SINCLAIR KNIGHT MERZ–(SKM)
Req#1720888 Scott Abbey –
SM#1745410 & Annexures #1745615
File 540953
Volume 1 of 4 ORIGINAL

In the matter of the Queensland Floods Commission of Inquiry 2011
A Commission of Inquiry under the *Commissions of Inquiry Act* 1950
And Pursuant to the *Commissions of Inquiry Order (No. 1)* 2011

Statement of Scott Allen Abbey

with Annexures SAA1 – SAA7

Volume 1 of 4

QFCI

Date: 26/10/11 JM

Exhibit Number: 885

In the matter of the Queensland Floods Commission of Inquiry 2011

A Commission of Inquiry under the Commissions of Inquiry Act 1950

And Pursuant to the Commissions of Inquiry Order (No. 1) 2011

Statement of Scott Allen Abbey

On 4 October 2011, I, Scott Allen Abbey, of [redacted] Cordelia Street, South Brisbane, in the State of Queensland, say as follows:

Introduction

1 I am currently employed by Sinclair Knight Merz Pty Ltd (**SKM**) as a Regional Manager Clients – Government and Environmental Agencies and Executive Project Manager. I have held this position (or similar one) since 2007.

2 My role at SKM includes the facilitation and coordination of SKM services to clients in the Government and Environmental Agencies portfolio, Project Manager and Project Director.

3 I have worked for SKM since 1989 predominantly in the water resources sector. I have experience in the fields of hydrologic and hydraulic modelling, floodplain management, catchment management, water resources planning, impact assessment, infrastructure approvals and project management.

4 Between 1986 and 1989, I was employed by Toowoomba City Council as a graduate engineer.

5 Between November 2003 and November 2005, I worked for SKM in London. I knew from about November 2002 that I was moving to London with SKM. From about July 2001 to November 2003, I was essentially working full time on the Burnett River Dam (Paradise Dam) project where SKM was engaged by Burnett Water.

Qualifications and experience

6 I hold a Bachelor of Engineering (Civil) [Deans Commendation] from the Darling Downs Institute of Advanced Education (1982 – 1985).

7 I have been a Chartered Professional Engineer since December 1993. I was listed on the National Professional Engineers Register in April 1995 and have maintained this registration.

8 **Annexure SAA1** is a copy of my curriculum vitae.

[redacted]......

Signature: Scott Allen Abbey

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Signature: Witness

This statement

9 This statement is provided in response to a notice issued by the Queensland Floods Commission of Inquiry (**Commission**) to me pursuant section 5(1) of the Commission of Inquiry Act 1950 (QLD) dated 22 September 2011 (**Request for Information**). Attached as **Annexure SAA2** is a copy of the Request for Information. I note that the Commission has confirmed via email on 28 September 2011 that the first topic in the Request relates only to Brisbane River flood related studies performed for the Brisbane City Council during the relevant period.

10 The statements I make below in paragraphs 11 to 32 are my best recollection of the matters referred to in the Request for Information.

Response to Request for Information

A brief overview of the work done for the Brisbane City Council by SKM during the period 1996 - 2000, and a list of reports (draft and final) prepared by SKM

11 During the period 1996 – 2000, SKM undertook only one study for Brisbane City Council (**BCC**) that was Brisbane River flood related. This study was known as the Brisbane River Flood Study. Further details of the study are provided at paragraph 16 and following.

12 During this period, SKM was also engaged by the BCC to undertake a flood study on Cubberla Creek (completed May 1996) and a hydraulic study on Bulimba Creek, East Arm (1999) which both drain to the Brisbane River. The focus of these studies was on flooding in the creeks.

13 In relation to the Brisbane River Flood Study, the following reports were prepared by SKM and submitted to BCC:

(1) Draft Calibration Report (March 1997);

(2) Draft Design Events Report (July 1997) – a copy of which is attached to this statement as **Annexure SAA3**;

(3) Draft Addendum Verification Report (August 1997) – a copy of which is attached to this statement as **Annexure SAA4**;

(4) Draft 2 Design Events Report (September 1997) – a copy of which is attached to this statement as **Annexure SAA5**;

(5) Draft Waterway Management Report (October 1997) – a copy of which is attached to this statement as **Annexure SAA6**;

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(6) Draft Flood Contour Report (February 1998) – a copy of which is attached to this statement as **Annexure SAA7**;

(7) Brisbane River Flood Study Final Draft Report (February 1998) – a copy of which is attached to this statement as **Annexure SAA8**;

(8) Brisbane River Flood Study Final Report: Volumes 1 and 2 (June 1998) – a copy of which is attached to this statement as **Annexure SAA9**;

(9) Brisbane River Flood Study Final Report – User Guide (June 1998) – a copy of which is attached to this statement as **Annexure SAA10**.

14 Although I recall the Draft Calibration Report (March 1997) being sent to BCC, as at the date of swearing this statement, I have not been able to locate a copy of that report.

Brisbane River Flood Study 1996 – 1998 – The instructions/brief from Brisbane City Council (both at the start of each study and any further instructions or clarifications given during the study)

15 A specification for the Brisbane River Flood Study (**study**) was provided by BCC in the form of a brief. To the best of my recollection, the brief was issued sometime around September 1996. The brief contained BCC's initial instructions in relation to the study. SKM no longer holds a copy of the full brief as it appears to have been destroyed in line with SKM's document control procedures (documents are destroyed after a set period of time has elapsed). However, a copy of the technical specification portion of the brief (pages 14 to 37, page 24 missing) is attached to this statement as **Annexure SAA11**.

16 The BCC brief to undertake the flood study was generally consistent with the approaches used to undertake such studies at the time. The study was to extend from Moreton Bay to the Brisbane city limits at Moggill. The primary aims of the study were to provide technically based flood development levels along the length of the Brisbane River within the confines of the Brisbane City boundary and develop a flood forecasting model. The secondary objectives of the study were the setting of flood regulation lines and the development of a revegetation strategy compatible with hydraulic constraints.

17 BCC's brief required specific outputs, such as the hydraulic assessment of structures, revegetation strategy and regulation lines assessment. These types of outputs were similar to those required by BCC in relation to other studies commissioned by BCC.

18 SKM submitted a proposal to BCC in October 1996 in response to the BCC brief. **Annexure SAA12** is a print out of an electronic version of the proposal dated 11 October 1996 submitted by SKM to the BCC (minus appendices as these are not contained on the electronic version).

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Given the time that has passed since the proposal was submitted, SKM no longer has a hard copy of the proposal.

19 In November 1996, BCC awarded the Brisbane River Flood Study contract to SKM. I was assigned by SKM to the project as project manager from November 1996 to July 1998. **Annexure SAA13** is a copy of the letter from the BCC to SKM dated 5 November 1996 awarding the contract to SKM.

20 There was a timeframe within which SKM was required to complete the study. SKM was required to undertake and deliver the results of the study by about mid 1998.

21 The delivery of the study was managed by officers from BCC's Waterways Section, Department of Works. BCC's project manager was Mr Ken Morris, Engineer in Charge, Waterways section. Mr Morris was supported by Mr Martin Giles, Engineer Waterways.

22 The Study was delivered with regular communications between the SKM team and the BCC study team. Face to face meetings were held on about a monthly basis. This was supplemented by frequent correspondence via telephone and facsimile. Significant technical assumptions or detailed methodologies were only adopted after review and approval from the BCC study team.

23 Overall approval of the study outputs occurred progressively as the study proceeded. Draft reports (interim reports) were prepared detailing the assumptions, methodology and results for various elements of the study. These included:

(1) Calibration Report;

(2) Design Event Report (2 drafts);

(3) Addendum Verification Report

(4) Waterway Management Report; and

(5) Flood Contour Report.

24 Draft reports were submitted to BCC study team for review. I recall that, as a matter of practice throughout the period of the study, the BCC study team would review the documents and provide comments on their contents. I would review the BCC study team comments and provide further information if needed to satisfy the BCC study team.

25 The final draft report and drawings were prepared as a collation of the previous interim reports reviewed by the BCC study team. The BCC study team also reviewed the final reporting documents and provided comments.

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26 The SKM team responded to those comments. The final report, user guide (model and documentation) and digital copies of models and data developed during the study was issued by SKM to the BCC study team in June 1998. Attached as **Annexure SAA9** is a copy of the Brisbane River Flood Study Final Report dated June 1998. Attached as **Annexure SAA10** is a copy of the Brisbane River Flood Study User Guide dated June 1998.

27 To the best of my recollection, the final study delivered the scope of works that was set out in BCC's brief for the project. There were minor amendments to the scope of the works, such as:

(1) not undertaking a flood frequency analysis at Jindalee (Centenary) (due to a lack of available data);

(2) the inclusion of the development of a hydraulic model as part of the development of the Flood Forecasting Model; and

(3) modifying the approach to the project consultation.

28 The nature of these amendments did not adversely impact on the overall scope or the quality of the outcomes of the study.

29 The methodologies used to deliver the scope and the assumptions made during the study process were developed and refined in consultation with the BCC study team. These matters were set out in the interim reports and the final report supplied to the BCC study team.

30 The key decisions made during the course of the study that influenced the outcomes of the study are as follows:

(1) In relation to the Flood Frequency Analysis used, the methodology of accounting for the presence of the dams in the catchment was discussed with the BCC study team (Mr Morris and Mr Giles) and an approach was agreed. Details of the approach are set out in Section 7.4, 7.5 and 7.6 of the Brisbane River Flood Study Final Report dated June 1998 (pages 72 – 76). This methodology included the adoption of the 'fit by eye' method to establish the flood frequency curves.

(2) In relation to the design rainfall losses adopted, the adoption of the flood frequency curve based on the 'fit by eye' method (rather than a Log Pearson III distribution) resulted in the adoption of an initial loss rate of 0.0mm and a continuing loss rate of 0.0mm/hr for the 1% AEP event. It was the BCC's preference to use the 'fit by eye' method, given that it was an accepted industry methodology at the time and had been used on other BCC flood study projects, so I did not disagree with such an approach.

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Annexure SAA17 is a facsimile from SKM to BCC dated 24 January 1997 discussing the 'fit by eye' method and the Log Pearson III distribution.

(3) In relation to dam operations adopted, the methodology was discussed and agreed with the BCC study team. A number of drivers led to the adoption of a simplified release strategy. One driver was that at the time that this study was being undertaken the dam operating rules were being revised by the South East Queensland Water Board and the new operating rules would not be available in time to inform the flood study. Another driver was that the Department of Natural Resources (**DNR**), the custodian of the dam operations model, was working on the revision and was not available to simulate any potential scenarios coming out of the flood study. A further driver was that the software being used in the study (RAFTS XP) to simulate the rainfall runoff in the Brisbane River catchment could not reproduce the complex release strategies that apply to Somerset and Wivenhoe Dams (as set out in the operating manual). The drivers listed above led to the adoption of a simplified release strategy. The approach is set out in Section 7.8 of the Brisbane River Flood Study Final Report dated June 1998 (pages 77, 78). The approach included an instruction by the BCC study team to assume the dams being at Full Supply Level (Water supply storage) at the start of the event and that an emergency release procedure would be adopted. It was considered that during a 1% AEP magnitude flood event communications could potentially be lost leading to the implementation of an emergency release procedure. The approach was identified in the report as being 'conservative' (likely to produce higher flood level estimates) as it did not simulate any specific gate operations that could reduce the outflows from the dam (without compromising the safety of the dam).

31 Further instructions or clarifications of the methodology used to deliver the study included the following:

(1) During the setting of regulation lines the location of the line was reviewed on a reach by reach basis in consultation with the BCC study team. The approach which was adopted meant that some of the initial performance criteria specified in the BCC brief needed to be modified. Details are provided in Section 9 of the Brisbane River Flood Study Final Report dated June 1998 (commencing at page 85).

(2) The development of a **HECRAS** hydraulic model (Hydrologic Engineering Centre (California) River Analysis System) was included in the scope of the flood forecasting model at the direction of the BCC study team. Further details are set out in Section 11 of the Brisbane River Flood Study Final Report dated June 1998 (page 131 ff).

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(3) During the course of the study, the BCC study team provided a further clarification as to the flood mapping methodology. The details of the approach are set out in Section 12.4 of the Brisbane River Flood Study Final Report dated June 1998 (page 141 ff).

The input parameters provided by Brisbane City Council to SKM

32 During the undertaking of the study the BCC study team provided a range of input parameters commensurate with a study of this nature. These parameters can be grouped as discussed below:

(1) BCC provided a range of data inputs into the study such as river cross sections, aerial photographs, cadastral information, existing and future land use information, bridge details, survey datum, historical flooding information, historical rainfall data.

(2) BCC also specified methodologies for the delivery of elements of the study such as, hydraulic assessment of structures, revegetation strategy and regulation lines assessment. These methodologies had been developed from previously completed studies for BCC by various consultants and were adopted to provide consistency. The methodologies were prescribed in the brief.

(3) As noted above at paragraphs 30(1) to 30(3), the BCC study team also provided approval of specific methodologies and assumptions relating to the flood frequency analysis and dam operations.

33 Attached to this statement as **Annexures SAA14** to **SAA79** are documents dated between 8 January 1997 and 9 October 1998 relating to the Brisbane River Flood Study, which fall within the scope of the Request for Information.

Opinion as to whether those instructions/brief and input parameters are likely to yield the best estimate of the 1% AEP flood (Q100)

34 In relation to hydrologic and hydraulic studies of the nature of the Brisbane River Flood Study it is difficult to quantify what 'best estimate' means. I would consider that the brief provided by BCC outlined a scope of works that was consistent with the practices of other Local Authorities and the industry bodies undertaking such studies at the time. There were elements of the scope of works, such as the assessment of waterway management strategy, flood contouring and mapping and the development of the flood forecasting model that were innovations of BCC and were, as far as I was aware, leading the practice in the field in Queensland at the time.

35 At this time, the technical guideline for studies like the Brisbane River Flood study was Australian Rainfall and Runoff (**ARR**) (published in 1987, some ten years prior to the

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commencement of this study). While the document did not mandate the use of its methods and design data; it was the best source of this type of information available to the industry at the time. Many of the methodologies set out in ARR as well as design rainfall depth estimates and temporal patterns were adopted for the study. Considerable research was being undertaken at the time of the study into hydrological methodologies (e.g. Areal Reduction Factors) and the generation of design rainfall data sets (e.g. CRC Forge). However the outcomes of this research were not available or only just becoming available to the wider engineering community and much of this new information was not able to be utilised because of the timing of the study.

36 As with any study of this nature, the quality of the estimate is influenced by the availability and quality of input data. Data was obtained from a wide range of sources including BCC, DNR, Bureau of Meteorology, South East Queensland Water Board, CSIRO Toowoomba City Council and Department of Transport. The data used during the study was thoroughly checked and scrutinized in order to access the best data sets that were available at the time when the study was undertaken (during 1997 and early 1998).

37 During this study a number of assumptions had to be made in order to progress the technical assessments being undertaken within the timeframes allowed for the study. This is common practice in studies of this nature. The assumptions made during the Brisbane River Flood Study were influenced by many factors such as the quality and availability of data sets, limitations of methodologies available, computing capacity available at the time, access to the dam operations model and the availability of external resources to generate input data for the study. When assumptions are made a conservative or low risk perspective is often adopted. In this case a conservative perspective meant that if further work was undertaken that may include new data, more refined analysis (e.g. gate operations) or better technologies it was unlikely that the estimate of the 1% AEP flood would increase. As stated in Section 7.8 of the Brisbane River Flood Study Final Report dated June 1998 (page 78), "*the assumptions made regarding the operations of the dam were considered to be 'conservative' and appropriate given the output was to be used to set development regulation lines*".

38 My view is that, considering the methodologies and technologies that were available at the time of the study being undertaken, the data sets that were available and the assumptions that consequentially had to be made following consultation with the BCC study team, the instructions/brief and input parameters provided by BCC enabled SKM to produce a reasonable estimate of the 1% AEP flood characteristics. Although difficult to quantify, the result of the study could be considered the best estimate available at the time the study was undertaken.

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Opinion as to whether the results of studies during 1996-1998 were an underestimate or overestimate of the 1% AEP flood (Q100) and why

39 Given studies of the nature of the Brisbane River Flood Study it is difficult to quantify what is meant by an underestimate or overestimate of a flood. As discussed in paragraphs 34 to 37 the 1% AEP flood estimate presented in the Brisbane River Flood Study was influenced by the data, methodologies and technologies that were available at the time of the study and the inherent assumptions that also had to be made in order to complete the study within the timeframe nominated. Considering how the estimate of the 1% AEP flood was generated, it is my opinion that the estimate was within the range of reasonable outcomes.

40 As discussed at paragraph 37 the assumptions that were made were considered to be conservative. Considering the conservative nature in which a number of the assumptions had to be made it is more likely that the estimate was on the high side (rather than the low side) of the range of reasonable outcomes.

41 The conservative nature of the 1% AEP flood estimate presented in the Brisbane River Flood Study has been confirmed through the work that followed the completion of the study in June 1998. These further studies completed some five years later in 2003 had access to new methodologies and additional data sets. The studies also reviewed some of the assumptions made. The resulting refinement of the 1% AEP flood estimate produced lower peak discharges and flood levels.

Opinion as to the opinions expressed by Professor [redacted] in his review of the 1998 study, in particular whether you agree that the result produced by SKM's study was an overestimate of the Q100

42 It is understandable how an independent professional reviewing the study could form an opinion that the 1 % AEP flood estimate produced was an overestimate.

43 As discussed in paragraph 39 and 40, the 1% AEP flood estimate presented in the Brisbane River Flood Study was influenced by the data, methodologies and technologies that were available at the time of the study and the inherent assumptions that also had to be made in order to complete the study within the timeframe nominated. These assumptions were considered to be conservative and the conservative nature of the assumptions meant that the 1% AEP flood estimate was more likely to be on the high side (rather than the low side) of the range of reasonable outcomes.

[redacted]

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44 Without a detailed understanding of the background to decisions made regarding methodologies adopted in the study and the basis for some of the assumptions made at the time the study was undertaken, it would be possible to form an opinion that the conservative estimate of the 1% AEP flood (that in my opinion was an estimate that was on the high side - rather than the low side - of the range of reasonable outcomes) was in his opinion an overestimate.

Sworn / Affirmed by the deponent	)	[redacted]
at Brisbane	)	
in Queensland	)	Signature of Scott Allen Abbey
on 4 October 2011	)	
Before me:	)	

[redacted]

Signature of witness [redacted]

In the matter of the Queensland Floods Commission of Inquiry 2011

A Commission of Inquiry under the Commissions of Inquiry Act 1950

And Pursuant to the Commissions of Inquiry Order (No. 1) 2011

Statement of Scott Allen Abbey

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Signature: Scott Allen Abbey

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Annexure	Details	Paragraph
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Signature: Scott Allen Abbey

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Signature: Witness

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Signature: Scott Allen Abbey

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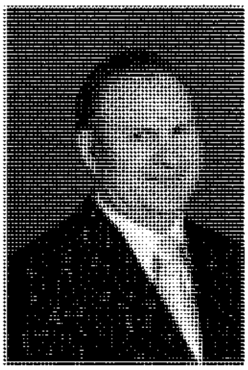
Signature: Witness

Scott Abbey



Scott is a Senior Associate in the Water and Environment Business Unit at Sinclair Knight Merz. Scott has twenty five years experience in the water resources sector, including floodplain management, catchment management, integrated urban water management, water resources planning, impact assessment and associated approvals.

Scott has extensive knowledge in environmental approvals and planning related to water infrastructure projects. He has filled key roles on projects for both public and private sector clients and understands the special requirements of each.

Scott has held senior management and leadership positions of multi disciplined teams and is able to clearly identify client and project objectives, appropriate team resources, establish effective project communication structures and processes, and effective review systems.

Current Position

Senior Associate, Water and Environment

Years in Industry

25

Qualifications

Bachelor of Engineering (Civil) with Deans Commendation, Darling Downs Institute of Advanced Education, 1985

Affiliations:

Corporate Member, Institution of Engineers, Australia

Chartered Professional Engineer

National Professional Engineers Register – NPER (Civil)

Experience:

Sinclair Knight Merz, Australia

December 2005 to date:

Senior Associate, Executive Engineer, Water and Environment Client Account Manager,

Water and Environment Group, Brisbane Office.

Project Director and/or Project Manager for the following projects:

- Sunshine Coast Regional Council Climate Change Risk Assessment and Adaptation Plan. Project Director responsible for the development of a risk assessment framework and adaptation plan for SCRC. Key tasks included design of risk assessment framework (in consultation with SCRC using the guidelines in 'Climate Change Impacts and Risk Management – A Guide for Business and Government' (AGO, 2006)), identification of Council assets and functions which are at risk from Climate Change, assessment of future Climate change projections, facilitation of workshops for stakeholders and provision of guidance on adaptation options and measures.
- Nerang River Freshwater Health Study. Project Director responsible for the development of a management tool for GCCC for the mid and upper sections of the Nerang River through the assessment of the physical and ecological health. The management tool took the form of models, maps, data sets and plans for river bank stability, riparian and in-stream areas as well as an overall catchment action and implementation plan with an ongoing monitoring and evaluation program.
- Gold Coast Desalination Project Stormwater Management Plan. Technical reviewer responsible for the Stormwater Management Plan including concept design of stormwater drainage, hydrologic, hydraulic and water quality assessment.
- Traveston Crossing Dam EIS. Technical reviewer responsible for the surface water components of the EIS and supplementary report. The role involved review of technical assessments using IQQM and Mike 11 to establish existing conditions in the study area of the project as well as determining the impacts of the project and appropriate mitigation measures. In addition to reviewing the work undertaken the role included supporting the development of strategies to assess the impacts and the identification of mitigation measures. The assessment considered elements such as water resources, environmental flows, surface water / ground water interaction, estuarine impacts, flooding and climate change.

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- Nerang and Coomera Rivers, Assessment of Flood Vulnerability; Gold Coast (Qld). Project Director responsible for establishing the vulnerability to flooding of communities within the Nerang and Coomera River floodplains. Inputs to this analysis included existing flood modelling results, determination of flood evacuation potential and population demographics. The output from this investigation included an assessment of the real flood vulnerability of the floodplain communities, to assist in the planning of flood management and evacuation.
- Myall Creek Flood Study and Flood Risk Assessment: Dalby (Qld). Project Director responsible for the calibration of URBS and MIKE 21 models, generation of design flood characteristics and assessment of the flood hazard in the Dalby town area.
- Emu Swamp Dam EIS. Technical reviewer of the flooding and water resources section of the EIS for the proposed dam on the Severn River near Stanthorpe. The role involved review of technical assessments using IQQM and Mike 11 to establish existing conditions in the study area of the project as well as determining the impacts of the project and appropriate mitigation measures. The role required ensuring compliance with the EIS terms of reference and liaison with regulatory authorities.
- Hinze Dam Stage 3 – Hinze Dam Alliance. Approvals Manager (SKM Project Manager) responsible for the EIS, approvals, recreation planning, stakeholder engagement and communications within the Hinze Dam Alliance. The project involves the raising of the existing dam by approximately 15 m in order to meet water supply, flood mitigation and dam safety objectives.
- SEQWater Hydrology Advice – Project Manager for the provision of advice relating to the water resource planning hydrology for the Stanley, Brisbane and Pine river catchments. The advice included historical sequence modelling using IQQM as well as stochastic assessments.
- SEQWater draft WRP Advice – Project Manager for the assessment of the draft Moreton Resource Plan in relation to SEQWater's entitlements and operations and the preparation of a submission to government on the draft WRP
- Roma Street Parkland Alternative Water Supply Feasibility. Project Manger for the determination of a preferred alternative water supply option for the 14.6 Ha Parkland. Using an integrated urban water management approach the study investigated sewer mining, stormwater capture and river water desalination. The study investigated water demand, process requirements, development logistics and regulatory requirements of an alternative supply.
- Department of Defence, Darling Downs Bases, Integrated Urban Water Management Study. Project Director for an investigation to improve quality and security of water service at Army Aviation Centre, Oakey and Borneo Barracks, Cabarlah Qld. The project considered options such as groundwater desalination, sewer mining, roof water capture and stormwater capture and included investigations into water demand, process requirements, development logistics and regulatory requirements.
- Millennium Arts Project - Water Recycling Options. Project Director for the review of potable water substitution options for the Millennium Arts Project being developed in the South Bank precinct of Brisbane. Using an integrated urban water management approach the options study investigated roof water capture, sewer mining, stormwater capture and river water desalination. The project included the sizing of alternative water storage infrastructure.
- Southern Gold Coast Wastewater Strategy. Project Director for the assessment of the implications of the recently completed Gold Coast Water Futures Strategy for the southern areas of the Gold Coast. Strategy includes confirmation of volumes, development of recycling opportunities and identification of release systems to service the area for next 50 years, that are consistent with GCWF
- Sinnamon Road Stormwater Management Plan Project Manager for the preparation of a Stormwater Management Plan for a commercial development at Sinnamon Road Jindalee Qld. Investigations included catchment hydrology, 2 D hydraulic modelling of Jindalee Creek and stormwater quantity and quality management.
- Department of Natural Resources, Mines and Water dams Failure Impact Assessments. Project Director for the preliminary FIAs for several farm dams in Queensland. Assessments involved hydrological definition of catchments, calculation of peak flows for various return periods, 1D hydrologic modelling, calculation and routing of breach flows, assessment of failure path inundation, concurrent flooding investigations and identification of populations at risk. Modelling software used included MIKE11, Hec-RAS, and XP-RAFTS.
- Stanthorpe Future Water Supply Strategy. Project Manager for the provision of strategic and specific technical advice in relation to upgrading the raw water supply arrangements at Stanthorpe, including the construction of a new dam. The strategy included the quantification of existing and future water demands in the shire, review of the NRMWs granite belt IQQM model and the hydrological modelling of water storage options using IQQM. The modelling assessed potential yields from storage options and simulated anticipated environmental flow requirements.
- Strategic Stormwater Management Plan for Lowood & Fernvale Local Area Plan. Project Manager responsible for the development of a strategic stormwater plan for the LAP areas of Lowood and Fernvale, Queensland. The study involved the identification of waterway corridors within the areas which would influence the development of the LAP. XP Rafts and Hec-RAS software were used to quantify runoff from the local catchments and determine the extents of inundation during flooding.

Scott Abbey

Sinclair Knight Merz, Europe

November 2003 to November 2005:

Senior Associate, Executive Engineer, Hydrology and Hydraulics, London Office.

- Mill Lane Cheadle Hydraulic Study. Hydraulics engineer responsible for the estimation of 1 in 100 year flood levels at a proposed development site for input to a flood risk assessment. The assessment involved the development of a MIKE 11 hydraulic model which included two weirs and an arch bridge.
- Rainham Marshes Hydrology and Flooding Assessment. Hydraulics engineer responsible for a desk study into the hydrology and flood characteristics of the Rainham and Waverly marshes. The study was undertaken as part of the development of a master plan for the area known as the London Marshes.
- Long Term Secondment to Halcrow Group Limited, Waltham Cross working on the following projects:
- Thames Barrier Rising Sector Gates 100 year life project. Project Manager for Stage 3 Phases 1 and 2 of the project which included investigations into extending the life of the gates to 2100. The study included consideration of options for extending gate life and the works required to undertake this. A principle outcome of the project was the development and implementation of a plan for detailed condition assessment of all of the gates in 2005. Investigations considered issues such as coating condition, structural integrity, performance of the cathodic protection system, health and safety requirements and potential environmental impacts.
- Floodscape Project Hamlands. Project Manager of a project to develop a long term landscape master plan and land management plan for the historic Thames River floodplain around Ham House at Richmond as part of the Environment Agencies EU Interreg 3B partnership project. The project involves extensive community consultation and 2 Dimensional modelling of the Thames River and floodplain.
- British Waterways Project Risk Estimator. Project manager for the development of a risk estimation tool for application on BW projects.
- Thames Estuary 2100 Project Risk Register. Project manager for the development of a preliminary risk register for TE2100 including development of a risk workshop and use of the Environment Agencies 'RISK 2.2'.
- Cobbins Brook Flood Alleviation Scheme. Senior Engineer responsible for the review of technical aspects of the project including flood alleviation mitigation options, hydraulic modelling of options, concept design of flood alleviation structures, overall feasibility development.
- Droitwich Canal Restoration Project. Senior engineer assisting the Project Manager in the development of the technical document to support the Stage 2 Heritage Lottery Fund submission for the restoration project of 10 miles of canal. Activities include management of the documentation of the restoration project including development of documentation of the works required, costing of the works and presentation of the overall project concept.

Sinclair Knight Merz, Australia

January 2002 to November 2003:

Senior Associate, Executive Engineer, Group Manager – Water, Brisbane Office.

Project Director and/or Project Manager for the following projects:

- Burnett River Dam Project. Project Manager responsible for the provision of advice relating to the hydrology and proposed operations of the dam as the client's representative in the alliance process. The advice extended to the future operation of the dam under the requirements of the Burnett Basin Water Resources Plan and Resource Operations Plan.
- Cooloola Urban Stormwater Management Scoping Study. Project Manager of scoping study identifying the shires legislative requirements with respect to storm water management and the development of a model for stormwater water management in the shire. The project also prioritised the urban catchments in the shire using GIS based Multi Criteria Analysis techniques.
- Home Hill Floodplain Management Study. Discipline Manager for flood study of the Home Hill District using MIKE21. Study included the hydraulic analysis of Burdekin River flooding and local flooding. Flood mitigation options were investigated as well as the performance of elements of the Home Hill stormwater system.
- Swanbank Paper Project EIS. Discipline manager for the preparation of water related sections in the EIS including documentation of water supply sources, management of site runoff, disposal of effluent streams and determination of the projects impacts on surface and groundwater systems.
- Quantification of Nutrient and Metals Budgets for North Pine Dam. Project director of team of specialist environmental engineers to develop nutrient and metals budgets for North Pine Dam and to recommend options to improve water quality in the dam. The project had strict time and quality requirements.

- Bremer Business Park. Discipline Manager for the assessment of hydraulic impacts (MIKE11) of development of the Business Park. The assessment provided input to into various design layouts of the proposed industrial development on the Brisbane and Bremer River floodplains.
- Condamine River Floodplain Management Study. Project Manager of the development of a coarse 2D hydraulic (MIKE21) model of the Condamine River floodplain, (Qld) for future floodplain development assessment. Model area covered 4,500km².
- Mooloolah River Floodplain Management Study. Expert reviewer for major flood study of Caloundra and Kawana using MIKE21. Study included the hydraulic analysis of road and rail transport infrastructure and future urban development within the Mooloolah River floodplain.
- Western Ipswich Bypass Study. Discipline Manager for a fine scale 2D hydraulic (MIKE21) assessment of proposed bridge structure over the Bremer River, Qld.
- North Lakes Tributary C Stormwater Management Plan. Discipline Manager for hydrologic and hydraulic (RAFTS & MIKE11) modelling of proposed residential development. Assessment of Water Quality control requirements and development and documentation of a stormwater management plan.
- Ipswich City "Riverlink" Project. Discipline Manager for hydraulic (MIKE11) modelling to establish impacts of multi-use development on Bremer River flooding characteristics.
- Hydrological studies for transfer of recycled water from Brisbane and SE Queensland to Darling Downs. Project Director of study to predict regional water resource outcomes of irrigation with treated effluent on groundwater levels, salinity and nutrient levels, and in surface streams. Modelling of groundwater systems, unsaturated zone processes and aquifer recharge.
- John Goleby Weir User Group ROP Advice. Project manager of review of draft Burnett Basin Resource Operations Plan, liaison with Department of Natural resources & Mines and SunWater and the development of a submission to Government which resulted in the maintenance of the groups current water entitlements.
- Nerang River Flood Mitigation Options. Project Manager of the economic, social and environmental assessment of flood mitigation options for Nerang River. The assessment used a GIS based flood damages model and an economic model which considered the multiplier affects of the flood mitigation options.
- Burnett Water Pty Ltd Burnett Basin ROP Submission. Project Manager responsible for the development of submissions to Government on how the proposed Burnett Water infrastructure (Burnett River Dam, Eidsvold Weir, raising of Jones Weir, raising of Walla Weir) would be operated in order to comply with the Burnett Basin Water Resources Plan. The project included detailed modelling of infrastructure operations using the IQQM model, development of operating rules to meet environmental flow requirements, development of water trading rules and documentation of proposed monitoring arrangements.
- Goonyella Mine Longwall Development. Discipline Manager responsible for advice on hydrology and drainage aspects relating to the design of the longwall pit access road and conveyor route.
- Hail Creek Coal Mine: Project Director for the hydraulic inputs into the review and construction advice for the mine access road.
- Coppabella Coal Mine: Project Director for hydrology and hydraulics inputs to the detailed design and documentation of relocation of transport corridor containing rail, road, power, water and telecoms
- Clermont Coal Mine: Project director of hydrology and hydraulics elements relating to the preliminary design of road diversions and conveyor routes.
- Due Diligence reviews: Discipline manager of hydrologic and hydraulics reviews for due diligence on two coal mines
- Border Rivers Draft Water Resources Plan submissions on WRP and ROP. Project Manager for preparation of submissions relating to the Border Rivers WRP and ROP on behalf of Stanthorpe Shire Council.
- Pre-construction Environmental Management Plan for Burnett Water water infrastructure development (Burnett Dam and three weirs). Discipline manager for water related aspects of environmental and planning approvals and other actions required prior to commencing construction.

January 2000 to December 2001:

Associate, Executive Engineer, Manager Toowoomba Office.

Project Director and/or Project Manager for the following projects:

- Coolmunda Dam Safety Review. Project Manager responsible for the delivery of the project to State Water Projects. Also responsible for the hydrologic, dam break and consequences components of the project.
- Burnett River Dam and raising of Walla Weir EIS's. Discipline manager for the preparation of water related sections in the EIS's and supplementary reports including justification of the infrastructure and determination of hydraulic impacts.
- Preliminary Risk Assessment, Wivenhoe, Somerset and North Pine Dams for the South East Queensland Water Board. Project manager of a preliminary risk assessment of the Board's three dams in order to determine a portfolio risk profile and prioritise risk reduction measures.

- Carnarvon Floodplain Management Plan for the Lower Gascoyne River in Western Australia. Project Director of project involving hydrological analysis, hydraulic model development, consultation, review of current management strategy and assessment of future mitigation and planning options. Evaluation of economic, social and environmental effects.
- Woogaroo Creek Bridge/Embankment Flood Study & Scour Design. Project Director of project involving the determination of the hydraulic impacts of a new bridge/embankment crossing. This study involved the sizing of the bridge opening and culverts to achieve a cost effective solution for a specified afflux. A bridge and culvert scour protection design was undertaken.
- Kogan Creek Coal Mine/Power Station: Project Director for hydrology and hydraulics inputs to the preparation of tender preliminary designs for power station infrastructure including, stormwater, sewerage, roads and earthworks for pad and water management dams
- Project Director of planning and preliminary design for a pipeline to transfer water over 16 km to the Hay Point and Dalrymple Bay coal export terminals in central Queensland. Project involved detailed modelling of water transfer and supply operations and pipeline feasability.
- Project Director of review of hydrology and IQQM system modelling for irrigators on the Condamine River in southern Queensland. Reviewed report to be appended to irrigators submission on the draft Condamine-Balonne WAMP (Water Allocation & Management Plan)
- Project Director of review of the impact of the Fitzroy River Basin WAMP (Water Allocation Management Plan) and the proposed Nathan Dam on water harvesting and irrigation on the Lower Dawson River in central Queensland.
- Burnett Water Development Group WAMP Advice – Project Manager for the assessment of the draft Burnett Basin Water Allocation Management Plan and the preparation of a submission to government on the draft WAMP
- Kogan Creek Power Project. Discipline Manager responsible for advice on flooding aspects of the power station site and associated mine. MIKE11 hydraulic model set up, encompassing Kogan Creek and the reach of the Condamine River upstream and downstream of the mine site
- RAAF Base Upgrade, Townsville. Project Director of the evaluation of flooding and stormwater aspects of major $70M upgrade of RAAF Base.
- Lang Park EIS. Project Director of evaluation of stormwater and flooding aspects as part of major upgrade of Lang Park Stadium, Brisbane.
- Outer Catchments Management Strategy. Project Director of development of strategy to manage flooding, trunk drainage and creek erosion within an 1100 ha catchment in Toowoomba.
- Springfield Stormwater Management. Project Director of review on behalf of Ipswich City Council of proposed stormwater detention and treatment strategy proposed for major urban development.
- O'Quinn Street Detention Basins. Project Director of hydrologic assessment to determine cost effective storage volumes and outlet configuration.
- Stenner Street Detention Basins. Project Director of hydrologic assessment to determine cost effective storage volumes and outlet configuration.
- Westbrook Creek Catchment Management Strategy. Project Director of development of a management plan including stormwater detention, stormwater treatment, revegetation and trunk drainage for 1300 ha catchment in Toowoomba.
- QCL Development, Jindalee. Project Director of development of a stormwater treatment strategy for a major urban development in Brisbane.
- Spring Street Basin. Project Director of design of 25 ML stormwater detention basin and wetlands on West Creek, Toowoomba.

May 1994 to January 2000:

Associate, Executive Engineer, Toowoomba Office.

Project Manager and/or Project Engineer for the following projects;

- Ipswich Rivers Flood Study. Flood studies of The Brisbane River, Bremer River, Bundamba Creek and other minor tributaries within the Ipswich LGA. The project involved the calibration of RAFTS and MIKE 11 models, generation of design flood level profiles and assessment of the impacts of ultimate development of the Ipswich region.
- Westbrook Creek CMS. Development of catchment management and stormwater management strategies for a 1 200 hectare catchment in south west Toowoomba. The project considered hydrologic, hydraulic, water quality, landuse and environmental factors and included community consultation.
- Millmerran Power Project - Flooding and Water Management. Study Manager responsible of the prediction of flooding conditions on the development site using RAFTS and MIKE 11 and the development of a management plan for the water supply and site runoff.

- Spring Creek CMS. Development of appropriate catchment management options for the Spring Creek Catchment. The project required direct technical input into the RAT-HGL modelling, HEC-RAS modelling and cost estimates preparation.
- Brisbane River Flood Study for Brisbane City Council - Calibration of RAFTS and MIKE 11 models, generation of design flood profiles, determination of regulation lines and revegetation strategy and development of a flood forecasting model.
- Catchment D Stormwater Drainage Management Plan. Project Manager responsible for the assessment and preliminary design of trunk drainage system (open channel and piped) using RAFTS, HEC-RAS and RATHGL Models.
- Master Drainage Study Outer Catchments, Toowoomba. Responsible for the development of drainage strategies, preliminary sizing of stormwater pipe systems and corridors and determination of legal points of discharge.
- Cubberla Creek Flood Study for Brisbane City Council to develop hydrologic (URBS) and hydraulic (MIKE 11) models for design flood modelling, regulation line and development levels assessment, waterway management strategy and development of a flood forecasting model.
- Glenvale/Torrington/Cotswold Hills DCP Drainage Study. Project Manager responsible for catchment hydrology (Qudm) and hydraulics calculations, drainage corridor needs assessment, definition of lawful points of discharge and establishment of drainage strategy policies and drainage design standards.
- Glenvale Stormwater System Options Study. Project Manager responsible for the assessment of provision of underground stormwater systems alternatives in the Glenvale area to relieve stormwater flooding problems. The project required catchment hydrology (Qudm), preliminary stormwater system design, cost estimation of infrastructure and recommendation of suitable options.
- Drayton/Wellcamp Road Drainage Study. Project Manager responsible for assessing the impacts of catchment urbanisation on stormwater runoff (using RORB), assessing nuisance potential of flow increases, preliminary design and costing of detention basins and assessment of immunity of road culverts and suggested upgrades.
- Beachmere DCP. Hydrology and Hydraulics Study Manager responsible for identification of major drainage corridors, determination of design flood levels and the documentation of design discharges for the Beachmere DCP area.
- Lismore Levee Scheme Detailed Investigation - Project Manager, responsible for the refinement and hydraulic testing of a levee system for Lismore. Aspects included assessment of hydraulic impacts, overtopping operation, levee stability, assessment of evacuation routes and preliminary cost estimate.

Sinclair Knight, Australia

1989 to April 1994:

Experienced Engineer, Toowoomba Office engaged on:

Hydrology and Hydraulics Projects:

- Moggill Creek Flood Study. Project Manager responsible for the calibration of URBS and MIKE 11 models, generation of design flood profiles, determination of regulation lines, tree planting strategy, hydraulic structures assessment and flood forecasting model.
- Lismore Floodplain Management Study.
- Project engineer responsible for hydrologic and hydraulic modelling. The project involved rigorous calibration and verification of RORB and MIKE 11 computer models and the determination of PMF, 1% and 5% AEP flood profiles.
- Project Manager for the hydraulic assessment of structural flood mitigation options. Various mitigation options ranging from levee banks to large diversion channels were assessed using the calibrated hydraulic model resulting in a levee scheme for the city. The study also required the presentation of findings at Council and public meetings.
- Freight Rail Bridge Upgrading - Lismore. Project Manager responsible for the hydraulic analysis of rail bridge upgrade options using the MIKE 11 hydraulic model and bridged waterways techniques.
- West Creek Beautification Works Hydraulic Study. Project Manager responsible for the investigation of the impacts of proposed beautification works on creek hydraulics using the RORB and HEC2 models. Impacts were determined for a range of floods from 1 in 2 years ARI to 1 in 100 years ARI.
- Eatonvale Estate Major Drainage Design. Hydraulic Study Manager responsible for open channel drainage. The project involved the analysis and design of an open channel through the estate, design of an engineered waterway having regard to existing conditions, sizing of road culverts and determination of design flood levels.
- Toowoomba Master Drainage Outer Catchments Strategy Study. Project Manager responsible for hydraulic, environmental, town planning and legal investigations of major drainage catchments in Toowoomba City. The project involved the development of a drainage strategy for underground and overland stormwater discharges, an assessment of the environmental impacts of the strategy and determination of legal points of discharge with respect to town planning and legal implications.

- Barneedoo No 1 Storage Hazard Assessment Report. Project Engineer responsible for hydraulic investigations. The project involved the investigation of the features of a 100 000 ML earth dam. Aspects such as possible dam failure modes, the impacts of dam failure, dam bank stability, approach for design and construction and operation and maintenance considerations were investigated and documented. The dam failure was modelled using the MIKE 11 programme.
- Gold Coast Highway Upgrading - Coombabah Creek Flood Study. Hydraulic Study Manager responsible for catchment hydrology and hydraulic investigation of the Coombabah Creek floodplain and proposed highway configurations. This project involved establishing existing conditions flooding characteristics of the floodplain and determining the hydraulic impacts of highway and drainage design alternatives. The investigation utilised the MIKE 11 hydraulic model.
- Mirage Grand Prix Complex Hydraulic Study. Project Manager responsible for the investigation of the hydraulic impacts of the relocation of flood regulation lines on the development site. The investigation involved the assessment of hydraulic impacts as well as the negotiation of development issues with Brisbane City Council.
- Leichhardt River Flood Level Study. Project Manager responsible for hydrologic and hydraulic studies. The project involved the review of 1 in 5 years, 1 in 15 years and 1 in 50 years ARI flood levels and areas of inundation in Mount Isa City to assist with development planning for the urban area of the city. The project was based on the RORB and MIKE 11 models.
- Hearls Drain - Half Moon Creek Hydraulic assessment. Project engineer responsible for hydraulic modelling. The project required the preliminary assessment of the impact on flood levels due to the construction of a proposed marina development and associated dredging of Half Moon Creek. The assessment was carried out using the MIKE 11 hydraulic model.
- Oakey Creek Hydraulic Study. Project Manager responsible for hydrologic and hydraulic studies. The project involved the assessment of the hydraulic effects of a proposed bridge over Oakey Creek and the construction of an embankment on the adjacent floodplain. The project also required the preliminary sizing of culverts on the floodplain to limit afflux effects due to the embankment.
- Weyba Creek Hydraulic Study. Project engineer responsible for hydraulic modelling. The project required the establishment of 1% AEP flood profiles and the assessment of the afflux effects of several bridge designs. The hydraulic assessment was carried out using a calibrated MIKE 11 model.
- Cubbie Station Land Court Appeal. The project involved the hydraulic modelling of a section of the Culgoa River near Dirranbandi to assess the backwater effects of a proposed irrigation diversion weir. The MIKE 11 model was calibrated using recorded streamflow information and the effect of the weir tested for a range of flows.
- Collins Creek/Popes Gully Flood Study. Investigation of flooding of Popes Gully in the suburb of Woonona, Wollongong. The study involved the use of MIKE 11 to model a complex open channel and pipe stormwater system to establish flood profiles for the 1%, 2% and 5% AEP flood events. MIKE 11 was also used to assess the effectiveness of various flood mitigation options considered.
- Lockyer Creek Flood Study, Helidon. Study of flooding in Lockyer Creek at the site of a proposed industrial development. The project involved the calculation of runoff from the 375 km2 catchment using the RORB model and the establishment of 100 year ARI flood levels using the MIKE 11 model.
- Land Court Trial, Burdekin River. The project involved the Hydraulic modelling of approximately 100 km of the Burdekin River system and the Burdekin Falls Dam using MIKE 11. The MIKE 11 programme was used to establish water levels, flow velocities and periods of inundation caused by flooding in the Burdekin River system and the backwater effects of the Burdekin Falls Dam.
- Bridgeman Gardens/Albany Creek Hydraulic Study. Study of the effect of subdivision development on flooding in Albany Creek. The project required the determination of the 100 year ARI flood profile and the establishment of development regulation lines. The RORB model was used to calculate discharges while MIKE 11 was used to establish water levels and assess the impacts of development alternatives.
- Karana Gardens Subdivision, Brisbane. Study of runoff from a small catchment to assess the impact of development on peak discharges from the catchment. The RORB model was used to calculate discharges from the undeveloped and developed catchments. The project also involved the preliminary design of retention basins to limit discharges from the developed catchment.
- Applethorpe TAFE. Establishment of design discharges in Four Mile Creek, Applethorpe, using the RORB model, and design of culvert crossing alternatives for proposed TAFE College.
- Ross River Dam Safety Review. Engineer responsible for the determination of the Probable Maximum Flood and low probability floods for the dam using the RORB Runoff Routing Model. The project also involved the investigation of discharges from the Ross River Catchment into the Bohle River catchment during extreme flood events.

Roadworks Projects:

- Oakey Bypass Intersection Report. Preparation of a report on access options to the township of Oakey from a bypass proposed by the Main Roads Department Toowoomba. The project involved the assessment of existing and future traffic conditions, preliminary design of various intersection options, including grade separated facilities, and assessment of public opinion of the various access options.

- Balonne Highway, Cunnamulla. Design of a 5 km section of the Balonne Highway for the Main Roads Department Roma. The design included the preparation of a Material Resources Report and a Pavement Design Report.
- Allora Bypass, New England Highway. Design of a 2.5 km section of the New England Highway known as the Allora Bypass for Main Roads Department Warwick. The project involved the design of an overlay for the existing roadway, redesign of a major channelised intersection on the outskirts of Allora and the upgrading of private entrances and lighting in the Allora township area.
- D.M.C. Subdivision Greenwattle Street, Toowoomba. Design of the water and stormwater systems for an industrial subdivision for the Department of Manufacturing and Commerce. The stormwater design required the consideration of a large urban catchment upstream of the subdivision site.

Toowoomba City Council, Australia

1988 to 1989:

Engineer, Works Department engaged on:

- Construction of the Bell Street Mall (Site Engineer) including the co-ordination of the alteration and installation of services, supervision of pavement construction, 2 000 m2 of paving and erection of street furniture.
- Reconstruction of rural roads (South Street) including organisation of the purchase of road base material, supervision of 5 000 m2 of cement stabilisation, installation of drainage and bitumen sealing of the roadway.
- Several minor cement stabilisation maintenance projects.
- Reconstruction of Hogg Street including road widening, kerb and channelling, minor drainage and bitumen sealing.
- Construction of Mackenzie Street/Perth Street roundabout including the monitoring of construction progress, ordering of street furniture, general construction supervision and public relation activities with local residents.
- General supervision of stormwater drainage construction including installations in Mort Street, Perth Street, Anaba Street and Panorama Crescent.
- Operation of Council's Soil Laboratory and the Toowoomba City Airport.

1986 to 1988:

Engineer, Water Supply and Sewerage Department engaged on:

- Supervision, inspection and co-ordination of water supply and sewerage day labour projects, including:
  - 2 900 m of 375-450 mm dia Trunk Water Main - Anzac Avenue.
  - 1 650 m of 250 mm dia - Drayton Water Main (including design).
  - 1 500 m of 225-450 mm dia Trunk Water Main - West/Baker Streets (including design).
  - 900 m of 375 mm dia Trunk Water Main - Rob Street.
  - Construction of Anzac Avenue Booster Pump Station.
  - Construction of Norman Park Pump Station.
  - 2 600 m of 450 to 600 mm dia "Black Brute" Trunk Sewer - Glenvale.
  - 1 500 m of 225 to 375 mm dia Trunk Sewer - Drayton (including design).
  - 600 m of 375 mm dia Duplicate Sewer - East Creek (including design).
  - Replacement of 150 mm dia inner city sewers in Phillip Street, Clopton Street, William Street and Aubigny Street - approximately 800 m (including design).
- Inspection of private subdivisions - water and sewerage installations.
- Co-ordination of annual contracts for the purchase of pipeline materials.
- Determination of headworks charges and associated external works requirements for town planning and subdivision applications.
- Cost estimates of various projects.

Languages:

English

Our ref: Doc 1720886

22 September 2011

Mr Scott Abbey
Regional Manager Clients (Governmental Agencies)
Sinclair Knight Merz
PO Box 3848
SOUTH BRISBANE QLD 4101

REQUIREMENT TO PROVIDE STATEMENT TO COMMISSION OF INQUIRY

I, Justice Catherine E Holmes, Commissioner of Inquiry, pursuant to section 5(1)(d) of the *Commissions of Inquiry Act 1950* (Qld), require Mr Scott Abbey to provide a written statement, under oath or affirmation, to the Queensland Floods Commission of Inquiry, in which the said Mr Abbey provides the following:

1. a brief overview of the work done for the Brisbane City Council by SKM during the period 1996 – 2000, and a list of reports (draft and final) prepared by SKM;

2. the instructions/brief from Brisbane City Council (both at the start of each study and any further instructions or clarifications given during the study);

3. the input parameters provided by Brisbane City Council to SKM;

4. his opinion as to whether those instructions/brief and input parameters are likely to yield the best estimate of the 1% AEP flood (Q100);

5. his opinion as to whether the results of studies during 1996-1998 were an underestimate or overestimate of the 1% AEP flood (Q100) and why; and

6. his opinion as to the opinions expressed by Professor Mein in his review of the 1998 study, in particular whether you agree that the result produced by SKM's study was an overestimate of the Q100.

Mr Abbey should attach relevant documents such as instructions, draft reports, final reports and correspondence including instructions, comments or directions to his statement.

In addressing these matters, Mr Abbey is to:

- provide all information in his possession and identify the source or sources of that information;
- make commentary and provide opinions he is qualified to give as to the appropriateness of particular actions or decisions and the basis of that commentary or opinion.

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Mr Abbey may also address other topics relevant to the Terms of Reference of the Commission in the statement, if he wishes.

The statement is to be provided to the Queensland Floods Commission of Inquiry by 4pm, Tuesday 4 October 2011.

The statement can be provided by post, email or by arranging delivery to the Commission by emailing info@floodcommission.qld.gov.au.

C. Holmes

Commissioner
Justice C E Holmes

Brisbane City Council
July 1997

Brisbane River Flood Study

Design Events Report

DRAFT

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Contents

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1. Introduction

The Brisbane River Flood Study is a major initiative of the Brisbane City Council to establish design flood levels along the lower reach of Brisbane River. Additional outcomes of the investigation shall be the setting of flood regulation lines, a revegetation strategy compatible with hydraulic constraints and a flood forecasting model.

The Design Flood Events Report is the second of a series of progress reports. This report uses the validated hydrologic model (RAFTS) for the Brisbane Valley Catchment and hydraulic model (MIKE 11) developed in the calibration phase of this study, to predict design floods for the lower Brisbane River. The remaining progress reports to be provided include:

- Waterway Management Report
- Flood Mapping Report.

2. Design Hydrology

2.1 Design Storm Requirements

An analysis of design storm events was performed to establish design flood characteristics in the Brisbane River. A range of average recurrence intervals (ARI) from 1 in 2 years ARI to the Probable Maximum Precipitation (PMP) were assessed. Temporal patterns and rainfall intensities were based on Australian Rainfall and Runoff (1987) guidelines and hydrologic data supplied by the Department of Natural Resources.

This assessment considers only the existing extent of urbanisation for the Brisbane River Catchment.

2.2 Catchment Urbanisation

The majority of the Brisbane River Catchment was considered to be rural and was therefore allocated a zero percent fraction impervious. In the Brisbane Metropolitan area the assumed percentage impervious varied from 20 to 50% to account for the catchment urbanisation.

Ultimate future urbanisation for the catchment was not considered in this study.

2.3 Design Event Rainfall

Design Event rainfall data was required to determine inflow hydrographs for the calculation of flood profiles in the Brisbane River. The distribution of rainfall over the catchment for the calibration events identified that significant variations of rainfall occurred over the catchment. This variation in rainfall was attributed to the size and topography of the catchment.

Design rainfall intensities were derived using Intensity-Frequency-Duration (IFD) techniques described in Chapter 2 of Australian Rainfall and Runoff 1987 (AR&R). Design rainfall intensities were derived at 130 rainfall gauge locations throughout the catchment to account for the variation of rainfall. Isohyetal maps for the catchment were derived for each recurrence intervals using CIVILCAD and the calculated design rainfalls.

between 2 Year ARI to 100 year ARI

(A)

The following figures present isoheytal maps and rainfall depths for critical duration storms of varying ARI.

- **Figure 2.1 - 2 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment**
- **Figure 2.2 - 5 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment**
- **Figure 2.3 - 10 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment**

- **Figure 2.4 - 20 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment**
- **Figure 2.5 - 50 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment**
- **Figure 2.6 - 100 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment**
- **Figure 2.7 - 200 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment**
- **Figure 2.8 - 500 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment**
- **Figure 2.9 - 1000 Year ARI ??? Hour Duration Rainfall Event - Brisbane River Catchment (Yet to be Determined)**
- **Figure 2.10 - 2000 Year ARI ??? Hour Duration Rainfall Event - Brisbane River Catchment (Yet to be Determined)**
- **Figure 2.11 - 10000 Year ARI ??? Hour Duration Rainfall Event - Brisbane River Catchment (Yet to be Determined)**
- **Figure 2.12 - PMP for ??? Hour Duration Rainfall Event - Brisbane River Catchment (Yet to be Determined)**

For large catchments it is unlikely that rainfall intensity will remain constant across the catchment. To account for this variation, AR&R suggests use of an areal reduction factor which reduces the depth of rainfall applied over the catchment.

The problem with this method is that the areal reduction factor method presented in AR&R is based on work conducted in the United States and virtually no work has been conducted for durations greater than 24 hours or catchments with areas greater than 1000 km^2.

Since the Brisbane River Catchment is approximately 13500 km^2 and has a critical duration of approximately 24 hours it was considered that spatial variation would have to be accounted for using an alternate method.

As previously stated design rainfalls were calculated at approximately 130 locations over the entire catchment. These rainfalls were used to calculate rainfall depths at the centroid of each sub-area (ie approximately 250 locations) using interpolation facilities within CIVILCAD. This method ensured that the majority of rainfall variation was accounted for by a blanket coverage of the catchment which in turn minimised the effects of spatial variation.

Given that the total catchment area of the Brisbane River is approximately 13500 km^2 and that this area has been broken down into about 250 sub areas, then the average sub area is around 50 km^2. The areal reduction factor for each sub-area with an area of approximately 50 km^2 (24 hour duration) was determined to be 0.98 which is approximately equal to 1. Since the areal reduction factor was almost equal to one, areal reduction factors were not applied to any of the sub-area rainfall. The rainfall depths used in this study are therefore considered to be slightly conservative.

Australian Rainfall and Runoff temporal patterns for zone 3 apply to the Brisbane River Catchment.

The Probable Maximum Precipitation (PMP) rainfall depths and corresponding temporal patterns were provided by the Bureau of Meteorology to the Department of Natural Resources. The adopted PMP rainfall depths for the Brisbane River Catchment are presented in **Table 2.1 - PMP Rainfall Depth, Brisbane River Catchment**. These depths are based on the PMP being centred over the Brisbane River Catchment.

Table 2-1 - PMP Rainfall Depth, Brisbane River Catchment

Duration (Hours)	PMP Rainfall Depth (mm)
12	370
24	530
48	680
72	830
96	1010
120	1050
144	1070

Review of relevent reports and files suggests that PMP investigations conducted by the Department of Natural Resources used the total PMP rainfall depth over the entire catchment. This method provides a conservative result which may be applicable when considering dam safety. For this study spatial variation was accounted for by use of **Figure A-1 - Generalised Tropical Storm Method (GTSM) Design Isoheytal Pattern for the Distribution of PMP for Areas > 2000 km^2**. The procedural method for the GTSM is also provided in **Appendix A - Generalised Tropical Storm Method.**

The temporal pattern for the critical duration PMP event is presented in **Figure A-2 - Temporal Pattern for PMP Critical Duration** (To be Determined) and was provided by the Bureau of Meteorology.

2.4 Flood Frequency Analysis

A flood frequency analysis was performed to check the consistency of rainfall based design events with streamflow data. The analysis also produced appropriate rainfall loss rates to ensure consistency between the two analysis methods.

Flood frequency analyses were conducted at Moggill, Lowood and Brisbane City at the Port Office Gauge. The omission of Jindalee for the analyses was due to limited available historical information at the site.

The locations for the flood frequency analyses are presented in **Figure 2.13 - Flood Frequency Analysis Location Layout**.

2.4.1 Historical Data

Historical events were derived from streamflow data recorded at Bureau of Meteorology gauging stations for Brisbane City (Port Office gauge) and Moggill. This data was in the form of peak instantaneous water levels which were converted to discharges using rating curves provided by the Bureau of Meteorology. The data for Lowood was obtained from the Department of Natural Resources in the form of peak instantaneous monthly discharges.

The Brisbane City (Port Office) gauge is influenced by tidal fluctuations and hence rating curves at the Port Office gauge vary to account for the changing tidal conditions. To determine peak discharges during flooding, it was therefore necessary to know the corresponding tide level at the time and date for each event. This information was not available. Discharges were determined by using two rating curves supplied by the Bureau of Meteorology. These rating curves used the following tailwater levels:

(i) -0.15 m AHD, and
(ii) 1.85 m AHD (Highest Astronomical Tide + 0.15 m).

One of the problems associated with performing the flood frequency analysis for this catchment was the influence that Wivenhoe and Somerset Dams would have on the downstream locations. To minimise these effects the flood frequency analysis was performed using a data series prior to the construction of Wivenhoe Dam (1985).

To account for the effects of Somerset Dam (constructed in 1943), it was necessary to adjust the series of peak discharges. As the data series was adopted prior to 1985, the effects of Wivenhoe Dam did not need to be considered. However, all data between 1943 and 1985 had to be adjusted to remove the effects of the construction of Somerset Dam.

In order to establish a relationship between the flow upstream of Somerset Dam and flow downstream of the dam site prior to its construction, peak monthly discharges obtained at Woodford (upstream) were plotted against the discharge at the Silverton Gauge (downstream), prior to 1943. A line of best fit was then formulated and a correlation of 91.5% was achieved. The data for Woodford and Silverton used in this study and the resulting adjustment factors due to the construction of Somerset Dam are illustrated in

Appendix B - Adjustment of Historical Streamflows to Account for the Effects of Somerset Dam.

Each of the corresponding adjusted values were applied at Lowood, Moggill and the Port Office and Flood Frequency Curves were constructed for the no dams effective catchment (ie. effects of Wivenhoe and Somerset Dams removed).

2.4.2 Construction of Flood Frequency Curves

In constructing the flood frequency curves, annual series of peak discharges were utilised in all analyses. An annual series was adopted because of the emphasis of the study in regard to design flood estimation involving ARI's of greater than 10 years. This is in accordance with the recommendations of Chapter 10 of Australian Rainfall and Runoff, (1987).

The flood frequency curves for the annual series data were constructed in accordance with the methods outlined in Australian Rainfall and Runoff, 1987. For each location the historical peak discharges were ranked in descending order and the plotting position for each discharge was then calculated. Using the ranked discharges and their associated plotting positions, the values were plotted on Log Normal paper and the flood frequency curves were then fitted by eye.

A Log-Pearson Type III distribution together with 5% and 95% confidence limits was also fitted to all of the annual series data using the procedures outlined in Chapter 10 of Australian Rainfall and Runoff, 1987. The fit by eye curve was adopted at each location however the Log Pearson Distribution and 5% and 95% confidence limits have been plotted for comparison.

The flood frequency curves generated from the historical annual data series at the three nominated locations are presented in the following figures:

Figure 2-14 - Flood Frequency Curve at Lowood - No Dams Effective,
Figure 2-15 - Flood Frequency Curve at Moggill - No Dams Effective,
Figure 2-16 - Flood Frequency Curve at Port Office (-0.15 m AHD) - No Dams Effective , and
Figure 2-17 - Flood Frequency Curve at Port Office (Highest Astronomical Tide) - No Dams Effective.

Results for the fit by eye curve are also presented in the following tables:

Table 2-2 - Flood Frequency Curve at Lowood - No Dams Effective,
Table 2-3 - Flood Frequency Curve at Moggill - No Dams Effective,
Table 2-4 - Flood Frequency Curve at Port Office (-0.15 m AHD) - No Dams Effective, and
Table 2-5 - Flood Frequency Curve at Port Office (1.85 m AHD - Highest Astronomical Tide + 0.15) - No Dams Effective.

Two flood frequency curves were generated at the Port Office Gauge, incorporating the two tide events mentioned previously.

Table 2-2 - Flood Frequency Estimates at Lowood - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s)
50	2	800
20	5	2900
10	10	3800
5	20	5100
2	50	6900
1	100	8200

Data at the Lowood site was reasonable, with 75 years of data being available and 62 annual floods on record. Again, the annual series had to be adjusted for those years where there was very little or no flow recorded.

Table 2-3 - Flood Frequency Estimates at Moggill - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s)
50	2	1630
20	5	4250
10	10	6500
5	20	8500
2	50	11000
1	100	13700

Data at the Moggill site was poor. A period of 18 years has been analysed, with only 11 annual floods in this time period recorded. The frequency chart thus had to be adjusted for the years of zero data in accordance with section 10.7.2 of Australian Rainfall and Runoff, 1987.

Table 2-4 - Flood Frequency Estimates at Port Office (-0.15 m AHD) - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s)
50	2	500
20	5	3300
10	10	5700
5	20	8100
2	50	11200
1	100	13700

Table 2-5 - Flood Frequency Estimates at Port Office (Highest Astronomical Tide) - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s)
50	2	-
20	5	1000
10	10	3500
5	20	6250
2	50	9750
1	100	12500

The two flood frequency estimates for the Port Office Gauge are shown in **Tables 2-4** and **2-5**. Data from 1841 was available at this site, with 142 years of data being analysed and adjustments made for the years of zero or low flow.

2.5 Initial and Continuing Losses

To determine appropriate initial and continuing loss values, the RAFTS model was run excluding Wivenhoe and Somerset Dams. The critical storm duration was determined by running each ARI without losses.

Once the critical duration was determined initial and continuing losses were applied uniformly over the catchment until the peak discharges produced by RAFTS matched the peak discharges found in the fit by eye flood frequency curves (**Section 2.4.2**). The adopted loss parameters are presented in **Table 2-6 - Initial and Continuing Losses for Brisbane River Catchment.**

Table 2-6 - Initial and Continuing Losses for the Brisbane River Catchment

ARI (Years)	Initial Loss (mm)	Continuing Loss (mm/hr)
PMP	0.0	0.0
10000	0.0	0.0
2000	0.0	0.0
1000	0.0	0.0
500	0.0	0.0
200	0.0	0.0
100	0.0	0.0
50	0.0	1.0
20	20	2.5
10	60	2.5
5	80	2.5
2	80	2.5

A comparison of RAFTS with loss rates applied and fit by eye peak discharges at Lowood, Moggill and Port Office are presented in **Table 2.7 - Peak Discharge Comparison Between RAFTS and Flood Frequency Curves for Lowood, Moggill and Port Office - No Dams Effective** for events up to and including the 100 year ARI.

Table 2-7 - Peak Discharge Comparison Between RAFTS and Flood Frequency Curves at Lowood, Moggill and Port Office - No Dams Effective - Loss Rates Applied

	Lowood			Moggill			Port Office*		
ARI (years)	RAFTS (m^3/s)	FFA (m^3/s)	Diff (%)	RAFTS (m^3/s)	FFA (m^3/s)	Diff (%)	RAFTS (m^3/s)	FFA (m^3/s)	Diff (%)
100	13770	8200	+40.5	13780	13700	+0.6	13780	13700	+0.6
50	11070	6900	+37.7	11280	11100	+1.6	11280	11200	+0.7
20	7510	5100	+32.1	8020	8500	-6.0	8020	8100	-0.1
10	5830	3800	+34.8	5740	6500	-11.7	5750	5700	+0.9
5	3770	2900	+23.1	3140	4500	-30.2	3140	3300	-5.1
2	1060	800	+24.5	1010	2000	-50.5	1010	500	+50.5

Note: Comparison for Port Office Conducted for -0.15 m AHD Rating Curve Case.

From Table 2.7 it can be seen that for Moggill and Port Office the comparison yields a good result however for low flows the percentage difference varies considerably. This variance would be most likely influenced by tidal fluctuations as these sites. As the studies objectives are generally related to the large flood events greater importance was placed on results consistency for the 10 year ARI flood and above.

At Lowood RAFTS over estimates flows by between about 23 and 41 percent. Loss rates above Lowood were increased however this resulted in a reduction in flows at Moggill and the Port Office. Given that the main aim of this study was to produce development design flood levels within the Brisbane City Boundary it was considered that the loss parameters presented in Table 2.6 were the most appropriate as they produced the best results at Moggill and Port Office.

2.6 Wivenhoe and Somerset Dam Operations

The RAFTS model was used to predict design hydrographs for the MIKE 11 hydraulic model. Prior to the commencment of the design events modelling, dam operational procedures for Wivenhoe and Somerset dams had to be established. These procedures were developed after discussions with Brisbane City Council and South East Queensland Water Board Officers.

Given the complex release procedures for Somerset and Wivenhoe Dams, it was decided that the following assumptions be adopted for this study.

- The starting water level for both dams are assumed to be Wivenhoe RL 67.0 m AHD and Somerset RL 100.5 m AHD which is full suply level and spillway level resectively.
- During a flood event all communication between Wivenhoe and Somerset is cut. When communications are cut during a flood event, the procedure is to employ uncontrolled releases for both dams.

It is evident that the above assumptions are conserative however these were considered to be the most appropriate when setting development regulation lines. Storage curves and stage-discharge curves used in this study are presented in **Appendix C - Dam Operations**. These curves were input into the RAFTS model and the design events modelling was conducted.

2.7 Design RAFTS Modelling

Wivenhoe and Somerset Dams were included in the RAFTS model and the 24 hour, 30 hour and 36 hour storms for the 100 year ARI event were rerun. Using no losses it was found that the critical storm duration for the dams effective case was 30 hours which is consistent with the no dams effective case.

Floods ranging from 2 year ARI through to PMP were run assuming loss parameters presented in **Table 2.6**. Peak discharges at Lowood, Moggill and the Port Office are presented in **Table 2-8 - Peak Discharges at Lowood, Moggill and the Port Office**. Peak discharges presented in the Department of Natural Resources Report are also presented in **Table 2-8** at the Port Office for comparison.

Table 2-8 - Peak Discharges at Lowood, Moggill and the Port Office

ARI (Years)	Lowood SKM (m^3/s)	Moggill SKM (m^3/s)	Port Office SKM (m^3/s)	Port Office DNR (m^3/s)	Difference @ PO (m^3/s)
PMP	TBD	TBD	TBD	-	-
10000	TBD	TBD	TBD	-	-
2000	TBD	TBD	TBD	-	-
1000	TBD	TBD	TBD	-	-
500	TBD	TBD	TBD	-	-
200	TBD	TBD	TBD	-	-
100	9300	9550	9560	9120	+440
50	7410	7700	7700	7990	-290
20	4190	3830	3830	3950	-120
10	1610	1658	1660	2840	-1180
5	920	940	940	-	-
2	280	320	330	-	-

The comparsion between the Sinclair Knight Merz (SKM) and Department of Natural Resourses (DNR) discharges are generally within five percent however, the SKM 10 year ARI flood is approximately forty two percent below that predicted by the DNR. This is most likely due to the loss parameters used. The loss rates used for the 10 year ARI flood by SKM are, IL=60 mm, CL=2.5 mm/hr whereas the losses used by DNR are IL=22.9 mm and CL=2.5 mm/hr.

Given that the loss parameters for the no dams effective case yield discharges within one percent (**Table 2.7**) of the flood frequency analysis, the loss parameters adopted by SKM were considered the most appropriate.

2.8 Comparison of DNR and SKM Discharges

It was proposed that a comparison between design flood hydrographs between DNR and SKM be conducted. Upon determination of the critical duration event, it became evident that the DNR critical duration was estimated at 24 hours whereas the SKM analysis resulted in a critical duration of 30 hours.

This meant that it was not appropriate to compare the two hydrographs as the 24 hour duration storm has a different temporal pattern to that of the 30 hour duration storm, hence a comparison was not conducted.

RAFTS hydrographs for the range of ARI storms at the Brisbane City Boundary and the Port Office are presented in Appendix D - RAFTS Hydrographs.

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FIGURE 2.13

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY ANALYSIS LOCATION

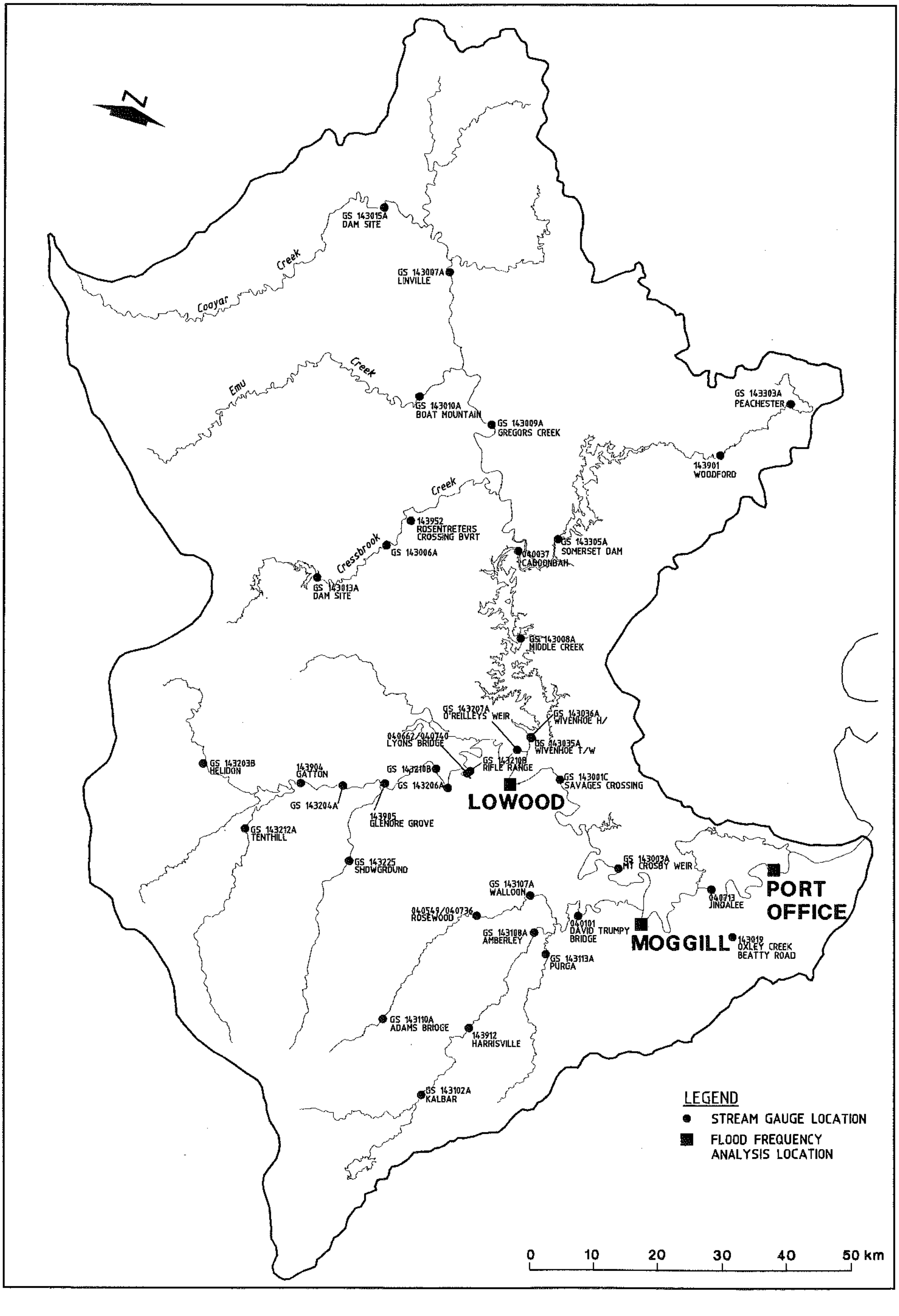

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FIGURE 2.14

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT LOWOOD
- NO DAMS EFFECTIVE

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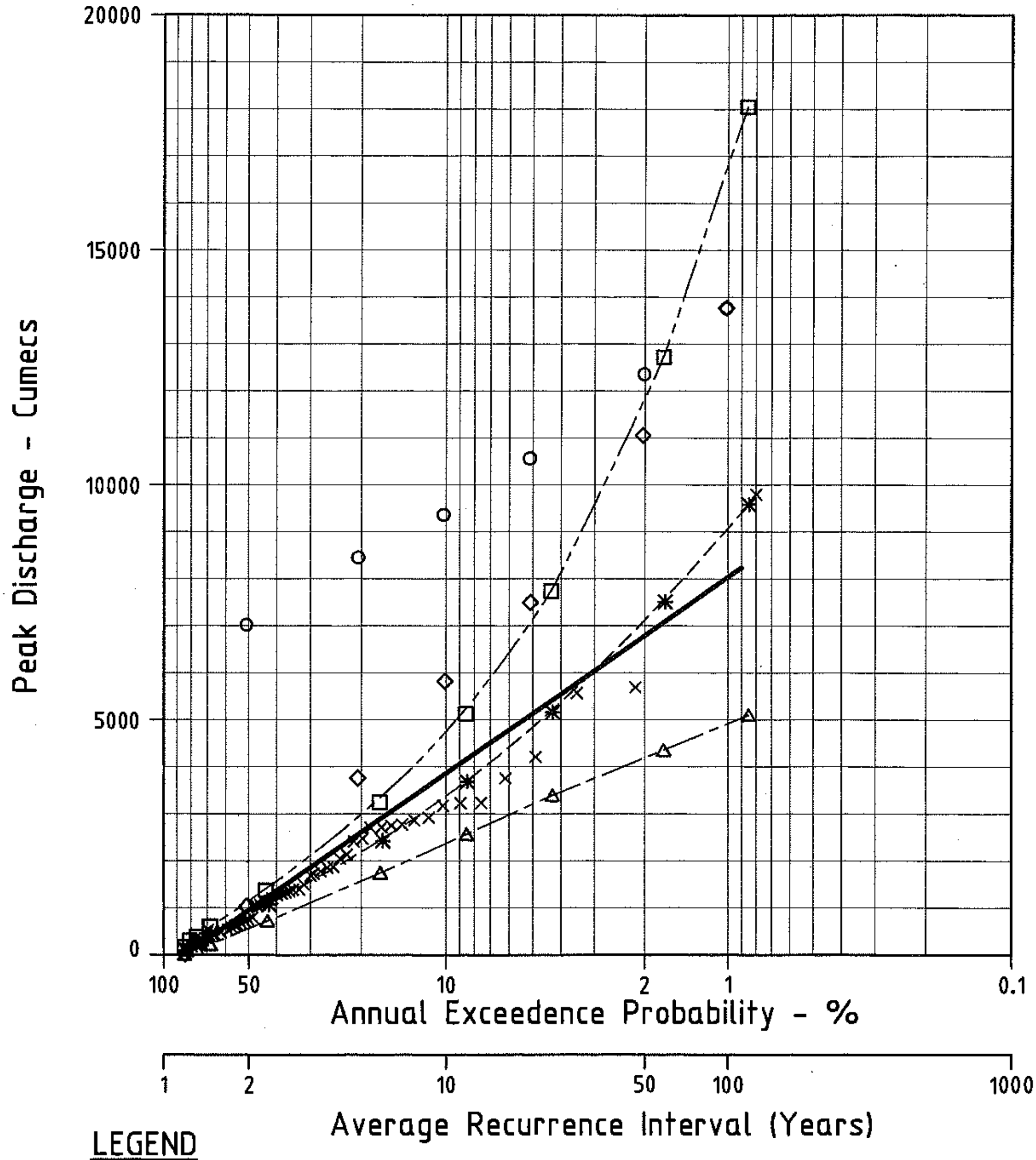

LEGEND

- FIT BY EYE CURVE
- FITTED LPIII DISTRIBUTION
- △ 95% CONFIDENCE LIMIT
- □ 5% CONFIDENCE LIMIT
- × HISTORICAL FLOOD EVENT
- ◇ RAFTS DESIGN RUNS - INCORPORATING LOSSES
- ○ RAFTS DESIGN RUNS - WITHOUT LOSSES

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PLOT SCALE: 1:

FIGURE 2.15

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT MOGGILL
- NO DAMS EFFECTIVE

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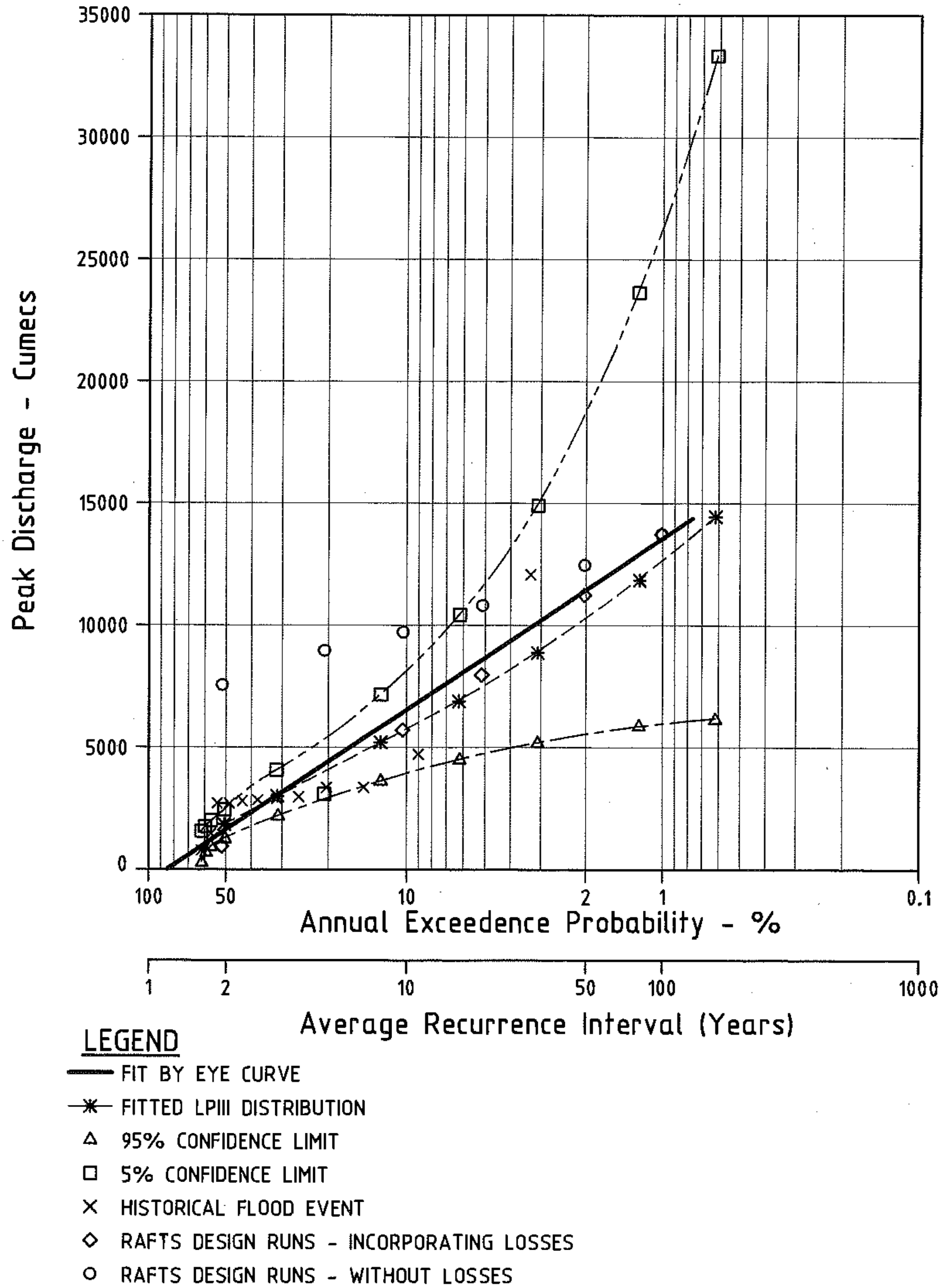

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FIGURE 2.16

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT PORT OFFICE
(-0.15m AHD) - NO DAMS EFFECTIVE

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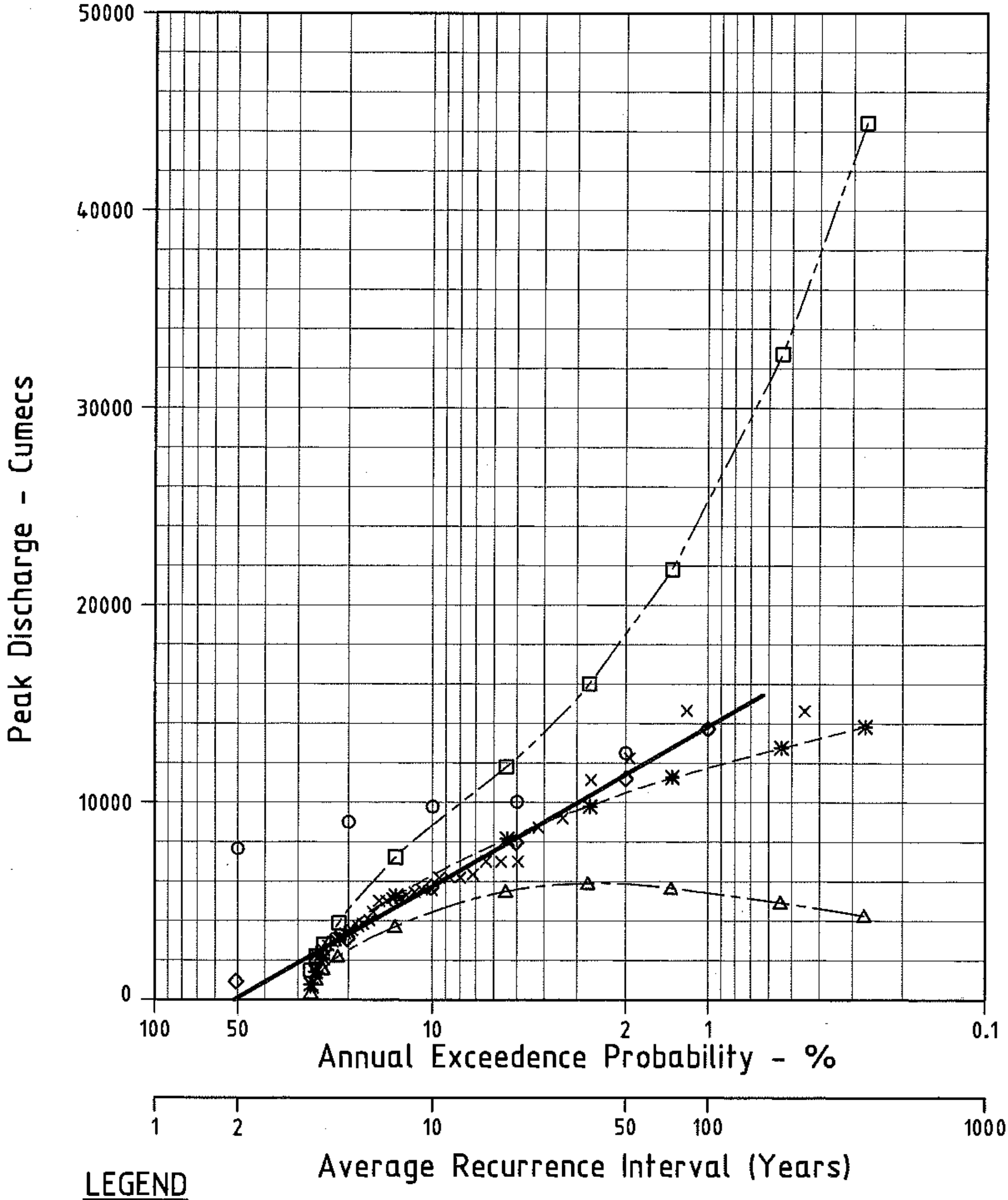

LEGEND

- FIT BY EYE CURVE
- FITTED LPIII DISTRIBUTION
- △ 95% CONFIDENCE LIMIT
- □ 5% CONFIDENCE LIMIT
- × HISTORICAL FLOOD EVENT
- ◇ RAFTS DESIGN RUNS - INCORPORATING LOSSES
- ○ RAFTS DESIGN RUNS - WITHOUT LOSSES

FILE NAME: 04157-31 DISK N°: D:\DWG\BRISBANE JOB N°: T004157 DATE: 3-7-97
PLOT SCALE: 1

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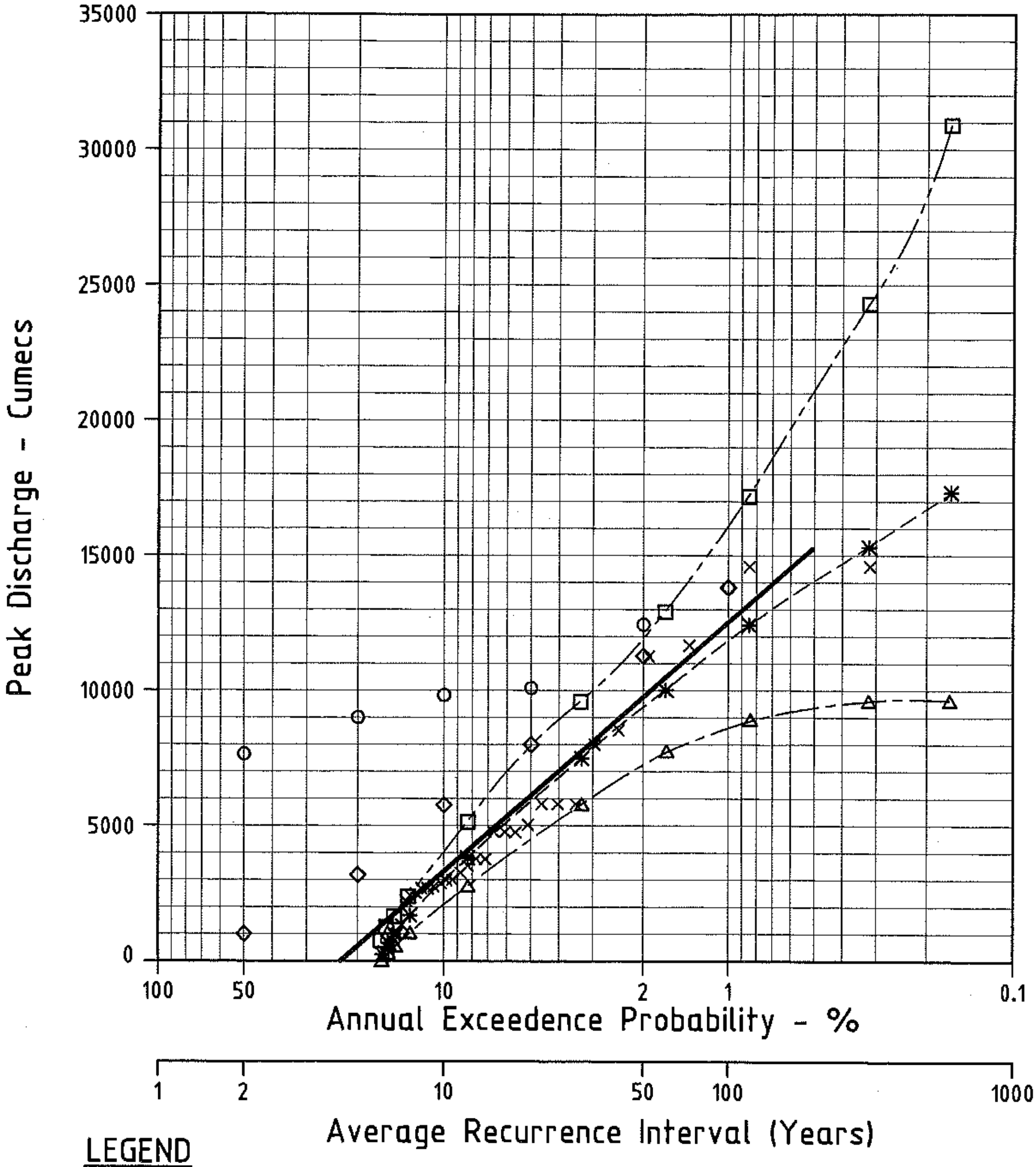
FIGURE 2.17

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT PORT OFFICE
(1.85m AHD, HIGHEST ASTRONOMICAL TIDE + 0.15m)
- NO DAMS EFFECTIVE



LEGEND

- FIT BY EYE CURVE
- FITTED LPIII DISTRIBUTION
- △ 95% CONFIDENCE LIMIT
- □ 5% CONFIDENCE LIMIT
- × HISTORICAL FLOOD EVENT
- ◇ RAFTS DESIGN RUNS - INCORPORATING LOSSES
- ○ RAFTS DESIGN RUNS - WITHOUT LOSSES

FILE NAME: 04157-31 DISK N°: D:\DWG\BRISBANE JOB N°: T004157 DATE: 3-7-97
PLOT SCALE: 1

4. Hydraulic Assessment of Structures

4.1 Hydraulic Capacity of Crossings

The performance of seven major bridges were individually assessed under design flood conditions. These structures are listed in **Table 4-1 - List of Assessed Hydraulic Structures for Brisbane River**.

Table 4-1 - List of Assessed Hydraulic Structures for Brisbane River

No	Structure Name	Cross Section Number	Mike 11 Chainage (km)	AMTD (km)	Structure Description
1	Centenary	BN 1350	1028.72		Major Public Bridge
2	Jindalee	BN 1130	1037.11		Major Public Bridge
3	Indooroopilly	BN 710	1052.37		Major Public Bridge
4	Merivale	BN 680	1052.63		Major Public Bridge
5	William Jolly	BN 640	1053.36		Major Public Bridge
6	Captain Cook	BN 600	1054.66		Major Public Bridge
7	Story	BN 495	1056.92		Major Public Bridge

Note: All structures were modelled in MIKE 11 as irregular culverts and weirs.

A series of reference sheets were prepared and are compiled in **Appendix F - Hydraulic Structure Reference Sheets.** These are consistent with Council's standard hydraulic structure reference sheets and include:

- Location of Structure
- Structure description and geometry including dimensions and key levels
- Reference to survey data
- Construction date and upgrade information
- General comments.

Additional information has been included on the sheets regarding the hydraulic performance of the structure for design flows ranging from 2 year ARI to 100 year ARI. In this assessment the afflux was determined as the difference between water levels upstream and downstream of the structure. Handrails and guardrails were assumed blocked.

The hydraulic structure reference sheets compiled in Appendix ??? were reviewed to identify high afflux structures. These are listed in **Table ?.? - High Afflux Public Structures**.

Table 4-2 - High Afflux Public Structures

No	Structure	100 Year ARI Afflux (mm)

Note: Assumes blocked handrails and guardrails

To be Completed

5. Conclusions

To be Completed

Appendix A - Generalised Tropical Storm Method

INSTRUCTIONS FOR THE USE OF THE GTSM PMP SPATIAL DISTRIBUTION DIAGRAMS

1. Select the appropriate distribution diagram according to whether the area of the catchment is above or below 2000 km^2.

2. Expand or contract the scale of the isohyetal pattern until the outermost isohyet just touches the catchment. Adjust the positioning of the pattern to get an (estimated) highest PMP depth over the catchment. This depends on the shape of the catchment as well as the position of the pattern.

3. Calculate the area of the catchment within the central isohyet, and then between each adjacent pair of isohyets until all these areas have been calculated. A planimeter or other means are suitable methods of doing this.

4. Multiply the percentage assigned to the label on each isohyet by the mean PMP depth for that duration. This gives isohyet labels in millimeters.

5. Multiply these areas by an estimate of the mean rainfall value over that part of the catchment contained in the annulus between each successive pair of isohyets. This will generally not be the arithmetic mean because of the usually irregular shape of the catchment boundary. For the central isohyet a mean value has to be estimated. This will not be critical.

6. The sum of all the above products is divided by the total catchment area to obtain the calculated mean catchment PMP depth. This will usually not be equal to the true PMP depth. The ratio of the actual PMP to the calculated PMP values is then calculated.

7. The values of the isohyetal labels are all multiplied by this ratio (ie a constant scaling factor) to ensure that the isohyetal pattern gives the correct mean PMP depth.

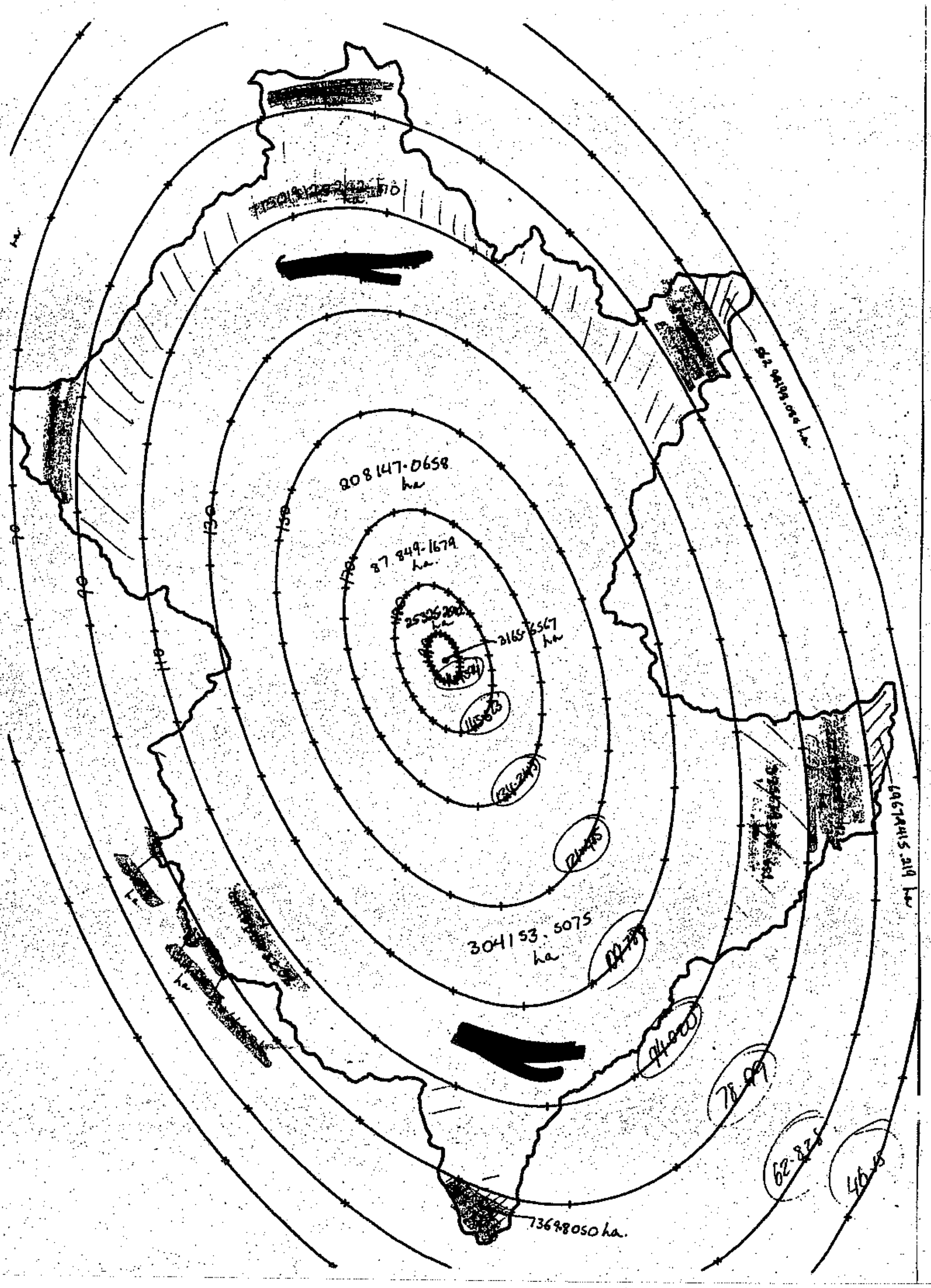


FIGURE A-1 GENERALISED TROPICAL STORM METHOD (GTSM)

DESIGN ISOHEYTAL PATTERN FOR THE DISTRIBUTION OF PMP

FOR AREAS GREATER THAN 2000KM2

Appendix B - Adjustment of Historical Streamflows to Account for the Effects of Somerset

FigureB1 - Relationship Between Discharge at Woodford and Discharge at Silverton

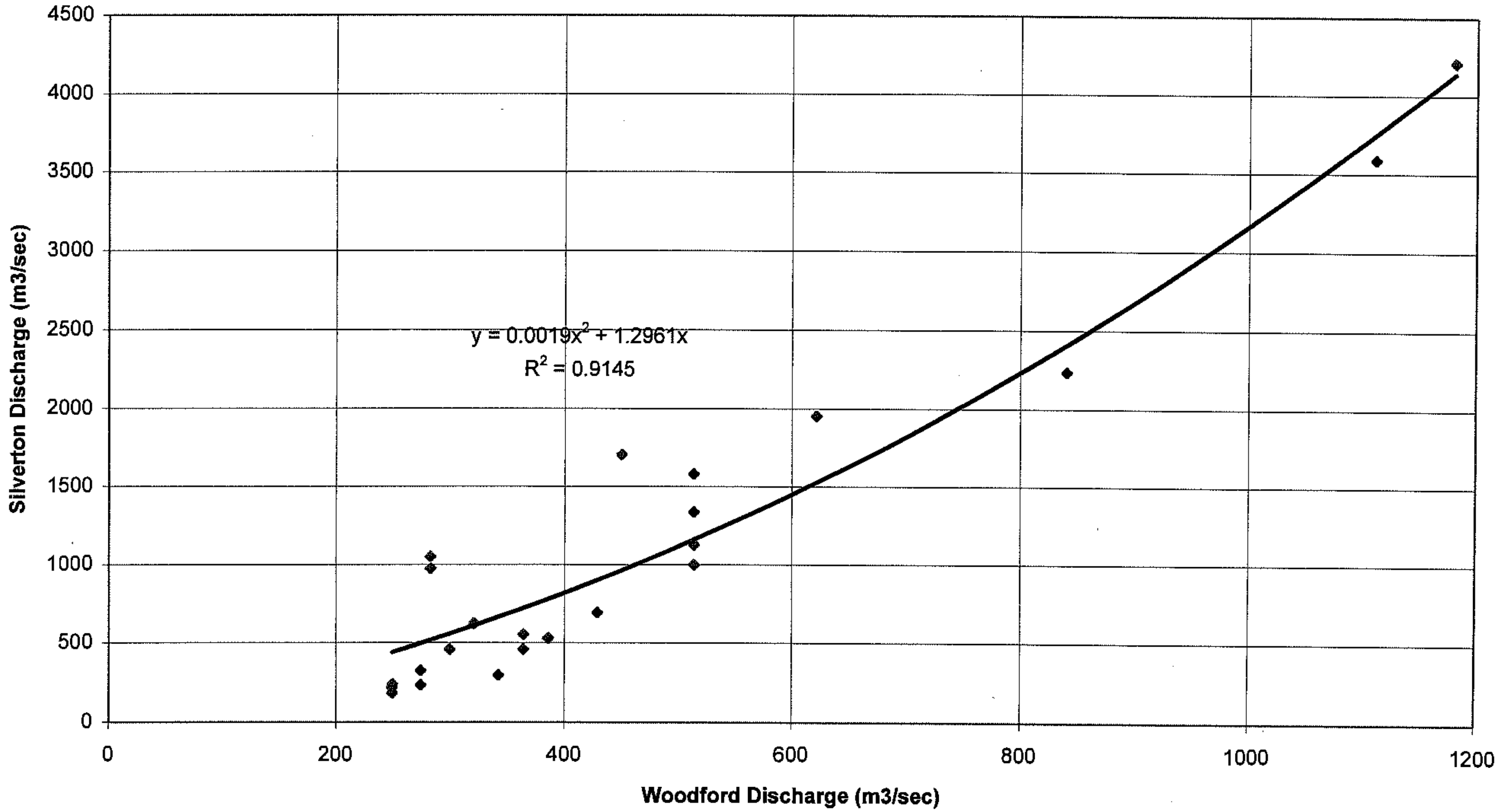


Table B.1
Calculation of Adjustment Factor for Post Somerset Dam Flows

Date	Recorded Discharge at Woodford (Cumecs)	Calculated Discharge at Somerset Dam (Cumecs)	Recorded Discharge at Somerset Dam (Peak Monthly) (Cumecs)	Adjustment Factor (Calculated - Actual Discharge) (Cumecs)
31/01/44	300	560	241	319
25/03/46	664	1699	1374	325
13/02/47	471	1033	317	716
1/03/47	514	1169	671	498
11/12/47				
1/05/48	429	904	716	188
19/01/50	166	267	115	152
15/02/50	233	405		
18/02/50	233	405		
28/02/50	643	1618	1139	479
1/03/50				
24/06/50				
29/07/50	250	442	352	90
31/01/51	750	2041	1347	694
1/02/51				
21/02/53	879	2605	1506	1099
24/03/53				
13/02/54				
14/07/54	557	1312	46	1266
28/03/55	1041	3407	3078	329
10/02/56				
13/01/56				
15/01/67				
11/02/56				
12/02/56				
11/03/56	536	1240	1397	0
13/03/56				
10/06/58	199	334	84	250
20/12/61	250	442		
2/01/63	258	461		
10/01/63	300	443	215	228
17/03/63	793	2885	1300	1585
8/05/63				
28/03/64	429	904		
23/04/64	124	189		
21/07/65		1243	0	1243
30/01/67	283			
18/03/67	283	1082	1050	32
8/05/67	191	316		
10/06/67	514	1443	1088	355
24/06/67	224	387		
27/06/67	321	613		
12/01/68	450	1894	1491	403

Calculation of Adjustment Factor for Post Somerset Dam Flows

Date	Recorded Discharge at Woodford (Cumecs)	Calculated Discharge at Somerset Dam (Cumecs)	Recorded Discharge at Somerset Dam (Peak Monthly) (Cumecs)	Adjustment Factor (Calculated - Actual Discharge) (Cumecs)
8/12/70	557	1271	0	1271
27/01/71	275	380	285	95
5/02/71				
20/02/71	283	1594	1763	0
24/02/71				
29/12/71	191	316		
12/02/72	1463	444	291	153
9/03/72	149	3621	1781	1840
3/04/72	664	2270	1175	1095
30/10/72				
8/07/73	879	2605	2070	535
14/01/74	191	4109		
25/01/74	1111	3495	1081	2414
17/02/74	250	442		
12/03/74	579	132	194	0
9/01/75	132	204	0	204
24/12/75	149	235	3	0
20/01/76	514	1200	1098	102
23/02/76	258	461	8	0
3/03/76	224	387	176	0
14/03/76	266	480		
26/03/78	72	103	0	103
2/04/78	60	85	0	85
25/01/79	111	167		
10/02/79	54	76	0	76
8/05/80	195	325	4	0
9/05/80	233	405		
9/02/81			0	0
16/02/81	360	713	0	713
17/02/81	250	442	0	442
8/04/81	54	76	0	76
23/05/81	60	85	6	0
21/01/82	707	1867	0	1867
21/01/82	660	1683	0	1683
4/03/82	90	132	0	132
16/03/82	54	76	0	76
3/05/83	72	103	0	103
24/05/83	224	387	0	387
24/05/83	216	369	0	369
29/05/83				
19/06/83	237	414	0	414
20/06/83	300	560	7	0
22/06/83	729	1953		1953
22/06/83	840	2236	1475	761
7/07/83	36	49	0	49

Calculation of Adjustment Factor for Post Somerset Dam Flows

Date	Recorded Discharge at Woodford (Cumecs)	Calculated Discharge at Somerset Dam (Cumecs)	Recorded Discharge at Somerset Dam (Peak Monthly) (Cumecs)	Adjustment Factor (Calculated - Actual Discharge) (Cumecs)
22/11/83	72	103		103
30/11/83	216	369		369
2/12/83	42	58	0	58
9/04/84	72	103		103
28/07/84	195	325		325
8/11/84	42	58		58
11/03/85	300	560		560
9/07/85	300	560		560

Note:

Calculated discharge at Somerset is based on the flows at Woodford, as illustrated in Figure B.1

Table B2
Historical Data at Woodford and Silverton (1920-1985)

Date	Time	Level	Discharge at Woodford	Corresponding Discharge at Silverton (DNR)
8/01/20	1700	4.88	249.6	236.6
7/04/21	600	5.79	364.2857143	553.7
30/12/21	1600	5.49	300	459.7
20/06/25	800	5.94	385.7142857	528.7
17/12/26	900	5.72	342.8571429	294.1
24/01/27	1600	6.48	514.2857143	1127
18/02/28	800	6.5	514.2857143	1000
19/04/28	1200	7.01	621.4285714	1955
21/01/29	1000	5.26	283.2	974.7
10/05/30	1930	5.79	364.2857143	459.7
5/02/31	1500	8.94	1322.222222	2022
5/04/33	800	5.18	274.8	231.7
16/03/37	2000	5.18	274.8	324.7
20/01/38	730	5.64	321.4285714	623.2
26/05/38	900	6.1	428.5714286	694.3
16/03/39	900	4.88	249.6	216.2
19/03/40	900	4.88	249.6	214.9
1/06/41	800	4.88	249.6	181.2
9/02/42	1515	5.79	364.2857143	
31/01/44	1500	5.46	300	
25/03/46	1200	7.16	664.2857143	
13/02/47	1130	6.25	471.4285714	
1/03/47	1900	6.48	514.2857143	
1/05/48		6.1	428.5714286	
19/01/50		3.91	165.6	
15/02/50	1600	4.72	232.8	
18/02/50		4.72	232.8	
28/02/50	900	7.09	642.8571429	
29/07/50	900	4.88	249.6	
31/01/51	1230	7.62	750	
21/02/53	800	8.23	878.5714286	
14/07/54	700	6.71	557.1428571	
28/03/55	330	8.53	1040.740741	
11/03/56	1800	6.55	535.7142857	
10/06/58	900	4.27	199.2	
20/12/61	900	4.88	249.6	
2/01/63	800	5.03	258	
10/01/63	1800	5.49	300	
17/03/63	900	7.77	792.8571429	
28/03/64	630	6.1	428.5714286	
23/04/64	1500	3.35	123.6	
30/01/67	2100	5.33	283.2	
18/03/67	1500	5.33	283.2	1051
8/05/67	500	4.22	190.8	
10/06/67	1800	6.5	514.2857143	1578
24/06/67	0	4.57	224.4	

Table B2
Historical Data at Woodford and Silverton (1920-1985)

Date	Time	Level	Discharge at Woodford	Corresponding Discharge at Silverton (DNR)
27/06/67	800	5.64	321.4285714	
12/01/68	1900	6.2	450	1708
8/12/70	300	6.71	557.1428571	
27/01/71	1500	5.18	274.8	
20/02/71	900	5.33	283.2	
29/12/71	900	4.17	190.8	3587
12/02/72	900	9.14	1462.962963	
9/03/72	1200	3.68	148.8	
3/04/72	300	7.16	664.2857143	
8/07/73	300	8.23	878.5714286	
14/01/74	900	4.2	190.8	
25/01/74	1200	8.6	1111.111111	
17/02/74	1500	4.9	249.6	
12/03/74	2100	6.8	578.5714286	
9/01/75	900	3.5	132	
24/12/75	1500	3.7	148.8	
20/01/76	1500	6.5	514.2857143	
23/02/76	1500	5	258	
3/03/76	1500	4.6	224.4	
14/03/76	1500	5.1	266.4	
26/03/78	2225	4.68	72	
2/04/78	1205	4.5	60	
25/01/79	820	5.06	111	
10/02/79	1340	4.44	54	
8/05/80	2300	5.52	195	
9/05/80	900	4.65	232.8	
16/02/81	2115	6.09	360	
17/02/81	900	4.9	249.6	
8/04/81	1610	4.36	54	
23/05/81	430	4.54	60	
21/01/82	1600	7.35	707.1428571	
21/01/82	1445	6.58	660	
4/03/82	955	4.98	90	
16/03/82	335	4.4	54	
3/05/83	1615	4.73	72	
24/05/83	800	4.6	224.4	
24/05/83	0	5.56	216	
19/06/83	2100	5.73	237	2236
20/06/83	1100	5.5	300	
22/06/83		7.5	728.5714286	
22/06/83	1700	6.89	840	
7/07/83	300	4.07	36	
22/11/83	1245	4.68	72	
30/11/83	1355	5.61	216	
2/12/83	2005	4.21	42	
9/04/84	1415	4.7	72	

Table B2
Historical Data at Woodford and Silverton (1920-1985)

Date	Time	Level	Discharge at Woodford	Corresponding Discharge at Silverton (DNR)
28/07/84	1055	5.45	195	
8/11/84	2245	4.23	42	
11/03/85	530	6.03	300	
9/07/85	1515	5.97	300	

Table B3
Historical and Adjusted Data at Moggill (1965-1983)

Date	Time	Level m AHD	Discharge Cumecs	Adjusted Discharge Cumecs
21/07/65	600	5.76	2175.33	3418.33
20/03/67		4.66	1787.00	
12/06/67	1800	7.98	3054.62	3409.60
14/01/68	1100	10.72	4356.11	4759.00
11/12/70	1000	3.82	1485.57	2756.60
4/02/71	1600	6.39	2389.43	
11/02/71	900	3.29	1317.00	
20/02/71	1500	7.50	2846.00	2846.00
24/02/71	1400	3.34	1317.00	
14/02/72	2100	5.14	1919.00	
5/04/72	900	4.84	1820.00	2915.00
10/07/73	730	6.32	2355.57	2891.00
28/01/74	1430	19.93	9745.00	12159.00
9/02/81	1545	2.05	905.52	905.52
22/01/82	1115	3.43	1350.71	3034.00
29/05/83	120	2.24	948.64	
23/06/83	500	5.26	1985.00	2746.00
5/04/89	100	3.73	1451.86	
27/04/89	1200	4.02	1553.00	
18/05/89	0	2.70	1137.75	
13/12/91	300	5.22	1952.00	
17/03/92	1230	2.44	1034.88	
6/05/96	300	7.10	2681.40	

Table B4
Historical and Adjusted Data at Port Office (1841-1974)

Date	Level	Discharge AHD-0.15m Cumecs	Adjusted AHD -0.15m Cumecs	Discharge HAT+0.15m	Adjusted HAT+0.15m
14/01/1841	8.43	14655.17241	14655.17241	14583.33333	14583.33333
09/06/1843	2.76	4800	5428.571429	3500	3500
10/01/1844	7.03	12241.37931	12241.37931	11666.66667	11666.66667
16/04/1852	2.91	4800	5571.428571	3750	3750
19/05/1857	3.27	6166.666667	6166.666667	4750	4750
16/02/1863	3.32	6166.666667	6166.666667	4750	4750
20/03/1864	3.78	7000	7000	5800	5800
02/04/1867	2.46	4800	5000	2666.666667	2666.666667
10/03/1870	2.89	4800	5571.428571	3750	3750
18/06/1873	2.69	4800	5285.714286	3250	3250
01/03/1875	2.61	4800	5142.857143	3000	3000
16/08/1879	2.46	4800	5000	2666.666667	2666.666667
23/01/1887	3.78	7000	7000	5800	5800
20/05/1889	3.75	7000	7000	5800	5800
13/03/1890	5.33	9200	9200	8500	8500
05/02/1893	8.35	14655.17241	14655.17241	14583.33333	14583.33333
12/02/1893	2.15	4400	4400	1000	1000
19/02/1893	8.09	14137.93103	14137.93103	13958.33333	13958.33333
12/06/1893	3.63	6666.666667	6666.666667	5400	5400
15/02/1896	2	4000	4000	0	0
22/02/1896	0.86	2166.666667	2166.666667	0	0
29/02/1896	1.85	3833.333333	3833.333333	0	0
13/01/1898	5.02	8714.285714	8714.285714	6833.333333	8000
09/03/1898	3.27	6166.666667	6166.666667	4750	4750
15/03/08	3.35	6333.333333	6333.333333	5000	5000
28/01/27	1.7	3500	3500	0	0
22/02/28	1.67	3500	3500	0	0
21/04/28	2.15	4400	4400	1000	1000
24/01/29	1.85	3833.333333	3833.333333	0	0
7/02/31	3.32	6166.666667	6166.666667	4750	4750
30/03/55	2.36	4800	5129	2333.333333	2662.333333
13/01/56	1.75	3666.666667	3666.666667	0	0
15/01/56	1.75	3666.666667	3666.666667	0	0
11/02/56	1.39	3000	3000	0	0
12/02/56	1.31	2833.333333	2833.333333	0	0
12/03/56	1.42	3000	3000	0	0
13/03/56	1.34	2833.333333	2833.333333	0	0
14/03/56	1.29	2833.333333	2833.333333	0	0
12/06/67	1.87	3833.333333	4188.333333	0	355
15/01/68	1.97	4000	4403	0	403
6/02/71	1.47	3166.666667	3166.666667	0	0
29/01/74	5.45	8750	11164	8833.333333	11247.33333

Table B5
Historical and Adjusted Discharge at Lowood

Date	Lowood Discharge Cumecs	Adjusted Lowood Discharge Cumecs
Jan-10	706.3	
Jan-11	1316	
Mar-12	460.7	
Jun-13	416.4	
Feb-14	234.4	
Feb-15	1035	
Dec-16	375.2	
Dec-17	522.2	
Feb-18	379.4	
Dec-21	1280	
Jan-22	1154	
Feb-24	173.2	
Mar-25	673.9	
Jun-25	778.4	
Dec-26	259.5	
Jan-27	2715	
Apr-28	4225	
Jan-29	2064	
Jun-30	749.2	
Feb-31	5574	
Dec-33	446.4	
Feb-34	614.2	
Feb-35	119.9	
Mar-36	138.6	
Mar-37	1102	
May-38	1052	
Mar-39	459.8	
Mar-40	697.3	
Jan-41	425.2	
Feb-42	1360	
Dec-43	1207	
31/01/44	1043	1362
25/03/46	1052	1377
13/02/47	421	1137
1/03/47	803	1302
11/12/47	613	613
1/05/48	544	732
19/01/50	295	448
28/02/50	2451	2930
1/03/50	2298	2298
24/06/50	1043	1043
29/07/50	784	874
31/01/51	2534	3228
1/02/51	2704	2704
21/02/53	764	1863

Table B5
Historical and Adjusted Discharge at Lowood

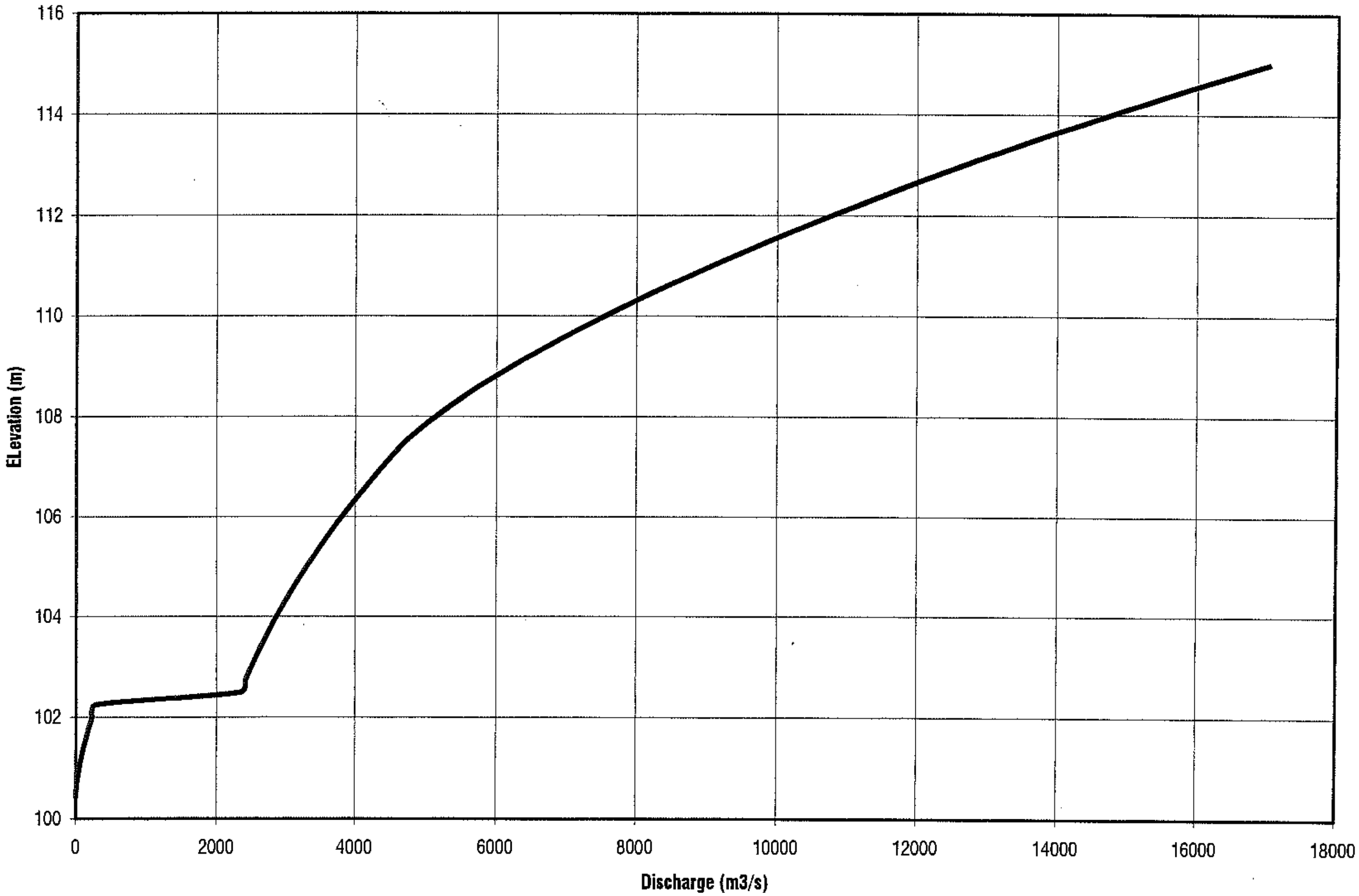
Date	Lowood Discharge Cumecs	Adjusted Lowood Discharge Cumecs
24/03/53	743	743
13/02/54	2111	2111
14/07/54	1922	3188
28/03/55	5363	5692
10/02/56	1365	1365
11/03/56	2141	2141
10/06/58	1520	1770
20/12/61	152	152
10/01/63	230	458
17/03/63	115	1700
8/05/63	502	502
28/03/64	258	258
23/04/64	12	12
21/07/65	1238	2481
30/01/67	254	254
18/03/67	1272	1304
8/05/67	215	215
10/06/67	2351	2706
12/01/68	3363	3766
8/12/70	582	1853
27/01/71	482	577
5/02/71	1071	1071
20/02/71	2779	2779
29/12/71	578	578
12/02/72	1842	1995
9/03/72	266	2106
3/04/72	1665	2760
30/10/72	531	531
8/07/73	2709	3244
25/01/74	7393	9807
17/02/74	835	835
12/03/74	874	874
9/01/75	203	407
24/12/75	520	520
20/01/76	1610	1712
23/02/76	1047	1047
14/03/76	1059	1059
26/03/78	59	162
2/04/78	351	436
25/01/79	298	298
10/02/79	35	110
9/05/80	44	44
16/02/81	765	1478
8/04/81	49	124
23/05/81	10	10

Table B5
Historical and Adjusted Discharge at Lowood

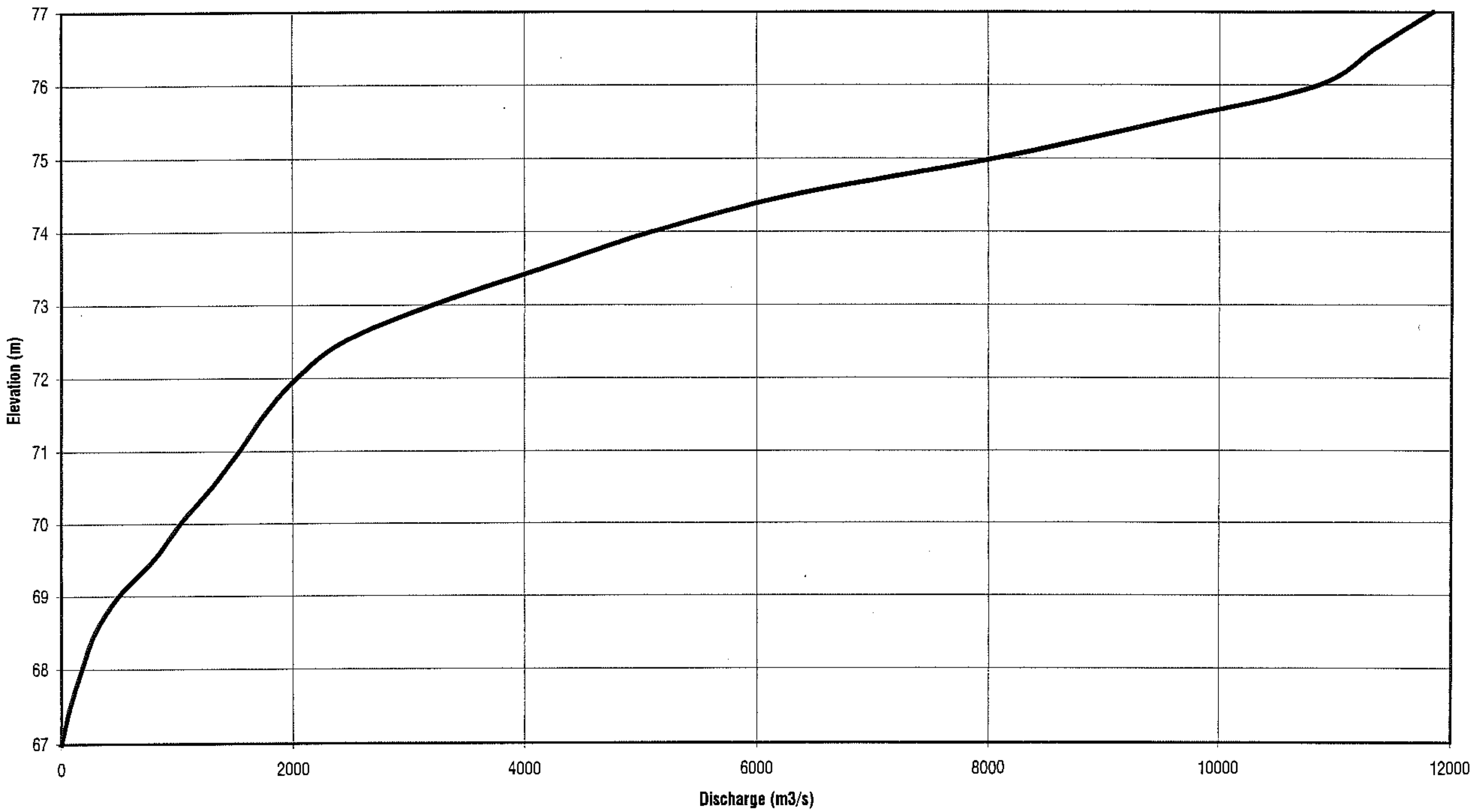
Date	Lowood Discharge Cumecs	Adjusted Lowood Discharge Cumecs
21/01/82	1006	2873
4/03/82	422	554
24/05/83	525	911
22/06/83	1659	2420
7/07/83	409	458
30/11/83	13	381
2/12/83		58
9/04/84	134	237
28/07/84		325
8/11/84	108	166
11/03/85	22	582
9/07/85	63	623

Appendix C - Dam Operations

Somerset Dam- Hieght - Discharge Curve



Wivenhoe Dam - Height - Discharge Curve



Appendix D - RAFTS Hydrographs

Appendix E - Brisbane River Hydraulic Characteristics

TABLE E-1 STORM SURGE PROFILES

Storm Surge Run

WATER LEVEL Location	Mike 11 Chaniage (km)	100 River 100 Moreton Bay WL (mAHD)	100 River 20 Moreton Bay WL (mAHD)	20 River 100 Moreton Bay WL (mAHD)
BRISBANE	1000	22.77	22.75	13.49
BRISBANE	1000.285	22.66	22.64	13.37
BRISBANE	1000.775	22.39	22.38	13.09
BRISBANE	1001.315	22.26	22.25	12.99
BRISBANE	1001.865	21.69	21.68	12.61
BRISBANE	1002.35	21.31	21.3	12.17
BRISBANE	1002.785	21.18	21.17	12.02
BRISBANE	1003.275	20.94	20.92	11.64
BRISBANE	1003.775	20.7	20.69	11.42
BRISBANE	1004.3	20.3	20.28	10.99
BRISBANE	1004.81	20.25	20.23	10.9
BRISBANE	1005.325	20.06	20.04	10.72
BRISBANE	1005.87	19.86	19.84	10.54
BRISBANE	1006.2	19.74	19.72	10.49
BRISBANE	1006.2	19.74	19.72	10.49
BRISBANE	1006.3	19.7	19.68	10.47
BRISBANE	1006.91	19.6	19.58	10.37
BRISBANE	1007.41	19.55	19.53	10.31
BRISBANE	1007.92	19.45	19.43	10.22
BRISBANE	1008.445	19.2	19.18	10.11
BRISBANE	1008.925	19.13	19.1	10.04
BRISBANE	1009.4	19.03	19.01	9.98
BRISBANE	1009.72	19	18.98	9.93
BRISBANE	1010.49	18.66	18.64	9.75
BRISBANE	1010.725	18.65	18.63	9.75
BRISBANE	1010.98	18.56	18.54	9.71
BRISBANE	1011.51	18.56	18.54	9.65
BRISBANE	1011.98	18.55	18.53	9.6
BRISBANE	1012.475	18.47	18.45	9.55
BRISBANE	1012.935	18.39	18.37	9.48
BRISBANE	1013.445	18.25	18.23	9.39
BRISBANE	1013.91	18.16	18.13	9.3
BRISBANE	1014.31	18.1	18.08	9.22
BRISBANE	1014.61	18.12	18.1	9.16
BRISBANE	1015.09	17.97	17.94	9.12
BRISBANE	1015.56	17.78	17.75	9.02
BRISBANE	1016.14	17.68	17.65	8.94
BRISBANE	1016.64	17.55	17.53	8.82
BRISBANE	1017.13	17.36	17.33	8.64
BRISBANE	1017.61	17.17	17.15	8.48
BRISBANE	1017.92	17.05	17.02	8.37
BRISBANE	1018.2	16.99	16.96	8.35
BRISBANE	1018.725	16.69	16.66	8.22
BRISBANE	1019.095	16.6	16.57	8.13
BRISBANE	1019.49	16.57	16.54	8.08
BRISBANE	1019.865	16.34	16.31	7.97
BRISBANE	1020.115	16.4	16.36	7.97
BRISBANE	1020.525	16.38	16.34	7.95
BRISBANE	1020.83	16.24	16.2	7.89
BRISBANE	1021.095	16.06	16.02	7.8
BRISBANE	1021.539	15.96	15.93	7.7
BRISBANE	1021.715	15.97	15.93	7.68
BRISBANE	1021.895	15.88	15.84	7.67
BRISBANE	1022.505	15.66	15.63	7.6
BRISBANE	1022.575	15.72	15.69	7.58
BRISBANE	1023.04	15.4	15.37	7.44
BRISBANE	1023.57	15.31	15.27	7.39
BRISBANE	1024.08	15.24	15.2	7.34
BRISBANE	1024.563	15.16	15.12	7.27
BRISBANE	1025.07	15.09	15.05	7.22

Storm Surge Run

WATER LEVEL Location	Mike 11 Chaniage (km)	100 River 100 Moreton Bay WL (mAHD)	100 River 20 Moreton Bay WL (mAHD)	20 River 100 Moreton Bay WL (mAHD)
BRISBANE	1025.36	14.94	14.91	7.15
BRISBANE	1025.59	14.77	14.73	7.08
BRISBANE	1026.17	14.71	14.67	7.01
BRISBANE	1026.68	14.58	14.54	6.94
BRISBANE	1026.9	14.45	14.41	6.88
BRISBANE	1027.16	14.38	14.34	6.85
BRISBANE	1027.68	14.46	14.42	6.83
BRISBANE	1028.18	14.42	14.38	6.8
BRISBANE	1028.68	14.27	14.23	6.72
BRISBANE	1028.76	14.18	14.14	6.65
BRISBANE	1029.2	14	13.96	6.56
BRISBANE	1029.68	13.96	13.93	6.54
BRISBANE	1030.22	13.93	13.91	6.5
BRISBANE	1030.87	13.82	13.79	6.43
BRISBANE	1031.26	13.68	13.65	6.34
BRISBANE	1031.7	13.29	13.25	6.23
BRISBANE	1031.995	13.43	13.39	6.21
BRISBANE	1032.23	13.34	13.3	6.18
BRISBANE	1032.585	13.23	13.19	6.16
BRISBANE	1033.08	13.07	13.03	6.08
BRISBANE	1033.37	13	12.95	6.02
BRISBANE	1033.9	12.79	12.74	5.91
BRISBANE	1034.37	12.58	12.53	5.82
BRISBANE	1034.89	12.5	12.44	5.76
BRISBANE	1035.414	12.31	12.25	5.65
BRISBANE	1035.9	12.01	11.95	5.55
BRISBANE	1036.46	11.9	11.84	5.46
BRISBANE	1036.77	11.78	11.72	5.4
BRISBANE	1036.915	11.66	11.6	5.37
BRISBANE	1037.09	11.61	11.55	5.33
BRISBANE	1037.175	11.56	11.5	5.2
BRISBANE	1037.285	11.48	11.42	5.18
BRISBANE	1037.625	11.52	11.46	5.16
BRISBANE	1038.085	11.48	11.42	5.14
BRISBANE	1038.6	11.41	11.35	5.08
BRISBANE	1039.1	11.34	11.27	5.03
BRISBANE	1039.565	11.3	11.23	4.99
BRISBANE	1039.828	11.27	11.21	4.98
BRISBANE	1039.828	11.27	11.21	4.98
BRISBANE	1040.09	11.26	11.19	4.98
BRISBANE	1040.49	11.14	11.07	4.92
BRISBANE	1041.01	11.08	11.01	4.9
BRISBANE	1041.23	11.06	10.99	4.88
BRISBANE	1041.46	11	10.93	4.85
BRISBANE	1041.7	10.95	10.88	4.85
BRISBANE	1041.96	10.83	10.76	4.79
BRISBANE	1042.235	10.64	10.56	4.74
BRISBANE	1042.515	10.62	10.54	4.72
BRISBANE	1042.91	10.43	10.35	4.62
BRISBANE	1043.725	10.18	10.09	4.5
BRISBANE	1044.06	10.05	9.96	4.46
BRISBANE	1044.34	9.92	9.84	4.41
BRISBANE	1044.605	9.89	9.8	4.39
BRISBANE	1044.86	9.85	9.77	4.36
BRISBANE	1045.4	9.72	9.63	4.3
BRISBANE	1045.885	9.66	9.57	4.22
BRISBANE	1046.18	9.57	9.48	4.21
BRISBANE	1046.34	9.52	9.43	4.2
BRISBANE	1046.58	9.5	9.4	4.19
BRISBANE	1046.9	9.35	9.26	4.13

Storm Surge Run

WATER LEVEL Location	Mike 11 Chaniage (km)	100 River 100 Moreton Bay WL (mAHD)	100 River 20 Moreton Bay WL (mAHD)	20 River 100 Moreton Bay WL (mAHD)
BRISBANE	1047.35	9.09	8.99	4.04
BRISBANE	1047.915	8.91	8.81	3.98
BRISBANE	1048.375	8.93	8.83	3.97
BRISBANE	1048.89	8.71	8.6	3.88
BRISBANE	1049.12	8.66	8.55	3.86
BRISBANE	1049.37	8.52	8.4	3.82
BRISBANE	1049.59	8.5	8.39	3.81
BRISBANE	1049.87	8.42	8.31	3.79
BRISBANE	1050.43	8.44	8.32	3.77
BRISBANE	1050.86	8.3	8.19	3.73
BRISBANE	1051.36	8.32	8.2	3.73
BRISBANE	1051.895	8.18	8.06	3.66
BRISBANE	1052.31	8.11	7.99	3.64
BRISBANE	1052.39	7.48	7.35	3.54
BRISBANE	1052.595	7.4	7.28	3.53
BRISBANE	1052.64	6.93	6.82	3.47
BRISBANE	1053.32	6.9	6.78	3.45
BRISBANE	1053.385	6.87	6.74	3.44
BRISBANE	1053.9	6.64	6.52	3.38
BRISBANE	1054.64	6.51	6.37	3.32
BRISBANE	1054.68	6.42	6.29	3.3
BRISBANE	1054.97	6.18	6.04	3.25
BRISBANE	1055.28	6.13	5.98	3.23
BRISBANE	1055.42	6.11	5.97	3.22
BRISBANE	1055.96	6.05	5.9	3.2
BRISBANE	1056.4	5.81	5.66	3.15
BRISBANE	1056.695	5.76	5.6	3.14
BRISBANE	1056.865	5.76	5.59	3.13
BRISBANE	1056.95	5.67	5.5	3.11
BRISBANE	1057.09	5.75	5.59	3.13
BRISBANE	1057.53	5.6	5.44	3.1
BRISBANE	1058.04	5.33	5.16	3.04
BRISBANE	1058.23	5.21	5.03	3.01
BRISBANE	1058.53	4.98	4.8	2.96
BRISBANE	1058.735	4.96	4.77	2.95
BRISBANE	1059.035	4.72	4.52	2.9
BRISBANE	1059.54	4.68	4.48	2.89
BRISBANE	1059.99	4.52	4.31	2.86
BRISBANE	1060.345	4.39	4.17	2.83
BRISBANE	1060.535	4.24	4.02	2.81
BRISBANE	1061.015	4.26	4.03	2.8
BRISBANE	1061.53	4.06	3.82	2.77
BRISBANE	1062.02	4	3.76	2.75
BRISBANE	1062.535	3.98	3.73	2.75
BRISBANE	1062.94	3.98	3.73	2.75
BRISBANE	1063.125	3.94	3.69	2.74
BRISBANE	1063.125	3.94	3.69	2.74
BRISBANE	1063.31	3.9	3.64	2.73
BRISBANE	1063.645	3.66	3.39	2.69
BRISBANE	1064	3.61	3.33	2.68
BRISBANE	1064.49	3.53	3.25	2.66
BRISBANE	1065.01	3.57	3.29	2.67
BRISBANE	1065.503	3.55	3.26	2.67
BRISBANE	1065.99	3.58	3.29	2.67
BRISBANE	1066.505	3.54	3.25	2.66
BRISBANE	1067.02	3.51	3.22	2.66
BRISBANE	1067.485	3.44	3.15	2.65
BRISBANE	1067.965	3.37	3.07	2.63
BRISBANE	1068.66	3.24	2.93	2.61
BRISBANE	1069.045	3.2	2.88	2.61

Storm Surge Run

WATER LEVEL Location	Mike 11 Chaniage (km)	100 River 100 Moreton Bay WL (mAHD)	100 River 20 Moreton Bay WL (mAHD)	20 River 100 Moreton Bay WL (mAHD)
BRISBANE	1069.535	3.16	2.83	2.6
BRISBANE	1070.025	3.1	2.77	2.59
BRISBANE	1070.53	3.03	2.69	2.58
BRISBANE	1071.04	2.97	2.63	2.57
BRISBANE	1071.52	2.99	2.65	2.57
BRISBANE	1072.015	2.97	2.63	2.57
BRISBANE	1072.02	2.97	2.63	2.57
BRISBANE	1072.02	2.97	2.63	2.57
BRISBANE	1072.515	2.88	2.53	2.56
BRISBANE	1072.995	2.85	2.5	2.55
BRISBANE	1073.485	2.78	2.42	2.55
BRISBANE	1074	2.73	2.36	2.56
BRISBANE	1074.46	2.69	2.32	2.56
BRISBANE	1074.985	2.59	2.21	2.56
BRISBANE	1075.48	2.65	2.24	2.65
BRISBANE	1076	2.81	2.36	2.8
BRISBANE	1076.495	2.8	2.36	2.8
BRISBANE	1077.01	2.89	2.43	2.89
BRISBANE	1077.51	2.88	2.43	2.88
BRISBANE	1078.04	2.73	2.3	2.73
BRISBANE	1078.525	2.51	2.11	2.51
BRISBANE	1078.66	2.5	2.1	2.5
BREMER	599.4	19.74	19.72	10.49
BREMER	600	19.74	19.72	10.49
OXLEY	599.4	11.27	11.21	4.98
OXLEY	600	11.27	11.21	4.98
BREAKFAST	599.4	3.94	3.69	2.74
BREAKFAST	600	3.94	3.69	2.74
BULIMBA	599.4	2.97	2.63	2.57
BULIMBA	600	2.97	2.63	2.57

Storm Surge Run

FLOW

Location	Mike 11 Chaniage (km)	100 River 100 Moreton Bay Flow (m^3/s)	100 River 20 Moreton Bay Flow (m^3/s)	20 River 100 Moreton Bay Flow (m^3/s)
BRISBANE	1000.143	9303.514	9303.509	4194.357
BRISBANE	1000.53	9297.485	9297.466	4188.481
BRISBANE	1001.045	9293.025	9292.992	4183.62
BRISBANE	1001.59	9287.694	9287.641	4175.217
BRISBANE	1002.107	9284.914	9284.857	4171.574
BRISBANE	1002.567	9281.862	9281.794	4167.488
BRISBANE	1003.03	9278.577	9278.495	4163.033
BRISBANE	1003.525	9270.348	9270.227	4159.215
BRISBANE	1004.037	9263.626	9263.493	4151.539
BRISBANE	1004.555	9253.981	9253.772	4147.223
BRISBANE	1005.067	9244.504	9244.265	4134.109
BRISBANE	1005.598	9235.211	9234.911	4123.186
BRISBANE	1006.035	9227.114	9226.766	4114.55
BRISBANE	1006.25	9488.869	9487.291	3621.587
BRISBANE	1006.605	9486.035	9484.672	3619.458
BRISBANE	1007.16	9479.57	9478.702	3614.866
BRISBANE	1007.665	9475.001	9474.487	3608.779
BRISBANE	1008.183	9467.692	9466.667	3601.621
BRISBANE	1008.685	9465.509	9464.347	3598.804
BRISBANE	1009.162	9462.646	9461.291	3596.298
BRISBANE	1009.56	9458.638	9457.001	3593.035
BRISBANE	1010.105	9452.884	9450.766	3588.552
BRISBANE	1010.607	9450.589	9448.211	3586.409
BRISBANE	1010.853	9449.447	9446.939	3585.12
BRISBANE	1011.245	9447.855	9445.163	3583.289
BRISBANE	1011.745	9443.503	9440.32	3579.349
BRISBANE	1012.228	9438.518	9434.76	3573.614
BRISBANE	1012.705	9433.617	9430.018	3569.062
BRISBANE	1013.19	9428.959	9425.066	3564.517
BRISBANE	1013.678	9424.681	9420.072	3561.561
BRISBANE	1014.11	9420.462	9415.11	3556.488
BRISBANE	1014.46	9417.027	9412.021	3552.568
BRISBANE	1014.85	9413.14	9408.694	3547.249
BRISBANE	1015.325	9411.015	9406.864	3545.288
BRISBANE	1015.85	9408.427	9404.62	3543.086
BRISBANE	1016.39	9403.74	9400.541	3540.394
BRISBANE	1016.885	9399.44	9396.554	3536.857
BRISBANE	1017.37	9394.573	9391.133	3533.574
BRISBANE	1017.765	9391.034	9386.906	3531.11
BRISBANE	1018.06	9388.4	9384.032	3529.225
BRISBANE	1018.463	9385.45	9381.339	3526.749
BRISBANE	1018.91	9384.155	9379.748	3525.236
BRISBANE	1019.293	9382.681	9377.589	3523.878
BRISBANE	1019.678	9380.483	9374.525	3521.035
BRISBANE	1019.99	9379.509	9372.953	3519.906
BRISBANE	1020.32	9377.909	9371.434	3517.19
BRISBANE	1020.678	9375.888	9369.76	3514.821
BRISBANE	1020.963	9374.918	9368.974	3513.493
BRISBANE	1021.317	9373.932	9368.2	3512.245
BRISBANE	1021.627	9371.681	9366.304	3510.791
BRISBANE	1021.805	9370.279	9365.109	3510.01
BRISBANE	1022.2	9369.108	9365.121	3508.422
BRISBANE	1022.54	9369.085	9365.233	3507.182
BRISBANE	1022.808	9369.313	9365.73	3505.341
BRISBANE	1023.305	9368.317	9365.038	3504.141
BRISBANE	1023.825	9367.782	9364.729	3502.723
BRISBANE	1024.321	9367.597	9364.799	3501.128
BRISBANE	1024.816	9367.388	9364.849	3499.401
BRISBANE	1025.215	9366.994	9364.685	3497.937
BRISBANE	1025.475	9366.045	9363.843	3497.119

Storm Surge Run

FLOW

Location	Mike 11 Chaniage (km)	100 River 100 Moreton Bay Flow (m³/s)	100 River 20 Moreton Bay Flow (m³/s)	20 River 100 Moreton Bay Flow (m³/s)
BRISBANE	1025.88	9363.436	9361.355	3495.961
BRISBANE	1026.425	9358.613	9357.397	3493.592
BRISBANE	1026.79	9365.766	9365.378	3492.187
BRISBANE	1027.03	9370.374	9370.087	3491.438
BRISBANE	1027.42	9382.21	9381.856	3490.454
BRISBANE	1027.93	9392.624	9392.833	3487.649
BRISBANE	1028.43	9395.745	9396.169	3485.496
BRISBANE	1028.72	9393.297	9393.808	3484.424
BRISBANE	1028.98	9406.519	9406.376	3483.546
BRISBANE	1029.44	9421.57	9418.463	3482.052
BRISBANE	1029.95	9410.302	9410.549	3480.195
BRISBANE	1030.545	9377.195	9377.115	3476.167
BRISBANE	1031.065	9343.571	9342.307	3474.507
BRISBANE	1031.48	9318.184	9315.502	3472.683
BRISBANE	1031.847	9313.001	9308.58	3471.729
BRISBANE	1032.112	9315.019	9310.548	3470.557
BRISBANE	1032.408	9315.583	9311.201	3469.387
BRISBANE	1032.832	9314.953	9310.537	3468.181
BRISBANE	1033.225	9311.525	9306.781	3467.171
BRISBANE	1033.635	9305.588	9300.274	3466.011
BRISBANE	1034.135	9297.707	9291.381	3463.985
BRISBANE	1034.63	9290.907	9283.917	3462.722
BRISBANE	1035.152	9278.588	9272.042	3459.809
BRISBANE	1035.657	9269.443	9264.754	3457.441
BRISBANE	1036.18	9267.643	9260.784	3456.044
BRISBANE	1036.615	9264.735	9257.972	3453.557
BRISBANE	1036.842	9263.419	9256.761	3452.697
BRISBANE	1037.002	9262.503	9255.916	3452.274
BRISBANE	1037.11	9262.161	9255.598	3452.003
BRISBANE	1037.23	9261.786	9255.249	3451.703
BRISBANE	1037.455	9260.659	9254.197	3451.125
BRISBANE	1037.855	9255.339	9249.173	3449.552
BRISBANE	1038.343	9246.07	9240.371	3447.888
BRISBANE	1038.85	9233.829	9228.738	3444.44
BRISBANE	1039.332	9221.352	9216.926	3440.396
BRISBANE	1039.696	9211.693	9207.839	3437.597
BRISBANE	1039.959	8914.657	8905.972	3362.33
BRISBANE	1040.29	8913.714	8904.271	3361.732
BRISBANE	1040.75	8912.226	8901.836	3361.158
BRISBANE	1041.12	8911.244	8900.479	3360.874
BRISBANE	1041.345	8910.025	8898.862	3360.666
BRISBANE	1041.58	8909.221	8897.826	3360.502
BRISBANE	1041.83	8908.452	8896.883	3360.414
BRISBANE	1042.098	8907.557	8895.809	3360.267
BRISBANE	1042.375	8907.037	8895.228	3360.187
BRISBANE	1042.713	8906.182	8894.84	3360.068
BRISBANE	1043.318	8905.249	8893.672	3359.781
BRISBANE	1043.893	8904.047	8892.161	3359.505
BRISBANE	1044.2	8903.405	8891.922	3359.418
BRISBANE	1044.473	8902.538	8891.588	3359.339
BRISBANE	1044.732	8901.962	8891.318	3359.25
BRISBANE	1045.13	8903.087	8891.086	3359.051
BRISBANE	1045.643	8904.742	8893.768	3358.913
BRISBANE	1046.033	8911.952	8898.016	3358.744
BRISBANE	1046.26	8915.324	8899.896	3358.695
BRISBANE	1046.46	8916.41	8900.493	3358.66
BRISBANE	1046.74	8918.962	8901.763	3358.595
BRISBANE	1047.125	8922.506	8903.56	3358.506
BRISBANE	1047.633	8926.078	8905.476	3358.467
BRISBANE	1048.145	8932.15	8908.967	3358.418

Storm Surge Run

FLOW

Location	Mike 11 Chaniage (km)	100 River 100 Moreton Bay Flow (m^3/s)	100 River 20 Moreton Bay Flow (m^3/s)	20 River 100 Moreton Bay Flow (m^3/s)
BRISBANE	1048.633	8941.856	8915.425	3358.318
BRISBANE	1049.005	8943.494	8919.346	3358.262
BRISBANE	1049.245	8944.441	8921.164	3358.229
BRISBANE	1049.48	8943.773	8922.156	3358.203
BRISBANE	1049.73	8942.76	8922.887	3358.177
BRISBANE	1050.15	8939.925	8924.577	3358.145
BRISBANE	1050.645	8942.916	8928.964	3358.123
BRISBANE	1051.11	8944.086	8932.651	3358.103
BRISBANE	1051.627	8973.575	8943.605	3358.079
BRISBANE	1052.102	9043.686	9009.26	3358.054
BRISBANE	1052.37	9061.288	9031.497	3358.041
BRISBANE	1052.492	9068.716	9043.376	3358.037
BRISBANE	1052.625	9074.509	9052.327	3358.033
BRISBANE	1052.98	9048.503	9040.539	3358.023
BRISBANE	1053.355	9032.345	9020.385	3358.008
BRISBANE	1053.643	9007.977	8991.293	3358.016
BRISBANE	1054.27	8994.568	9013.043	3358.036
BRISBANE	1054.66	8979.89	9000.212	3358.052
BRISBANE	1054.825	8975.048	8996.011	3358.058
BRISBANE	1055.125	8972.466	8992.847	3358.066
BRISBANE	1055.35	8968.518	8986.639	3358.072
BRISBANE	1055.69	8961.355	8975.241	3358.081
BRISBANE	1056.18	8945.643	8949.302	3358.093
BRISBANE	1056.547	8944.745	8934.516	3358.101
BRISBANE	1056.78	8943.586	8927.13	3358.105
BRISBANE	1056.92	8941.929	8921.252	3358.107
BRISBANE	1057.02	8940.862	8917.449	3358.109
BRISBANE	1057.31	8938.349	8908.475	3358.114
BRISBANE	1057.785	8934.589	8908.261	3358.121
BRISBANE	1058.135	8931.528	8910.446	3358.128
BRISBANE	1058.38	8928.56	8912.027	3358.142
BRISBANE	1058.633	8926.054	8912.943	3358.153
BRISBANE	1058.885	8922.761	8913.249	3358.168
BRISBANE	1059.287	8921.095	8913.294	3358.208
BRISBANE	1059.765	8919.949	8910.328	3358.254
BRISBANE	1060.168	8918.536	8908.413	3358.281
BRISBANE	1060.44	8915.444	8904.91	3358.318
BRISBANE	1060.775	8914.666	8904.225	3358.329
BRISBANE	1061.273	8917.434	8899.222	3358.377
BRISBANE	1061.775	8918.953	8897.877	3358.396
BRISBANE	1062.277	8920.081	8896.027	3358.416
BRISBANE	1062.738	8919.671	8894.419	3358.451
BRISBANE	1063.033	8918.313	8893.161	3358.476
BRISBANE	1063.217	8902.463	8886.513	3358.748
BRISBANE	1063.477	8900.708	8886.301	3358.788
BRISBANE	1063.822	8899.313	8886.126	3358.82
BRISBANE	1064.245	8897.591	8885.835	3358.857
BRISBANE	1064.75	8896.731	8885.573	3358.895
BRISBANE	1065.257	8896.392	8884.896	3358.957
BRISBANE	1065.747	8895.852	8884.291	3358.996
BRISBANE	1066.248	8894.661	8883.236	3359.043
BRISBANE	1066.762	8892.946	8881.57	3359.117
BRISBANE	1067.252	8891.983	8880.29	3359.169
BRISBANE	1067.725	8891.413	8878.934	3359.22
BRISBANE	1068.313	8891.088	8879.335	3359.285
BRISBANE	1068.852	8891.498	8879.654	3359.308
BRISBANE	1069.29	8892.239	8880.081	3359.343
BRISBANE	1069.78	8892.688	8880.411	3359.376
BRISBANE	1070.277	8893.022	8880.594	3359.404
BRISBANE	1070.785	8893.856	8880.71	3359.435

Storm Surge Run

FLOW Location	Mike 11 Chaniage (km)	100 River 100 Moreton Bay Flow (m^3/s)	100 River 20 Moreton Bay Flow (m^3/s)	20 River 100 Moreton Bay Flow (m^3/s)
BRISBANE	1071.28	8894.575	8880.718	3359.461
BRISBANE	1071.768	8894.999	8880.77	3359.502
BRISBANE	1072.018	8895.025	8880.756	3359.524
BRISBANE	1072.268	8882.376	8872.507	3360.325
BRISBANE	1072.755	8882.36	8872.481	3360.362
BRISBANE	1073.24	8882.279	8872.459	3360.389
BRISBANE	1073.742	8882.182	8872.441	3360.417
BRISBANE	1074.23	8882.089	8872.468	3360.437
BRISBANE	1074.723	8881.998	8872.506	3360.461
BRISBANE	1075.232	8881.985	8872.531	3360.473
BRISBANE	1075.74	8882.138	8872.604	3360.498
BRISBANE	1076.248	8882.199	8872.651	3360.51
BRISBANE	1076.752	8882.224	8872.745	3360.53
BRISBANE	1077.26	8882.208	8872.811	3360.541
BRISBANE	1077.775	8882.193	8872.84	3360.545
BRISBANE	1078.283	8882.182	8872.854	3360.548
BRISBANE	1078.592	8882.183	8872.858	3360.549
BREMER	599.7	2164.052	2147.572	1062.224
OXLEY	599.7	1178.852	1185.061	438.412
BREAKFAST	599.7	402.364	403.099	250.23
BULIMBA	599.7	694.53	674.703	699.335

TABLE E-2 DESIGN PROFILES

Design Levels

Location	MIKE 11 Chainage (km)	100 MHWS WL (m AHD)	100 MLWS WL (m AHD)	50 MHWS WL (m AHD)	50 MLWS WL (m AHD)	20 MHWS WL (m AHD)	20 MLWS WL (m AHD)	10 MHWS WL (m AHD)	10 MLWS WL (m AHD)	5 MHWS WL (m AHD)	5 MLWS WL (m AHD)	2 MHWS WL (m AHD)	2 MLWS WL (m AHD)
BRISBANE	1000	22.73	22.7	19.72	19.67	13.33	13.22	7.18	6.96	4.6	4.22	2.12	1.21
BRISBANE	1000.285	22.62	22.59	19.6	19.55	13.2	13.09	7.08	6.85	4.53	4.14	2.1	1.18
BRISBANE	1000.775	22.35	22.32	19.36	19.31	12.92	12.8	6.93	6.68	4.41	4	2.08	1.13
BRISBANE	1001.315	22.22	22.19	19.25	19.2	12.8	12.68	6.83	6.57	4.33	3.9	2.05	1.08
BRISBANE	1001.665	21.65	21.62	18.76	18.71	12.41	12.28	6.63	6.36	4.19	3.74	2.02	1.03
BRISBANE	1002.35	21.27	21.23	18.4	18.35	11.95	11.81	6.35	6.05	3.98	3.5	1.98	0.97
BRISBANE	1002.785	21.13	21.1	18.27	18.22	11.79	11.63	6.2	5.89	3.85	3.33	1.95	0.92
BRISBANE	1003.275	20.89	20.85	18	17.94	11.39	11.22	6.01	5.67	3.71	3.16	1.93	0.87
BRISBANE	1003.775	20.65	20.61	17.79	17.73	11.16	10.97	5.85	5.49	3.6	3.02	1.91	0.84
BRISBANE	1004.3	20.25	20.2	17.38	17.3	10.71	10.51	5.63	5.25	3.46	2.85	1.89	0.8
BRISBANE	1004.81	20.19	20.15	17.33	17.26	10.6	10.39	5.5	5.1	3.37	2.72	1.87	0.77
BRISBANE	1005.325	20	19.96	17.14	17.08	10.41	10.19	5.35	4.93	3.24	2.55	1.85	0.73
BRISBANE	1005.87	19.8	19.76	16.94	16.87	10.22	10	5.21	4.76	3.13	2.39	1.83	0.69
BRISBANE	1006.2	19.68	19.63	16.83	16.76	10.16	9.94	5.16	4.71	3.1	2.37	1.82	0.68
BRISBANE	1006.2	19.68	19.63	16.83	16.76	10.16	9.94	5.16	4.71	3.1	2.37	1.82	0.68
BRISBANE	1006.3	19.64	19.6	16.81	16.74	10.14	9.92	5.15	4.7	3.09	2.36	1.82	0.67
BRISBANE	1006.91	19.54	19.49	16.7	16.63	10.03	9.8	5.06	4.6	3.04	2.29	1.79	0.63
BRISBANE	1007.41	19.49	19.44	16.68	16.59	9.97	9.74	4.98	4.51	2.98	2.21	1.76	0.58
BRISBANE	1007.92	19.39	19.34	16.55	16.48	9.87	9.64	4.93	4.44	2.94	2.16	1.74	0.54
BRISBANE	1008.445	19.14	19.09	16.35	16.28	9.76	9.52	4.86	4.37	2.9	2.11	1.72	0.51
BRISBANE	1008.925	19.06	19.01	16.27	16.2	9.69	9.45	4.82	4.32	2.87	2.07	1.71	0.49
BRISBANE	1009.4	18.97	16.92	16.18	16.1	9.62	9.38	4.77	4.26	2.84	2.03	1.69	0.46
BRISBANE	1009.72	18.94	18.89	16.14	16.07	9.57	9.32	4.75	4.23	2.82	2.01	1.69	0.45
BRISBANE	1010.49	18.59	18.54	15.86	15.79	9.38	9.13	4.65	4.13	2.77	1.94	1.66	0.42
BRISBANE	1010.725	18.58	18.53	15.85	15.77	9.38	9.13	4.64	4.11	2.76	1.93	1.66	0.41
BRISBANE	1010.98	18.5	18.45	15.78	15.71	9.34	9.08	4.62	4.09	2.75	1.91	1.65	0.4
BRISBANE	1011.51	18.49	18.44	15.75	15.67	9.28	9.02	4.58	4.05	2.73	1.89	1.64	0.39
BRISBANE	1011.98	18.48	18.43	15.73	15.65	9.22	8.96	4.54	4	2.7	1.85	1.63	0.37
BRISBANE	1012.475	18.4	18.35	15.65	15.57	9.17	8.9	4.5	3.95	2.68	1.82	1.62	0.35
BRISBANE	1012.935	18.32	18.27	15.57	15.5	9.09	8.82	4.45	3.9	2.65	1.78	1.61	0.33
BRISBANE	1013.445	18.18	18.13	15.44	15.36	8.99	8.72	4.39	3.82	2.61	1.73	1.59	0.3
BRISBANE	1013.91	18.08	18.03	15.35	15.27	8.9	8.63	4.31	3.72	2.56	1.65	1.56	0.25
BRISBANE	1014.31	18.02	17.97	15.26	15.18	8.81	8.53	4.24	3.64	2.51	1.58	1.54	0.21
BRISBANE	1014.61	18.05	18	15.27	15.18	8.74	8.46	4.19	3.58	2.48	1.53	1.53	0.18
BRISBANE	1015.09	17.89	17.84	15.14	15.06	8.71	8.42	4.18	3.58	2.47	1.53	1.52	0.18
BRISBANE	1015.56	17.7	17.65	14.99	14.9	8.6	8.32	4.14	3.52	2.45	1.5	1.52	0.17
BRISBANE	1016.14	17.6	17.54	14.69	14.8	8.51	8.22	4.08	3.45	2.42	1.46	1.5	0.14
BRISBANE	1016.64	17.47	17.42	14.75	14.66	8.38	8.08	3.98	3.32	2.35	1.35	1.47	0.08
BRISBANE	1017.13	17.28	17.22	14.55	14.46	8.19	7.88	3.84	3.14	2.25	1.2	1.42	-0.03
BRISBANE	1017.61	17.09	17.03	14.36	14.26	8.01	7.69	3.74	3.02	2.2	1.12	1.4	-0.07
BRISBANE	1017.92	16.98	16.9	14.24	14.14	7.9	7.57	3.67	2.94	2.17	1.07	1.39	-0.09
BRISBANE	1018.2	16.9	16.84	14.18	14.09	7.87	7.54	3.64	2.91	2.15	1.05	1.38	-0.1
BRISBANE	1018.725	16.6	16.53	13.92	13.82	7.74	7.4	3.59	2.85	2.12	1.01	1.37	-0.12
BRISBANE	1019.095	16.51	16.44	13.82	13.71	7.84	7.3	3.55	2.8	2.1	0.99	1.36	-0.13
BRISBANE	1019.49	16.48	16.41	13.79	13.68	7.59	7.24	3.5	2.74	2.08	0.95	1.35	-0.15
BRISBANE	1019.865	16.24	16.17	13.57	13.47	7.47	7.12	3.45	2.68	2.06	0.92	1.34	-0.16
BRISBANE	1020.115	16.3	16.23	13.62	13.51	7.46	7.11	3.43	2.65	2.04	0.89	1.34	-0.17
BRISBANE	1020.525	16.28	16.21	13.6	13.49	7.43	7.08	3.41	2.62	2.03	0.87	1.33	-0.19
BRISBANE	1020.63	16.14	16.06	13.48	13.37	7.37	7.01	3.38	2.58	2.01	0.84	1.33	-0.2
BRISBANE	1021.095	15.95	15.68	13.33	13.22	7.28	6.91	3.33	2.53	1.99	0.81	1.32	-0.21
BRISBANE	1021.539	15.86	15.78	13.21	13.1	7.16	6.79	3.27	2.44	1.96	0.76	1.3	-0.23
BRISBANE	1021.715	15.86	15.79	13.22	13.1	7.14	6.77	3.25	2.42	1.94	0.73	1.3	-0.25
BRISBANE	1021.895	15.77	15.7	13.16	13.05	7.14	6.76	3.25	2.42	1.94	0.74	1.3	-0.25
BRISBANE	1022.505	15.55	15.48	13	12.88	7.05	6.68	3.22	2.38	1.93	0.72	1.29	-0.25
BRISBANE	1022.575	15.61	15.54	13.02	12.9	7.03	6.65	3.2	2.35	1.92	0.7	1.29	-0.26
BRISBANE	1023.04	15.29	15.21	12.74	12.62	6.89	6.51	3.15	2.29	1.9	0.67	1.28	-0.27
BRISBANE	1023.57	15.2	15.12	12.67	12.55	6.83	6.44	3.11	2.24	1.88	0.64	1.27	-0.29
BRISBANE	1024.08	15.13	15.05	12.6	12.47	6.77	6.37	3.07	2.2	1.88	0.61	1.26	-0.3
BRISBANE	1024.563	15.05	14.97	12.52	12.4	6.7	6.29	3.04	2.15	1.84	0.58	1.26	-0.31
BRISBANE	1025.07	14.98	14.89	12.45	12.32	6.64	6.23	3	2.11	1.82	0.55	1.25	-0.32
BRISBANE	1025.36	14.83	14.74	12.32	12.2	6.56	6.15	2.97	2.07	1.81	0.53	1.24	-0.33
BRISBANE	1025.59	14.65	14.56	12.18	12.05	6.49	6.07	2.94	2.03	1.79	0.51	1.24	-0.34
BRISBANE	1026.17	14.59	14.5	12.11	11.98	6.4	5.98	2.89	1.97	1.77	0.48	1.23	-0.35
BRISBANE	1026.68	14.46	14.37	11.99	11.86	6.32	5.89	2.85	1.91	1.75	0.44	1.22	-0.37
BRISBANE	1026.9	14.33	14.24	11.89	11.75	6.26	5.83	2.82	1.88	1.74	0.43	1.22	-0.37
BRISBANE	1027.16	14.25	14.16	11.82	11.68	6.22	5.78	2.81	1.86	1.73	0.41	1.22	-0.38
BRISBANE	1027.68	14.33	14.24	11.87	11.73	6.2	5.78	2.78	1.82	1.72	0.39	1.21	-0.38
BRISBANE	1028.18	14.29	14.2	11.82	11.68	6.16	5.71	2.76	1.78	1.71	0.36	1.21	-0.4
BRISBANE	1028.68	14.15	14.05	11.7	11.55	6.07	5.61	2.71	1.72	1.68	0.33	1.2	-0.41
BRISBANE	1028.76	14.05	13.98	11.6	11.45	5.98	5.51	2.87	1.66	1.67	0.29	1.19	-0.43
BRISBANE	1029.2	13.87	13.77	11.44	11.29	5.69	5.41	2.63	1.61	1.65	0.27	1.19	-0.44
BRISBANE	1029.88	13.84	13.74	11.4	11.25	5.85	5.37	2.61	1.58	1.64	0.25	1.18	-0.45
BRISBANE	1030.22	13.81	13.72	11.37	11.22	5.81	5.32	2.58	1.55	1.63	0.24	1.18	-0.45
BRISBANE	1030.87	13.69	13.59	11.25	11.1	5.73	5.23	2.55	1.5	1.61	0.21	1.17	-0.46
BRISBANE	1031.28	13.55	13.45	11.13	10.97	5.63	5.12	2.51	1.45	1.6	0.19	1.17	-0.47
BRISBANE	1031.7	13.15	13.04	10.82	10.66	5.51	4.99	2.48	1.4	1.58	0.16	1.16	-0.48
BRISBANE	1031.995	13.29	13.19	10.89	10.73	5.48	4.98	2.44	1.37	1.57	0.14	1.16	-0.49
BRISBANE	1032.23	13.2	13.09	10.82	10.66	5.45	4.92	2.42	1.34	1.56	0.13	1.16	-0.49
BRISBANE	1032.585	13.09	12.99	10.75	10.59	5.42	4.89	2.42	1.33	1.56	0.12	1.16	-0.5
BRISBANE	1033.08	12.93	12.82	10.6	10.43	5.34	4.8	2.39	1.3	1.55	0.11	1.15	-0.5
BRISBANE	1033.37	12.85	12.74	10.52	10.34	5.28	4.74	2.37	1.27	1.54	0.1	1.15	-0.5
BRISBANE	1033.9	12.64	12.53	10.33	10.15	5.15	4.59	2.32	1.21	1.52	0.07	1.14	-0.51
BRISBANE	1034.37	12.42	12.31	10.15	9.96	5.05	4.48	2.28	1.16	1.5	0.04	1.14	-0.52
BRISBANE	1034.69	12.33	12.22	10.06	9.87	4.97	4.39	2.24	1.11	1.49	0.02	1.13	-0.53
BRISBANE	1035.414	12.14	12.02	9.87	9.68	4.85	4.26	2.19	1.04	1.46	-0.01	1.13	-0.54
BRISBANE	1035.9	11.83	11.71	9.63	9.42	4.74	4.14	2.15	0.99	1.45	-0.03	1.12	-0.55
BRISBANE	1036.46	11.71	11.59	9.51	9.3	4.62	4	2.1	0.93	1.43	-0.06	1.12	-0.56
BRISBANE	1036.77	11.6	11.47	9.4	9.19	4.56	3.93	2.07	0.88	1.42	-0.08	1.11	-0.57
BRISBANE	1036.915	11.48	11.35	9.31	9.09	4.52	3.89	2.06	0.87	1.42	-0.09	1.11	-0.57
BRISBANE	1037.09	11.42	11.29	9.24	9.02	4.48	3.84	2.04	0.85	1.41	-0.1	1.11	-0.57
BRISBANE	1037.175	11.37	11.24	9.22	9	4.43	3.79	1.99	0.79	1.39	-0.13	1.1	-0.58
BRISBANE	1037.265	11.28	11.15	9.15	8.93	4.42	3.78	1.99	0.78	1.39	-0.13	1.1	-0.59
BRISBANE	1037.625	11.32	11.19	9.15	8.93	4.39	3.74	1.98	0.76	1.38	-0.14	1.1	-0.59
BRISBANE	1038.085	11.28	11.15	9.11	8.88	4.37	3.72	1.97	0.75	1.38	-0.14	1.1	-0.59
BRISBANE	1038.6	11.21	11.08	9.03	8.8	4.3	3.63	1.93	0.7	1.36	-0.17	1.09	-0.6
BRISBANE	1039.1	11.13	11	8.95	8.72	4.23	3.54	1.9	0.63	1.35	-0.2	1.09	-0.61
BRISBANE	1039.565	11.09	10.95	8.91	8.67	4.18	3.48	1.87	0.6	1.34	-0.22	1.08	-0.62
BRISBANE	1039.828	11.06	10.93	8.88	8.65	4.17	3.47	1.87	0.59	1.34	-0.22	1.08	-0.62
BRISBANE	1039.828	11.06	10.93	8.88	8.65	4.17	3.47	1.87	0.59	1.34	-0.22	1.08	-0.62
BRISBANE	1040.09	11.04	10.9	8.87	8.63	4.16	3.46	1.87	0.59	1.34	-0.22	1.08	-0.62
BRISBANE	1040.49	10.92	10.78	8.76	8.52	4.09	3.38	1.84	0.56	1.33	-0.23	1.08	-0.62
BRISBANE	1041.01	10.86	10.72	8.71	8.47	4.07	3.36	1.84	0.55	1.32	-0.24	1.08	-0.63
BRISBANE	1041.23	10.84	10.69	8.68	8.43	4.05	3.33	1.83	0.53	1.32	-0.25	1.08	-0.63
BRISBANE	1041.46	10.78	10.63	8.63	8.38	4.01	3.29	1.81	0.51	1.31	-0.26	1.08	-0.63
BRISBANE	1041.7	10.73	10.59	8.6	8.35	4.01	3.29	1.81	0.52	1.31	-0.25	1.08	-0.63
BRISBANE	1041.96	10.61	10.46	8.49	8.24	3.95	3.22	1.79	0.49	1.31	-0.26	1.07	-0.64
BRISBANE	1042.235	10.41	10.25	8.34	8.08	3.89	3.15	1.77	0.47	1.3	-0.28	1.07	-0.64

Design Levels

Location	MIKE 11 Chainage (km)	100 MHWS WL (m AHD)	100 MLWS WL (m AHD)	50 MHWS WL (m AHD)	50 MLWS WL (m AHD)	20 MHWS WL (m AHD)	20 MLWS WL (m AHD)	10 MHWS WL (m AHD)	10 MLWS WL (m AHD)	5 MHWS WL (m AHD)	5 MLWS WL (m AHD)	2 MHWS WL (m AHD)	2 MLWS WL (m AHD)
BRISBANE	1042.515	10.38	10.23	8.32	8.06	3.87	3.13	1.77	0.46	1.29	-0.28	1.07	-0.64
BRISBANE	1042.91	10.19	10.03	8.13	7.87	3.75	3	1.73	0.41	1.28	-0.31	1.06	-0.65
BRISBANE	1043.725	9.92	9.76	7.9	7.62	3.59	2.8	1.87	0.31	1.25	-0.35	1.05	-0.87
BRISBANE	1044.06	9.79	9.63	7.8	7.51	3.55	2.76	1.65	0.3	1.24	-0.36	1.05	-0.67
BRISBANE	1044.34	9.66	9.49	7.69	7.4	3.5	2.69	1.64	0.28	1.24	-0.37	1.05	-0.68
BRISBANE	1044.605	9.62	9.45	7.65	7.36	3.47	2.68	1.63	0.26	1.23	-0.38	1.05	-0.68
BRISBANE	1044.68	9.59	9.42	7.62	7.32	3.44	2.62	1.62	0.24	1.23	-0.38	1.05	-0.66
BRISBANE	1045.4	9.44	9.27	7.48	7.17	3.35	2.51	1.58	0.2	1.21	-0.41	1.04	-0.69
BRISBANE	1045.885	9.37	9.19	7.34	7.02	3.25	2.39	1.55	0.16	1.2	-0.43	1.04	-0.7
BRISBANE	1046.18	9.29	9.1	7.3	6.98	3.25	2.39	1.55	0.15	1.2	-0.43	1.04	-0.7
BRISBANE	1046.34	9.24	9.05	7.27	6.95	3.24	2.38	1.55	0.15	1.2	-0.43	1.03	-0.7
BRISBANE	1046.58	9.21	9.02	7.24	6.92	3.22	2.35	1.54	0.14	1.2	-0.43	1.03	-0.7
BRISBANE	1046.9	9.06	8.87	7.12	6.79	3.15	2.27	1.52	0.11	1.19	-0.45	1.03	-0.71
BRISBANE	1047.35	8.78	8.59	6.89	6.55	3.05	2.16	1.49	0.07	1.18	-0.46	1.03	-0.71
BRISBANE	1047.915	8.59	8.39	6.74	6.39	2.98	2.08	1.47	0.05	1.17	-0.47	1.02	-0.72
BRISBANE	1048.375	8.61	8.41	6.74	6.39	2.98	2.06	1.46	0.04	1.16	-0.48	1.02	-0.72
BRISBANE	1048.69	8.38	8.17	6.53	6.17	2.85	1.91	1.42	-0.03	1.15	-0.51	1.02	-0.73
BRISBANE	1049.12	8.32	8.12	6.49	6.12	2.82	1.88	1.42	-0.04	1.14	-0.51	1.02	-0.73
BRISBANE	1049.37	8.17	7.96	6.37	5.99	2.77	1.82	1.4	-0.06	1.14	-0.52	1.01	-0.74
BRISBANE	1049.59	8.15	7.94	6.35	5.97	2.77	1.82	1.4	-0.05	1.14	-0.52	1.01	-0.74
BRISBANE	1049.87	8.07	7.88	6.29	5.91	2.74	1.78	1.4	-0.07	1.14	-0.53	1.01	-0.74
BRISBANE	1050.43	8.08	7.87	6.27	5.68	2.71	1.74	1.38	-0.09	1.13	-0.54	1.01	-0.74
BRISBANE	1050.86	7.94	7.73	6.17	5.78	2.66	1.68	1.37	-0.11	1.12	-0.55	1.01	-0.75
BRISBANE	1051.36	7.94	7.73	6.16	5.77	2.68	1.68	1.37	-0.11	1.12	-0.55	1.01	-0.75
BRISBANE	1051.895	7.8	7.58	6.02	5.62	2.58	1.58	1.35	-0.14	1.11	-0.56	1	-0.75
BRISBANE	1052.31	7.74	7.51	5.97	5.58	2.55	1.53	1.33	-0.16	1.11	-0.57	1	-0.76
BRISBANE	1052.39	7.09	6.82	5.39	4.96	2.4	1.31	1.3	-0.21	1.1	-0.59	1	-0.76
BRISBANE	1052.595	7.01	6.75	5.34	4.91	2.38	1.3	1.3	-0.22	1.1	-0.59	1	-0.77
BRISBANE	1052.64	6.52	6.21	4.99	4.53	2.31	1.21	1.28	-0.26	1.09	-0.61	0.99	-0.78
BRISBANE	1053.32	6.47	6.15	4.95	4.46	2.28	1.15	1.27	-0.28	1.08	-0.62	0.99	-0.78
BRISBANE	1053.385	6.43	6.1	4.91	4.4	2.25	1.12	1.26	-0.29	1.08	-0.63	0.98	-0.79
BRISBANE	1053.9	6.19	5.85	4.72	4.2	2.18	1.02	1.24	-0.33	1.07	-0.65	0.98	-0.79
BRISBANE	1054.64	6.04	5.67	4.57	4.02	2.09	0.88	1.21	-0.38	1.06	-0.67	0.98	-0.8
BRISBANE	1054.68	5.95	5.58	4.5	3.94	2.06	0.85	1.2	-0.39	1.05	-0.68	0.97	-0.81
BRISBANE	1054.97	5.68	5.3	4.3	3.73	2	0.77	1.19	-0.41	1.04	-0.89	0.97	-0.81
BRISBANE	1055.28	5.62	5.23	4.26	3.68	1.98	0.75	1.18	-0.41	1.04	-0.69	0.97	-0.81
BRISBANE	1055.42	5.6	5.21	4.24	3.85	1.96	0.72	1.18	-0.42	1.04	-0.69	0.97	-0.81
BRISBANE	1055.96	5.53	5.12	4.17	3.57	1.94	0.68	1.17	-0.44	1.03	-0.7	0.96	-0.82
BRISBANE	1056.4	5.27	4.84	3.98	3.35	1.87	0.59	1.16	-0.46	1.03	-0.71	0.96	-0.82
BRISBANE	1056.695	5.2	4.77	3.93	3.3	1.85	0.58	1.15	-0.47	1.03	-0.71	0.96	-0.82
BRISBANE	1056.865	5.17	4.74	3.9	3.27	1.85	0.57	1.15	-0.47	1.02	-0.71	0.96	-0.82
BRISBANE	1056.95	5.08	4.63	3.83	3.18	1.82	0.52	1.14	-0.52	1.01	-0.74	0.95	-0.83
BRISBANE	1057.09	5.19	4.76	3.92	3.28	1.85	0.56	1.15	-0.51	1.01	-0.73	0.95	-0.83
BRISBANE	1057.53	5.03	4.59	3.81	3.15	1.81	0.51	1.14	-0.52	1.01	-0.74	0.95	-0.83
BRISBANE	1058.04	4.72	4.25	3.57	2.88	1.72	0.39	1.11	-0.56	1	-0.75	0.95	-0.84
BRISBANE	1058.23	4.58	4.09	3.46	2.75	1.68	0.34	1.1	-0.57	1	-0.76	0.95	-0.84
BRISBANE	1058.53	4.33	3.81	3.28	2.53	1.62	0.25	1.09	-0.6	0.99	-0.77	0.95	-0.84
BRISBANE	1058.735	4.29	3.76	3.24	2.48	1.6	0.22	1.08	-0.61	0.99	-0.77	0.95	-0.83
BRISBANE	1059.035	4.02	3.45	3.04	2.25	1.54	0.14	1.07	-0.63	0.98	-0.78	0.94	-0.83
BRISBANE	1059.54	3.96	3.38	2.99	2.17	1.52	0.1	1.06	-0.64	0.98	-0.79	0.94	-0.83
BRISBANE	1059.99	3.77	3.16	2.85	2	1.47	0.02	1.05	-0.66	0.97	-0.8	0.94	-0.84
BRISBANE	1060.345	3.6	2.95	2.72	1.83	1.43	-0.03	1.04	-0.68	0.97	-0.8	0.94	-0.84
BRISBANE	1060.535	3.46	2.81	2.64	1.75	1.41	-0.06	1.03	-0.68	0.97	-0.8	0.94	-0.84
BRISBANE	1061.015	3.43	2.76	2.6	1.68	1.39	-0.09	1.03	-0.69	0.97	-0.81	0.94	-0.84
BRISBANE	1061.53	3.21	2.5	2.45	1.49	1.34	-0.16	1.02	-0.71	0.96	-0.82	0.94	-0.84
BRISBANE	1062.02	3.13	2.39	2.39	1.39	1.32	-0.21	1.01	-0.72	0.96	-0.82	0.95	-0.84
BRISBANE	1062.535	3.08	2.31	2.34	1.31	1.3	-0.25	1.01	-0.74	0.96	-0.83	0.96	-0.84
BRISBANE	1062.94	3.07	2.29	2.33	1.3	1.3	-0.25	1.01	-0.74	0.98	-0.83	0.98	-0.84
BRISBANE	1063.125	3.03	2.23	2.3	1.26	1.29	-0.27	1.01	-0.74	0.98	-0.83	0.98	-0.84
BRISBANE	1063.125	3.03	2.23	2.3	1.26	1.29	-0.27	1.01	-0.74	0.98	-0.83	0.98	-0.84
BRISBANE	1063.31	2.97	2.16	2.26	1.2	1.28	-0.29	1	-0.75	0.98	-0.83	0.98	-0.84
BRISBANE	1063.645	2.68	1.81	2.06	0.94	1.22	-0.38	0.99	-0.77	0.96	-0.84	0.96	-0.84
BRISBANE	1064	2.6	1.71	2.01	0.87	1.2	-0.4	0.99	-0.77	0.97	-0.84	0.97	-0.84
BRISBANE	1064.49	2.5	1.57	1.93	0.77	1.18	-0.43	0.98	-0.78	0.97	-0.84	0.97	-0.84
BRISBANE	1065.01	2.54	1.61	1.96	0.79	1.19	-0.42	0.98	-0.78	0.98	-0.84	0.98	-0.84
BRISBANE	1065.503	2.51	1.58	1.94	0.77	1.19	-0.43	0.98	-0.78	0.98	-0.84	0.98	-0.84
BRISBANE	1065.99	2.54	1.62	1.98	0.79	1.19	-0.42	0.98	-0.78	0.98	-0.84	0.98	-0.85
BRISBANE	1066.505	2.49	1.54	1.92	0.74	1.18	-0.44	0.98	-0.78	0.98	-0.85	0.98	-0.85
BRISBANE	1067.02	2.45	1.49	1.9	0.7	1.17	-0.45	0.98	-0.79	0.98	-0.85	0.98	-0.85
BRISBANE	1067.485	2.35	1.36	1.83	0.6	1.15	-0.49	0.97	-0.8	0.97	-0.85	0.97	-0.85
BRISBANE	1067.965	2.26	1.24	1.77	0.52	1.14	-0.5	0.97	-0.8	0.97	-0.85	0.97	-0.85
BRISBANE	1068.66	2.1	1.04	1.68	0.37	1.11	-0.55	0.97	-0.81	0.97	-0.88	0.97	-0.86
BRISBANE	1069.045	2.02	0.93	1.81	0.31	1.09	-0.57	0.97	-0.82	0.97	-0.86	0.97	-0.86
BRISBANE	1069.535	1.96	0.85	1.57	0.25	1.08	-0.59	0.97	-0.82	0.97	-0.86	0.97	-0.86
BRISBANE	1070.025	1.88	0.74	1.52	0.17	1.07	-0.61	0.97	-0.83	0.97	-0.86	0.97	-0.86
BRISBANE	1070.53	1.77	0.58	1.45	0.05	1.05	-0.65	0.97	-0.83	0.97	-0.86	0.97	-0.66
BRISBANE	1071.04	1.69	0.44	1.39	-0.04	1.04	-0.87	0.97	-0.84	0.97	-0.86	0.97	-0.68
BRISBANE	1071.52	1.71	0.48	1.41	-0.01	1.04	-0.67	0.97	-0.84	0.97	-0.86	0.97	-0.68
BRISBANE	1072.015	1.67	0.4	1.38	-0.08	1.03	-0.69	0.97	-0.84	0.97	-0.86	0.97	-0.86
BRISBANE	1072.02	1.67	0.4	1.38	-0.08	1.03	-0.69	0.97	-0.84	0.97	-0.86	0.97	-0.86
BRISBANE	1072.02	1.67	0.4	1.38	-0.08	1.03	-0.69	0.97	-0.84	0.97	-0.86	0.97	-0.86
BRISBANE	1072.515	1.55	0.25	1.31	-0.17	1.01	-0.71	0.97	-0.85	0.97	-0.87	0.97	-0.87
BRISBANE	1072.995	1.51	0.18	1.28	-0.21	1.01	-0.72	0.98	-0.85	0.98	-0.87	0.98	-0.87
BRISBANE	1073.485	1.41	0.02	1.21	-0.32	1	-0.75	0.98	-0.88	0.98	-0.87	0.98	-0.67
BRISBANE	1074	1.33	-0.07	1.17	-0.38	1	-0.76	0.99	-0.88	0.98	-0.87	0.98	-0.87
BRISBANE	1074.46	1.26	-0.17	1.13	-0.44	1	-0.78	0.99	-0.87	0.99	-0.87	0.99	-0.87
BRISBANE	1074.985	1.12	-0.42	1.04	-0.6	1	-0.82	0.99	-0.87	0.99	-0.87	0.99	-0.87
BRISBANE	1075.48	1.08	-0.55	1.03	-0.69	1.03	-0.84	1.03	-0.87	1.03	-0.87	1.03	-0.87
BRISBANE	1076	1.19	-0.56	1.19	-0.69	1.19	-0.84	1.19	-0.87	1.19	-0.87	1.19	-0.87
BRISBANE	1076.495	1.16	-0.81	1.16	-0.65	1.16	-0.87	1.16	-0.87	1.16	-0.87	1.16	-0.87
BRISBANE	1077.01	1.26	-0.85	1.26	-0.86	1.26	-0.87	1.26	-0.87	1.26	-0.87	1.26	-0.87
BRISBANE	1077.51	1.26	-0.82	1.26	-0.85	1.26	-0.87	1.26	-0.87	1.26	-0.87	1.26	-0.87
BRISBANE	1078.04	1.14	-0.84	1.14	-0.88	1.14	-0.88	1.14	-0.88	1.14	-0.88	1.14	-0.88
BRISBANE	1078.525	0.94	-0.89	0.94	-0.89	0.94	-0.89	0.94	-0.89	0.94	-0.89	0.94	-0.89
BRISBANE	1078.86	0.92	-0.89	0.92	-0.89	0.92	-0.89	0.92	-0.89	0.92	-0.89	0.92	-0.89
BREMER	599.4	19.68	19.63	16.83	16.76	10.16	9.94	5.16	4.71	3.1	2.36	1.82	0.87
BREMER	600	19.68	19.83	16.83	16.76	10.16	9.94	5.16	4.71	3.1	2.37	1.82	0.68
OXLEY	599.4	11.06	10.93	8.88	8.65	4.16	3.46	1.87	0.59	1.34	-0.22	1.08	-0.62
OXLEY	600	11.06	10.93	8.88	8.85	4.17	3.47	1.87	0.59	1.34	-0.22	1.08	-0.62
BREAKFAST	599.4	3.03	2.23	2.3	1.26	1.29	-0.27	1.01	-0.74	0.98	-0.83	0.98	-0.84
BREAKFAST	600	3.03	2.23	2.3	1.26	1.29	-0.27	1.01	-0.74	0.98	-0.83	0.98	-0.84
BULIMBA	599.4	1.67	0.4	1.38	-0.08	1.05	-0.69	1.04	-0.84	1.04	-0.85	1.04	-0.85
BULIMBA	600	1.67	0.4	1.38	-0.08	1.03	-0.69	0.97	-0.84	0.97	-0.86	0.97	-0.86

Design Flows

Location	MIKE 11 Chainage (km)	100 MHWS WL (m AHD)	100 MLWS WL (m AHD)	50 MHWS WL (m AHD)	50 MLWS WL (m AHD)	20 MHWS WL (m AHD)	20 MLWS WL (m AHD)	10 MHWS WL (m AHD)	10 MLWS WL (m AHD)	5 MHWS WL (m AHD)	5 MLWS WL (m AHD)	2 MHWS WL (m AHD)	2 MLWS WL (m AHD)
BRISBANE	1000.143	9303.464	9303.464	7146.197	7146.17	4194.357	4194.376	1610.577	1610.583	917.49	917.482	314.174	313.631
BRISBANE	1000.53	9297.372	9297.246	7142.564	7142.454	4188.504	4188.603	1609.442	1609.472	916.999	916.975	312.021	311.136
BRISBANE	1001.045	9292.855	9292.678	7139.102	7138.902	4183.638	4183.786	1608.274	1608.312	916.352	916.317	309.98	308.183
BRISBANE	1001.59	9287.426	9287.149	7134.395	7134.966	4175.232	4175.471	1606.612	1606.68	915.503	915.443	307.092	304.618
BRISBANE	1002.107	9284.617	9284.309	7132.464	7132.081	4171.577	4171.648	1605.608	1605.876	915.057	914.098	305.798	303.071
BRISBANE	1002.567	9281.508	9281.142	7129.917	7129.464	4167.472	4167.774	1604.962	1605.038	914.648	914.576	304.693	301.787
BRISBANE	1003.03	9278.183	9277.729	7127.383	7126.632	4162.867	4163.23	1603.603	1603.877	914.024	913.959	303.122	299.852
BRISBANE	1003.525	9269.733	9269.424	7120.814	7120.091	4159.106	4159.485	1602.896	1602.953	913.55	913.468	301.818	298.435
BRISBANE	1004.037	9262.881	9262.513	7115.521	7114.645	4151.375	4151.791	1601.287	1601.341	912.771	912.637	299.95	298.468
BRISBANE	1004.555	9253.052	9252.498	7108.201	7107.153	4146.957	4147.349	1600.306	1600.33	912.264	912.091	298.702	295.12
BRISBANE	1605.067	9243.336	9242.742	7100.176	7098.934	4134.163	4134.931	1598.8	1598.754	911.465	911.234	296.701	293.153
BRISBANE	1005.598	9233.802	9233.071	7092.264	7090.793	4123.45	4124.07	1596.575	1596.423	910.384	910.042	294.293	291.221
BRISBANE	1006.035	9225.443	9224.646	7084.887	7083.351	4114.605	4115.064	1594.782	1594.543	909.538	909.077	292.361	289.579
BRISBANE	1006.25	9479.95	9472.91	7261.931	7248.428	3588.777	3563.217	1580.781	1579.299	941.325	960.234	530.593	548.187
BRISBANE	1006.605	9477.525	9470.39	7260.646	7247.27	3586.68	3560.984	1580.497	1578.93	941.135	959.043	530.531	546.98
BRISBANE	1007.16	9472.124	9464.727	7257.208	7244.232	3582.023	3558.414	1580.074	1578.359	940.844	957.338	530.44	545.101
BRISBANE	1007.665	9468.368	9460.869	7253.962	7241.357	3575.65	3550.083	1579.409	1577.577	940.531	955.362	530.336	543.231
BRISBANE	1008.163	9461.359	9453.796	7248.108	7236.187	3568.583	3542.715	1578.642	1576.547	940.06	952.661	530.201	540.566
BRISBANE	1008.685	9459.308	9451.777	7246.453	7234.77	3565.753	3539.845	1578.308	1576.077	939.831	951.111	530.129	539.333
BRISBANE	1009.162	9458.643	9449.109	7244.733	7233.293	3563.095	3537.224	1578.009	1575.677	939.642	949.936	530.071	539.195
BRISBANE	1009.56	9452.698	9445.408	7242.563	7231.425	3559.805	3533.763	1577.658	1575.174	939.417	948.635	530.008	539.047
BRISBANE	1010.105	9447.371	9440.113	7239.036	7228.402	3555.288	3529.211	1577.259	1574.629	939.155	947.277	529.93	538.858
BRISBANE	1010.607	9444.711	9437.559	7238.972	7226.611	3553.009	3526.9	1577.008	1574.255	938.987	946.392	529.879	538.739
BRISBANE	1010.853	9443.376	9436.275	7236.086	7225.853	3551.708	3525.511	1576.859	1574.047	938.888	945.902	529.853	538.67
BRISBANE	1011.245	9441.507	9434.48	7234.589	7224.556	3549.859	3523.538	1576.648	1573.751	938.749	945.202	529.815	538.572
BRISBANE	1011.745	9436.383	9429.754	7231.268	7221.724	3545.833	3519.559	1576.316	1573.275	938.545	944.169	529.758	538.443
BRISBANE	1012.228	9430.447	9424.294	7225.875	7216.952	3540.061	3513.661	1575.954	1572.759	938.315	943.061	529.695	538.268
BRISBANE	1012.705	9425.306	9418.947	7222.863	7213.15	3535.27	3508.727	1575.574	1572.215	938.081	942.058	529.636	538.137
BRISBANE	1013.19	9420.247	9412.864	7218.735	7208.515	3530.596	3504.254	1575.23	1571.72	937.874	941.422	529.583	538.009
BRISBANE	1013.678	9415.522	9406.825	7215.413	7205.272	3527.522	3501.084	1574.936	1571.315	937.701	940.867	529.539	537.899
BRISBANE	1014.11	9410.941	9400.603	7211.52	7202.493	3522.269	3495.738	1574.328	1570.42	937.334	939.897	529.457	537.677
BRISBANE	1014.46	9407.172	9396.453	7207.914	7199.935	3518.219	3491.403	1573.921	1569.827	937.108	939.525	529.404	537.609
BRISBANE	1014.85	9402.892	9392.642	7204.2	7196.806	3512.943	3486.116	1573.499	1569.246	936.897	939.207	529.365	537.498
BRISBANE	1015.325	9400.538	9390.883	7203.077	7195.569	3510.926	3483.918	1573.289	1568.935	936.76	939.014	529.339	537.427
BRISBANE	1015.85	9397.693	9388.572	7201.952	7194.371	3606.76	3481.805	1573.075	1568.633	936.66	938.821	529.313	537.353
BRISBANE	1016.39	9392.821	9384.441	7199.974	7192.196	3505.933	3478.748	1572.792	1568.222	936.515	938.573	529.289	537.284
BRISBANE	1016.885	9388.029	9380.368	7197.712	7189.752	3502.282	3475.022	1572.449	1567.74	936.348	938.309	529.261	537.175
BRISBANE	1017.37	9382.364	9375.447	7194.105	7185.862	3498.685	3471.435	1572.139	1567.288	936.202	938.055	529.234	537.091
BRISBANE	1017.765	9378.532	9371.447	7191.049	7182.665	3496.475	3469.103	1571.965	1567.062	936.127	937.916	529.225	537.049
BRISBANE	1018.06	9375.472	9368.304	7188.417	7179.896	3494.601	3467.39	1571.863	1566.911	936.078	937.825	529.219	537.021
BRISBANE	1018.463	9372.068	9364.86	7186.995	7177.066	3492.097	3464.958	1571.713	1566.682	935.991	937.676	529.208	536.97
BRISBANE	1018.91	9369.867	9362.515	7186.287	7175.795	3490.504	3463.368	1571.57	1566.448	935.928	937.554	529.199	536.93
BRISBANE	1019.293	9367.62	9359.546	7185.185	7173.717	3489.067	3461.93	1571.437	1566.247	935.868	937.435	529.19	536.897
BRISBANE	1019.678	9364.505	9355.769	7183.637	7170.554	3468.085	3458.731	1571.173	1565.907	935.76	937.246	529.174	536.846
BRISBANE	1019.99	9362.817	9353.543	7182.746	7168.978	3464.69	3457.488	1571.065	1565.741	935.707	937.152	529.169	536.817
BRISBANE	1020.32	9360.63	9351.172	7181.833	7167.146	3482.105	3454.43	1570.82	1565.428	935.619	936.966	529.161	536.765
BRISBANE	1020.678	9358.095	9349.614	7180.993	7165.368	3479.588	3451.571	1570.593	1565.088	935.52	936.875	529.152	536.716
BRISBANE	1020.963	9357.919	9348.868	7180.471	7164.375	3478.169	3449.951	1570.471	1564.9	935.461	936.905	529.147	536.685
BRISBANE	1021.317	9357.44	9348.117	7179.856	7163.332	3476.832	3448.681	1570.354	1564.727	935.41	936.933	529.142	536.657
BRISBANE	1021.627	9357.937	9346.306	7178.554	7161.623	3475.245	3447.153	1570.225	1564.543	935.363	936.962	529.136	536.63
BRISBANE	1021.805	9357.113	9345.159	7177.885	7161.183	3474.398	3446.265	1570.151	1564.423	935.332	936.982	529.134	536.615
BRISBANE	1022.2	9357.111	9343.675	7177.045	7160.464	3472.691	3444.55	1570.017	1564.224	935.276	937.044	529.133	536.59
BRISBANE	1022.54	9357.17	9342.645	7176.209	7160.044	3471.48	3443.18	1569.908	1564.056	935.228	937.098	529.132	536.568
BRISBANE	1022.808	9357.783	9342.655	7175.101	7159.349	3469.706	3441.261	1569.765	1563.858	935.176	937.158	529.131	536.546
BRISBANE	1023.305	9356.081	9342.695	7174.287	7159.173	3468.427	3439.692	1569.659	1563.698	935.136	937.216	529.129	536.522
BRISBANE	1023.825	9354.948	9342.917	7174.34	7159.28	3466.897	3438.239	1569.53	1563.494	935.085	937.316	529.128	536.497
BRISBANE	1024.321	9354.302	9343.369	7174.429	7159.553	3465.179	3436.389	1569.392	1563.289	935.031	937.42	529.125	536.474
BRISBANE	1024.818	9353.775	9343.503	7174.55	7159.962	3463.331	3434.53	1569.262	1563.106	934.981	937.512	529.124	536.455
BRISBANE	1025.215	9353.507	9342.941	7174.595	7160.579	3461.603	3432.88	1569.146	1562.919	934.94	937.618	529.127	536.434
BRISBANE	1025.475	9352.377	9341.944	7174.851	7160.927	3460.816	3432.003	1569.064	1562.828	934.919	937.681	529.128	536.422
BRISBANE	1025.88	9348.927	9339.434	7175.627	7161.216	3459.722	3430.713	1568.997	1562.705	934.89	937.767	529.13	536.41
BRISBANE	1026.425	9352.03	9336.398	7176.673	7183.161	3457.554	3428.188	1568.881	1562.511	934.844	937.902	529.133	536.395
BRISBANE	1026.79	9358.438	9346.151	7177.653	7164.681	3456.184	3426.521	1568.784	1562.361	934.807	938.008	529.134	536.383
BRISBANE	1027.03	9362.868	9349.748	7178.648	7165.365	3455.403	3425.603	1568.71	1562.282	934.787	938.08	529.135	536.376
BRISBANE	1027.42	9374.722	9360.427	7180.802	7168.872	3454.391	3424.372	1568.633	1562.168	934.765	938.167	529.137	536.365
BRISBANE	1027.93	9381.447	9370.283	7184.523	7171.715	3451.618	3421.138	1568.463	1561.921	934.715	938.42	529.14	536.342
BRISBANE	1028.43	9381.41	9374.747	7189.049	7176.63	3449.2	3418.744	1568.309	1561.687	934.682	938.665	529.146	536.33
BRISBANE	1028.72	9380.047	9375.709	7193.061	7179.604	3448	3417.627	1568.253	1561.604	934.644	938.746	529.149	536.326
BRISBANE	1028.98	9394.418	9382.549	7188.521	7174.092	3446.891	3416.624	1568.193	1561.517	934.627	938.854	529.153	536.321
BRISBANE	1029.44	9408.891	9397.373	7180.081	7168.552	3445.612	3414.928	1568.1	1561.393	934.605	939.012	529.158	536.313
BRISBANE	1029.95	9399.728	9383.607	7173.273	7163.115	3444.052	3412.884	1568.003	1561.247	934.58	939.109	529.164	536.304
BRISBANE	1030.545	9368.642	9358.326	7163.596	7152.102	3440.897	3407.956	1567.883	1561.073	934.547	939.431	529.171	536.294
BRISBANE	1031.065	9336.077	9327.045	7154.072	7141.729	3439.284	3406.432	1567.789	1560.948	934.522	939.604	529.175	536.291
BRISBANE	1031.48	9310.808	9302.011	7146.679	7133.946	3437.672	3404.762	1567.717	1560.85	934.503	939.745	529.179	536.289
BRISBANE	1031.847	9304.399	9295.919	7144.347	7131.409	3436.728	3403.743	1567.662	1560.768	934.492	939.874	529.183	536.286
BRISBANE	1032.112	9304.404	9291.54	7138.654	7126.49	3435.779	3402.592	1567.611	1560.696	934.481	939.991	529.186	536.284
BRISBANE	1032.408	9305.216	9290.79	7135.541	7123.501	3434.76	3401.266	1567.547	1560.606	934.468	940.136	529.19	536.281
BRISBANE	1032.632	9304.731	9289.126	7132.297	7120.696	3433.582	3400.075	1567.479	1560.511	934.453	940.301	529.196	536.278
BRISBANE	1033.225	9301.628	9286.007	7127.425	7116.651	3432.349	3399.503	1567.42	1560.431	934.44	940.445	529.202	536.275
BRISBANE	1033.635	9298.206	9282.102	7121.913	7112.327	3430.75	3398.931	1567.357	1560.354	934.426	940.599	529.209	536.272
BRISBANE	1034.135	9288.485	9275.248	7118.681	7108.865	3430.156	3398.496	1567.296	1560.268	934.411	940.774	529.215	536.273
BRISBANE	1034.83	9281.703	9266.419	7116.712	7103.453	3430.247	3398.171	1567.231	1560.174	934.399	940.961	529.222	536.274
BRISBANE	1035.152	9268.607	9253.132	7111.548	7098.249	3430.539	3397.659	1567.155	1560.076	934.388	941.176	529.23	536.275
BRISBANE	1035.657	9258.785	9242.101	7107.82	7094.75	3430.544	3397.253	1567.064	1559.979	934.375	941.4	529.238	536.275
BRISBANE	1036.16	9255.933	9237.346	7105.264	7092.285	3430.137	3396.681	1567.002	1559.895	934.365	941.595	529.245	536.276
BRISBANE	1036.615	9253.063	9232.369	7100.661	7088.018	3427.509	3395.066	1566.94	1559.609	934.353	941.799	529.252	536.276
BRISBANE	1036.842	9251.721	9230.78	7098.869	7086.321	3425.64	3394.239	1566.901	1559.763	934.346	941.927	529.256	536.276
BRISBANE	1037.002	9250.805	9229.723	7097.791	7085.294	3424.85	3393.698	1566.881	1559.74	934.343	941.983	529.258	536.276
BRISBANE	1037.11	9250.453	9229.326	7097.333	7084.843	3425.697	3393.326	1566.87	1559.726	934.341	942.03	529.259	536.276
BRISBANE	1037.23	9250.069	9228.895	7096.849	7064.364	3424.446	3393.998	1566.857	1559.71	934.338	942.076	529.26	536.276
BRISBANE	1937.455	9248.924	9227.633	7095.655	7083.169	3425.606	3395.102	1566.83	1559.677	934.333	942.184	529.263	536.277
BRISBANE	1037.855	9243.249	9221.675	7089.855	7077.481	3425.868	3396.295	1566.765	1559.6	934.325	942.374	529.269	536.281
BRISBANE	1038.343	9233.175	9211.437	7081.584	7069.279	3425.463	3395.902	1566.695	1559.514	934.319	942.618	529.277	536.286
BRISBANE	1038.85	9219.847	9198.141	7073.094	7059.805	3423.434	3393.736	1566.605	1559.42	934.31	942.931	529.29	536.292
BRISBANE	1039.332	9206.395	9184.718	7065.183	7051.233	3419.865	3389.898	1566.5	1559.329	934.3	943.206	529.303	536.297
BRISBANE	1039.698	9196.141	9174.417	7058.481	7044.134	3417.039	3368.741	1566.416	1559.252	934.292	943.458	529.313	536.301
BRISBANE	1039.959	8886.733	8854.375	6852.651	6835.463	3334.846	3310.214	1565.63	1559.056	979.586	983.273	564.5	588.479
BRISBANE	1040.29	8865.374	8852.08	6851.157	6833.737	3333.614	3308.329	1565.616	1559.002	979.693	983.248	564.709	588.571
BRISBANE	1040.75	8863.411	8850.59	6849.102	6831.535	3331.78	3305.916	1565.602	1558.964	979.776	983.23	564.866	588.647
BRISBANE	1041.12	8882.285	8849.78	6847.974	6830.396	3330.459	3304.062	1565.591	1558.923	979.852	983.212	565.018	588.724
BRISBANE	1041.345	8880.916	8848.818	6847.034	6829.468	3329.556	3302.654	1565.583	1558.896	979.907	983.205	565.153	588.779

Design Flows

Location	MIKE 11 Chainage (km)	100 MHWS WL (m AHD)	100 MLWS WL (m AHD)	50 MHWS WL (m AHD)	50 MLWS WL (m AHD)	20 MHWS WL (m AHD)	20 MLWS WL (m AHD)	10 MHWS WL (m AHD)	10 MLWS WL (m AHD)	5 MHWS WL (m AHD)	5 MLWS WL (m AHD)	2 MHWS WL (m AHD)	2 MLWS WL (m AHD)
BRISBANE	1041.58	8880.028	8848.165	6846.194	6828.85	3328.57	3301.691	1565.575	1558.876	979.958	983.215	565.291	588.83
BRISBANE	1841.83	8879.224	8847.616	6845.573	6828.063	3327.898	3300.851	1565.57	1558.859	979.997	983.222	565.401	588.869
BRISBANE	1042.098	8878.319	8847.069	6844.784	6827.576	3326.901	3299.935	1565.568	1558.842	980.038	983.229	565.514	588.909
BRISBANE	1042.375	8877.838	8846.773	6844.385	6827.423	3326.334	3299.242	1565.566	1558.026	980.073	983.235	565.615	588.944
BRISBANE	1042.713	8877.082	8846.405	6843.759	6827.219	3325.824	3298.651	1565.563	1558.804	980.123	983.243	565.76	589.043
BRISBANE	1043.318	8874.803	8845.153	6841.869	6826.348	3325.5	3298.609	1565.558	1558.761	980.215	983.256	566.029	589.23
BRISBANE	1043.893	8874.427	8843.659	6840.041	6825.217	3325.249	3298.621	1565.552	1558.729	980.309	983.273	566.307	589.432
BRISBANE	1044.2	8874.192	8843.574	6839.469	6824.608	3325.112	3298.45	1565.549	1558.713	980.355	983.281	566.441	589.526
BRISBANE	1044.473	8873.823	8843.356	6839.098	6824.337	3325.047	3298.266	1565.546	1558.7	980.391	983.288	566.549	589.601
BRISBANE	1044.732	8873.468	8843.815	6839.385	6823.715	3324.928	3298.004	1565.543	1558.686	980.432	983.296	566.668	589.682
BRISBANE	1045.13	8873.082	8844.463	6840.401	6823.583	3324.576	3297.418	1565.54	1558.661	980.501	983.31	566.871	589.819
BRISBANE	1045.643	8873.465	8845.741	6842.59	6828.254	3324.042	3296.48	1565.543	1558.631	980.618	983.358	567.173	590.022
BRISBANE	1046.033	8875.684	8847.968	6845.189	6834.282	3323.453	3295.784	1565.545	1558.615	980.711	983.395	567.385	590.158
BRISBANE	1046.26	8876.822	8848.996	6846.024	6836.204	3323.23	3295.397	1565.546	1558.607	980.758	983.414	567.491	590.23
BRISBANE	1046.46	8877.223	8849.311	6846.326	6836.931	3323.067	3295.132	1565.547	1558.601	980.791	983.428	567.566	590.3
BRISBANE	1046.74	8878.007	8850.184	6846.892	6838.351	3322.757	3294.632	1565.548	1558.59	980.851	983.453	567.705	590.433
BRISBANE	1047.125	8879.531	8851.131	6847.897	6840.618	3322.347	3293.977	1565.55	1558.575	980.93	983.485	567.89	590.602
BRISBANE	1047.833	8882.262	8853.214	6848.985	6842.5	3322.019	3293.659	1565.551	1558.562	980.999	983.513	568.052	590.755
BRISBANE	1048.145	8888.386	8859.582	6850.066	6844.137	3321.972	3293.613	1565.552	1558.555	981.061	983.538	568.203	590.89
BRISBANE	1048.833	8895.719	8870.632	6851.083	6847.471	3321.979	3293.468	1565.553	1558.547	981.153	983.576	568.438	591.095
BRISBANE	1049.005	8900.692	8872.943	6851.272	6847.405	3321.934	3293.272	1565.56	1558.539	981.236	983.611	568.661	591.278
BRISBANE	1049.245	8902.96	8874.269	6851.245	6847.363	3321.897	3293.15	1565.564	1558.535	981.281	983.629	568.782	591.376
BRISBANE	1049.48	8906.191	8873.823	6851.143	6846.59	3321.862	3293.054	1565.567	1558.531	981.313	983.642	568.868	591.447
BRISBANE	1049.73	8909.705	8873.491	6850.865	6845.927	3321.814	3292.933	1565.57	1558.528	981.348	983.656	568.963	591.522
BRISBANE	1050.15	8912.74	8872.146	6851.218	6846.757	3321.715	3292.789	1565.575	1558.522	981.408	983.68	569.124	591.648
BRISBANE	1050.845	8913.679	8875.089	6854.72	6845.948	3321.499	3292.587	1565.583	1558.514	981.503	983.716	569.381	591.85
BRISBANE	1051.11	8914.909	8886.069	6855.168	6845.81	3321.329	3292.42	1565.589	1558.514	981.571	983.741	569.564	591.993
BRISBANE	1051.827	8915.874	8949.347	6854.373	6884.7	3321.125	3292.21	1565.594	1558.514	981.842	983.767	569.756	592.146
BRISBANE	1052.102	8966.844	9022.563	6872.704	6903.548	3320.909	3291.987	1565.6	1558.513	981.713	983.79	569.949	592.294
BRISBANE	1052.37	9004.557	9051.565	6880.609	6919.105	3320.87	3291.852	1565.603	1558.513	981.753	983.803	570.057	592.38
BRISBANE	1052.492	9020.658	9065.57	6884.594	6928.535	3320.879	3291.804	1565.604	1558.513	981.772	983.809	570.107	592.421
BRISBANE	1052.625	9034.227	9079.185	6888.098	6938.271	3320.865	3291.76	1565.605	1558.512	981.789	983.814	570.152	592.457
BRISBANE	1052.98	9030.605	9057.243	6884.558	6920.624	3320.891	3291.653	1565.609	1558.512	981.836	983.83	570.282	592.562
BRISBANE	1053.355	9007.547	9038.604	6876.86	6901.537	3320.873	3291.524	1566.614	1558.511	981.902	983.861	570.46	592.708
BRISBANE	1053.843	8978.46	9013.314	6868.408	6864.668	3320.857	3291.521	1565.618	1558.51	981.961	983.888	570.608	592.835
BRISBANE	1054.27	9008.445	8988.892	6853.53	6898.626	3320.797	3291.477	1565.632	1558.515	982.093	983.937	570.902	593.103
BRISBANE	1054.68	8991.158	6965.619	6849.721	6888.543	3320.713	3291.401	1565.846	1558.522	982.218	983.981	571.181	593.339
BRISBANE	1054.825	8986.193	6958.035	6850.682	6865.284	3320.686	3291.375	1565.65	1558.525	982.261	983.995	571.276	593.418
BRISBANE	1055.125	8982.217	6952.273	6851.896	6881.964	3320.648	3291.337	1565.656	1558.528	982.319	984.016	571.405	593.53
BRISBANE	1055.35	6975.315	6946.009	6852.07	6878.431	3320.616	3291.304	1565.66	1558.531	982.363	984.032	571.504	593.621
BRISBANE	1055.69	6962.295	6934.094	6851.954	6870.703	3320.567	3291.255	1565.667	1558.534	982.428	984.055	571.648	593.749
BRISBANE	1056.18	8933.568	6929.338	6850.229	6856.362	3320.581	3291.162	1565.677	1558.541	982.533	984.093	571.884	593.971
BRISBANE	1056.547	8919.68	8928.79	6848.614	6851.125	3320.6	3291.1	1565.684	1558.544	982.602	984.117	572.039	594.11
BRISBANE	1056.78	8911.655	6926.861	6847.431	6046.921	3320.609	3291.061	1565.688	1558.547	982.643	984.131	572.132	594.195
BRISBANE	1056.92	8908.464	6925.429	6846.794	6844.995	3320.613	3291.042	1565.69	1558.548	982.683	984.138	572.178	594.235
BRISBANE	1057.02	8903.181	8924.51	6846.359	6843.698	3320.616	3291.028	1565.692	1558.548	982.678	984.143	572.211	594.266
BRISBANE	1057.31	8893.181	8919.665	6844.433	6838.845	3320.625	3290.987	1565.697	1558.551	982.729	984.16	572.326	594.389
BRISBANE	1057.765	8888.592	6912.029	6841.589	6833.72	3320.633	3291	1565.704	1558.556	982.807	984.188	572.503	594.534
BRISBANE	1058.135	8891.701	6906.075	6839.986	6031.284	3320.835	3291.003	1565.709	1558.56	982.865	984.208	572.634	594.657
BRISBANE	1058.38	8893.817	6901.917	6839.595	6829.805	3320.635	3291.004	1565.713	1558.564	982.905	984.221	572.725	594.742
BRISBANE	1058.633	8895.205	6898.157	6839.288	6830.546	3320.635	3291.003	1565.717	1558.568	982.939	984.232	572.804	594.809
BRISBANE	1058.885	8895.835	6892.583	6838.859	6831.101	3320.633	3291	1565.72	1558.572	982.98	984.245	572.897	594.893
BRISBANE	1059.287	8896.655	6881.016	6839.13	6831.616	3320.633	3290.994	1565.726	1558.577	983.03	984.262	573.01	595.002
BRISBANE	1059.765	8892.905	6865.801	6839.461	6830.617	3320.683	3290.977	1565.734	1558.587	983.119	984.291	573.217	595.199
BRISBANE	1060.168	8890.442	6865.143	6839.408	6829.365	3320.726	3290.956	1565.742	1558.596	983.208	984.318	573.423	595.396
BRISBANE	1060.44	8885.811	8867.869	6839.19	6828.153	3320.747	3290.947	1565.746	1558.599	983.243	984.329	573.508	595.475
BRISBANE	1060.775	8864.825	6869.217	6839.126	6827.511	3320.784	3290.937	1565.749	1558.603	983.282	984.341	573.597	595.564
BRISBANE	1061.273	6876.771	6871.508	6838.332	6826.053	3320.795	3290.914	1565.757	1558.611	983.359	984.364	573.78	595.747
BRISBANE	1061.775	6874.195	6872.389	6837.995	6824.987	3320.819	3290.915	1565.763	1558.618	983.426	984.383	573.941	595.911
BRISBANE	1062.277	6874.114	6872.087	6837.479	6824.015	3320.842	3290.935	1565.77	1558.626	983.504	984.403	574.128	596.097
BRISBANE	1062.738	6875.637	8869.607	6837.04	6923.858	3320.885	3290.954	1565.78	1558.635	983.604	984.425	574.363	596.325
BRISBANE	1063.033	6875.889	8868.669	6836.708	6823.163	3320.878	3290.963	1565.787	1558.842	983.691	984.439	574.524	596.482
BRISBANE	1063.217	8865.884	8847.785	6835.327	6823.333	3320.975	3291.018	1565.827	1558.677	992.098	990.711	582.304	603.795
BRISBANE	1063.477	8865.604	8846.198	6835.313	6823.191	3321.905	3291.024	1565.833	1558.682	992.175	990.73	582.428	603.903
BRISBANE	1063.822	8865.378	8845.398	6835.269	6823.08	3321.029	3291.03	1565.839	1558.686	992.246	990.747	582.544	603.995
BRISBANE	1064.245	8864.798	8844.425	6835.222	6822.929	3321.058	3291.036	1565.845	1558.691	992.33	990.769	582.68	604.117
BRISBANE	1064.75	8864.007	8843.262	6835.09	6822.768	3321.089	3291.041	1565.852	1558.698	992.425	990.794	582.833	604.256
BRISBANE	1065.257	8863.129	8842.311	6834.865	6822.551	3321.122	3291.043	1565.86	1558.705	992.534	990.822	583.001	604.411
BRISBANE	1065.747	8862.959	8842.571	6834.67	6822.257	3321.152	3291.043	1565.868	1558.712	992.642	990.851	583.167	604.564
BRISBANE	1066.246	8862.391	8842.525	6834.391	6821.777	3321.168	3291.057	1565.877	1558.72	992.777	990.884	583.368	604.773
BRISBANE	1066.762	8861.195	8842.164	6833.992	6821.146	3321.224	3291.092	1565.868	1558.728	992.92	990.921	583.578	604.993
BRISBANE	1067.252	8861.133	8841.479	6833.872	6820.475	3321.257	3291.121	1565.897	1558.736	993.051	990.952	583.767	605.163
BRISBANE	1067.725	8861.183	8840.764	6834.131	6819.863	3321.285	3291.144	1565.905	1558.743	993.172	990.98	583.938	605.344
BRISBANE	1068.313	8861.402	8840.032	6834.398	6820.118	3321.31	3291.166	1565.913	1558.752	993.289	991.012	584.101	605.507
BRISBANE	1068.852	8861.532	8839.329	6834.529	6820.222	3321.329	3291.181	1565.92	1558.758	993.381	991.05	584.228	605.627
BRISBANE	1069.29	8861.639	8838.712	6834.624	6820.256	3321.344	3291.194	1565.925	1558.764	993.457	991.066	584.332	605.735
BRISBANE	1069.78	8861.726	8837.784	6834.717	6820.207	3321.364	3291.209	1565.932	1558.772	993.58	991.135	584.473	605.873
BRISBANE	1070.277	8861.763	8837.056	6834.76	6820.068	3321.379	3291.221	1565.937	1558.777	993.634	991.174	584.576	605.976
BRISBANE	1070.785	8861.849	8836.241	6834.774	6819.858	3321.4	3291.233	1565.942	1558.783	993.709	991.217	584.682	606.081
BRISBANE	1071.28	8882.056	8835.568	6834.746	6819.53	3321.426	3291.245	1565.947	1558.789	993.776	991.256	584.781	606.173
BRISBANE	1071.768	8862.214	8834.834	6834.655	6819.089	3321.449	3291.256	1565.952	1558.794	993.838	991.296	584.675	606.261
BRISBANE	1072.018	8862.196	8834.368	6834.562	6818.652	3321.468	3291.265	1565.955	1558.798	993.868	991.326	584.952	606.323
BRISBANE	1072.268	6855.793	8834.087	6832.073	6815.654	3321.83	3291.375	1565.985	1558.828	999.365	995.639	590.288	611.09
BRISBANE	1072.755	6855.77	8834.021	6832.072	6815.958	3321.649	3291.395	1565.969	1558.832	999.445	995.675	590.377	611.163
BRISBANE	1073.24	8855.727	8833.957	6832.063	6816.042	3321.669	3291.414	1565.993	1558.836	999.507	995.707	590.466	611.229
BRISBANE	1073.742	8855.753	8833.902	6832.055	6816.121	3321.686	3291.432	1565.996	1558.84	999.561	995.741	590.546	611.294
BRISBANE	1074.23	6855.813	8633.657	6832.046	6816.172	3321.699	3291.447	1565.999	1558.843	999.603	995.77	590.61	611.344
BRISBANE	1074.723	8855.68	8833.622	6832.038	6816.216	3321.712	3291.46	1566.002	1558.846	999.644	995.799	590.674	611.393
BRISBANE	1075.232	8855.936	8833.851	6832.037	6816.278	3321.722	3291.472	1580.004	1558.849	999.674	995.82	590.724	611.431
BRISBANE	1075.74	8856.037	8833.935	6832.046	6816.356	3321.736	3291.483	1566.006	1558.851	999.712	995.84	590.791	611.468
BRISBANE	1076.248	8856.128	8834.24	6832.169	6816.401	3321.75	3291.498	1566.009	1558.854	999.748	995.862	590.851	611.507
BRISBANE	1076.752	8856.269	8834.452	6832.326	6816.718	3321.767	3291.508	1566.013	1558.856	999.791	995.878	590.953	611.535
BRISBANE	1077.26	8856.348	8834.567	6832.41	6817.02	3321.776	3291.514	1568.015	1558.858	999.813	995.896	591.002	611.558
BRISBANE	1077.775	8858.383	8834.617	6832.448	6817.174	3321.761	3291.517	1566.016	1558.859	999.822	995.904	591.025	611.568
BRISBANE	1078.283	8856.399	8834.544	6832.467	6817.26	3321.763	3291.52	1568.016	1558.859	999.827	995.909	591.036	611.574
BRISBANE	1078.592	8856.402	6834.642	6832.467	6817.259	3321.763	3291.52	1566.016	1558.859	999.827	995.909	591.036	611.574
BREMER	599.7	2105.19	2087.456	1755.574	1760.179	1027.544	1008.424	919.475	924.379	669.212	674.278	265.531	268.595
OXLEY	599.7	1180.069	1190.179	837.896	844.448	470.814	498.84	398.595	400.309	306.449	305.948	164.058	163.253
BREAKFAST	599.7	407.552	408.359	334.676	334.797	248.567	248.388	201.343	201.288	167.998	167.995	99.505	99.496
BULIMBA	599.7	841.322	848.907	806.8	536.847	696.537	387.875	643.038	300.887	643.038	248.443	643.038	161.451

Table E-3 - 100 Year ARI Design Flood & 1974 Historical Event Comparison

Flood Levels

River Name	Chainage (km)	100 year ARI (m AHD)	1974 (m AHD)	Difference (m)
BRISBANE	1000	22.73	22.02	0.71
BRISBANE	1000.285	22.62	21.93	0.69
BRISBANE	1000.775	22.35	21.74	0.61
BRISBANE	1001.315	22.22	21.65	0.57
BRISBANE	1001.865	21.65	21.23	0.42
BRISBANE	1002.35	21.27	20.96	0.31
BRISBANE	1002.785	21.13	20.87	0.26
BRISBANE	1003.275	20.89	20.7	0.19
BRISBANE	1003.775	20.65	20.53	0.12
BRISBANE	1004.3	20.25	20.25	0
BRISBANE	1004.81	20.19	20.22	-0.03
BRISBANE	1005.325	20	20.08	-0.08
BRISBANE	1005.87	19.8	19.95	-0.15
BRISBANE	1006.2	19.68	19.89	-0.21
BRISBANE	1006.2	19.68	19.89	-0.21
BRISBANE	1006.3	19.64	19.81	-0.17
BRISBANE	1006.91	19.54	19.7	-0.16
BRISBANE	1007.41	19.49	19.66	-0.17
BRISBANE	1007.92	19.39	19.56	-0.17
BRISBANE	1008.445	19.14	19.31	-0.17
BRISBANE	1008.925	19.06	19.23	-0.17
BRISBANE	1009.4	18.97	19.14	-0.17
BRISBANE	1009.72	18.94	19.11	-0.17
BRISBANE	1010.49	18.59	18.76	-0.17
BRISBANE	1010.725	18.58	18.75	-0.17
BRISBANE	1010.98	18.5	18.66	-0.16
BRISBANE	1011.51	18.49	18.66	-0.17
BRISBANE	1011.98	18.48	18.65	-0.17
BRISBANE	1012.475	18.4	18.57	-0.17
BRISBANE	1012.935	18.32	18.49	-0.17
BRISBANE	1013.445	18.18	18.35	-0.17
BRISBANE	1013.91	18.08	18.25	-0.17
BRISBANE	1014.31	18.02	18.2	-0.18
BRISBANE	1014.61	18.05	18.22	-0.17
BRISBANE	1015.09	17.89	18.06	-0.17
BRISBANE	1015.56	17.7	17.87	-0.17
BRISBANE	1016.14	17.6	17.77	-0.17
BRISBANE	1016.64	17.47	17.64	-0.17
BRISBANE	1017.13	17.28	17.44	-0.16
BRISBANE	1017.61	17.09	17.26	-0.17
BRISBANE	1017.92	16.96	17.13	-0.17
BRISBANE	1018.2	16.9	17.07	-0.17
BRISBANE	1018.725	16.6	16.76	-0.16
BRISBANE	1019.095	16.51	16.67	-0.16
BRISBANE	1019.49	16.48	16.64	-0.16
BRISBANE	1019.865	16.24	16.41	-0.17
BRISBANE	1020.115	16.3	16.46	-0.16
BRISBANE	1020.525	16.28	16.44	-0.16
BRISBANE	1020.83	16.14	16.3	-0.16
BRISBANE	1021.095	15.95	16.11	-0.16
BRISBANE	1021.539	15.86	16.02	-0.16
BRISBANE	1021.715	15.86	16.02	-0.16
BRISBANE	1021.895	15.77	15.93	-0.16
BRISBANE	1022.505	15.55	15.7	-0.15
BRISBANE	1022.575	15.61	15.77	-0.16
BRISBANE	1023.04	15.29	15.44	-0.15
BRISBANE	1023.57	15.2	15.34	-0.14
BRISBANE	1024.08	15.13	15.27	-0.14
BRISBANE	1024.563	15.05	15.19	-0.14
BRISBANE	1025.07	14.98	15.12	-0.14
BRISBANE	1025.36	14.83	14.97	-0.14

Discharges

River Name	Chainage (km)	100 year ARI (m3/s)	1974 (m3/s)	Difference (m3/s)
BRISBANE	1000.143	9303.484	7503.995	1799.489
BRISBANE	1000.53	9297.372	7504.911	1792.461
BRISBANE	1001.045	9292.855	7505.759	1787.096
BRISBANE	1001.59	9287.426	7507	1780.426
BRISBANE	1002.107	9284.617	7507.601	1777.016
BRISBANE	1002.567	9281.508	7508.299	1773.209
BRISBANE	1003.03	9278.163	7509.059	1769.104
BRISBANE	1003.525	9269.733	7511.127	1758.606
BRISBANE	1004.037	9262.881	7512.891	1749.99
BRISBANE	1004.555	9253.052	7515.582	1737.47
BRISBANE	1005.067	9243.336	7518.396	1724.94
BRISBANE	1005.598	9233.802	7521.283	1712.519
BRISBANE	1006.035	9225.443	7523.527	1701.916
BRISBANE	1006.25	9479.95	9572.466	-92.516
BRISBANE	1006.605	9477.525	9570.411	-92.886
BRISBANE	1007.16	9472.124	9566.503	-94.379
BRISBANE	1007.665	9468.388	9563.782	-95.394
BRISBANE	1008.183	9461.359	9558.617	-97.258
BRISBANE	1008.685	9459.308	9557.031	-97.723
BRISBANE	1009.162	9456.643	9554.967	-98.324
BRISBANE	1009.56	9452.898	9552.083	-99.185
BRISBANE	1010.105	9447.371	9547.806	-100.435
BRISBANE	1010.607	9444.711	9545.796	-101.085
BRISBANE	1010.853	9443.376	9544.799	-101.423
BRISBANE	1011.245	9441.507	9543.406	-101.899
BRISBANE	1011.745	9436.383	9540.278	-103.895
BRISBANE	1012.228	9430.447	9537.054	-106.607
BRISBANE	1012.705	9425.306	9534.643	-109.337
BRISBANE	1013.19	9420.247	9531.954	-111.707
BRISBANE	1013.678	9415.522	9529.259	-113.737
BRISBANE	1014.11	9410.941	9526.593	-115.652
BRISBANE	1014.46	9407.172	9524.435	-117.263
BRISBANE	1014.85	9402.892	9522.305	-119.413
BRISBANE	1015.325	9400.538	9521.374	-120.836
BRISBANE	1015.85	9397.693	9520.201	-122.508
BRISBANE	1016.39	9392.821	9517.948	-125.127
BRISBANE	1016.885	9388.029	9515.749	-127.72
BRISBANE	1017.37	9382.364	9513.054	-130.69
BRISBANE	1017.765	9378.532	9511.438	-132.906
BRISBANE	1018.06	9375.472	9510.117	-134.645
BRISBANE	1018.463	9372.068	9508.684	-136.616
BRISBANE	1018.91	9369.887	9507.556	-137.669
BRISBANE	1019.293	9367.62	9506.018	-138.398
BRISBANE	1019.678	9364.505	9503.973	-139.468
BRISBANE	1019.99	9362.817	9502.439	-139.622
BRISBANE	1020.32	9360.63	9500.771	-140.141
BRISBANE	1020.678	9358.095	9500.164	-142.069
BRISBANE	1020.963	9357.919	9500.018	-142.099
BRISBANE	1021.317	9357.44	9500.119	-142.679
BRISBANE	1021.627	9357.037	9500.17	-143.133
BRISBANE	1021.805	9357.113	9500.032	-142.919
BRISBANE	1022.2	9357.111	9499.977	-142.866
BRISBANE	1022.54	9357.17	9499.89	-142.72
BRISBANE	1022.808	9357.783	9499.333	-141.55
BRISBANE	1023.305	9356.081	9499.624	-143.543
BRISBANE	1023.825	9354.948	9498.949	-144.001
BRISBANE	1024.321	9354.302	9496.848	-142.546
BRISBANE	1024.816	9353.775	9493.325	-139.55
BRISBANE	1025.215	9353.507	9496.914	-143.407
BRISBANE	1025.475	9352.377	9498.772	-146.395
BRISBANE	1025.88	9348.927	9500.523	-151.596

Table E-3 - 100 Year ARI Design Flood & 1974 Historical Event Comparison

Flood Levels

River Name	Chainage (km)	100 year ARI (m AHD)	1974 (m AHD)	Difference (m)
BRISBANE	1025.59	14.65	14.78	-0.13
BRISBANE	1026.17	14.59	14.73	-0.14
BRISBANE	1026.68	14.46	14.59	-0.13
BRISBANE	1026.9	14.33	14.46	-0.13
BRISBANE	1027.16	14.25	14.38	-0.13
BRISBANE	1027.68	14.33	14.46	-0.13
BRISBANE	1028.18	14.29	14.42	-0.13
BRISBANE	1028.68	14.15	14.27	-0.12
BRISBANE	1028.76	14.05	14.17	-0.12
BRISBANE	1029.2	13.87	13.98	-0.11
BRISBANE	1029.68	13.84	13.95	-0.11
BRISBANE	1030.22	13.81	13.93	-0.12
BRISBANE	1030.87	13.69	13.8	-0.11
BRISBANE	1031.26	13.55	13.66	-0.11
BRISBANE	1031.7	13.15	13.24	-0.09
BRISBANE	1031.995	13.29	13.38	-0.09
BRISBANE	1032.23	13.2	13.29	-0.09
BRISBANE	1032.585	13.09	13.17	-0.08
BRISBANE	1033.08	12.93	13	-0.07
BRISBANE	1033.37	12.85	12.92	-0.07
BRISBANE	1033.9	12.64	12.7	-0.06
BRISBANE	1034.37	12.42	12.47	-0.05
BRISBANE	1034.89	12.33	12.38	-0.05
BRISBANE	1035.414	12.14	12.17	-0.03
BRISBANE	1035.9	11.83	11.84	-0.01
BRISBANE	1036.46	11.71	11.72	-0.01
BRISBANE	1036.77	11.6	11.59	0.01
BRISBANE	1036.915	11.48	11.46	0.02
BRISBANE	1037.09	11.42	11.4	0.02
BRISBANE	1037.175	11.37	11.35	0.02
BRISBANE	1037.285	11.28	11.25	0.03
BRISBANE	1037.625	11.32	11.3	0.02
BRISBANE	1038.085	11.28	11.25	0.03
BRISBANE	1038.6	11.21	11.18	0.03
BRISBANE	1039.1	11.13	11.09	0.04
BRISBANE	1039.565	11.09	11.04	0.05
BRISBANE	1039.828	11.06	11.01	0.05
BRISBANE	1039.828	11.06	11.01	0.05
BRISBANE	1040.09	11.04	10.99	0.05
BRISBANE	1040.49	10.92	10.86	0.06
BRISBANE	1041.01	10.86	10.8	0.06
BRISBANE	1041.23	10.84	10.77	0.07
BRISBANE	1041.46	10.78	10.71	0.07
BRISBANE	1041.7	10.73	10.66	0.07
BRISBANE	1041.96	10.61	10.52	0.09
BRISBANE	1042.235	10.41	10.3	0.11
BRISBANE	1042.515	10.38	10.28	0.1
BRISBANE	1042.91	10.19	10.06	0.13
BRISBANE	1043.725	9.92	9.77	0.15
BRISBANE	1044.06	9.79	9.63	0.16
BRISBANE	1044.34	9.66	9.48	0.18
BRISBANE	1044.605	9.62	9.44	0.18
BRISBANE	1044.86	9.59	9.4	0.19
BRISBANE	1045.4	9.44	9.24	0.2
BRISBANE	1045.885	9.37	9.15	0.22
BRISBANE	1046.18	9.29	9.06	0.23
BRISBANE	1046.34	9.24	9	0.24
BRISBANE	1046.58	9.21	8.97	0.24
BRISBANE	1046.9	9.06	8.8	0.26
BRISBANE	1047.35	8.78	8.49	0.29
BRISBANE	1047.915	8.59	8.28	0.31

Discharges

River Name	Chainage (km)	100 year ARI (m3/s)	1974 (m3/s)	Difference (m3/s)
BRISBANE	1026.425	9352.03	9507.514	-155.484
BRISBANE	1026.79	9358.438	9511.216	-152.778
BRISBANE	1027.03	9362.888	9512.011	-149.123
BRISBANE	1027.42	9374.722	9521.113	-146.391
BRISBANE	1027.93	9381.447	9537.087	-155.64
BRISBANE	1028.43	9381.41	9548.277	-166.867
BRISBANE	1028.72	9380.047	9552.917	-172.87
BRISBANE	1028.98	9394.418	9556.043	-161.625
BRISBANE	1029.44	9408.891	9559.423	-150.532
BRISBANE	1029.95	9399.728	9548.001	-148.273
BRISBANE	1030.545	9368.842	9518.987	-150.145
BRISBANE	1031.065	9336.077	9493.278	-157.201
BRISBANE	1031.48	9310.808	9482.267	-171.459
BRISBANE	1031.847	9304.399	9483.235	-178.836
BRISBANE	1032.112	9304.404	9484.573	-180.169
BRISBANE	1032.408	9305.216	9484.958	-179.742
BRISBANE	1032.832	9304.731	9484.403	-179.672
BRISBANE	1033.225	9301.628	9481.505	-179.877
BRISBANE	1033.635	9296.206	9476.464	-180.258
BRISBANE	1034.135	9288.485	9469.46	-180.975
BRISBANE	1034.63	9281.703	9463.072	-181.369
BRISBANE	1035.152	9268.607	9449.552	-180.945
BRISBANE	1035.657	9258.785	9447.776	-188.991
BRISBANE	1036.18	9255.933	9447.537	-191.604
BRISBANE	1036.615	9253.063	9446.182	-193.119
BRISBANE	1036.842	9251.721	9445.498	-193.777
BRISBANE	1037.002	9250.805	9445.018	-194.213
BRISBANE	1037.11	9250.453	9444.815	-194.362
BRISBANE	1037.23	9250.069	9444.602	-194.533
BRISBANE	1037.455	9248.924	9443.943	-195.019
BRISBANE	1037.855	9243.249	9440.026	-196.777
BRISBANE	1038.343	9233.175	9432.531	-199.356
BRISBANE	1038.85	9219.847	9423.624	-203.777
BRISBANE	1039.332	9206.395	9421.4	-215.005
BRISBANE	1039.696	9196.141	9418.5	-222.359
BRISBANE	1039.959	8886.733	9251.112	-364.379
BRISBANE	1040.29	8885.374	9248.779	-363.405
BRISBANE	1040.75	8883.411	9245.105	-361.694
BRISBANE	1041.12	8882.285	9243.021	-360.736
BRISBANE	1041.345	8880.916	9240.507	-359.591
BRISBANE	1041.58	8880.028	9238.862	-358.834
BRISBANE	1041.83	8879.224	9237.404	-358.18
BRISBANE	1042.098	8878.319	9235.667	-357.348
BRISBANE	1042.375	8877.838	9234.669	-356.831
BRISBANE	1042.713	8877.082	9233.38	-356.298
BRISBANE	1043.318	8874.803	9232.113	-357.31
BRISBANE	1043.893	8874.427	9231.297	-356.87
BRISBANE	1044.2	8874.192	9230.909	-356.717
BRISBANE	1044.473	8873.823	9230.781	-356.958
BRISBANE	1044.732	8873.468	9230.605	-357.137
BRISBANE	1045.13	8873.062	9230.25	-357.188
BRISBANE	1045.643	8873.465	9228.883	-355.418
BRISBANE	1046.033	8875.664	9228.562	-352.898
BRISBANE	1046.26	8876.822	9229.519	-352.697
BRISBANE	1046.46	8877.223	9229.833	-352.61
BRISBANE	1046.74	8878.007	9230.672	-352.665
BRISBANE	1047.125	8879.531	9231.841	-352.31
BRISBANE	1047.633	8882.262	9232.854	-350.592
BRISBANE	1048.145	8888.386	9234.861	-346.475
BRISBANE	1048.633	8895.719	9241.321	-345.602
BRISBANE	1049.005	8900.692	9243.067	-342.375

Table E-3 - 100 Year ARI Design Flood & 1974 Historical Event Comparison

Flood Levels

River Name	Chainage (km)	100 year ARI (m AHD)	1974 (m AHD)	Difference (m)
BRISBANE	1048.375	8.61	8.3	0.31
BRISBANE	1048.89	8.38	8.03	0.35
BRISBANE	1049.12	8.32	7.97	0.35
BRISBANE	1049.37	8.17	7.8	0.37
BRISBANE	1049.59	8.15	7.77	0.38
BRISBANE	1049.87	8.07	7.68	0.39
BRISBANE	1050.43	8.08	7.68	0.4
BRISBANE	1050.86	7.94	7.52	0.42
BRISBANE	1051.36	7.94	7.53	0.41
BRISBANE	1051.895	7.8	7.36	0.44
BRISBANE	1052.31	7.74	7.29	0.45
BRISBANE	1052.39	7.09	7.28	-0.19
BRISBANE	1052.595	7.01	7.2	-0.19
BRISBANE	1052.64	6.52	6.68	-0.16
BRISBANE	1053.32	6.47	6.62	-0.15
BRISBANE	1053.385	6.43	6.58	-0.15
BRISBANE	1053.9	6.19	6.32	-0.13
BRISBANE	1054.64	6.04	6.15	-0.11
BRISBANE	1054.68	5.95	6.06	-0.11
BRISBANE	1054.97	5.68	5.79	-0.11
BRISBANE	1055.28	5.62	5.72	-0.1
BRISBANE	1055.42	5.6	5.71	-0.11
BRISBANE	1055.96	5.53	5.63	-0.1
BRISBANE	1056.4	5.27	5.36	-0.09
BRISBANE	1056.695	5.2	5.3	-0.1
BRISBANE	1056.865	5.17	5.27	-0.1
BRISBANE	1056.95	5.08	5.17	-0.09
BRISBANE	1057.09	5.19	5.29	-0.1
BRISBANE	1057.53	5.03	5.12	-0.09
BRISBANE	1058.04	4.72	4.8	-0.08
BRISBANE	1058.23	4.58	4.65	-0.07
BRISBANE	1058.53	4.33	4.38	-0.05
BRISBANE	1058.735	4.29	4.34	-0.05
BRISBANE	1059.035	4.02	4.06	-0.04
BRISBANE	1059.54	3.96	4	-0.04
BRISBANE	1059.99	3.77	3.8	-0.03
BRISBANE	1060.345	3.6	3.62	-0.02
BRISBANE	1060.535	3.46	3.46	0
BRISBANE	1061.015	3.43	3.44	-0.01
BRISBANE	1061.53	3.21	3.2	0.01
BRISBANE	1062.02	3.13	3.12	0.01
BRISBANE	1062.535	3.08	3.07	0.01
BRISBANE	1062.94	3.07	3.05	0.02
BRISBANE	1063.125	3.03	3.01	0.02
BRISBANE	1063.125	3.03	3.01	0.02
BRISBANE	1063.31	2.97	2.94	0.03
BRISBANE	1063.645	2.68	2.63	0.05
BRISBANE	1064	2.6	2.56	0.04
BRISBANE	1064.49	2.5	2.45	0.05
BRISBANE	1065.01	2.54	2.49	0.05
BRISBANE	1065.503	2.51	2.46	0.05
BRISBANE	1065.99	2.54	2.49	0.05
BRISBANE	1066.505	2.49	2.44	0.05
BRISBANE	1067.02	2.45	2.4	0.05
BRISBANE	1067.485	2.35	2.31	0.04
BRISBANE	1067.965	2.26	2.22	0.04
BRISBANE	1068.66	2.1	2.07	0.03
BRISBANE	1069.045	2.02	2	0.02
BRISBANE	1069.535	1.96	1.94	0.02
BRISBANE	1070.025	1.88	1.87	0.01
BRISBANE	1070.53	1.77	1.77	0

Discharges

River Name	Chainage (km)	100 year ARI (m3/s)	1974 (m3/s)	Difference (m3/s)
BRISBANE	1049.245	8902.96	9244.5	-341.54
BRISBANE	1049.48	8906.191	9245	-338.809
BRISBANE	1049.73	8909.705	9246.216	-336.511
BRISBANE	1050.15	8912.74	9247.187	-334.447
BRISBANE	1050.645	8913.679	9257.567	-343.888
BRISBANE	1051.11	8914.909	9262.961	-348.052
BRISBANE	1051.627	8915.874	9294.354	-378.48
BRISBANE	1052.102	8966.844	9396.587	-429.743
BRISBANE	1052.37	9004.557	9428.53	-423.973
BRISBANE	1052.492	9020.658	9441.52	-420.862
BRISBANE	1052.625	9034.227	9448.008	-413.781
BRISBANE	1052.98	9030.606	9463.548	-432.942
BRISBANE	1053.355	9007.547	9437.996	-430.449
BRISBANE	1053.643	8978.46	9404.062	-425.602
BRISBANE	1054.27	9006.445	9326.409	-319.964
BRISBANE	1054.66	8991.156	9306.283	-315.127
BRISBANE	1054.825	8986.193	9299.607	-313.414
BRISBANE	1055.125	8982.217	9294.341	-312.124
BRISBANE	1055.35	8975.315	9294.105	-318.79
BRISBANE	1055.69	8962.295	9292.915	-330.62
BRISBANE	1056.18	8933.568	9291.861	-358.293
BRISBANE	1056.547	8919.68	9291.854	-372.174
BRISBANE	1056.78	8911.655	9290.038	-378.383
BRISBANE	1056.92	8906.484	9288.315	-381.831
BRISBANE	1057.02	8903.181	9287.277	-384.096
BRISBANE	1057.31	8893.181	9282.137	-388.956
BRISBANE	1057.785	8888.592	9275.136	-386.544
BRISBANE	1058.135	8891.701	9272.776	-381.075
BRISBANE	1058.38	8893.817	9270.626	-376.809
BRISBANE	1058.633	8895.205	9269.026	-373.821
BRISBANE	1058.885	8895.835	9266.643	-370.808
BRISBANE	1059.287	8896.655	9263.172	-366.517
BRISBANE	1059.765	8892.905	9271.466	-378.561
BRISBANE	1060.168	8890.442	9277.161	-386.719
BRISBANE	1060.44	8885.811	9285.847	-400.036
BRISBANE	1060.775	8884.825	9288.245	-403.42
BRISBANE	1061.273	8876.771	9298.818	-422.047
BRISBANE	1061.775	8874.195	9302.966	-428.771
BRISBANE	1062.277	8874.114	9307.768	-433.654
BRISBANE	1062.738	8875.637	9316.264	-440.627
BRISBANE	1063.033	8875.889	9322.234	-446.345
BRISBANE	1063.217	8865.884	9366.376	-500.492
BRISBANE	1063.477	8865.604	9374.236	-508.632
BRISBANE	1063.822	8865.378	9379.518	-514.14
BRISBANE	1064.245	8864.798	9386.677	-521.879
BRISBANE	1064.75	8864.007	9396.01	-532.003
BRISBANE	1065.257	8863.129	9408.956	-545.827
BRISBANE	1065.747	8862.959	9418.796	-555.837
BRISBANE	1066.248	8862.391	9430.745	-568.354
BRISBANE	1066.762	8861.195	9448.913	-587.718
BRISBANE	1067.252	8861.133	9464.718	-603.585
BRISBANE	1067.725	8861.183	9480.112	-618.929
BRISBANE	1068.313	8861.402	9499.638	-638.236
BRISBANE	1068.852	8861.532	9512.28	-650.748
BRISBANE	1069.29	8861.639	9523.455	-661.816
BRISBANE	1069.78	8861.726	9539.412	-677.686
BRISBANE	1070.277	8861.763	9552.075	-690.312
BRISBANE	1070.785	8861.849	9566.809	-704.96
BRISBANE	1071.28	8862.058	9582.619	-720.561
BRISBANE	1071.768	8862.214	9594.267	-732.053
BRISBANE	1072.018	8862.196	9753.525	-891.329

Table E-3 - 100 Year ARI Design Flood & 1974 Historical Event Comparison

Flood Levels

River Name	Chainage (km)	100 year ARI (m AHD)	1974 (m AHD)	Difference (m)
BRISBANE	1071.04	1.69	1.69	0
BRISBANE	1071.52	1.71	1.72	-0.01
BRISBANE	1072.015	1.67	1.71	-0.04
BRISBANE	1072.02	1.67	1.71	-0.04
BRISBANE	1072.02	1.67	1.68	-0.01
BRISBANE	1072.515	1.55	1.6	-0.05
BRISBANE	1072.995	1.51	1.6	-0.09
BRISBANE	1073.485	1.41	1.59	-0.18
BRISBANE	1074	1.33	1.59	-0.26
BRISBANE	1074.46	1.26	1.59	-0.33
BRISBANE	1074.985	1.12	1.58	-0.46
BRISBANE	1075.48	1.08	1.58	-0.5
BRISBANE	1076	1.19	1.57	-0.38
BRISBANE	1076.495	1.16	1.57	-0.41
BRISBANE	1077.01	1.26	1.57	-0.31
BRISBANE	1077.51	1.26	1.56	-0.3
BRISBANE	1078.04	1.14	1.56	-0.42
BRISBANE	1078.525	0.94	1.56	-0.62
BRISBANE	1078.66	0.92	1.55	-0.63
BREMER	599.4	19.68	19.9	-0.22
BREMER	600	19.68	19.89	-0.21
OXLEY	599.4	11.06	11.01	0.05
OXLEY	600	11.06	11.01	0.05
BREAKFAST	599.4	3.03	3.01	0.02
BREAKFAST	600	3.03	3.01	0.02
BULIMBA	599.4	1.67	1.71	-0.04
BULIMBA	600	1.67	1.71	-0.04

Discharges

River Name	Chainage (km)	100 year ARI (m3/s)	1974 (m3/s)	Difference (m3/s)
BRISBANE	1072.268	8855.793	9774.518	-918.725
BRISBANE	1072.755	8855.77	9790.438	-934.668
BRISBANE	1073.24	8855.727	9808.69	-952.963
BRISBANE	1073.742	8855.753	9827.604	-971.851
BRISBANE	1074.23	8855.813	9845.013	-989.2
BRISBANE	1074.723	8855.88	9865.266	-1009.386
BRISBANE	1075.232	8855.936	9885.669	-1029.733
BRISBANE	1075.74	8856.037	9918.814	-1062.777
BRISBANE	1076.248	8856.128	9965.861	-1109.733
BRISBANE	1076.752	8856.269	10044.143	-1187.874
BRISBANE	1077.26	8856.348	10107.022	-1250.674
BRISBANE	1077.775	8856.383	10150.063	-1293.68
BRISBANE	1078.283	8856.399	10190.661	-1334.262
BRISBANE	1078.592	8856.402	10204.864	-1348.462
BREMER	599.7	2105.19	3775.959	-1670.769
OXLEY	599.7	1180.069	1101.454	78.615
BREAKFAST	599.7	407.552	94.273	313.279
BULIMBA	599.7	841.322	941.863	-100.541

Brisbane City Council
August 1997

Brisbane River Flood Study

Addendum Model Verification Report

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Contents

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1. Introduction

After the calibration report for the Brisbane River Flood Study was completed, recorded levels for the February 1931 and March 1955 floods were discovered by Brisbane City Council officers.

These events were considered to be of medium magnitude and hence important in the calibration and verification process since no floods of this magnitude were used during the calibration phase of the study.

Historical streamflow and rainfall information for these events was obtained and used as additional verification events for the calibrated RAFTS and MIKE 11 models.

This report should be considered as an addendum report and should be read in conjunction with the Sinclair Knight Merz Draft Calibration Report (March 1997).

2. Available Data

The available historical streamflow and rainfall data for the 1931 and 1951 events was limited. Flood level information was provided by Brisbane City Council for both flood events.

2.1 Stream Gauges

Stream gauge data was provided by the Department of Natural Resources (DNR) and Bureau of Meteorology (BOM).

The BOM data was provided as time series level information however a large percentage of this data was missing time information and was therefore considered to be of poor quality. In addition the Port Office gauge was the only gauging station in the lower reach of the Brisbane River and since the discharge at this location is dependent on tidal rating curves, tidal information at the Western Inner Bar was required. The only tidal information available for both flood events was predicted values.

The DNR data was considered to be the most appropriate as it was supplied as time series discharges at various locations. **Table 2-1 - Brisbane River Stream Gauge Summary 1931 and 1955 Flood Events** presents details of the available stream gauges used for the 1931 and 1955 verification events.

Table -2-1 - Brisbane River Stream Gauge Summary 1931 and 1955 Flood Events

Number	Stream	Site	Record	% Catchment Area
Upper Brisbane River				
add- 143002	Brisbane River	Fulham Vale	1920 -1965	29
Somerset and Wivenhoe				
add- 143006	Tinton	Cresbrook Ck	1928 - 1980	3
add- 143302	Stanley River	Silverton	1919 -1968	9.8
143303	Stanley River	Peachester	1927 - date	1
Lockyer				
143203	Lockyer Creek	Helidon	1926 - date	3
add 143204	Lockyer Creek	Wilsons Weir	1953 - 1982	12
add 143206	Brisbane River	Brightview Weir	1953 - 1973	18
Bremer and Lower Brisbane				
143001	Brisbane River	Savages Cross	1909 - date	78
143101	Warrill Ck	Mudtapilly	1914 - 1953	6
143102	Warrill Ck	Kalbar	1912 - 1973	3
143919	Brisbane River	Port Office	1841 - date	100

Note: % catchment area estimated as proportion of total Brisbane River Catchment (equal to 13 570 km^2) upstream of the streamgauge.

2.2 Rainfall Data

The Bureau of Meteorology provided rainfall information for the February 1931 and March 1955 flood events. Rainfall station locations are illustrated in **Figure 3.2 - Rainfall Station Locations** of the **Sinclair Knight Merz Calibration Report (March 1997)**. **Table 2-2 - Daily Rainfall Data for the 1931 and 1955 Flood Events** presents the available historical rainfall data.

Rainfall data was predominantly daily read information however pluviograph information was available at two locations. For the 1931 event pluviograph data was available at only one location this being Brisbane Regional Office (Station No 040214). For the upper subcatchments the same pattern was applied however this pattern was bought forward half an hour. This will be discussed later in this report. The temporal patterns for Port Office and Somerset are presented on **Figure 2-1 - Representative Pluviographs - February 1931 Storm**

Pluviograph data for the 1955 event was available at Brisbane Regional Office (Station No 040214) and Somerset Dam BVRT (Station No 040189). The temporal patterns for this event are presented in **Figure 2-2 - Representative Pluviographs - March 1955 Storm**.

Table 2-2 - Daily Rainfall Data for the 1931 & 1955 Flood Events

Station Number	Station Name	Period
040079	Forrest Hill	1894 - Date
040082	Gatton - Lawes	1897 - Date
040083	Gatton PO	1894 - Date
040091	Laidley (Granchester)	1894 - Date
040094	Harisville PO	1896 - Date
040095	Hatton Vale	1908 - Date
040096	Helidon	1870 - Date
040101	Ipswich Composite	1870 - Date
040104	Kalbar	1870 - Date
040107	Beaudesert	1917 - Date
040114	Laidley PO	1889 - 1995
040115	Lake Manchester	1917 - Date
040120	Lowood	1887 - Date
040124	Marburg	1887 - Date
040135	Moogerah Dam	1917 - Date
040139	Mount Alford	1911 - 1976
040140	Mount Brisbane	1890 - Date
040142	Mount Crosby	1894 - Date
040145	Mount Mee	1909 - Date
040149	Boonah	1924 - 1990
040150	Mundoolun	1881 - Date
040153	Murphys Creek	1895 - 1985
040154	Murrumba (Fairview)	1926 - 1974
040155	Mudtapilly (Derrylin)	1917 - 1957
040156	Innisplain	1913 - Date
040159	Narangbar	1920 - 1987
040163	Rathdowney	1925 - 1972
040170	Crows Nest (Pechey SF)	1927 - Date
040171	Petrie (Australian Paper Mills)	1886 - Date
040179	Redbank	1888 - 1978
040180	Margate	1886 - Date
040181	Roadvale	1907 - 1983
040183	Rosevale	1909 - Date
040184	Rosewood	1894 - Date
040186	Samsonvale Composite	1919 - Date
040197	Mount Tamborine	1888 - Date
040198	Tarome	1911 - Date
040202	Thornton Brvt	1915 - Date
040205	Toogoolawah PO	1909 - Date
040208	Pine Mountain	1925 - Date
040212	Ascot Racecourse	1920 - Date
040213	Bald Hills	1895 - 1993

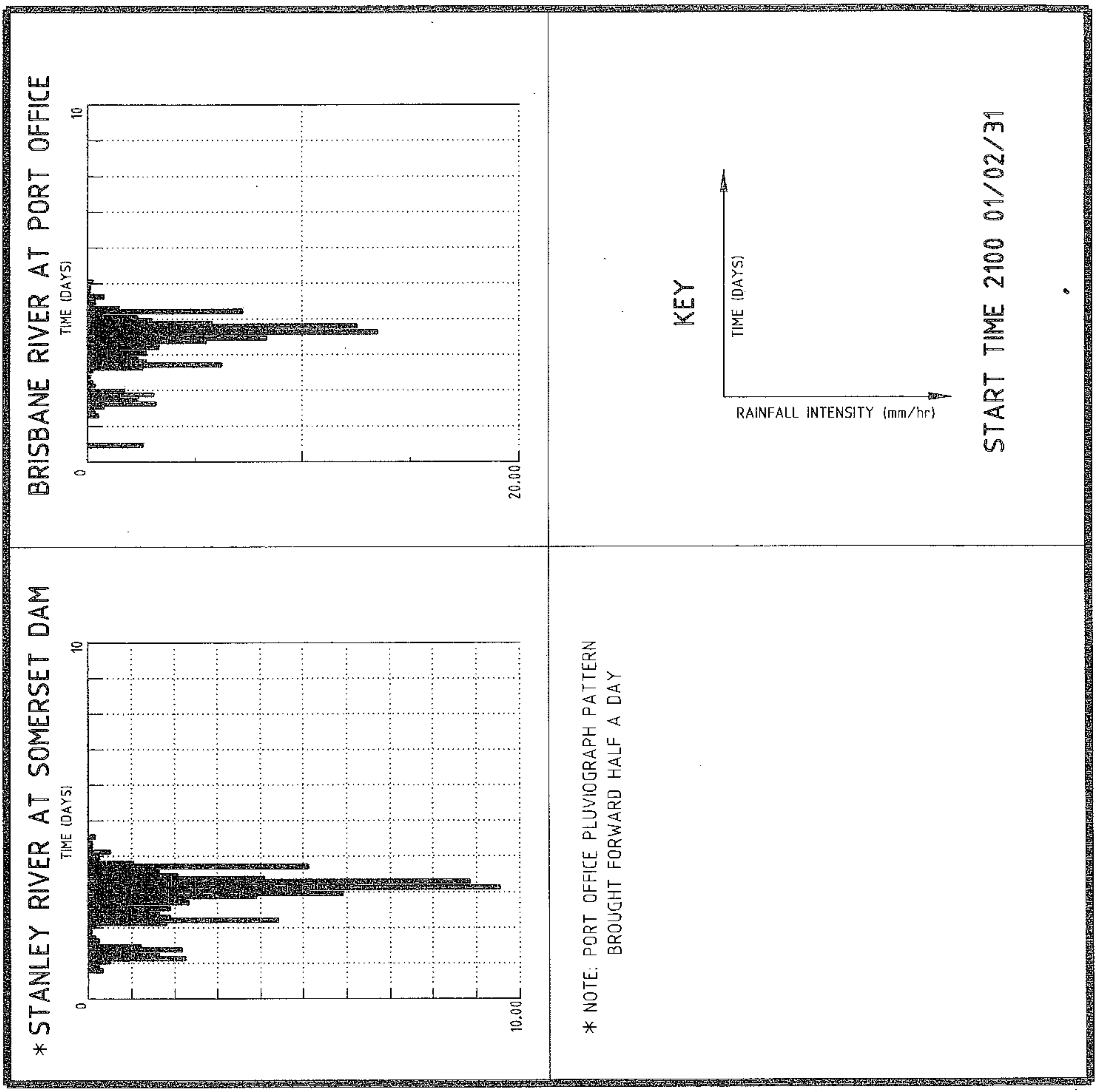
Station Number	Station Name	Period
040214	Brisbane Regional Office	1840 - 1994
040215	Brisbane Botanic Gardens	1890 - 1984
040216	Brisbane Show Grounds	1889 - Date
040224	Enoggera	1899 - Date
040225	The Gap1870 - Date	
040226	Goodna	1870 - Date
040227	Wacol (Wolston Park Hospital)	1893 - 1973

2.3 Flood Levels

Level information was provided by the Brisbane City Council as peak flood levels at various locations. Some of these levels were interpolated values which is discussed further in **Section 4 - Hydraulic Modelling.**

SINCLAIR KNIGHT MERZ

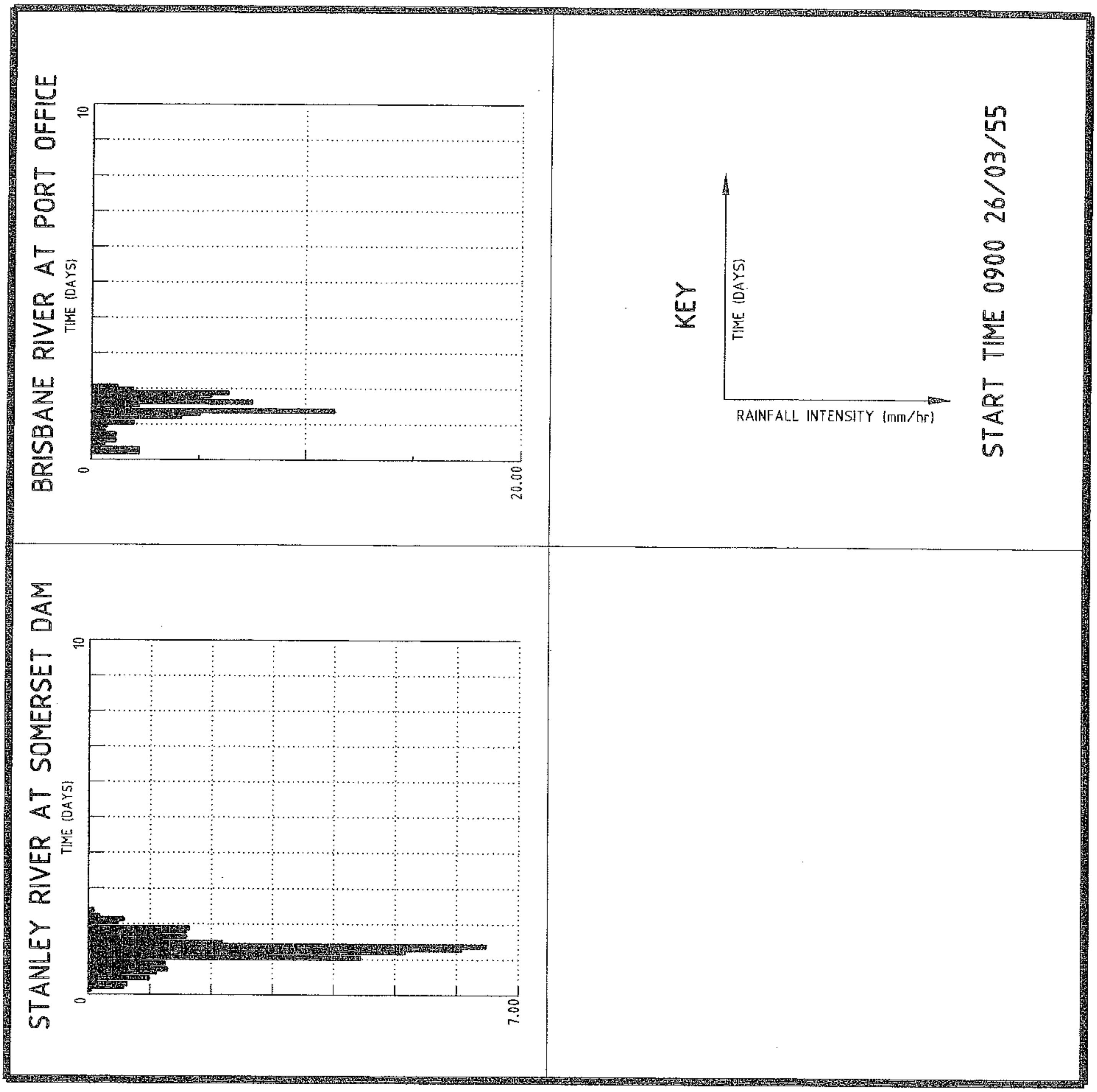
FIGURE 2.1
BRISBANE RIVER FLOOD STUDY
REPRESENTATIVE PLUVIOGRAPHS
- FEBRUARY 1931 STORM



FILE NAME: PLUV31
PLOT SCALE:
DISK N°: D:\DWG\BRISBANE JOB N°: T004157
DATE: 21/8/97

SINCLAIR KNIGHT MERZ

FIGURE 2.2
BRISBANE RIVER FLOOD STUDY
REPRESENTATIVE PLUVIOGRAPHS
- MARCH 1955 STORM



FILE NAME: PLUV31 DISK N°: D:\DWG\BRISBANE FILE N°: T004157 DATE: 21/8/97
PLOT SCALE: 1=80

3. Hydrologic Modelling

3.1 Overview

The previously calibrated RAFTS hydrologic model was used to reproduce the 1931 and 1955 historical storm events. The 1931 and 1955 flood events were used as additional verification events to ensure that the calibrated RAFTS model was capable of accurately modelling events of medium magnitude.

Unless otherwise stated all parameters relating to the RAFTS model are as stated in the Sinclair Knight Merz Calibration Report (March 1997).

3.2 1931 Verification Event

The 1931 historical flood event commenced on the 1 Feb 1931 and continued for a period of five days. This event was the second largest flood recorded this century and was considered to be an important flood in the verification process.

Limited stream gauge information was available in the lower reaches of the Brisbane River however it was considered that there was sufficient information to provide some indication of the reliability of the RAFTS model output.

Wivenhoe and Somerset Dams were not constructed for this event and the RAFTS model was adjusted accordingly.

Rainfall

One of the main concerns modelling this event was the lack of pluviograph information. Pluviographs provide temporal variation throughout the catchment during a storm.

To account for spatial variation, rainfall depths for the event were calculated and these depths were input into Civilcad where isohyetal maps were generated. **Figure 3-1 Isohyetal Map for the 1931 Flood Event** illustrates the rainfall depths for the Brisbane River Catchment.

Rainfall depths were then interpolated at each sub-area and input into the software package HYDCON where appropriate temporal patterns were applied. HYDCON is a software package produced by Sinclair Knight Merz specifically for this study.

A single temporal pattern was applied over the entire catchment for the 1931 flood which was measured at Brisbane Regional Office. This was the only temporal pattern (other than daily rainfall information) available for this flood event.

After inspection of the daily rainfall data it was considered that the temporal pattern over the catchment was reasonably consistent for the lower part of the catchment. However for the upper catchment the rainfall commenced half to a full day earlier than in the lower catchments (Lower Brisbane and Bremer catchments). These temporal effects can be seen in the daily rainfall patterns presented in **Appendix A- Daily Rainfall Patterns.** To compensate for these effects the temporal pattern was applied to rainfalls half a day earlier for the upper catchments.

Rainfall Losses

Table 3 -1 - Rainfall Losses - February 1931 Verification lists the initial and continuing losses used for the pre Wivenhoe and pre Somerset Dam verification event.

Table 3-1 - Rainfall Losses - February 1931 Verification

Subcatchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	150	3.5
Somerset	120	3.0
Wivenhoe	150	3.5
Lockyer	100	2.5
Bremer	40	1.0
Lower Brisbane	40	1.0

The above losses are consistent with the loss rates used for the previous calibration/verification events although the maximum continuing loss had to be increased from a previous maximum of 3 mm/hr to 3.5 mm/hr.

Catchment Storage

The PERN value applied to the catchment were applied as follows:

- PERN equal to 0.11 - was used for Wivenhoe, Somerset and the Upper Brisbane subcatchments.

- PERN equal to 0.05 - was used for Lockyer, Bremer and Lower Brisbane subcatchments.

These PERN values reflect the absence of Wivenhoe and Somerset Dams.

Channel Routing

Channel routing within the Somerset subcatchment were modified to account for the effects of Somerset Dam not being constructed during this event. Lag times were adjusted until a good match of the Savages Crossing hydrograph was achieved.

Recorded and Predicted Hydrographs

Plots of recorded and RAFTS predicted hydrographs for the February 1931 flood are compiled in **Appendix B - RAFTS Results (Figure B-1)** and summary details are given in **Table 3-2 - RAFTS Verification - February 1931 Flood Event.**

Table 3-2 -Rafts Verification - February 1931 Flood Event

Number	Stream	Site	Peak Discharge (m^3/s)			Discharge Volume (GL)			Comments
			Gauged	Predicted	Diff (%)	Gauged	Predicted	Diff (%)	
Upper Brisbane									
143002	Brisbane	Fulham Vale	3005	3150	+4.9	338340	287870	-15.0	
Somerset and Wivenhoe									
143303	Stanley	Peachester	625	640	+2.9	59330	35760	-40.0	
Lockyer									
143203	Lockyer	Helidon	370	545	+45.0	33310	23230	-30.0	
Bremer and Lower Brisbane									
143102	Warrill	Kalbar	40	245	+499	1920	16620	+765	Poor Data
143101	Warrill	Mudtapilly	260	285	+9.7	20970	27930	+33.0	Key Location
143001	Brisbane	Savages Crossing	5575	5685	+2.0	1009760	915750	-9.0	Key location

The main object of this verification was to match hydrographs at Savages Crossing and Mudtapilly as these locations directly influence the inflow into the Lower Brisbane River.

3.3 1955 Verification Event

The 1955 flood event commenced on the 26 March 1955 and was the third largest recorded flood event this century. The event continued over a period of three days.

Rainfall

A similar procedure to that adopted for the 1931 flood event was used for the 1955 event. An isohyetal map was generated and rainfall depths were interpolated using Civilcad. HYDCON was used to apply the temporal patterns at each sub area. **Figure 3-2 - Isohyetal Map for 1955 Flood Event** presents rainfall depths over the Brisbane River Catchment

For this event a temporal pattern was available at the Brisbane Regional Office and Somerset Dam hence temporal variation over the catchment could be better represented in the 1931 event. The Theissen polygon method was applied to the catchment to determine the area of influence for each of these temporal patterns.

Rainfall Losses

Table 3-3 - Rainfall Losses - February 1955 Verification lists the initial and continuing losses used for the pre Wivenhoe and Somerset Dam verification events.

Table 3-3 - Rainfall Losses - February 1955 Verification

Subcatchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	20	1.8
Somerset	130	2.5
Wivenhoe	20	1.8
Lockyer	85	2.5
Bremer	50	1.5
Lower Brisbane	100	2.5

The loss parameters used for this verification event conform to the values used for the previous calibration and verification events.

Catchment Storage

The PERN value applied to the catchment was 0.5 except for Wivenhoe and the Upper Brisbane subcatchment where a PERN coefficient Of 0.11 was used. These PERN values reflect the absence of Wivenhoe Dam.

Channel Routing

The link travel times and storage properties assigned at Lowood, Moggill and Harrisville basin nodes were identical to those used in the July 1973 flood verification.

3.4 Recorded and Predicted Hydrographs

Plots of recorded and RAFTS predicted hydrographs for the March 1955 flood are compiled in **Appendix B (Figure B-2)** and summary details are given in **Table 3-4 - RAFTS Verification - February 1955 Flood Event.**

Table 3-4 -Rafts Verification - February 1955 Flood Event

Number	Stream	Site	Peak Discharge (m^3/s)			Discharge Volume (GL)			Comments
			Gauged	Predicted	Diff (%)	Gauged	Predicted	Diff (%)	
Upper Brisbane									
143002	Brisbane	Fulham Vale	5090	4800	-5.6	437310	414570	-5.2	
Somerset and Wivenhoe									
143006	Cresbrook Ck	Tinton	485	480	-1.2	27120	44680	+65.0	
143303	Stanley	Peachester	455	425	-6.9	104690	15870	-85.0	
Lockyer									
143206	Lockyer	Brightview Weir	620	800	+31.0	48850	45230	-7.4	
143204	Lockyer	Wilsons Weir	934	931	-0.3	201470	65950	-67.0	
143203	Lockyer	Helidon	225	235	+4.5	14930	10100	-32.0	
Bremer and Lower Brisbane									
143102	Warrill	Kalbar	3314	348	+5.1	32220	19600	-39.0	Key location
143001	Brisbane	Savages Crossing	5270	5085	-3.5	1125840	758900	-33.0	Key Location

Again most emphasis for the matching of hydrographs was placed on two primary stream gauges, Savages Crossing and Kalbar. These gauges were the predominant gauges for estimating inflows into the Lower Brisbane River for the 1955 flood event.

4. Hydraulic Model

4.1 Model Overview

The overall purpose of any hydraulic model is to predict the behaviour of floods as they pass through the stream network. Flood levels, velocities and extent of inundation are predicted at various locations during this process.

For the model results to be reliable the hydraulic model must be calibrated and verified through means of matching recorded and predicted flood levels throughout the stream system.

The MIKE 11 model has been previously calibrated and verified however it was considered that the verification process should have included medium magnitude events. During the calibration/verification phase of this study no flood level information for medium magnitude floods was obtainable however since then information has been uncovered.

The 1931 and 1955 flood events are the additional flood events which have been used to further verify the MIKE 11 hydraulic model which has been previously calibrated.

4.2 MIKE 11 Model Verification

4.2.1 General

The model verification for the 1931 and 1955 flood events was carried out using the calibrated parameters used for the 1974 flood event. These parameters were considered to be the most appropriate as flood waters would be well out of the river proper similar to the 1974 event. It was therefore assumed that bend losses and Manning's n roughnesses would also be similar.

The absence of some structures during the 1931 and 1955 flood events required that the MIKE 11 model be modified. The only structure that was constructed for the 1931 event was the William Jolly Bridge and for the 1955 flood event the in place structures were Indooroopilly Bridge, William Jolly Bridge, Victoria Bridge and the Story Bridge. The MIKE 11 model was adjusted accordingly for each event to account for the absence of the relevant structures.

Model boundaries at the Brisbane River for these verification events consisted of RAFTS calculated discharge hydrographs for the model inflows however recorded tailwater levels for the Western Inner Bar were not available for either event. Predicted tidal information was used as an initial tailwater level however this information did not include any likely surge at the mouth associated with the event and hence other estimates had to be assumed. Assumed levels were therefore used until a good match between recorded and predicted flood profiles was achieved.

Recorded and predicted flood levels at various locations are tabulated in **Appendix C - MIKE 11 Verification Results** along with longitudinal flood profiles (**Figure C1a - C1i**).

4.2.2 February 1931

The February 1931 flood was the second largest recorded flood event used for any of the verification or calibration events.

Calculated hydrographs for this event from the RAFTS model were input into the MIKE 11 model and predicted water levels were computed. The adopted tailwater level at the Western Inner Bar for this event was 1.5 m AHD which was considered to be reasonable. This tailwater level assumes a 2 year ARI storm surge in Moreton Bay (Mallon TD, 1987). Using this tailwater level the predicted water levels are generally within 150 mm which was considered to be a good result given the age of the basic data.

Predicted water levels above the Indooroopilly Bridge are generally within 300 mm below the recorded flood levels however the reliability of these recorded levels are in question due to annotations on recorded flood level maps. These annotations indicate that some form of extrapolation may have been carried out and hence the reliability of this information is questionable.

Flood profiles for the 1931 event are presented in **Appendix C (Figure C1a - C1i). Table C-1 - Predicted and Recorded Flood Levels - 1931 Flood Event.**

4.2.3 March 1955

The March 1955 flood was the third largest recorded flood event used for the verification or calibration events in this study.

Calculated hydrographs for this event from the RAFTS model were input into the MIKE 11 model and predicted water levels were computed. The adopted tailwater level at the Western Inner Bar for this event was 1.[illegible] m AHD which was ~~considered to be reasonable as this level was below the 1 year ARI storm surge level for Moreton Bay (Mallon TD, 1987)~~ (obtained from recorded information at Bishop Island). Using this tailwater level the predicted water levels are generally within 150 mm which was considered to be a good result.

Flood Profiles for the 1955 event are presented in Appendix B **Figure C1a - C1i). Table C-2 - Predicted and Recorded Flood Levels - 1955 Flood Event.**

5. Conclusions

The performance of the RAFTS hydrologic model for the 1931 and 1955 verification events was considered to be good. The following conclusions have been drawn from this study:

- Temporal information for the for the 1931 flood was bought forward half a day in the upper subcatchments to account for trends evident in daily rainfall temporal information.
- Generally the 1931 flood event yielded a good match between the recorded and predicted hydrographs however a greater emphasis was placed on matching the hydrographs at Savages Crossing and Mudtapilly as these had the greatest impact on the direct inflow points to the lower Brisbane River.
- The maximum continuing loss used for the 1931 flood event were 150 mm and 3.5 mm/hr respectively. These losses were similar to those adopted in the calibration/verification phase of this study.
- Predicted peak discharges for the 1931 flood event are generally within 10% of the recorded peak discharges.
- The runoff generated by the RAFTS model were used as inflows at boundaries for the MIKE 11 hydraulic model. A constant tailwater level of 1.5 m AHD was used for the 1931 flood event because predicted tidal fluctuations did not account an increase in water level during storm surges.
- The MIKE 11 hydraulic model generally predicted flood levels to within 150 mm of recorded flood levels for the 1931 flood event however flood levels in the upper reaches were under estimated by the model. This under estimation was likely due to extrapolation techniques used to estimate the recorded flood levels or the impacts of a railway bridge at Indooroopilly where no details were available.
- Temporal information for the 1955 flood event was available at two locations where the area of influence for each pluviograph was defined via use of the Thessien Polygon Method.
- This rainfall information for the 1955 flood event was input into RAFTS to generate runoff. A good match between the recorded and predicted hydrographs was achieved with most emphasis being placed on matching hydrographs at Savages Crossing and Kalbar.
- The maximum continuing loss used for the 1955 flood event were 150 mm and 2.5 mm/hr respectively. These losses were similar to those adopted in the calibration/verification phase of this study.

- Predicted peak discharges for the 1955 flood event are generally within 10% of the recorded peak discharges

- The runoff generated by the RAFTS model were used as inflows at boundaries for the MIKE 11 hydraulic model. A constant tailwater level of 1.3 m AHD was used for the 1955 flood event because predicted tidal fluctuations did not account an increase in water level during storm surges.

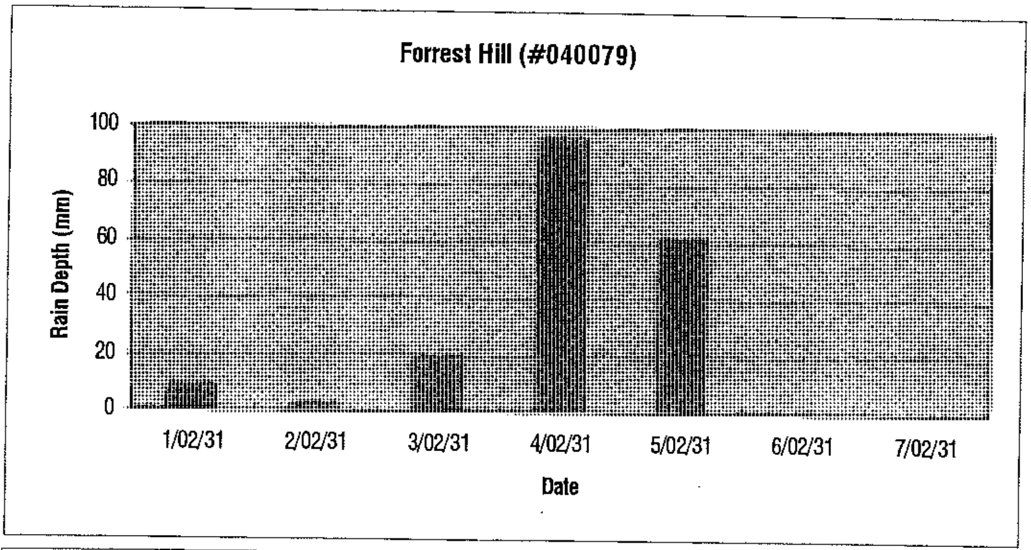
- Flood levels calculated by the MIKE 11 hydraulic model are generally within 150 mm of recorded levels.

- The RAFTS hydrological model produces good results for varying magnitude flood events and hence model verification has been satisfied.

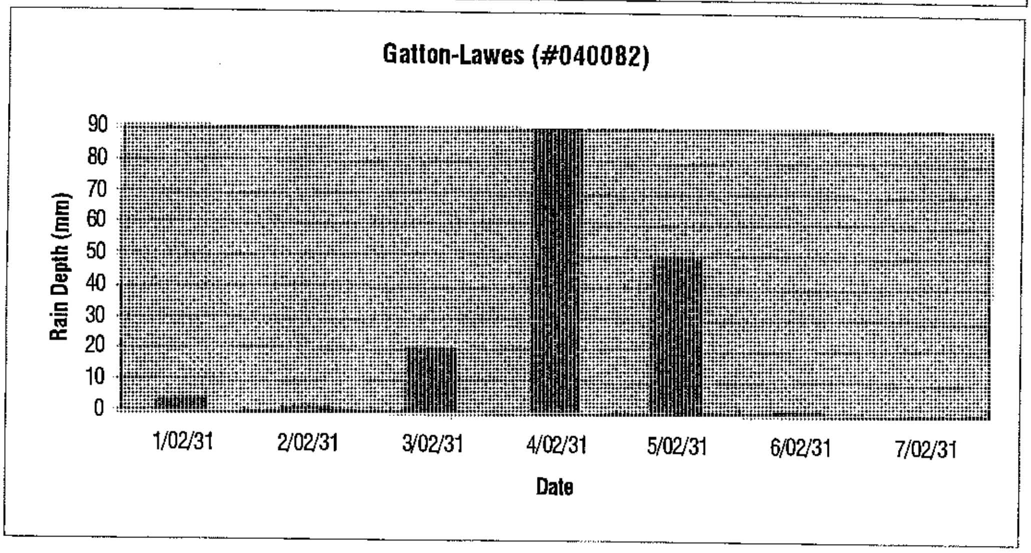
- The MIKE 11 hydraulic model estimates flood levels over a range of flood events therefore the model has been verified.

Appendix A - Daily Rainfall Patterns

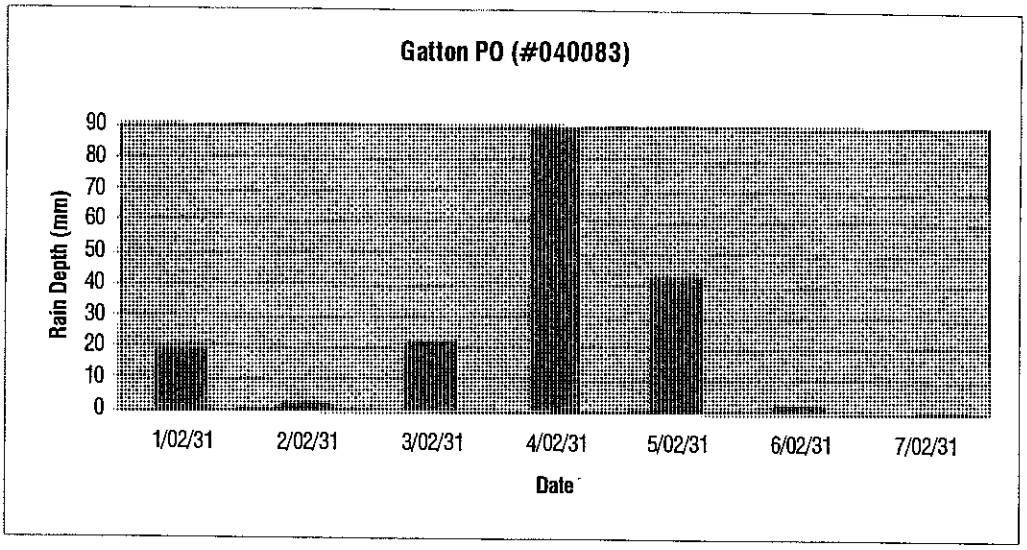
1931 Daily Rainfall Patterns



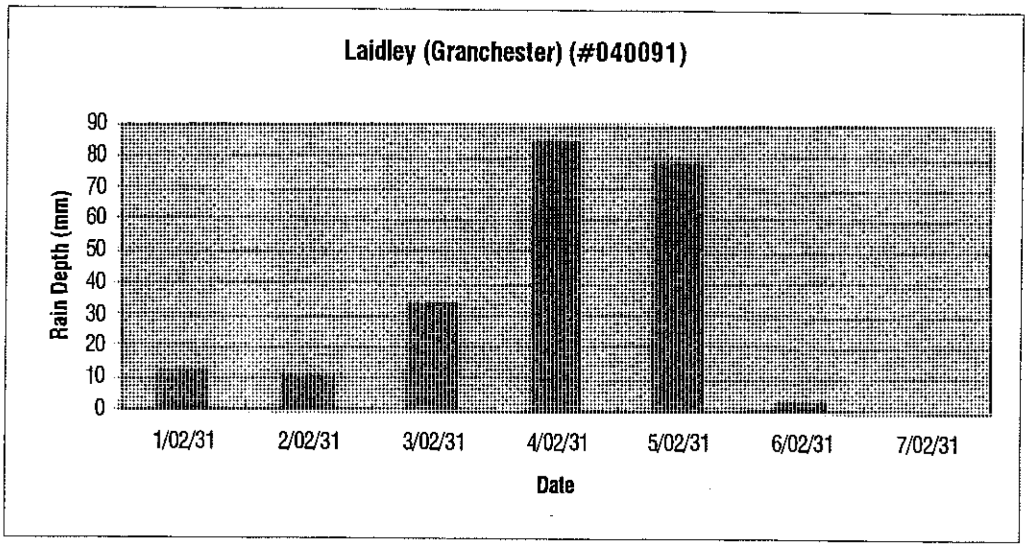
Forrest Hill (#040079)
Rain Depth (mm)
100
80
60
40
20
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date



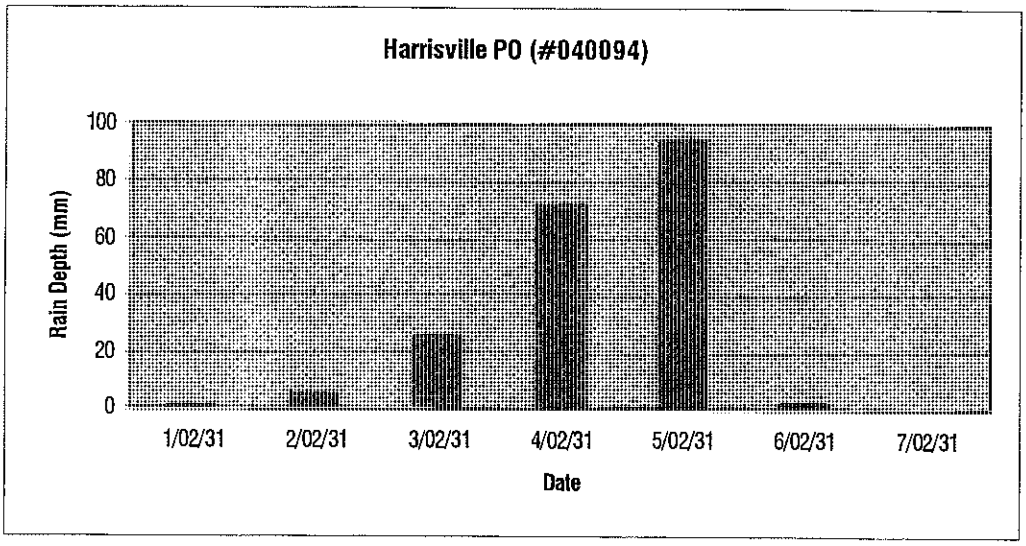
Gatton-Lawes (#040082)
Rain Depth (mm)
90
80
70
60
50
40
30
20
10
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date



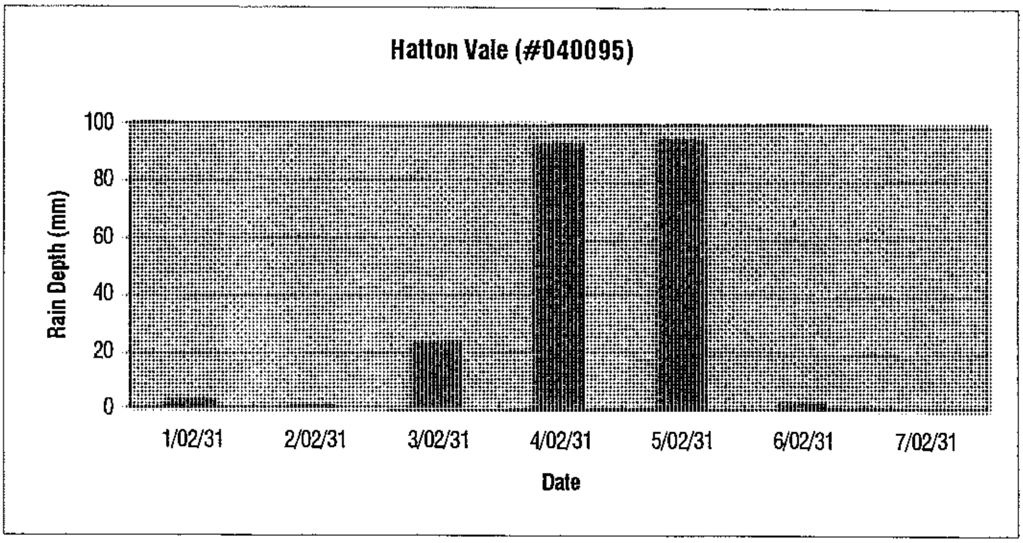
Gatton PO (#040083)
Rain Depth (mm)
90
80
70
60
50
40
30
20
10
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date



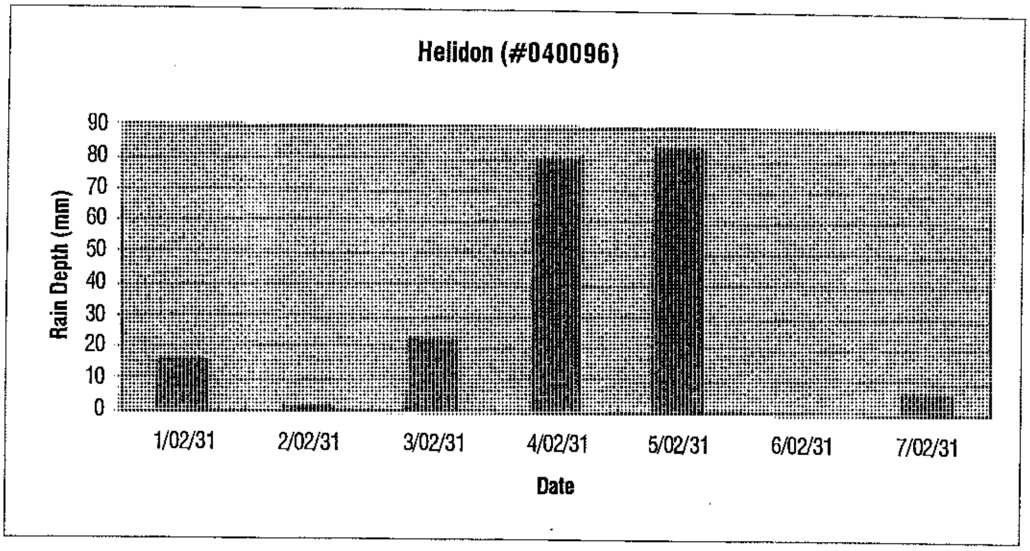
Laidley (Granchester) (#040091)
Rain Depth (mm)
90
80
70
60
50
40
30
20
10
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

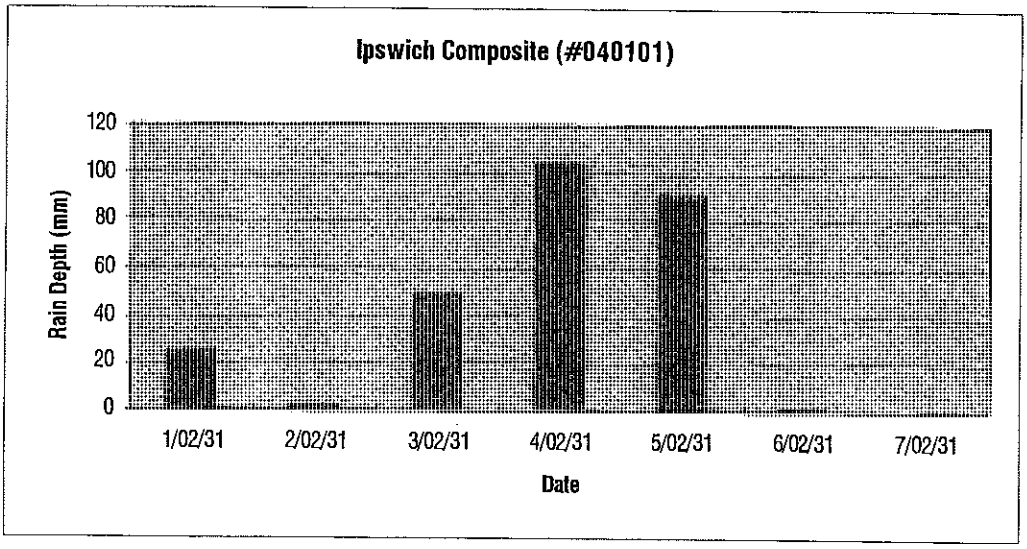


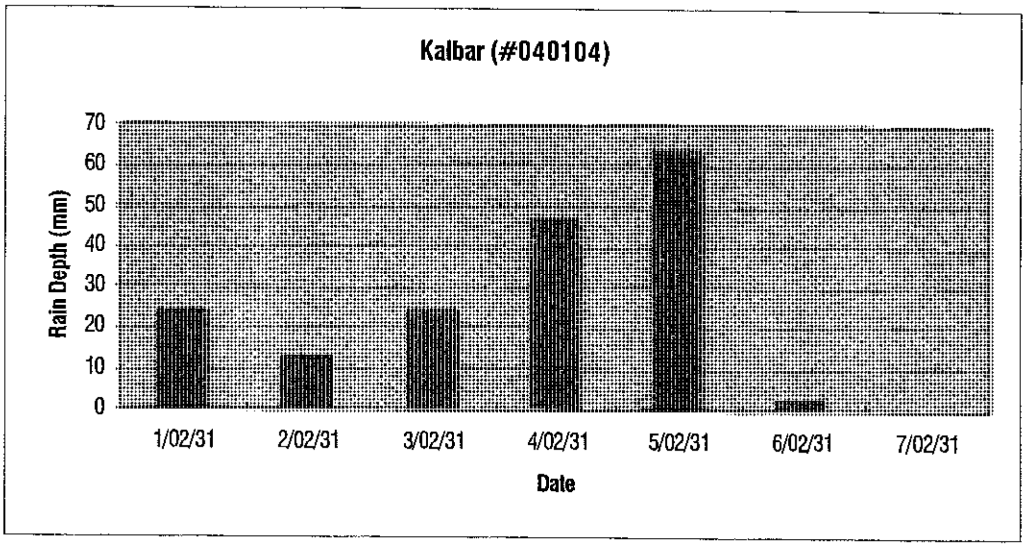
Harrisville PO (#040094)
Rain Depth (mm)
100
80
60
40
20
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

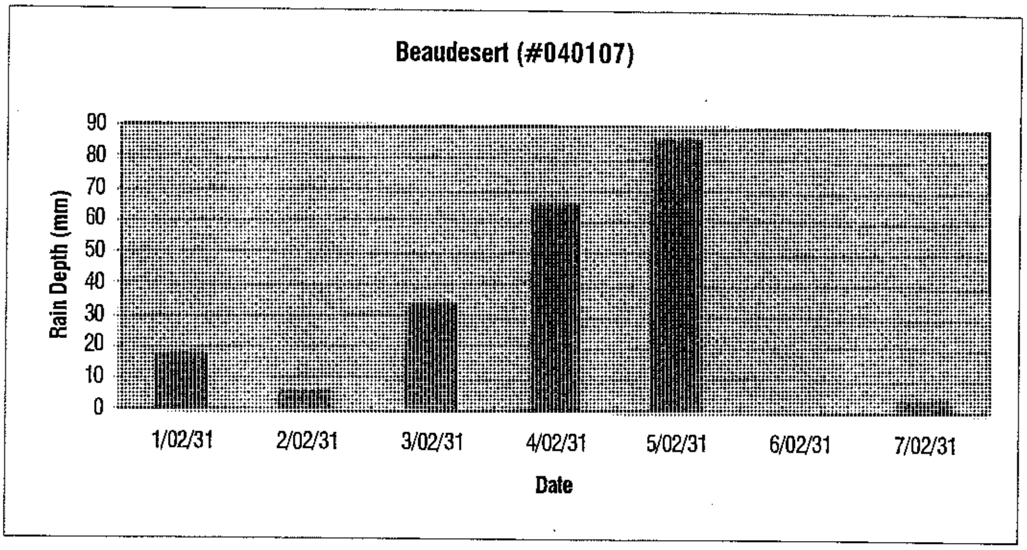


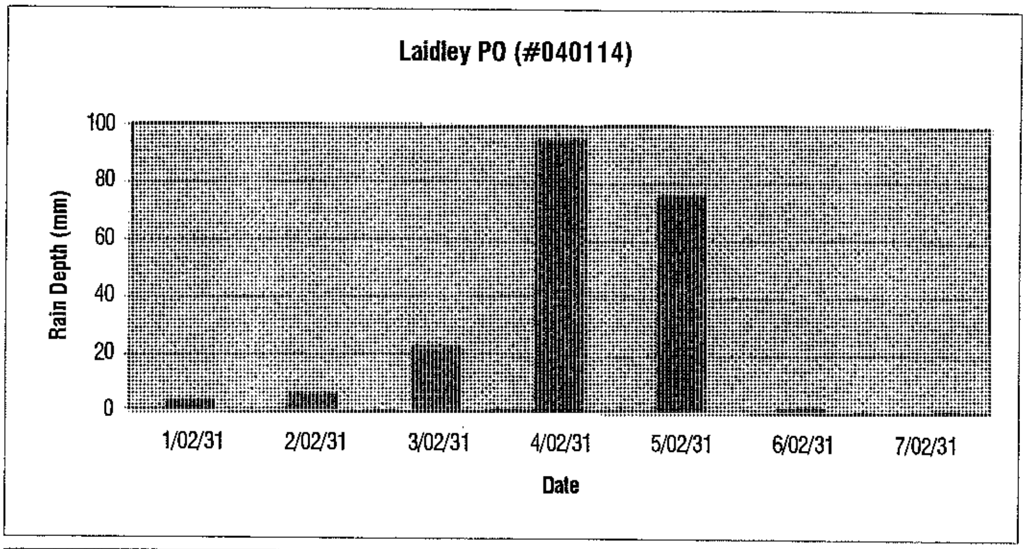
Hatton Vale (#040095)
Rain Depth (mm)
100
80
60
40
20
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

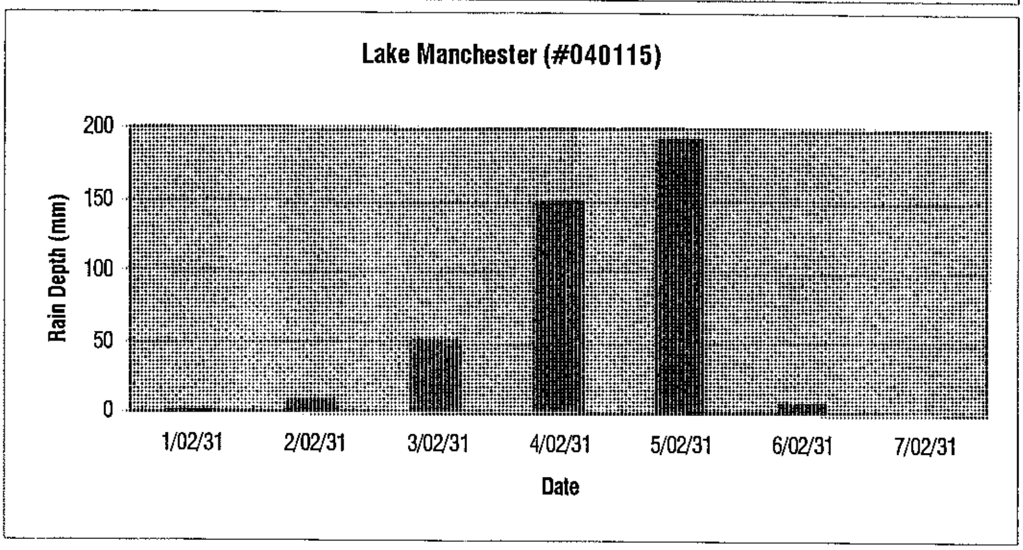

Helidon (#040096)
90
80
70
60
50
40
30
20
10
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

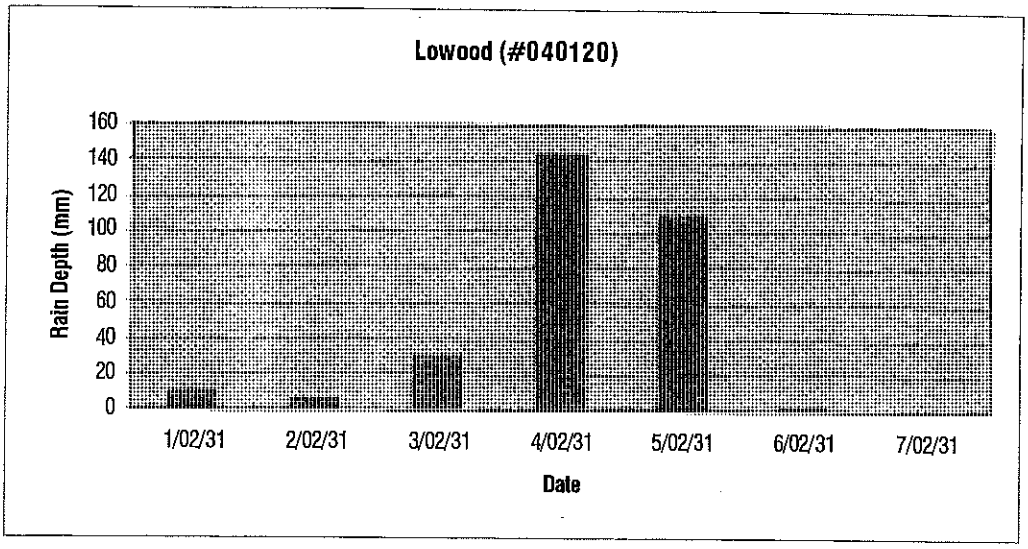

Ipswich Composite (#040101)
120
100
80
60
40
20
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

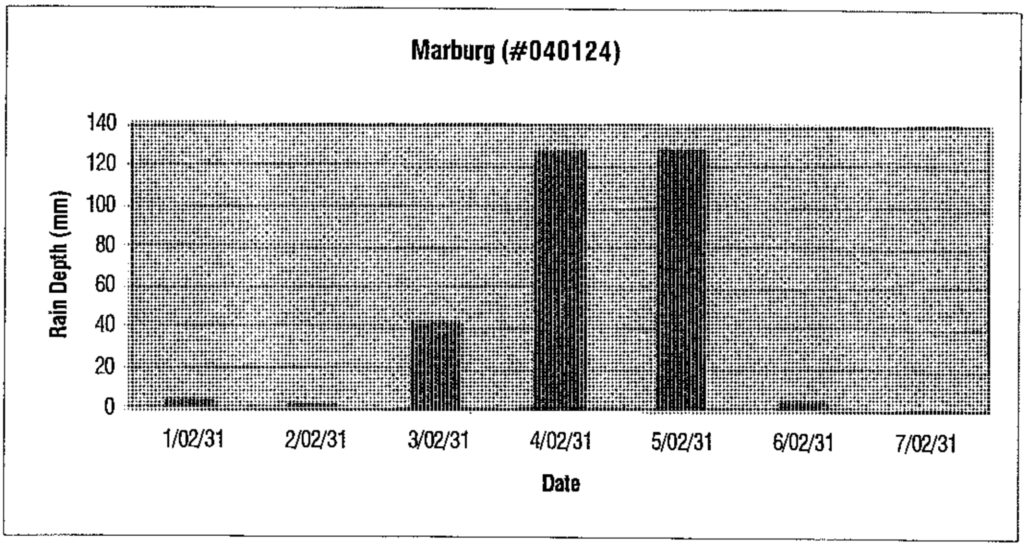

Kalbar (#040104)
70
60
50
40
30
20
10
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

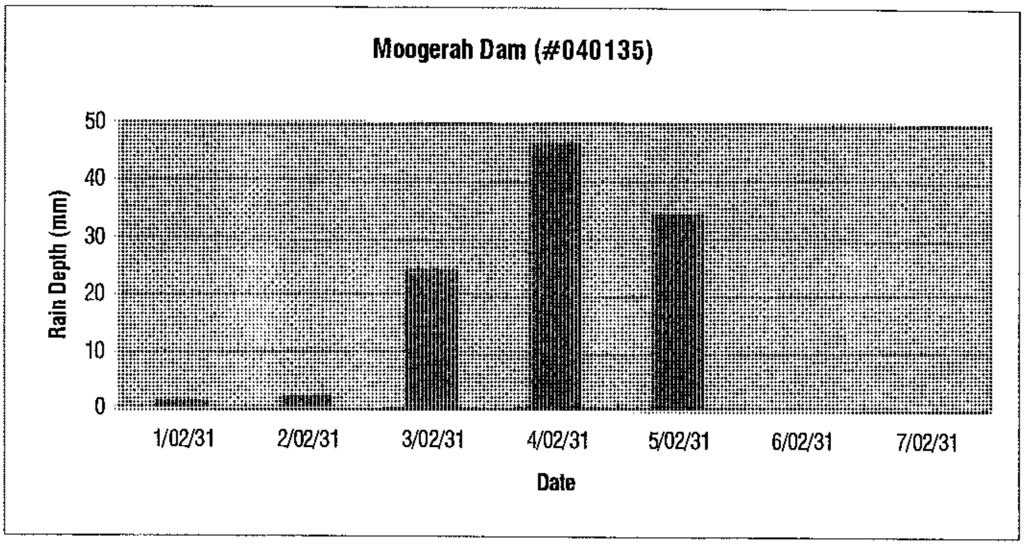

Beaudesert (#040107)
Rain Depth (mm)
90
80
70
60
50
40
30
20
10
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

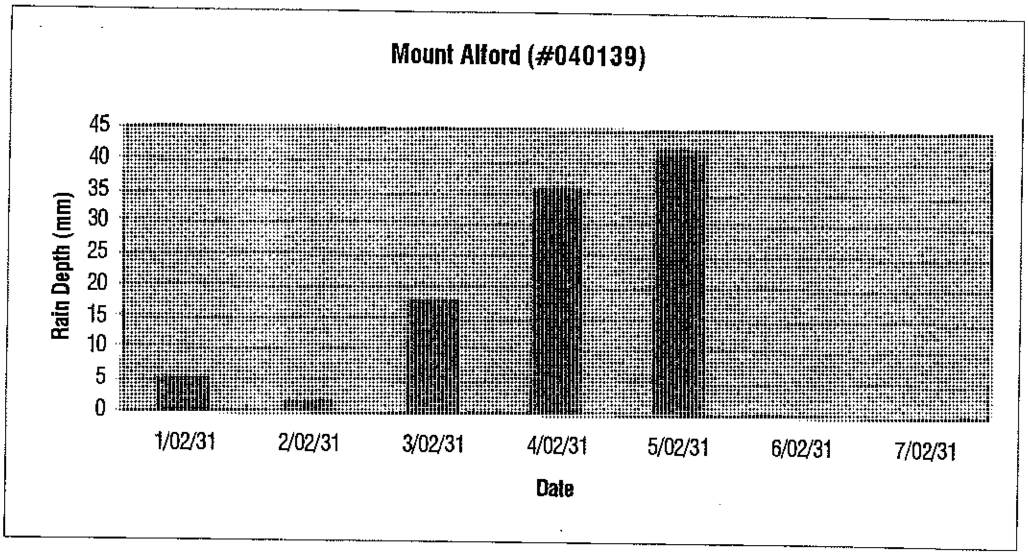

Laidley PO (#040114)
Rain Depth (mm)
100
80
60
40
20
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date


Lake Manchester (#040115)
Rain Depth (mm)
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

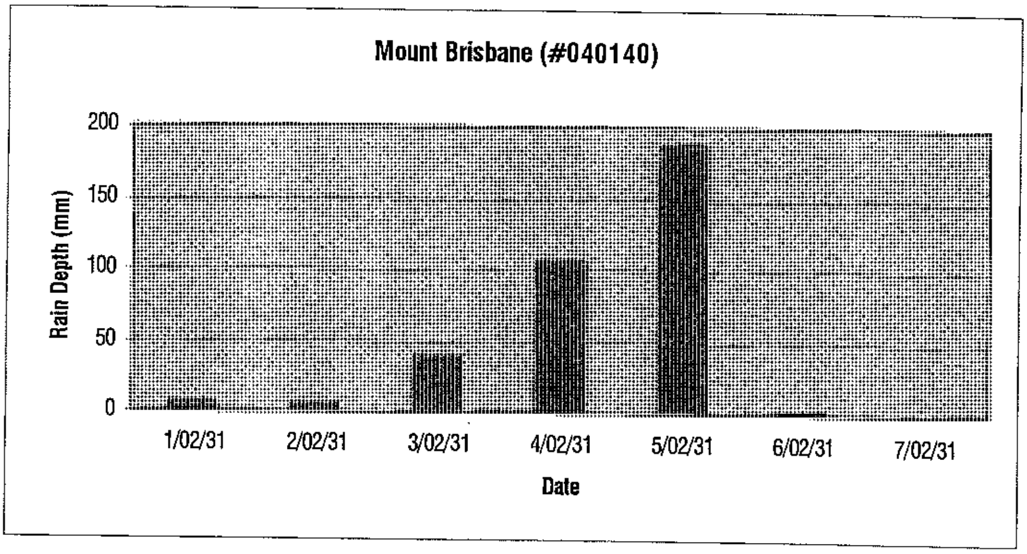

Lowood (#040120)
160
140
120
100
80
60
40
20
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date


Marburg (#040124)
140
120
100
80
60
40
20
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

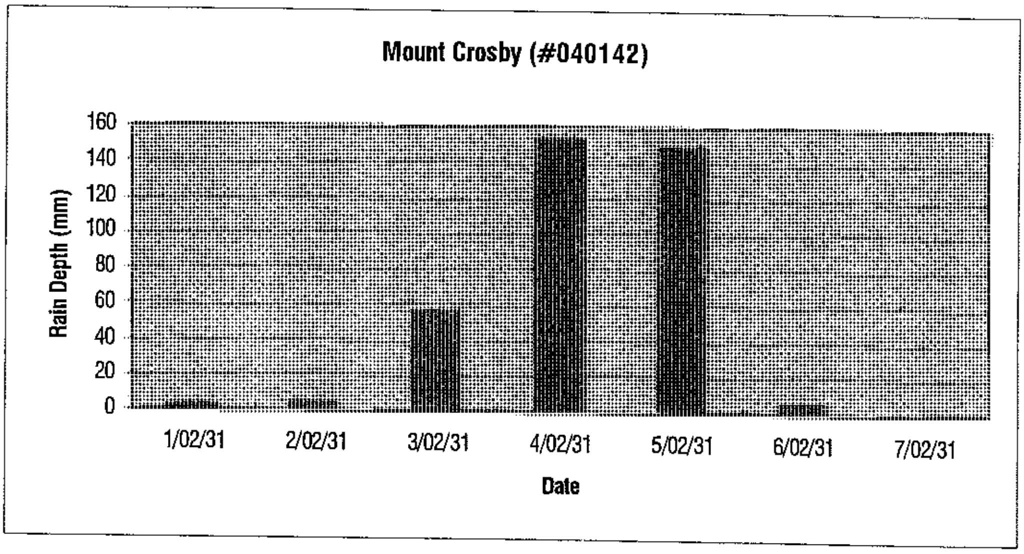

Moogerah Dam (#040135)
50
40
30
20
10
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date



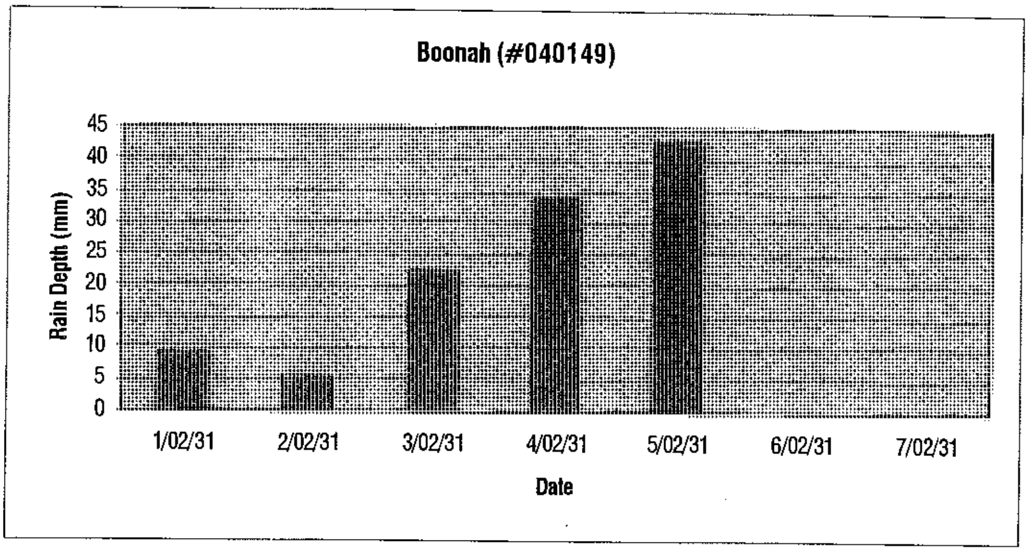
Mount Alford (#040139)
Rain Depth (mm)
45
40
35
30
25
20
15
10
5
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

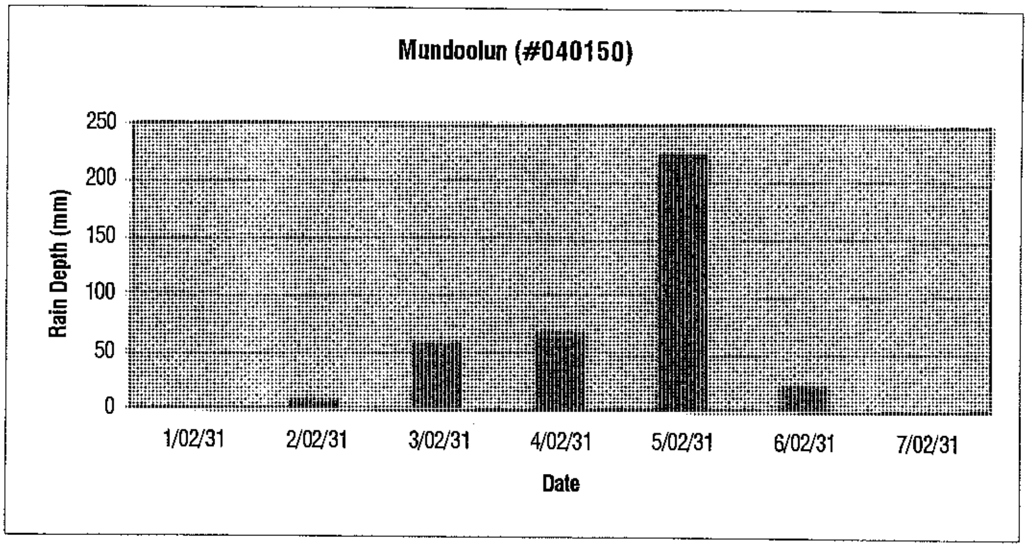


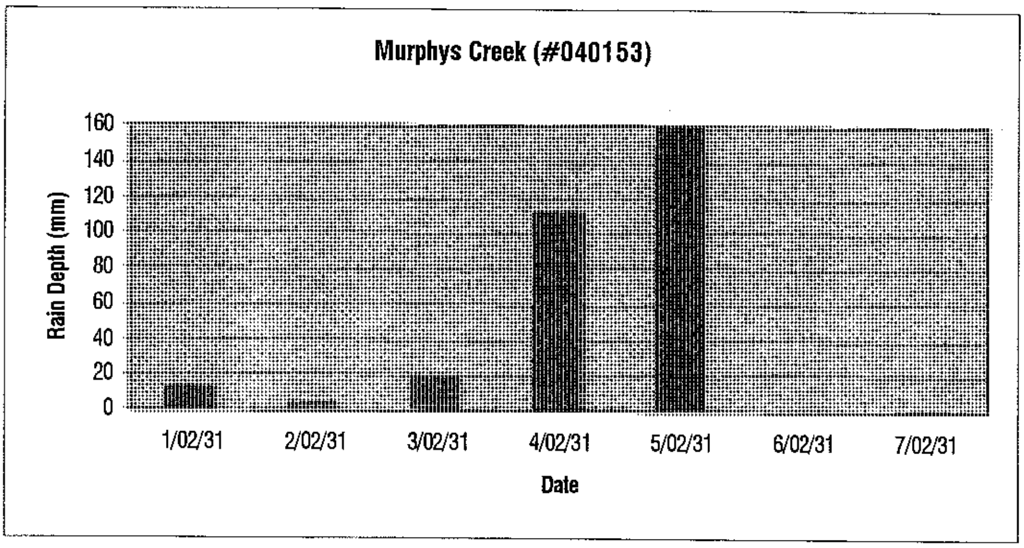
Mount Brisbane (#040140)
Rain Depth (mm)
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

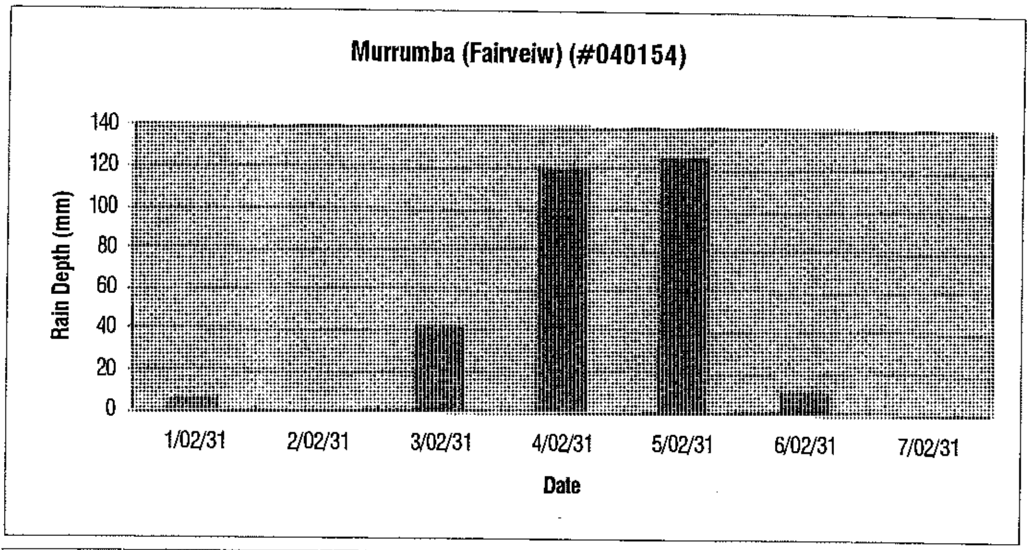


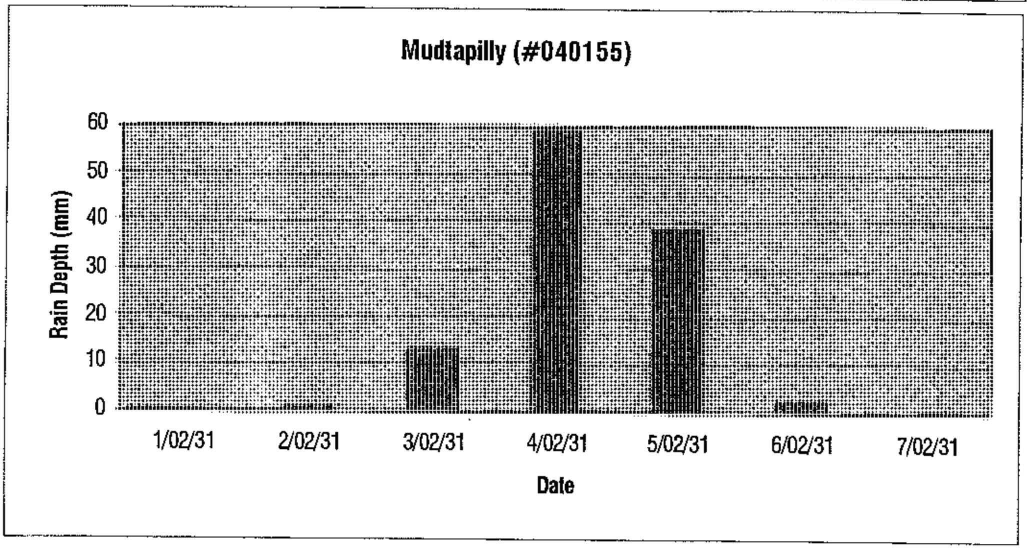
Mount Crosby (#040142)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

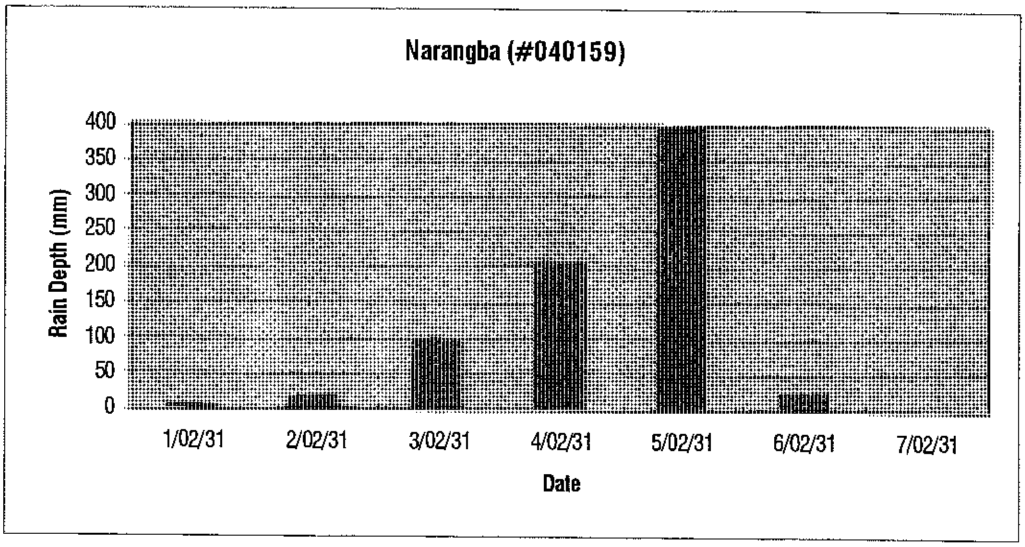

Boonah (#040149)
45
40
35
30
25
20
15
10
5
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

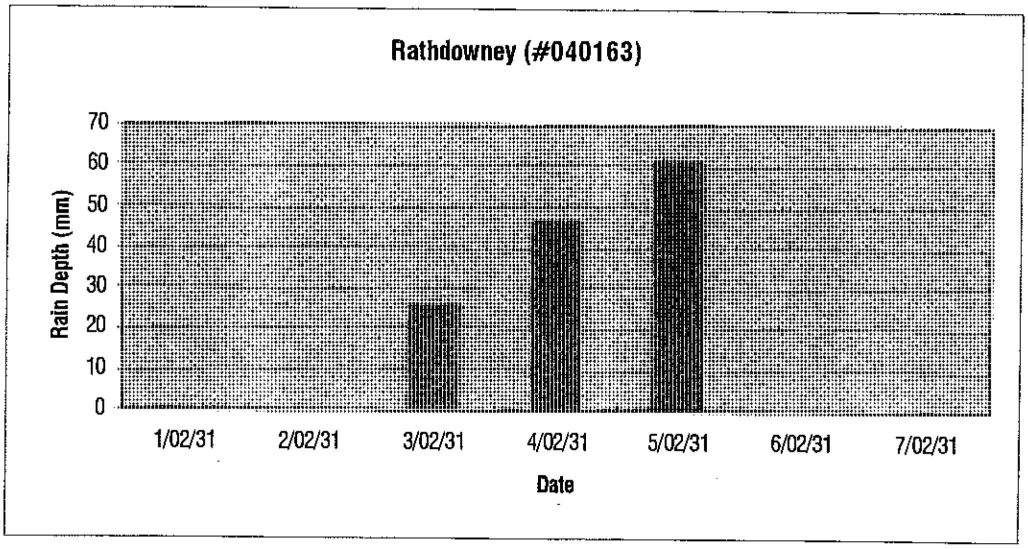

Mundoolun (#040150)
250
200
150
100
50
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

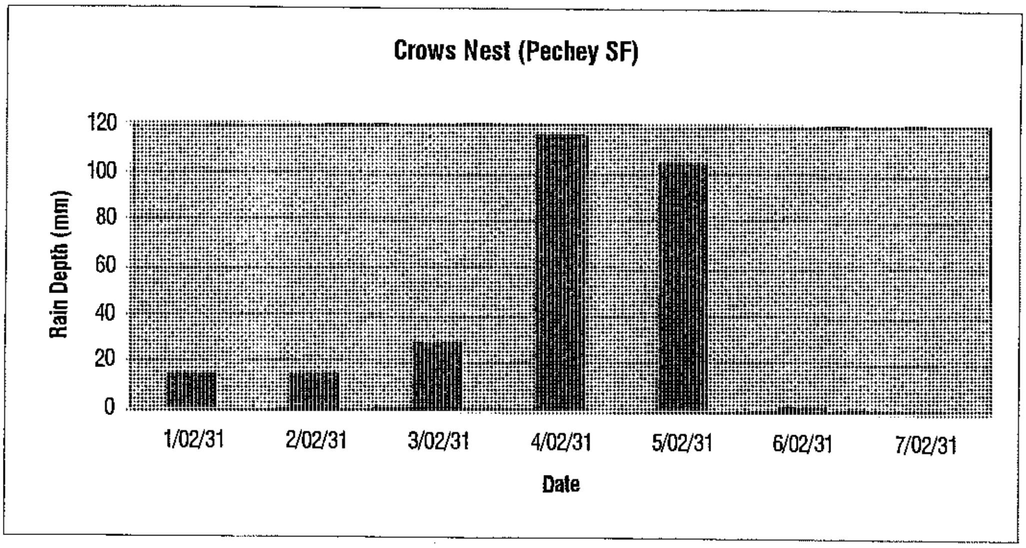

Murphys Creek (#040153)
160
140
120
100
80
60
40
20
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

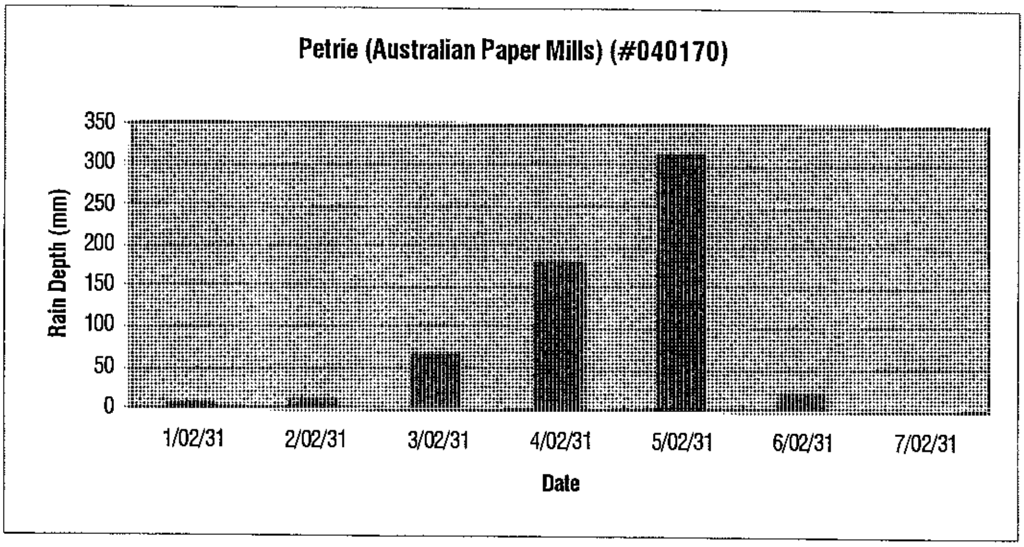

Murrumba (Fairveiw) (#040154)
Rain Depth (mm)
140
120
100
80
60
40
20
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

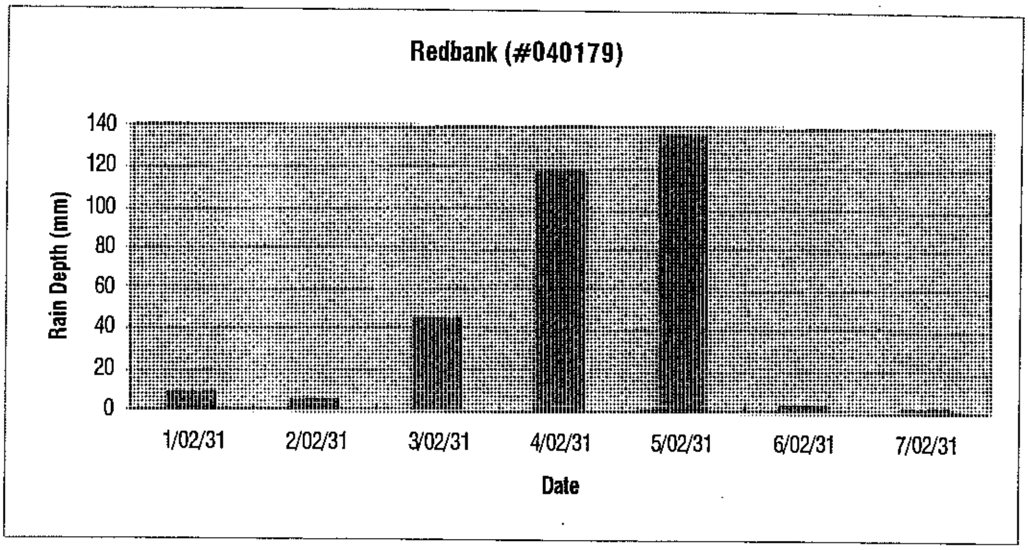

Mudtapilly (#040155)
Rain Depth (mm)
60
50
40
30
20
10
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

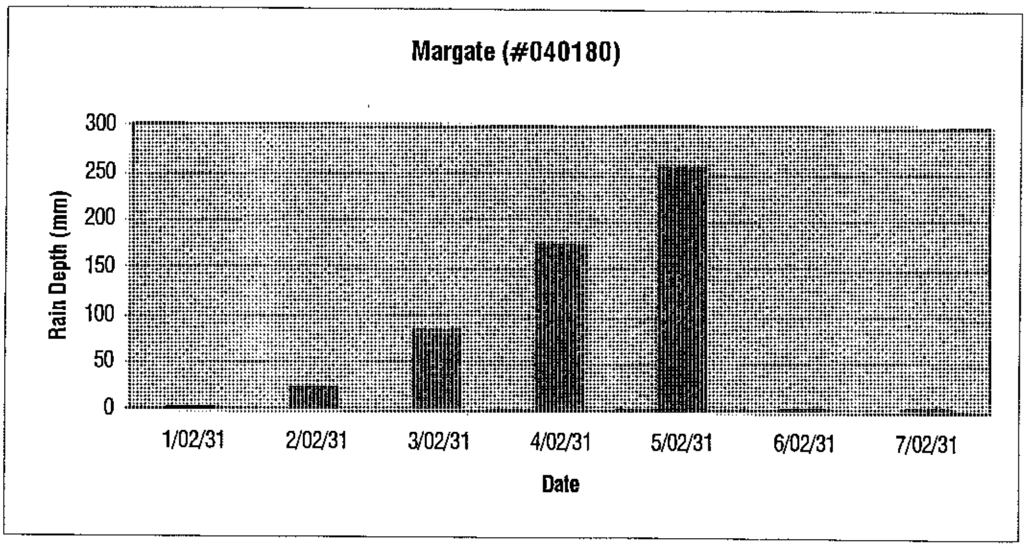

Narangba (#040159)
Rain Depth (mm)
400
350
300
250
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

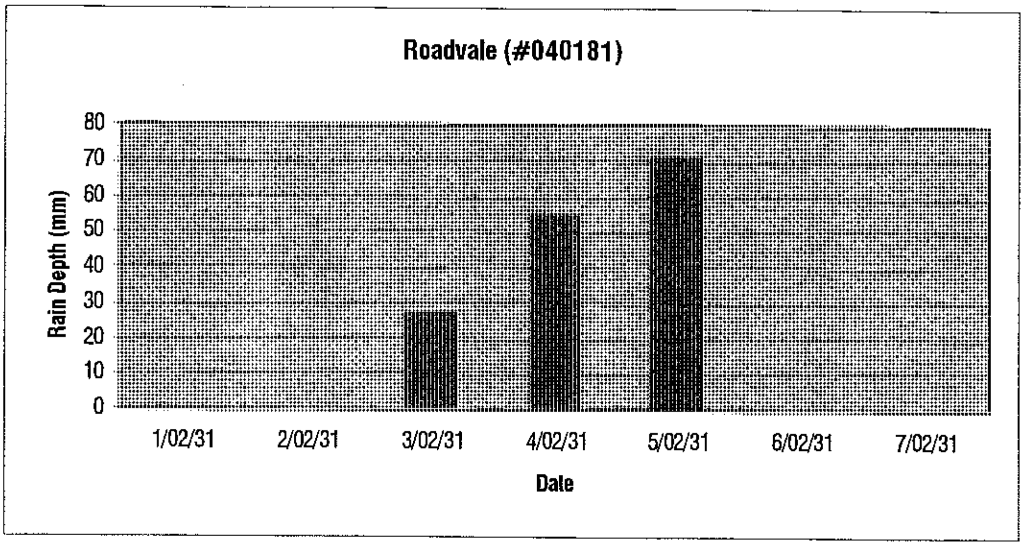

Rathdowney (#040163)
70
60
50
40
30
20
10
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

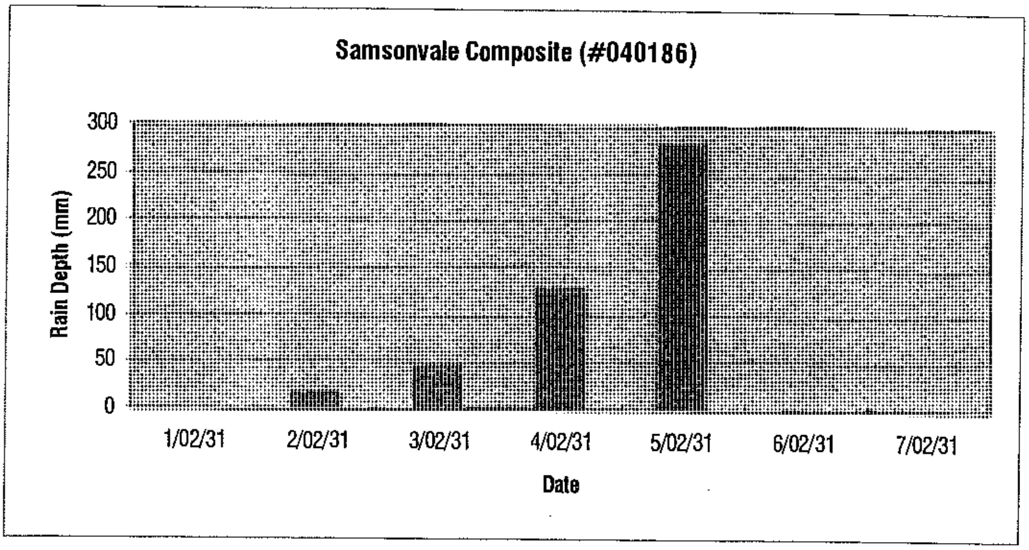

Crows Nest (Pechey SF)
120
100
80
60
40
20
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

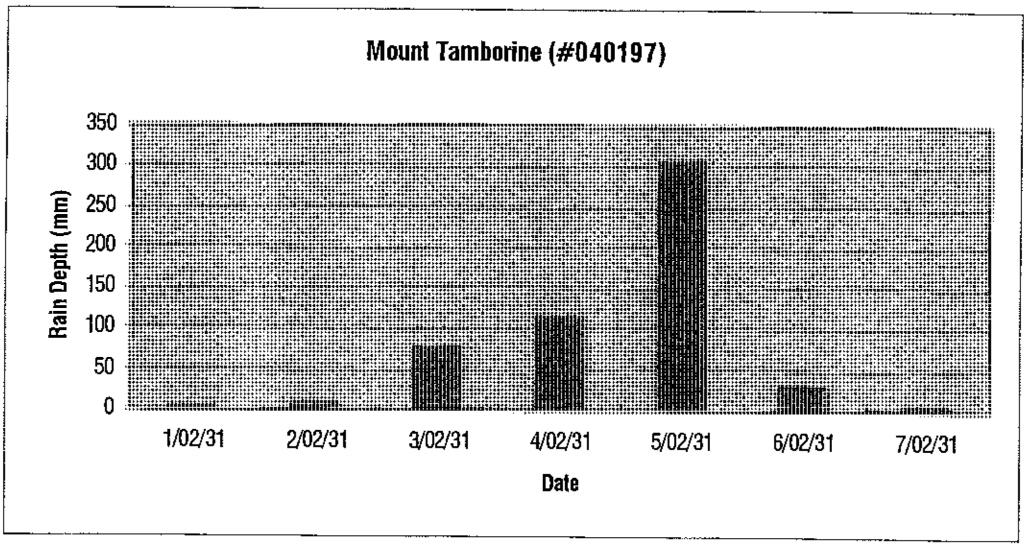

Petrie (Australian Paper Mills) (#040170)
350
300
250
200
150
100
50
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

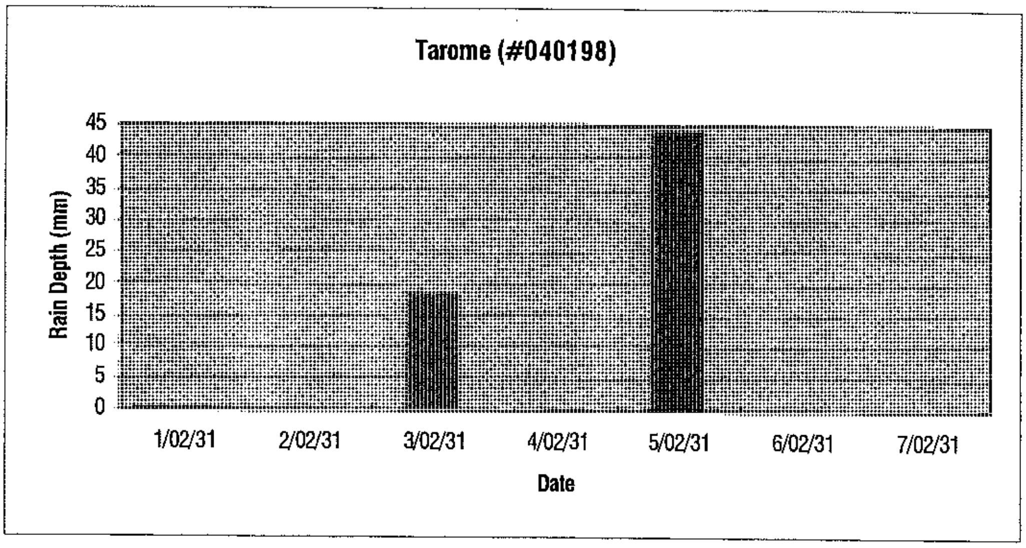

Redbank (#040179)
140
120
100
80
60
40
20
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

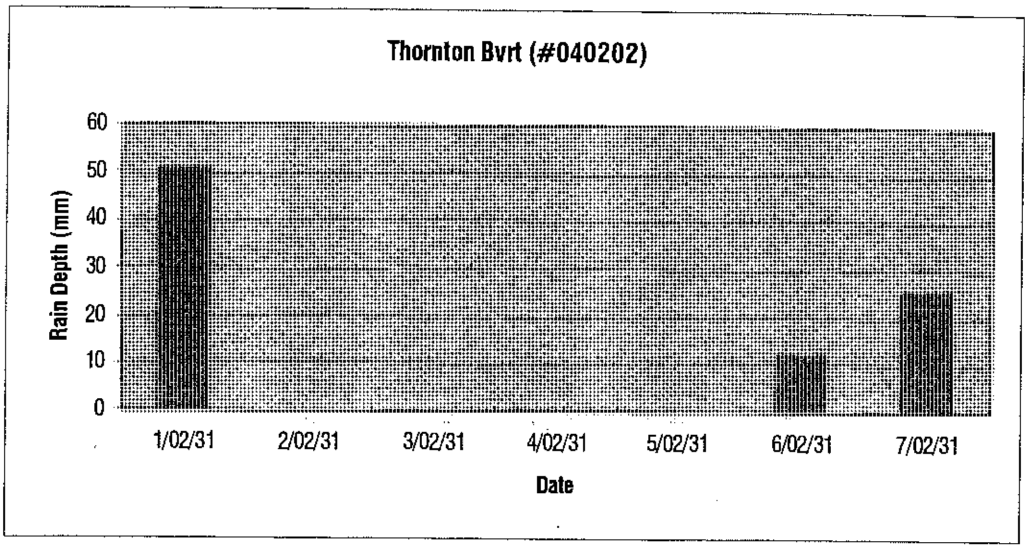

Margate (#040180)
300
250
200
150
100
50
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

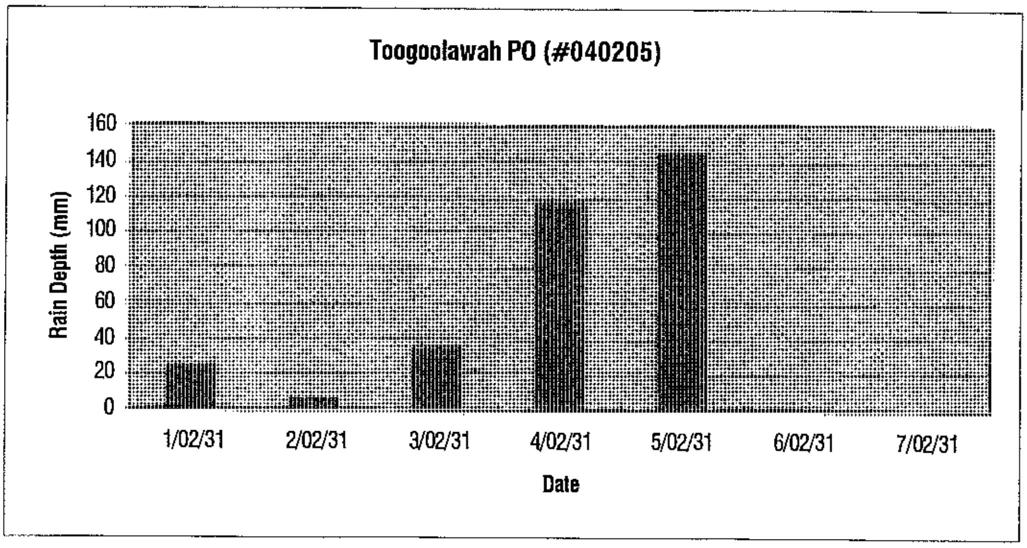

Roadvale (#040181)
80
70
60
50
40
30
20
10
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

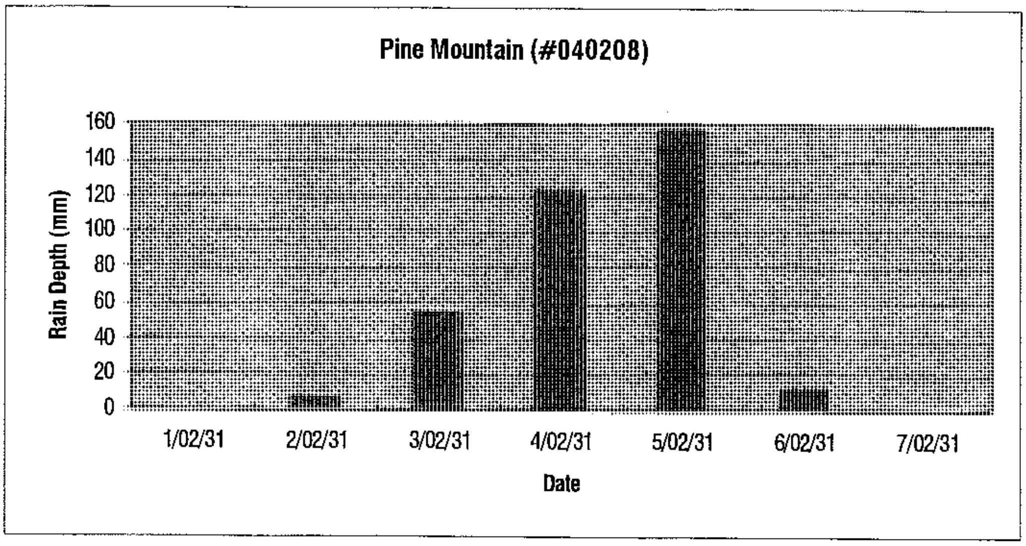

Samsonvale Composite (#040186)
300
250
200
150
100
50
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

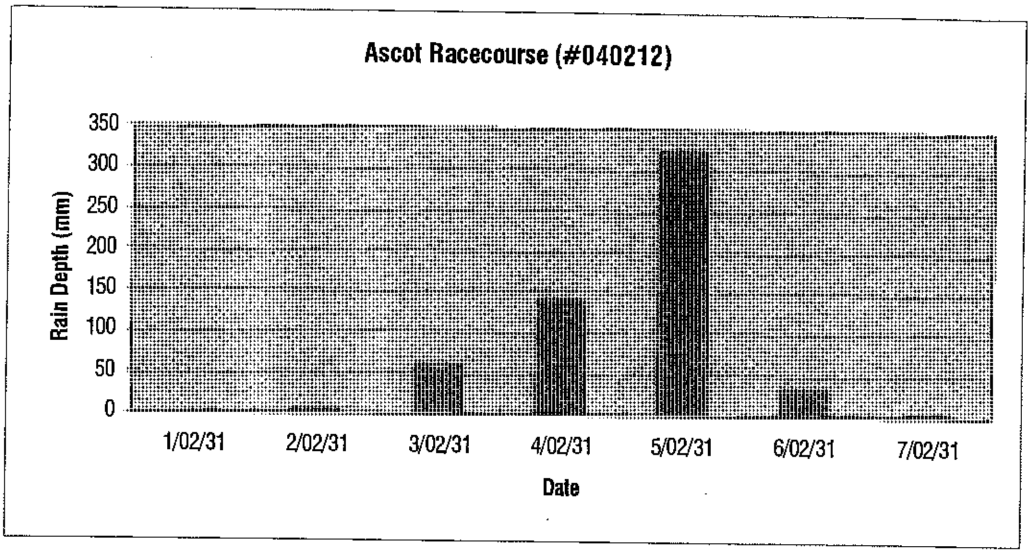

Mount Tamborine (#040197)
350
300
250
200
150
100
50
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

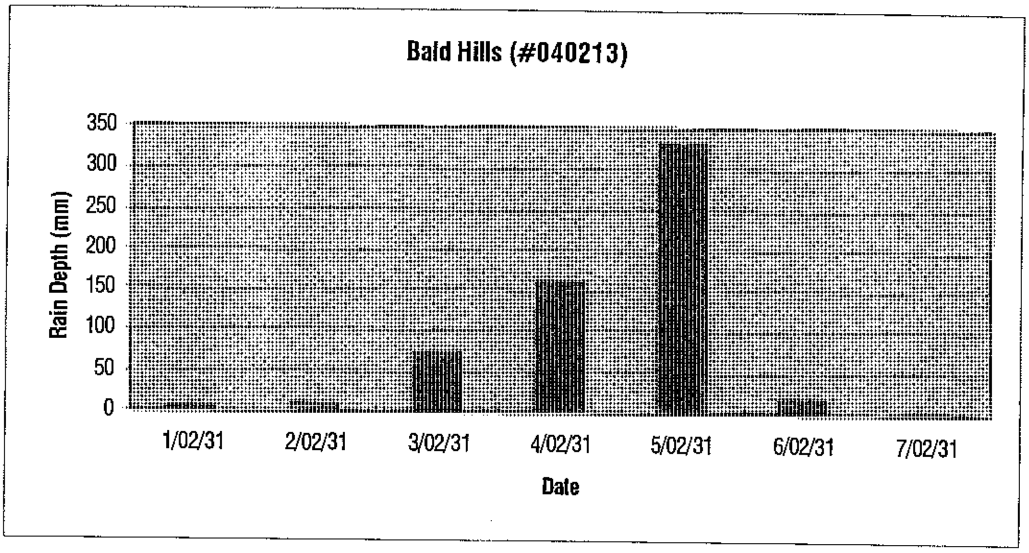

Tarome (#040198)
45
40
35
30
25
20
15
10
5
0
Rain Depth (mm)
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

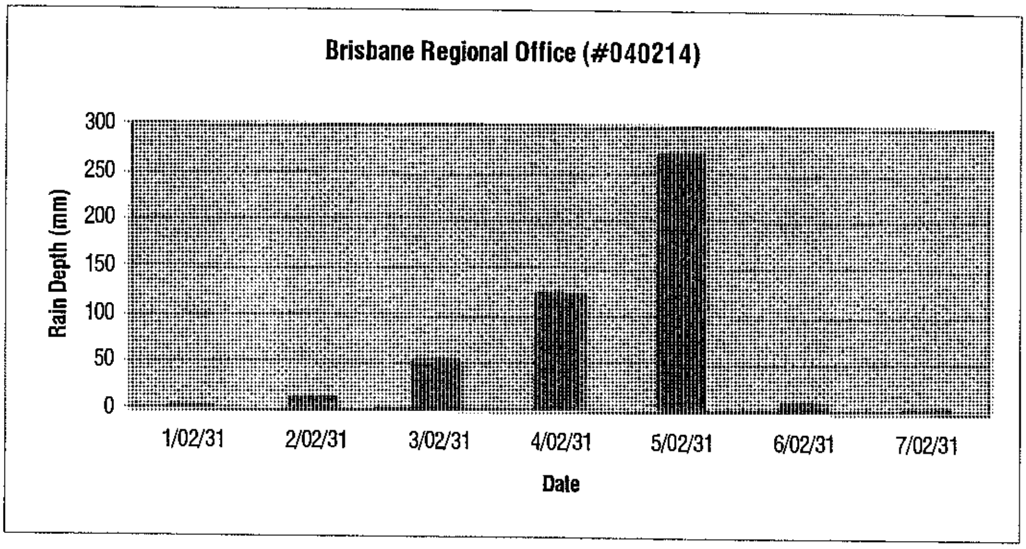

Thornton Bvrt (#040202)
Rain Depth (mm)
60
50
40
30
20
10
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

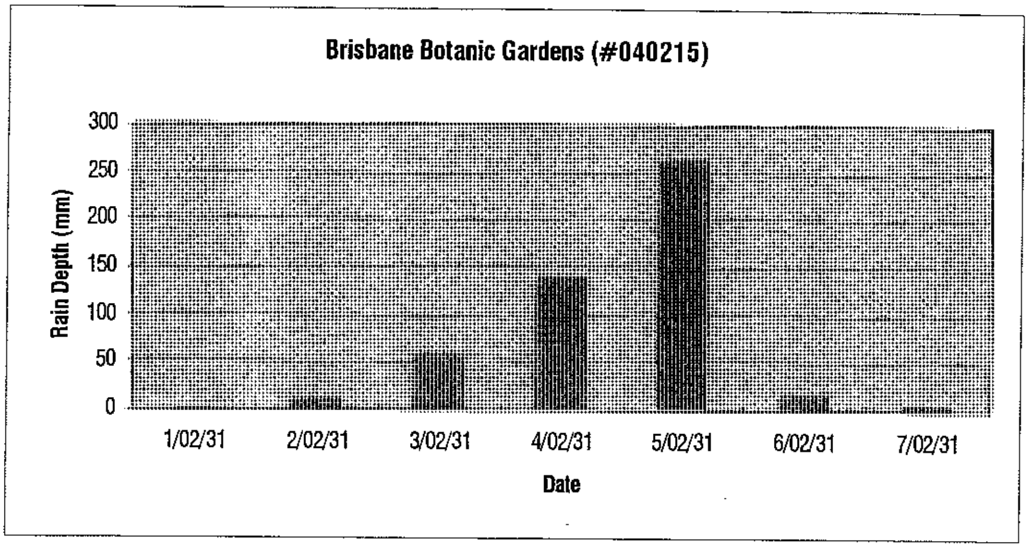

Toogoolawah PO (#040205)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date


Pine Mountain (#040208)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

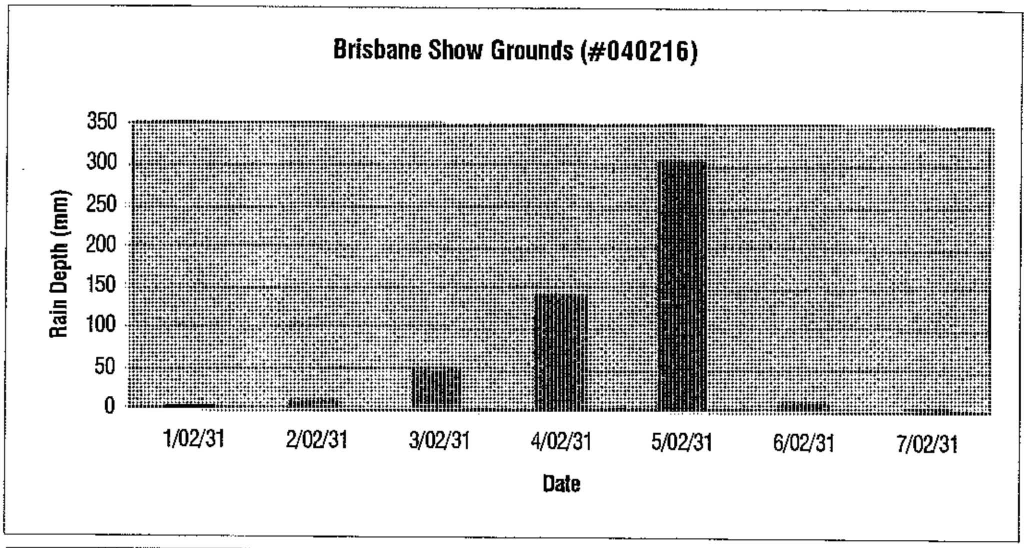

Ascot Racecourse (#040212)
Rain Depth (mm)
350
300
250
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date


Bald Hills (#040213)
Rain Depth (mm)
350
300
250
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

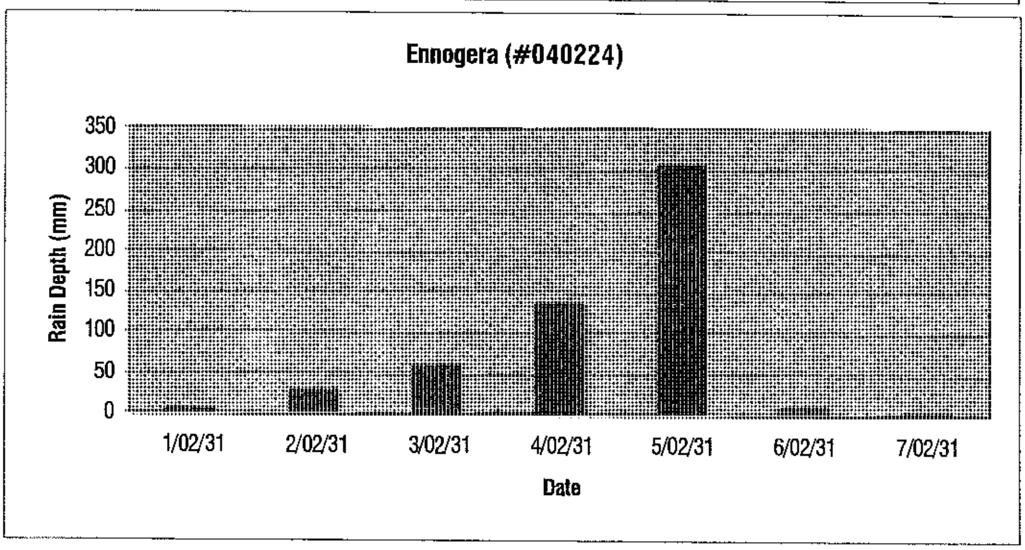

Brisbane Regional Office (#040214)
Rain Depth (mm)
300
250
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date



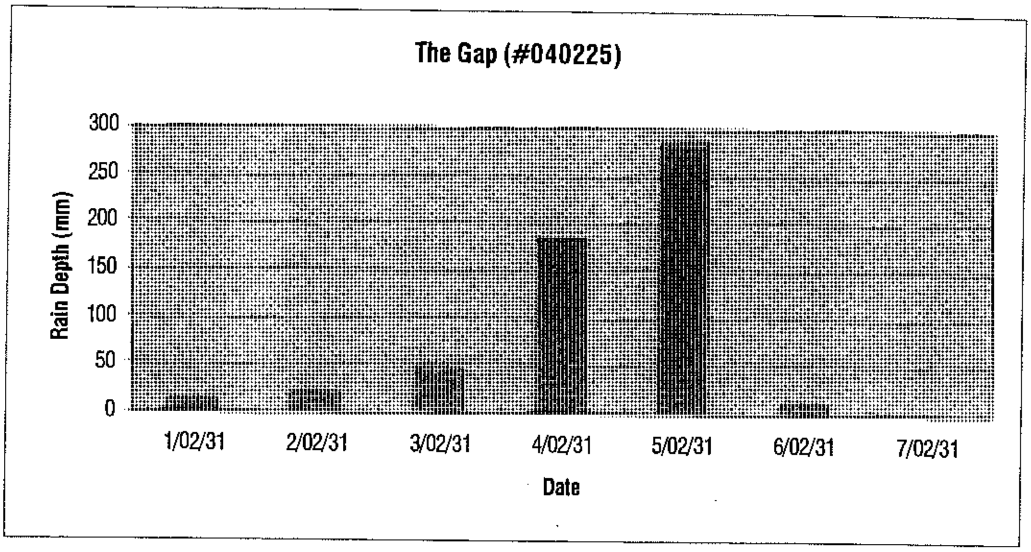
Brisbane Botanic Gardens (#040215)
Rain Depth (mm)
300
250
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

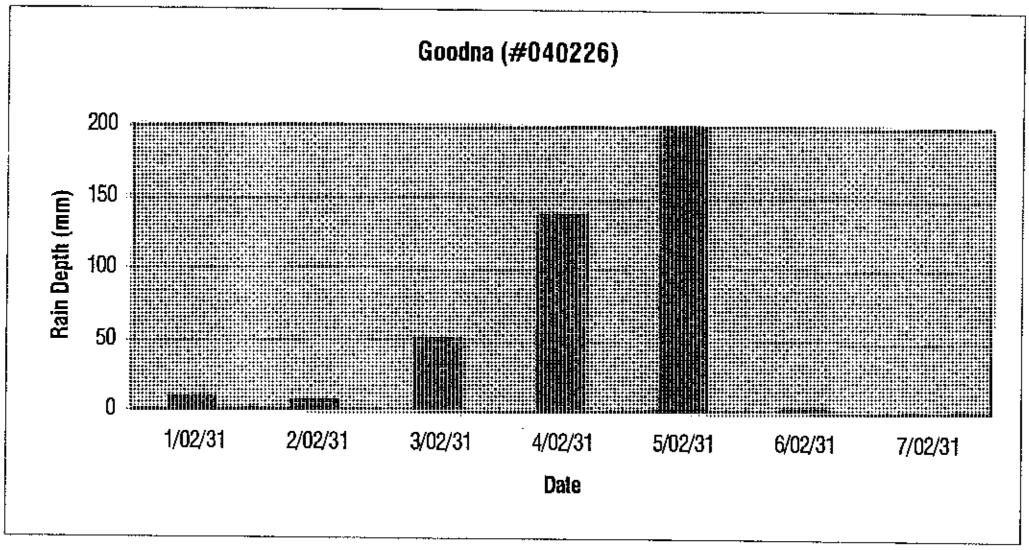


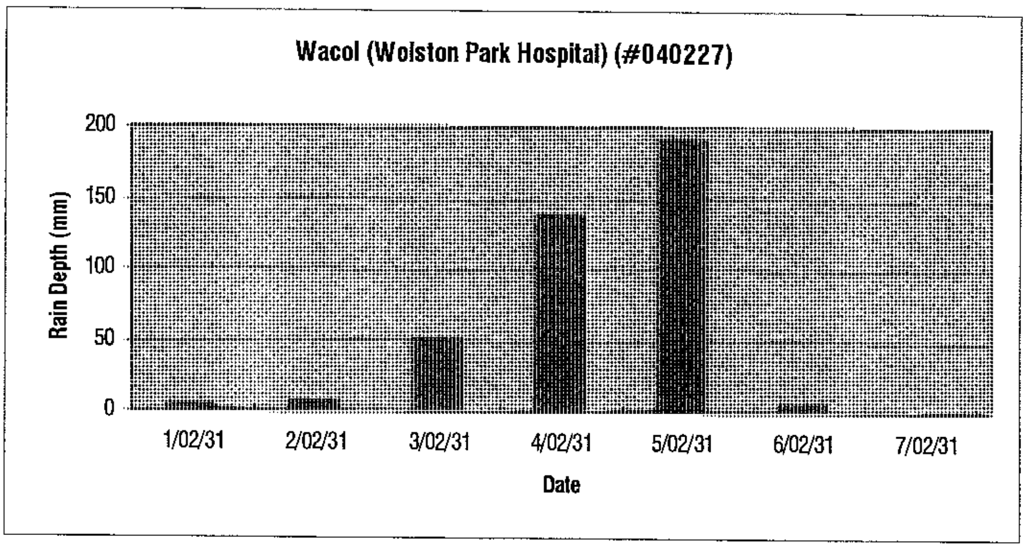
Brisbane Show Grounds (#040216)
Rain Depth (mm)
350
300
250
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date



Ennogera (#040224)
Rain Depth (mm)
350
300
250
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

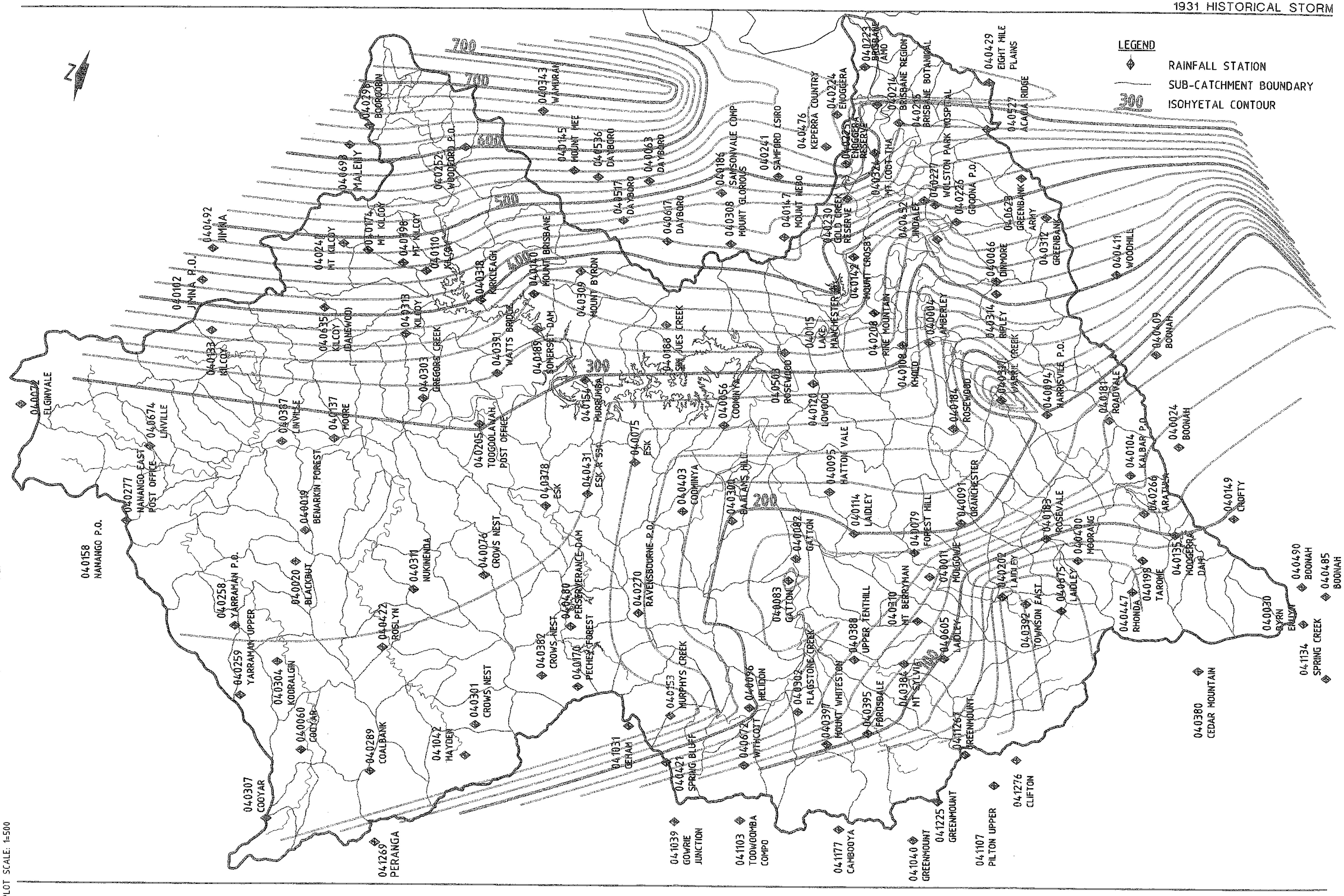

The Gap (#040225)
Rain Depth (mm)
300
250
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date


Goodna (#040226)
Rain Depth (mm)
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date


Wacol (Wolston Park Hospital) (#040227)
Rain Depth (mm)
200
150
100
50
0
1/02/31
2/02/31
3/02/31
4/02/31
5/02/31
6/02/31
7/02/31
Date

1955 Daily Rainfall Patterns

FIGURE 3.1
BRISBANE RIVER FLOOD STUDY
1931 HISTORICAL STORM

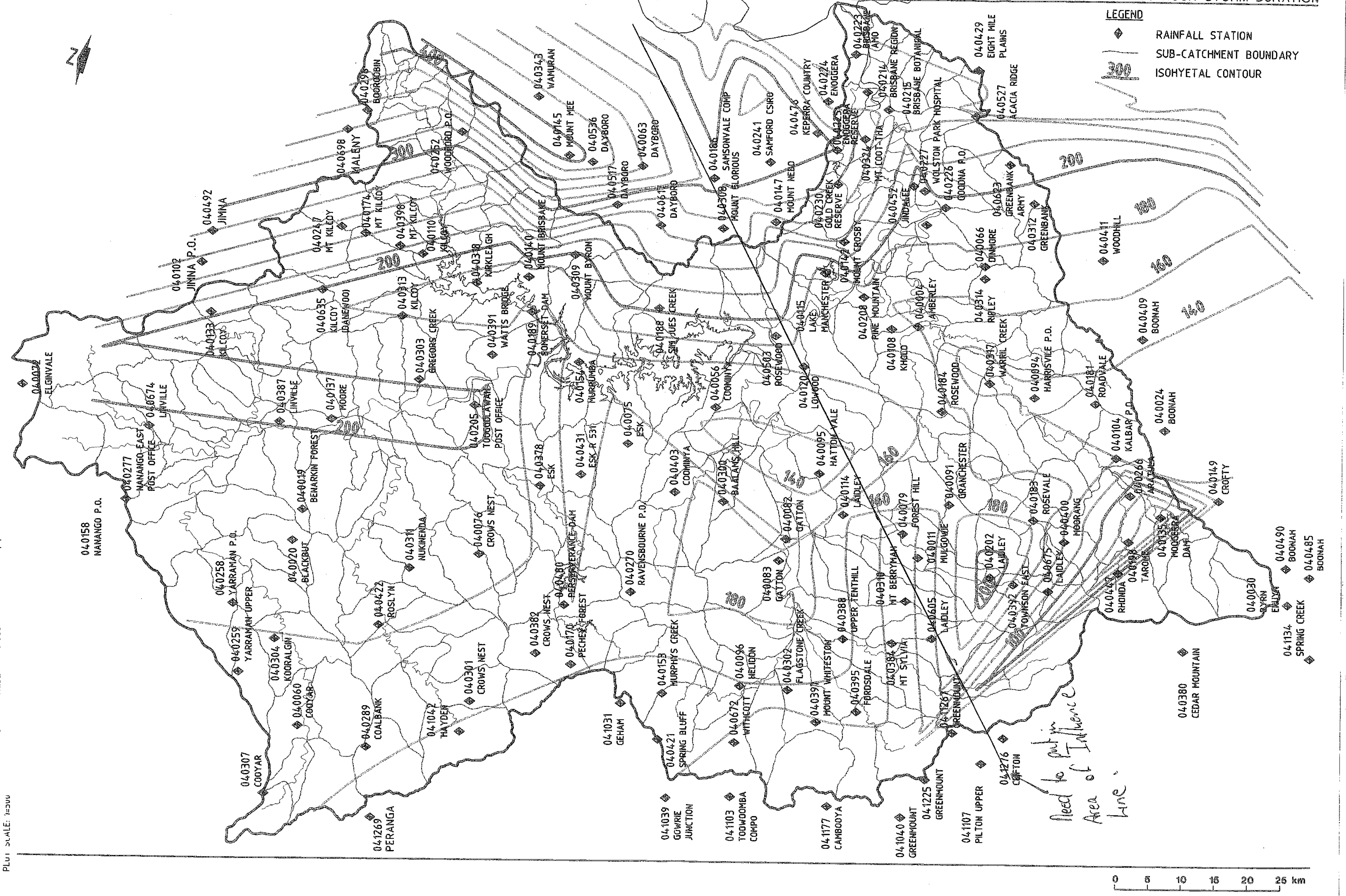


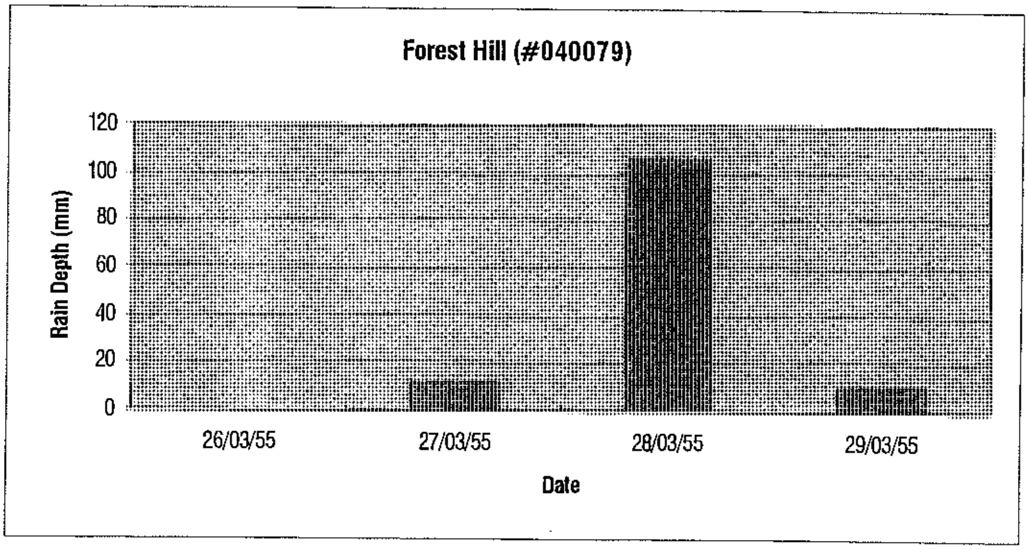
PLOT SCALE: 1=500

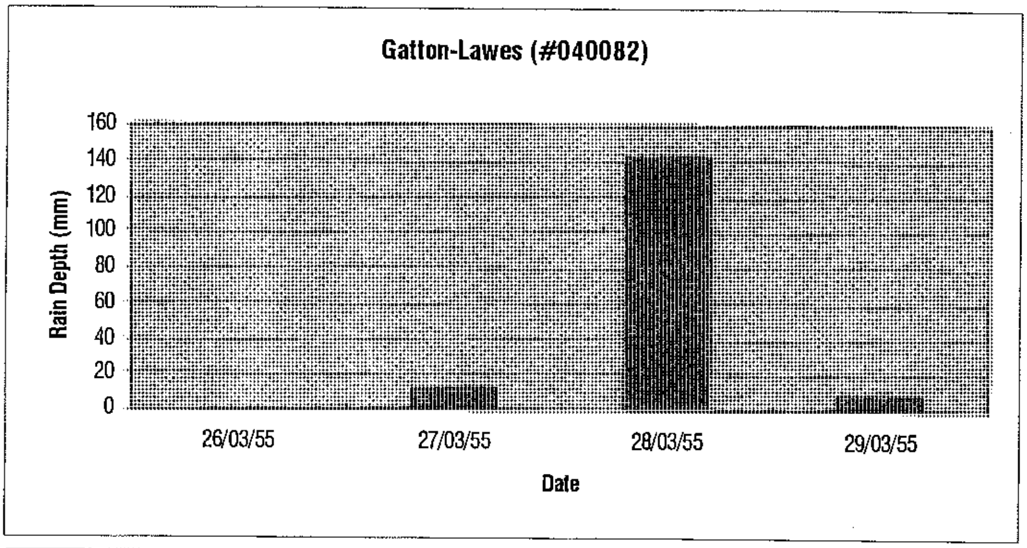
FIGURE 3.2

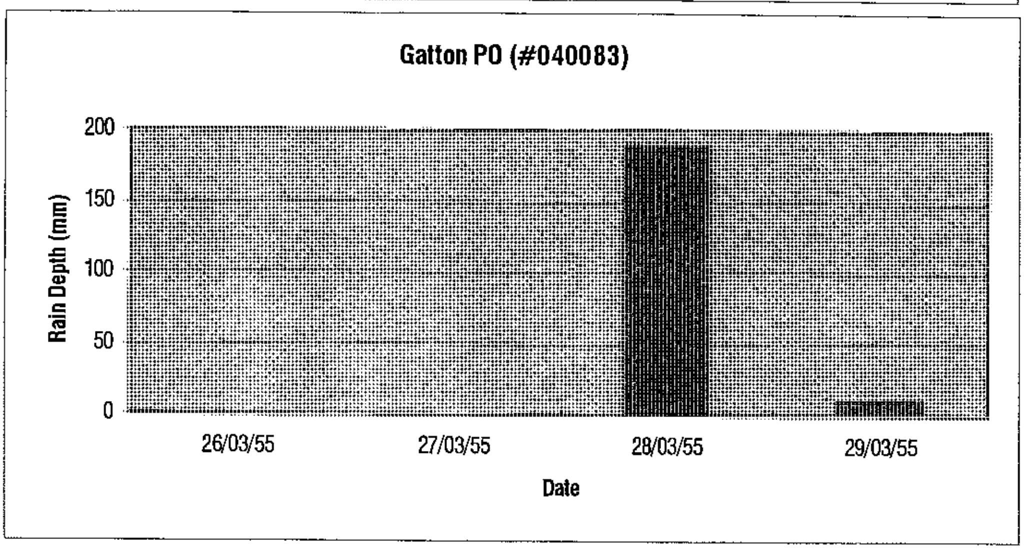
BRISBANE RIVER FLOOD STUDY

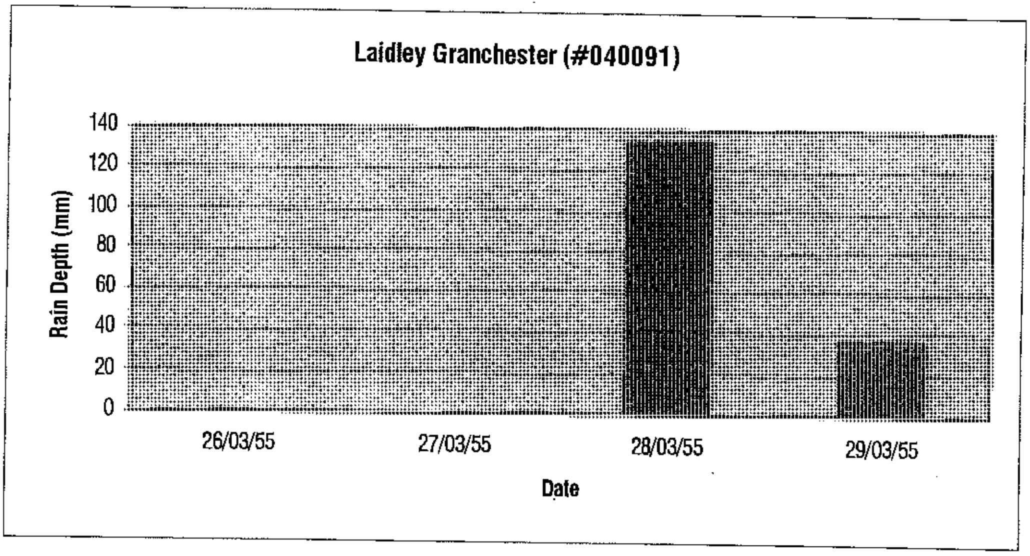
1955 HISTORICAL STORM ~~2 YEAR ARI - 30 HOUR STORM DURATION~~

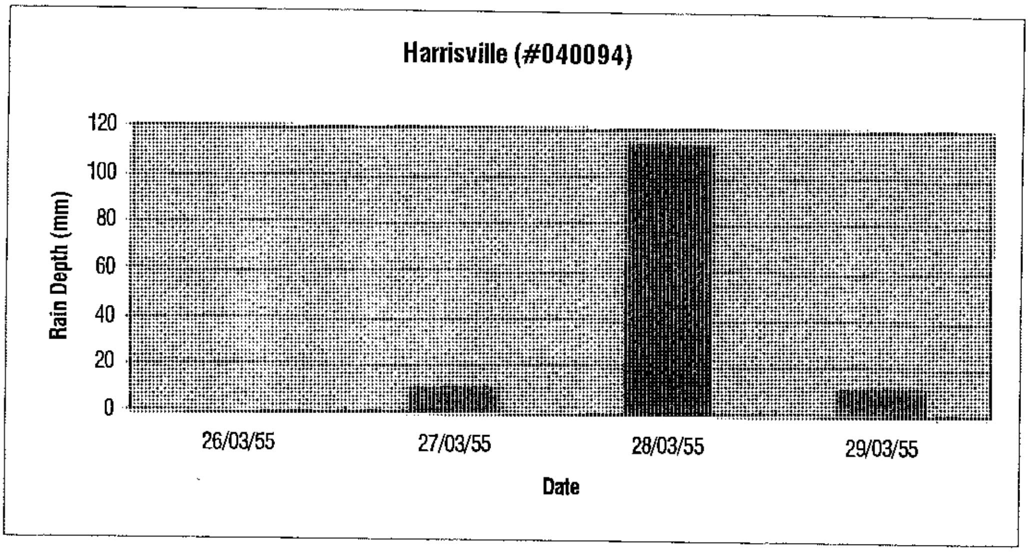


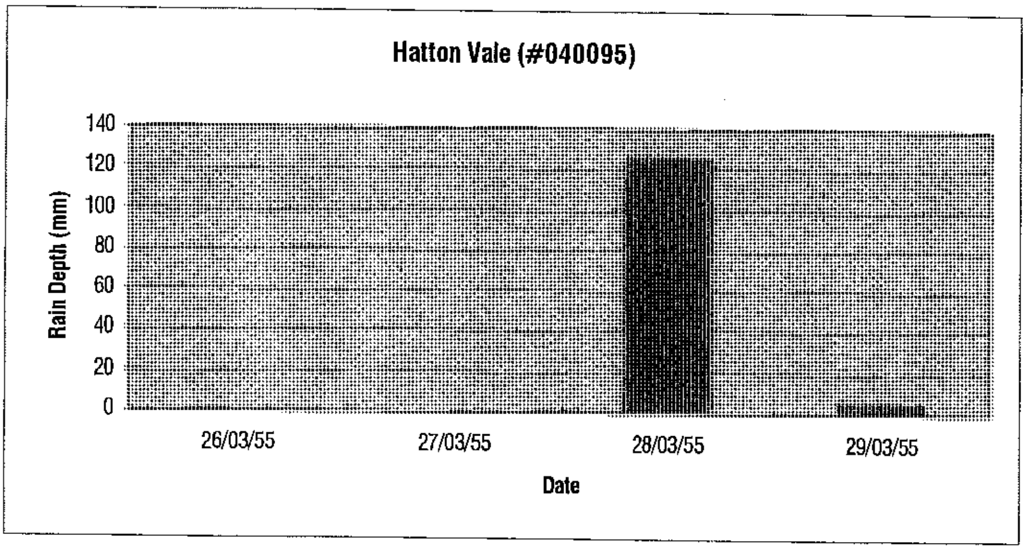

Forest Hill (#040079)
Rain Depth (mm)
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

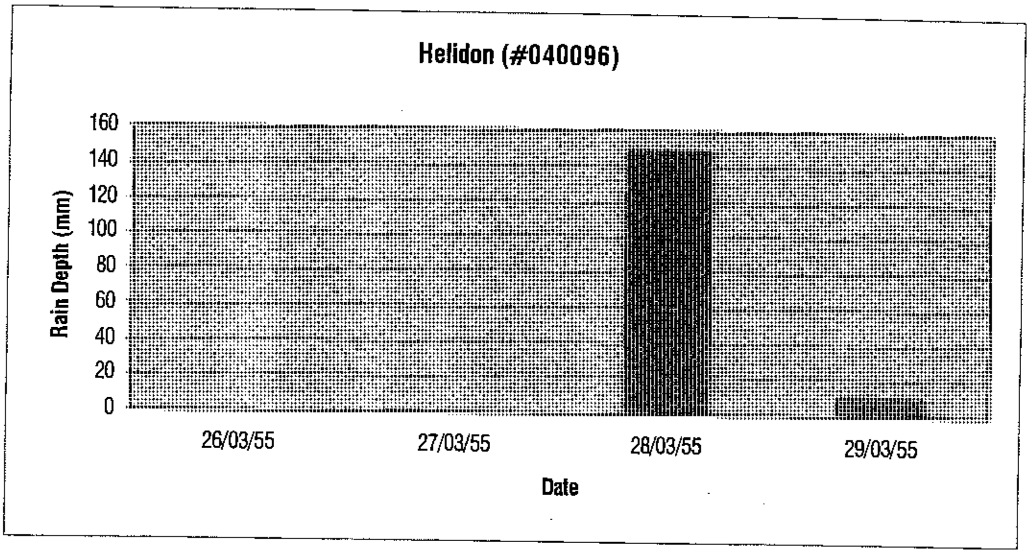

Gatton-Lawes (#040082)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

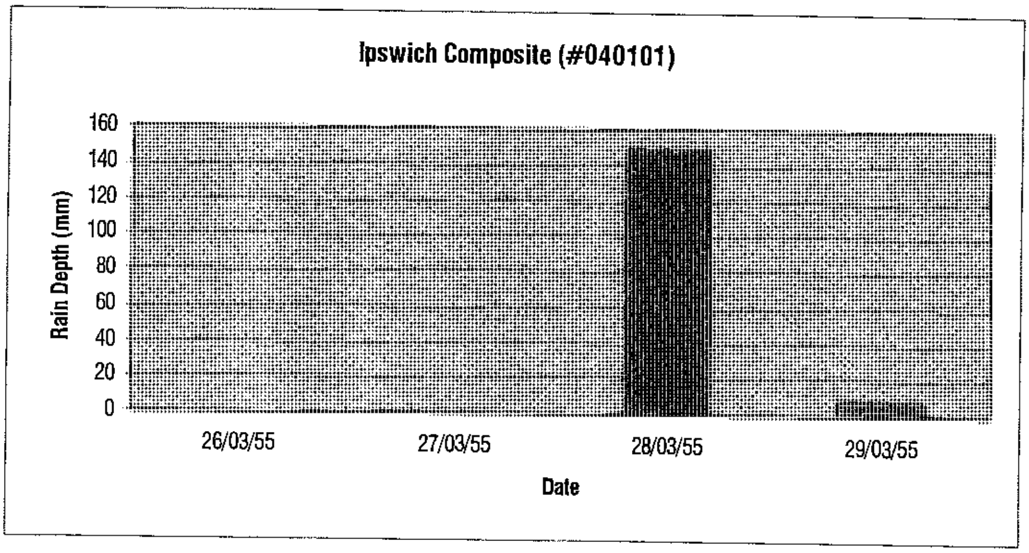

Gatton PO (#040083)
Rain Depth (mm)
200
150
100
50
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

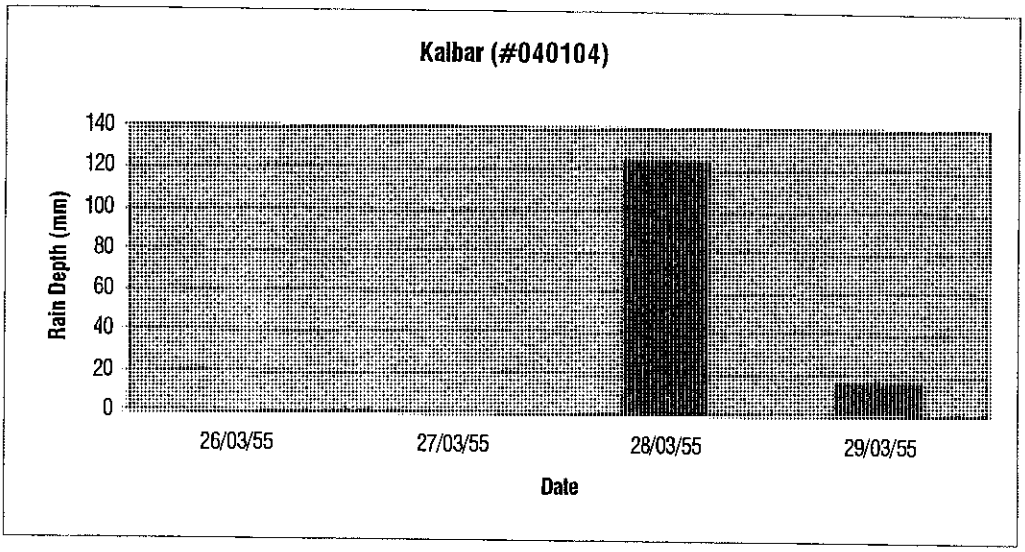

Laidley Granchester (#040091)
140
120
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

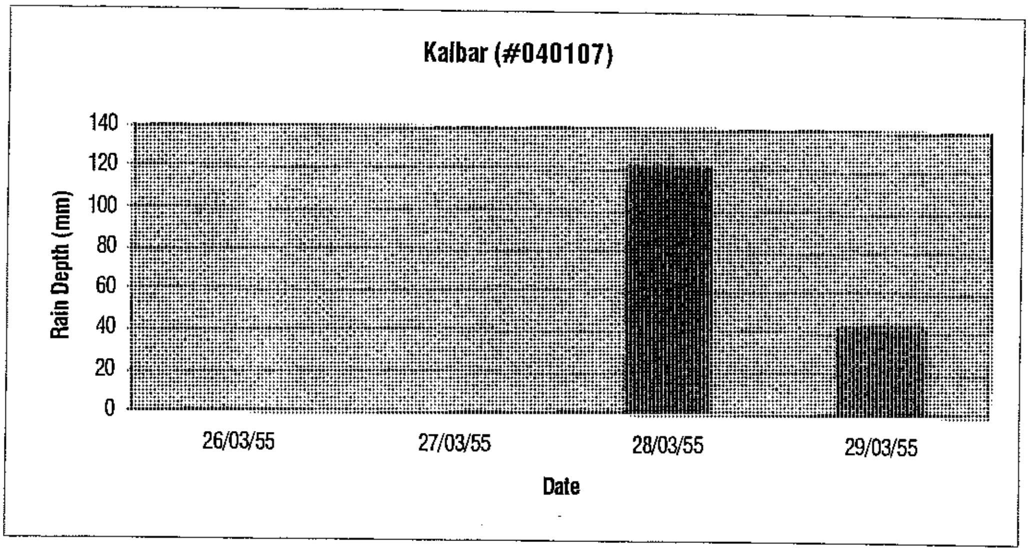

Harrisville (#040094)
120
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

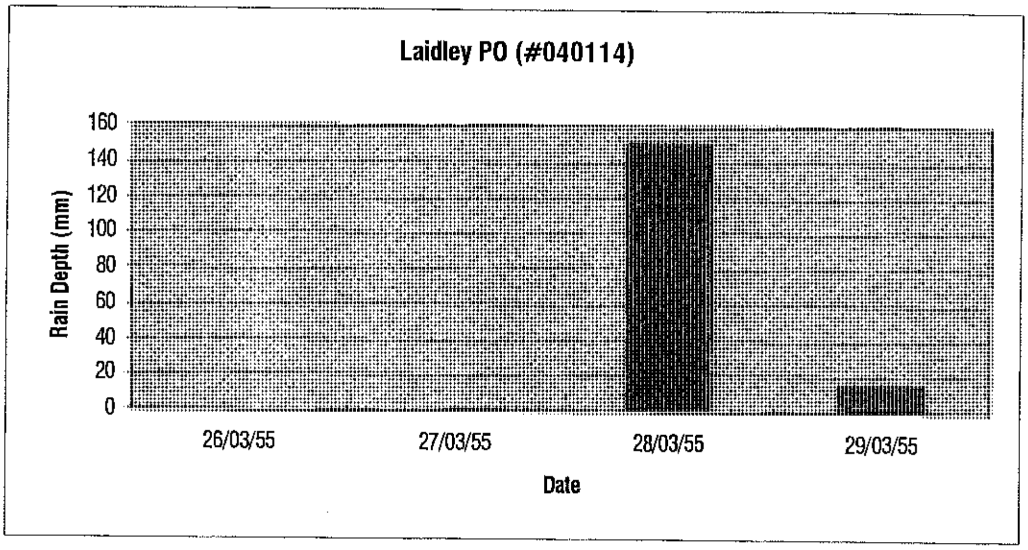

Hatton Vale (#040095)
140
120
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

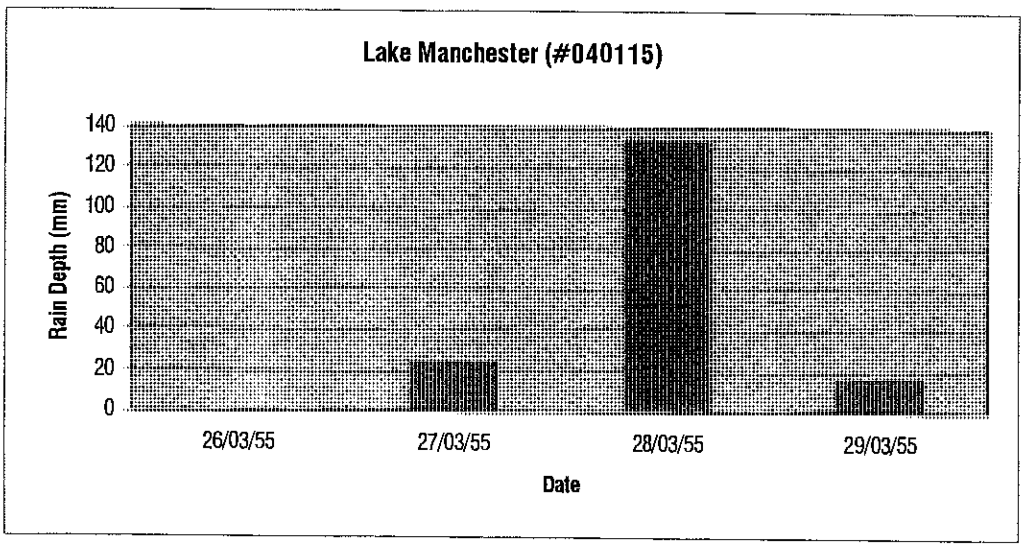

Helidon (#040096)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

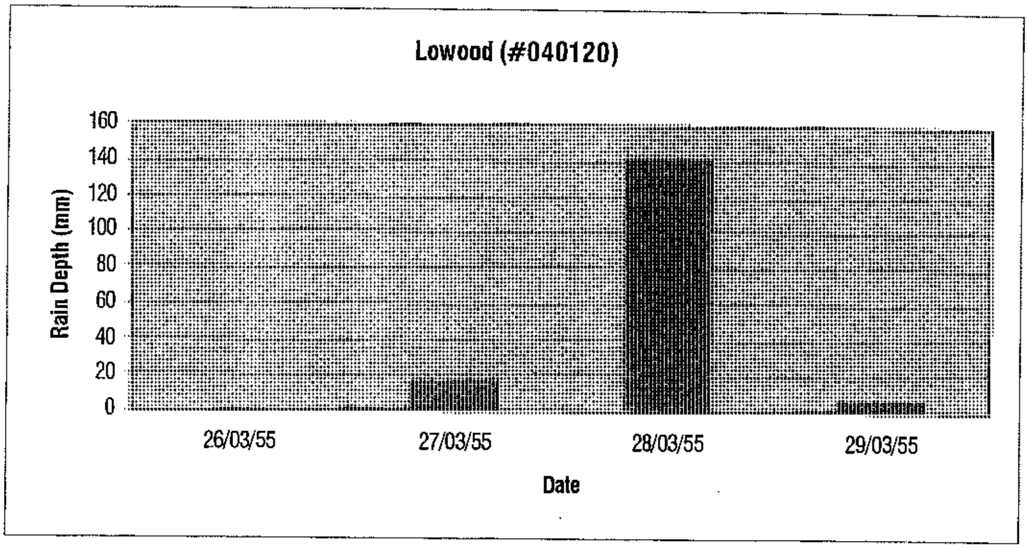

Ipswich Composite (#040101)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

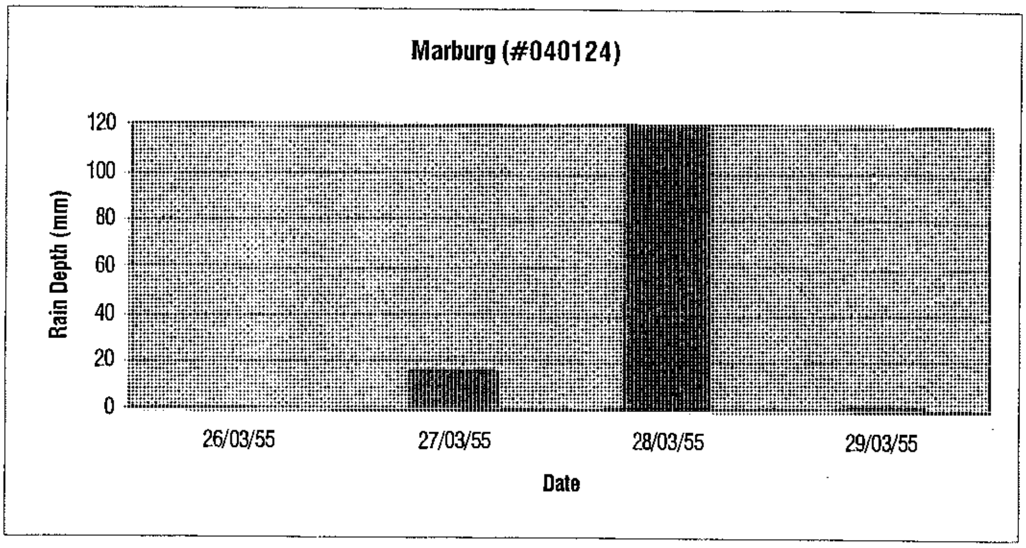

Kalbar (#040104)
Rain Depth (mm)
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

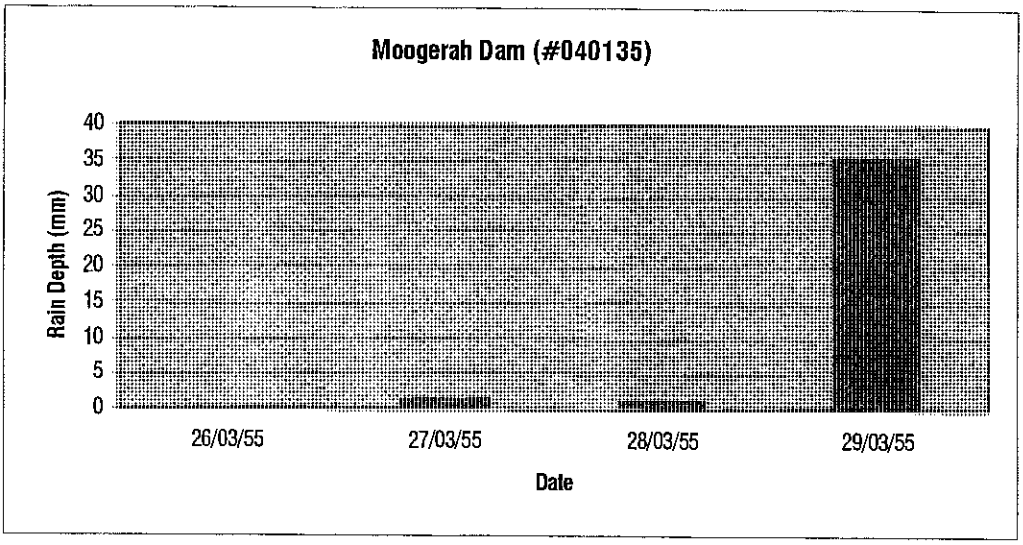

Kalbar (#040107)
Rain Depth (mm)
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

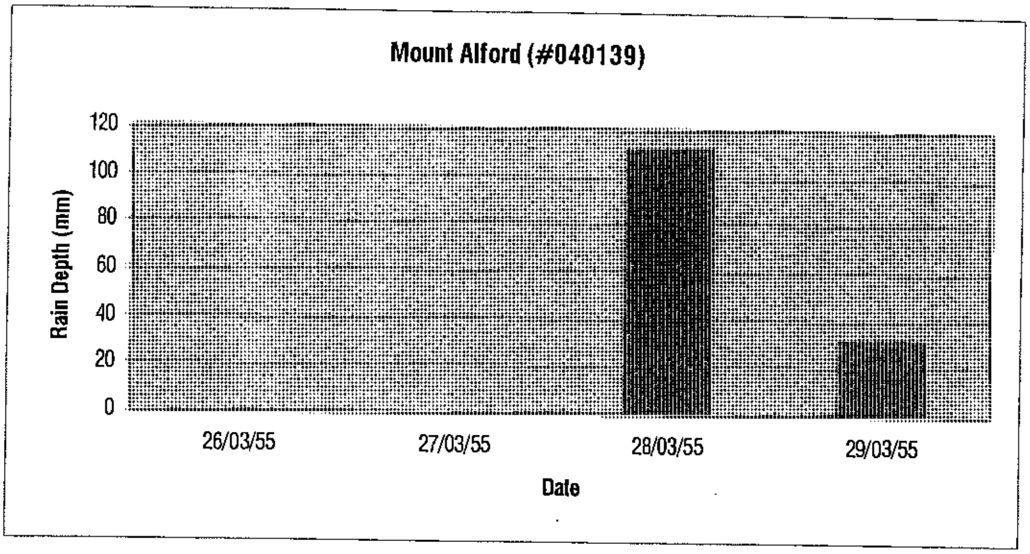

Laidley PO (#040114)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

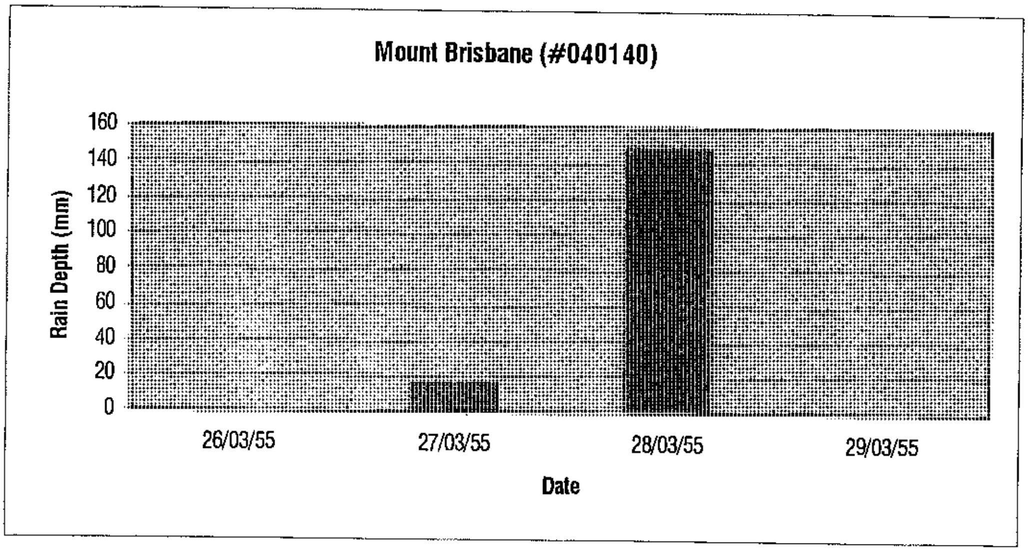

Lake Manchester (#040115)
Rain Depth (mm)
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

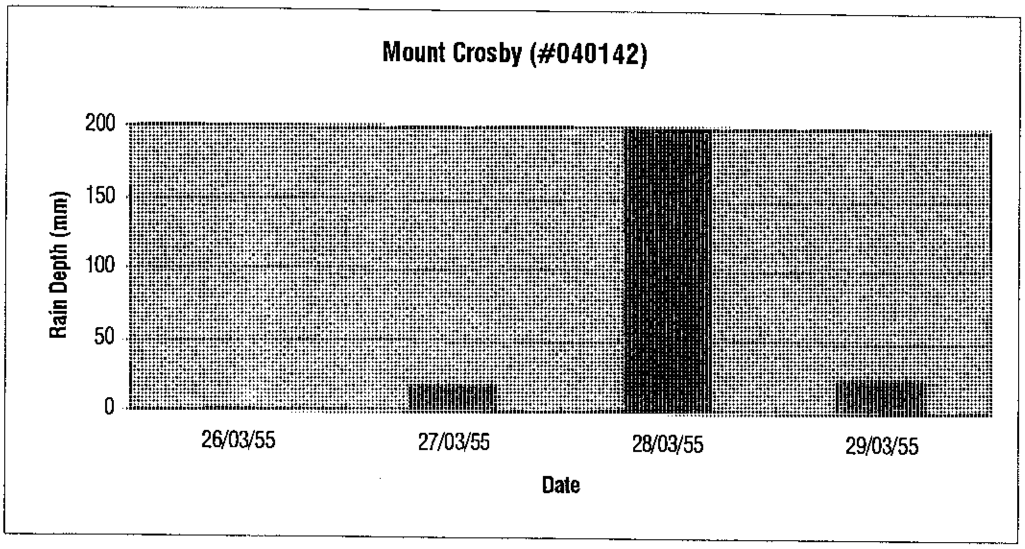

Lowood (#040120)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

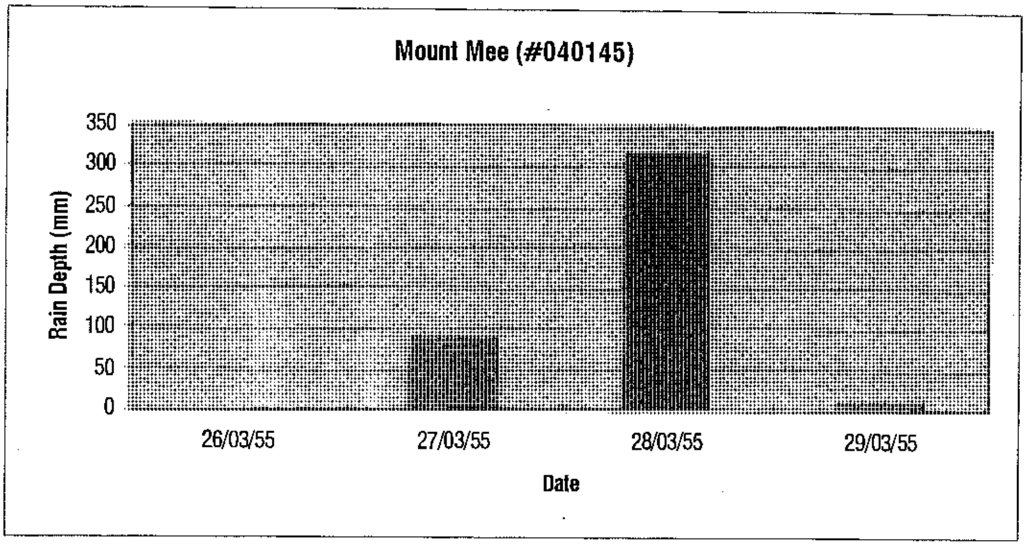

Marburg (#040124)
Rain Depth (mm)
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

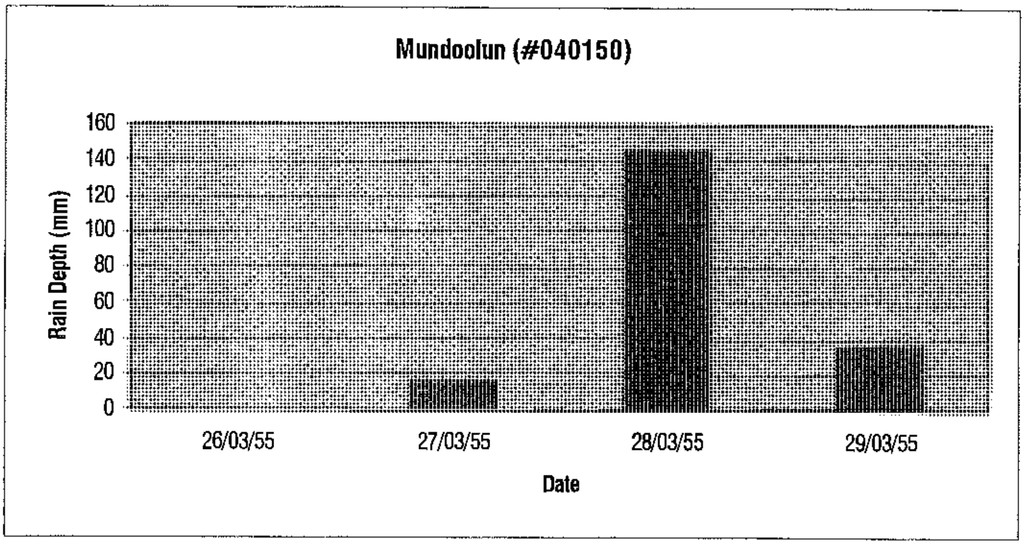

Moogerah Dam (#040135)
Rain Depth (mm)
40
35
30
25
20
15
10
5
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

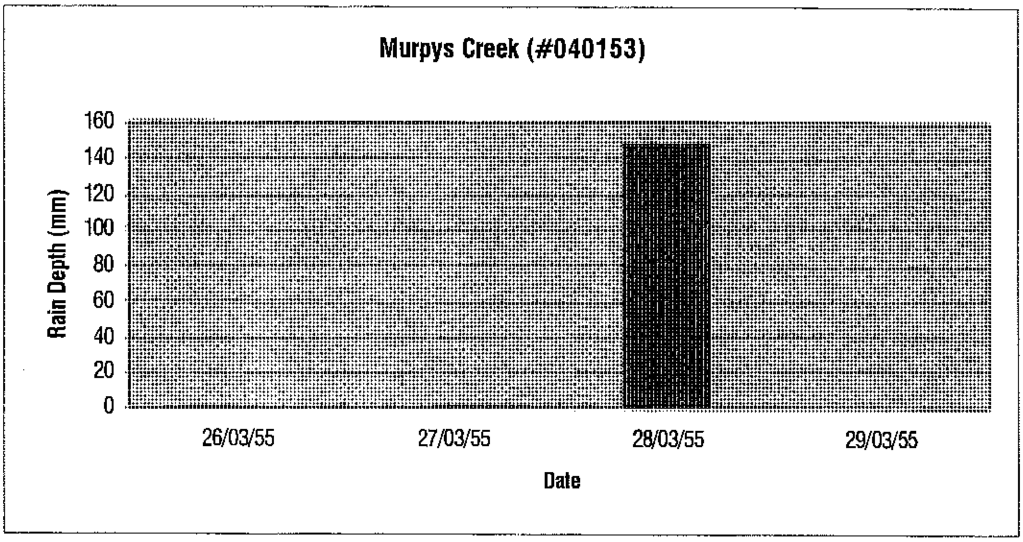

Mount Alford (#040139)
Rain Depth (mm)
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

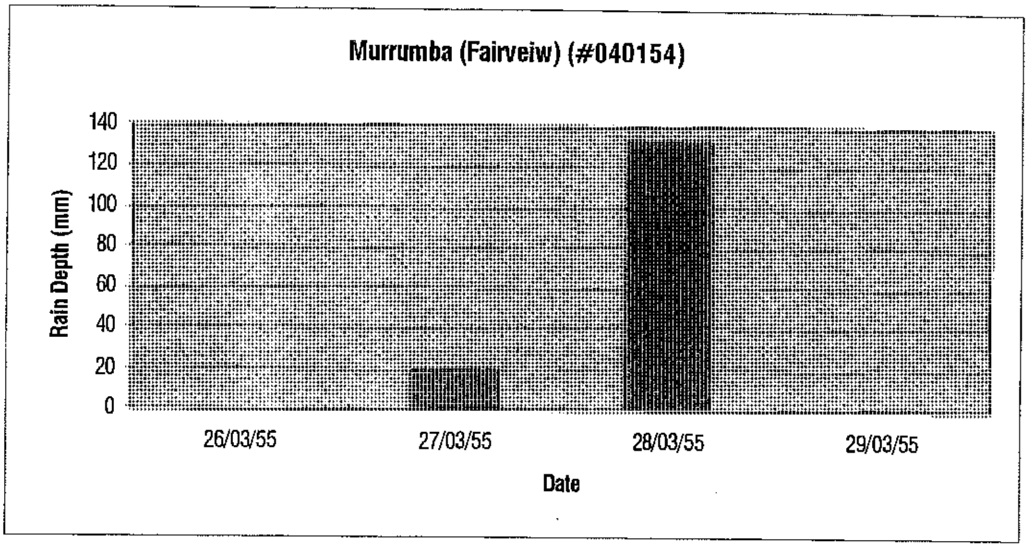

Mount Brisbane (#040140)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

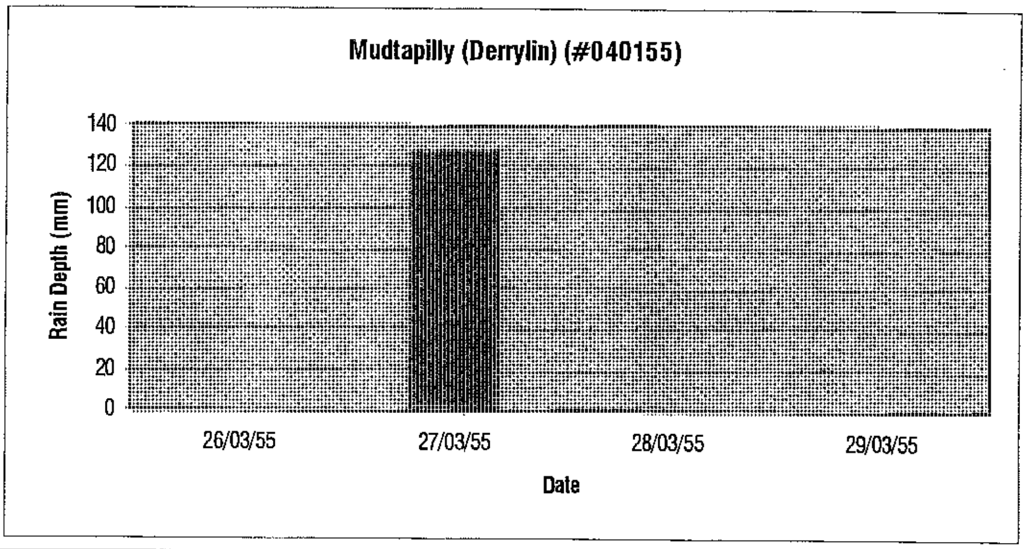

Mount Crosby (#040142)
Rain Depth (mm)
200
150
100
50
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

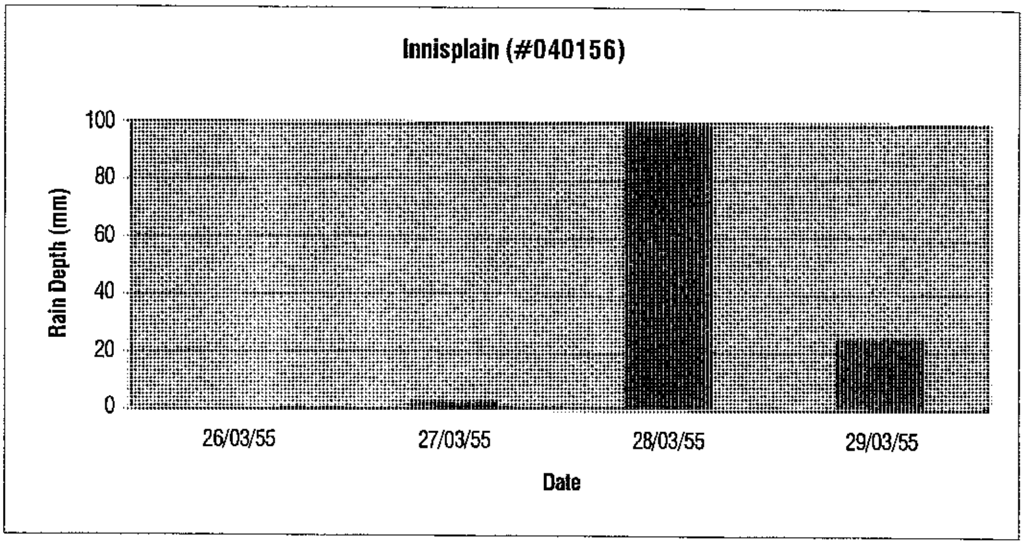

Mount Mee (#040145)
350
300
250
200
150
100
50
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

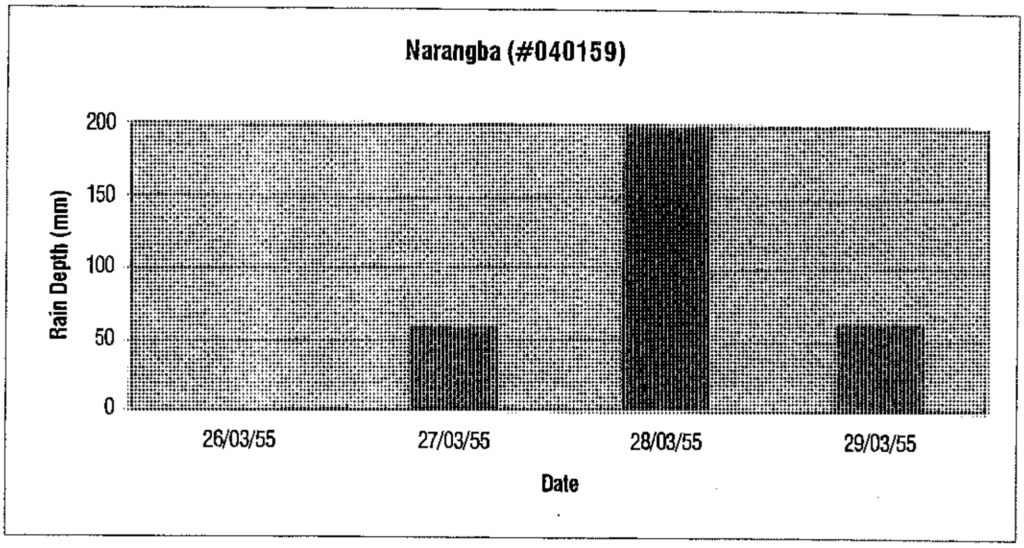

Mundoolun (#040150)
160
140
120
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

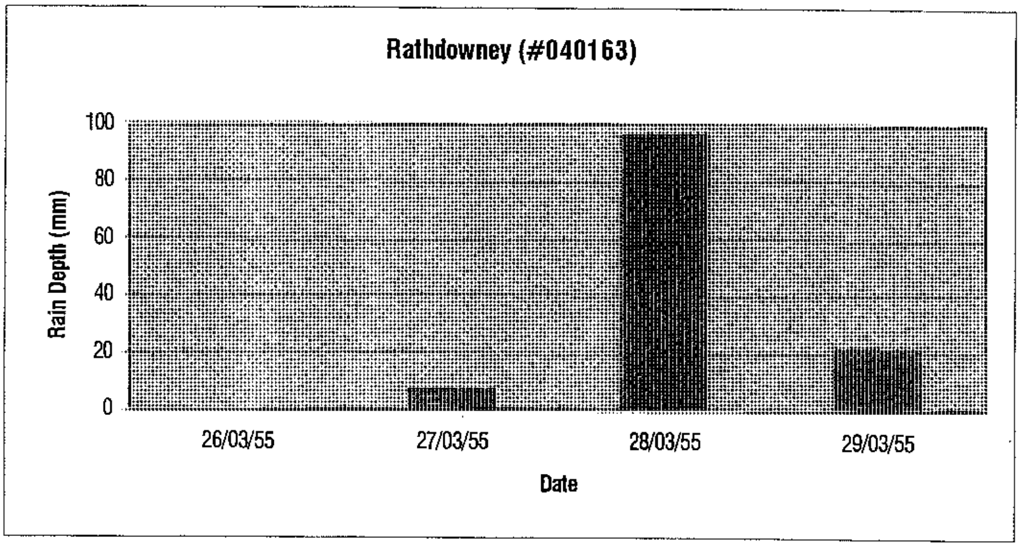

Murpys Creek (#040153)
160
140
120
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

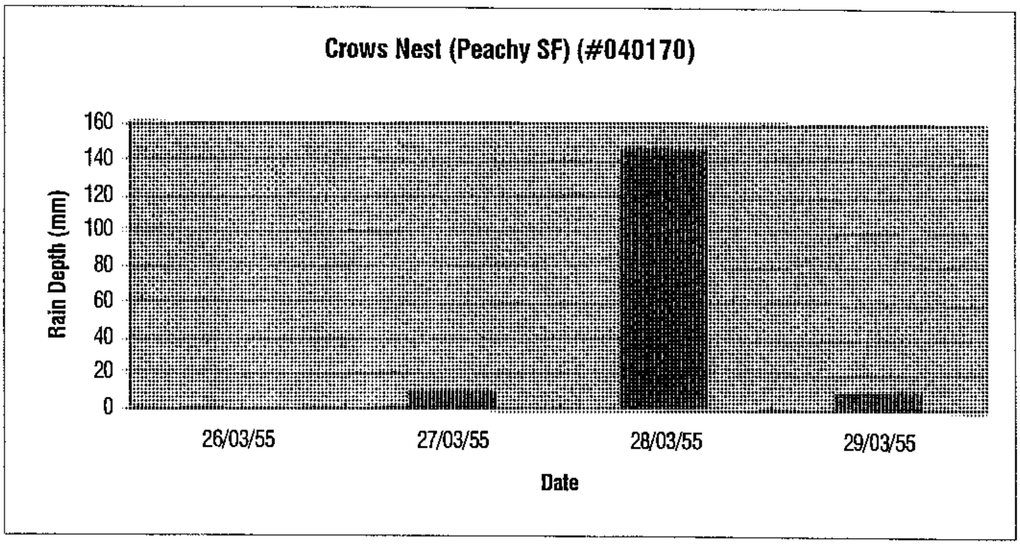

Murrumba (Fairveiw) (#040154)
140
120
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

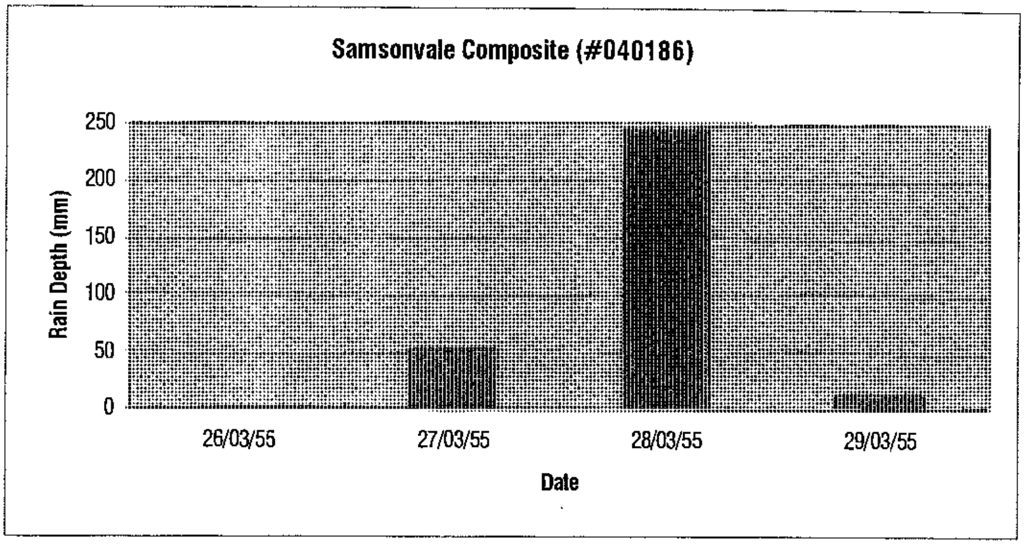

Mudtapilly (Derrylin) (#040155)
140
120
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

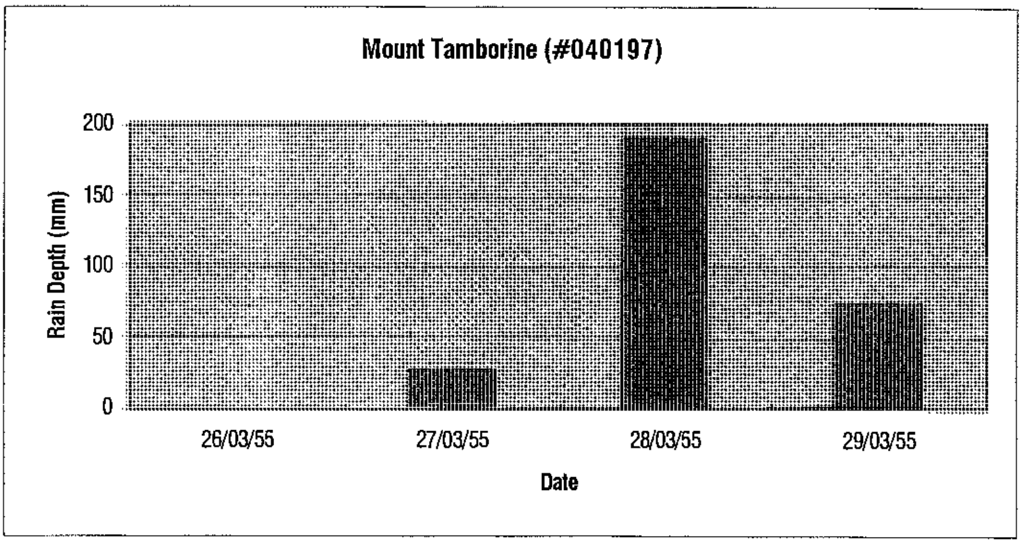

Innisplain (#040156)
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

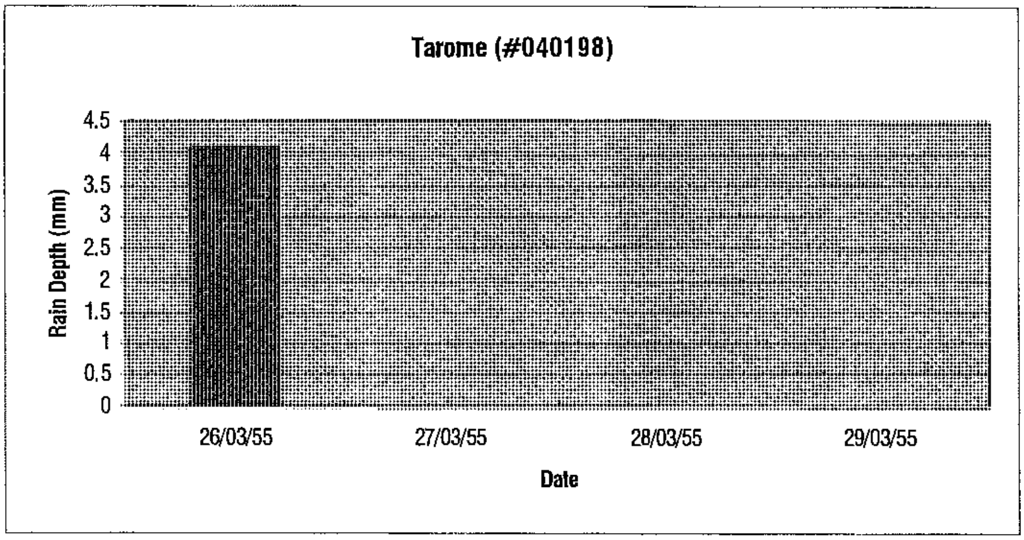

Narangba (#040159)
Rain Depth (mm)
200
150
100
50
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

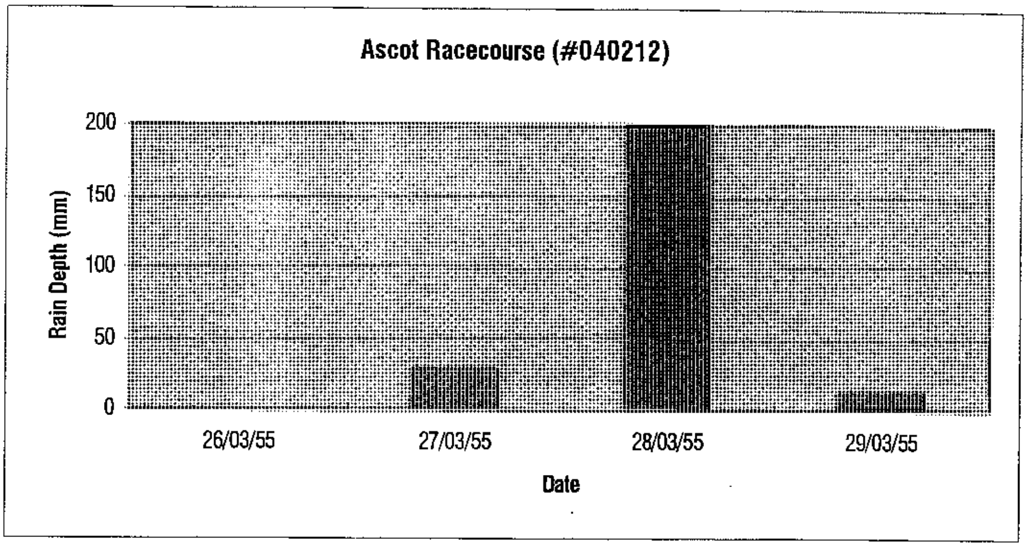

Rathdowney (#040163)
Rain Depth (mm)
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

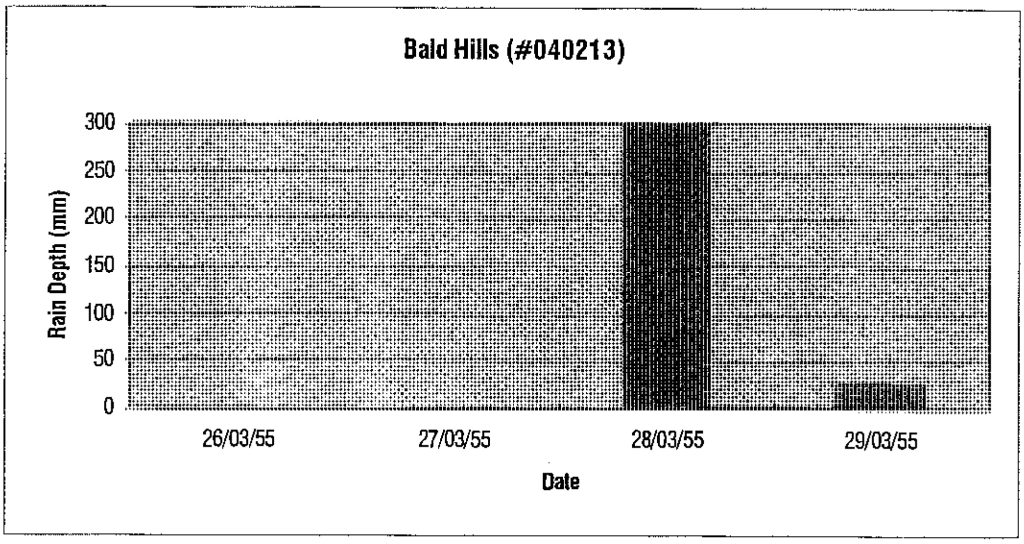

Crows Nest (Peachy SF) (#040170)
Rain Depth (mm)
160
140
120
100
80
60
40
20
0
26/03/55
27/03/55
28/03/55
29/03/55
Date

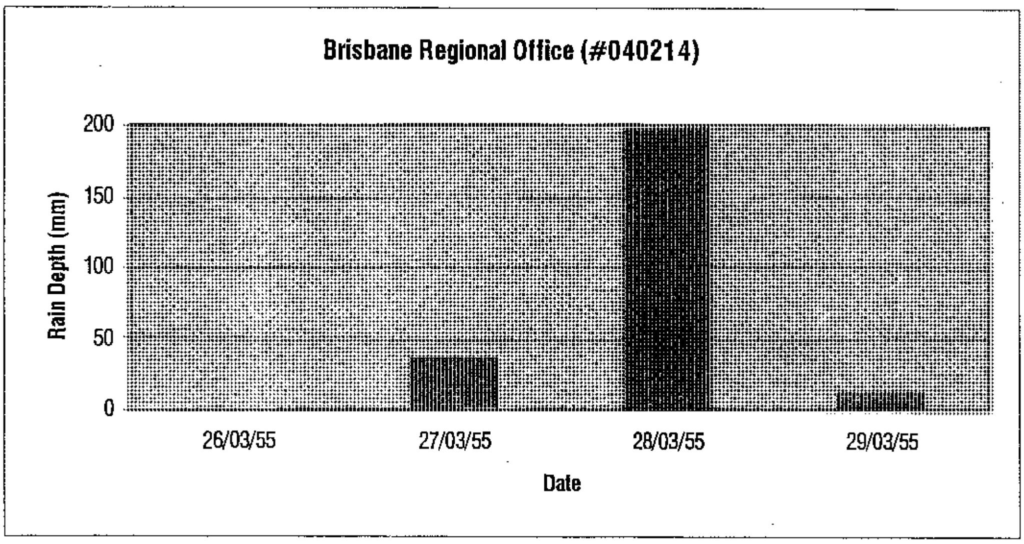

Samsonvale Composite (#040186)
250
200
150
100
50
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

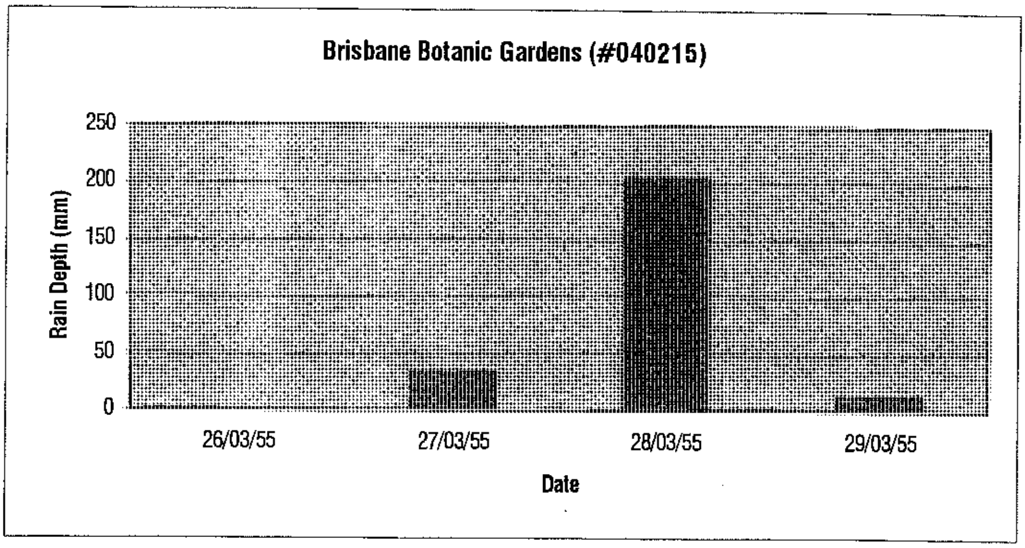

Mount Tamborine (#040197)
200
150
100
50
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

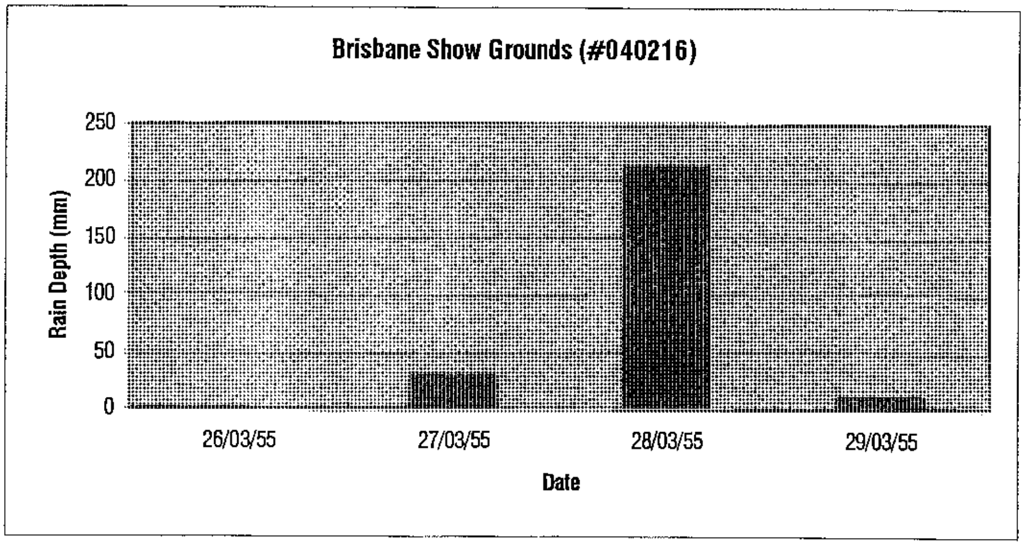

Tarome (#040198)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

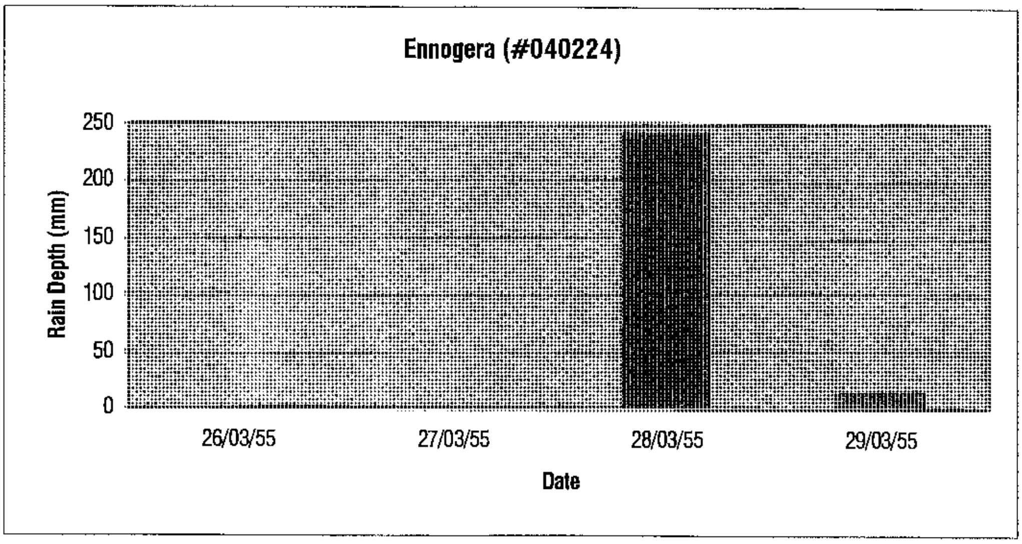

Ascot Racecourse (#040212)
Rain Depth (mm)
0
50
100
150
200
26/03/55
27/03/55
28/03/55
29/03/55
Date

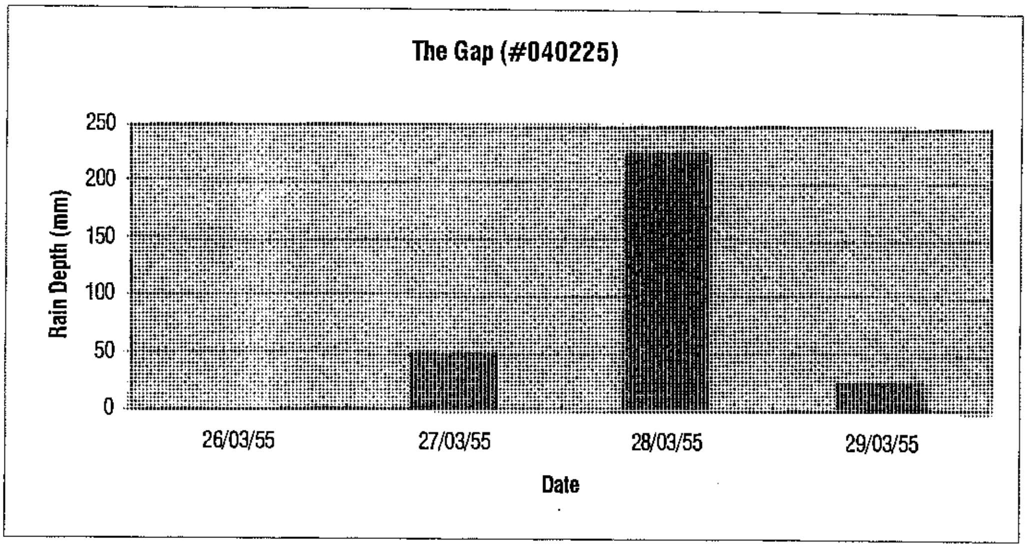

Bald Hills (#040213)
Rain Depth (mm)
0
50
100
150
200
250
300
26/03/55
27/03/55
28/03/55
29/03/55
Date

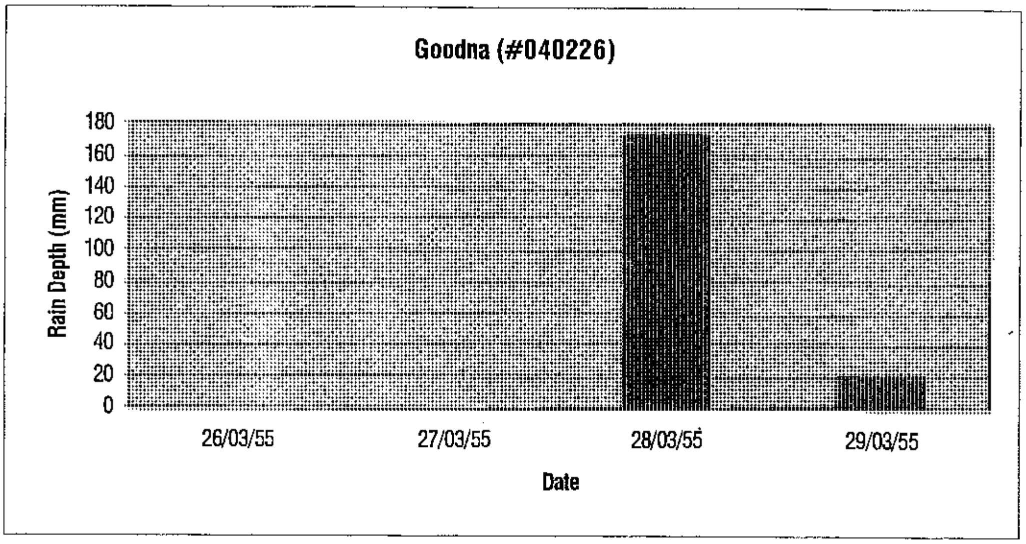

Brisbane Regional Office (#040214)
Rain Depth (mm)
0
50
100
150
200
26/03/55
27/03/55
28/03/55
29/03/55
Date

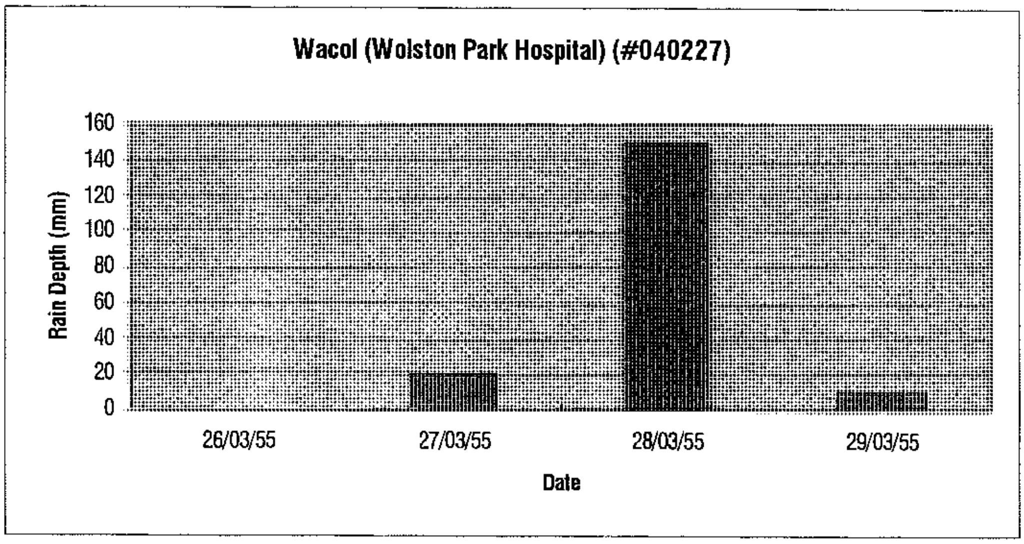

Brisbane Botanic Gardens (#040215)
Rain Depth (mm)
250
200
150
100
50
0
26/03/55
27/03/55
28/03/55
29/03/55
Date


Brisbane Show Grounds (#040216)
Rain Depth (mm)
250
200
150
100
50
0
26/03/55
27/03/55
28/03/55
29/03/55
Date


Ennogera (#040224)
Rain Depth (mm)
250
200
150
100
50
0
26/03/55
27/03/55
28/03/55
29/03/55
Date


The Gap (#040225)
250
200
150
100
50
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date


Goodna (#040226)
180
160
140
120
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

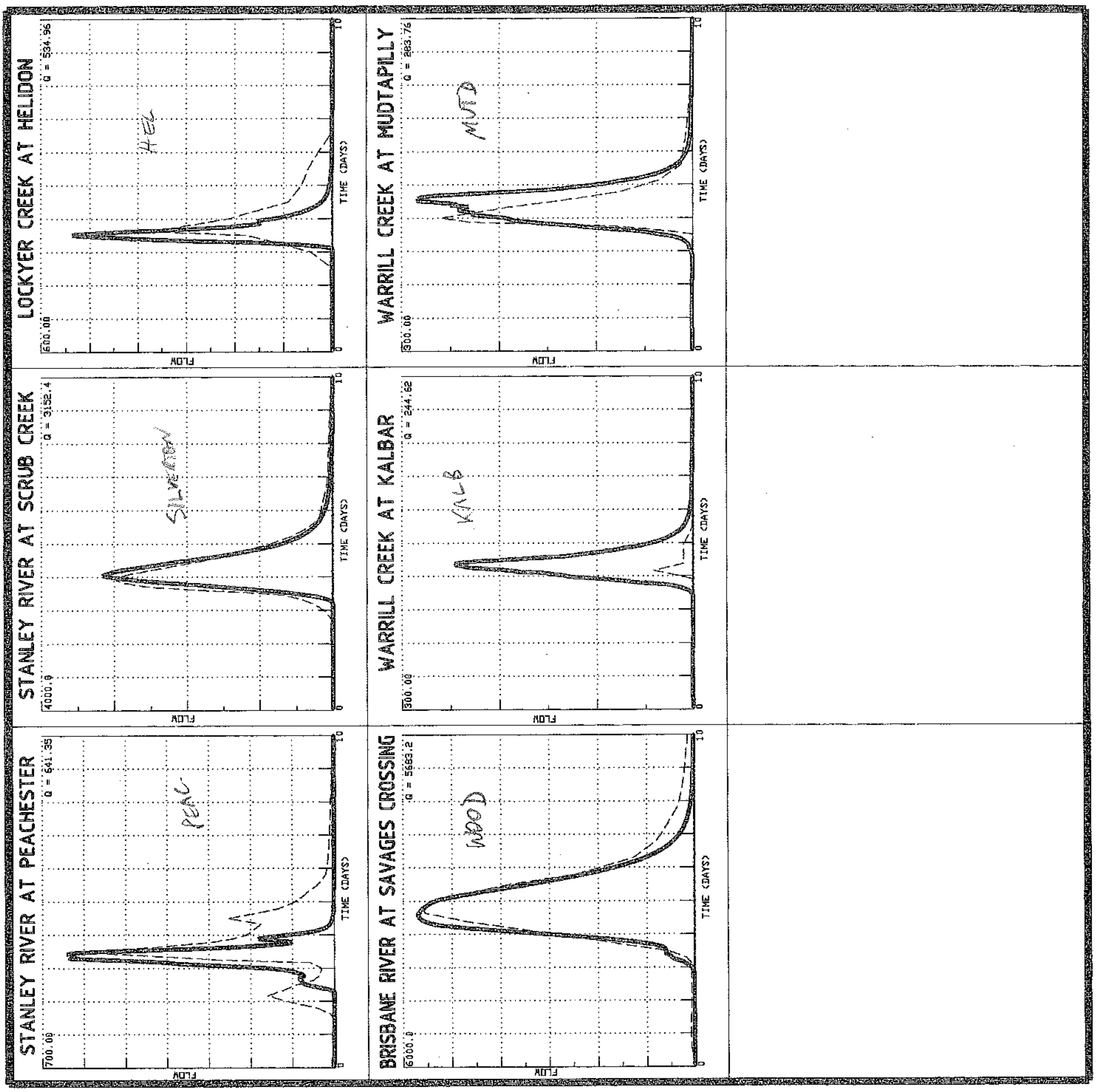

Wacol (Wolston Park Hospital) (#040227)
160
140
120
100
80
60
40
20
0
Rain Depth (mm)
26/03/55
27/03/55
28/03/55
29/03/55
Date

Appendix B - RAFTS Results

FIGURE B1

BRISBANE RIVER FLOOD STUDY
FEBRUARY 1931 FLOOD HYDROGRAPHS

SINCLAIR KNIGHT MERZ



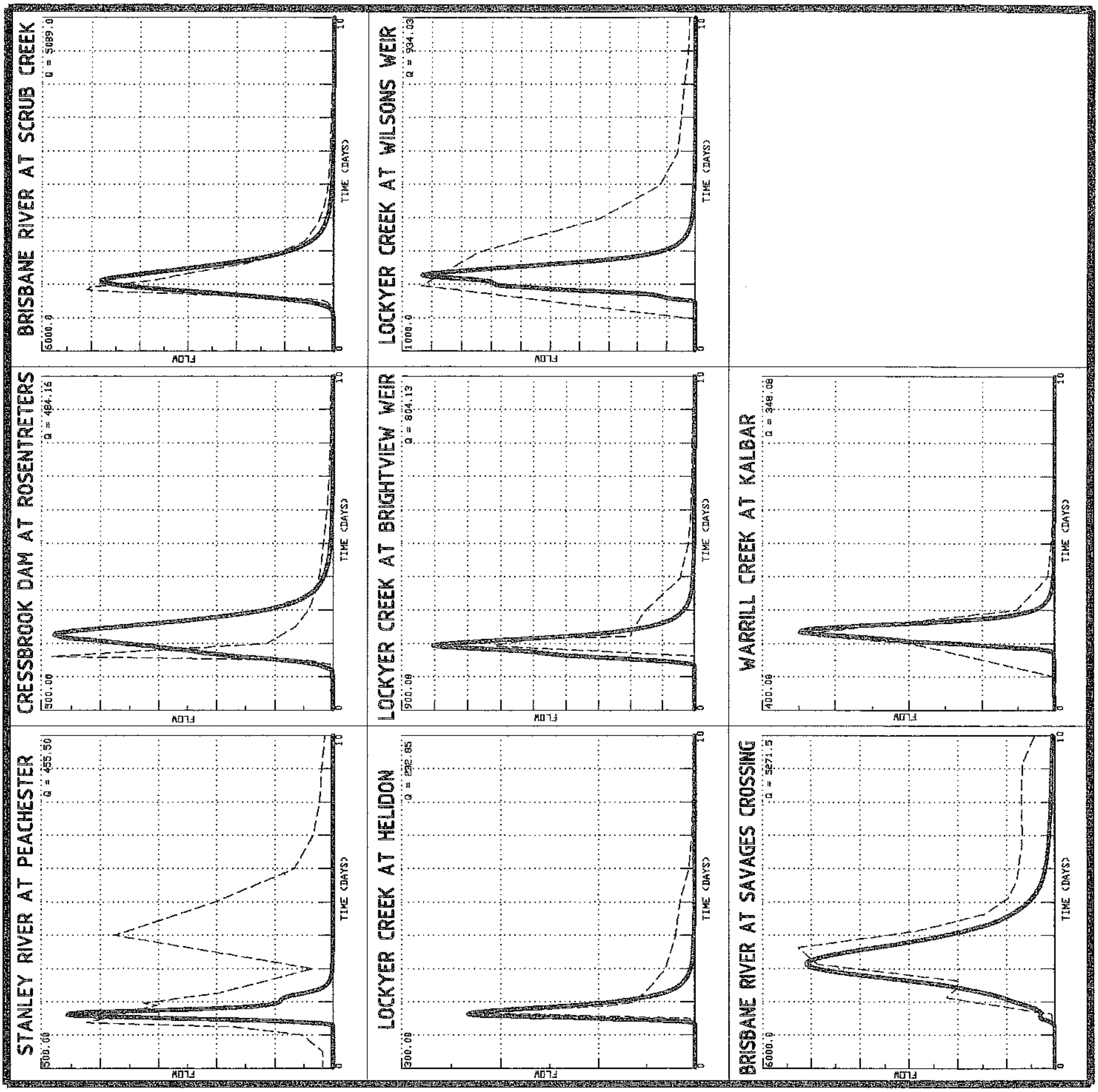
LEGEND

- - - - - - RECORDED DISCHARGE

——— PREDICTED DISCHARGE

FIGURE B2

BRISBANE RIVER FLOOD STUDY
MARCH 1955 FLOOD HYDROGRAPHS



LEGEND

- - - - - - - RECORDED DISCHARGE

▬▬▬▬▬ PREDICTED DISCHARGE

FILE NAME: HYD31 PL... ALE: 1
DISK N°: D:\DWG\BRISBANE N°: T004157 DATE: 21/8/97

Appendix C - MIKE 11 Verification Results

Table C-1 - Predicted and Recorded Flood Levels - 1931 Flood Event

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1931 Predicted WL (m AHD)	1931 Historical WL (m AHD)	1931 Difference (m)
1000	78.66	BN 2020	17.22		
1000.285	78.375	BN 2010	17.1		
1000.775	77.885	BN 2000	16.86		
1001.315	77.345	BN 1990	16.76		
1001.865	76.795	BN 1980	16.33		
1002.35	76.31	BN 1970	15.94		
1002.785	75.875	BN 1960	15.82		
1003.275	75.385	BN 1950	15.48		
1003.775	74.885	BN 1940	15.28		
1004.3	74.36	BN 1930	14.83		
1004.81	73.85	BN 1920	14.8		
1005.325	73.335	BN 1910	14.62		
1005.87	72.79	BN 1900	14.39		
1006.3	72.36	BN 1890	14.29		
1006.91	71.75	BN 1880	14.17		
1007.41	71.25	BN 1870	14.12		
1007.92	70.74	BN 1860	14.01		
1008.445	70.215	BN 1850	13.85		
1008.925	69.735	BN 1840	13.77		
1009.4	69.26	BN 1830	13.69		
1009.72	68.84	BN 1820	13.65		
1010.49	68.17	BN 1810	13.41		
1010.725	67.935	BN 1800	13.4		
1010.98	67.68	BN 1790	13.34		
1011.51	67.15	BN 1780	13.29		
1011.98	66.68	BN 1770	13.25		
1012.475	66.185	BN 1760	13.19		
1012.935	65.725	BN 1750	13.11		
1013.445	65.215	BN 1740	12.99		
1013.91	64.74	BN 1730	12.89		
1014.31	64.55	BN 1720	12.8		
1014.61	64.05	BN 1710	12.74		
1015.09	63.57	BN 1700	12.67		
1015.56	63.1	BN 1690	12.53		
1016.14	62.52	BN 1680	12.43		
1016.64	62.02	BN 1670	12.29		
1017.13	61.53	BN 1660	12.07		
1017.61	61.05	BN 1650	11.88		
1017.92	60.74	BN 1640	11.75		
1018.2	60.46	BN 1630	11.72		
1018.725	59.935	BN 1620	11.5		
1019.095	59.565	BN 1610	11.39		
1019.49	59.17	BN 1600	11.35		
1019.865	58.795	BN 1590	11.16		
1020.115	58.545	BN 1580	11.19		
1020.525	58.135	BN 1570	11.17		
1020.83	57.83	BN 1560	11.07		

Table C-1 - Predicted and Recorded Flood Levels - 1931 Flood Event

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1931 Predicted WL (m AHD)		1931 Historical WL (m AHD)	1931 Difference (m)	
1021.095	57.565	BN 1550	10.94				
1021.539	57.121	BN 1540	10.81				
1021.715	56.945	BN 1530	10.81				
1021.895	56.765	BN 1520	10.78				
1022.505	56.555	BN 1510	10.64				
1022.575	56.085	BN 1500	10.64				
1023.04	55.62	BN 1490	10.41				
1023.57	55.09	BN 1480	10.35				
1024.08	54.58	BN 1470	10.27				
1024.563	54.097	BN 1460	10.19				
1025.07	53.59	BN 1450	10.12				
1025.36	53.3	BN 1440	10.02				
1025.59	53.07	BN 1430	9.9				
1026.17	52.49	BN 1420	9.82	9.67	10.738	-0.918	-1.07
1026.68	51.98	BN 1410	9.7				
1026.9	51.76	BN 1400	9.62				
1027.16	51.5	BN 1390	9.55				
1027.68	50.98	BN 1380	9.57				
1028.18	50.48	BN 1370	9.52				
1028.68	49.98	BN 1360	9.41				
1028.76	49.9	BN 1340	9.36				
1029.2	49.46	BN 1330	9.23				
1029.68	48.98	BN 1320	9.2				
1030.22	48.44	BN 1310	9.16				
1030.87	47.79	BN 1300	9.05	9.12	9.397	-0.347	-0.28
1031.26	47.4	BN 1290	8.93				
1031.7	46.96	BN 1280	8.7				
1031.995	46.665	BN 1270	8.72				
1032.23	46.43	BN 1260	8.67	8.68	8.986	-0.316	-0.31
1032.585	46.075	BN 1250	8.62				
1033.08	45.58	BN 1240	8.48				
1033.37	45.29	BN 1230	8.4	8.31	8.665	-0.265	-0.36
1033.9	44.76	BN 1220	8.22				
1034.37	44.29	BN 1210	8.06	8.05	8.132	-0.072	-0.08
1034.89	43.77	BN 1200	7.97				
1035.414	43.246	BN 1190	7.8				
1035.9	42.76	BN 1180	7.59				
1036.46	42.2	BN 1170	7.47				
1036.77	41.89	BN 1160	7.37	[illegible]	7.69	-0.32	-0.68
1036.915	41.745	BN 1150	7.29				
1037.09	41.57	BN 1140	7.23				
1037.175	41.485	BN 1120	7.23				
1037.285	41.375	BN 1110	7.18	7.09	7.462	-0.282	-0.37
1037.625	41.035	BN 1100	7.16				
1038.085	40.575	BN 1090	7.12				
1038.6	40.06	BN 1080	7.04				
1039.1	39.56	BN 1070	6.95	6.95	6.965	-0.015	-0.02

Table C-1 - Predicted and Recorded Flood Levels - 1931 Flood Event

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1931 Predicted WL (m AHD)		1931 Historical WL (m AHD)	1931 Difference (m)	
1039.565	39.05	BN 1060	6.9				
1039.828	38.787						
1040.09	38.57	BN 1050	6.87	6.92	6.776	0.094	+0.14
1040.49	38.17	BN 1040	6.77				
1041.01	37.56	BN 1030	6.74	6.84	6.623	0.117	+0.22
1041.23	37.43	BN 1020	6.7				
1041.46	37.2	BN 1010	6.65				
1041.7	36.96	BN 1000	6.64				
1041.96	36.7	BN 990	6.54	6.62	6.395	0.145	+0.22
1042.235	36.425	BN 980	6.43				
1042.515	36.145	BN 970	6.4				
1042.91	35.75	BN 960	6.23	6.41	6.166	0.064	+0.24
1043.725	34.935	BN 950	6				
1044.06	34.6	BN 940	5.92	6.10	6.014	-0.094	+0.09
1044.34	34.32	BN 930	5.83				
1044.605	34.055	BN 920	5.79				
1044.86	33.8	BN 910	5.75	5.89	5.8	-0.05	+0.09
1045.4	33.26	BN 900	5.61				
1045.885	32.775	BN 890	5.47				
1046.18	32.48	BN 880	5.45				
1046.34	32.32	BN 870	5.43	5.51	5.48	-0.05	+0.03
1046.58	32.08	BN 860	5.4				
1046.9	31.76	BN 850	5.29				
1047.35	31.31	BN 840	5.1				
1047.915	30.745	BN 830	4.97	4.94	5.099	-0.129	-0.16
1048.375	30.285	BN 820	4.95				
1048.89	29.77	BN 810	4.76				
1049.12	29.54	BN 800	4.73				
1049.37	29.29	BN 790	4.62	4.64	4.764	-0.144	-0.12
1049.59	29.07	BN 780	4.61	4.63	4.734	-0.124	-0.09
1049.87	28.79	BN 770	4.56				
1050.43	28.23	BN 760	4.52				
1050.86	27.8	BN 750	4.44	4.42	4.414	0.026	+0.01
1051.36	27.3	BN 740	4.43				
1051.895	26.765	BN 730	4.28				
1052.31	26.35	BN 720	4.25				
1052.39	26.27	BN 700	4.24				
1052.595	26.065	BN 690	4.2				
1052.64	26.02	BN 670	4	4.02	4.033	-0.033	-0.01
1052.865	25.795	BN 660	3.99				
1053.32	25.34	BN 650	3.96				
1053.385	25.795	BN 660	3.98	3.84	3.88	0.1	-0.04
1053.9	24.76	BN 620	3.85				
1054.49	24.17	BN 580	3.75				
1054.64	24.02	BN 610	3.72				
1054.68	23.98	BN 590	3.71	3.52	3.652	0.058	-0.13
1054.76	23.9	BN 570	3.67				

Table C-1 - Predicted and Recorded Flood Levels - 1931 Flood Event

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1931 Predicted WL (m AHD)		1931 Historical WL (m AHD)	1931 Difference (m)	
1054.97	23.69	BN 560	3.57				
1055.28	23.38	BN 550	3.54				
1055.42	23.24	BN 540	3.52				
1055.96	22.7	BN 530	3.47	3.33	3.423	0.047	-0.09
1056.4	22.26	BN 520	3.34				
1056.695	21.965	BN 510	3.3				
1056.865	21.795	BN 500	3.29				
1056.95	21.71	BN 490	3.28				
1057.09	21.57	BN 480	3.35				
1057.53	21.13	BN 470	3.27				
1058.04	20.62	BN 460	3.11				
1058.23	20.43	BN 450	3.03				
1058.53	20.13	BN 440	2.91				
1058.735	19.925	BN 430	2.88				
1059.035	19.625	BN 420	2.75	2.78	2.737	0.013	+0.04
1059.54	19.12	BN 410	2.72				
1059.99	18.67	BN 400	2.62				
1060.345	18.315	BN 390	2.54	2.55	2.585	-0.045	-0.04
1060.535	18.125	BN 380	2.49				
1061.015	17.645	BN 370	2.46				
1061.53	17.13	BN 360	2.37				
1062.02	16.64	BN 350	2.33				
1062.535	16.125	BN 340	2.3	2.30	2.356	-0.056	-0.06
1062.94	15.72	BN 330	2.3				
1063.125	15.535		2.28				
1063.31	15.35	BN 320	2.25	2.25	2.28	-0.03	-0.03
1063.645	15.015	BN 310	2.13				
1064	14.66	BN 300	2.1				
1064.49	14.17	BN 290	2.05				
1065.01	13.65	BN 280	2.07				
1065.503	13.157	BN 270	2.06				
1065.99	12.67	BN 260	2.07				
1066.505	12.155	BN 250	2.05				
1067.02	11.64	BN 240	2.03				
1067.485	11.175	BN 230	1.99				
1067.965	10.695	BN 220	1.96				
1068.66	10	BN 210	1.9				
1069.045	9.615	BN 200	1.87				
1069.535	9.125	BN 190	1.84				
1070.025	8.635	BN 180	1.82				
1070.53	8.13	BN 170	1.78				
1071.04	7.62	BN 160	1.75				
1071.52	7.14	BN 150	1.76				
1072.015	6.645	BN 140	1.74				
1072.515	6.145	BN 130	1.7				
1072.995	5.665	BN 120	1.69				
1073.485	5.175	BN 110	1.65				

Table C-1 - Predicted and Recorded Flood Levels - 1931 Flood Event

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1931 Predicted WL (m AHD)	1931 Historical WL (m AHD)	1931 Difference (m)
1074	4.66	BN 100	1.62		
1074.46	4.2	BN 90	1.6		
1074.985	3.675	BN 80	1.58		
1075.48	3.18	BN 70	1.58		
1076	2.66	BN 60	1.57		
1076.495	2.165	BN 50	1.57		
1077.01	1.65	BN 40	1.57		
1077.51	1.15	BN 30	1.56		
1078.04	0.62	BN 20	1.54		
1078.525	0.135	BN 10	1.5		
1078.66	0		1.5		

Table C-2 - Predicted and Recorded Flood Levels - 1955 Flood Events

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1955 Predicted WL (m AHD)	1955 Recorded WL (m AHD)	Diff (m)
1000	78.66	BN 2020	15.07		
1000.285	78.375	BN 2010	14.94		
1000.775	77.885	BN 2000	14.65		
1001.315	77.345	BN 1990	14.54		
1001.865	76.795	BN 1980	14.1		
1002.35	76.31	BN 1970	13.64		
1002.785	75.875	BN 1960	13.48		
1003.275	75.385	BN 1950	13.08		
1003.775	74.885	BN 1940	12.86		
1004.3	74.36	BN 1930	12.39		
1004.81	73.85	BN 1920	12.31		
1005.325	73.335	BN 1910	12.12		
1005.87	72.79	BN 1900	11.88		
1006.3	72.36	BN 1890	11.8		
1006.91	71.75	BN 1880	11.68		
1007.41	71.25	BN 1870	11.63		
1007.92	70.74	BN 1860	11.52		
1008.445	70.215	BN 1850	11.39		
1008.925	69.735	BN 1840	11.31		
1009.4	69.26	BN 1830	11.24		
1009.72	68.84	BN 1820	11.2		
1010.49	68.17	BN 1810	10.98		
1010.725	67.935	BN 1800	10.98		
1010.98	67.68	BN 1790	10.93		
1011.51	67.15	BN 1780	10.87		
1011.98	66.68	BN 1770	10.82		
1012.475	66.185	BN 1760	10.76		
1012.935	65.725	BN 1750	10.68		
1013.445	65.215	BN 1740	10.57		
1013.91	64.74	BN 1730	10.48		
1014.31	64.55	BN 1720	10.39		
1014.61	64.05	BN 1710	10.32		
1015.09	63.57	BN 1700	10.27		
1015.56	63.1	BN 1690	10.15		
1016.14	62.52	BN 1680	10.05		
1016.64	62.02	BN 1670	9.92		
1017.13	61.53	BN 1660	9.71		
1017.61	61.05	BN 1650	9.52		
1017.92	60.74	BN 1640	9.39		
1018.2	60.46	BN 1630	9.37		
1018.725	59.935	BN 1620	9.21		
1019.095	59.565	BN 1610	9.09		
1019.49	59.17	BN 1600	9.04		
1019.865	58.795	BN 1590	8.89		
1020.115	58.545	BN 1580	8.9		
1020.525	58.135	BN 1570	8.87		
1020.83	57.83	BN 1560	8.8		

Table C-2 - Predicted and Recorded Flood Levels - 1955 Flood Events

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1955 Predicted WL (m AHD)		1955 Recorded WL (m AHD)	Diff (m)	
1021.095	57.565	BN 1550	8.69				
1021.539	57.121	BN 1540	8.56				
1021.715	56.945	BN 1530	8.55				
1021.895	56.765	BN 1520	8.53				
1022.505	56.555	BN 1510	8.43				
1022.575	56.085	BN 1500	8.42				
1023.04	55.62	BN 1490	8.23				
1023.57	55.09	BN 1480	8.17				
1024.08	54.58	BN 1470	8.1				
1024.563	54.097	BN 1460	8.02				
1025.07	53.59	BN 1450	7.96				
1025.36	53.3	BN 1440	7.87				
1025.59	53.07	BN 1430	7.78				
1026.17	52.49	BN 1420	7.69				
1026.68	51.98	BN 1410	7.6				
1026.9	51.76	BN 1400	7.53				
1027.16	51.5	BN 1390	7.47				
1027.68	50.98	BN 1380	7.46				
1028.18	50.48	BN 1370	7.42				
1028.68	49.98	BN 1360	7.32				
1028.76	49.9	BN 1340	7.29				
1029.2	49.46	BN 1330	7.17				
1029.68	48.98	BN 1320	7.14				
1030.22	48.44	BN 1310	7.1				
1030.87	47.79	BN 1300	7	7.08	7.172	-0.172	-0.09
1031.26	47.4	BN 1290	6.89				
1031.7	46.96	BN 1280	6.73				
1031.995	46.665	BN 1270	6.71				
1032.23	46.43	BN 1260	6.67	6.70	6.700	-0.030	0.0
1032.585	46.075	BN 1250	6.64				
1033.08	45.58	BN 1240	6.53				
1033.37	45.29	BN 1230	6.46	6.40	6.410	0.050	-0.01
1033.9	44.76	BN 1220	6.31				
1034.37	44.29	BN 1210	6.18	6.19	6.227	-0.047	-0.04
1034.89	43.77	BN 1200	6.09				
1035.414	43.246	BN 1190	5.95				
1035.9	42.76	BN 1180	5.8				
1036.46	42.2	BN 1170	5.68				
1036.77	41.89	BN 1160	5.6	5.52	5.465	0.135	+0.05
1036.915	41.745	BN 1150	5.55				
1037.09	41.57	BN 1140	5.5				
1037.175	41.485	BN 1120	5.45				
1037.285	41.375	BN 1110	5.42	5.36	5.557	-0.137	-0.20
1037.625	41.035	BN 1100	5.39				
1038.085	40.575	BN 1090	5.37				
1038.6	40.06	BN 1080	5.28				
1039.1	39.56	BN 1070	5.2	5.22	5.160	0.040	+0.06

Table C-2 - Predicted and Recorded Flood Levels - 1955 Flood Events

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1955 Predicted WL (m AHD)		1955 Recorded WL (m AHD)	Diff (m)	
1039.565	39.05	BN 1060	5.15				
1039.828	38.787		5.130				
1040.09	38.57	BN 1050	5.12	5.20	5.099	0.021	+0.1
1040.49	38.17	BN 1040	5.04				
1041.01	37.56	BN 1030	5.01	5.14	5.023	-0.013	+0.12
1041.23	37.43	BN 1020	4.98				
1041.46	37.2	BN 1010	4.94				
1041.7	36.96	BN 1000	4.94				
1041.96	36.7	BN 990	4.86	4.96	4.947	-0.087	+0.01
1042.235	36.425	BN 980	4.78				
1042.515	36.145	BN 970	4.75				
1042.91	35.75	BN 960	4.61	4.78	4.795	-0.185	-0.02
1043.725	34.935	BN 950	4.41				
1044.06	34.6	BN 940	4.36	4.54	4.642	-0.282	-0.10
1044.34	34.32	BN 930	4.28				
1044.605	34.055	BN 920	4.25				
1044.86	33.8	BN 910	4.21	4.37	4.490	-0.280	-0.12
1045.4	33.26	BN 900	4.1				
1045.885	32.775	BN 890	3.98				
1046.18	32.48	BN 880	3.97				
1046.34	32.32	BN 870	3.96	4.07	4.124	-0.164	-0.05
1046.58	32.08	BN 860	3.93				
1046.9	31.76	BN 850	3.85				
1047.35	31.31	BN 840	3.71				
1047.915	30.745	BN 830	3.61	3.63	3.819	-0.209	-0.19
1048.375	30.285	BN 820	3.59				
1048.89	29.77	BN 810	3.44				
1049.12	29.54	BN 800	3.41	3.48	3.548	-0.138	-0.07
1049.37	29.29	BN 790	3.34	3.40	3.514	-0.174	-0.11
1049.59	29.07	BN 780	3.33	3.39	3.499	-0.169	-0.11
1049.87	28.79	BN 770	3.3				
1050.43	28.23	BN 760	3.25				
1050.86	27.8	BN 750	3.19	3.23	3.194	-0.004	+0.04
1051.36	27.3	BN 740	3.19				
1051.895	26.765	BN 730	3.08				
1052.31	26.35	BN 720	3.05				
1052.39	26.27	BN 700	3.04				
1052.595	26.065	BN 690	3.02				
1052.64	26.02	BN 670	2.9	3.05	2.813	0.087	+0.23
1052.865	25.795	BN 660	2.89				
1053.32	25.34	BN 650	2.87				
1053.385	25.795	BN 660	2.88	2.91	2.661	0.219	+0.25
1053.9	24.76	BN 620	2.78				
1054.49	24.17	BN 580	2.7				
1054.64	24.02	BN 610	2.68				
1054.68	23.98	BN 590	2.66	2.68	2.432	0.228	+0.25
1054.76	23.9	BN 570	2.64				

Table C-2 - Predicted and Recorded Flood Levels - 1955 Flood Events

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1955 Predicted WL (m AHD)		1955 Recorded WL (m AHD)	Diff (m)	
1054.97	23.69	BN 560	2.57				
1055.28	23.38	BN 550	2.55				
1055.42	23.24	BN 540	2.53				
1055.96	22.7	BN 530	2.5	2.54	2.280	0.220	+0.26
1056.4	22.26	BN 520	2.4				
1056.695	21.965	BN 510	2.38				
1056.865	21.795	BN 500	2.37				
1056.95	21.71	BN 490	2.33	2.46	2.152	0.178	+0.31
1057.09	21.57	BN 480	2.38				
1057.53	21.13	BN 470	2.32				
1058.04	20.62	BN 460	2.21				
1058.23	20.43	BN 450	2.15				
1058.53	20.13	BN 440	2.07				
1058.735	19.925	BN 430	2.05				
1059.035	19.625	BN 420	1.96	2.14	1.975	-0.015	+0.16
1059.54	19.12	BN 410	1.93				
1059.99	18.67	BN 400	1.87				
1060.345	18.315	BN 390	1.81	1.98	1.975	-0.165	0.0
1060.535	18.125	BN 380	1.78				
1061.015	17.645	BN 370	1.75				
1061.53	17.13	BN 360	1.69				
1062.02	16.64	BN 350	1.66				
1062.535	16.125	BN 340	1.64	1.81	1.823	-0.183	-0.01
1062.94	15.72	BN 330	1.63				
1063.125	15.535		1.620				
1063.31	15.35	BN 320	1.6	1.78	1.747	-0.147	+0.04
1063.645	15.015	BN 310	1.52				
1064	14.66	BN 300	1.5				
1064.49	14.17	BN 290	1.47				
1065.01	13.65	BN 280	1.48				
1065.503	13.157	BN 270	1.47				
1065.99	12.67	BN 260	1.48				
1066.505	12.155	BN 250	1.47				
1067.02	11.64	BN 240	1.46				
1067.485	11.175	BN 230	1.43				
1067.965	10.695	BN 220	1.4				
1068.66	10	BN 210	1.36				
1069.045	9.615	BN 200	1.34				
1069.535	9.125	BN 190	1.33				
1070.025	8.635	BN 180	1.31				
1070.53	8.13	BN 170	1.29				
1071.04	7.62	BN 160	1.26				
1071.52	7.14	BN 150	1.27				
1072.015	6.645	BN 140	1.26				
1072.515	6.145	BN 130	1.23				
1072.995	5.665	BN 120	1.22				
1073.485	5.175	BN 110	1.2				

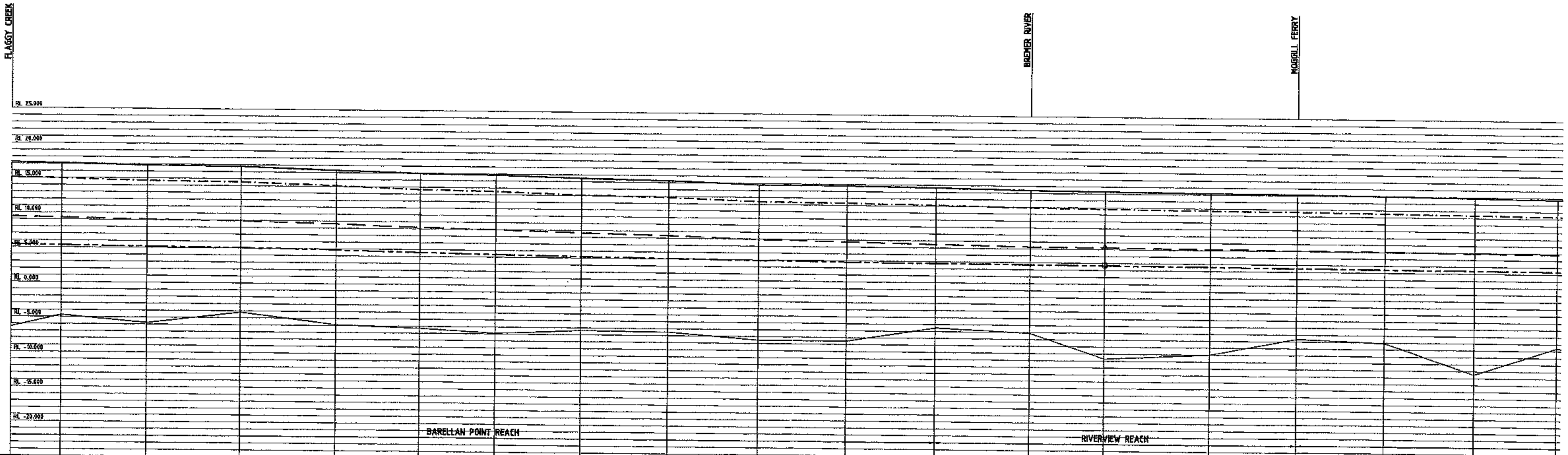
Table C-2 - Predicted and Recorded Flood Levels - 1955 Flood Events

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	1955 Predicted WL (m AHD)	1955 Recorded WL (m AHD)	Diff (m)
1074	4.66	BN 100	1.18		
1074.46	4.2	BN 90	1.17		
1074.985	3.675	BN 80	1.14		
1075.48	3.18	BN 70	1.13		
1076	2.66	BN 60	1.13		
1076.495	2.165	BN 50	1.11		
1077.01	1.65	BN 40	1.11		
1077.51	1.15	BN 30	1.11		
1078.04	0.62	BN 20	1.11		
1078.525	0.135	BN 10	1.1		
1078.66	0		1.1		

SINCLAIR KNIGHT MERZ

FIGURE C-1a

BRISBANE RIVER FLOOD STUDY
MIKE 11 VERIFICATION PROFILE



DATUM RL. -25.000

1989 PREDICTED FLOOD LEVEL	5.420	5.320	5.170	5.060	4.870	4.590	4.400	4.210	4.080	3.930	3.840	3.760	3.710	3.670	3.590	3.510	3.470	3.430	3.390
1973 PREDICTED FLOOD LEVEL	9.620	9.290	9.060	8.920	8.610	8.180	7.970	7.630	7.360	6.950	6.760	6.480	6.280	6.230	6.130	6.060	6.100	5.920	5.860
1955 PREDICTED FLOOD LEVEL	15.070	14.940	14.650	14.540	14.100	13.640	13.480	13.080	12.840	12.390	12.310	12.120	11.880	11.800	11.660	11.630	11.520	11.390	11.310
1931 PREDICTED FLOOD LEVEL	17.220	17.100	16.840	16.760	16.330	15.940	15.820	15.480	15.280	14.830	14.890	14.620	14.390	14.290	14.170	14.120	14.010	13.850	13.770
BED LEVEL (m AHD)	-6.400	-4.700	-5.800	-4.200	-5.900	-6.300	-6.900	-6.400	-6.500	-7.500	-7.500	-5.500	-6.100	-9.700	-9.000	-6.400	-7.100	-11.500	-7.600
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1000.000	1000.265	1000.775	1001.315	1001.865	1002.350	1002.785	1003.275	1003.775	1004.300	1004.810	1005.325	1005.870	1006.300	1006.910	1007.410	1007.920	1008.445	1008.925
AMTG CHAINAGE (km)	78.640	78.375	77.885	77.345	76.795	76.310	75.875	75.365	74.885	74.360	73.850	73.335	72.790	72.360	71.750	71.250	70.740	70.215	69.735

BRISBANE RIVER - BN 2020 TO BN 1840

LEGEND

- (55) LOCATION AND IDENTIFICATION OF STRUCTURE
- 1931 RECORDED FLOOD LEVEL
- 1955 RECORDED FLOOD LEVEL
- 1973 RECORDED FLOOD LEVEL
- 1989 RECORDED FLOOD LEVEL
- COMPUTED WATER LEVEL - FEBRUARY 1931
- COMPUTED WATER LEVEL - MARCH 1955
- COMPUTED WATER LEVEL - JULY 1973
- COMPUTED WATER LEVEL - EARLY APRIL 1989

VERT. 0 2.0 4.0 6.0 8.0 10.0 METRES

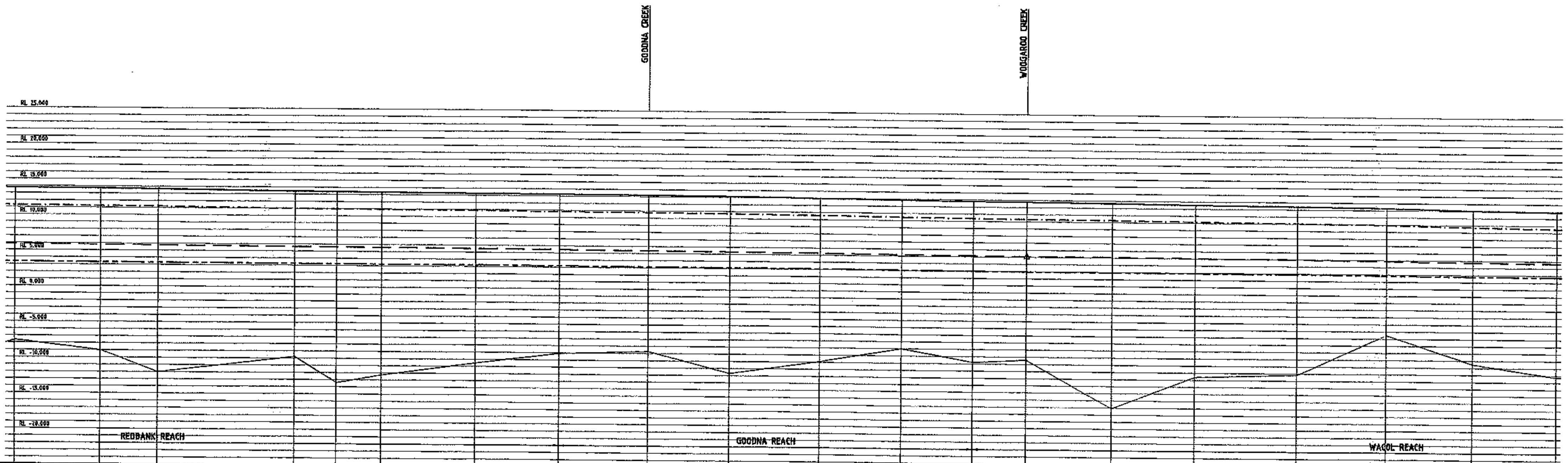
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

PLOT SCALE: 1=30

FIGURE C-1b

BRISBANE RIVER FLOOD STUDY

MIKE 11 VERIFICATION PROFILE

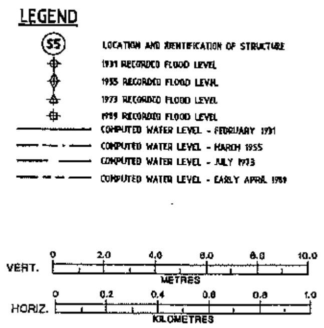


DATUM RL. -25.000

1989 PREDICTED FLOOD LEVEL	3.390	3.350	3.330	3.260	3.260	3.240	3.210	3.180	3.140	3.110
1973 PREDICTED FLOOD LEVEL	5.860	5.800	5.760	5.620	5.610	5.580	5.530	5.460	5.390	5.340
1955 PREDICTED FLOOD LEVEL	11.310	11.240	11.200	10.980	10.980	10.930	10.870	10.820	10.760	10.680
1931 PREDICTED FLOOD LEVEL	13.770	13.670	13.650	13.410	13.400	13.340	13.290	13.250	13.190	13.110
BED LEVEL (m AHD)	-7.400	-9.000	-12.000	-9.300	-13.440	-12.300	-10.500	-9.100	-8.700	-14.740
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750
MIKE 11 CHAINAGE (km)	1008.925	1009.460	1009.720	1010.490	1010.725	1010.980	1011.510	1011.980	1012.475	1012.935
AMTD CHAINAGE (km)	69.735	69.260	68.860	68.170	67.935	67.680	67.150	66.680	66.185	65.725

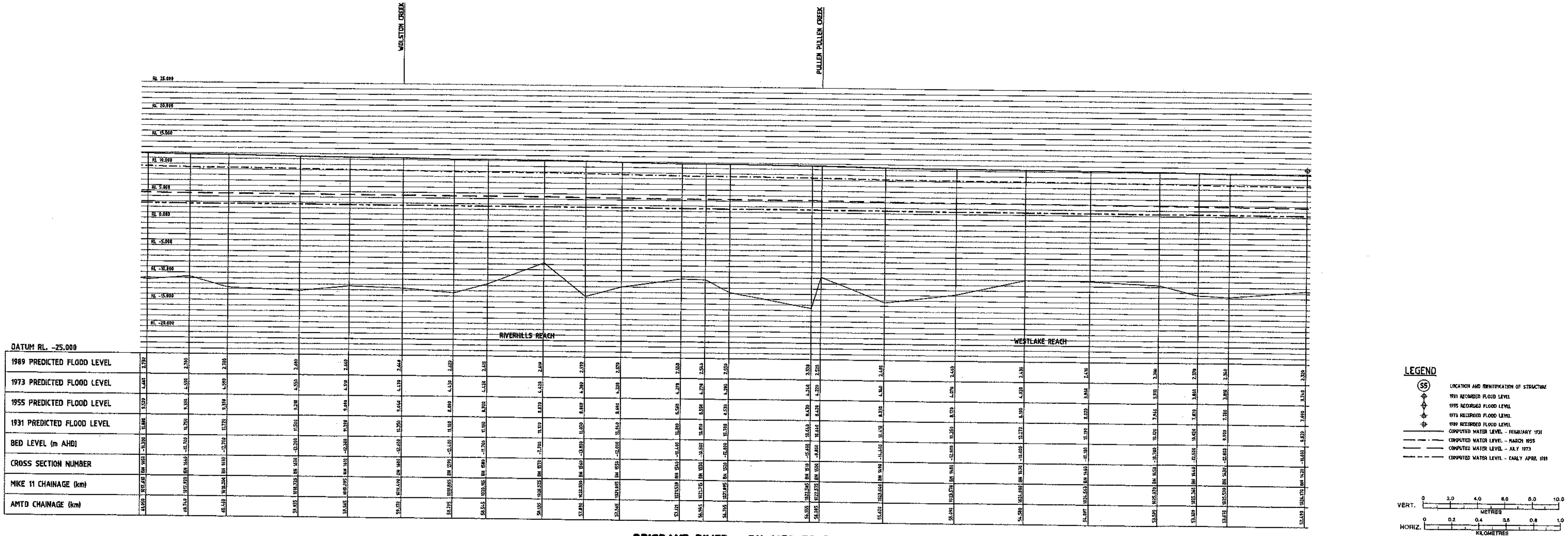
1989 PREDICTED FLOOD LEVEL	3.070	3.020	2.980	2.960	2.940	2.930	2.910	2.840	2.770	2.730
1973 PREDICTED FLOOD LEVEL	5.270	5.200	5.140	5.080	5.090	5.030	4.900	4.876	4.750	4.660
1955 PREDICTED FLOOD LEVEL	10.570	10.480	10.390	10.320	10.270	10.150	10.050	9.920	9.710	9.520
1931 PREDICTED FLOOD LEVEL	12.990	12.890	12.800	12.740	12.670	12.530	12.430	12.250	12.070	11.880
BED LEVEL (m AHD)	-9.900	-8.000	-9.340	-9.400	-16.100	-11.600	-11.200	-5.530	-9.500	-11.300
CROSS SECTION NUMBER	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1013.445	1013.910	1014.310	1014.610	1015.090	1015.560	1016.140	1016.460	1017.130	1017.610
AMTD CHAINAGE (km)	65.215	64.740	64.550	64.050	63.570	63.100	62.520	62.020	61.530	61.050

BRISBANE RIVER - BN 1840 TO BN 1650



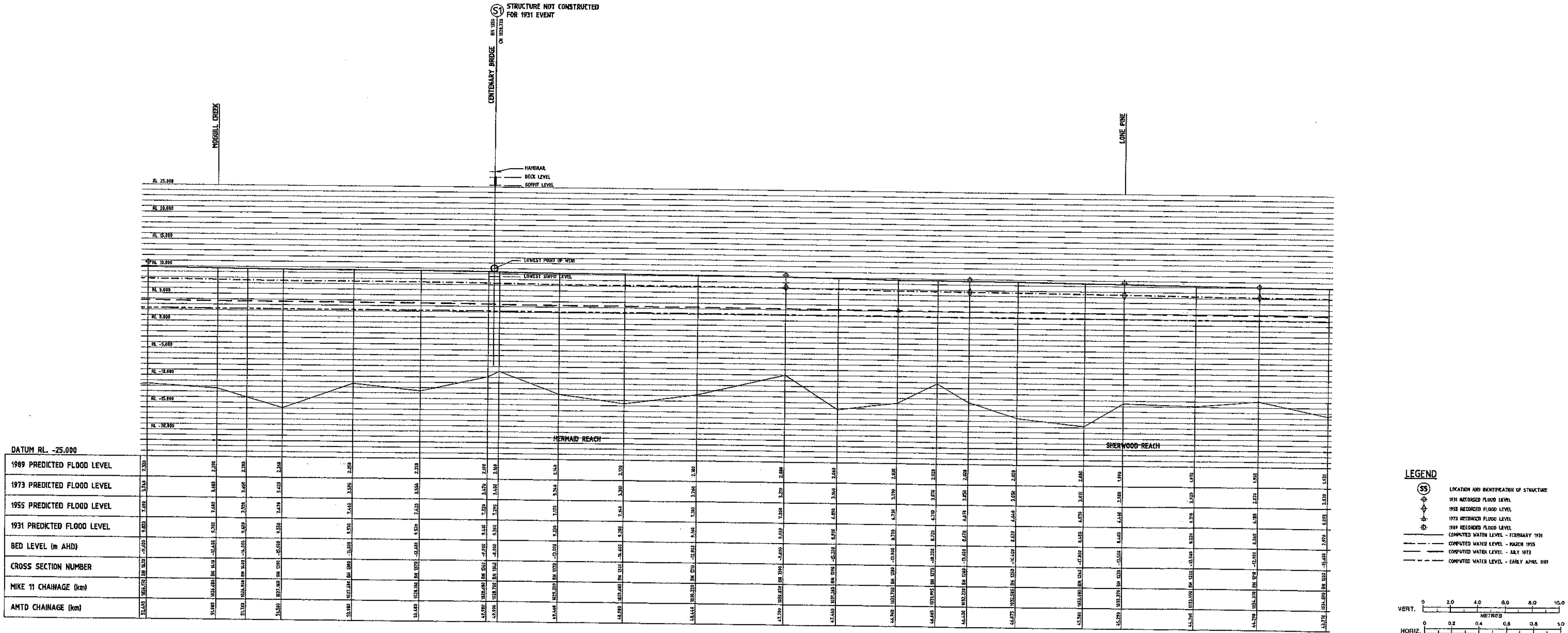
SINCLAIR KNIGHT MERZ

FIGURE C-1c
BRISBANE RIVER FLOOD STUDY
MIKE 11 VERIFICATION PROFILE



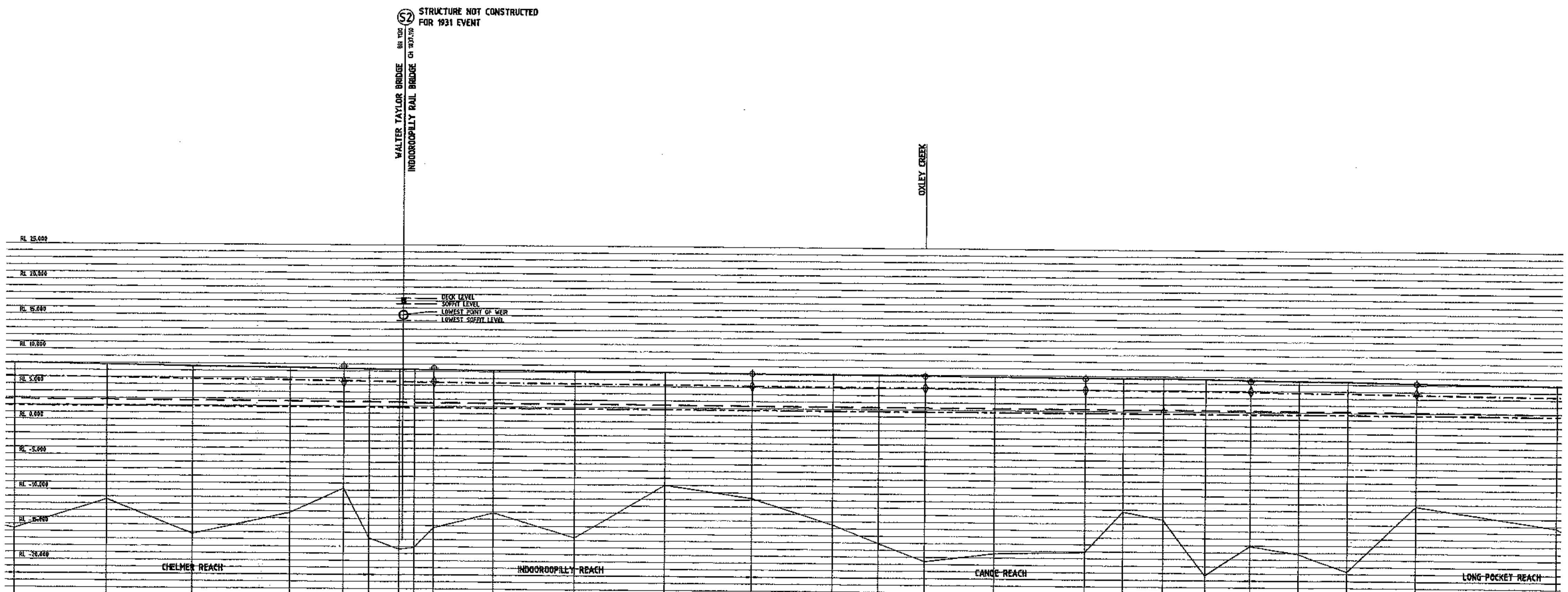
BRISBANE RIVER - BN 1650 TO BN 1420

PLOT SCALE: 1=30



BRISBANE RIVER - BN 1420 TO BN 1200

PLOT SCALE: 1=30



DATUM RL. -25.000

1989 PREDICTED FLOOD LEVEL	1.930	1.910	1.890	1.870	1.860	1.850	1.840	1.810	1.810	1.800	1.790	1.770	1.750
1973 PREDICTED FLOOD LEVEL	2.830	2.770	2.730	2.660	2.640	2.620	2.600	2.510	2.510	2.490	2.470	2.410	2.350
1955 PREDICTED FLOOD LEVEL	6.090	5.950	5.800	5.480	5.600	5.550	5.500	5.450	5.420	5.390	5.330	5.260	5.200
1931 PREDICTED FLOOD LEVEL	7.970	7.800	7.590	7.470	7.370	7.290	7.230	7.220	7.180	7.160	7.120	7.040	6.950
BED LEVEL (m AHD)	-15.480	-11.400	-16.300	-13.200	-9.700	-16.800	-18.440	-18.100	-15.300	-12.400	-16.400	-9.000	-10.800
CROSS SECTION NUMBER	BN 1200	BN 1190	BN 1180	BN 1170	BN 1160	BN 1150	BN 1140	BN 1120	BN 1110	BN 1100	BN 1090	BN 1080	BN 1070
MIKE 11 CHAINAGE (km)	1034.890	1035.414	1035.900	1036.460	1036.770	1036.915	1037.090	1037.175	1037.285	1037.625	1038.085	1038.600	1039.100
AMTD CHAINAGE (km)	43.770	43.246	42.760	42.200	41.890	41.745	41.570	41.485	41.375	41.035	40.575	40.060	39.560

1989 PREDICTED FLOOD LEVEL	1.730	1.730	1.730	1.710	1.710	1.700	1.690	1.690	1.680	1.670	1.670	1.650	1.610
1973 PREDICTED FLOOD LEVEL	2.320	2.310	2.300	2.260	2.250	2.240	2.210	2.210	2.180	2.150	2.140	2.070	1.990
1955 PREDICTED FLOOD LEVEL	5.150	5.130	5.120	5.040	5.010	4.980	4.960	4.940	4.860	4.780	4.750	4.610	4.410
1931 PREDICTED FLOOD LEVEL	6.900	6.880	6.870	6.770	6.740	6.700	6.650	6.640	6.540	6.430	6.400	6.230	6.000
BED LEVEL (m AHD)	-14.500		-19.400	-18.400	-18.100	-12.300	-13.400	-21.300	-17.100	-18.200	-20.700	-11.300	-14.300
CROSS SECTION NUMBER	BN 1060		BN 1050	BN 1040	BN 1030	BN 1020	BN 1010	BN 1000	BN 990	BN 980	BN 970	BN 960	BN 950
MIKE 11 CHAINAGE (km)	1039.565	1039.828	1040.090	1040.490	1041.100	1041.230	1041.460	1041.700	1041.960	1042.235	1042.515	1042.910	1043.725
AMTD CHAINAGE (km)	39.095	38.832	38.570	38.170	37.560	37.430	37.200	36.960	36.700	36.425	36.145	35.750	34.935

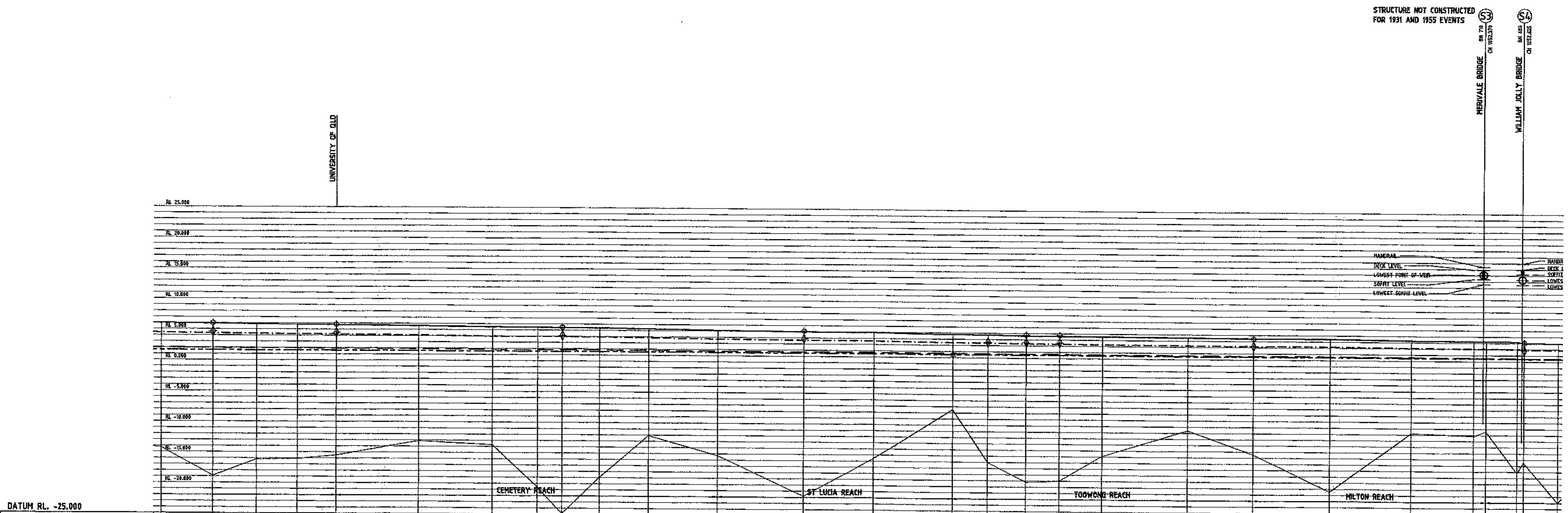
BRISBANE RIVER - BN 1200 TO BN 950

LEGEND
- (55) LOCATION AND IDENTIFICATION OF STRUCTURE
- 1931 RECORDED FLOOD LEVEL
- 1955 RECORDED FLOOD LEVEL
- 1973 RECORDED FLOOD LEVEL
- 1989 RECORDED FLOOD LEVEL
- COMPUTED WATER LEVEL - FEBRUARY 1931
- COMPUTED WATER LEVEL - MARCH 1955
- COMPUTED WATER LEVEL - JULY 1973
- COMPUTED WATER LEVEL - EARLY APRIL 1989

VERT. 0 2.0 4.0 6.0 8.0 10.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

FIGURE C-1f

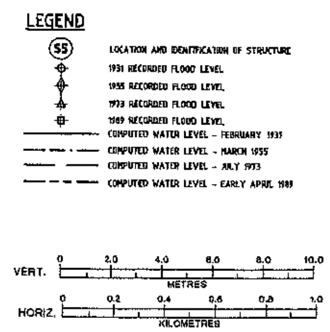
BRISBANE RIVER FLOOD STUDY
MIKE 11 VERIFICATION PROFILE



	BN 950	BN 940	BN 930	BN 920	BN 910	BN 900	BN 890	BN 880	BN 870	BN 860
1989 PREDICTED FLOOD LEVEL	1.610	1.610	1.600	1.590	1.590	1.570	1.560	1.560	1.550	1.550
1973 PREDICTED FLOOD LEVEL	1.990	1.970	1.950	1.930	1.920	1.880	1.830	1.830	1.830	1.820
1955 PREDICTED FLOOD LEVEL	4.410	4.340	4.280	4.250	4.210	4.190	3.980	3.970	3.960	3.930
1931 PREDICTED FLOOD LEVEL	6.000	5.920	5.830	5.790	5.750	5.610	5.470	5.450	5.430	5.400
BED LEVEL (m AHD)	-14.300	-18.900	-16.200	-16.100	-15.500	-13.100	-13.700	-20.600	-24.900	-19.600
CROSS SECTION NUMBER	BN 950	BN 940	BN 930	BN 920	BN 910	BN 900	BN 890	BN 880	BN 870	BN 860
MIKE 11 CHAINAGE (km)	1043.725	1044.060	1044.340	1044.605	1044.860	1045.400	1045.885	1046.180	1046.340	1046.580
AMTD CHAINAGE (km)	34.935	34.600	34.320	34.055	33.800	33.260	32.775	32.480	32.320	32.080

	BN 850	BN 840	BN 830	BN 820	BN 810	BN 800	BN 790	BN 780	BN 770
1989 PREDICTED FLOOD LEVEL	1.540	1.530	1.520	1.520	1.500	1.500	1.490	1.490	1.480
1973 PREDICTED FLOOD LEVEL	1.790	1.750	1.730	1.730	1.670	1.660	1.640	1.640	1.620
1955 PREDICTED FLOOD LEVEL	3.850	3.710	3.610	3.590	3.440	3.410	3.340	3.330	3.300
1931 PREDICTED FLOOD LEVEL	5.290	5.100	4.970	4.950	4.760	4.730	4.620	4.610	4.560
BED LEVEL (m AHD)	-12.100	-15.300	-21.800	-15.400	-7.500	-14.000	-19.200	-19.000	-16.900
CROSS SECTION NUMBER	BN 850	BN 840	BN 830	BN 820	BN 810	BN 800	BN 790	BN 780	BN 770
MIKE 11 CHAINAGE (km)	1046.900	1047.350	1047.915	1048.375	1048.890	1049.120	1049.370	1049.590	1049.870
AMTD CHAINAGE (km)	31.760	31.310	30.745	30.285	29.770	29.540	29.290	29.070	28.790

	BN 760	BN 750	BN 740	BN 730	BN 720	BN 700	BN 690	BN 670	BN 660
1989 PREDICTED FLOOD LEVEL	1.470	1.470	1.460	1.450	1.450	1.440	1.430	1.420	1.420
1973 PREDICTED FLOOD LEVEL	1.600	1.580	1.530	1.540	1.530	1.520	1.520	1.470	1.440
1955 PREDICTED FLOOD LEVEL	3.250	3.190	3.190	3.080	3.050	3.040	3.020	2.980	2.890
1931 PREDICTED FLOOD LEVEL	4.520	4.440	4.430	4.280	4.250	4.240	4.200	4.000	3.99
BED LEVEL (m AHD)	-18.600	-16.500	-20.500	-14.800	-11.200	-10.400	-17.200	-15.500	-22.000
CROSS SECTION NUMBER	BN 760	BN 750	BN 740	BN 730	BN 720	BN 700	BN 690	BN 670	BN 660
MIKE 11 CHAINAGE (km)	1050.430	1050.860	1051.360	1051.895	1052.310	1052.390	1052.595	1052.640	1052.865
AMTD CHAINAGE (km)	28.230	27.800	27.300	26.765	26.350	26.270	26.065	26.020	25.795

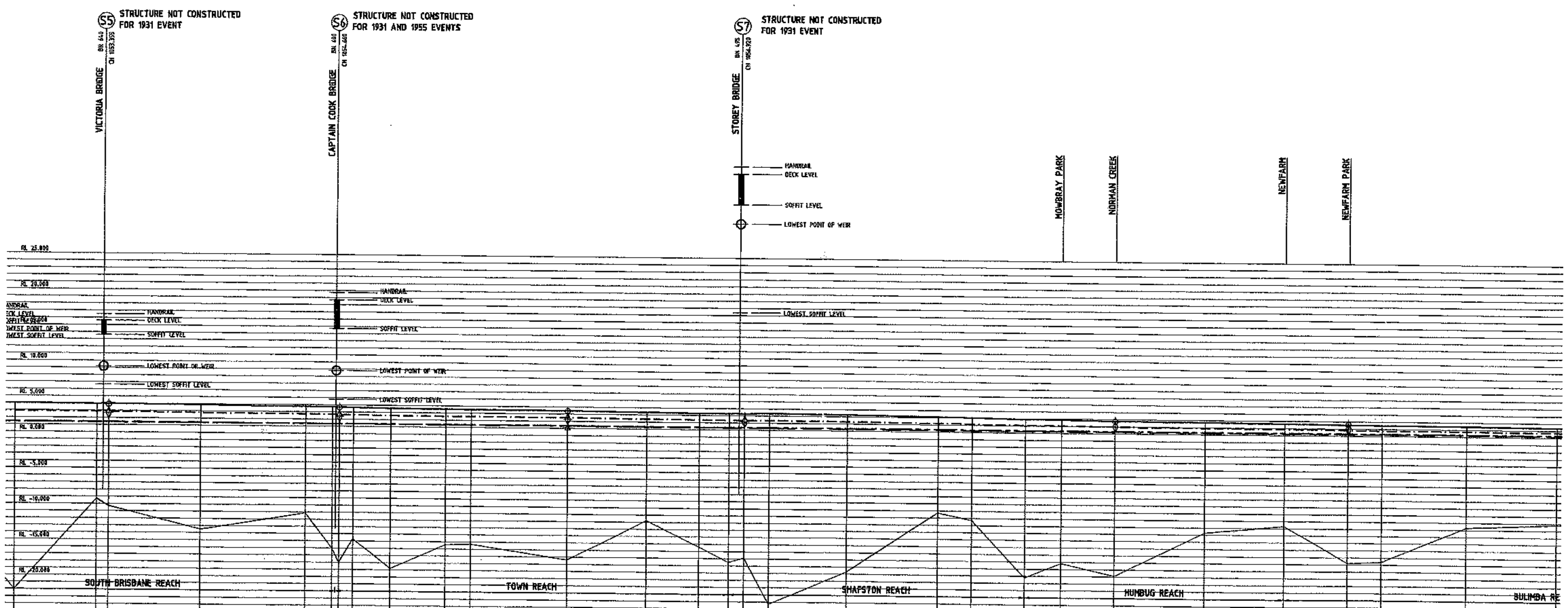


BRISBANE RIVER - BN 950 TO BN 660

SINCLAIR KNIGHT MERZ

FIGURE C-1g

BRISBANE RIVER FLOOD STUDY
MIKE 11 VERIFICATION PROFILE



1989 PREDICTED FLOOD LEVEL	1.420	1.410	1.410	1.400	1.390	1.390	1.390	1.390	1.380
1973 PREDICTED FLOOD LEVEL	1.440	1.450	1.440	1.410	1.400	1.400	1.390	1.380	1.360
1955 PREDICTED FLOOD LEVEL	2.890	2.870	2.880	2.780	2.700	2.680	2.660	2.64	2.570
1931 PREDICTED FLOOD LEVEL	3.99	3.960	3.980	3.850	3.750	3.720	3.710	3.470	3.570
BED LEVEL (m AHD)	-22.000	-9.300	-10.340	-13.500	-11.100	-16.000	-18.000	-14.700	-18.800
CROSS SECTION NUMBER	BN 660	BN 650	BN 630	BN 620	BN 580	BN 610	BN 590	BN 570	BN 560
MIKE 11 CHAINAGE (km)	1052.865	1053.320	1053.385	1053.900	1054.490	1054.640	1054.680	1054.760	1054.970
AMTO CHAINAGE (km)	25.795	25.340	25.295	24.740	24.170	24.020	23.980	23.900	23.690

1989 PREDICTED FLOOD LEVEL	1.380	1.380	1.370	1.340	1.340	1.360	1.350	1.350	1.350
1973 PREDICTED FLOOD LEVEL	1.340	1.350	1.340	1.310	1.300	1.300	1.250	1.260	1.250
1955 PREDICTED FLOOD LEVEL	2.550	2.530	2.500	2.400	2.380	2.370	2.330	2.380	2.320
1931 PREDICTED FLOOD LEVEL	3.540	3.520	3.470	3.340	3.300	3.290	3.280	3.350	3.270
BED LEVEL (m AHD)	-15.400	-15.390	-17.400	-11.800	-15.400	-17.500	-16.900	-23.300	-18.700
CROSS SECTION NUMBER	BN 550	BN 540	BN 530	BN 520	BN 510	BN 500	BN 490	BN 480	BN 470
MIKE 11 CHAINAGE (km)	1055.280	1055.420	1055.960	1056.440	1056.695	1056.865	1056.950	1057.090	1057.530
AMTO CHAINAGE (km)	23.380	23.240	22.700	22.260	21.965	21.795	21.710	21.570	21.130

1989 PREDICTED FLOOD LEVEL	1.340	1.330	1.330	1.330	1.320	1.320	1.320	1.310	1.310	1.300	1.300
1973 PREDICTED FLOOD LEVEL	1.220	1.220	1.210	1.210	1.210	1.210	1.210	1.210	1.210	1.210	1.210
1955 PREDICTED FLOOD LEVEL	2.290	2.150	2.070	2.050	1.960	1.930	1.870	1.810	1.780	1.750	1.690
1931 PREDICTED FLOOD LEVEL	3.110	3.030	2.910	2.880	2.750	2.720	2.620	2.540	2.490	2.460	2.370
BED LEVEL (m AHD)	-10.300	-11.300	-19.200	-17.200	-10.900	-12.700	-11.700	-16.800	-16.400	-11.700	-11.200
CROSS SECTION NUMBER	BN 460	BN 450	BN 440	BN 430	BN 420	BN 410	BN 400	BN 390	BN 380	BN 370	BN 360
MIKE 11 CHAINAGE (km)	1058.040	1058.230	1058.530	1058.735	1059.035	1059.540	1059.990	1060.345	1060.535	1061.015	1061.530
AMTO CHAINAGE (km)	20.620	20.430	20.130	19.925	19.625	19.120	18.670	18.315	18.125	17.645	17.130

BRISBANE RIVER - BN 660 TO BN 360

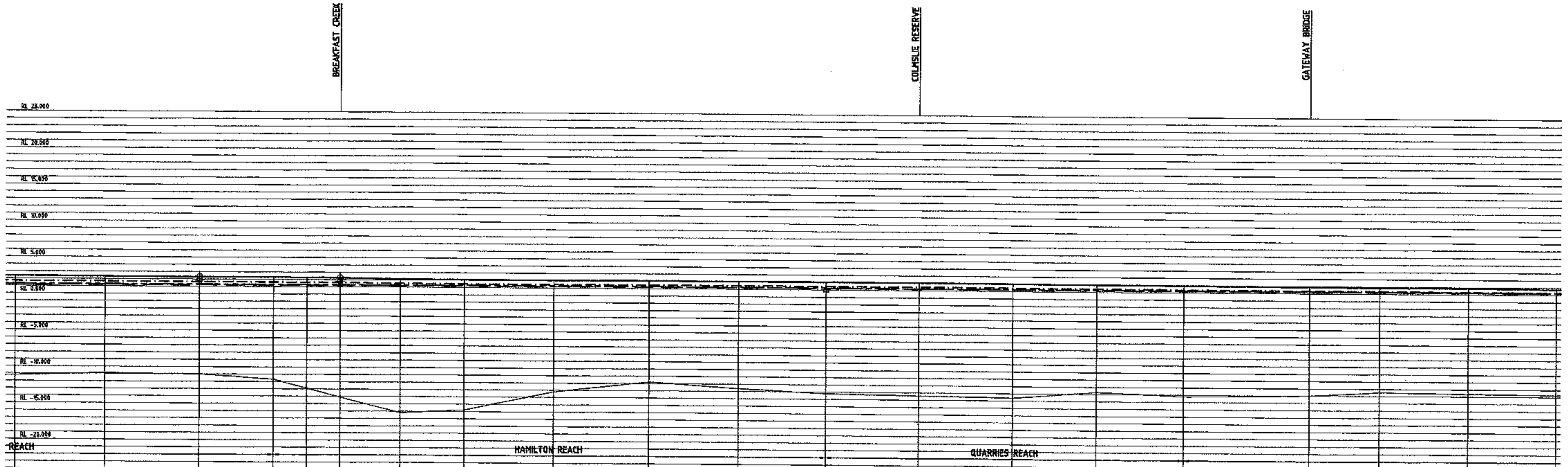
LEGEND

- (S5) LOCATION AND IDENTIFICATION OF STRUCTURE
- 1931 RECORDED FLOOD LEVEL
- 1955 RECORDED FLOOD LEVEL
- 1973 RECORDED FLOOD LEVEL
- 1989 RECORDED FLOOD LEVEL
- COMPUTED WATER LEVEL - FEBRUARY 1931
- COMPUTED WATER LEVEL - MARCH 1955
- COMPUTED WATER LEVEL - JULY 1973
- COMPUTED WATER LEVEL - EARLY APRIL 1989

VERT. 0 2.0 4.0 6.0 8.0 10.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

PLOT SCALE 1:30

FIGURE C-1h
BRISBANE RIVER FLOOD STUDY
MIKE 11 VERIFICATION PROFILE



DATUM RL. -25.000

1989 PREDICTED FLOOD LEVEL	1.300	1.300	1.300	1.290	1.290	1.290	1.290	1.280	1.280	1.280
1973 PREDICTED FLOOD LEVEL	1.210	1.210	1.210	1.220	1.220	1.220	1.210	1.210	1.210	1.210
1955 PREDICTED FLOOD LEVEL	1.690	1.660	1.640	1.620	1.600	1.600	1.520	1.500	1.470	1.480
1931 PREDICTED FLOOD LEVEL	2.330	2.330	2.300	2.280	2.250	2.250	2.130	2.100	2.050	2.010
BED LEVEL (m AHD)	-11.200	-10.900	-11.000	-11.700		-14.100	-16.200	-15.800	-13.200	-11.800
CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330		BN 320	BN 310	BN 300	BN 290	BN 280
MIKE 11 CHAINAGE (km)	1061.530	1062.070	1062.535	1062.940	1063.125	1063.310	1063.645	1064.000	1064.490	1065.010
AMTD CHAINAGE (km)	17.150	16.610	16.125	15.720	15.535	15.350	15.015	14.660	14.170	13.650

1989 PREDICTED FLOOD LEVEL	1.270	1.270	1.270	1.270	1.260	1.260	1.250	1.250	1.240	1.240
1973 PREDICTED FLOOD LEVEL	1.210	1.210	1.210	1.210	1.260	1.200	1.200	1.200	1.200	1.200
1955 PREDICTED FLOOD LEVEL	1.470	1.480	1.470	1.440	1.430	1.400	1.360	1.340	1.330	1.310
1931 PREDICTED FLOOD LEVEL	2.060	2.070	2.050	2.030	1.990	1.960	1.900	1.870	1.840	1.820
BED LEVEL (m AHD)	-12.600	-13.200	-13.400	-13.600	-12.700	-13.200	-13.000	-12.500	-12.400	-12.700
CROSS SECTION NUMBER	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
MIKE 11 CHAINAGE (km)	1065.503	1065.990	1066.505	1067.020	1067.485	1067.965	1068.660	1069.045	1069.535	1070.025
AMTD CHAINAGE (km)	13.157	12.670	12.155	11.640	11.175	10.695	10.000	9.615	9.125	8.635

BRISBANE RIVER - BN 360 TO BN 180

LEGEND

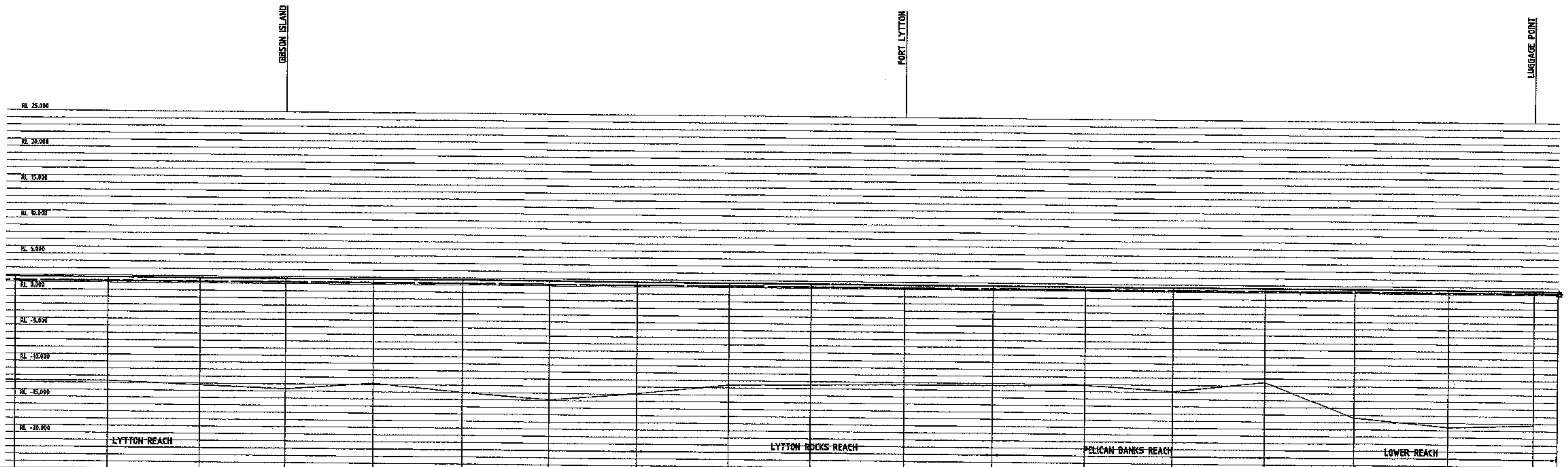
- (55) LOCATION AND IDENTIFICATION OF STRUCTURE
- 1931 RECORDED FLOOD LEVEL
- 1955 RECORDED FLOOD LEVEL
- 1973 RECORDED FLOOD LEVEL
- 1989 RECORDED FLOOD LEVEL
- COMPUTED WATER LEVEL - FEBRUARY 1931
- COMPUTED WATER LEVEL - MARCH 1955
- COMPUTED WATER LEVEL - JULY 1973
- COMPUTED WATER LEVEL - EARLY APRIL 1989

VERT. 0 2.0 4.0 6.0 8.0 10.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

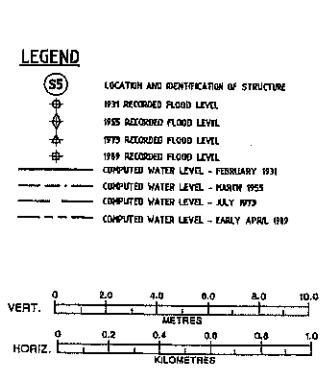
PLOT SCALE: 1=30

FIGURE C-1i
BRISBANE RIVER FLOOD STUDY
MIKE 11 VERIFICATION PROFILE



1989 PREDICTED FLOOD LEVEL	1.240	1.240	1.230	1.230	1.230	1.220	1.220	1.220	1.210	1.210	1.210	1.210	1.210	1.200	1.200	1.200	1.200	1.200	1.200
1973 PREDICTED FLOOD LEVEL	1.200	1.200	1.200	1.200	1.190	1.190	1.190	1.190	1.190	1.190	1.180	1.180	1.180	1.180	1.190	1.190	1.190	1.190	1.190
1955 PREDICTED FLOOD LEVEL	1.310	1.290	1.260	1.270	1.260	1.230	1.220	1.200	1.180	1.170	1.140	1.130	1.130	1.110	1.110	1.110	1.110	1.100	1.100
1931 PREDICTED FLOOD LEVEL	1.820	1.780	1.750	1.760	1.740	1.700	1.690	1.650	1.620	1.600	1.580	1.580	1.570	1.570	1.570	1.560	1.540	1.500	1.500
BED LEVEL (m AHD)	-12.700	-12.700	-13.250	-13.700	-12.800	-14.000	-14.900	-13.900	-12.600	-12.500	-12.300	-12.300	-12.100	-12.900	-14.500	-16.400	-17.600	-17.200	
CROSS SECTION NUMBER	BN 180	BN 170	BN 160	BN 150	BN 140	BN 130	BN 120	BN 110	BN 100	BN 90	BN 80	BN 70	BN 60	BN 50	BN 40	BN 30	BN 20	BN 10	
MIKE 11 CHAINAGE (km)	1070.025	1070.530	1071.040	1071.520	1072.015	1072.515	1072.995	1073.485	1074.000	1074.460	1074.985	1075.480	1076.000	1076.495	1077.010	1077.510	1078.040	1078.525	1078.660
AMTD CHAINAGE (km)	8.635	8.130	7.620	7.140	6.645	6.145	5.665	5.175	4.660	4.200	3.675	3.180	2.660	2.165	1.650	1.150	0.620	0.135	0.000

BRISBANE RIVER - BN 180 TO BN 10



Brisbane City Council
September 1997

Brisbane River Flood Study

Design Events Report

DRAFT 2

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SINCLAIR KNIGHT MERZ

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Contents

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1. Introduction

The Brisbane River Flood Study is a major initiative of the Brisbane City Council to establish design flood levels along the lower reach of Brisbane River. Additional outcomes of the investigation shall be the setting of flood regulation lines, a revegetation strategy compatible with hydraulic constraints and a flood forecasting model.

The Design Flood Events Report is the second of a series of progress reports. This report uses the validated hydrologic model (RAFTS) for the Brisbane Valley Catchment and hydraulic model (MIKE 11) developed in the calibration phase of this study, to predict design floods for the lower Brisbane River. The remaining progress reports to be provided include:

- Waterway Management Report
- Flood Mapping Report.

2. Design Hydrology

2.1 Design Storm Requirements

An analysis of design storm events was performed to establish design flood characteristics in the Brisbane River. A range of average recurrence intervals (ARI) from 1 in 2 years ARI to the Probable Maximum Precipitation (PMP) were assessed. Temporal patterns and rainfall intensities were based on Australian Rainfall and Runoff (1987) guidelines and hydrologic data supplied by the Department of Natural Resources.

This assessment considers only the existing extent of urbanisation for the Brisbane River Catchment.

2.2 Catchment Urbanisation

The majority of the Brisbane River Catchment was considered to be rural and was therefore allocated a zero percent impervious. In the Brisbane Metropolitan area the assumed percentage impervious varied from 20 to 50% to account for the catchment urbanisation.

Ultimate future urbanisation for the catchment was not considered in this study. Given the large size of the catchment, the effects of likely future urbanisation was considered to be minor.

2.3 Design Event Rainfall

Design Event rainfall data was required to determine inflow hydrographs for the calculation of flood profiles in the Brisbane River. The distribution of rainfall over the catchment for the calibration events identified that significant variations of rainfall occurred over the catchment. This variation in rainfall was attributed to the size and topography of the catchment.

Design rainfall intensities were derived using Intensity-Frequency-Duration (IFD) techniques used in Chapter 2 of Australian Rainfall and Runoff 1987 (AR&R). Design rainfall intensities were derived at 130 rainfall gauge locations throughout the catchment to account for the variation of rainfall. Isoheytal maps for the catchment were derived for recurrence intervals ranging from 2 year ARI to 100 Year ARI using CivilCAD and the calculated design rainfalls.

The following figures present Isoheytal maps and rainfall depths for critical duration storms ranging from 2 year ARI to 100 year ARI.

- **Figure 2-1 - 2 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.**
- **Figure 2-2 - 5 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.**

- **Figure 2-3 - 10 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.**
- **Figure 2-4 - 20 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.**
- **Figure 2-5 - 50 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.**
- **Figure 2-6 - 100 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.**

For large catchments it is unlikely that rainfall intensity will remain constant across the catchment. To account for this variation, AR&R suggests use of an areal reduction factor which reduces the depth of rainfall over the catchment.

The problem with this method is that the areal reduction factor method presented in AR&R is based on work conducted in the United States and virtually no work has been conducted for durations greater than 24 hours or catchments with areas greater than 1 000 km^2.

Since the Brisbane River Catchment is approximately 13 500 km^2 and has a critical duration of approximately 24 hours it was considered that spatial variation would have to be accounted for using an alternate method.

As previously stated design rainfalls were calculated at approximately 130 locations over the entire catchment. These rainfalls were then used to calculate rainfall depths at the centroid of each sub-area (ie approximately 250 locations) using interpolation facilities within CIVILCAD. This method ensured that the majority of rainfall variation was accounted for by a blanket coverage of the catchment which in turn minimised the effects of rainfall variation.

Given that the total catchment area of the Brisbane River is approximately 13 500 km^2 and that this area has been broken down into about 250 sub areas, then the average sub area is around 50 km^2. The areal reduction factor for an area of 50 km^2 (24 hour duration) was determined to be 0.98. Since the areal reduction factor was almost equal to one, areal reduction factors were not applied to any of the sub-areas. The rainfall intensities used in this study are therefore considered to be slightly conservative.

Australian Rainfall and Runoff temporal patterns for zone 3 apply to the Brisbane River Catchment.

The Probable Maximum Precipitation (PMP) rainfall depth and corresponding temporal pattern were provided by the Bureau of Meteorology. The adopted PMP rainfall depth for the Brisbane River Catchment is presented in **Table 2-1 - PMP Rainfall Depth, Brisbane River Catchment.**

Table 2-1 - PMP Rainfall Depth, Brisbane River Catchment

Duration	PMP Rainfall Depth
12	370
24	530
48	680
72	830
96	1010
120	1050
144	1070
168	1160

Review of the relevant reports and files suggested that PMP investigations conducted by the Department of Natural Resources used the total PMP rainfall depth over the entire catchment. This method provides a conservative result which may be applicable when considering dam safety. For this study spatial variation was accounted for by use of **Figure A-1 - Generalised Tropical Storm Method (GTSM) Design Isohyetal Pattern for the Distribution of PMP for Areas > 2 000 km^2**. The procedural method for the GTSM is also provided in **Appendix A - Generalised Tropical Storm Method.**

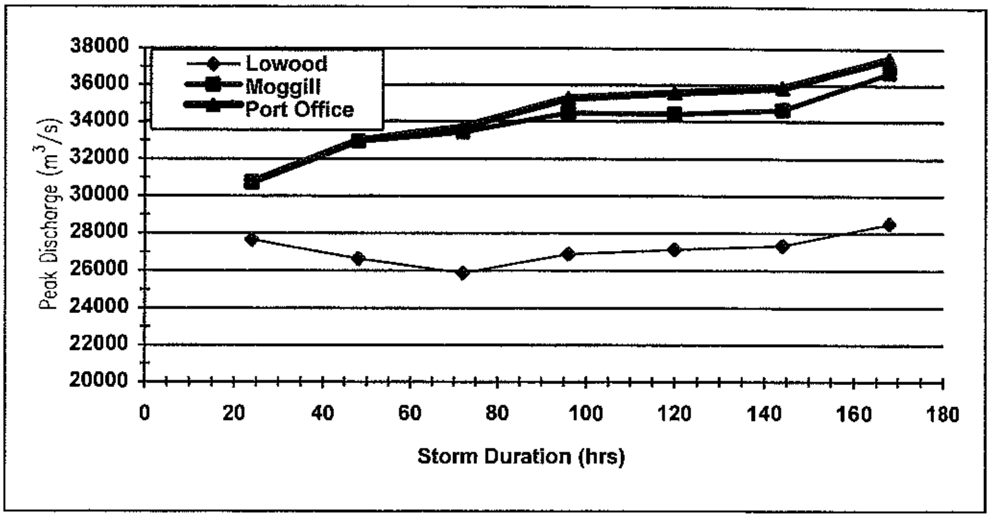
An analysis to determine the critical duration PMP rainfall event was performed. The critical duration storm for the PMP was found to be 168 hours. Peak discharges for the durations ranging from 24 hour to 168 hour storms are presented in **Table 2-2 - Peak Discharges for PMP at Lowood, Moggill & Port Office**. A plot of these results are presented in **Figure 2-7 - Critical Duration Storms at Lowood, Moggill & Port Office.**

Table 2-2 - Peak Discharges for PMP at Lowood, Moggill & Port Office

Duration (hrs)	Lowood (m^3/s)	Moggill (m^3/s)	Port Office (m^3/s)
24	27660 26584	30750 28227	30750 28230
48	26650 26975	32950 32412	33000 32430
72	25880 26018	33460 33681	33720 34131
96	26890 27095	34490 34831	35300 35961
120a	27130 27288	34440 35617	35600 36159
144a	27350 27584	34660 35574	35880 36114
168c	28530 28556	36720 36855	37500 37913

As previously mentioned the critical storm duration for the PMP event was 168 hours with only six percent variation in peak discharges predicted for the range of longer durations from 96 hours to 168 hours. As there was a significant difference between the critical durations found for the 100 year ARI and PMP events, a number of checks were conducted to ensure basic data had been interpreted and applied correctly.

Figure 2-7 - Critical Duration Storms at Lowood, Moggill & Port Office



The average intensities for each PMP duration were examined to ensure that the average rainfall intensity decreased as the storm duration increased.

The maximum rainfall intensity within each duration was checked to make sure that the temporal pattern was reasonably uniform without any uncharacteristic high intensities contained throughout the duration of the rainfall event.

A final check of sensitivity of time increment within the duration was conducted. This made little difference to the peak discharges and therefore it was considered that the effects of time increment were negligible.

The RAFTS model output for these events showed that the larger volumes of water associated with longer duration events caused peak discharges to occur over a longer period of time which resulted in the coincidence of peak discharges at major confluences. Conversely, the coincident peak effects for the shorter duration events are not as pronounced hence resulting in smaller peak discharges for the shorter duration storms.

Previous investigations conducted by the Department of Natural Resources found that the critical duration storm for the PMP was 120 hours and the critical duration storm for the 100 year ARI event was 24 hours. As the DNR found that there was significant differences in duration between the two recurrence intervals, it was considered that this was inherent of the catchment configuration and the rainfall variability in the catchment and the 168 hour was adopted as the critical duration storm for the PMP event for this study.

Initial and continuing losses have been applied which is consistent with the parameter set used for the 100 year ARI storm. Investigations carried out by the DNR used a continuing loss rate of 2.5 mm\hr and found that the peak discharge at the Port Office for the PMP was 31950 m^3\s. A continuing loss of 2.5 mm\hr was applied to the Sinclair Knight Merz model (120 hour storm) and the resulting peak discharge for the PMP at the Port Office was estimated to be 29960 m^3\s. This comparison shows that the Sinclair Knight Merz result is within 7% of the DNR result.

The adoption of the 168 hour storm for the PMP presented a problem in the calculation of the intermediate flood events if a rainfall based method was used. Since the critical duration of the PMP differed from the 100 year and 50 year ARI events, an extrapolation to 168 hours would have had to be done for the 100 and 50 year IFD curves. As no recognised methodology was available, the rainfall based calculation of intermediate events was not considered further.

An alternate method was to use peak discharges from the PMP, 100 year and 50 year ARI events using the methodology set down in Australian Rainfall and Runoff (AR&R). This method eliminated the problems associated with varying duration events. The intermediate events were calculated using this method at Lowood, Moggill and Port Office. The following figures illustrate the peak discharges with respect to recurrence interval at Lowood, Moggill and the Port Office.

The return period for the PMP was determined to be 100000 years ARI using **Table 13.1 of AR&R**. This calculation was performed using the Generalised Method with a catchment area of approximately 13500 km^2.

- **Figure 2-8 - Design Peak Discharges at Lowood.**
- **Figure 2-9 - Design Peak Discharges at Moggill.**
- **Figure 2-10 - Design Peak Discharges at Port Office.**

Figure 2-8 - Design Peak Discharges at Lowood

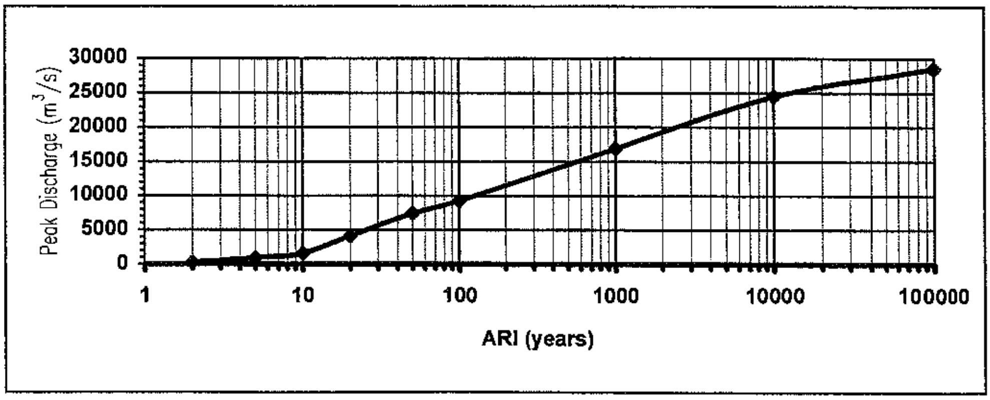


Figure 2-9 - Design Peak Discharges at Moggill

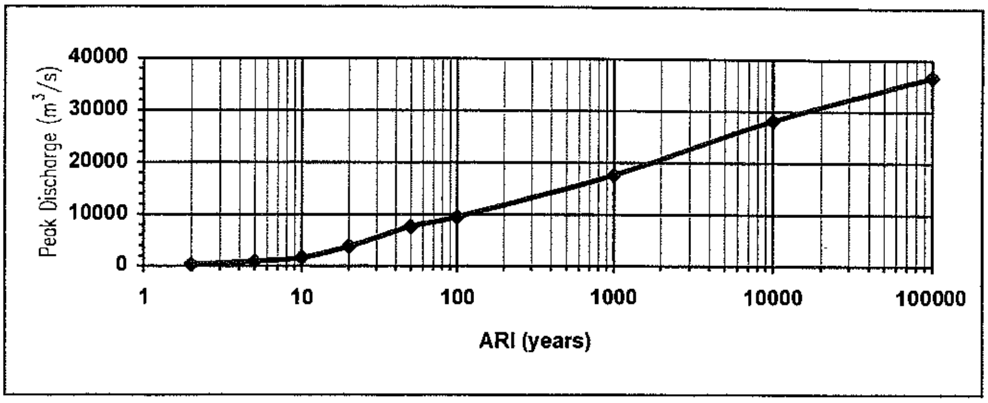
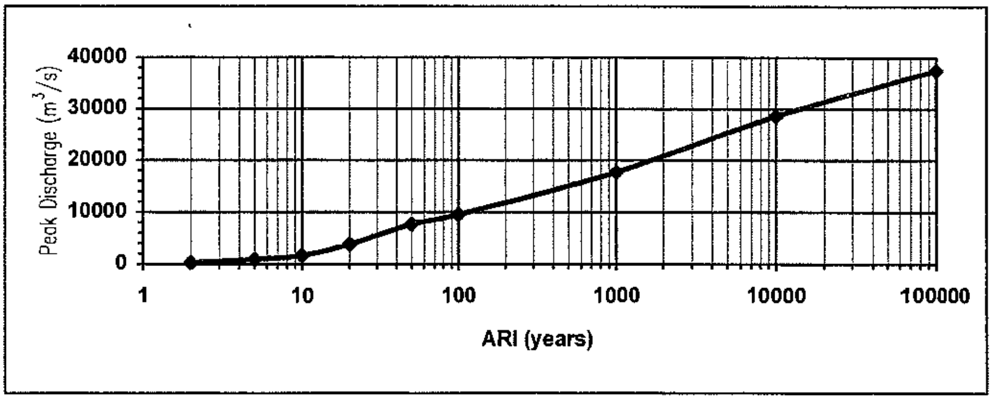


Figure 2-10 - Design Peak Discharges at Port Office



Once the peak discharges for these events were calculated, an average ratio was determined and the PMP rainfall depths were scaled and applied to the catchment. The 168 hour temporal pattern was adopted and the scaled intermediate storms were run through RAFTS. These scaling factors were adjusted for each recurrence interval until a good match between the AR&R peak calculated discharges and the peak RAFTS discharges was achieved. **Table 2-3 - Peak Predicted Discharges for the PMF, 10000, and 2000 Year ARI Events at Lowood, Moggill and Port Office** and **Table 2-4 Peak Predicted Discharges for the 1000, 500 and 200 Year ARI Events at Lowood, Moggill and Port Office** present the outcomes of this analysis.

Table 2-3 - Peak Predicted Discharges for the PMF, 10000 and 2000 Year ARI Events at Lowood, Moggill and Port Office

Location	PMF			10000 Year ARI			2000 Year ARI		
	Calc (m³\s)	RAFTS (m³\s)	% error	Calc (m³\s)	RAFTS (m³\s)	% error	Calc (m³\s)	RAFTS (m³\s)	% error
Lowood	-	28530	-	24520	22900	-6.6	19250	17630	-8.4
Moggill	-	36720	-	28200	29030	+3.0	20500	21600	+5.8
Port Office	-	37500	-	28610	29780	+4.1	21000	22040	+5.0

Table 2-4 - Peak Predicted Discharges for the 1000, 500, 200 Year ARI Events at Lowood, Moggill and Port Office

Location	1000 Year ARI			500 Year ARI			200 Year ARI		
	Calc (m³\s)	RAFTS (m³\s)	% error	Calc (m³\s)	RAFTS (m³\s)	% error	Calc (m³\s)	RAFTS (m³\s)	% error
Lowood	16880	15950	-5.6	14380	13100	-8.9	11500	11000	-4.3
Moggill	17630	19150	+8.7	15000	15470	+3.1	11800	12300	+4.3
Port Office	17730	19300	+8.9	15000	15500	+3.3	1200	12310	+2.6

Table 2-3 and 2-4 show that the calculated discharges are within 10% of the RAFTS predicted discharges at the three locations hence they were considered to be acceptable.

2.4 Flood Frequency Analysis

A flood frequency analysis was performed to ensure a match between the storm events obtained through hydrologic routing of historical information. The analysis also produced appropriate rainfall loss rates to ensure consistency between the two analysis methods.

Flood frequency analyses were conducted at Moggill, Lowood and Brisbane City at the Port Office Gauge. The omission of Jindalee for the analyses was due to limited available historical information at the site.

The locations for the flood frequency analyses are presented in **Figure 2-11 - Flood Frequency Analysis Location Layout.**

2.4.1 Historical Data

Historical events were derived from streamflow data recorded at Bureau of Meteorology gauging stations for Brisbane City (Port Office gauge) and Moggill. This data was in the form of peak instantaneous water levels which were converted to discharges using rating curves provided by the Bureau of Meteorology. The data for Lowood was obtained from the Department of Natural Resources in the form of peak instantaneous monthly discharges.

The Brisbane City (Port Office) gauge is influenced by tidal fluctuations and hence rating curves at the Port Office gauge vary to account for the changing tidal conditions. To determine peak discharges during flooding, it was therefore necessary to know the corresponding tide level at the time and date for each event. This information was not available. Discharges were determined by using two rating curves supplied by the Bureau of Meteorology. These rating curves used the following tailwater levels:

(i) -0.15 m AHD, and
(ii) 1.85 m AHD (highest Astronomical Tide +0.15 m).

One of the problems associated with performing the flood frequency analysis for this catchment was the influence that Wivenhoe and Somerset Dams would have on the downstream locations. To minimise these effects the flood frequency analysis was performed using a data series prior to the construction of Wivenhoe Dam (1985).

To account for the effects of Somerset Dam (constructed in 1943), it was necessary to adjust the series of peak discharges. As the adopted data series ended prior to 1985, the effects of Wivenhoe Dam did not need to be considered. However, all data between 1943 and 1985 had to be adjusted to remove the effects of the construction of Somerset Dam.

In order to establish a relationship between the flow upstream of Somerset Dam and flow downstream of the dam site prior to its construction, peak monthly discharges obtained at Woodford (upstream) were plotted against the discharge at the Silverton Gauge (downstream), prior to 1943. A line of best fit was then formulated and a correlation of 91.5% was achieved. The data for Woodford and Silverton used in this study and the resulting adjustment factors due to the construction of Somerset Dam are illustrated in **Appendix B - Adjustment of Historical Streamflows to Account for the Effects of Somerset Dam**.

Each of the corresponding adjusted values were applied at Lowood, Moggill and the Port Office and Flood Frequency Curves were constructed for the no dams effective catchment (ie effects of Wivenhoe and Somerset Dams removed).

2.4.2 Construction of Flood Frequency Curves

In constructing the flood frequency curves, annual series of peak discharges were utilised in all analyses. An annual series was adopted because of the emphasis of the study in regard to design flood estimation involving ARI's of greater than 10 years. This is in accordance with the recommendations of Chapter 10 of Australian Rainfall and Runoff, (1987).

The flood frequency curves for the annual series data were constructed in accordance with the methods outlined in Australian Rainfall and Runoff, 1987. For each location the historical peak discharges were ranked in descending order and the plotting position for each discharge was then calculated. Using the ranked discharges and their associated plotting positions, the values were plotted on Log Normal paper and the flood frequency curves were then fitted by eye.

A Log-Pearson Type III distribution together with 5% and 95% confidence limits was also fitted to all of the annual series data using the procedures outlined in Chapter 10 of Australian Rainfall and Runoff, 1987. The fit by eye curve was adopted at each location however the Log Pearson Distribution and 5% and 95% confidence limits have been plotted for comparison.

The flood frequency curves generated from the historical annual data series at the three nominated locations are presented in the following figures:

- **Figure 2-12 - Flood Frequency Curve at Lowood - No Dams Effective**
- **Figure 2-13 - Flood Frequency Curve at Moggill - No Dams Effective**
- **Figure 2-14 - Flood Frequency Curve at Port Office (-0.15 m AHD) - No Dames Effective** and
- **Figure 2-15 - Flood Frequency Curve at Port Office (1.85m AHD, Highest Astronomical Tide +0.15m) - No Dams Effective.**

Results for the fit by eye peak discharge estimates are presented in the following tables:

- **Table 2-5 - Flood Frequency Estimates at Lowood - No Dams Effective**
- **Table 2-6 - Flood Frequency Estimates at Moggill - No Dams Effective**
- **Table 2-7 - Flood Frequency Estimates at Port Office (-0.15 m AHD) - No Dams Effective** and
- **Table 2-8 - Flood Frequency Estimates at Port Office (1.85 m AHD, - Highest Astronomical Tide +0.15) - No Dams Effective**

Two flood frequency curves were generated at the Port Office Gauge, incorporating the two tide events mentioned previously.

Table 2-3 - Flood Frequency Estimates at Lowood - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s
50	2	800
20	5	2 900
10	10	3 800
5	20	5 100
2	50	6 900
1	100	8 200

Data at the Lowood site was reasonable, with 75 years of data being available and 62 annual floods on record. Again, the annual series had to be adjusted for those years where there was very little or no flow recorded.

Table 2-4 - Flood Frequency Estimates at Moggill - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s
50	2	1 630
20	5	4 250
10	10	6 500
5	20	8 500
2	50	11 000
1	100	13 700

Data at the Moggill site was poor. A period of 18 years has been analysed, with only 11 annual floods in this time period recorded. The frequency chart thus had to be adjusted for the years of zero data in accordance with Section 10.7.2 of Australian Rainfall and Runoff, 1987.

Table 2-5 - Flood Frequency Estimates at Port Office (-0.15 m AHD) - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s
50	2	500
20	5	3 300
10	10	5 700
5	20	8 100
2	50	11 200
1	100	13 700

Table 2-6 - Flood Frequency Estimates at Port Office (Highest Astronomical Tide) - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s
50	2	-
20	5	1 000
10	10	3 500
5	20	6 250
2	50	9 750
1	100	12 500

The two flood frequency estimates for the Port Office Gauge are shown in **Tables 2-5** and **2-6**. Data from 1841 was available at this site, with 142 years of data being analysed and adjustments made for the years of zero or low flow.

2.5 Initial and Continuing Losses

To determine appropriate initial and continuing loss values, the RAFTS model was run excluding Wivenhoe and Somerset Dams. The critical storm duration was determined by running each ARI without losses.

Once the critical duration was determined initial and continuing losses were applied uniformly over the catchment until the peak discharges produced by RAFTS matched the peak discharges found in the fit by eye flood frequency curves (Section 2.4.2). The adopted loss parameters are presented in **Table 2-9 - Initial and Continuing Losses for Brisbane River Catchment**.

Table 2-7 - Initial and Continuing Losses for Brisbane River Catchment

AEP (Years)	Initial Loss (mm)	Continuing Loss (mm/hr)
PMP	0.0	0.0
10 000	0.0	0.0
2 000	0.0	0.0
1 000	0.0	0.0
500	0.0	0.0
200	0.0	0.0
100	0.0	0.0
50	0.0	1.0
20	20	2.5
10	60	2.5
5	80	2.5
2	80	2.5

A comparison of RAFTS with loss rates applied and fit by eye peak discharges at Lowood, Moggill and Port Office are presented in **Table 2-8 - Peak Discharge Comparison Between RAFTS and Flood Frequency Curves for Lowood, Moggill and Port Office - No Dams Effective** for events up to and including the 100 year ARI.

Table 2-8 - Peak Discharge Comparison Between RAFTS and Flood Frequency Curves for Lowood, Moggill and Port Office - No Dams Effective

	Lowood			Moggill			Port Office *		
ARI (years)	RAFTS (m^3/s)	FFA (m^3/s)	Diff (%)	RAFTS (m^3/s)	FFA (m^3/s)	Diff (%)	RAFTS (m^3/s)	FFA (m^3/s)	Diff (%)
100	13 770	8 200	+40.5	13 780	13 700	+0.6	13 780	13 700	+0.6
50	11 070	6 900	+37.7	11 280	11 100	+1.6	11 280	11 200	+0.7
20	7 510	5 100	+32.1	8 020	8 500	-6.0	8 020	8 100	-0.1
10	5 830	3 800	+34.8	5 740	6 500	-11.7	5 750	5 700	+0.9
5	3 770	2 900	+23.1	3 140	4 500	-30.2	3 140	3 300	-5.1
2	1 060	800	+24.5	1 010	2 000	-50.5	1 010	500	+50.5

Note: Comparison for Port Office conducted for -0.15 m AHD Rating Curve Case.

From **Table 2-8** it can be seen that for Moggill and Port Office the comparison yields a good result however for low flows the percentage difference varies considerably. This variance would be most likely influenced by tidal fluctuations at these sites. As the studies objectives are generally related to the large flood events greater importance was placed on results consistency for the 10 year ARI flood and above.

At Lowood RAFTS over estimates flows by between about 23 and 41%. Loss rates above Lowood were increased, however this resulted in a reduction in flows at Moggill and the Port Office. Given that the main aim of this study was to produce development design flood levels within the Brisbane City Boundary it was considered that the loss parameters presented in **Table 2-7** were the most appropriate as they produced the best results at Moggill and Port Office.

2.6 Wivenhoe and Somerset Dam Operations

The RAFTS model was used to predict design hydrographs for the MIKE 11 hydraulic model. Prior to the commencement of the design events modelling, dam operational procedures for Wivenhoe and Somerset dams had to be established. These procedures were developed after discussions with Brisbane City Council and South East Queensland Water Board officers.

Given the complex release procedures for Somerset and Wivenhoe Dams, it was decided that the following assumptions be adopted for this study.

- The starting water level for both dams are assumed to be Wivenhoe RL 67.0 m AHD and Somerset RL 100.5 m AHD which is full supply level and spillway level respectively.
- During a flood event all communication between Wivenhoe and Somerset would be cut. When communications are cut during a flood event, the procedure is to employ uncontrolled releases for both dams.

It is evident that the above assumptions are conservative, however these were considered to be the most appropriate when setting development regulation lines. Storage curves and stage-discharge curves used in this study are presented in **Appendix C - Dam Operations**. These curves were input into the RAFTS model and the design events modelling was conducted.

2.7 Design RAFTS Modelling

Wivenhoe and Somerset Dams were included in the RAFTS model and the 24 hour, 30 hour and 36 hour storms for the 100 year ARI event were rerun. Using no losses it was found that the critical storm duration for the dams effective case was 30 hours which is consistent with the no dams effective case.

Floods ranging from 2 year ARI through to PMP were run assuming loss parameters presented in **Table 2-7**. Peak discharges at Lowood, Moggill and the Port Office are presented in **Table 2-9 - Peak Discharges at Lowood, Moggill and the Port Office.** Peak discharges presented in the Department of Natural Resources Report are also presented in **Table 2-9** at the Port Office for comparison.

Table 2-9 - Peak Discharges at Lowood, Moggill and the Port Office

ARI (Years)	Lowood SKM (m^3/s)	Moggill SKM (m^3/s)	Port Office SKM (m^3/s)	Port Office DNR (m^3/s)	Difference @ PO (m^3/s)
PMP	28530	36720	37500	31950 (1)	+5550
10 000	22900	29030	29780	27560 (1)	+2220
2 000	17630	21690	22040	-	-
1 000	16880	17630	17730	20100 (1)	-2370
500	13100	15470	15500	17510 (1)	-2010
200	11000	12300	12310	11840 (1)	+470
100	9 300	9 550	9 560	9 120 (2)	+440
50	7 410	7 700	7 700	7 990 (2)	-290
20	4 190	3 830	3 830	3 950 (2)	-120
10	1 610	1 658	1 660	2 840 (2)	-1 180
5	920	940	940	-	-
2	280	320	330	-	-

Note (1) - DNR 120a hour duration storm assuming 2.5 mm\hr continuing loss.
(2) - DNR 24 hour duration storm assuming varying loss rates.

The comparison between the Sinclair Knight Merz (SKM) and Department of Natural Resources (DNR) discharges up to and including the 100 year ARI event are generally within 5%, however, the SKM 10 year ARI flood is approximately 42% below that predicted by the DNR. This is most likely due to the loss parameters used. The loss rates used for the 10 year ARI flood by SKM are, IL = 60 mm, CL = 2.5 mm/hr whereas the losses used by DNR are IL = 22.9 mm and CL = 2.5 mm/hr.

As previously mentioned the PMF and intermediate results from the different sources vary considerably. However when loss rates applied by DNR were applied in the SKM model for the PMF flood event, this resulted in the outcomes for both models being within 7% of each other.

Given that the loss parameters for the no dams effective case yield discharges within 1% of the flood frequency analysis (**Table 2-8**), the loss parameters adopted by SKM were considered the most appropriate.

2.8 Comparison of DNR and SKM Discharges

It was proposed that a comparison between design flood hydrographs between DNR and SKM be conducted. Upon determination of the critical duration event, it became evident that the DNR critical duration was estimated at 24 hours whereas the SKM analysis resulted in a critical duration of 30 hours.

This meant that it was not appropriate to compare the two hydrographs as the 24 hour duration storm has a different temporal pattern to that of the 30 hour duration storm, hence a comparison was not conducted.

RAFTS hydrographs for the range of ARI storms at the Brisbane City Boundary, Inflow Boundaries and the Port Office gauge are presented in the following figures:

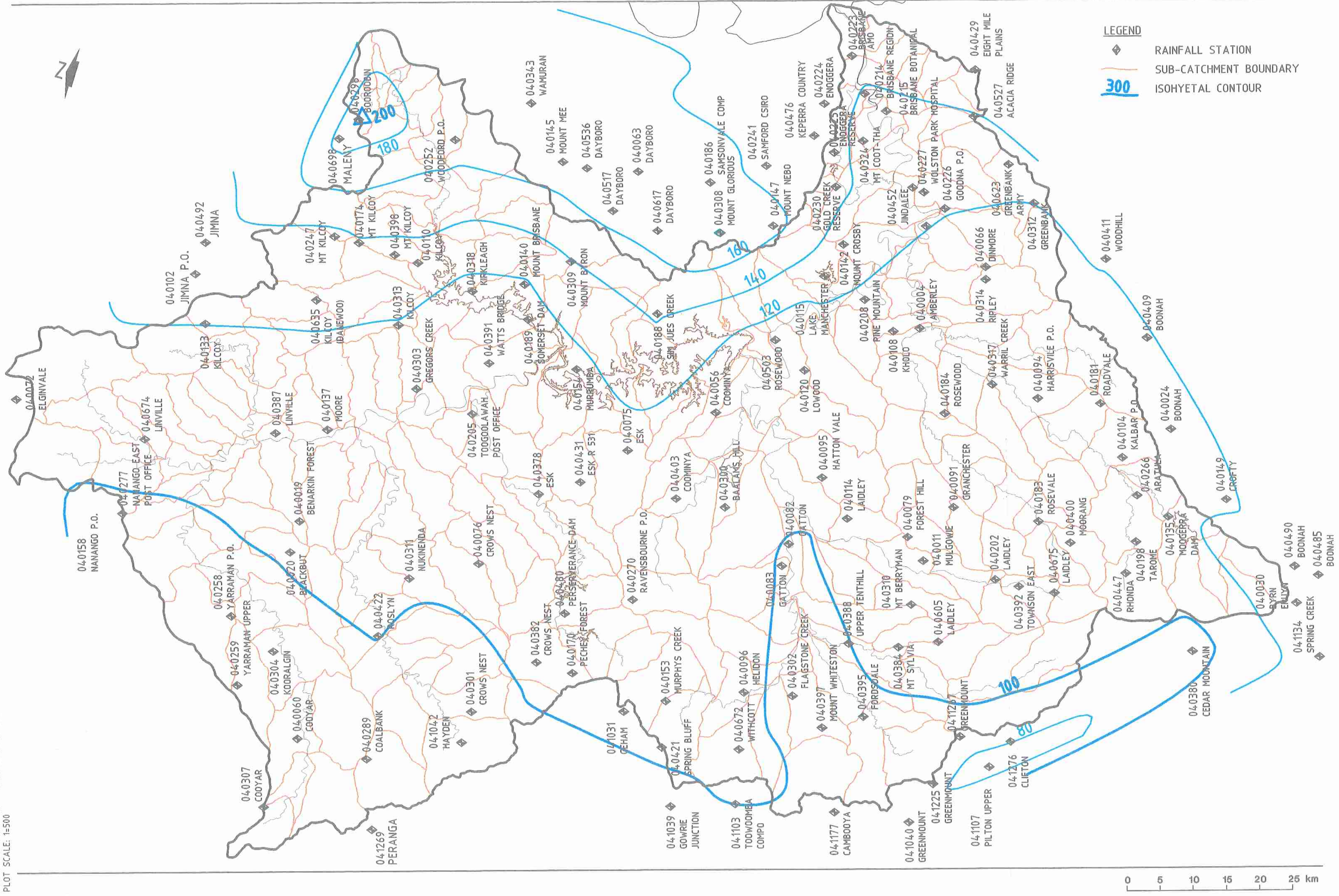
- **Figure D-1 - Hydrographs for the 2 Year ARI Flood Event**
- **Figure D-2 - Hydrographs for the 5 Year ARI Flood Event**
- **Figure D-3 - Hydrographs for the 10 Year ARI Flood Event**
- **Figure D-4 - Hydrographs for the 20 Year ARI Flood Event**
- **Figure D-5 - Hydrographs for the 50 Year ARI Flood Event**
- **Figure D-6 - Hydrographs for the 100 Year ARI Flood Event**
- **Figure D-7 - Hydrographs for the 200 Year ARI Flood Event**
- **Figure D-8 - Hydrographs for the 500 Year ARI Flood Event**
- **Figure D-9 - Hydrographs for the 1000 Year ARI Flood Event**
- **Figure D-10 - Hydrographs for the 2000 Year ARI Flood Event**
- **Figure D-11 - Hydrographs for the 10000 Year ARI Flood Event**
- **Figure D-12 - Hydrographs for the PMF Year ARI Flood Event**

SINCLAIR KNIGHT MERZ

FIGURE 2.1

BRISBANE RIVER FLOOD STUDY

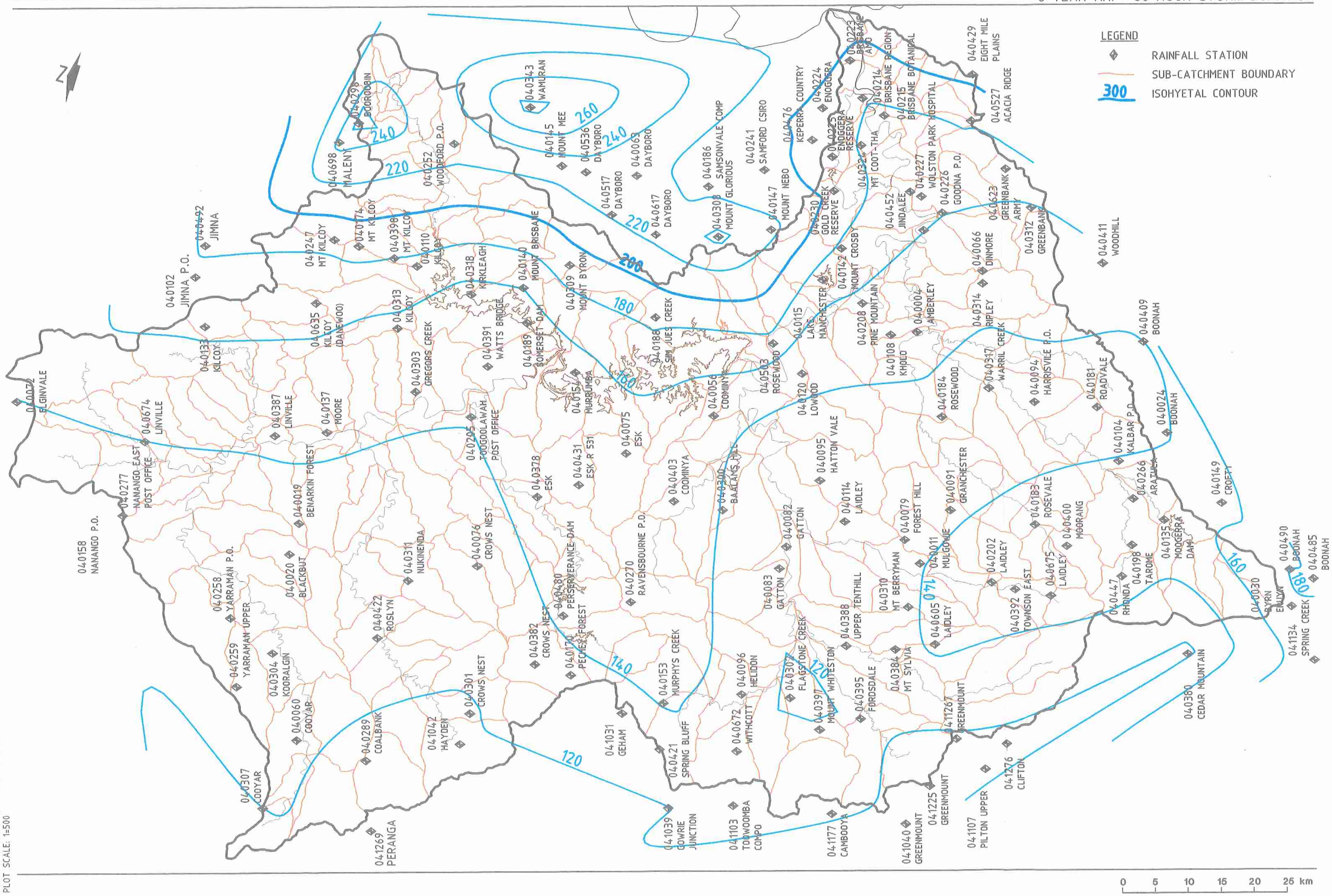
2 YEAR ARI - 30 HOUR STORM DURATION



PLOT SCALE: 1=500

FIGURE 2.2

BRISBANE RIVER FLOOD STUDY
5 YEAR ARI - 30 HOUR STORM DURATION



PLOT SCALE: 1=500

FIGURE 2.3

BRISBANE RIVER FLOOD STUDY
10 YEAR ARI - 30 HOUR STORM DURATION

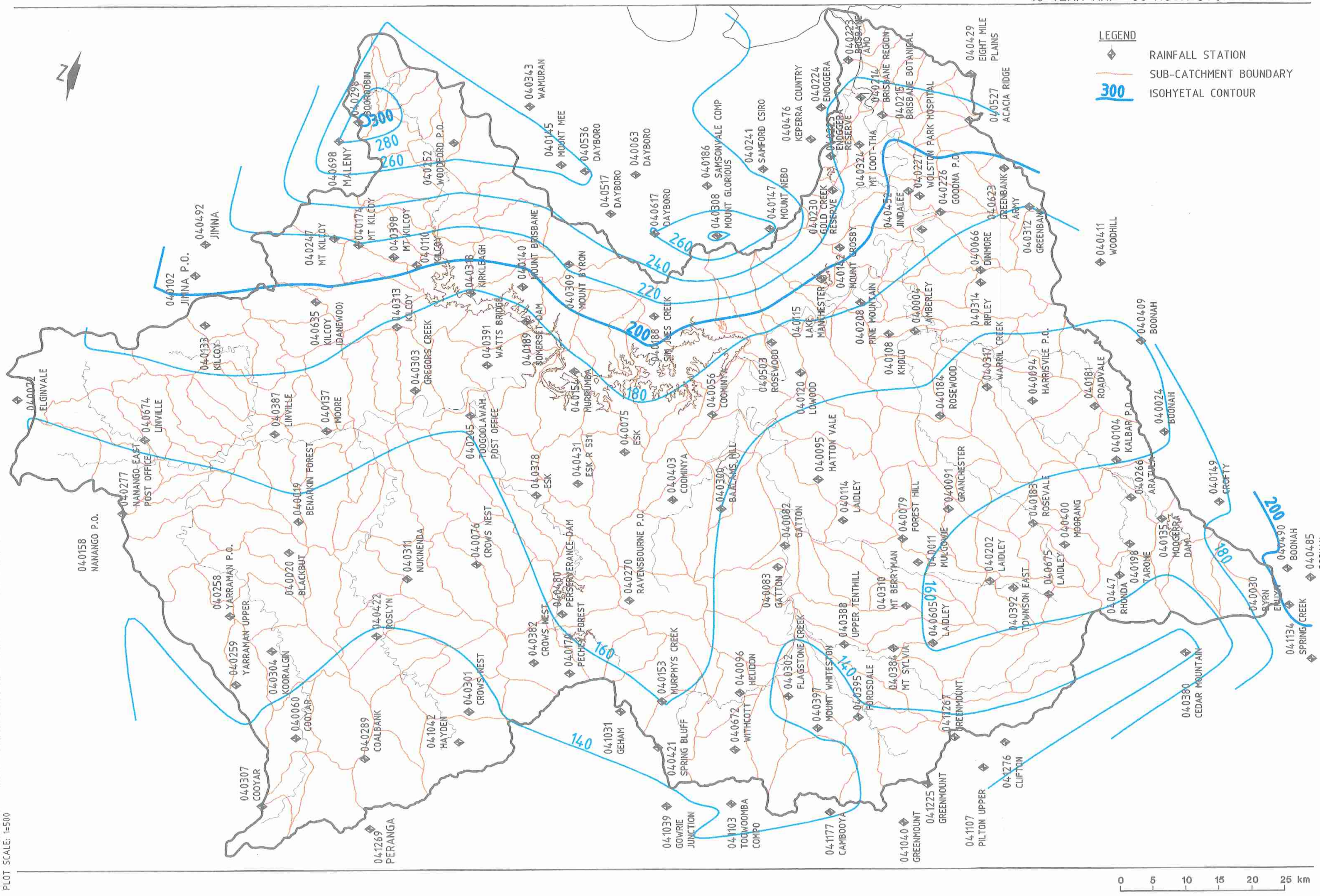
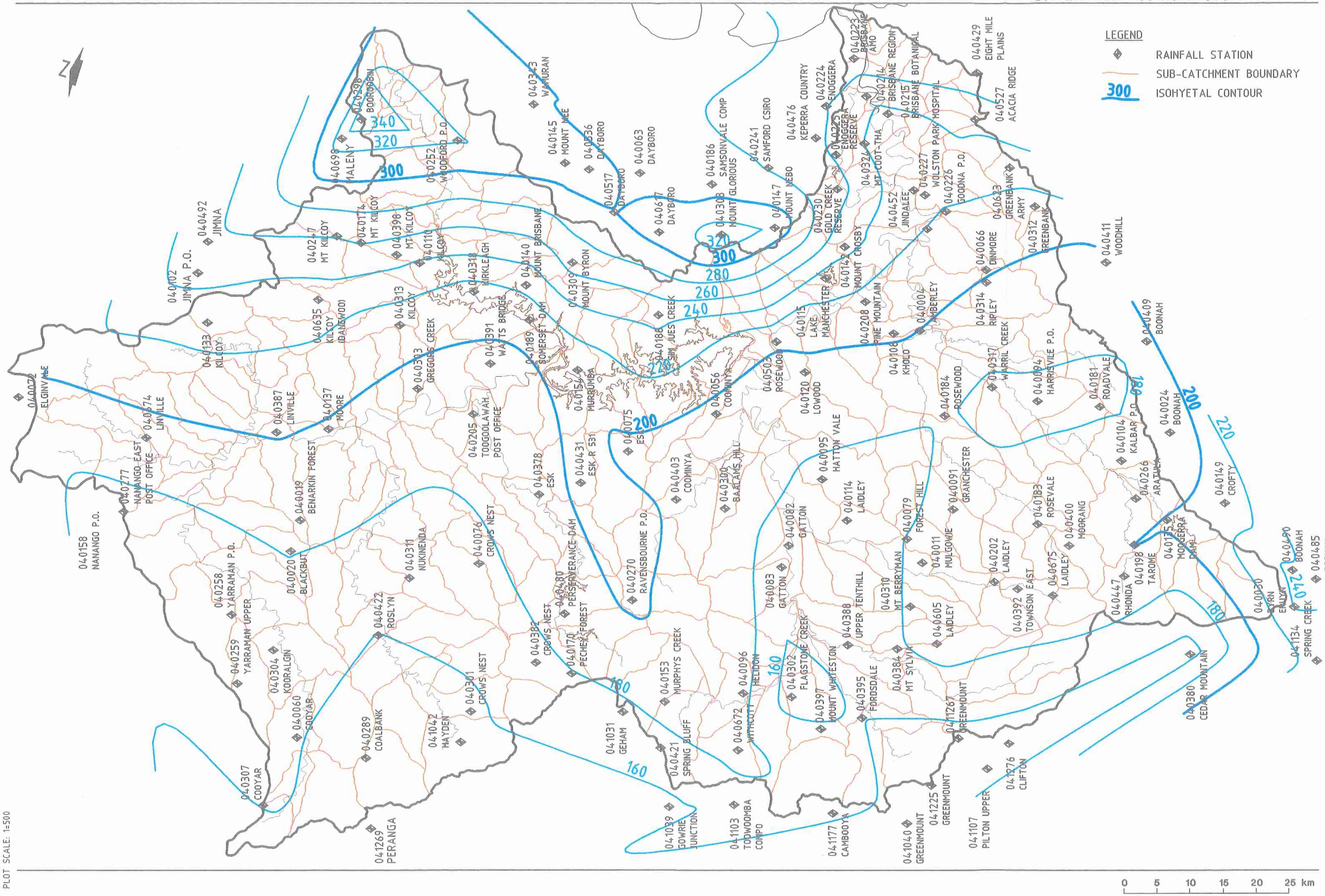


FIGURE 2.4

BRISBANE RIVER FLOOD STUDY
20 YEAR ARI - 30 HOUR STORM DURATION

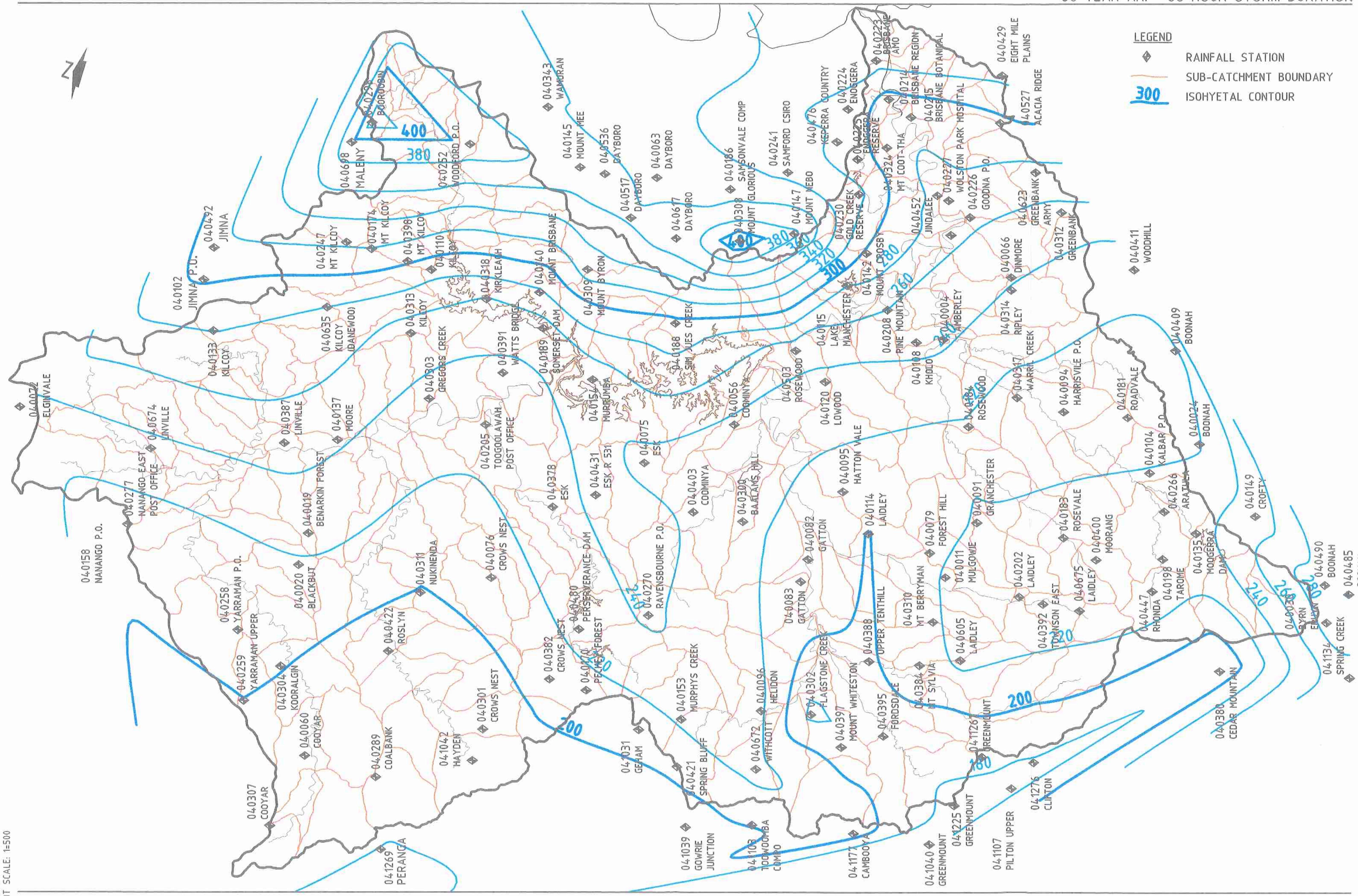


PLOT SCALE: 1=500

SINCLAIR KNIGHT MERZ

FIGURE 2.5

BRISBANE RIVER FLOOD STUDY
50 YEAR ARI - 30 HOUR STORM DURATION



PLOT SCALE: 1=500

SINCLAIR KNIGHT MERZ

FIGURE 2.6
BRISBANE RIVER FLOOD STUDY
100 YEAR ARI - 30 HOUR STORM DURATION

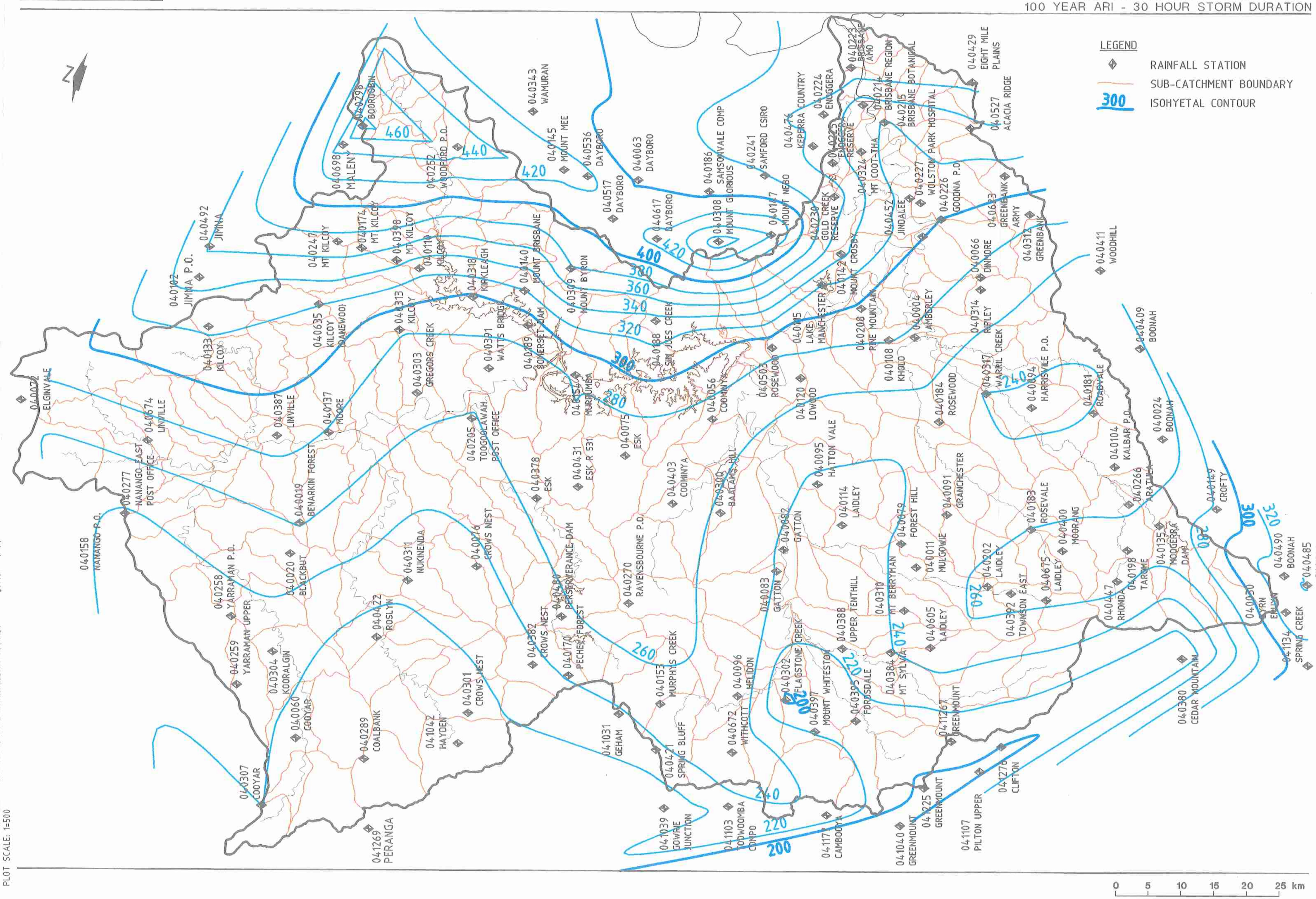


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FIGURE 2.11

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BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY ANALYSIS LOCATION LAYOUT

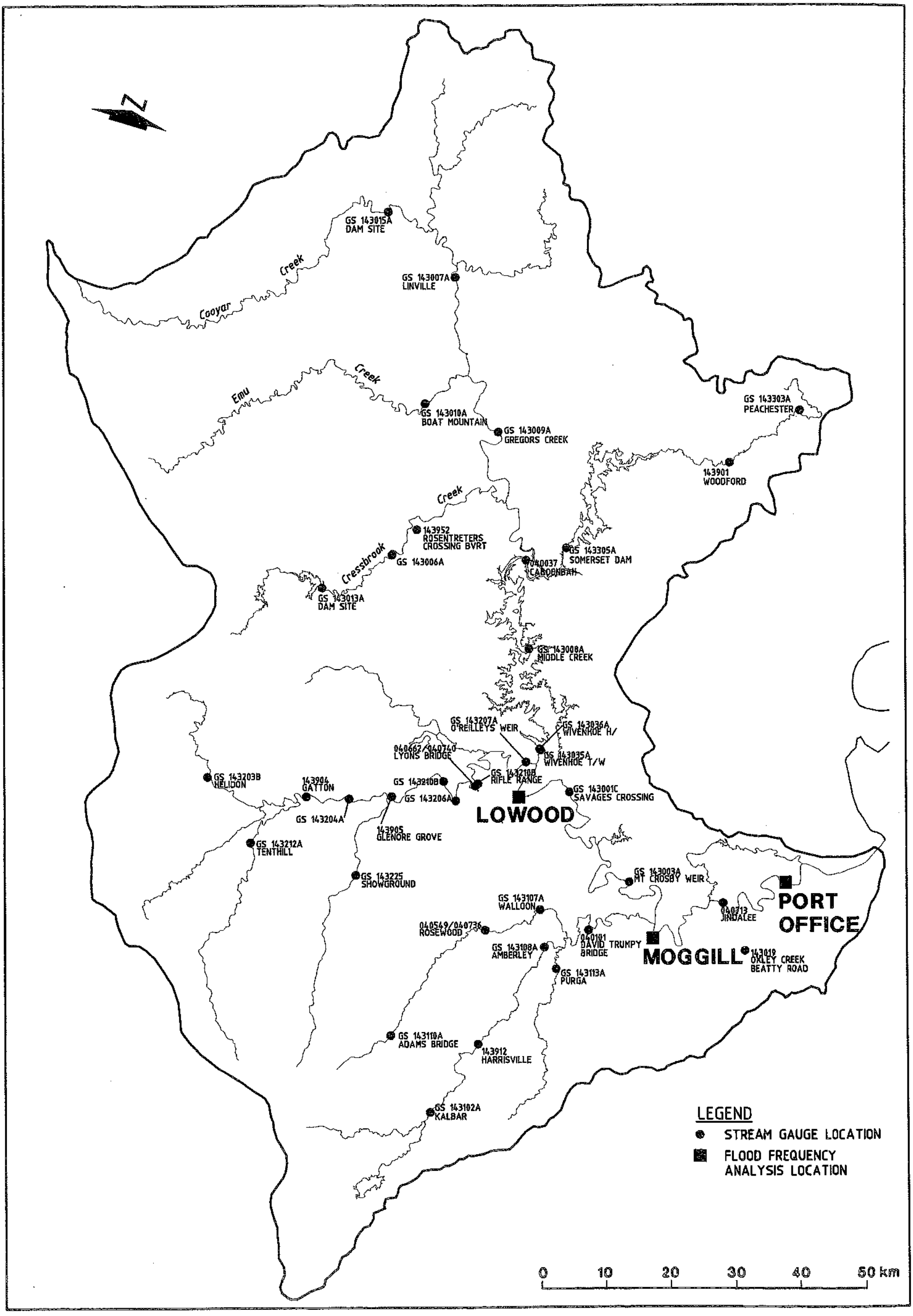

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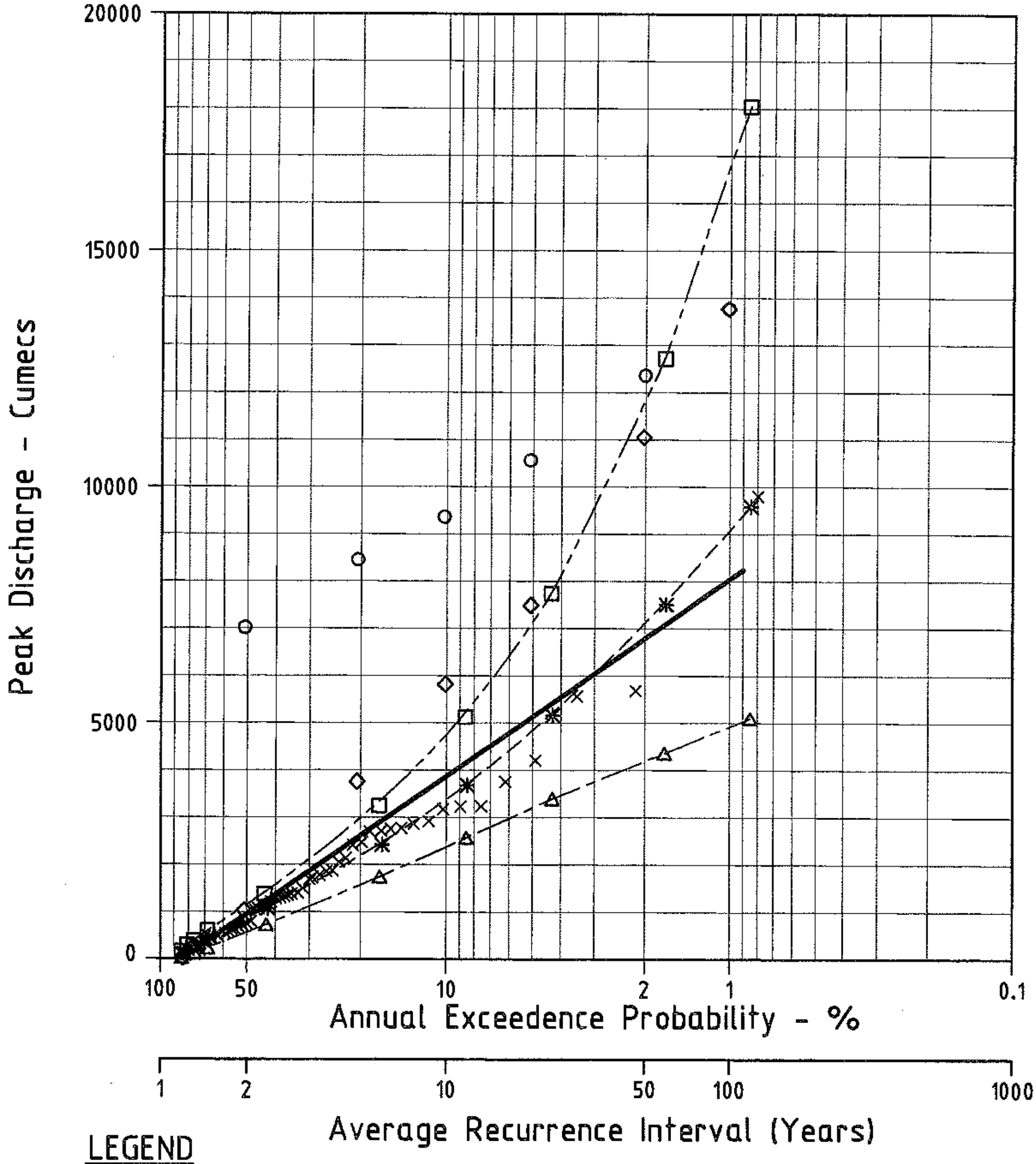
FIGURE 2.12
BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT LOWOOD
- NO DAMS EFFECTIVE



LEGEND
- FIT BY EYE CURVE
- FITTED LPIII DISTRIBUTION
- △ 95% CONFIDENCE LIMIT
- □ 5% CONFIDENCE LIMIT
- × HISTORICAL FLOOD EVENT
- ◇ RAFTS DESIGN RUNS - INCORPORATING LOSSES
- ○ RAFTS DESIGN RUNS - WITHOUT LOSSES

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FIGURE 2.13
BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT MOGGILL
- NO DAMS EFFECTIVE

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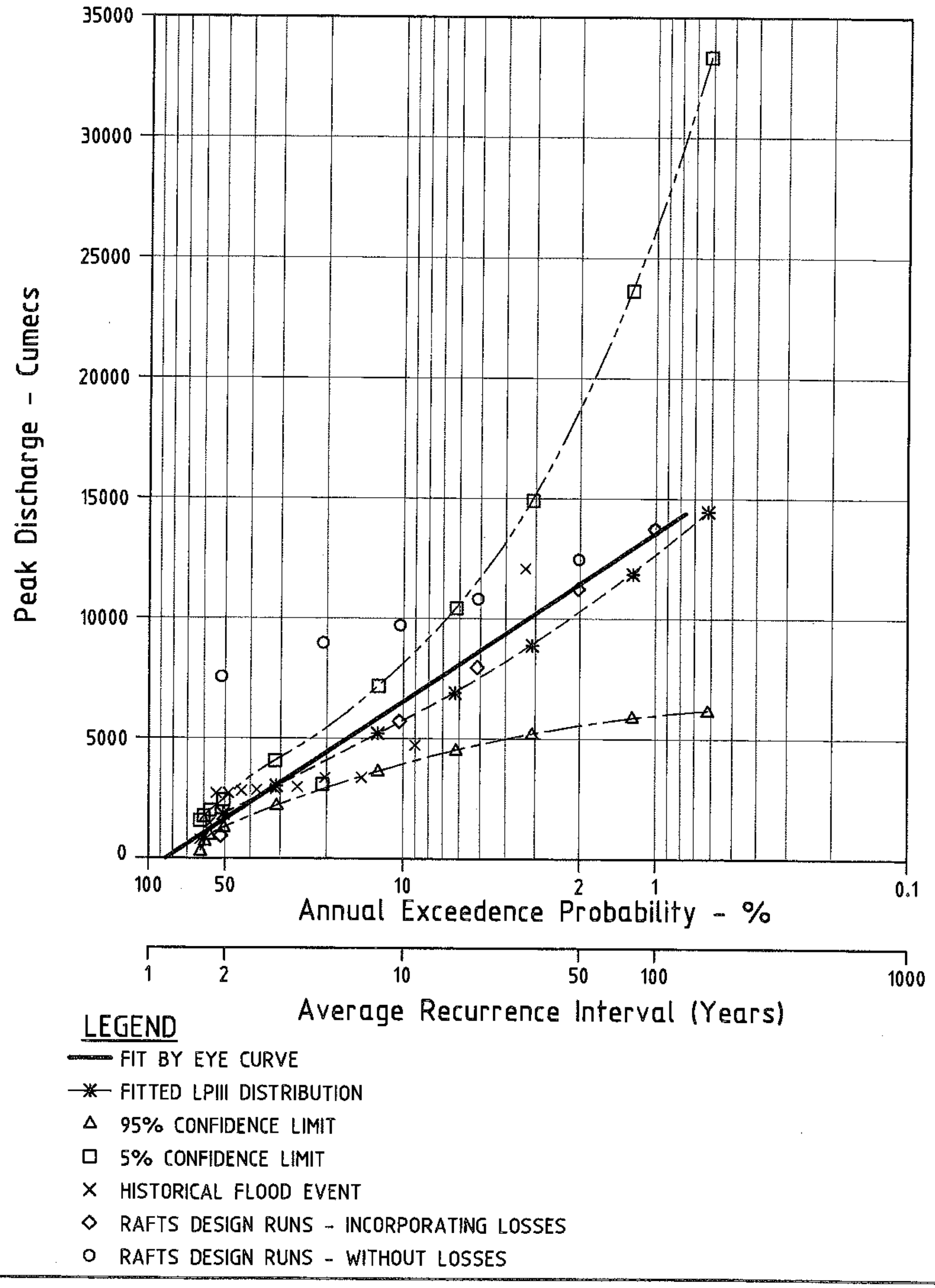

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FIGURE 2.14

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT PORT OFFICE
(-0.15m AHD) - NO DAMS EFFECTIVE

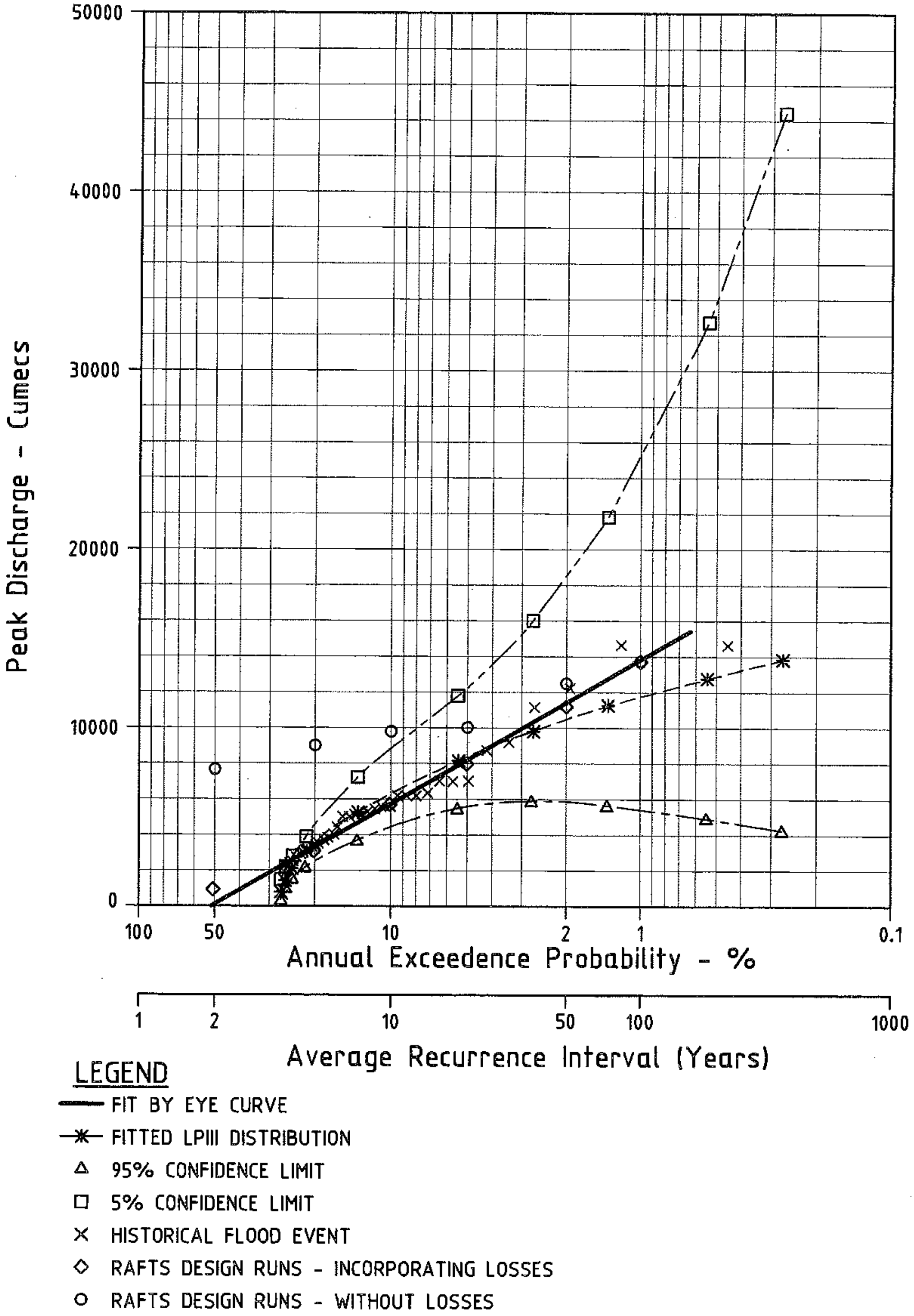

FIGURE 2.15

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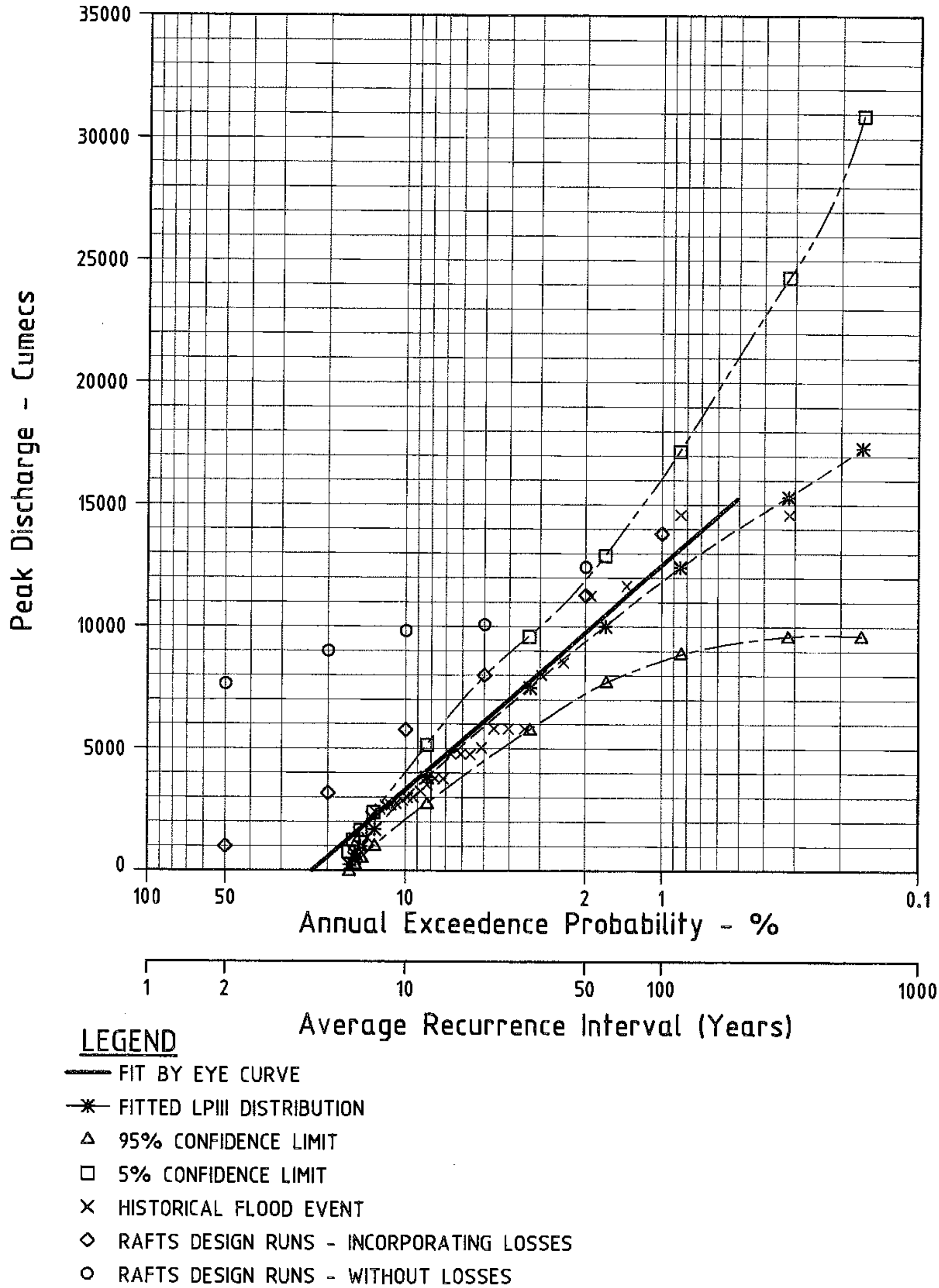
BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT PORT OFFICE
(1.85m AHD, HIGHEST ASTRONOMICAL TIDE + 0.15m)
- NO DAMS EFFECTIVE



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3. Design Hydraulics

3.1 Tailwater Boundary Conditions

Tailwater boundary conditions for design model runs were selected for a number of tidal conditions at the Western Inner Bar. These conditions were:

- Mean High Water Spring Tide (RL 0.92 m AHD) and
- Mean Low Water Spring Tide (RL -0.89 m AHD).

These levels were used at the downstream end of the Brisbane River as boundary conditions for the MIKE 11 hydraulic model.

It was recognised that varying conditions at the mouth of the Brisbane River (Western Inner Bar) may be caused by storm surges in Moreton Bay. These conditions are likely to impact on flood profiles within the lower reaches of the Brisbane River and were therefore investigated. The storm surge conditions analysed in this study were;

(i) 100 year ARI river flood coinciding with a 20 year ARI Moreton Bay storm surge

(ii) 20 year ARI river flood coinciding with a 100 year ARI Moreton Bay storm surge

(iii) 100 year ARI river flood coinciding with a 100 year ARI Moreton Bay storm surge.

Peak storm surge levels for the Western Inner Bar (post Wivenhoe Dam) were supplied by Council and are presented in **Table 3-1 - Western Inner Bar Flood Levels.**

Table 3-1 - Western Inner Bar Flood Levels

Design ARI (years)	Storm Surge Level (m AHD)	Storm Surge Level + Greenhouse Effect Levels (m AHD)
20	1.75	2.10
100	2.14	2.50

Brisbane City Council requires that an allowance of 300 mm be added to storm surge levels to account for Greenhouse effects. Once this level was determined it was rounded up to the nearest 0.1 m as required. Design modelling for this study used the adjusted Greenhouse effect tailwater levels presented in **Table 3-1**.

The predicted flood profiles for the three combined flooding cases are presented in **Figure E-1 - Combined Tailwater and River Flooding Conditions**. These results are also tabulated in **Table E-1 - Combined Tailwater and River Flooding Conditions** in **Appendix E - MIKE 11 Model Results**. The assessment assumed handrails at structures were blocked.

It can be seen that for the first case combining a 100 year ARI river flood with a 20 year ARI Moreton Bay storm surge, the tailwater level at the Western Inner Bar results in a 140 mm increase in flood level at the Walter Taylor Bridge (MIKE 11 model chainage 1037.11 km) when compared to a tailwater level of Mean High Water Spring Tide at the Inner Bar. An increase in water levels was predicted over the entire length of the Brisbane River with an increase at the Brisbane City Boundary of 20 mm.

The second case combined a 20 year ARI river flood with a 100 year ARI Moreton Bay storm surge. This case resulted in a significant increase in water levels throughout the lower Brisbane River reach when compared to the 20 year ARI design flood (MHWS). The increase in flood levels at the Walter Taylor Bridge and the Brisbane City Boundary were estimated to be 770 mm and 150 mm respectively.

The final configuration combined a 100 year ARI river flood with a 100 year Moreton Bay Storm surge. This combination caused an increase in water level of 200 mm at the Walter Taylor Bridge and 30 mm at the Brisbane City Boundary. Again the base case for this comparison was MHWS at the bar. This flooding combination of river flow and storm surge in Moreton Bay resulted in the highest predicted flooding levels throughout the Brisbane City Council Local Government Area of all the flooding cases considered. The joint probability of these events was considered to be in excess of 100 years ARI.

Following review of the cases assessed Council advised that the 100 year ARI flood profile be generated as follows:

- Determine the 100 year ARI river flood profile for a mean high water springs tailwater.
- Establish the flood profile for the 100 year ARI storm surge level with zero river flow.
- Adopt the highest predicted levels from each profile to establish the design flood profile.

3.2 Design Flood Profiles

The inflow hydrographs calculated by the RAFTS model for the full range of design storms were run through the MIKE 11 model for the current extent of urbanisation to generate a series of design flood profiles. The flood profiles for the Brisbane River have been plotted for the range of return periods and are presented in the following figures:

- **Figures E2a to E2i - MIKE 11 Design Flood Profiles for the 5, 20 & 100 Year ARI Events (MHWS).**
- **Figures E3a to E3i - MIKE 11 Design Flood Profiles for the 2, 10 & 50 Year ARI Events (MHWS).**
- **Figures E4a to E4i - MIKE 11 Design Flood Profiles for the PMF & 10000 Year ARI Events (MHWS).**
- **Figures E5a to E5i - MIKE 11 Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events (MHWS).**

Design flood discharges and peak water levels are presented in the following tables:

- **Table E-2 - MIKE 11 Design Flood Profiles for the 5, 20 & 100 Year ARI Events (MHWS).**
- **Table E-3 - MIKE 11 Design Flood Profiles for the 2, 10 & 50 Year ARI Events (MHWS).**
- **Table E-4 - MIKE 11 Design Flood Profiles for the PMF & 10000 Year ARI Events (MHWS).**
- **Table E-5 - MIKE 11 Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events (MHWS).**

It has been assumed that the handrails at all structures would be fully blocked by debris during the design events. A sensitivity analysis has been performed to test the sensitivity of this assumption and it was found that the effects of blocked handrails were negligible.

3.3 HEC-RAS Model Construction and Calibration

During the model calibration phase of this study, it was decided that the HEC-RAS model would only be used to check the performance of the MIKE 11 model at major river crossings. This process is detailed in **Section 6.8 - HEC-RAS Check of Major Creek Crossings** in the Calibration Report (SKM March 1997). The construction and calibration of the HEC-RAS model was deferred until the Design Events stage of the study.

The construction of the HEC-RAS model involved linking the structures analysed in the calibration phase of this report to the remaining cross sectional information used in the MIKE 11 model. The HEC-RAS and MIKE 11 models are essentially a duplicate of each other in all aspects.

Following the model setup, the 100 year ARI peak water levels and discharges were taken from the MIKE 11 model. The peak discharges varied along the length of the Brisbane River due to attenuation effects and adjoining river branches. To account for this phenomenon discharges were placed at strategic locations in order to accurately represent the river flow regime throughout the model.

Peak water levels extracted from MIKE 11 were inserted at each cross section in the HEC-RAS model. These levels were used in a comparison role during the calibration of the HEC-RAS model. The calibration of the HEC-RAS model was based on altering Manning's n values used in the MIKE 11 model by a constant scaling factor of 0.85.

Using this scaling factor the water levels determined by the HEC-RAS model were generally within 150 mm of that predicted by MIKE 11 with an absolute average difference of 105 mm for the100 year ARI event and an absolute average difference of 27 mm for the 10 year ARI event. These results are presented in **Appendix F - HEC-RAS Model Results** in **Table F-1 - HEC-RAS Model Calibration**. The roughness coefficients adopted in the HEC-RAS model are summarised in **Table F-2 - Comparison of MIKE 11 & HEC-RAS Manning's n Roughnesses**

3.4 River Hydraulic Characteristics

The HEC-RAS model was used to determine the bank full channel flood by using a range of flows and identifying the bank full flow at each cross section. MIKE 11 results for the 100 year ARI and 20 year ARI floods were inserted at strategic locations in HEC-RAS model to determine the velocities and conveyance at each section.

Left bank, right bank and main channel velocities for the 100 year ARI and bank full flood were determined using HEC-RAS. Conveyances for the left bank, right bank and channel for the 100 year ARI and 20 year ARI floods were determined. The results for velocities and conveyance are tabulated in **Table F-3 - HEC-RAS Predicted Velocities and Table F-4 HEC-RAS Predicted Conveyances.**

It should be noted that these conveyances and velocities relate to the channel proper being at the extent of the tidal zone. During the calibration phase of the study, the MIKE 11 model was developed by defining the channel proper on the basis of roughness rather than a topographical basis. This was considered to be justified due to the significant differences between the roughness within the tidal zone and the roughness on the river banks and floodplains.

For consistency the calibration of the HEC-RAS model used the same parameters as those adopted by the MIKE 11 model and hence the channel proper is defined by the tidal zone within each cross section. This approach was also considered to be suitable for HEC-RAS as the model defines each cross section into three segments, these being:

- left overbank,
- channel, and
- right overbank.

Each of these segments define the distinct roughness appropriate to each cross section. This became a problem when the hydraulic characteristics had to be assessed. If the left and right overbanks are placed at bank full condition (based on topographical interpretation), then the HEC-RAS model calculates a composite roughness for the main channel using the formula:

$$n=\Sigma((P_i n_i)^{3/2})/P)^{2/3}$$

Due to both high wetted perimeters and relatively high Manning's n values along the Brisbane River banks, the composite channel roughnesses calculated by the HEC-RAS model were considered to be over estimated. This over estimation caused significant increases in water levels and decreases in conveyances for the entire cross section if roughness values consistent with MIKE 11 were used.

This meant that the HEC-RAS model would have to be calibrated as a stand alone model using a different Manning's n parameter set to that used in MIKE 11. After discussions with Brisbane City Council Officers, it was decided that it was most appropriate to use a consistent parameter set for this investigation.

4. Hydraulic Assessment of Structures

4.1 Hydraulic Capacity of Crossings

The performance of seven major bridges were individually assessed under design flood conditions. These structures are listed in **Table 4-1 - List of Assessed Hydraulic Structures for Brisbane River.**

Table 4-1 - List of Assessed Hydraulic Structures for Brisbane River

No.	Structure Name	Cross Section Number	MIKE 11 Chainage (km)	AMTD (km)	Structure Description
1	Centenary	BN 1350	1 028.72	49.94	Major Public Bridge
2	Indooroopilly	BN 1130	1 037.11	41.55	Major Public Bridge
3	Merivale	BN 710	1 052.37	26.29	Major Public Bridge
4	William Jolly	BN 680	1 052.63	26.03	Major Public Bridge
5	Victoria	BN 640	1 053.36	25.83	Major Public Bridge
6	Captain Cook	BN 600	1 054.66	24.00	Major Public Bridge
7	Story	BN 495	1 056.92	21.74	Major Public Bridge

Note: All structures were modelled in MIKE 11 as irregular culverts and weirs.

A series of reference sheets were prepared and are compiled in **Appendix G - Hydraulic Structure Reference Sheets.** These are consistent with Council's standard hydraulic structure reference sheets and include:

- Location of Structure
- Structure description and geometry including dimensions and key levels
- Reference to survey data
- Construction date and upgrade information
- General comments

Additional information has been included on the sheets regarding the hydraulic performance of the structure for design flows ranging from 2 year ARI to 100 year ARI. In this assessment the afflux was determined as the difference between water levels upstream and downstream of the structure. Handrails and guardrails were assumed to be blocked.

Rating curves for the seven major structures were developed using the MIKE 11 hydraulic model for the Brisbane River. These rating curves were determined by taking the peak discharge and peak level for a range of design events directly upstream of each structure. Structure handrails and guardrails were assumed to be fully blocked by debris.

A rating curve for the Gateway Bridge was not generated as it was considered that the afflux caused would be negligible because of the width of the section and deck level of the structure.

Rating curves were extracted from the reference sheets for incorporation into the Brisbane River Flood forecasting model which is to be completed during the Flood Mapping phase of this study.

The rating curves provide an indication of the design flood capacity of the structure (ie design flood that just overtops the roadway) and these are summarised in **Table 4-2 - Design Flood Capacities of Major Structures.** The structure capacity was taken as being the design flow having a peak flood level coincident with the lowest point of the structure weir (assuming unblocked handrails).

Appendix H - Rating Curves at Structures tabulates and plots the rating curves that have been generated. The curves also illustrate the recorded historical flood levels and calibrated discharge at the relevant locations. These curves show that some of the smaller historical events data points do not coincide with the generated rating curves. This is most likely due to tailwater conditions at the time of the events. The design events were run using a constant tailwater level of mean high water springs whereas the historical events were subject to varying tailwater levels which occurred at the time of the events. As expected, these effects are more pronounced for the smaller flood events and the structures closer to the river mouth.

Table 4-2 - Design Flood Capacities of Major Structures

No	Structure Name	Design Capacity (Years ARI)
1	Centenary Bridge	41
2	Indooroopilly Bridge	greater than 100
3	Merivale Bridge	greater than 100
4	William Jolly Bridge	greater than 100
5	Victoria Bridge	greater than 100
6	Captain Cook Bridge	greater than 100
7	Story Bridge	greater than 100

4.2 Upgrading of River Crossings

The upgrading of major river crossings was assessed using the following approach:

- Identify structures which have a 100 year ARI afflux exceeding 150 mm. In all cases, blocked handrails have been assumed.
- Based on available ground survey data, determine if these selected structures cause flooding of upstream property or houses for events up to the 100 year ARI flood.
- Discussions with council to determine the practical upgrade potential of some structures.
- Test and recommend upgrades of structures that have high affluxes and contribute to upstream flooding impacts.

The hydraulic structure reference sheets compiled in **Appendix G** were reviewed to identify high afflux structures. Affluxes at each structure are listed in **Table 4-3 - High Afflux Public Structures**.

Table 4-3 - High Afflux Public Structures

No.	Structure	100 Year ARI Afflux (mm)
1	Centenary Bridge	150
2	Indooroopilly Bridge	110
3	Merivale Bridge	660
4	William Jolly Bridge	490
5	Victoria Bridge	40
6	Captain Cook Bridge	90
7	Story Bridge	90

Note: Assumes blocked handrails and guardrails.

Table 4-3 demonstrates that the Merivale and William Jolly Bridges have an afflux significantly greater than 150 mm for the 100 year ARI flood.

Review of the structure reference sheets indicates that these structures create significant afflux for floods greater than 50 years ARI. This flood coincides with the commencement of inundation of the floodplain on the right bank in the vicinity of the structures. Several properties in this area will be affected by the flooding and the affluxes generated by the two structures. The exact number of properties affected can not be determined as floor survey data was not available.

Options for upgrading the structures in an efficient manner are limited.

For the Merivale Bridge possible options include improving the hydraulic efficiency of the right overbank area adjacent to the approach or raising the bridge structure. Improving the hydraulic efficiency of the right overbank is not practical due to the large number of buildings that would have to be removed and the associated high costs involved. Raising the bridge is also not practical due to design constraints associated with railway operations and the associated high costs of upgrading.

The William Jolly Bridge also has limited opportunities for upgrading. Improvement of the right floodplain's conveyance is not practical due the large number of properties on the floodplain. Major modifications to the bridge structure such as abutment works or raising the deck are unlikely to be accepted due to the heritage value of the structure.

Affluxes associated with the other structures were considered to be acceptable as the cost of upgrading these structures would be high.

5. Conclusions

The design events phase of this study has been completed and the findings are summarised below.

- Design rainfall intensities were derived at 130 rainfall gauge locations throughout the catchment for design storms ranging from 2 year ARI to 100 year ARI. Isohyetal Maps were then constructed using CivilCAD and rainfall depths were calculated for each sub area. The software package hydcon was developed to apply zone 3 temporal patterns to these rainfall depths. Once the patterns had been calculated they were input into the calibrated RAFTS hydrological model (no dams effective case) where the critical duration storm was found to be 30 hours with a peak discharge at the Port Office of 13780 m^3/s for the 100 year ARI flood.

- A flood frequency analysis was performed at Lowood, Moggill and Port Office for a no dams effective case (i.e. streamflow record adjusted to account for the effects of Wivenhoe and Somerset Dams).

- Using the no dams effective RAFTS model, losses were then applied for each return period until a good match between the RAFTS peak discharge and that calculated for the flood frequency analysis was achieved. These losses ranged from 0 to 80 mm for initial loss and 0 to 2.5 mm/hr for continuing loss.

- Once appropriate losses had been determined, Wivenhoe and Somerset Dams were added to the RAFTS model. These Dams were assumed to be at full supply level at the beginning of each flood event and therefore the results were considered to be conservative. The range of design floods (2 year ARI to 100 year ARI) were rerun through the dams effective RAFTS model using the determined loss parameters. The critical duration storm was again found to be 30 hours with a peak discharge at the Port Office of 9120 m^3/s for the 100 year ARI flood.

- Probable Maximum Precipitation (PMP) rainfall depths, Isohyetal maps and temporal patterns were supplied by the Bureau of Meteorology. The PMP storm was centred over the Brisbane River Catchment and using CivilCAD rainfall depths were determined for each sub-area. Hydcon was then used to apply the temporal patterns and each duration was run through the dams effective RAFTS model. The critical storm duration for the PMP was found to be 168 hours with a peak discharge at the Port Office of 37500 m^3/s.

- Intermediate flood events (i.e. 10000, 2000, 1000, 500 and 200 year ARI) were then calculated at Lowood, Moggill and the Port Office using the peak discharges of the PMF, 100 and 50 year ARI flood events (AR&R method). The rainfall pattern used for the PMP event was then scaled and run through the RAFTS model until the peak discharges matched the calculated discharges(AR&R). The scaling factors were determined on an iterative basis until the error between the RAFTS and AR&R discharges were within 10% at each location.

- The RAFTS discharges for events ranging from 2 year ARI to the PMF were input into the calibrated MIKE 11 hydraulic model (1974 roughness parameters) and water levels were determined at each cross section within the Brisbane River hydraulic model.

- A HEC-RAS model was developed and calibrated against the 100 year ARI and 10 year ARI water levels predicted by the MIKE 11 model. The calibration was performed by adjusting the MIKE 11 roughnesses by a constant scaling factor. The best result was obtained using a scaling factor of 0.85 where the absolute average difference for the 100 and 10 year ARI events were 105 mm and 27 mm respectively.

- Once the HEC-RAS model was calibrated, conveyances for the 100 and 20 year ARI floods were determined along with the average velocities for bank full conditions and the 100 year ARI flood. Conveyances and velocities were calculated for the left overbank, right overbank and channel proper.

- Using the results from the hydraulic models, an assessment of the hydraulic structures was conducted. Structure reference sheets and rating curves were developed and it was found that affluxes for the Merivale and William Jolly Bridges were 660 mm and 490 mm respectively for the 100 year ARI flood event. The upgrade potential of these structures was low because of associated costs of upgrades and the practicality of such upgrades. Affluxes associated with the other structures were within the 150 mm limit and were therefore assumed to be acceptable.

Appendix A - Generalised Tropical Storm Method

INSTRUCTIONS FOR THE USE OF THE GTSM PMP SPATIAL DISTRIBUTION DIAGRAMS

1. Select the appropriate distribution diagram according to whether the area of the catchment is above or below 2000 km^2.

2. Expand or contract the scale of the isohyetal pattern until the outermost isohyet just touches the catchment. Adjust the positioning of the pattern to get an (estimated) highest PMP depth over the catchment. This depends on the shape of the catchment as well as the position of the pattern.

3. Calculate the area of the catchment within the central isohyet, and then between each adjacent pair of isohyets until all these areas have been calculated. A planimeter or other means are suitable methods of doing this.

4. Multiply the percentage assigned to the label on each isohyet by the mean PMP depth for that duration. This gives isohyet labels in millimeters.

5. Multiply these areas by an estimate of the mean rainfall value over that part of the catchment contained in the annulus between each successive pair of isohyets. This will generally not be the arithmetic mean because of the usually irregular shape of the catchment boundary. For the central isohyet a mean value has to be estimated. This will not be critical.

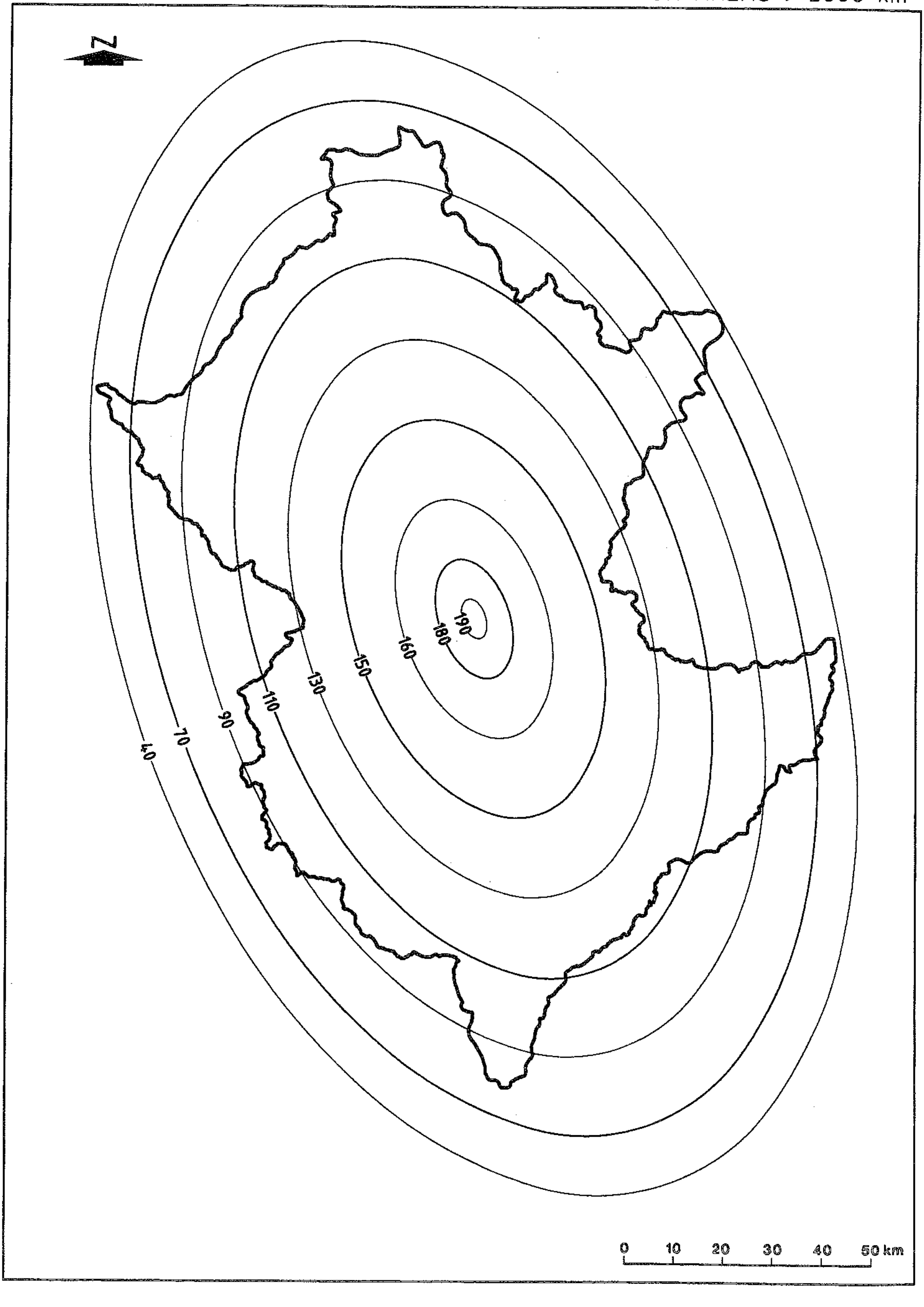
6. The sum of all the above products is divided by the total catchment area to obtain the calculated mean catchment PMP depth. This will usually not be equal to the true PMP depth. The ratio of the actual PMP to the calculated PMP values is then calculated.

7. The values of the isohyetal labels are all multiplied by this ratio (ie a constant scaling factor) to ensure that the isohyetal pattern gives the correct mean PMP depth.

FIGURE A-1

BRISBANE RIVER FLOOD STUDY
GENERALISED TROPICAL STORM METHOD (GTSM)
DESIGN ISOHYETAL PATTERN FOR THE
DISTRIBUTION OF PMP FOR AREAS > 2000 km²

SINCLAIR KNIGHT MERZ



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Appendix B - Adjustment of Historical Streamflows to Account for the Effects of Somerset

E-1

FigureB1 - Relationship Between Discharge at Woodford and Discharge at Silverton

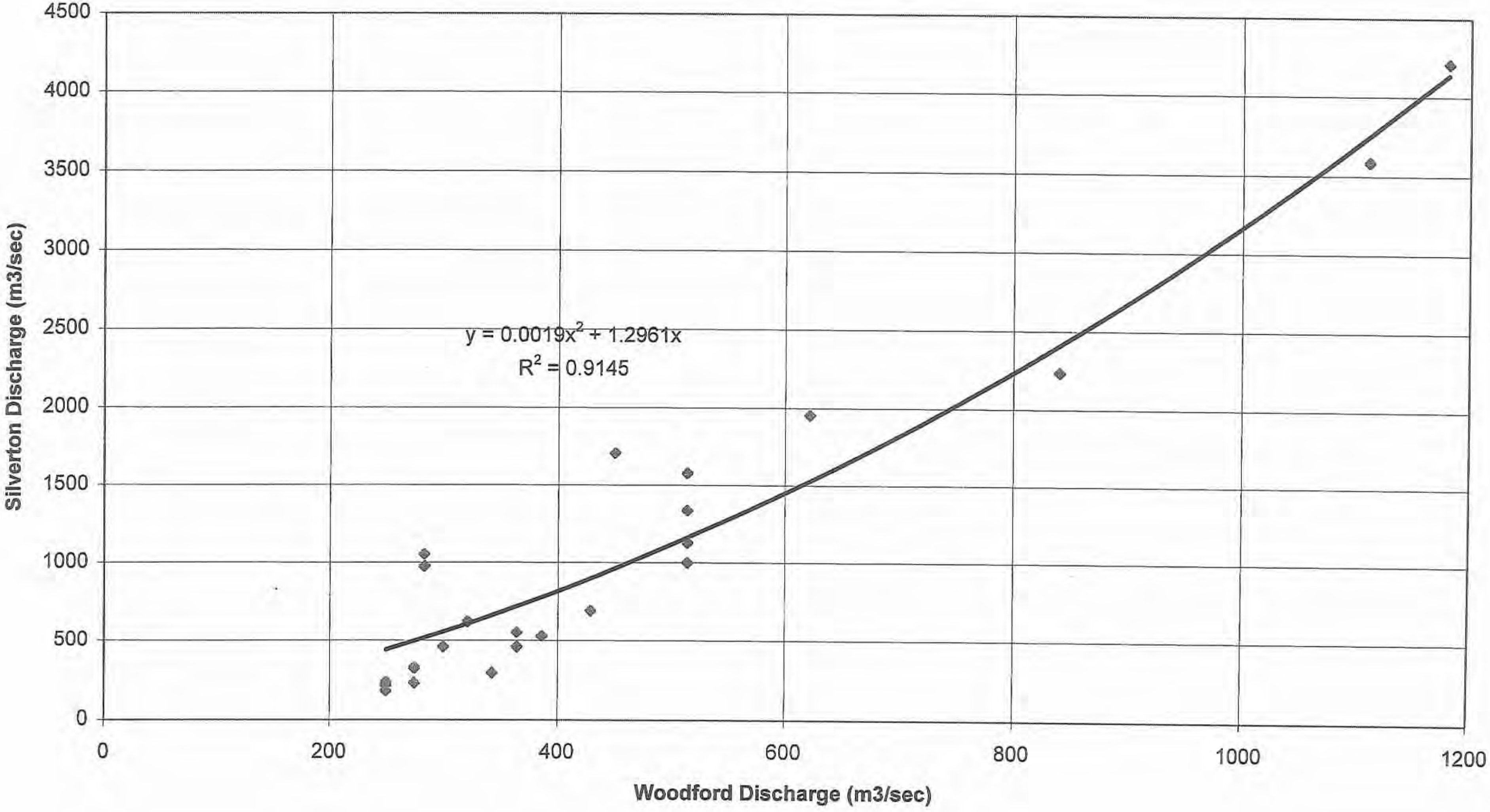


Table B.1
Calculation of Adjustment Factor for Post Somerset Dam Flows

Date	Recorded Discharge at Woodford (Cumecs)	Calculated Discharge at Somerset Dam (Cumecs)	Recorded Discharge at Somerset Dam (Peak Monthly) (Cumecs)	Adjustment Factor (Calculated - Actual Discharge) (Cumecs)
31/01/44	300	560	241	319
25/03/46	664	1699	1374	325
13/02/47	471	1033	317	716
1/03/47	514	1169	671	498
11/12/47				
1/05/48	429	904	716	188
19/01/50	166	267	115	152
15/02/50	233	405		
18/02/50	233	405		
28/02/50	643	1618	1139	479
1/03/50				
24/06/50				
29/07/50	250	442	352	90
31/01/51	750	2041	1347	694
1/02/51				
21/02/53	879	2605	1506	1099
24/03/53				
13/02/54				
14/07/54	557	1312	46	1266
28/03/55	1041	3407	3078	329
10/02/56				
13/01/56				
15/01/67				
11/02/56				
12/02/56				
11/03/56	536	1240	1397	0
13/03/56				
10/06/58	199	334	84	250
20/12/61	250	442		
2/01/63	258	461		
10/01/63	300	443	215	228
17/03/63	793	2885	1300	1585
8/05/63				
28/03/64	429	904		
23/04/64	124	189		
21/07/65		1243	0	1243
30/01/67	283			
18/03/67	283	1082	1050	32
8/05/67	191	316		
10/06/67	514	1443	1088	355
24/06/67	224	387		
27/06/67	321	613		
12/01/68	450	1894	1491	403

Calculation of Adjustment Factor for Post Somerset Dam Flows

Date	Recorded Discharge at Woodford (Cumecs)	Calculated Discharge at Somerset Dam (Cumecs)	Recorded Discharge at Somerset Dam (Peak Monthly) (Cumecs)	Adjustment Factor (Calculated - Actual Discharge) (Cumecs)
8/12/70	557	1271	0	1271
27/01/71	275	380	285	95
5/02/71				
20/02/71	283	1594	1763	0
24/02/71				
29/12/71	191	316		
12/02/72	1463	444	291	153
9/03/72	149	3621	1781	1840
3/04/72	664	2270	1175	1095
30/10/72				
8/07/73	879	2605	2070	535
14/01/74	191	4109		
25/01/74	1111	3495	1081	2414
17/02/74	250	442		
12/03/74	579	132	194	0
9/01/75	132	204	0	204
24/12/75	149	235	3	0
20/01/76	514	1200	1098	102
23/02/76	258	461	8	0
3/03/76	224	387	176	0
14/03/76	266	480		
26/03/78	72	103	0	103
2/04/78	60	85	0	85
25/01/79	111	167		
10/02/79	54	76	0	76
8/05/80	195	325	4	0
9/05/80	233	405		
9/02/81			0	0
16/02/81	360	713	0	713
17/02/81	250	442	0	442
8/04/81	54	76	0	76
23/05/81	60	85	6	0
21/01/82	707	1867	0	1867
21/01/82	660	1683	0	1683
4/03/82	90	132	0	132
16/03/82	54	76	0	76
3/05/83	72	103	0	103
24/05/83	224	387	0	387
24/05/83	216	369	0	369
29/05/83				
19/06/83	237	414	0	414
20/06/83	300	560	7	0
22/06/83	729	1953		1953
22/06/83	840	2236	1475	761
7/07/83	36	49	0	49

Calculation of Adjustment Factor for Post Somerset Dam Flows

Date	Recorded Discharge at Woodford (Cumecs)	Calculated Discharge at Somerset Dam (Cumecs)	Recorded Discharge at Somerset Dam (Peak Monthly) (Cumecs)	Adjustment Factor (Calculated - Actual Discharge) (Cumecs)
22/11/83	72	103		103
30/11/83	216	369		369
2/12/83	42	58	0	58
9/04/84	72	103		103
28/07/84	195	325		325
8/11/84	42	58		58
11/03/85	300	560		560
9/07/85	300	560		560

Note:

Calculated discharge at Somerset is based on the flows at Woodford, as illustrated in Figure B.1

E1. – Relationship between discharge at Woodford & ~~Somerset~~ Silverton

Table B2
Historical Data at Woodford and Silverton (1920-1985)

Date	Time	Level	Discharge at Woodford	Corresponding Discharge at Silverton (DNR)
8/01/20	1700	4.88	249.6	236.6
7/04/21	600	5.79	364.2857143	553.7
30/12/21	1600	5.49	300	459.7
20/06/25	800	5.94	385.7142857	528.7
17/12/26	900	5.72	342.8571429	294.1
24/01/27	1600	6.48	514.2857143	1127
18/02/28	800	6.5	514.2857143	1000
19/04/28	1200	7.01	621.4285714	1955
21/01/29	1000	5.26	283.2	974.7
10/05/30	1930	5.79	364.2857143	459.7
5/02/31	1500	8.94	1322.222222	2022
5/04/33	800	5.18	274.8	231.7
16/03/37	2000	5.18	274.8	324.7
20/01/38	730	5.64	321.4285714	623.2
26/05/38	900	6.1	428.5714286	694.3
16/03/39	900	4.88	249.6	216.2
19/03/40	900	4.88	249.6	214.9
1/06/41	800	4.88	249.6	181.2
9/02/42	1515	5.79	364.2857143	
31/01/44	1500	5.46	300	
25/03/46	1200	7.16	664.2857143	
13/02/47	1130	6.25	471.4285714	
1/03/47	1900	6.48	514.2857143	
1/05/48		6.1	428.5714286	
19/01/50		3.91	165.6	
15/02/50	1600	4.72	232.8	
18/02/50		4.72	232.8	
28/02/50	900	7.09	642.8571429	
29/07/50	900	4.88	249.6	
31/01/51	1230	7.62	750	
21/02/53	800	8.23	878.5714286	
14/07/54	700	6.71	557.1428571	
28/03/55	330	8.53	1040.740741	
11/03/56	1800	6.55	535.7142857	
10/06/58	900	4.27	199.2	
20/12/61	900	4.88	249.6	
2/01/63	800	5.03	258	
10/01/63	1800	5.49	300	
17/03/63	900	7.77	792.8571429	
28/03/64	630	6.1	428.5714286	
23/04/64	1500	3.35	123.6	
30/01/67	2100	5.33	283.2	
18/03/67	1500	5.33	283.2	1051
8/05/67	500	4.22	190.8	
10/06/67	1800	6.5	514.2857143	1578
24/06/67	0	4.57	224.4	

Table B2
Historical Data at Woodford and Silverton (1920-1985)

Date	Time	Level	Discharge at Woodford	Corresponding Discharge at Silverton (DNR)
27/06/67	800	5.64	321.4285714	
12/01/68	1900	6.2	450	1708
8/12/70	300	6.71	557.1428571	
27/01/71	1500	5.18	274.8	
20/02/71	900	5.33	283.2	
29/12/71	900	4.17	190.8	3587
12/02/72	900	9.14	1462.962963	
9/03/72	1200	3.68	148.8	
3/04/72	300	7.16	664.2857143	
8/07/73	300	8.23	878.5714286	
14/01/74	900	4.2	190.8	
25/01/74	1200	8.6	1111.111111	
17/02/74	1500	4.9	249.6	
12/03/74	2100	6.8	578.5714286	
9/01/75	900	3.5	132	
24/12/75	1500	3.7	148.8	
20/01/76	1500	6.5	514.2857143	
23/02/76	1500	5	258	
3/03/76	1500	4.6	224.4	
14/03/76	1500	5.1	266.4	
26/03/78	2225	4.68	72	
2/04/78	1205	4.5	60	
25/01/79	820	5.06	111	
10/02/79	1340	4.44	54	
8/05/80	2300	5.52	195	
9/05/80	900	4.65	232.8	
16/02/81	2115	6.09	360	
17/02/81	900	4.9	249.6	
8/04/81	1610	4.36	54	
23/05/81	430	4.54	60	
21/01/82	1600	7.35	707.1428571	
21/01/82	1445	6.58	660	
4/03/82	955	4.98	90	
16/03/82	335	4.4	54	
3/05/83	1615	4.73	72	
24/05/83	800	4.6	224.4	
24/05/83	0	5.56	216	
19/06/83	2100	5.73	237	2236
20/06/83	1100	5.5	300	
22/06/83		7.5	728.5714286	
22/06/83	1700	6.89	840	
7/07/83	300	4.07	36	
22/11/83	1245	4.68	72	
30/11/83	1355	5.61	216	
2/12/83	2005	4.21	42	
9/04/84	1415	4.7	72	

Table B2
Historical Data at Woodford and Silverton (1920-1985)

Date	Time	Level	Discharge at Woodford	Corresponding Discharge at Silverton (DNR)
28/07/84	1055	5.45	195	
8/11/84	2245	4.23	42	
11/03/85	530	6.03	300	
9/07/85	1515	5.97	300	

Table B3
Historical and Adjusted Data at Moggill (1965-1983)

Date	Time	Level m AHD	Discharge Cumecs	Adjusted Discharge Cumecs
21/07/65	600	5.76	2175.33	3418.33
20/03/67		4.66	1787.00	
12/06/67	1800	7.98	3054.62	3409.60
14/01/68	1100	10.72	4356.11	4759.00
11/12/70	1000	3.82	1485.57	2756.60
4/02/71	1600	6.39	2389.43	
11/02/71	900	3.29	1317.00	
20/02/71	1500	7.50	2846.00	2846.00
24/02/71	1400	3.34	1317.00	
14/02/72	2100	5.14	1919.00	
5/04/72	900	4.84	1820.00	2915.00
10/07/73	730	6.32	2355.57	2891.00
28/01/74	1430	19.93	9745.00	12159.00
9/02/81	1545	2.05	905.52	905.52
22/01/82	1115	3.43	1350.71	3034.00
29/05/83	120	2.24	948.64	
23/06/83	500	5.26	1985.00	2746.00
5/04/89	100	3.73	1451.86	
27/04/89	1200	4.02	1553.00	
18/05/89	0	2.70	1137.75	
13/12/91	300	5.22	1952.00	
17/03/92	1230	2.44	1034.88	
6/05/96	300	7.10	2681.40	

Table B4
Historical and Adjusted Data at Port Office (1841-1974)

Date	Level	Discharge AHD-0.15m Cumecs	Adjusted AHD -0.15m Cumecs	Discharge HAT+0.15m	Adjusted HAT+0.15m
14/01/1841	8.43	14655.17241	14655.17241	14583.33333	14583.33333
09/06/1843	2.76	4800	5428.571429	3500	3500
10/01/1844	7.03	12241.37931	12241.37931	11666.66667	11666.66667
16/04/1852	2.91	4800	5571.428571	3750	3750
19/05/1857	3.27	6166.666667	6166.666667	4750	4750
16/02/1863	3.32	6166.666667	6166.666667	4750	4750
20/03/1864	3.78	7000	7000	5800	5800
02/04/1867	2.46	4800	5000	2666.666667	2666.666667
10/03/1870	2.89	4800	5571.428571	3750	3750
18/06/1873	2.69	4800	5285.714286	3250	3250
01/03/1875	2.61	4800	5142.857143	3000	3000
16/08/1879	2.46	4800	5000	2666.666667	2666.666667
23/01/1887	3.78	7000	7000	5800	5800
20/05/1889	3.75	7000	7000	5800	5800
13/03/1890	5.33	9200	9200	8500	8500
05/02/1893	8.35	14655.17241	14655.17241	14583.33333	14583.33333
12/02/1893	2.15	4400	4400	1000	1000
19/02/1893	8.09	14137.93103	14137.93103	13958.33333	13958.33333
12/06/1893	3.63	6666.666667	6666.666667	5400	5400
15/02/1896	2	4000	4000	0	0
22/02/1896	0.86	2166.666667	2166.666667	0	0
29/02/1896	1.85	3833.333333	3833.333333	0	0
13/01/1898	5.02	8714.285714	8714.285714	6833.333333	8000
09/03/1898	3.27	6166.666667	6166.666667	4750	4750
15/03/08	3.35	6333.333333	6333.333333	5000	5000
28/01/27	1.7	3500	3500	0	0
22/02/28	1.67	3500	3500	0	0
21/04/28	2.15	4400	4400	1000	1000
24/01/29	1.85	3833.333333	3833.333333	0	0
7/02/31	3.32	6166.666667	6166.666667	4750	4750
30/03/55	2.36	4800	5129	2333.333333	2662.333333
13/01/56	1.75	3666.666667	3666.666667	0	0
15/01/56	1.75	3666.666667	3666.666667	0	0
11/02/56	1.39	3000	3000	0	0
12/02/56	1.31	2833.333333	2833.333333	0	0
12/03/56	1.42	3000	3000	0	0
13/03/56	1.34	2833.333333	2833.333333	0	0
14/03/56	1.29	2833.333333	2833.333333	0	0
12/06/67	1.87	3833.333333	4188.333333	0	355
15/01/68	1.97	4000	4403	0	403
6/02/71	1.47	3166.666667	3166.666667	0	0
29/01/74	5.45	8750	11164	8833.333333	11247.33333

Table B5
Historical and Adjusted Discharge at Lowood

Date	Lowood Discharge Cumecs	Adjusted Lowood Discharge Cumecs
Jan-10	706.3	
Jan-11	1316	
Mar-12	460.7	
Jun-13	416.4	
Feb-14	234.4	
Feb-15	1035	
Dec-16	375.2	
Dec-17	522.2	
Feb-18	379.4	
Dec-21	1280	
Jan-22	1154	
Feb-24	173.2	
Mar-25	673.9	
Jun-25	778.4	
Dec-26	259.5	
Jan-27	2715	
Apr-28	4225	
Jan-29	2064	
Jun-30	749.2	
Feb-31	5574	
Dec-33	446.4	
Feb-34	614.2	
Feb-35	119.9	
Mar-36	138.6	
Mar-37	1102	
May-38	1052	
Mar-39	459.8	
Mar-40	697.3	
Jan-41	425.2	
Feb-42	1360	
Dec-43	1207	
31/01/44	1043	1362
25/03/46	1052	1377
13/02/47	421	1137
1/03/47	803	1302
11/12/47	613	613
1/05/48	544	732
19/01/50	295	448
28/02/50	2451	2930
1/03/50	2298	2298
24/06/50	1043	1043
29/07/50	784	874
31/01/51	2534	3228
1/02/51	2704	2704
21/02/53	764	1863

Table B5
Historical and Adjusted Discharge at Lowood

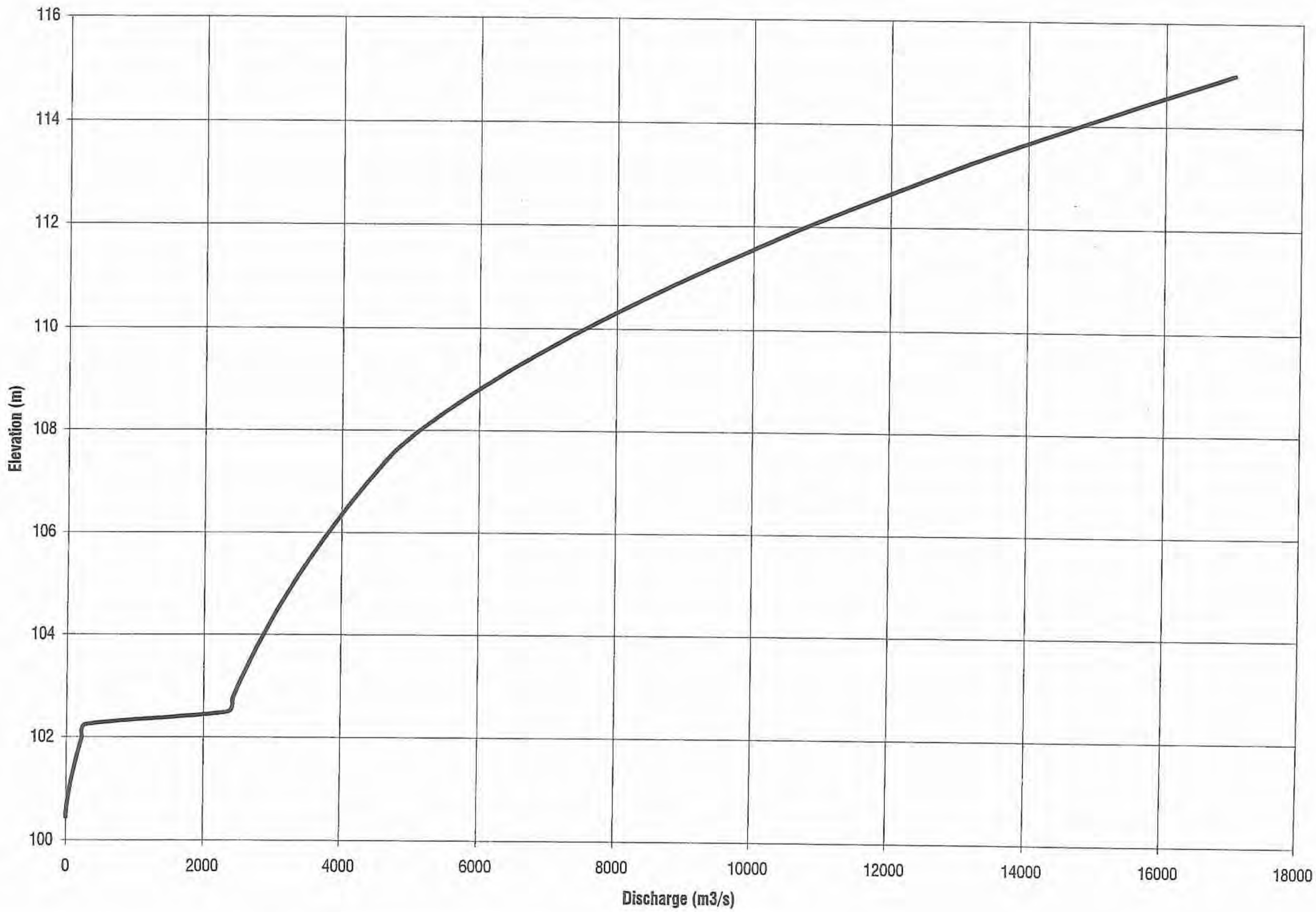
Date	Lowood Discharge Cumecs	Adjusted Lowood Discharge Cumecs
24/03/53	743	743
13/02/54	2111	2111
14/07/54	1922	3188
28/03/55	5363	5692
10/02/56	1365	1365
11/03/56	2141	2141
10/06/58	1520	1770
20/12/61	152	152
10/01/63	230	458
17/03/63	115	1700
8/05/63	502	502
28/03/64	258	258
23/04/64	12	12
21/07/65	1238	2481
30/01/67	254	254
18/03/67	1272	1304
8/05/67	215	215
10/06/67	2351	2706
12/01/68	3363	3766
8/12/70	582	1853
27/01/71	482	577
5/02/71	1071	1071
20/02/71	2779	2779
29/12/71	578	578
12/02/72	1842	1995
9/03/72	266	2106
3/04/72	1665	2760
30/10/72	531	531
8/07/73	2709	3244
25/01/74	7393	9807
17/02/74	835	835
12/03/74	874	874
9/01/75	203	407
24/12/75	520	520
20/01/76	1610	1712
23/02/76	1047	1047
14/03/76	1059	1059
26/03/78	59	162
2/04/78	351	436
25/01/79	298	298
10/02/79	35	110
9/05/80	44	44
16/02/81	765	1478
8/04/81	49	124
23/05/81	10	10

Table B5
Historical and Adjusted Discharge at Lowood

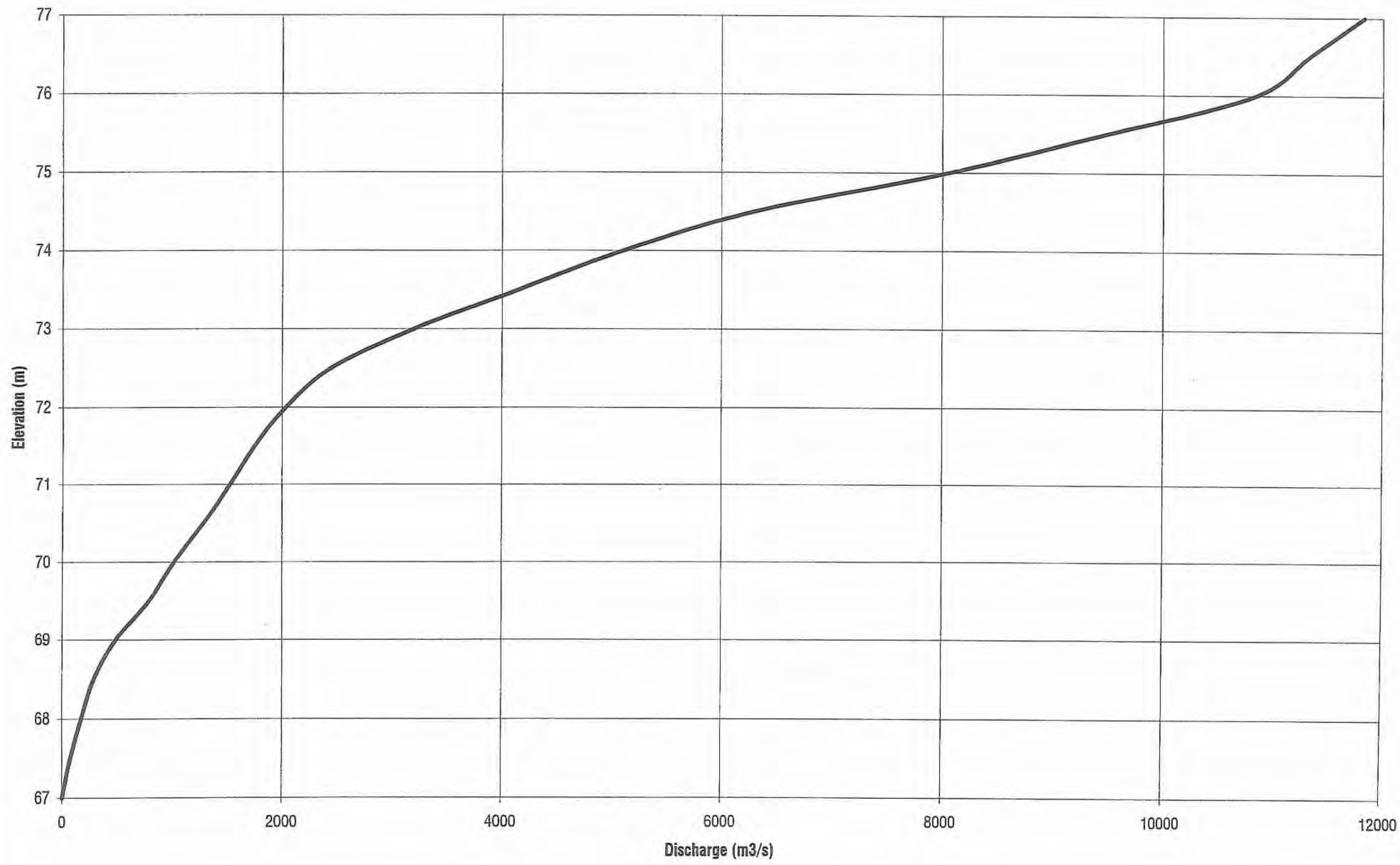
Date	Lowood Discharge Cumecs	Adjusted Lowood Discharge Cumecs
21/01/82	1006	2873
4/03/82	422	554
24/05/83	525	911
22/06/83	1659	2420
7/07/83	409	458
30/11/83	13	381
2/12/83		58
9/04/84	134	237
28/07/84		325
8/11/84	108	166
11/03/85	22	582
9/07/85	63	623

Appendix C - Dam Operations

F-1 — Somerset Dam- Height - Discharge Curve



FR – Wivenhoe Dam - Height - Discharge Curve

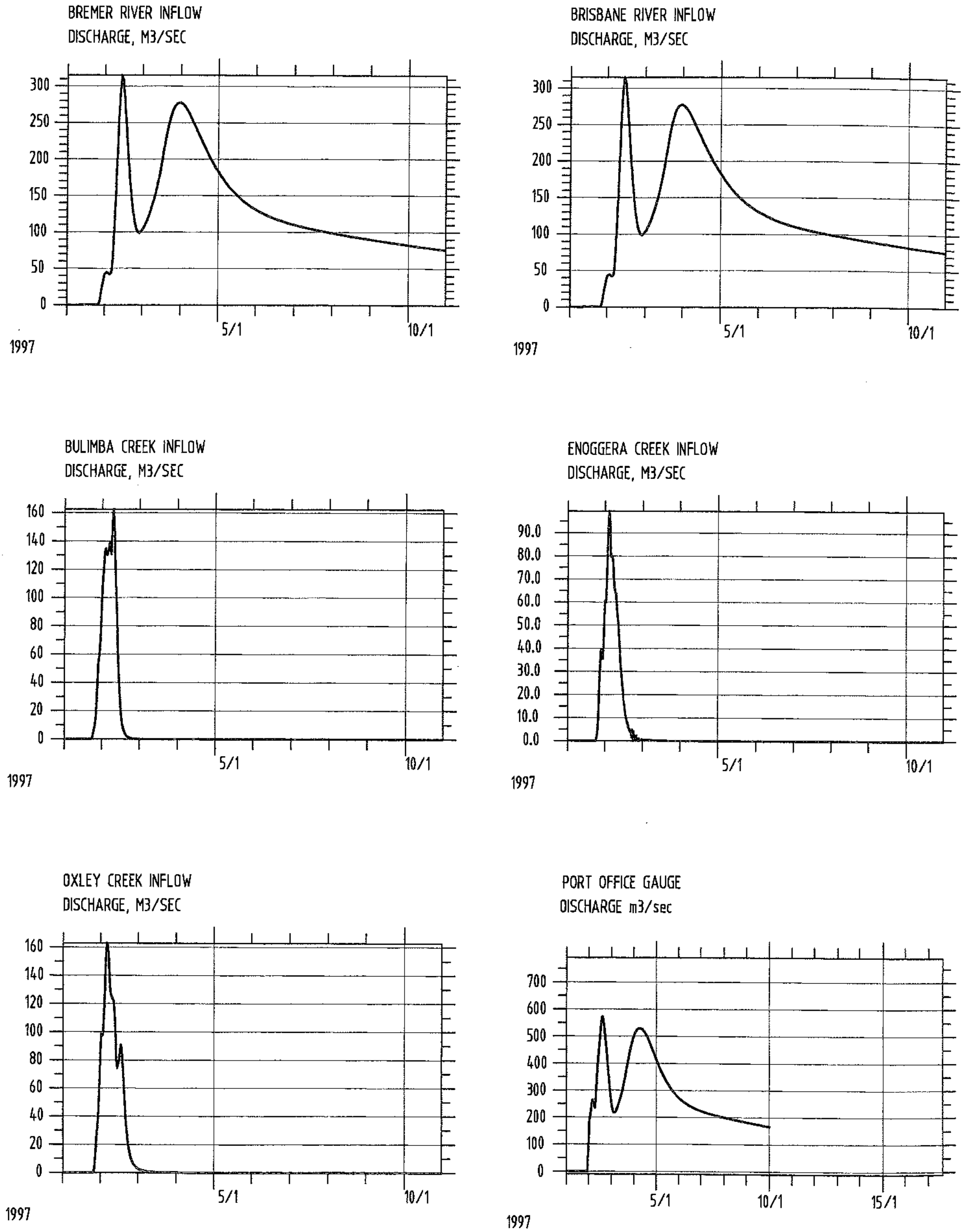


Appendix D - RAFTS Hydrographs

SINCLAIR KNIGHT MERZ

FIGURE D-1

BRISBANE RIVER FLOOD SYUDY
HYDROGRAPHS FOR THE 2 YEAR ARI FLOOD EVENT



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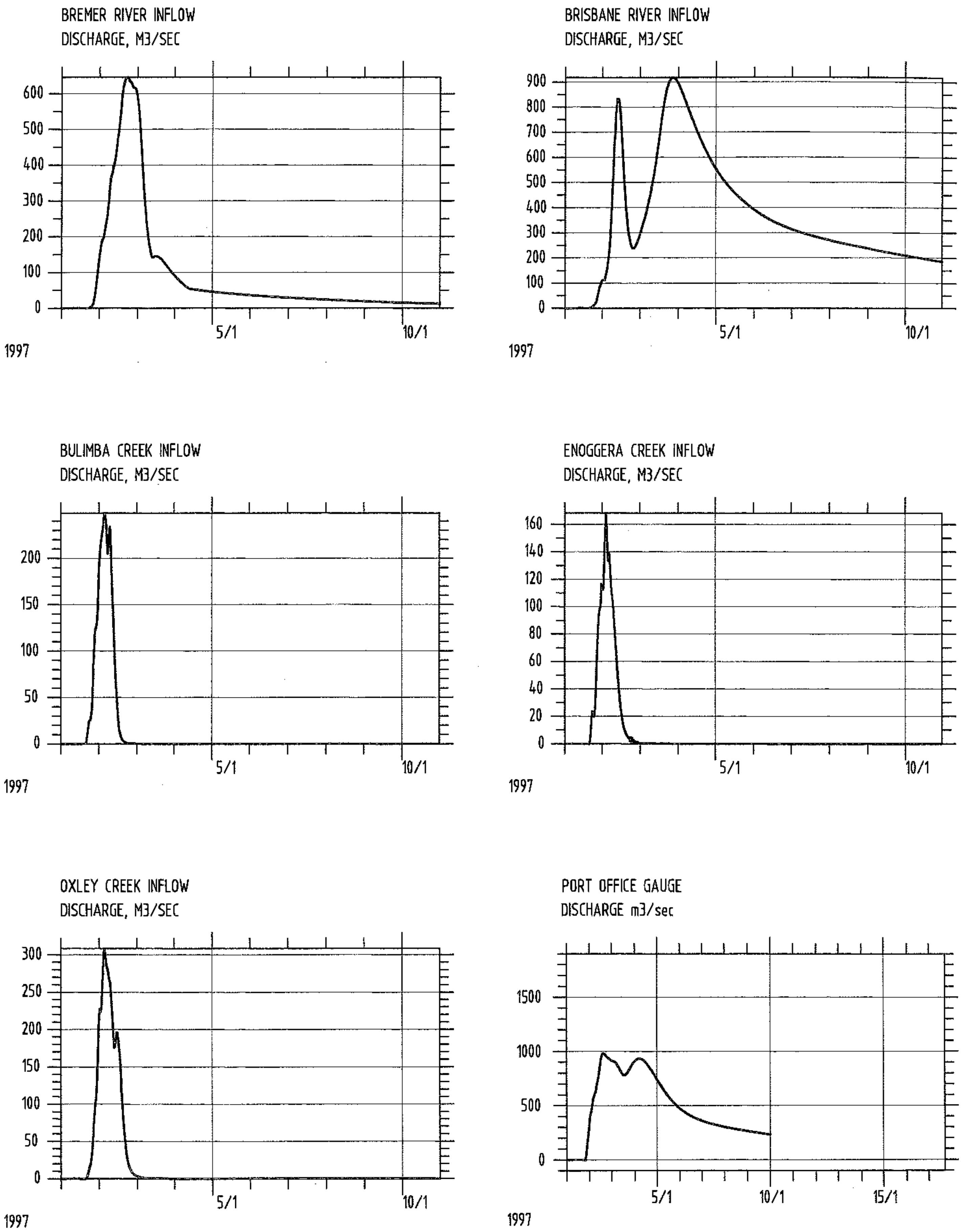
JOB N°: T004157
DISK N°: C:\DWG
FILE NAME: 04157-77
PLOT SCALE: 1=1

SINCLAIR KNIGHT MERZ

FIGURE D-2

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 5 YEAR ARI FLOOD EVENT

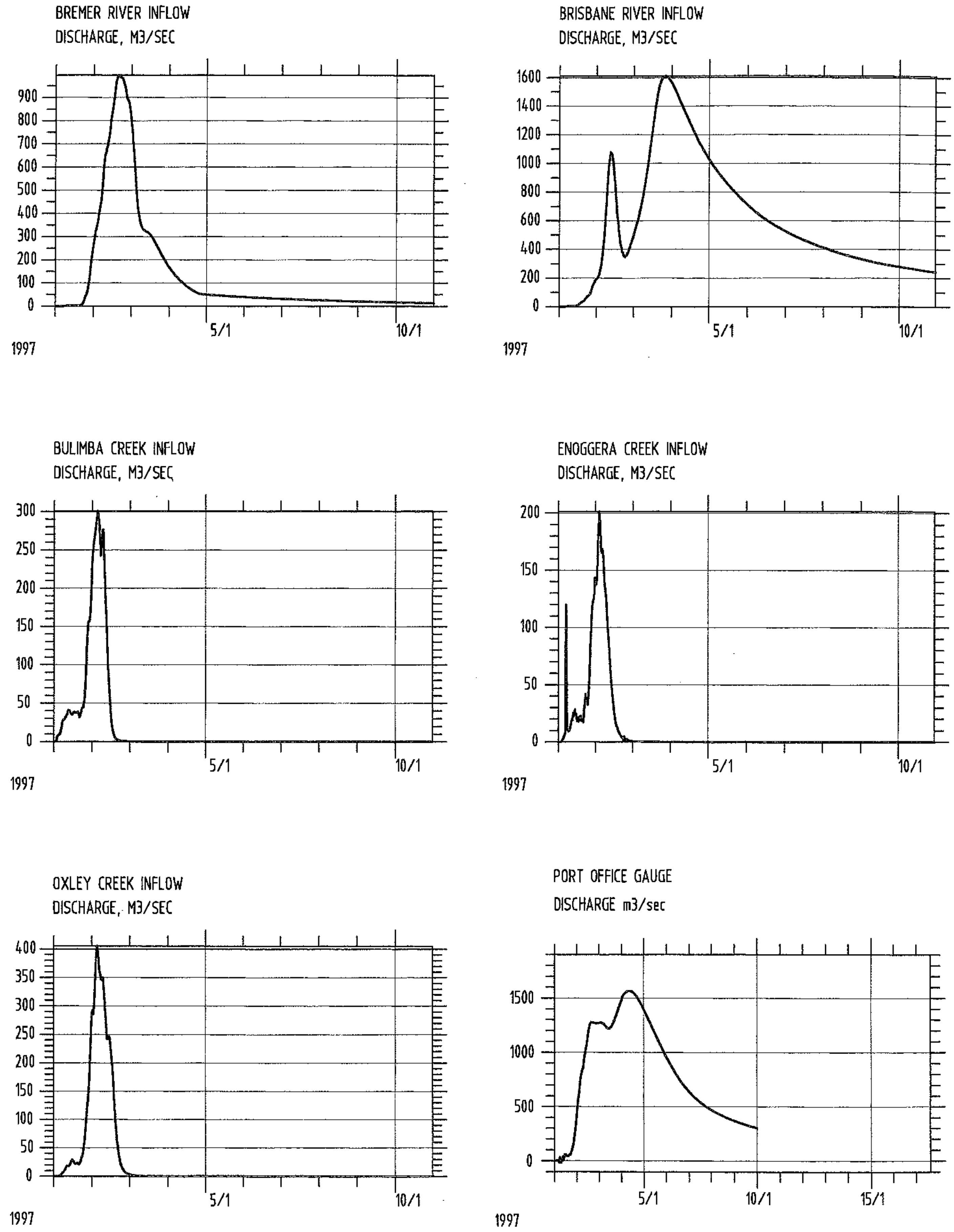


DATE: 24-9-97 JOB N°: T004157 DISK N°: C:\DWG FILE NAME: 04157-75 PLOT SCALE: 1=

SINCLAIR KNIGHT MERZ

FIGURE D-3

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 10 YEAR ARI FLOOD EVENT

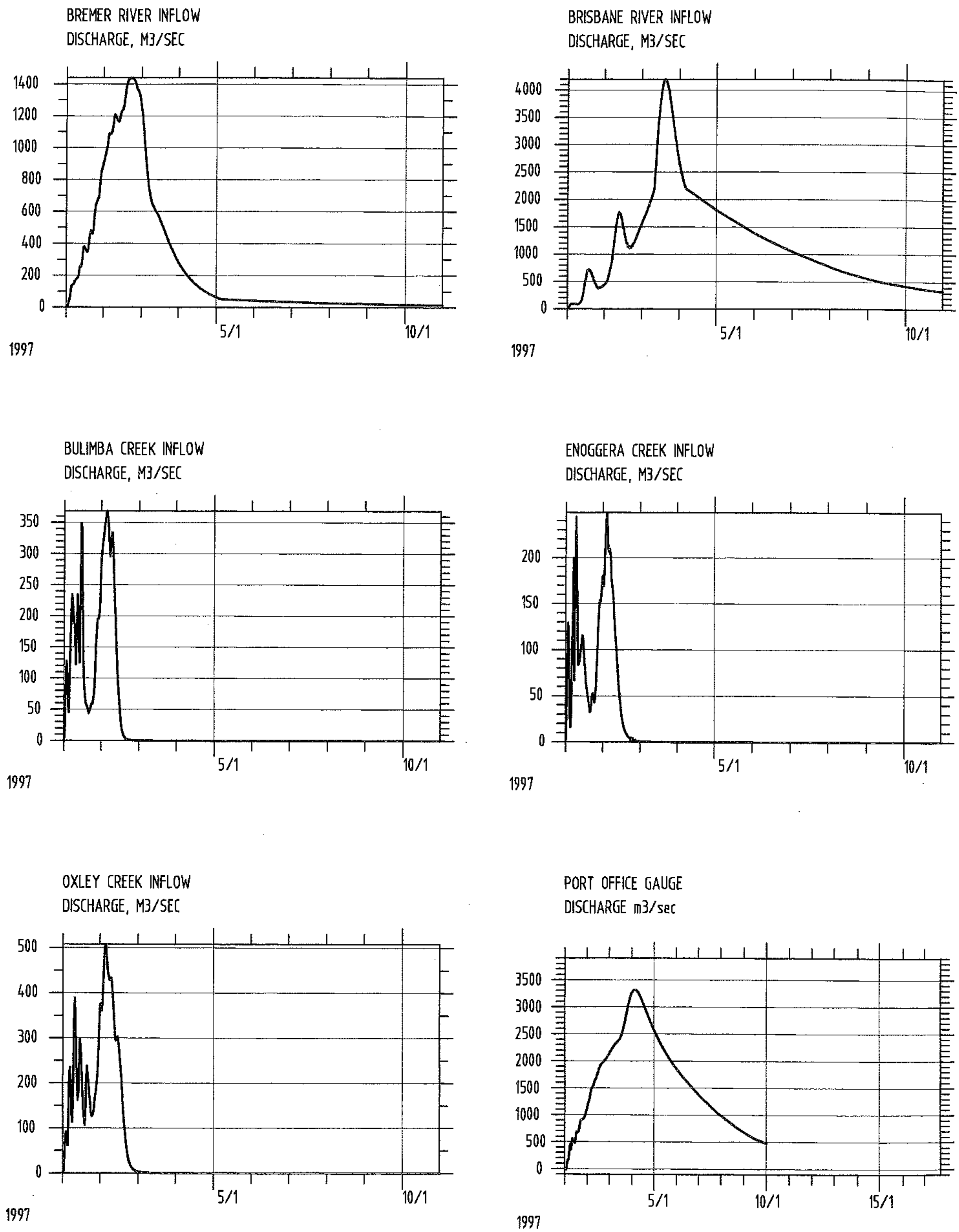


DATE: 24-9-97
JOB N°: T004157
DISK N°: C:\DWG
FILE NAME: 04157-68
PLOT SCALE: 1=1

SINCLAIR KNIGHT MERZ

FIGURE D-4

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR 20 YEAR ARI FLOOD EVENT

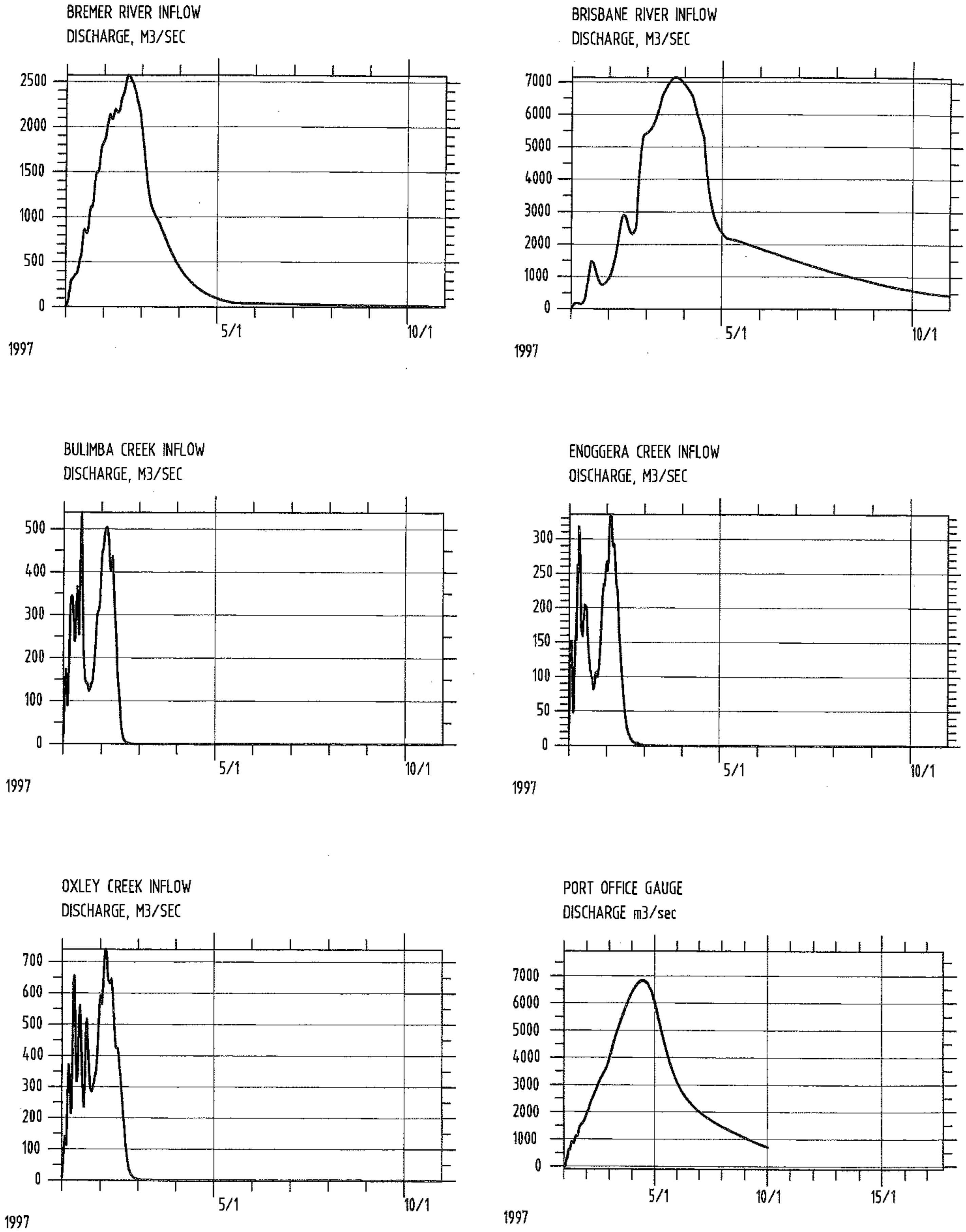


DATE: 24-9-97
JOB Nº: T004157
DISK Nº: C:\DWG
FILE NAME: 04157-71
PLOT SCALE: 1=1

SINCLAIR KNIGHT MERZ

FIGURE D-5

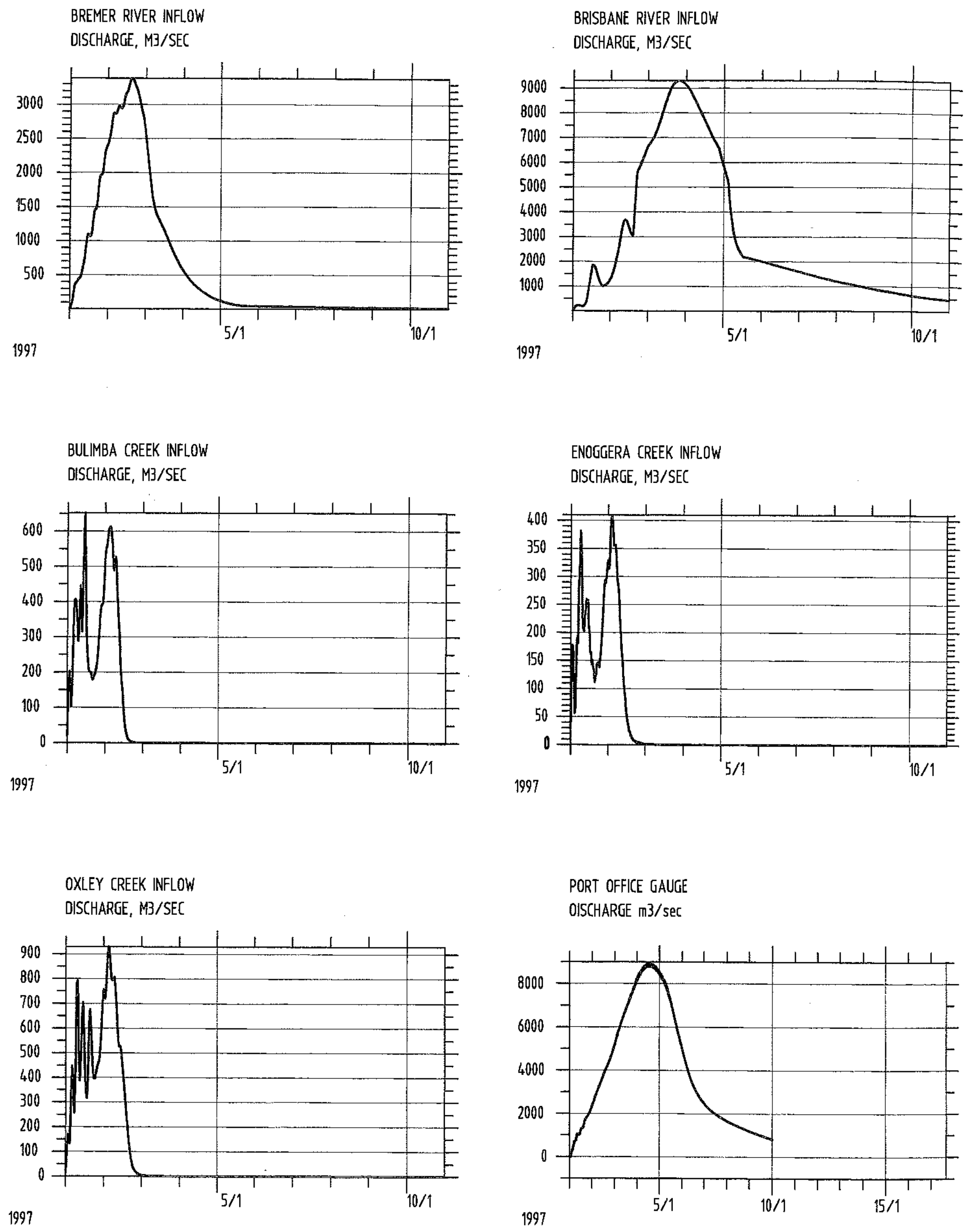
BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 50 YEAR ARI FLOOD EVENT



SINCLAIR KNIGHT MERZ

FIGURE D-6

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 100 YEAR ARI FLOOD EVENT



FILE NAME: 04157-67 DISK N°: C:\DWG JOB N°: T004157 DATE: 24-9-97
PLO. SCALE: 1=

FIGURE D-7

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 200 YEAR ARI FLOOD EVENT

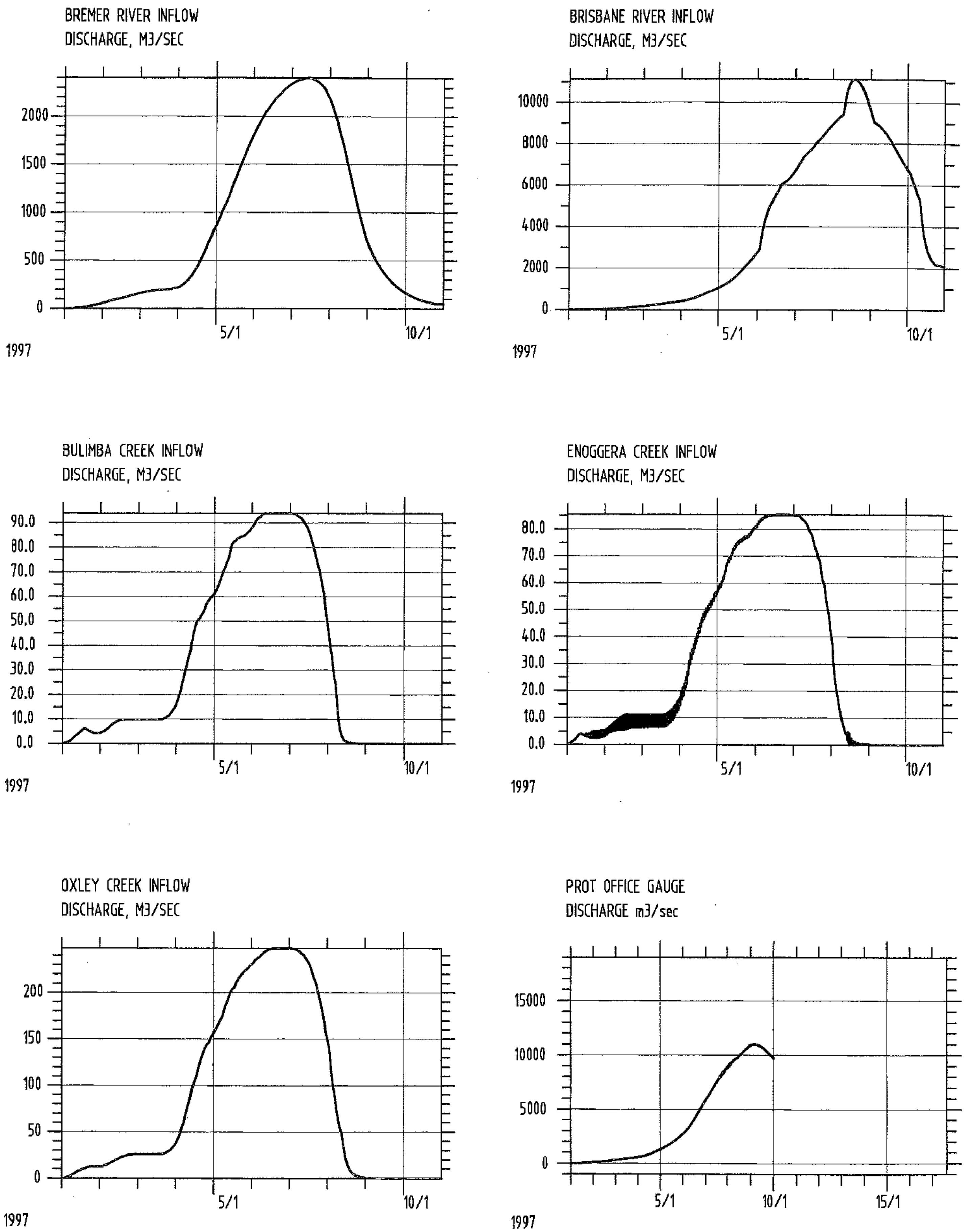
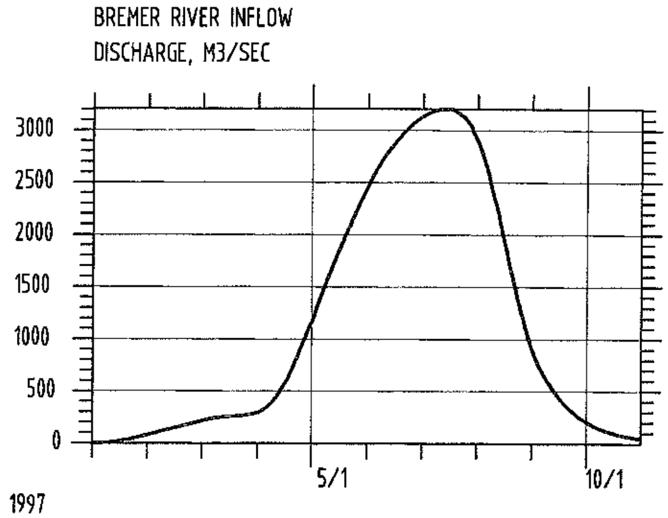
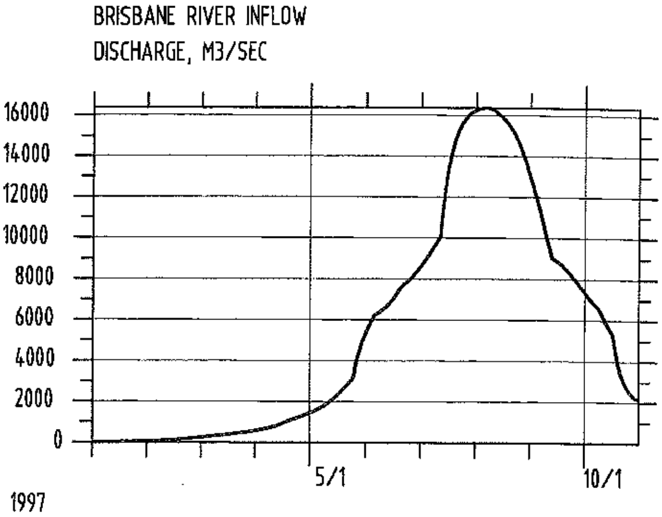
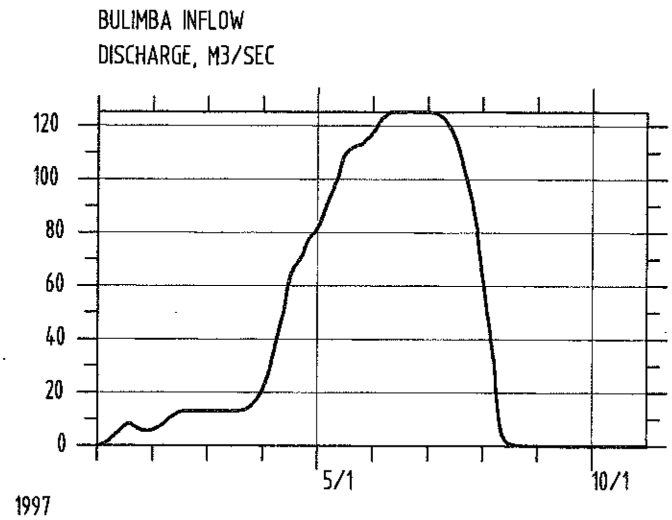


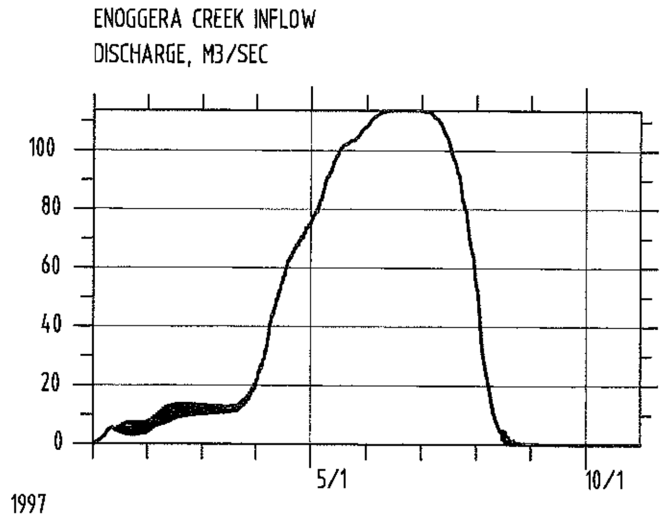
FIGURE D-9

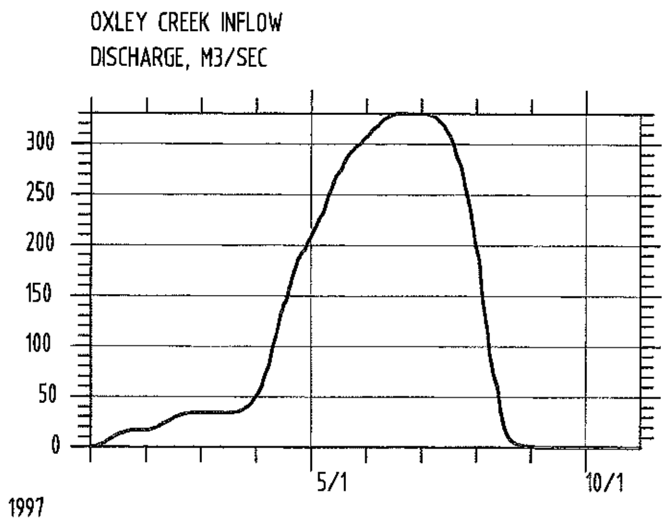
BRISBANE RIVER FLOOD STUDY -RAFTS HYDROGRAPHS FOR THE 1000 YEAR ARI EVENT

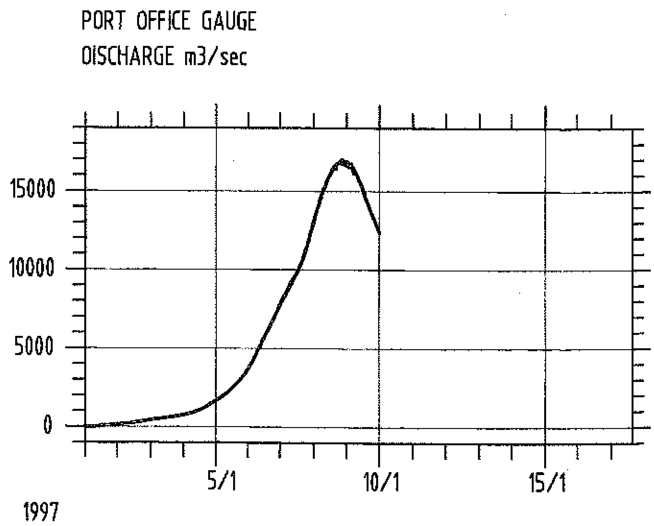










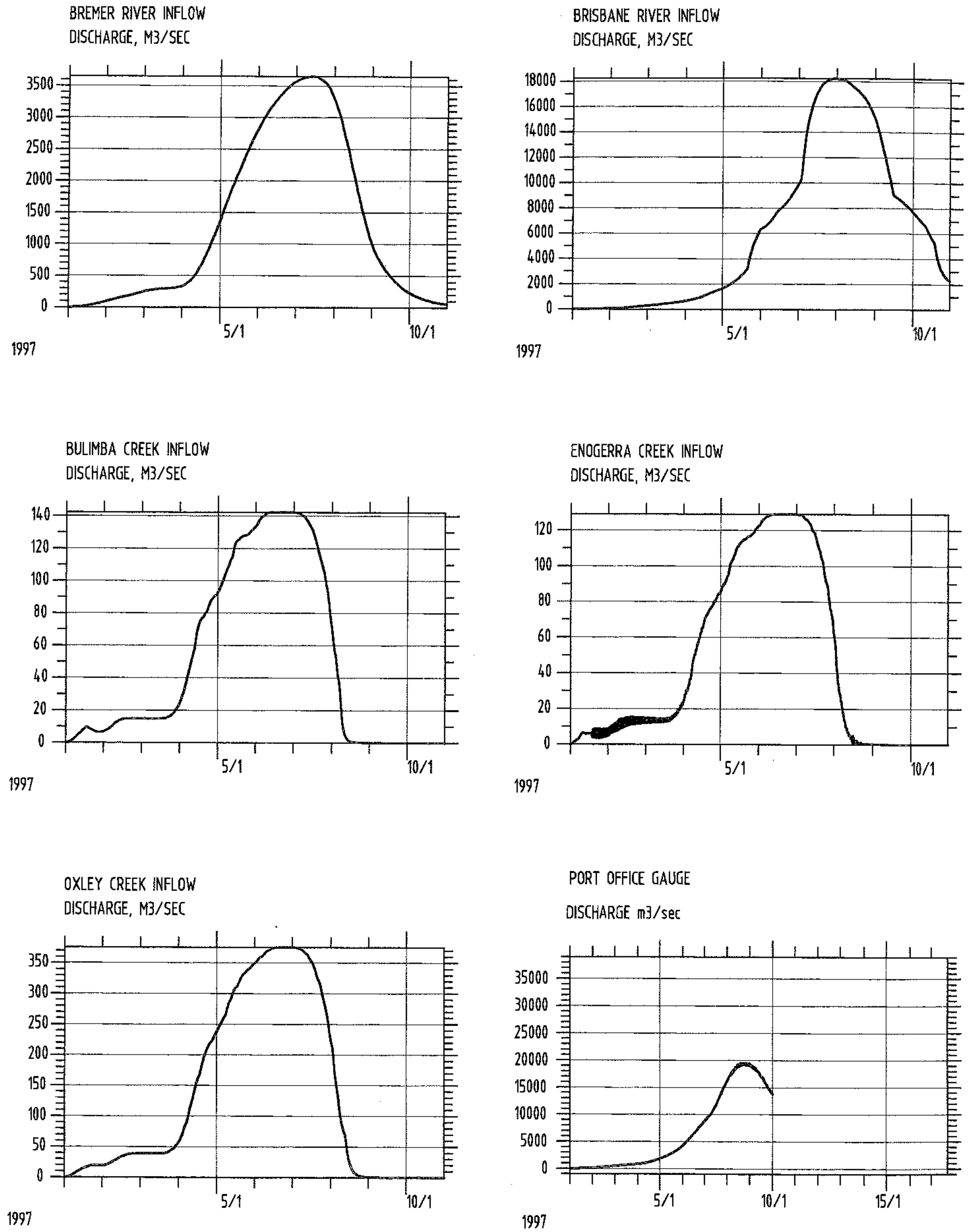


FILE NAME: 04157-66 PLOT SCALE: 1=1 DISK No: C:\DWG JOB No: T00457 DATE: 25-9-97

SINCLAIR KNIGHT MERZ

FIGURE D-10

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 2000 YEAR ARI FLOOD EVENT



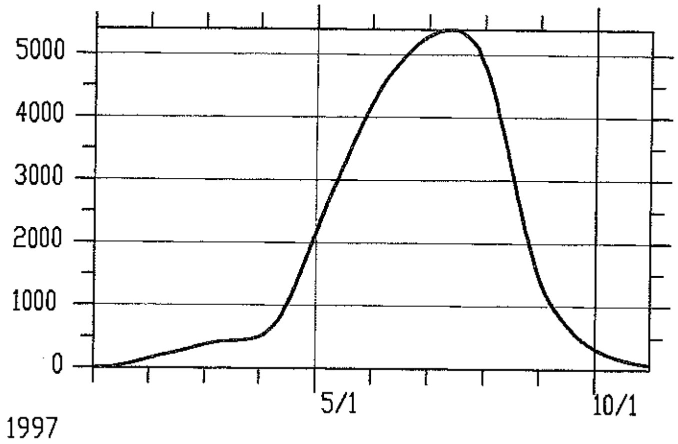
DATE: 24-9-97
JOB N°: T004157
DISK N°: C:\DWG
FILE NAME: 04157-69
PLO. ...LE: 1=.

SINCLAIR KNIGHT MERZ

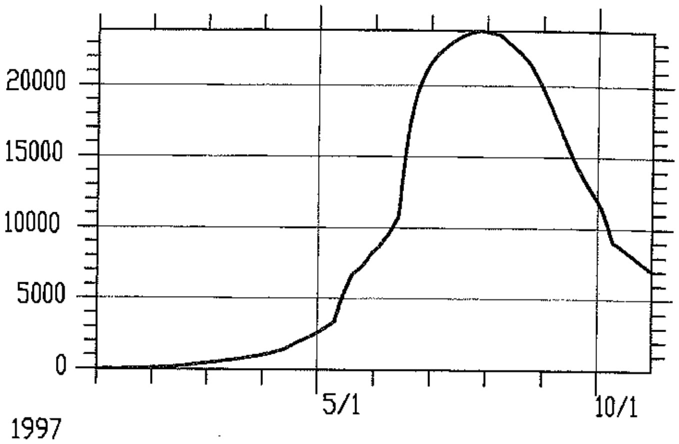
FIGURE D-11

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 10000 YEAR ARI FLOOD EVENT

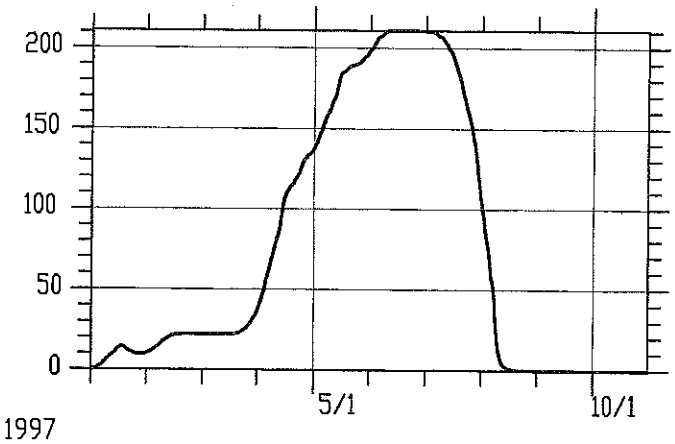
BREMER RIVER INFLOW
DISCHARGE, M3/SEC



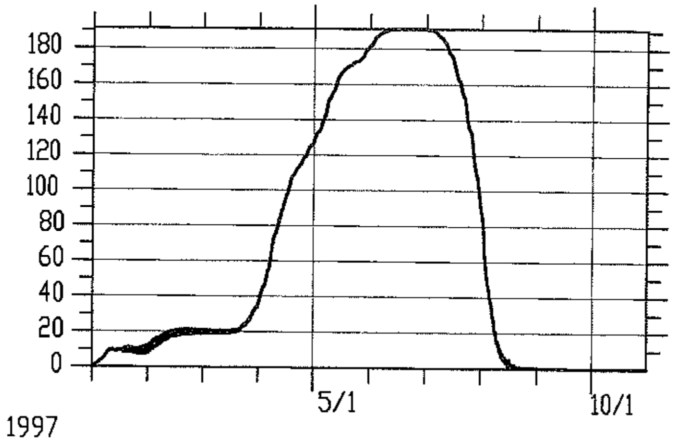
BRISBANE RIVER INFLOW
DISCHARGE, M3/SEC



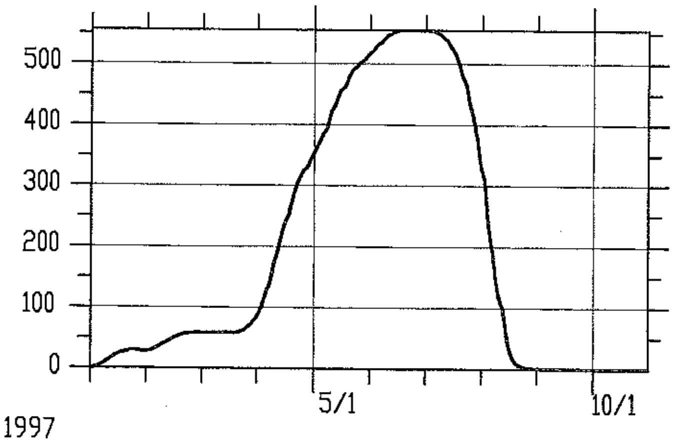
BULIMBA CREEK INFLOW
DISCHARGE, M3/SEC



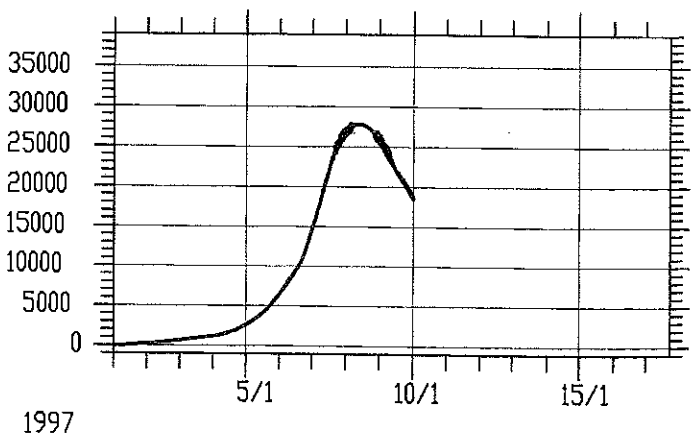
ENOGGERA CREEK INFLOW
DISCHARGE, M3/SEC



OXLEY CREEK INFLOW
DISCHARGE, M3/SEC



PORT OFFICE GAUGE
DISCHARGE m3/sec

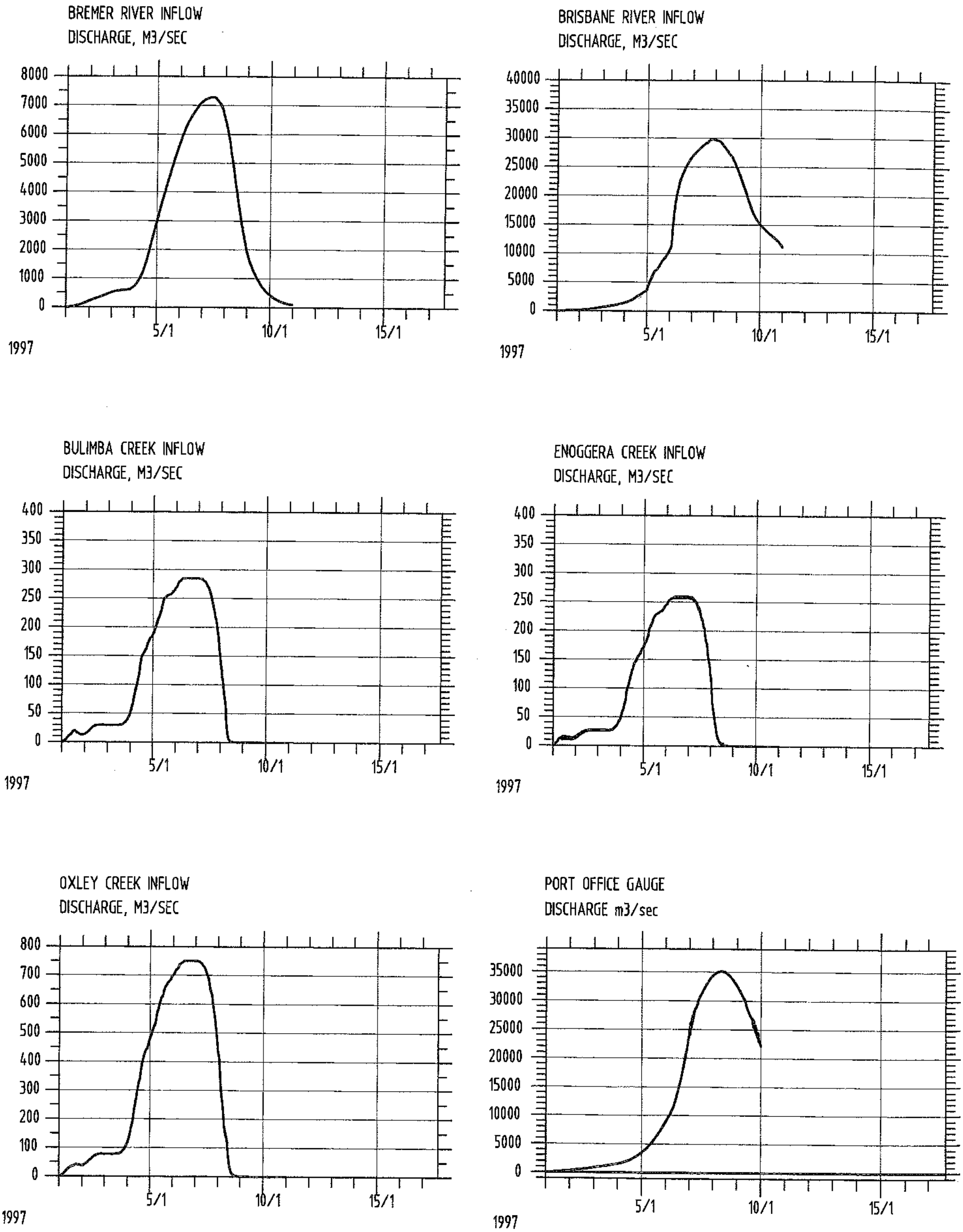


DATE: 24-9-97 JOB N°: T004157 DISK N°: C:\DWG FILE NAME: 04157-65 PLOT SCALE: 1:

SINCLAIR KNIGHT MERZ

FIGURE D-12

BRISBANE RIVER FLOOD STUDY HYDROGRAPHS FOR THE PMF EVENT



FILE NAME: 04157-76 PLO. ...LE: 1:.. DISK N°: C:\DWG JOB N°: T004157 DATE: 24-9-97

Appendix E - MIKE 11 Model Results

Table E-1 - Combined Tailwater and River Flooding Conditions

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI River Flood with 100 Year ARI Storm Surge WL (m AHD)	100 Year ARI River Flood with 20 Year ARI Storm Surge WL (m AHD)	20 Year ARI River Flood with 100 Year ARI Storm Surge WL (m AHD)
1000	78.66	BN 2020	22.77	22.76	13.49
1000.285	78.375	BN 2010	22.66	22.65	13.37
1000.775	77.885	BN 2000	22.4	22.39	13.09
1001.315	77.345	BN 1990	22.27	22.26	12.99
1001.865	76.795	BN 1980	21.7	21.69	12.61
1002.35	76.31	BN 1970	21.32	21.31	12.17
1002.785	75.875	BN 1960	21.19	21.18	12.02
1003.275	75.385	BN 1950	20.95	20.93	11.64
1003.775	74.885	BN 1940	20.71	20.7	11.42
1004.3	74.36	BN 1930	20.31	20.3	10.99
1004.81	73.85	BN 1920	20.26	20.25	10.9
1005.325	73.335	BN 1910	20.07	20.06	10.72
1005.87	72.79	BN 1900	19.87	19.86	10.54
1006.3	72.36	BN 1890	19.72	19.7	10.47
1006.91	71.75	BN 1880	19.61	19.59	10.37
1007.41	71.25	BN 1870	19.56	19.55	10.31
1007.92	70.74	BN 1860	19.47	19.45	10.22
1008.445	70.215	BN 1850	19.22	19.2	10.11
1008.925	69.735	BN 1840	19.14	19.12	10.04
1009.4	69.26	BN 1830	19.05	19.03	9.98
1009.72	68.84	BN 1820	19.02	19	9.93
1010.49	68.17	BN 1810	18.68	18.66	9.75
1010.725	67.935	BN 1800	18.67	18.65	9.75
1010.98	67.68	BN 1790	18.58	18.56	9.71
1011.51	67.15	BN 1780	18.58	18.56	9.65
1011.98	66.68	BN 1770	18.57	18.55	9.6
1012.475	66.185	BN 1760	18.49	18.47	9.55
1012.935	65.725	BN 1750	18.42	18.4	9.48
1013.445	65.215	BN 1740	18.28	18.26	9.39
1013.91	64.74	BN 1730	18.18	18.16	9.31
1014.31	64.55	BN 1720	18.12	18.1	9.22
1014.61	64.05	BN 1710	18.15	18.13	9.16
1015.09	63.57	BN 1700	17.99	17.97	9.12
1015.56	63.1	BN 1690	17.8	17.78	9.03
1016.14	62.52	BN 1680	17.7	17.68	8.94
1016.64	62.02	BN 1670	17.58	17.56	8.82
1017.13	61.53	BN 1660	17.39	17.36	8.64
1017.61	61.05	BN 1650	17.2	17.18	8.48
1017.92	60.74	BN 1640	17.08	17.05	8.37
1018.2	60.46	BN 1630	17.02	16.99	8.35
1018.725	59.935	BN 1620	16.72	16.69	8.23
1019.095	59.565	BN 1610	16.63	16.61	8.14
1019.49	59.17	BN 1600	16.6	16.57	8.09
1019.865	58.795	BN 1590	16.37	16.34	7.97
1020.115	58.545	BN 1580	16.43	16.4	7.97
1020.525	58.135	BN 1570	16.41	16.38	7.95
1020.83	57.83	BN 1560	16.27	16.24	7.89
1021.095	57.565	BN 1550	16.09	16.06	7.8
1021.539	57.121	BN 1540	15.99	15.96	7.7
1021.715	56.945	BN 1530	16	15.97	7.69
1021.895	56.765	BN 1520	15.91	15.88	7.68
1022.505	56.555	BN 1510	15.69	15.66	7.6
1022.575	56.085	BN 1500	15.75	15.72	7.58
1023.04	55.62	BN 1490	15.44	15.4	7.45
1023.57	55.09	BN 1480	15.34	15.31	7.39
1024.08	54.58	BN 1470	15.28	15.24	7.34
1024.563	54.097	BN 1460	15.2	15.17	7.27
1025.07	53.59	BN 1450	15.13	15.09	7.22
1025.36	53.3	BN 1440	14.98	14.95	7.15
1025.59	53.07	BN 1430	14.8	14.77	7.08
1026.17	52.49	BN 1420	14.75	14.72	7.01
1026.68	51.98	BN 1410	14.62	14.58	6.94
1026.9	51.76	BN 1400	14.49	14.45	6.89
1027.16	51.5	BN 1390	14.42	14.38	6.85
1027.68	50.98	BN 1380	14.5	14.46	6.83

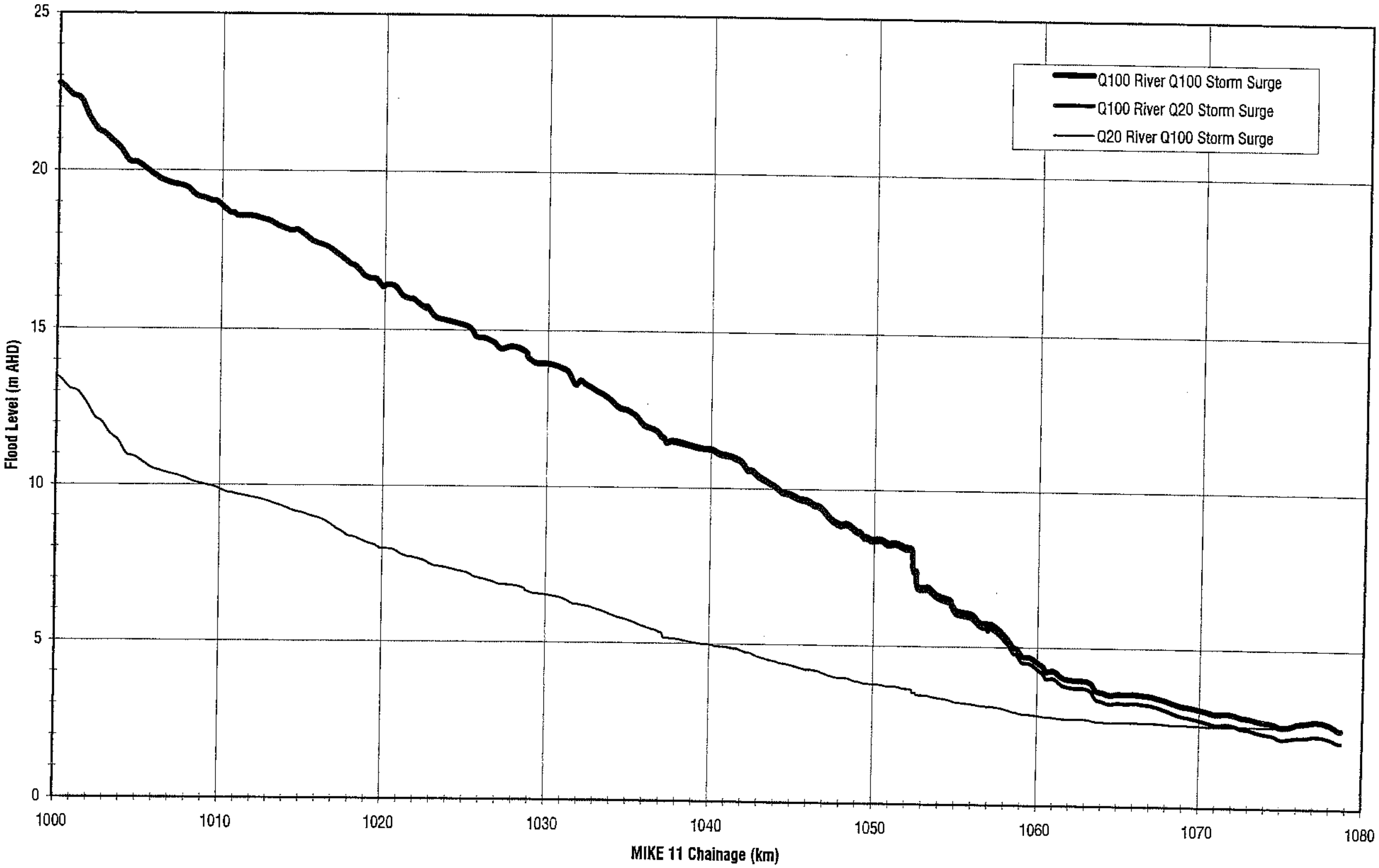
Table E-1 - Combined Tailwater and River Flooding Conditions

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI River Flood with 100 Year ARI Storm Surge WL (m AHD)	100 Year ARI River Flood with 20 Year ARI Storm Surge WL (m AHD)	20 Year ARI River Flood with 100 Year ARI Storm Surge WL (m AHD)
1028.18	50.48	BN 1370	14.46	14.42	6.8
1028.68	49.98	BN 1360	14.31	14.27	6.72
1028.76	49.9	BN 1340	14.16	14.12	6.65
1029.2	49.46	BN 1330	13.99	13.95	6.56
1029.68	48.98	BN 1320	13.96	13.92	6.54
1030.22	48.44	BN 1310	13.94	13.9	6.5
1030.87	47.79	BN 1300	13.82	13.78	6.43
1031.26	47.4	BN 1290	13.69	13.65	6.35
1031.7	46.96	BN 1280	13.29	13.25	6.23
1031.995	46.665	BN 1270	13.43	13.39	6.22
1032.23	46.43	BN 1260	13.34	13.3	6.19
1032.585	46.075	BN 1250	13.23	13.19	6.16
1033.08	45.58	BN 1240	13.08	13.03	6.08
1033.37	45.29	BN 1230	13	12.96	6.03
1033.9	44.76	BN 1220	12.8	12.75	5.92
1034.37	44.29	BN 1210	12.58	12.53	5.83
1034.89	43.77	BN 1200	12.5	12.45	5.76
1035.414	43.246	BN 1190	12.31	12.26	5.66
1035.9	42.76	BN 1180	12.01	11.96	5.56
1036.46	42.2	BN 1170	11.9	11.85	5.46
1036.77	41.89	BN 1160	11.79	11.73	5.41
1036.915	41.745	BN 1150	11.67	11.61	5.37
1037.09	41.57	BN 1140	11.62	11.56	5.34
1037.175	41.485	BN 1120	11.56	11.5	5.2
1037.285	41.375	BN 1110	11.47	11.41	5.18
1037.625	41.035	BN 1100	11.52	11.46	5.16
1038.085	40.575	BN 1090	11.48	11.41	5.14
1038.6	40.06	BN 1080	11.41	11.35	5.08
1039.1	39.56	BN 1070	11.34	11.27	5.03
1039.565	39.05	BN 1060	11.29	11.23	4.99
1040.09	38.57	BN 1050	11.26	11.19	4.97
1040.49	38.17	BN 1040	11.14	11.07	4.92
1041.01	37.56	BN 1030	11.08	11.01	4.9
1041.23	37.43	BN 1020	11.05	10.99	4.88
1041.46	37.2	BN 1010	11	10.93	4.85
1041.7	36.96	BN 1000	10.95	10.88	4.85
1041.96	36.7	BN 990	10.83	10.76	4.79
1042.235	36.425	BN 980	10.63	10.56	4.74
1042.515	36.145	BN 970	10.61	10.54	4.72
1042.91	35.75	BN 960	10.43	10.35	4.62
1043.725	34.935	BN 950	10.17	10.1	4.5
1044.06	34.6	BN 940	10.04	9.97	4.46
1044.34	34.32	BN 930	9.92	9.84	4.41
1044.605	34.055	BN 920	9.89	9.81	4.39
1044.86	33.8	BN 910	9.85	9.77	4.36
1045.4	33.26	BN 900	9.71	9.63	4.29
1045.885	32.775	BN 890	9.66	9.57	4.22
1046.18	32.48	BN 880	9.57	9.49	4.21
1046.34	32.32	BN 870	9.52	9.43	4.2
1046.58	32.08	BN 860	9.49	9.41	4.19
1046.9	31.76	BN 850	9.35	9.26	4.13
1047.35	31.31	BN 840	9.09	8.99	4.04
1047.915	30.745	BN 830	8.91	8.81	3.98
1048.375	30.285	BN 820	8.93	8.83	3.97
1048.89	29.77	BN 810	8.71	8.61	3.88
1049.12	29.54	BN 800	8.66	8.56	3.86
1049.37	29.29	BN 790	8.52	8.41	3.82
1049.59	29.07	BN 780	8.5	8.39	3.81
1049.87	28.79	BN 770	8.42	8.31	3.79
1050.43	28.23	BN 760	8.43	8.33	3.77
1050.86	27.8	BN 750	8.3	8.19	3.73
1051.36	27.3	8N 740	8.31	8.21	3.73
1051.895	26.765	8N 730	8.18	8.07	3.66
1052.31	26.35	BN 720	8.1	7.99	3.64
1052.39	26.27	BN 700	7.48	7.36	3.54

Table E-1 - Combined Tailwater and River Flooding Conditions

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI River Flood with 100 Year ARI Storm Surge WL (m AHD)	100 Year ARI River Flood with 20 Year ARI Storm Surge WL (m AHD)	20 Year ARI River Flood with 100 Year ARI Storm Surge WL (m AHD)
1052.595	26.065	BN 690	7.4	7.28	3.53
1052.64	26.02	BN 670	6.93	6.82	3.47
1053.32	25.34	BN 650	6.9	6.78	3.45
1053.385	25.795	BN 660	6.87	6.74	3.44
1053.9	24.76	BN 620	6.64	6.52	3.38
1054.64	24.02	BN 610	6.5	6.37	3.32
1054.68	23.98	BN 590	6.42	6.29	3.3
1054.97	23.69	BN 560	6.18	6.04	3.25
1055.28	23.38	BN 550	6.12	5.98	3.23
1055.42	23.24	BN 540	6.11	5.97	3.22
1055.96	22.7	BN 530	6.05	5.9	3.2
1056.4	22.26	BN 520	5.81	5.66	3.15
1056.695	21.965	BN 510	5.76	5.6	3.14
1056.865	21.795	BN 500	5.76	5.59	3.13
1056.95	21.71	BN 490	5.67	5.51	3.11
1057.09	21.57	BN 480	5.75	5.59	3.13
1057.53	21.13	BN 470	5.6	5.44	3.1
1058.04	20.62	BN 460	5.33	5.16	3.04
1058.23	20.43	BN 450	5.21	5.04	3.01
1058.53	20.13	BN 440	4.98	4.8	2.96
1058.735	19.925	BN 430	4.96	4.77	2.95
1059.035	19.625	BN 420	4.72	4.53	2.9
1059.54	19.12	BN 410	4.68	4.48	2.89
1059.99	18.67	BN 400	4.52	4.32	2.86
1060.345	18.315	BN 390	4.39	4.17	2.83
1060.535	18.125	BN 380	4.24	4.02	2.81
1061.015	17.645	BN 370	4.26	4.03	2.8
1061.53	17.13	BN 360	4.06	3.82	2.77
1062.02	16.64	BN 350	4	3.76	2.75
1062.535	16.125	BN 340	3.98	3.73	2.75
1062.94	15.72	BN 330	3.97	3.73	2.75
1063.31	15.35	BN 320	3.9	3.64	2.73
1063.645	15.015	BN 310	3.66	3.39	2.69
1064	14.66	BN 300	3.61	3.33	2.68
1064.49	14.17	BN 290	3.53	3.25	2.66
1065.01	13.65	BN 280	3.57	3.29	2.67
1065.503	13.157	BN 270	3.55	3.26	2.67
1065.99	12.67	BN 260	3.57	3.29	2.67
1066.505	12.155	BN 250	3.54	3.25	2.66
1067.02	11.64	BN 240	3.51	3.22	2.66
1067.485	11.175	BN 230	3.44	3.15	2.65
1067.965	10.695	BN 220	3.37	3.07	2.63
1068.66	10	BN 210	3.24	2.93	2.61
1069.045	9.615	BN 200	3.2	2.88	2.61
1069.535	9.125	BN 190	3.16	2.83	2.6
1070.025	8.635	BN 180	3.1	2.77	2.59
1070.53	8.13	BN 170	3.03	2.69	2.58
1071.04	7.62	BN 160	2.97	2.63	2.58
1071.52	7.14	BN 150	2.99	2.65	2.58
1072.015	6.645	BN 140	2.97	2.63	2.58
1072.515	6.145	BN 130	2.88	2.53	2.58
1072.995	5.665	BN 120	2.85	2.5	2.58
1073.485	5.175	BN 110	2.78	2.42	2.58
1074	4.66	BN 100	2.73	2.36	2.58
1074.46	4.2	BN 90	2.69	2.32	2.58
1074.985	3.675	BN 80	2.59	2.21	2.57
1075.48	3.18	BN 70	2.6	2.22	2.59
1076	2.66	BN 60	2.7	2.26	2.7
1076.495	2.165	BN 50	2.72	2.27	2.71
1077.01	1.65	BN 40	2.77	2.31	2.77
1077.51	1.15	BN 30	2.75	2.29	2.75
1078.04	0.62	BN 20	2.66	2.22	2.66
1078.525	0.135	BN 10	2.5	2.1	2.5
1078.66	0		2.5	2.1	2.5

FIGURE E-1 - Combined Tailwater and River Flooding Conditions



Flood Levels

Table E-2-Design Flood Profiles for the 5, 20 & 100 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI WL (m AHD)	20 Year ARI WL (m AHD)	5 Year ARI WL (m AHD)
BRISBANE	1000	78.66	BN 2020	22.74	13.34	4.60
BRISBANE	1000.285	78.375	BN 2010	22.63	13.21	4.53
BRISBANE	1000.775	77.885	BN 2000	22.36	12.92	4.41
BRISBANE	1001.315	77.345	BN 1990	22.23	12.81	4.33
BRISBANE	1001.865	76.795	BN 1980	21.66	12.42	4.19
BRISBANE	1002.35	76.31	BN 1970	21.28	11.97	3.98
BRISBANE	1002.785	75.875	BN 1960	21.15	11.80	3.85
BRISBANE	1003.275	75.385	BN 1950	20.90	11.40	3.72
BRISBANE	1003.775	74.885	BN 1940	20.66	11.17	3.60
BRISBANE	1004.3	74.36	BN 1930	20.26	10.72	3.46
BRISBANE	1004.81	73.85	BN 1920	20.21	10.61	3.37
BRISBANE	1005.325	73.335	BN 1910	20.02	10.43	3.24
BRISBANE	1005.87	72.79	BN 1900	19.82	10.24	3.13
BRISBANE	1006.3	72.36	BN 1890	19.66	10.16	3.09
BRISBANE	1006.91	71.75	BN 1880	19.55	10.05	3.04
BRISBANE	1007.41	71.25	BN 1870	19.50	9.99	2.98
BRISBANE	1007.92	70.74	BN 1860	19.41	9.89	2.94
BRISBANE	1008.445	70.215	BN 1850	19.16	9.78	2.90
BRISBANE	1008.925	69.735	BN 1840	19.08	9.71	2.87
BRISBANE	1009.4	69.26	BN 1830	18.99	9.65	2.84
BRISBANE	1009.72	68.84	BN 1820	18.96	9.60	2.82
BRISBANE	1010.49	68.17	BN 1810	18.61	9.41	2.77
BRISBANE	1010.725	67.935	BN 1800	18.60	9.41	2.76
BRISBANE	1010.98	67.68	BN 1790	18.52	9.36	2.75
BRISBANE	1011.51	67.15	BN 1780	18.51	9.30	2.73
BRISBANE	1011.98	66.68	BN 1770	18.50	9.25	2.70
BRISBANE	1012.475	66.185	BN 1760	18.42	9.19	2.68
BRISBANE	1012.935	65.725	BN 1750	18.35	9.12	2.65
BRISBANE	1013.445	65.215	BN 1740	18.21	9.02	2.61
BRISBANE	1013.91	64.74	BN 1730	18.11	8.93	2.56
BRISBANE	1014.31	64.55	BN 1720	18.05	8.84	2.51
BRISBANE	1014.61	64.05	BN 1710	18.07	8.77	2.48
BRISBANE	1015.09	63.57	BN 1700	17.91	8.74	2.47
BRISBANE	1015.56	63.1	BN 1690	17.73	8.64	2.45
BRISBANE	1016.14	62.52	BN 1680	17.62	8.55	2.42
BRISBANE	1016.64	62.02	BN 1670	17.50	8.42	2.35
BRISBANE	1017.13	61.53	BN 1660	17.30	8.23	2.25
BRISBANE	1017.61	61.05	BN 1650	17.12	8.06	2.20
BRISBANE	1017.92	60.74	BN 1640	16.99	7.94	2.17
BRISBANE	1018.2	60.46	BN 1630	16.93	7.91	2.15
BRISBANE	1018.725	59.935	BN 1620	16.63	7.78	2.13
BRISBANE	1019.095	59.565	BN 1610	16.54	7.69	2.11
BRISBANE	1019.49	59.17	BN 1600	16.51	7.63	2.08
BRISBANE	1019.865	58.795	BN 1590	16.27	7.51	2.06
BRISBANE	1020.115	58.545	BN 1580	16.33	7.51	2.04
BRISBANE	1020.525	58.135	BN 1570	16.31	7.48	2.03
BRISBANE	1020.83	57.83	BN 1560	16.17	7.42	2.01
BRISBANE	1021.095	57.565	BN 1550	15.99	7.33	1.99
BRISBANE	1021.539	57.121	BN 1540	15.89	7.21	1.96
BRISBANE	1021.715	56.945	BN 1530	15.90	7.20	1.94
BRISBANE	1021.895	56.765	BN 1520	15.81	7.19	1.95
BRISBANE	1022.505	56.555	BN 1510	15.59	7.10	1.93
BRISBANE	1022.575	56.085	BN 1500	15.65	7.09	1.92
BRISBANE	1023.04	55.62	BN 1490	15.33	6.94	1.90
BRISBANE	1023.57	55.09	BN 1480	15.23	6.89	1.88
BRISBANE	1024.08	54.58	BN 1470	15.17	6.83	1.86
BRISBANE	1024.563	54.097	BN 1460	15.09	6.75	1.84
BRISBANE	1025.07	53.59	BN 1450	15.01	6.70	1.82
BRISBANE	1025.36	53.3	BN 1440	14.87	6.62	1.81
BRISBANE	1025.59	53.07	BN 1430	14.69	6.55	1.80
BRISBANE	1026.17	52.49	BN 1420	14.63	6.47	1.77
BRISBANE	1026.68	51.98	BN 1410	14.50	6.38	1.75

Flood Levels

Table E-2-Design Flood Profiles for the 5, 20 & 100 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI WL (m AHD)	20 Year ARI WL (m AHD)	5 Year ARI WL (m AHD)
BRISBANE	1026.9	51.76	BN 1400	14.37	6.33	1.74
BRISBANE	1027.16	51.5	BN 1390	14.29	6.29	1.73
BRISBANE	1027.68	50.98	BN 1380	14.37	6.27	1.72
BRISBANE	1028.18	50.48	BN 1370	14.33	6.23	1.71
BRISBANE	1028.68	49.98	BN 1360	14.18	6.14	1.69
BRISBANE	1028.76	49.9	BN 1340	14.03	6.06	1.67
BRISBANE	1029.2	49.46	BN 1330	13.86	5.96	1.65
BRISBANE	1029.68	48.98	BN 1320	13.83	5.93	1.64
BRISBANE	1030.22	48.44	BN 1310	13.80	5.88	1.63
BRISBANE	1030.87	47.79	BN 1300	13.68	5.81	1.61
BRISBANE	1031.26	47.4	BN 1290	13.55	5.71	1.60
BRISBANE	1031.7	46.96	BN 1280	13.14	5.59	1.58
BRISBANE	1031.995	46.665	BN 1270	13.29	5.56	1.57
BRISBANE	1032.23	46.43	BN 1260	13.19	5.53	1.56
BRISBANE	1032.585	46.075	BN 1250	13.09	5.50	1.56
BRISBANE	1033.08	45.58	BN 1240	12.92	5.42	1.55
BRISBANE	1033.37	45.29	BN 1230	12.85	5.36	1.54
BRISBANE	1033.9	44.76	BN 1220	12.64	5.23	1.52
BRISBANE	1034.37	44.29	BN 1210	12.42	5.13	1.50
BRISBANE	1034.89	43.77	BN 1200	12.33	5.06	1.49
BRISBANE	1035.414	43.246	BN 1190	12.14	4.94	1.46
BRISBANE	1035.9	42.76	BN 1180	11.83	4.83	1.45
BRISBANE	1036.46	42.2	BN 1170	11.72	4.71	1.43
BRISBANE	1036.77	41.89	BN 1160	11.60	4.65	1.42
BRISBANE	1036.915	41.745	BN 1150	11.48	4.61	1.42
BRISBANE	1037.09	41.57	BN 1140	11.42	4.57	1.41
BRISBANE	1037.175	41.485	BN 1120	11.37	4.42	1.39
BRISBANE	1037.285	41.375	BN 1110	11.28	4.41	1.39
BRISBANE	1037.625	41.035	BN 1100	11.32	4.38	1.38
BRISBANE	1038.085	40.575	BN 1090	11.28	4.36	1.38
BRISBANE	1038.6	40.06	BN 1080	11.21	4.29	1.36
BRISBANE	1039.1	39.56	BN 1070	11.13	4.22	1.35
BRISBANE	1039.565	39.05	BN 1060	11.09	4.17	1.34
BRISBANE	1040.09	38.57	BN 1050	11.04	4.15	1.34
BRISBANE	1040.49	38.17	BN 1040	10.92	4.09	1.33
BRISBANE	1041.01	37.56	BN 1030	10.86	4.07	1.32
BRISBANE	1041.23	37.43	BN 1020	10.83	4.04	1.32
BRISBANE	1041.46	37.2	BN 1010	10.78	4.01	1.31
BRISBANE	1041.7	36.96	BN 1000	10.73	4.01	1.31
BRISBANE	1041.96	36.7	BN 990	10.60	3.94	1.31
BRISBANE	1042.235	36.425	BN 980	10.40	3.88	1.30
BRISBANE	1042.515	36.145	BN 970	10.38	3.86	1.29
BRISBANE	1042.91	35.75	BN 960	10.18	3.75	1.28
BRISBANE	1043.725	34.935	BN 950	9.92	3.59	1.25
BRISBANE	1044.06	34.6	BN 940	9.79	3.55	1.24
BRISBANE	1044.34	34.32	BN 930	9.65	3.49	1.24
BRISBANE	1044.605	34.055	BN 920	9.62	3.46	1.23
BRISBANE	1044.86	33.8	BN 910	9.58	3.43	1.23
BRISBANE	1045.4	33.26	BN 900	9.44	3.34	1.21
BRISBANE	1045.885	32.775	BN 890	9.37	3.25	1.20
BRISBANE	1046.18	32.48	BN 880	9.28	3.24	1.20
BRISBANE	1046.34	32.32	BN 870	9.23	3.23	1.20
BRISBANE	1046.58	32.08	BN 860	9.20	3.21	1.20
BRISBANE	1046.9	31.76	BN 850	9.06	3.15	1.19
BRISBANE	1047.35	31.31	BN 840	8.78	3.05	1.18
BRISBANE	1047.915	30.745	BN 830	8.59	2.97	1.17
BRISBANE	1048.375	30.285	BN 820	8.61	2.96	1.16
BRISBANE	1048.89	29.77	BN 810	8.37	2.84	1.15
BRISBANE	1049.12	29.54	BN 800	8.32	2.82	1.14
BRISBANE	1049.37	29.29	BN 790	8.17	2.77	1.14
BRISBANE	1049.59	29.07	BN 780	8.15	2.76	1.14
BRISBANE	1049.87	28.79	BN 770	8.07	2.74	1.14

Flood Levels

Table E-2-Design Flood Profiles for the 5, 20 & 100 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI WL (m AHD)	20 Year ARI WL (m AHD)	5 Year ARI WL (m AHD)
BRISBANE	1050.43	28.23	BN 760	8.07	2.70	1.13
BRISBANE	1050.86	27.8	BN 750	7.93	2.66	1.12
BRISBANE	1051.36	27.3	BN 740	7.94	2.65	1.12
BRISBANE	1051.895	26.765	BN 730	7.80	2.57	1.11
BRISBANE	1052.31	26.35	BN 720	7.74	2.55	1.11
BRISBANE	1052.39	26.27	BN 700	7.08	2.39	1.10
BRISBANE	1052.595	26.065	BN 690	7.01	2.38	1.10
BRISBANE	1052.64	26.02	BN 670	6.52	2.31	1.09
BRISBANE	1053.32	25.34	BN 650	6.47	2.27	1.08
BRISBANE	1053.385	25.795	BN 660	6.43	2.25	1.08
BRISBANE	1053.9	24.76	BN 620	6.19	2.17	1.07
BRISBANE	1054.64	24.02	BN 610	6.03	2.09	1.06
BRISBANE	1054.68	23.98	BN 590	5.94	2.06	1.05
BRISBANE	1054.97	23.69	BN 560	5.68	1.99	1.04
BRISBANE	1055.28	23.38	BN 550	5.62	1.98	1.04
BRISBANE	1055.42	23.24	BN 540	5.60	1.96	1.04
BRISBANE	1055.96	22.7	BN 530	5.52	1.93	1.03
BRISBANE	1056.4	22.26	BN 520	5.26	1.87	1.03
BRISBANE	1056.695	21.965	BN 510	5.20	1.85	1.03
BRISBANE	1056.865	21.795	BN 500	5.17	1.84	1.02
BRISBANE	1056.95	21.71	BN 490	5.08	1.82	1.01
BRISBANE	1057.09	21.57	BN 480	5.19	1.85	1.01
BRISBANE	1057.53	21.13	BN 470	5.03	1.81	1.01
BRISBANE	1058.04	20.62	BN 460	4.72	1.72	1.00
BRISBANE	1058.23	20.43	BN 450	4.58	1.68	1.00
BRISBANE	1058.53	20.13	BN 440	4.33	1.62	0.99
BRISBANE	1058.735	19.925	BN 430	4.29	1.60	0.99
BRISBANE	1059.035	19.625	BN 420	4.02	1.54	0.98
BRISBANE	1059.54	19.12	BN 410	3.96	1.52	0.98
BRISBANE	1059.99	18.67	BN 400	3.77	1.47	0.97
BRISBANE	1060.345	18.315	BN 390	3.60	1.43	0.97
BRISBANE	1060.535	18.125	BN 380	3.45	1.41	0.97
BRISBANE	1061.015	17.645	BN 370	3.43	1.39	0.97
BRISBANE	1061.53	17.13	BN 360	3.21	1.34	0.96
BRISBANE	1062.02	16.64	BN 350	3.13	1.32	0.96
BRISBANE	1062.535	16.125	BN 340	3.08	1.30	0.96
BRISBANE	1062.94	15.72	BN 330	3.07	1.30	0.96
BRISBANE	1063.31	15.35	BN 320	2.97	1.28	0.95
BRISBANE	1063.645	15.015	BN 310	2.67	1.22	0.95
BRISBANE	1064	14.66	BN 300	2.60	1.20	0.95
BRISBANE	1064.49	14.17	BN 290	2.49	1.18	0.95
BRISBANE	1065.01	13.65	BN 280	2.53	1.19	0.95
BRISBANE	1065.503	13.157	BN 270	2.51	1.18	0.95
BRISBANE	1065.99	12.67	BN 260	2.54	1.19	0.95
BRISBANE	1066.505	12.155	BN 250	2.49	1.18	0.94
BRISBANE	1067.02	11.64	BN 240	2.45	1.17	0.94
BRISBANE	1067.485	11.175	BN 230	2.35	1.15	0.94
BRISBANE	1067.965	10.695	BN 220	2.26	1.13	0.94
BRISBANE	1068.66	10	BN 210	2.10	1.11	0.94
BRISBANE	1069.045	9.615	BN 200	2.02	1.09	0.94
BRISBANE	1069.535	9.125	BN 190	1.96	1.08	0.94
BRISBANE	1070.025	8.635	BN 180	1.88	1.07	0.93
BRISBANE	1070.53	8.13	BN 170	1.77	1.05	0.93
BRISBANE	1071.04	7.62	BN 160	1.68	1.04	0.93
BRISBANE	1071.52	7.14	BN 150	1.71	1.04	0.93
BRISBANE	1072.015	6.645	BN 140	1.67	1.03	0.93
BRISBANE	1072.515	6.145	BN 130	1.55	1.01	0.93
BRISBANE	1072.995	5.665	BN 120	1.51	1.01	0.93
BRISBANE	1073.485	5.175	BN 110	1.40	0.99	0.93
BRISBANE	1074	4.66	BN 100	1.33	0.98	0.93
BRISBANE	1074.46	4.2	BN 90	1.26	0.97	0.93
BRISBANE	1074.985	3.675	BN 80	1.12	0.95	0.92

Flood Levels

Table E-2-Design Flood Profiles for the 5, 20 & 100 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI WL (m AHD)	20 Year ARI WL (m AHD)	5 Year ARI WL (m AHD)
BRISBANE	1075.48	3.18	BN 70	1.08	0.94	0.92
BRISBANE	1076	2.66	BN 60	1.08	0.94	0.92
BRISBANE	1076.495	2.165	BN 50	0.99	0.93	0.92
BRISBANE	1077.01	1.65	BN 40	0.97	0.93	0.92
BRISBANE	1077.51	1.15	BN 30	0.97	0.93	0.92
BRISBANE	1078.04	0.62	BN 20	0.95	0.92	0.92
BRISBANE	1078.525	0.135	BN 10	0.92	0.92	0.92
BRISBANE	1078.66	-	-	0.92	0.92	0.92
BREMER	599.4	-	-	19.69	10.18	3.10
BREMER	600	-	-	19.69	10.18	3.10
OXLEY	599.4	-	-	11.06	4.16	1.34
OXLEY	600	-	-	11.06	4.16	1.34
BREAKFAST	599.4	-	-	3.03	1.29	0.96
BREAKFAST	600	-	-	3.03	1.29	0.96
BULIMBA	599.4	-	-	1.67	1.03	0.93
BULIMBA	600	-	-	1.67	1.03	0.93
CENTWEIR	0	-	-	14.18	6.14	1.69
CENTWEIR	0.08	-	-	14.03	6.06	1.67
INDOORWEIR	0	-	-	11.42	4.57	1.41
INDOORWEIR	0.085	-	-	11.37	4.42	1.39
WILLIAMWEIR	0	-	-	7.01	2.38	1.10
WILLIAMWEIR	0.045	-	-	6.52	2.31	1.09
VICTORIAWEIR	0	-	-	6.47	2.27	1.08
VICTORIAWEIR	0.065	-	-	6.43	2.25	1.08
CAPTAINWEIR	0	-	-	6.03	2.09	1.06
CAPTAINWEIR	0.04	-	-	5.94	2.06	1.05
STORYWEIR	0	-	-	5.17	1.84	1.02
STORYWEIR	0.085	-	-	5.08	1.82	1.01
ERIVALEWEIR	0	-	-	7.74	2.55	1.11
ERIVALEWEIR	0.08	-	-	7.08	2.39	1.10

Discharges

Table E-2-Design Flood Profiles for the 5, 20 & 100 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Q (m^3/s)	20 Year ARI Q (m^3/s)	5 Year ARI Q (m^3/s)
BRISBANE	1000.14	78.52	BN 2020	9303	4194	917
BRISBANE	1000.53	78.13	BN 2010	9297	4188	917
BRISBANE	1001.05	77.62	BN 2000	9293	4184	916
BRISBANE	1001.59	77.07	BN 1990	9287	4175	916
BRISBANE	1002.11	76.55	BN 1980	9284	4172	915
BRISBANE	1002.57	76.09	BN 1970	9281	4167	915
BRISBANE	1003.03	75.63	BN 1960	9278	4163	914
BRISBANE	1003.53	75.14	BN 1950	9269	4159	914
BRISBANE	1004.04	74.62	BN 1940	9263	4151	913
BRISBANE	1004.56	74.11	BN 1930	9253	4147	912
BRISBANE	1005.07	73.59	BN 1920	9243	4134	911
BRISBANE	1005.60	73.06	BN 1910	9233	4123	910
BRISBANE	1006.04	72.63	BN 1900	9225	4114	910
BRISBANE	1006.25	72.41	BN 1890	9475	3586	941
BRISBANE	1006.61	72.05	BN 1880	9473	3584	941
BRISBANE	1007.16	71.50	BN 1870	9467	3580	941
BRISBANE	1007.67	71.00	BN 1860	9463	3573	941
BRISBANE	1008.18	70.48	BN 1850	9456	3566	940
BRISBANE	1008.69	69.98	BN 1840	9453	3563	940
BRISBANE	1009.16	69.50	BN 1830	9451	3560	940
BRISBANE	1009.56	69.00	BN 1820	9447	3557	939
BRISBANE	1010.11	68.56	BN 1810	9441	3552	939
BRISBANE	1010.61	68.05	BN 1800	9439	3550	939
BRISBANE	1010.85	67.81	BN 1790	9438	3549	939
BRISBANE	1011.25	67.42	BN 1780	9436	3547	939
BRISBANE	1011.75	66.92	BN 1770	9431	3543	939
BRISBANE	1012.23	66.43	BN 1760	9426	3537	938
BRISBANE	1012.71	65.95	BN 1750	9421	3532	938
BRISBANE	1013.19	65.47	BN 1740	9415	3527	938
BRISBANE	1013.68	64.97	BN 1730	9410	3524	938
BRISBANE	1014.11	64.75	BN 1720	9405	3519	937
BRISBANE	1014.46	64.20	BN 1710	9401	3515	937
BRISBANE	1014.85	63.81	BN 1700	9396	3509	937
BRISBANE	1015.33	63.33	BN 1690	9394	3507	937
BRISBANE	1015.85	62.81	BN 1680	9391	3505	937
BRISBANE	1016.39	62.27	BN 1670	9386	3502	936
BRISBANE	1016.89	61.78	BN 1660	9382	3499	936
BRISBANE	1017.37	61.29	BN 1650	9376	3495	936
BRISBANE	1017.77	60.90	BN 1640	9372	3493	936
BRISBANE	1018.06	60.60	BN 1630	9368	3491	936
BRISBANE	1018.46	60.20	BN 1620	9364	3488	936
BRISBANE	1018.91	59.75	BN 1610	9361	3487	936
BRISBANE	1019.29	59.37	BN 1600	9358	3485	936
BRISBANE	1019.68	58.98	BN 1590	9354	3482	936
BRISBANE	1019.99	58.67	BN 1580	9351	3481	936
BRISBANE	1020.32	58.34	BN 1570	9348	3478	936
BRISBANE	1020.68	57.98	BN 1560	9345	3475	936
BRISBANE	1020.96	57.70	BN 1550	9344	3474	935
BRISBANE	1021.32	57.34	BN 1540	9342	3473	935
BRISBANE	1021.63	57.03	BN 1530	9339	3471	935
BRISBANE	1021.81	56.86	BN 1520	9337	3470	935
BRISBANE	1022.20	56.86	BN 1510	9336	3469	935
BRISBANE	1022.54	56.12	BN 1500	9335	3467	935
BRISBANE	1022.81	55.85	BN 1490	9332	3465	935
BRISBANE	1023.31	55.36	BN 1480	9329	3464	935
BRISBANE	1023.83	54.83	BN 1470	9327	3462	935
BRISBANE	1024.32	54.34	BN 1460	9324	3461	935
BRISBANE	1024.82	53.84	BN 1450	9322	3459	935
BRISBANE	1025.22	53.45	BN 1440	9319	3457	935
BRISBANE	1025.48	53.19	BN 1430	9318	3456	935
BRISBANE	1025.88	52.78	BN 1420	9317	3455	935
BRISBANE	1026.43	52.24	BN 1410	9313	3453	935

Discharges

Table E-2-Design Flood Profiles for the 5, 20 & 100 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Q (m^3/s)	20 Year ARI Q (m^3/s)	5 Year ARI Q (m^3/s)
BRISBANE	1026.79	51.87	BN 1400	9310	3451	935
BRISBANE	1027.03	51.63	BN 1390	9309	3450	935
BRISBANE	1027.42	51.24	BN 1380	9307	3449	935
BRISBANE	1027.93	50.73	BN 1370	9303	3446	935
BRISBANE	1028.43	50.23	BN 1360	9299	3444	935
BRISBANE	1028.72	49.94	BN 1340	8912	3443	935
BRISBANE	1028.98	49.68	BN 1330	9295	3442	935
BRISBANE	1029.44	49.22	BN 1320	9291	3440	935
BRISBANE	1029.95	48.71	BN 1310	9286	3439	935
BRISBANE	1030.55	48.11	BN 1300	9279	3434	935
BRISBANE	1031.07	47.59	BN 1290	9274	3433	935
BRISBANE	1031.48	47.18	BN 1280	9270	3431	934
BRISBANE	1031.85	46.81	BN 1270	9268	3429	934
BRISBANE	1032.11	46.55	BN 1260	9266	3428	934
BRISBANE	1032.41	46.25	BN 1250	9264	3427	934
BRISBANE	1032.83	45.83	BN 1240	9262	3426	934
BRISBANE	1033.23	45.44	BN 1230	9260	3425	934
BRISBANE	1033.64	45.03	BN 1220	9256	3423	934
BRISBANE	1034.14	44.52	BN 1210	9252	3422	934
BRISBANE	1034.63	44.03	BN 1200	9248	3420	934
BRISBANE	1035.15	43.51	BN 1190	9242	3417	934
BRISBANE	1035.66	43.00	BN 1180	9238	3415	934
BRISBANE	1036.18	42.48	BN 1170	9235	3413	934
BRISBANE	1036.62	42.05	BN 1160	9230	3411	934
BRISBANE	1036.84	41.82	BN 1150	9228	3410	934
BRISBANE	1037.00	41.66	BN 1140	9227	3409	934
BRISBANE	1037.11	41.55	BN 1120	9226	3409	934
BRISBANE	1037.23	41.43	BN 1110	9226	3409	934
BRISBANE	1037.46	41.21	BN 1100	9224	3408	934
BRISBANE	1037.86	40.81	BN 1090	9218	3406	934
BRISBANE	1038.34	40.32	BN 1080	9207	3404	934
BRISBANE	1038.85	39.81	BN 1070	9194	3401	934
BRISBANE	1039.33	39.28	BN 1060	9181	3397	934
BRISBANE	1039.70	38.96	BN 1050	9171	3394	934
BRISBANE	1039.96	38.70	BN 1040	8883	3322	979
BRISBANE	1040.29	38.28	BN 1030	8881	3321	980
BRISBANE	1040.75	37.91	BN 1020	8878	3321	980
BRISBANE	1041.12	37.54	BN 1010	8877	3320	980
BRISBANE	1041.35	37.32	BN 1000	8876	3320	980
BRISBANE	1041.58	37.08	BN 990	8875	3320	980
BRISBANE	1041.83	36.83	BN 980	8874	3320	980
BRISBANE	1042.10	36.56	BN 970	8873	3320	980
BRISBANE	1042.38	36.29	BN 960	8873	3320	980
BRISBANE	1042.71	35.95	BN 950	8873	3319	980
BRISBANE	1043.32	35.34	BN 940	8872	3319	980
BRISBANE	1043.89	34.77	BN 930	8871	3319	980
BRISBANE	1044.20	34.46	BN 920	8870	3319	980
BRISBANE	1044.47	34.19	BN 910	8870	3318	980
BRISBANE	1044.73	33.93	BN 900	8869	3318	980
BRISBANE	1045.13	33.53	BN 890	8868	3318	980
BRISBANE	1045.64	33.02	BN 880	8870	3318	981
BRISBANE	1046.03	32.63	BN 870	8872	3318	981
BRISBANE	1046.26	32.40	BN 860	8873	3318	981
BRISBANE	1046.46	32.20	BN 850	8874	3318	981
BRISBANE	1046.74	31.92	BN 840	8875	3317	981
BRISBANE	1047.13	31.54	BN 830	8876	3317	981
BRISBANE	1047.63	31.03	BN 820	8879	3317	981
BRISBANE	1048.15	30.52	BN 810	8885	3317	981
BRISBANE	1048.63	30.03	BN 800	8892	3317	981
BRISBANE	1049.01	29.65	BN 790	8897	3317	981
BRISBANE	1049.25	29.42	BN 780	8899	3317	981
BRISBANE	1049.48	29.18	BN 770	8903	3317	981

Discharges

Table E-2-Design Flood Profiles for the 5, 20 & 100 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Q (m^3/s)	20 Year ARI Q (m^3/s)	5 Year ARI Q (m^3/s)
BRISBANE	1049.73	28.93	BN 760	8906	3317	981
BRISBANE	1050.15	28.51	BN 750	8909	3317	981
BRISBANE	1050.65	28.01	BN 740	8911	3317	981
BRISBANE	1051.11	27.55	BN 730	8912	3317	981
BRISBANE	1051.63	27.03	BN 720	8912	3317	982
BRISBANE	1052.10	26.56	BN 700	8963	3317	982
BRISBANE	1052.37	26.29	BN 690	9001	3317	982
BRISBANE	1052.49	26.17	BN 670	9017	3317	982
BRISBANE	1052.63	26.03	BN 650	9031	3317	982
BRISBANE	1052.98	26.20	BN 660	9027	3317	982
BRISBANE	1053.36	25.31	BN 620	9004	3317	982
BRISBANE	1053.64	25.02	BN 610	8975	3316	982
BRISBANE	1054.27	24.39	BN 590	9002	3316	982
BRISBANE	1054.66	24.00	BN 560	8987	3316	982
BRISBANE	1054.83	23.83	BN 550	8982	3316	982
BRISBANE	1055.13	23.54	BN 540	8978	3316	982
BRISBANE	1055.35	23.31	BN 530	8971	3316	982
BRISBANE	1055.69	22.97	BN 520	8958	3316	982
BRISBANE	1056.18	22.48	BN 510	8929	3316	982
BRISBANE	1056.55	22.11	BN 500	8915	3316	982
BRISBANE	1056.78	21.88	BN 490	8907	3316	983
BRISBANE	1056.92	21.74	BN 480	8902	3316	983
BRISBANE	1057.02	21.64	BN 470	8899	3316	983
BRISBANE	1057.31	21.35	BN 460	8890	3316	983
BRISBANE	1057.79	20.87	BN 450	8884	3316	983
BRISBANE	1058.14	20.53	BN 440	8887	3317	983
BRISBANE	1058.38	20.28	BN 430	8890	3317	983
BRISBANE	1058.63	20.03	BN 420	8891	3317	983
BRISBANE	1058.89	19.78	BN 410	8892	3317	983
BRISBANE	1059.29	19.37	BN 400	8892	3317	983
BRISBANE	1059.77	18.89	BN 390	8889	3317	983
BRISBANE	1060.17	18.49	BN 380	8886	3317	983
BRISBANE	1060.44	18.22	BN 370	8882	3317	983
BRISBANE	1060.78	17.88	BN 360	8881	3317	983
BRISBANE	1061.27	17.39	BN 350	8873	3317	983
BRISBANE	1061.78	16.89	BN 340	8870	3317	983
BRISBANE	1062.28	16.38	BN 330	8871	3317	983
BRISBANE	1062.74	15.92	BN 320	8872	3317	983
BRISBANE	1063.03	15.63	BN 310	8872	3317	984
BRISBANE	1063.22	15.44	BN 300	8862	3317	992
BRISBANE	1063.48	15.18	BN 290	8862	3317	992
BRISBANE	1063.82	14.84	BN 280	8862	3317	992
BRISBANE	1064.25	14.42	BN 270	8861	3317	992
BRISBANE	1064.75	13.91	BN 260	8861	3317	992
BRISBANE	1065.26	13.40	BN 250	8859	3317	992
BRISBANE	1065.75	12.91	BN 240	8859	3317	993
BRISBANE	1066.25	12.41	BN 230	8858	3317	993
BRISBANE	1066.76	11.90	BN 220	8857	3317	993
BRISBANE	1067.25	11.41	BN 210	8857	3317	993
BRISBANE	1067.73	10.94	BN 200	8857	3317	993
BRISBANE	1068.31	10.35	BN 190	8857	3317	993
BRISBANE	1068.85	9.81	BN 180	8857	3317	993
BRISBANE	1069.29	9.37	BN 170	8857	3317	993
BRISBANE	1069.78	8.88	BN 160	8858	3317	993
BRISBANE	1070.28	8.38	BN 150	8858	3317	994
BRISBANE	1070.79	7.88	BN 140	8858	3317	994
BRISBANE	1071.28	7.38	BN 130	8858	3317	994
BRISBANE	1071.77	6.89	BN 120	8858	3317	994
BRISBANE	1072.02	6.64	BN 110	8858	3317	994
BRISBANE	1072.27	6.39	BN 100	8852	3317	999
BRISBANE	1072.76	5.90	BN 90	8852	3317	999
BRISBANE	1073.24	5.42	BN 80	8852	3318	999

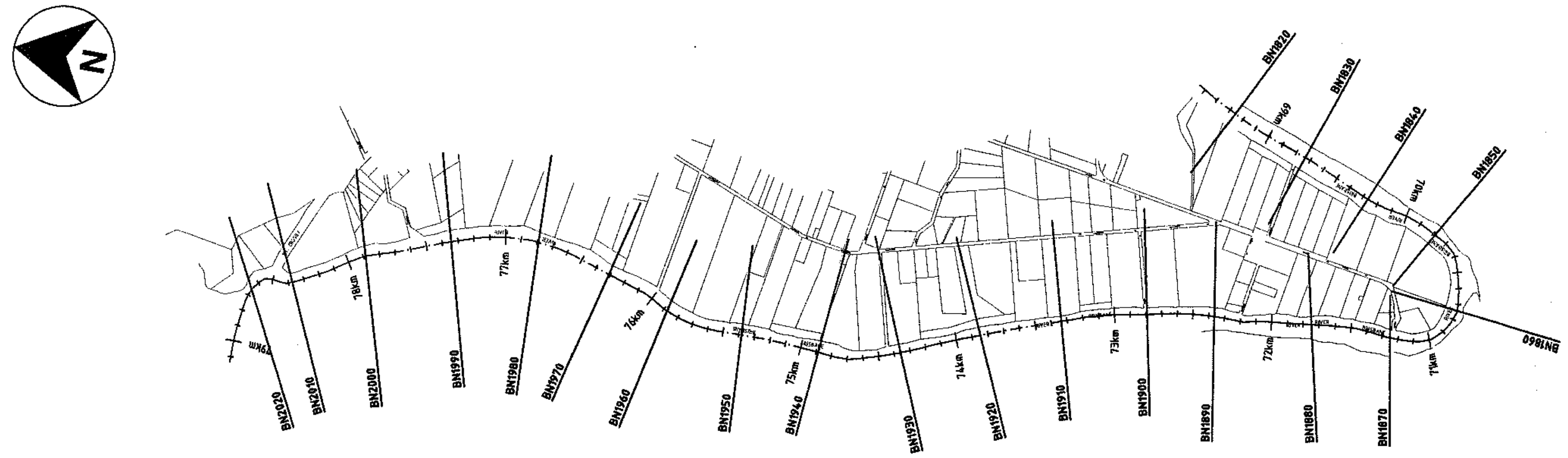
Discharges

Table E-2-Design Flood Profiles for the 5, 20 & 100 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Q (m^3/s)	20 Year ARI Q (m^3/s)	5 Year ARI Q (m^3/s)
BRISBANE	1073.74	4.92	BN 70	8852	3318	999
BRISBANE	1074.23	4.43	BN 60	8852	3318	999
BRISBANE	1074.72	3.94	BN 50	8852	3318	1000
BRISBANE	1075.23	3.43	BN 40	8852	3318	1000
BRISBANE	1075.74	2.92	BN 30	8852	3318	1000
BRISBANE	1076.25	2.41	BN 20	8852	3318	1000
BRISBANE	1076.75	1.91	BN 10	8852	3318	1000
BRISBANE	1077.26	1.40	-	8852	3318	1000
BRISBANE	1077.78	-478.38	-	8852	3318	1000
BRISBANE	1078.28	-478.28	-	8852	3318	1000
BRISBANE	1078.59	-479.19	-	8852	3318	1000
BREMER	599.70	0.30	-	2107	1024	669
OXLEY	599.70	0.30	-	1169	471	306
BREAKFAST	599.70	0.30	-	408	249	168
BULIMBA	599.70	0.30	-	651	368	248
CENTWEIR	0.04	0.04	-	418	0	0
INDOORWEIR	0.04	0.04	-	0	0	0
WILLIAMWEIR	0.02	0.02	-	0	0	0
VICTORIAWEIR	0.03	0.03	-	0	0	0
CAPTAINWEIR	0.02	0.02	-	0	0	0
STORYWEIR	0.04	0.04	-	0	0	0
MERIVALEWEIR	0.04	0.04	-	0	0	0

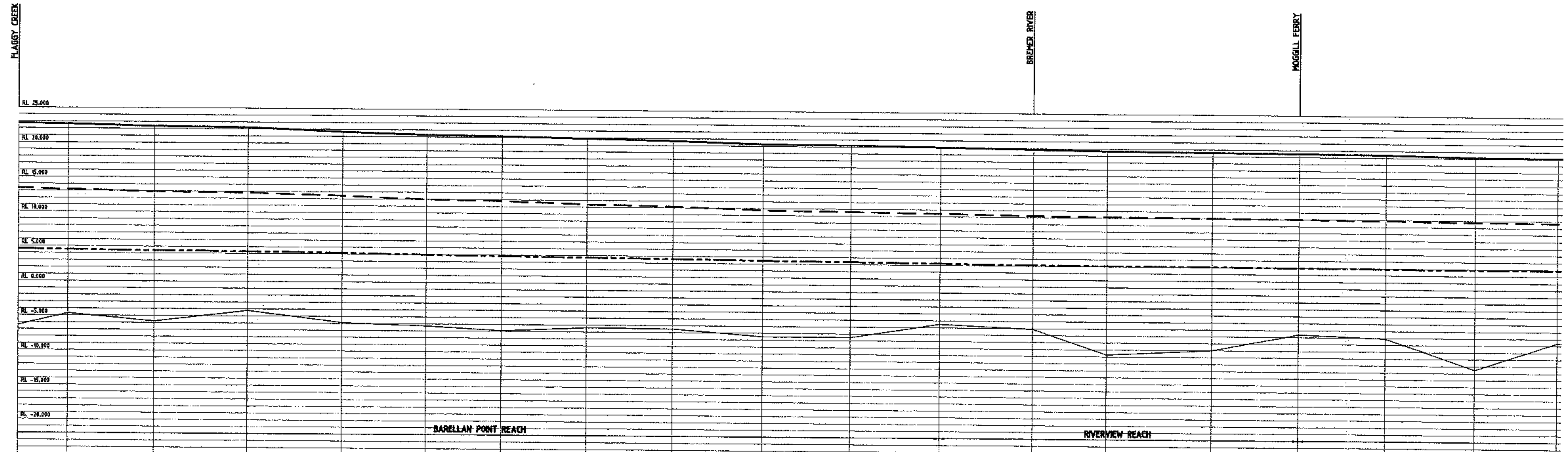
FIGURE E-2a

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
5, 20 AND 100 YEAR ARI EVENTS (MHWS)



PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	4.600	4.530	4.410	4.330	4.190	3.980	3.850	3.720	3.600	3.460	3.370	3.240	3.130	3.090	3.040	2.980	2.940	2.900	2.870
20 YEAR ARI DESIGN FLOOD LEVEL	13.340	13.210	12.920	12.850	12.420	11.970	11.800	11.460	11.170	10.720	10.610	10.430	10.240	10.180	10.050	9.990	9.890	9.780	9.710
100 YEAR ARI DESIGN FLOOD LEVEL	22.740	22.430	22.360	22.230	21.660	21.200	21.150	20.900	20.640	20.260	20.210	20.020	19.820	19.640	19.550	19.500	19.410	19.160	19.080
BED LEVEL (m AHD)	-6.400	-4.700	-5.800	-4.200	-5.900	-6.360	-6.980	-6.600	-6.580	-7.510	-7.500	-5.500	-6.100	-9.300	-9.000	-6.600	-7.100	-11.500	-7.600
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1000.000	1000.365	1000.775	1001.315	1001.845	1002.350	1002.785	1003.275	1003.775	1004.300	1004.810	1005.325	1005.870	1006.300	1006.910	1007.410	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	78.660	78.375	77.885	77.345	76.795	76.310	75.875	75.385	74.885	74.360	73.850	73.335	72.790	72.360	71.750	71.250	70.740	70.215	69.735

LEGEND

- (516) LOCATION AND IDENTIFICATION OF STRUCTURE
- 5 YEAR ARI DESIGN FLOOD
- 20 YEAR ARI DESIGN FLOOD
- 100 YEAR ARI DESIGN FLOOD

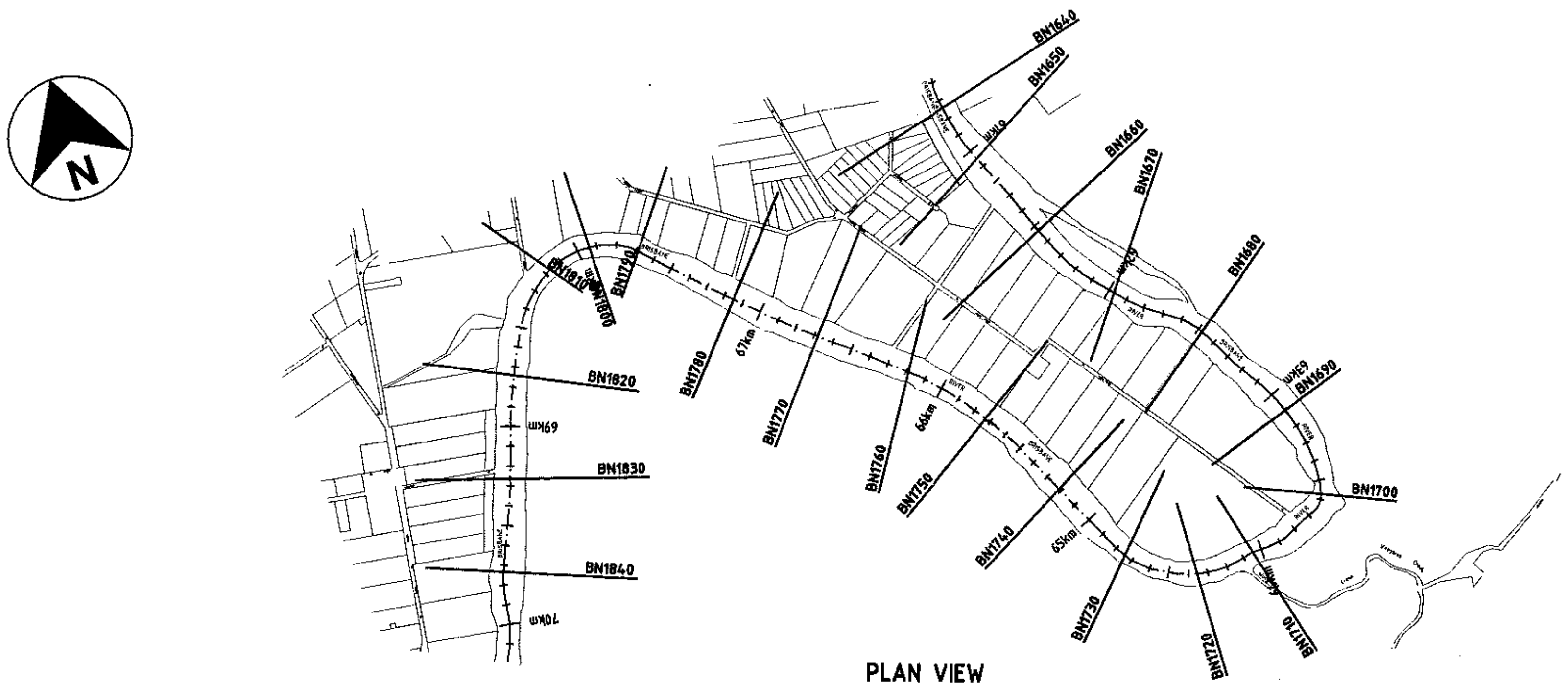
VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 2020 TO BN 1840

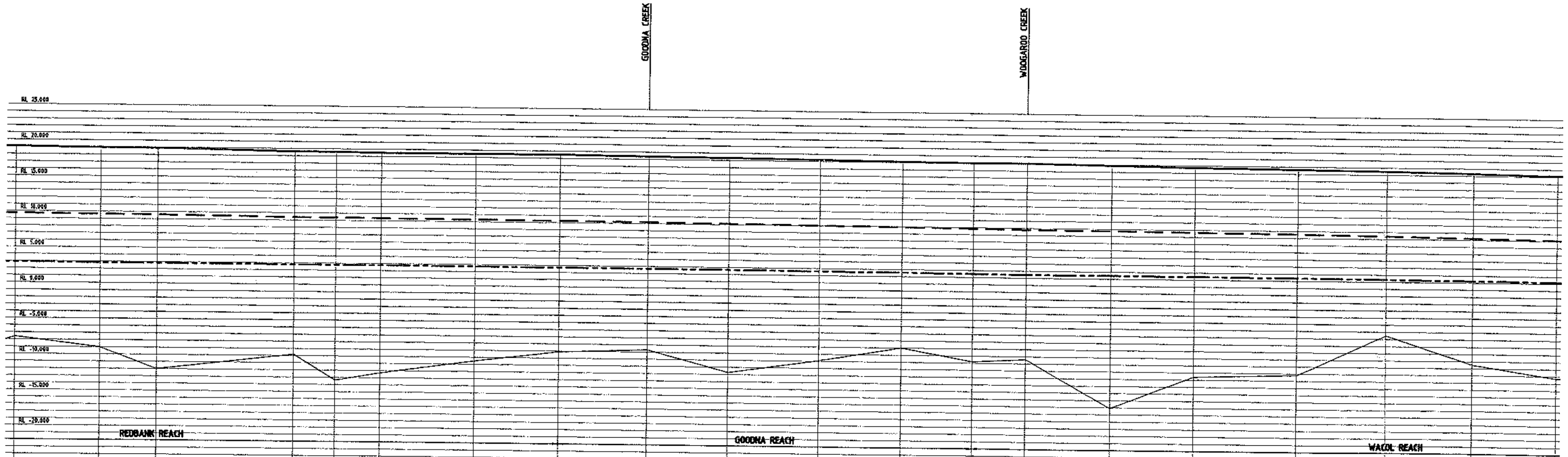
FIGURE E-2b

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
5, 20 AND 100 YEAR ARI EVENTS (MHWS)



LEGEND

BN 1250 SURVEYED CROSS SECTION



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	2.870	2.840	2.820	2.770	2.760	2.750	2.730	2.700	2.680	2.650	2.610	2.540	2.510	2.480	2.470	2.450	2.420	2.350	2.250	2.240
20 YEAR ARI DESIGN FLOOD LEVEL	9.710	9.650	9.600	9.420	9.410	9.360	9.300	9.250	9.190	9.120	9.020	8.930	8.840	8.770	8.740	8.640	8.550	8.420	8.230	8.060
100 YEAR ARI DESIGN FLOOD LEVEL	19.080	18.990	18.960	18.610	18.600	18.520	18.510	18.590	18.420	18.350	18.210	18.110	18.050	18.070	17.910	17.730	17.620	17.500	17.300	17.120
BED LEVEL (m AHD)	-7.600	-9.000	-12.000	-9.800	-13.400	-12.300	-10.500	-9.100	-8.700	-11.700	-9.900	-8.000	-9.600	-9.400	-14.100	-11.600	-11.200	-5.500	-9.500	-11.300
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1008.925	1009.400	1009.720	1010.490	1010.725	1010.980	1011.510	1011.980	1012.475	1012.935	1013.445	1013.910	1014.310	1014.610	1015.090	1015.540	1016.140	1016.640	1017.130	1017.410
AMTO CHAINAGE (km)	69.735	69.260	68.940	68.170	67.935	67.680	67.150	66.680	66.185	65.725	65.215	64.740	64.350	64.050	63.570	63.100	62.520	62.020	61.530	61.050

LEGEND

- LOCATION AND IDENTIFICATION OF STRUCTURE
- 5 YEAR ARI DESIGN FLOOD
- 20 YEAR ARI DESIGN FLOOD
- 100 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

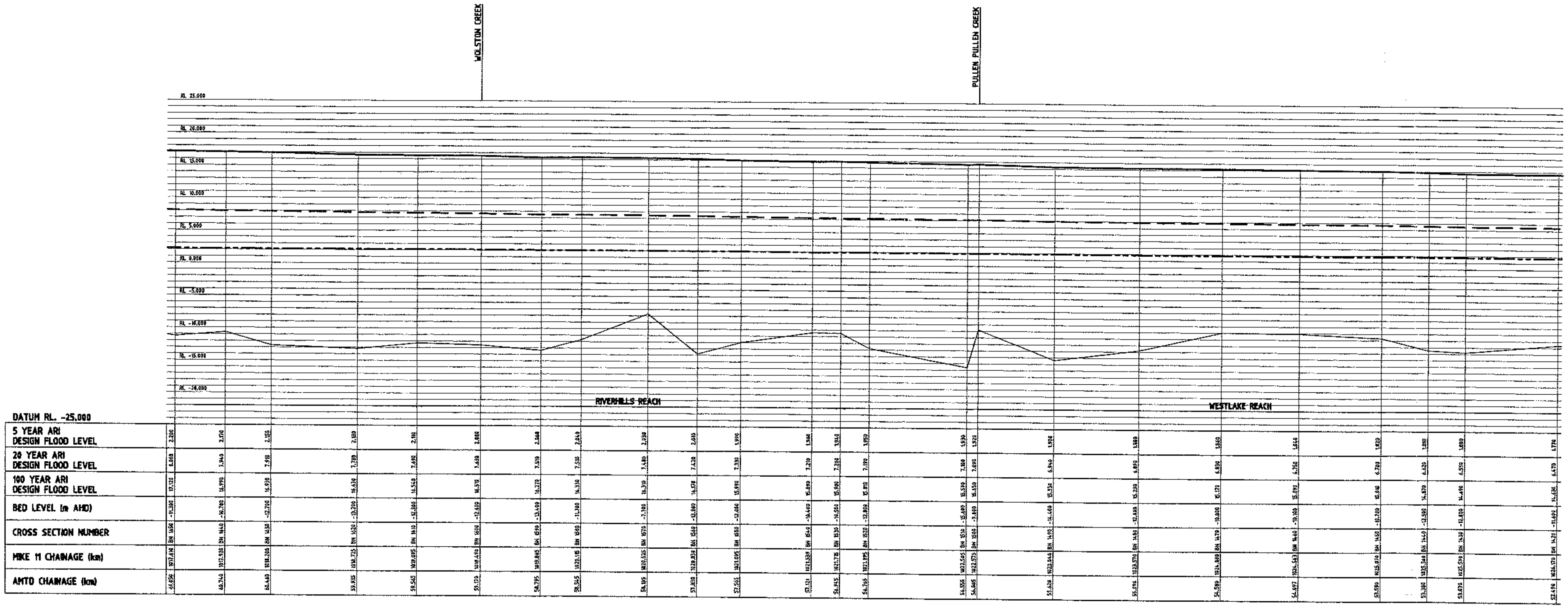
BRISBANE RIVER - BN 1840 TO BN 1650

FIGURE E-2c

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
5, 20 AND 100 YEAR ARI EVENTS (MHWS)

LEGEND
AMTD LINE
BN 1250 SURVEYED CROSS SECTION

PLAN VIEW
0 0.25 0.5 0.75 1.0 1.25
KILOMETRES



LEGEND
LOCATION AND IDENTIFICATION OF STRUCTURE
5 YEAR ARI DESIGN FLOOD
20 YEAR ARI DESIGN FLOOD
100 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

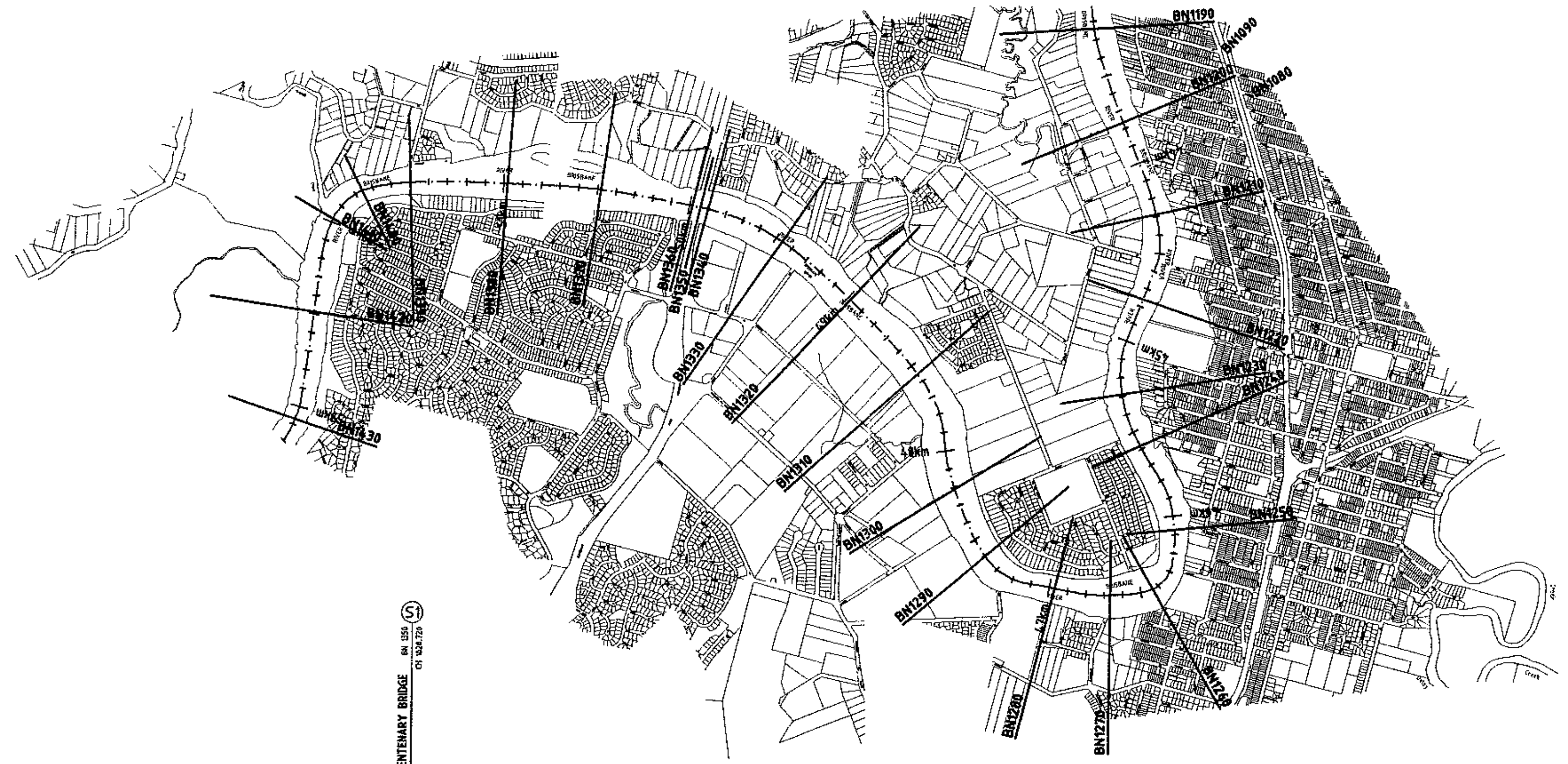
BRISBANE RIVER - BN 1650 TO BN 1420

PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

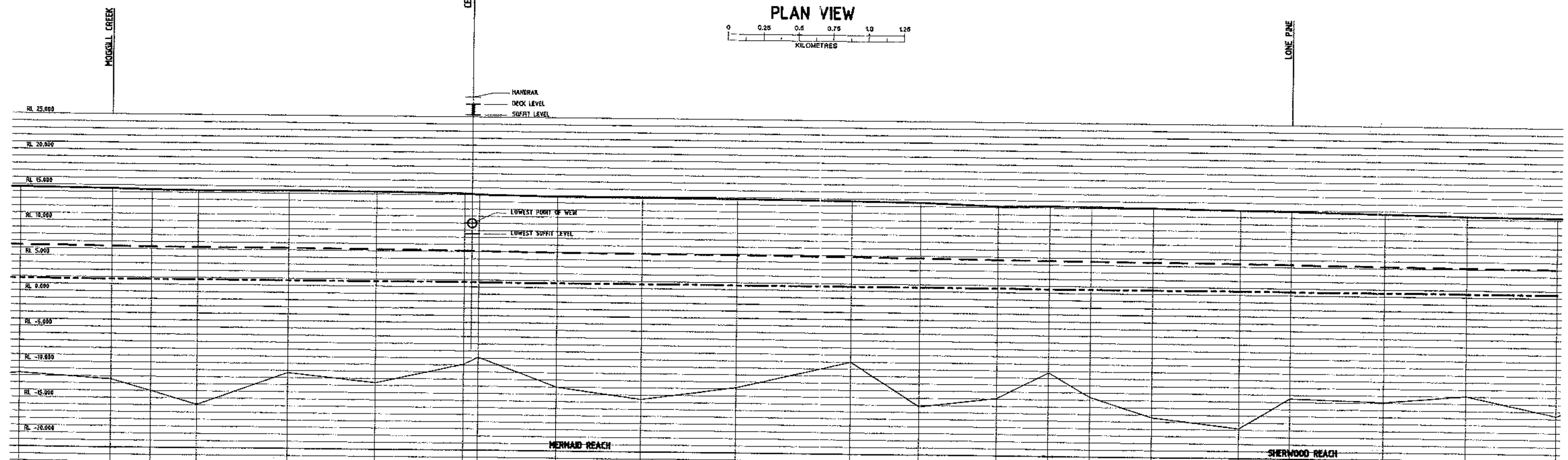
FIGURE E-2d

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
5, 20 AND 100 YEAR ARI EVENTS (MHWS)



PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	1.770	1.750	1.740	1.730	1.720	1.710	1.690	1.670	1.650	1.640	1.630
20 YEAR ARI DESIGN FLOOD LEVEL	6.470	6.380	6.330	6.290	6.270	6.230	6.140	6.060	5.960	5.930	5.880
100 YEAR ARI DESIGN FLOOD LEVEL	14.630	14.500	14.370	14.290	14.370	14.330	14.180	14.030	13.860	13.830	13.800
BED LEVEL (m AHD)	-11.600	-12.600	-14.000	-15.900	-11.300	-12.600	-9.900	-8.900	-13.000	-14.600	-12.800
CROSS SECTION NUMBER	BN 1420	BN 1410	BN 1400	BN 1390	BN 1380	BN 1370	BN 1360	BN 1340	BN 1330	BN 1320	BN 1310
MIKE 11 CHAINAGE (km)	1026.170	1026.680	1026.900	1027.140	1027.680	1028.180	1028.680	1028.740	1029.200	1029.680	1030.720
AMTD CHAINAGE (km)	52.490	51.980	51.740	51.500	50.980	50.480	49.980	49.960	49.460	48.980	48.440

5 YEAR ARI DESIGN FLOOD LEVEL	1.610	1.600	1.580	1.570	1.560	1.560	1.550	1.540	1.520	1.500	1.490
20 YEAR ARI DESIGN FLOOD LEVEL	5.810	5.710	5.590	5.540	5.530	5.500	5.420	5.340	5.220	5.130	5.060
100 YEAR ARI DESIGN FLOOD LEVEL	13.680	13.550	13.140	13.290	13.190	13.090	12.920	12.850	12.440	12.420	12.330
BED LEVEL (m AHD)	-9.000	-15.200	-13.900	-10.200	-13.600	-16.400	-17.800	-13.540	-12.940	-12.900	-15.400
CROSS SECTION NUMBER	BN 1300	BN 1290	BN 1280	BN 1270	BN 1260	BN 1250	BN 1240	BN 1230	BN 1220	BN 1210	BN 1200
MIKE 11 CHAINAGE (km)	1030.870	1031.260	1031.700	1031.995	1032.230	1032.585	1033.080	1033.370	1033.900	1034.370	1034.890
AMTD CHAINAGE (km)	47.790	47.400	46.960	46.665	46.430	46.075	45.580	45.290	44.760	44.290	43.770

LEGEND

(S1) LOCATION AND IDENTIFICATION OF STRUCTURE
5 YEAR ARI DESIGN FLOOD
20 YEAR ARI DESIGN FLOOD
100 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

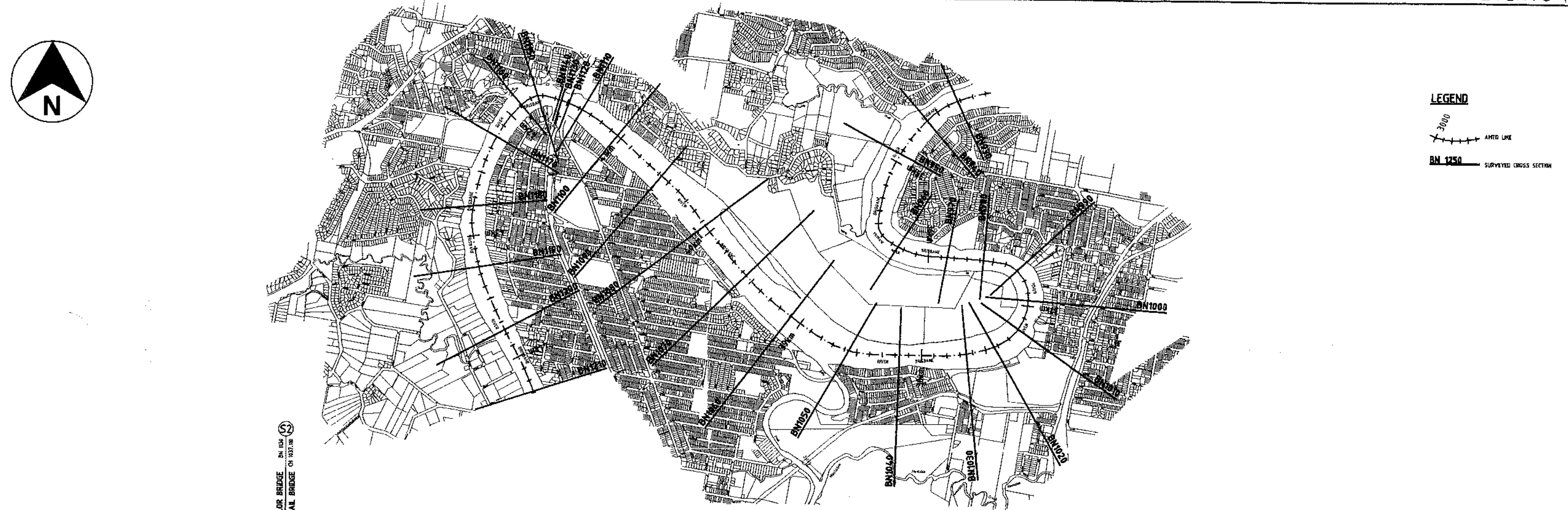
BRISBANE RIVER - BN 1420 TO BN 1200

FILE NAME: 04157-52 DISK No. CADV/G JOB No. T00/157 DATE 23/2/...
PLOT SCALE: 1:30

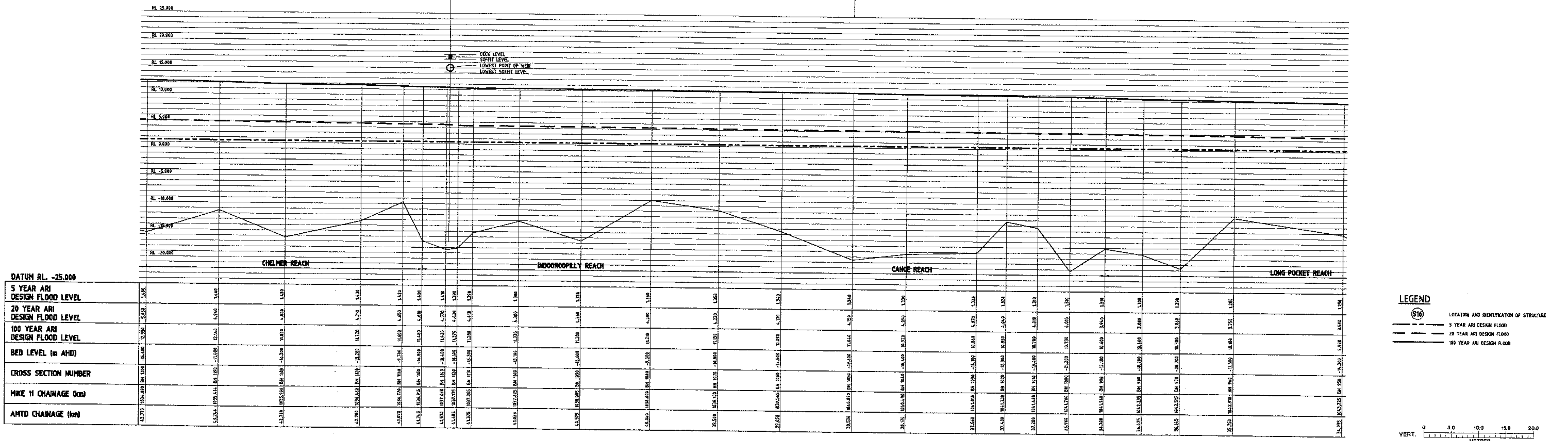
SINCLAIR KNIGHT MERZ

FIGURE E-2e

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
5, 20 AND 100 YEAR ARI EVENTS (MHWS)



PLAN VIEW



BRISBANE RIVER - BN 1200 TO BN 950

FILE NAME: 04... PLOT SCALE: 1:30

FIGURE E-2f

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
5, 20 AND 100 YEAR ARI EVENTS (MHWS)

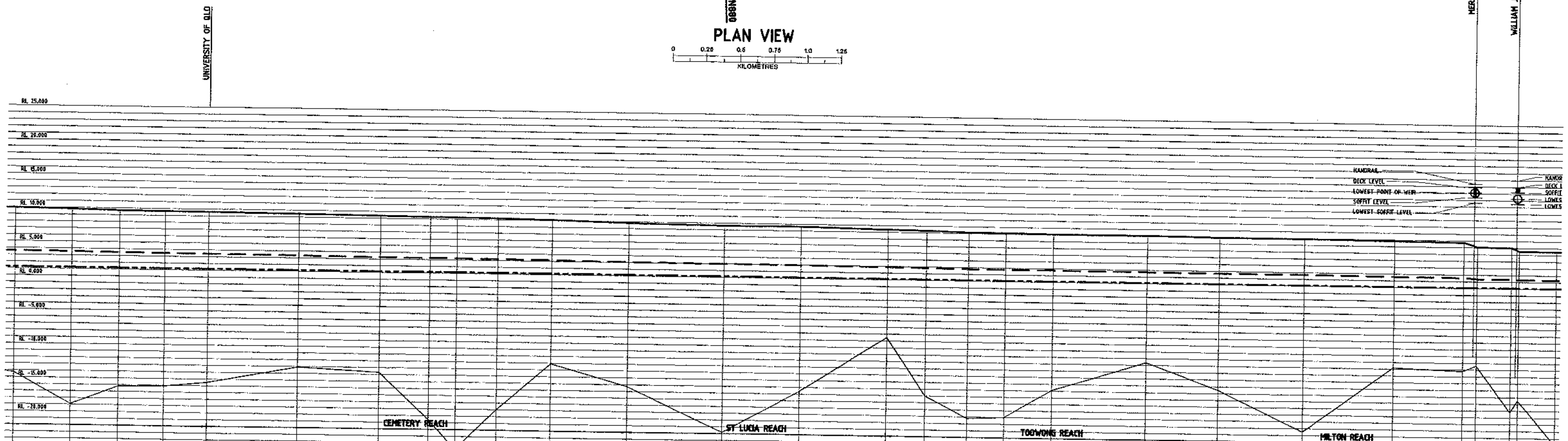
LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL -25.000

CROSS SECTION NUMBER	5 YEAR ARI DESIGN FLOOD LEVEL	20 YEAR ARI DESIGN FLOOD LEVEL	100 YEAR ARI DESIGN FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 950	1.250	3.590	9.920	-14.300	1043.725	34.935
BN 940	1.240	3.550	9.790	-16.900	1044.060	34.680
BN 930	1.240	3.490	9.650	-16.200	1044.310	34.320
BN 920	1.230	3.460	9.620	-14.100	1044.605	34.055
BN 910	1.230	3.430	9.580	-15.500	1044.860	33.800
BN 900	1.210	3.340	9.440	-13.100	1045.400	33.260
BN 890	1.200	3.250	9.370	-13.700	1045.885	32.775
BN 880	1.200	3.240	9.280	-20.600	1046.180	32.480
BN 870	1.200	3.230	9.230	-24.900	1046.340	32.320
BN 860	1.200	3.210	9.200	-19.800	1046.540	32.080
BN 850	1.190	3.150	9.060	-12.100	1046.900	31.760
BN 840	1.180	3.050	8.780	-15.300	1047.350	31.310
BN 830	1.170	2.970	8.590	-21.800	1047.915	30.745
BN 820	1.160	2.960	8.410	-15.600	1048.375	30.285
BN 810	1.150	2.840	8.370	-7.500	1048.890	29.770
BN 800	1.140	2.820	8.320	-16.000	1049.120	29.540
BN 790	1.140	2.770	8.170	-19.200	1049.370	29.290
BN 780	1.140	2.760	8.150	-19.000	1049.590	29.070
BN 770	1.140	2.740	8.070	-14.900	1049.870	28.790
BN 760	1.130	2.700	8.070	-10.600	1050.430	28.230
BN 750	1.120	2.640	7.930	-14.500	1050.860	27.800
BN 740	1.120	2.650	7.940	-20.500	1051.340	27.300
BN 730	1.110	2.570	7.800	-10.800	1051.895	26.765
BN 720	1.110	2.550	7.740	-11.200	1052.310	26.350
BN 700	1.100	2.390	7.000	-10.400	1052.390	26.270
BN 698	1.100	2.300	7.010	-17.200	1052.595	26.065
BN 670	1.090	2.310	6.520	-15.500	1052.640	26.020
BN 660	1.090	2.300	6.500	-22.000	1052.865	25.795

LEGEND

(S16) LOCATION AND IDENTIFICATION OF STRUCTURE

5 YEAR ARI DESIGN FLOOD

20 YEAR ARI DESIGN FLOOD

100 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

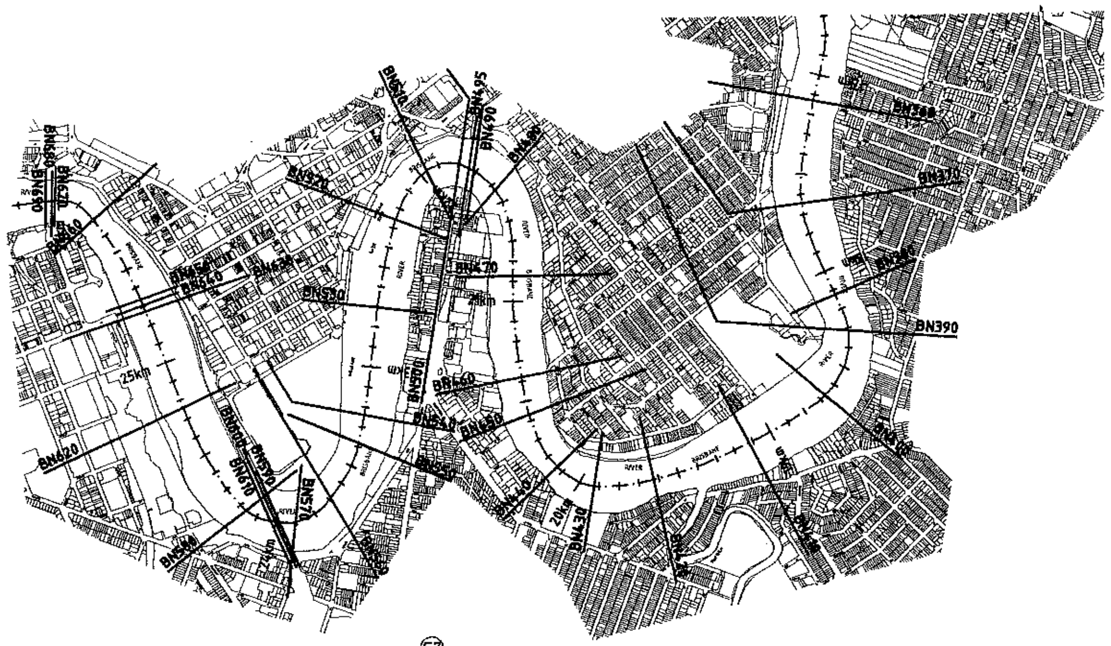
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 950 TO BN 660

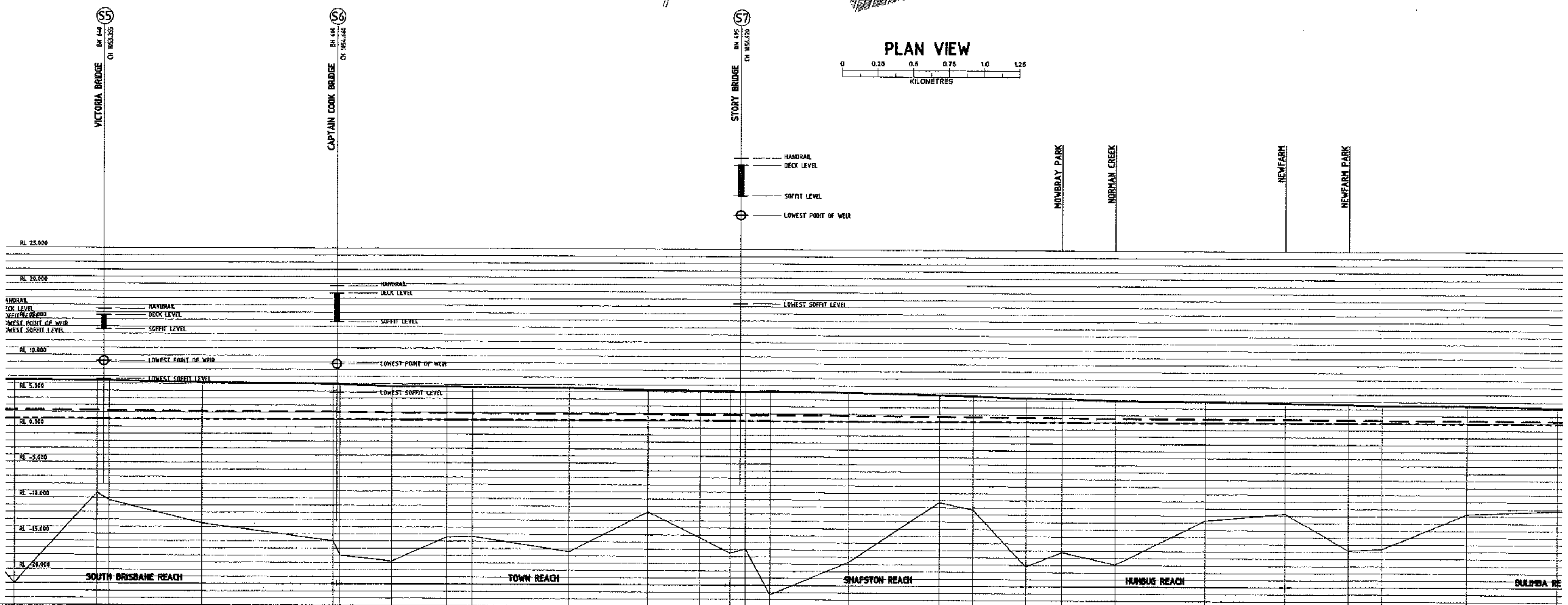
FILE NAME: 04... PLOT SCALE: 1:30

FIGURE E-2g

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
5, 20 AND 100 YEAR ARI EVENTS (MHWS)



LEGEND
3000 AMTD LINE
BN 1250 SURVEYED CROSS SECTION



	BN 660	BN 650	BN 630	BN 620	BN 610	BN 590	BN 560	BN 550	BN 540
5 YEAR ARI DESIGN FLOOD LEVEL	1.090	1.080	1.080	1.070	1.060	1.050	1.040	1.040	1.040
20 YEAR ARI DESIGN FLOOD LEVEL	2.300	2.270	2.250	2.170	2.090	2.060	1.990	1.980	1.960
100 YEAR ARI DESIGN FLOOD LEVEL	6.500	6.470	6.430	6.190	6.030	5.940	5.680	5.620	5.600
BED LEVEL (m AHD)	-22.080	-9.300	-10.300	-13.500	-16.000	-18.080	-18.800	-15.400	-15.300
CROSS SECTION NUMBER	BN 660	BN 650	BN 630	BN 620	BN 610	BN 590	BN 560	BN 550	BN 540
MIKE 11 CHAINAGE (km)	1052.865	1053.320	1053.385	1053.900	1054.640	1054.680	1054.970	1055.280	1055.420
AMTD CHAINAGE (km)	25.795	25.340	25.295	24.760	24.020	23.980	23.690	23.380	23.240

	BN 530	BN 520	BN 510	BN 500	BN 490	BN 480	BN 470	BN 460	BN 450
5 YEAR ARI DESIGN FLOOD LEVEL	1.030	1.030	1.030	1.020	1.010	1.010	1.010	1.000	1.000
20 YEAR ARI DESIGN FLOOD LEVEL	1.930	1.870	1.850	1.840	1.820	1.850	1.810	1.720	1.680
100 YEAR ARI DESIGN FLOOD LEVEL	5.520	5.260	5.200	5.170	5.080	5.190	5.030	4.720	4.380
BED LEVEL (m AHD)	-17.400	-11.800	-15.400	-17.560	-16.900	-23.380	-18.100	-10.300	-11.300
CROSS SECTION NUMBER	BN 530	BN 520	BN 510	BN 500	BN 490	BN 480	BN 470	BN 460	BN 450
MIKE 11 CHAINAGE (km)	1055.960	1056.400	1056.695	1056.865	1056.950	1057.090	1057.530	1058.040	1058.230
AMTD CHAINAGE (km)	22.700	22.260	21.965	21.795	21.710	21.570	21.130	20.620	20.430

	BN 440	BN 430	BN 420	BN 410	BN 400	BN 390	BN 380	BN 370	BN 360
5 YEAR ARI DESIGN FLOOD LEVEL	0.990	0.990	0.980	0.980	0.970	0.970	0.970	0.970	0.960
20 YEAR ARI DESIGN FLOOD LEVEL	1.620	1.600	1.540	1.520	1.470	1.430	1.410	1.390	1.340
100 YEAR ARI DESIGN FLOOD LEVEL	4.330	4.290	4.020	3.940	3.770	3.600	3.450	3.430	3.210
BED LEVEL (m AHD)	-19.280	-17.200	-18.900	-12.700	-11.900	-16.800	-16.600	-11.700	-11.200
CROSS SECTION NUMBER	BN 440	BN 430	BN 420	BN 410	BN 400	BN 390	BN 380	BN 370	BN 360
MIKE 11 CHAINAGE (km)	1058.530	1058.735	1059.035	1059.540	1059.990	1060.345	1060.535	1061.015	1061.530
AMTD CHAINAGE (km)	20.130	19.925	19.625	19.120	18.670	18.315	18.125	17.645	17.130

BRISBANE RIVER - BN 660 TO BN 360

LEGEND
S16 LOCATION AND IDENTIFICATION OF STRUCTURE
5 YEAR ARI DESIGN FLOOD
20 YEAR ARI DESIGN FLOOD
100 YEAR ARI DESIGN FLOOD

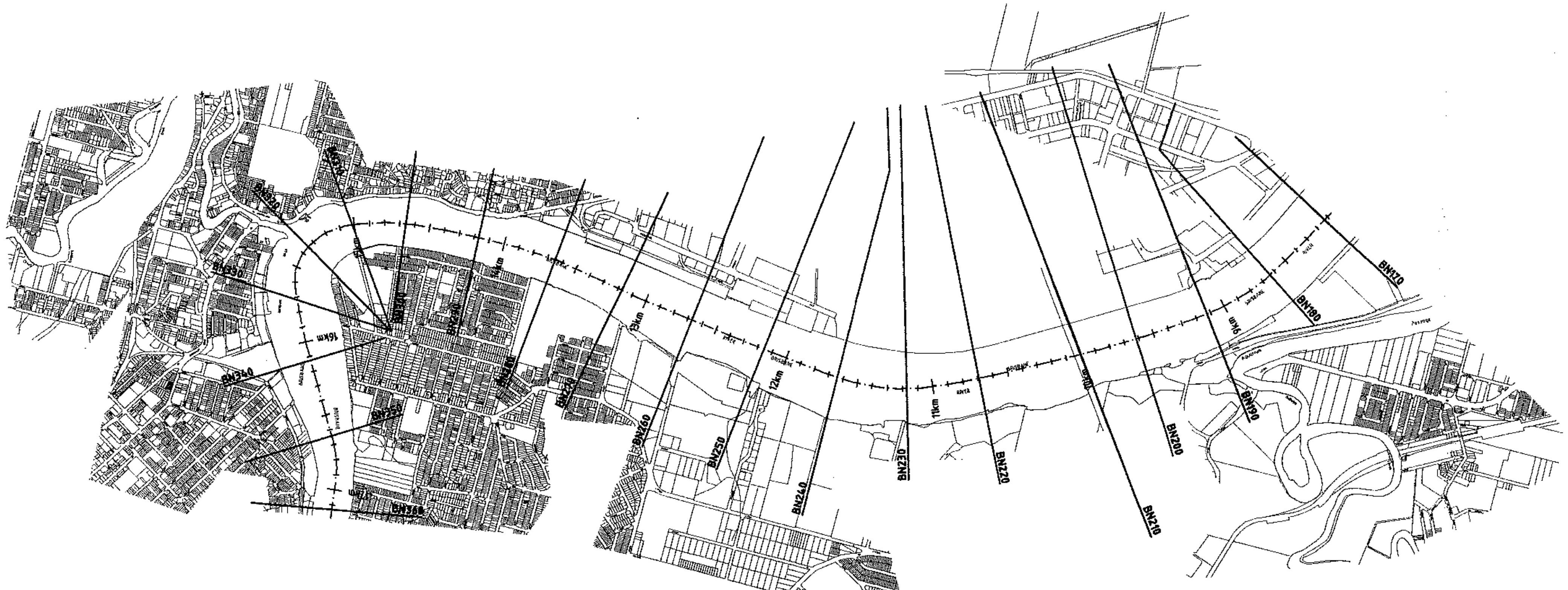
VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

FILE : 041
PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

FIGURE E-2h

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
5, 20 AND 100 YEAR ARI EVENTS (MHWS)



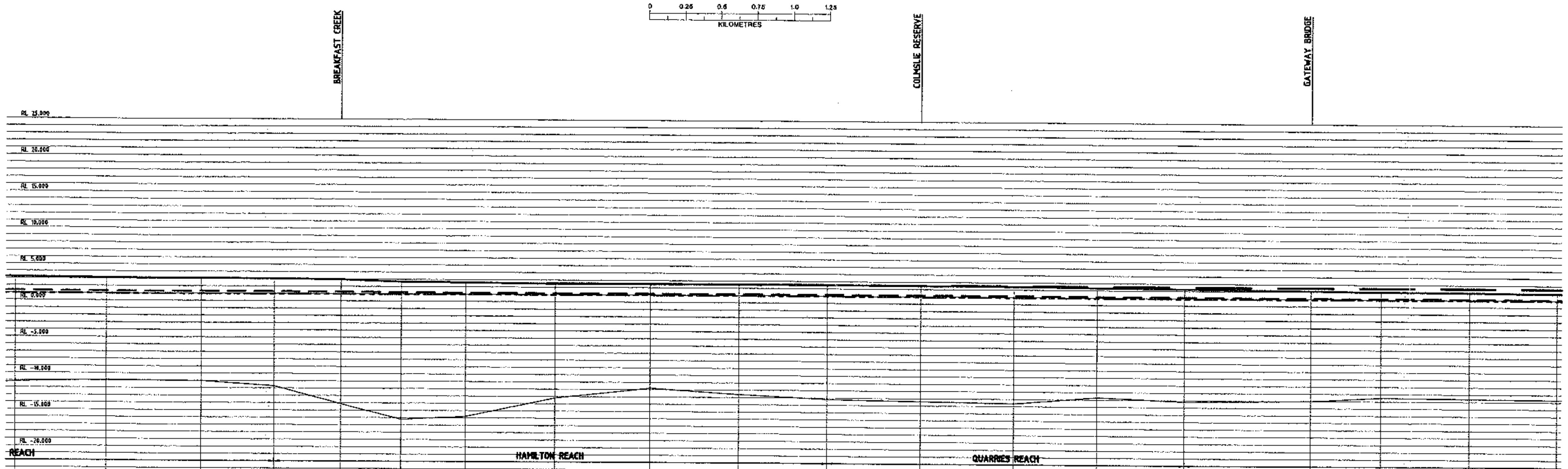
PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25
KILOMETRES

LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION



DATUM RL. -25.000

CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
5 YEAR ARI DESIGN FLOOD LEVEL	0.960	0.960	0.960	0.960	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.938
20 YEAR ARI DESIGN FLOOD LEVEL	1.340	1.320	1.300	1.300	1.280	1.220	1.200	1.180	1.190	1.180	1.190	1.180	1.170	1.150	1.130	1.110	1.090	1.080	1.070
100 YEAR ARI DESIGN FLOOD LEVEL	3.210	3.130	3.080	3.070	2.970	2.670	2.600	2.490	2.530	2.510	2.540	2.490	2.450	2.350	2.260	2.100	2.020	1.940	1.880
BED LEVEL (m AHD)	-11.200	-10.900	-11.000	-11.700	-14.100	-16.200	-15.800	-13.200	-11.800	-12.600	-13.200	-13.400	-13.600	-12.700	-13.200	-13.800	-12.500	-12.600	-12.300
MIKE 11 CHAINAGE (km)	1061.530	1062.020	1062.535	1062.940	1063.310	1063.645	1064.000	1064.490	1065.010	1065.503	1065.990	1066.505	1067.020	1067.495	1067.965	1068.440	1069.045	1069.535	1070.025
AMTD CHAINAGE (km)	17.130	16.640	16.125	15.720	15.350	15.015	14.660	14.170	13.650	13.157	12.670	12.155	11.640	11.175	10.695	10.080	9.615	9.125	8.435

LEGEND

(S16) LOCATION AND IDENTIFICATION OF STRUCTURE
5 YEAR ARI DESIGN FLOOD
20 YEAR ARI DESIGN FLOOD
100 YEAR ARI DESIGN FLOOD
100 YEAR ARI MORETON BAY STORM SURGE LEVEL. RL 2.5m AHD, INCLUDING 300mm ALLOWANCE FOR GREENHOUSE EFFECT.)

VERT. 0 5.0 10.0 15.0 20.0 METRES

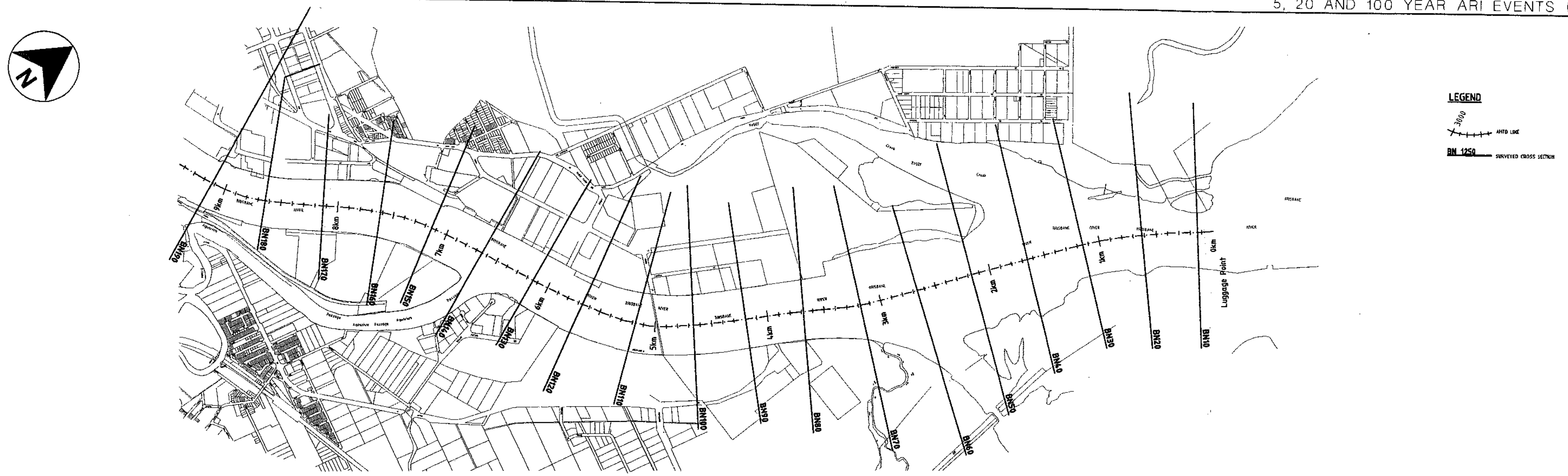
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 360 TO BN 180

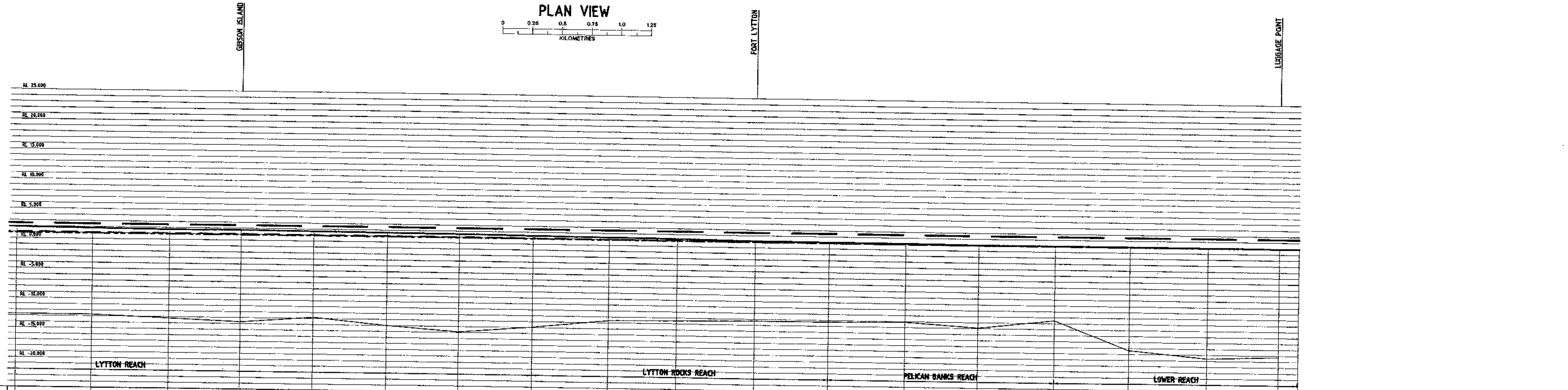
FILE 0415
PLOT SCALE: 1=30

FIGURE E-2i

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
5, 20 AND 100 YEAR ARI EVENTS (MHWS)



PLAN VIEW



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
20 YEAR ARI DESIGN FLOOD LEVEL	1.070	1.050	1.040	1.040	1.030	1.010	1.010	0.990	0.980	0.970	0.950	0.940	0.940	0.930	0.930	0.930	0.920	0.920	0.920
100 YEAR ARI DESIGN FLOOD LEVEL	1.880	1.770	1.680	1.710	1.670	1.550	1.510	1.400	1.330	1.260	1.120	1.080	1.080	0.990	0.970	0.970	0.950	0.920	0.920
BED LEVEL (m AHD)	-12.700	-12.700	-13.200	-13.700	-12.800	-14.000	-14.900	-13.900	-12.600	-12.500	-12.300	-12.300	-12.100	-12.900	-11.500	-14.400	-17.400	-17.200	
CROSS SECTION NUMBER	BN 180	BN 170	BN 160	BN 150	BN 140	BN 130	BN 120	BN 110	BN 100	BN 90	BN 80	BN 70	BN 60	BN 50	BN 40	BN 30	BN 20	BN 10	
MIKE 11 CHAINAGE (km)	1070.025	1070.530	1071.040	1071.520	1072.015	1072.515	1072.995	1073.485	1074.080	1074.460	1074.985	1075.480	1076.000	1076.495	1077.010	1077.510	1078.040	1078.525	1078.660
AMTD CHAINAGE (km)	8.635	8.130	7.620	7.140	6.645	6.145	5.665	5.175	4.660	4.200	3.675	3.180	2.640	2.165	1.650	1.150	0.620	0.135	0.000

BRISBANE RIVER - BN 180 TO BN 10

PLOT SCALE 1=30

Flood Levels

Table E-3-Design Flood Profiles for the 2, 10, & 50 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	50 Year ARI WL (m AHD)	10 Year ARI WL (m AHD)	2 Year ARI WL (m AHD)
BRISBANE	1000	78.66	BN 2020	19.72	7.18	2.12
BRISBANE	1000.285	78.375	BN 2010	19.59	7.08	2.10
BRISBANE	1000.775	77.885	BN 2000	19.36	6.93	2.08
BRISBANE	1001.315	77.345	BN 1990	19.25	6.83	2.05
BRISBANE	1001.865	76.795	BN 1980	18.76	6.63	2.02
BRISBANE	1002.35	76.31	BN 1970	18.40	6.35	1.98
BRISBANE	1002.785	75.875	BN 1960	18.27	6.21	1.95
BRISBANE	1003.275	75.385	BN 1950	18.00	6.01	1.93
BRISBANE	1003.775	74.885	BN 1940	17.79	5.85	1.91
BRISBANE	1004.3	74.36	BN 1930	17.36	5.63	1.89
BRISBANE	1004.81	73.85	BN 1920	17.33	5.50	1.87
BRISBANE	1005.325	73.335	BN 1910	17.14	5.35	1.85
BRISBANE	1005.87	72.79	BN 1900	16.94	5.21	1.83
BRISBANE	1006.3	72.36	BN 1890	16.81	5.15	1.82
BRISBANE	1006.91	71.75	BN 1880	16.70	5.07	1.79
BRISBANE	1007.41	71.25	BN 1870	16.66	4.99	1.76
BRISBANE	1007.92	70.74	BN 1860	16.55	4.93	1.74
BRISBANE	1008.445	70.215	BN 1850	16.35	4.86	1.72
BRISBANE	1008.925	69.735	BN 1840	16.28	4.82	1.71
BRISBANE	1009.4	69.26	BN 1830	16.18	4.77	1.69
BRISBANE	1009.72	68.84	BN 1820	16.15	4.75	1.69
BRISBANE	1010.49	68.17	BN 1810	15.87	4.65	1.66
BRISBANE	1010.725	67.935	BN 1800	15.85	4.64	1.66
BRISBANE	1010.98	67.68	BN 1790	15.79	4.62	1.65
BRISBANE	1011.51	67.15	BN 1780	15.75	4.58	1.64
BRISBANE	1011.98	66.68	BN 1770	15.73	4.54	1.63
BRISBANE	1012.475	66.185	BN 1760	15.65	4.50	1.62
BRISBANE	1012.935	65.725	BN 1750	15.58	4.45	1.61
BRISBANE	1013.445	65.215	BN 1740	15.45	4.39	1.59
BRISBANE	1013.91	64.74	BN 1730	15.35	4.31	1.56
BRISBANE	1014.31	64.55	BN 1720	15.27	4.24	1.54
BRISBANE	1014.61	64.05	BN 1710	15.27	4.19	1.53
BRISBANE	1015.09	63.57	BN 1700	15.15	4.18	1.52
BRISBANE	1015.56	63.1	BN 1690	14.99	4.14	1.52
BRISBANE	1016.14	62.52	BN 1680	14.89	4.08	1.50
BRISBANE	1016.64	62.02	BN 1670	14.76	3.98	1.47
BRISBANE	1017.13	61.53	BN 1660	14.56	3.84	1.43
BRISBANE	1017.61	61.05	BN 1650	14.37	3.74	1.40
BRISBANE	1017.92	60.74	BN 1640	14.24	3.67	1.39
BRISBANE	1018.2	60.46	BN 1630	14.19	3.65	1.38
BRISBANE	1018.725	59.935	BN 1620	13.93	3.59	1.37
BRISBANE	1019.095	59.565	BN 1610	13.82	3.55	1.36
BRISBANE	1019.49	59.17	BN 1600	13.79	3.50	1.35
BRISBANE	1019.865	58.795	BN 1590	13.58	3.46	1.34
BRISBANE	1020.115	58.545	BN 1580	13.63	3.43	1.34
BRISBANE	1020.525	58.135	BN 1570	13.61	3.41	1.33
BRISBANE	1020.83	57.83	BN 1560	13.49	3.38	1.33
BRISBANE	1021.095	57.565	BN 1550	13.33	3.34	1.32
BRISBANE	1021.539	57.121	BN 1540	13.22	3.27	1.30
BRISBANE	1021.715	56.945	BN 1530	13.22	3.25	1.30
BRISBANE	1021.895	56.765	BN 1520	13.17	3.25	1.30
BRISBANE	1022.505	56.555	BN 1510	13.00	3.22	1.29
BRISBANE	1022.575	56.085	BN 1500	13.02	3.20	1.29
BRISBANE	1023.04	55.62	BN 1490	12.74	3.15	1.28
BRISBANE	1023.57	55.09	BN 1480	12.67	3.11	1.27
BRISBANE	1024.08	54.58	BN 1470	12.60	3.08	1.26
BRISBANE	1024.563	54.097	BN 1460	12.53	3.04	1.26
BRISBANE	1025.07	53.59	BN 1450	12.45	3.00	1.25
BRISBANE	1025.36	53.3	BN 1440	12.33	2.97	1.24
BRISBANE	1025.59	53.07	BN 1430	12.19	2.94	1.24
BRISBANE	1026.17	52.49	BN 1420	12.12	2.89	1.23
BRISBANE	1026.68	51.98	BN 1410	12.01	2.85	1.22

Flood Levels

Table E-3-Design Flood Profiles for the 2, 10, & 50 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	50 Year ARI WL (m AHD)	10 Year ARI WL (m AHD)	2 Year ARI WL (m AHD)
BRISBANE	1026.9	51.76	BN 1400	11.90	2.82	1.22
BRISBANE	1027.16	51.5	BN 1390	11.83	2.81	1.22
BRISBANE	1027.68	50.98	BN 1380	11.88	2.78	1.21
BRISBANE	1028.18	50.48	BN 1370	11.83	2.76	1.21
BRISBANE	1028.68	49.98	BN 1360	11.71	2.71	1.20
BRISBANE	1028.76	49.9	BN 1340	11.60	2.67	1.19
BRISBANE	1029.2	49.46	BN 1330	11.45	2.63	1.19
BRISBANE	1029.68	48.98	BN 1320	11.40	2.61	1.18
BRISBANE	1030.22	48.44	BN 1310	11.38	2.59	1.18
BRISBANE	1030.87	47.79	BN 1300	11.26	2.55	1.17
BRISBANE	1031.26	47.4	BN 1290	11.13	2.51	1.17
BRISBANE	1031.7	46.96	BN 1280	10.82	2.46	1.16
BRISBANE	1031.995	46.665	BN 1270	10.89	2.44	1.16
BRISBANE	1032.23	46.43	BN 1260	10.82	2.42	1.16
BRISBANE	1032.585	46.075	BN 1250	10.75	2.42	1.16
BRISBANE	1033.08	45.58	BN 1240	10.60	2.39	1.15
BRISBANE	1033.37	45.29	BN 1230	10.52	2.37	1.15
BRISBANE	1033.9	44.76	BN 1220	10.33	2.32	1.14
BRISBANE	1034.37	44.29	BN 1210	10.15	2.28	1.14
BRISBANE	1034.89	43.77	BN 1200	10.06	2.24	1.13
BRISBANE	1035.414	43.246	BN 1190	9.87	2.19	1.13
BRISBANE	1035.9	42.76	BN 1180	9.63	2.15	1.12
BRISBANE	1036.46	42.2	BN 1170	9.51	2.10	1.12
BRISBANE	1036.77	41.89	BN 1160	9.40	2.08	1.11
BRISBANE	1036.915	41.745	BN 1150	9.31	2.07	1.11
BRISBANE	1037.09	41.57	BN 1140	9.25	2.05	1.11
BRISBANE	1037.175	41.485	BN 1120	9.21	1.99	1.10
BRISBANE	1037.285	41.375	BN 1110	9.15	1.99	1.10
BRISBANE	1037.625	41.035	BN 1100	9.15	1.98	1.10
BRISBANE	1038.085	40.575	BN 1090	9.10	1.97	1.10
BRISBANE	1038.6	40.06	BN 1080	9.03	1.93	1.09
BRISBANE	1039.1	39.56	BN 1070	8.95	1.90	1.09
BRISBANE	1039.565	39.05	BN 1060	8.90	1.87	1.08
BRISBANE	1040.09	38.57	BN 1050	8.86	1.87	1.08
BRISBANE	1040.49	38.17	BN 1040	8.76	1.84	1.08
BRISBANE	1041.01	37.56	BN 1030	8.71	1.84	1.08
BRISBANE	1041.23	37.43	BN 1020	8.68	1.83	1.08
BRISBANE	1041.46	37.2	BN 1010	8.63	1.81	1.08
BRISBANE	1041.7	36.96	BN 1000	8.60	1.81	1.08
BRISBANE	1041.96	36.7	BN 990	8.49	1.79	1.07
BRISBANE	1042.235	36.425	BN 980	8.34	1.77	1.07
BRISBANE	1042.515	36.145	BN 970	8.31	1.77	1.07
BRISBANE	1042.91	35.75	BN 960	8.13	1.73	1.06
BRISBANE	1043.725	34.935	BN 950	7.90	1.67	1.05
BRISBANE	1044.06	34.6	BN 940	7.80	1.65	1.05
BRISBANE	1044.34	34.32	BN 930	7.69	1.64	1.05
BRISBANE	1044.605	34.055	BN 920	7.65	1.63	1.05
BRISBANE	1044.86	33.8	BN 910	7.61	1.62	1.05
BRISBANE	1045.4	33.26	BN 900	7.48	1.58	1.04
BRISBANE	1045.885	32.775	BN 890	7.33	1.55	1.04
BRISBANE	1046.18	32.48	BN 880	7.30	1.55	1.04
BRISBANE	1046.34	32.32	BN 870	7.27	1.55	1.03
BRISBANE	1046.58	32.08	BN 860	7.24	1.54	1.03
BRISBANE	1046.9	31.76	BN 850	7.11	1.52	1.03
BRISBANE	1047.35	31.31	BN 840	6.89	1.49	1.03
BRISBANE	1047.915	30.745	BN 830	6.73	1.47	1.02
BRISBANE	1048.375	30.285	BN 820	6.73	1.46	1.02
BRISBANE	1048.89	29.77	BN 810	6.53	1.42	1.02
BRISBANE	1049.12	29.54	BN 800	6.49	1.42	1.02
BRISBANE	1049.37	29.29	BN 790	6.36	1.40	1.01
BRISBANE	1049.59	29.07	BN 780	6.35	1.40	1.01
BRISBANE	1049.87	28.79	BN 770	6.29	1.40	1.01

Flood Levels

Table E-3-Design Flood Profiles for the 2, 10, & 50 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	50 Year ARI WL (m AHD)	10 Year ARI WL (m AHD)	2 Year ARI WL (m AHD)
BRISBANE	1050.43	28.23	BN 760	6.26	1.38	1.01
BRISBANE	1050.86	27.8	BN 750	6.16	1.37	1.01
BRISBANE	1051.36	27.3	BN 740	6.16	1.37	1.01
BRISBANE	1051.895	26.765	BN 730	6.01	1.35	1.00
BRISBANE	1052.31	26.35	BN 720	5.97	1.33	1.00
BRISBANE	1052.39	26.27	BN 700	5.38	1.30	1.00
BRISBANE	1052.595	26.065	BN 690	5.33	1.30	1.00
BRISBANE	1052.64	26.02	BN 670	4.99	1.28	0.99
BRISBANE	1053.32	25.34	BN 650	4.95	1.27	0.99
BRISBANE	1053.385	25.795	BN 660	4.90	1.26	0.98
BRISBANE	1053.9	24.76	BN 620	4.72	1.24	0.98
BRISBANE	1054.64	24.02	BN 610	4.57	1.21	0.98
BRISBANE	1054.68	23.98	BN 590	4.50	1.20	0.97
BRISBANE	1054.97	23.69	BN 560	4.30	1.19	0.97
BRISBANE	1055.28	23.38	BN 550	4.26	1.18	0.97
BRISBANE	1055.42	23.24	BN 540	4.24	1.18	0.97
BRISBANE	1055.96	22.7	BN 530	4.17	1.17	0.96
BRISBANE	1056.4	22.26	BN 520	3.98	1.16	0.96
BRISBANE	1056.695	21.965	BN 510	3.93	1.15	0.96
BRISBANE	1056.865	21.795	BN 500	3.90	1.15	0.96
BRISBANE	1056.95	21.71	BN 490	3.83	1.14	0.95
BRISBANE	1057.09	21.57	BN 480	3.92	1.15	0.95
BRISBANE	1057.53	21.13	BN 470	3.81	1.14	0.95
BRISBANE	1058.04	20.62	BN 460	3.57	1.11	0.95
BRISBANE	1058.23	20.43	BN 450	3.46	1.10	0.95
BRISBANE	1058.53	20.13	BN 440	3.28	1.09	0.95
BRISBANE	1058.735	19.925	BN 430	3.24	1.08	0.95
BRISBANE	1059.035	19.625	BN 420	3.04	1.07	0.94
BRISBANE	1059.54	19.12	BN 410	2.99	1.06	0.94
BRISBANE	1059.99	18.67	BN 400	2.85	1.05	0.94
BRISBANE	1060.345	18.315	BN 390	2.72	1.04	0.94
BRISBANE	1060.535	18.125	BN 380	2.64	1.03	0.94
BRISBANE	1061.015	17.645	BN 370	2.60	1.03	0.94
BRISBANE	1061.53	17.13	BN 360	2.45	1.02	0.94
BRISBANE	1062.02	16.64	BN 350	2.39	1.01	0.94
BRISBANE	1062.535	16.125	BN 340	2.34	1.01	0.94
BRISBANE	1062.94	15.72	BN 330	2.33	1.01	0.94
BRISBANE	1063.31	15.35	BN 320	2.26	1.00	0.94
BRISBANE	1063.645	15.015	BN 310	2.06	0.99	0.94
BRISBANE	1064	14.66	BN 300	2.01	0.99	0.94
BRISBANE	1064.49	14.17	BN 290	1.93	0.98	0.94
BRISBANE	1065.01	13.65	BN 280	1.96	0.98	0.94
BRISBANE	1065.503	13.157	BN 270	1.94	0.98	0.94
BRISBANE	1065.99	12.67	BN 260	1.96	0.98	0.94
BRISBANE	1066.505	12.155	BN 250	1.92	0.98	0.94
BRISBANE	1067.02	11.64	BN 240	1.90	0.98	0.94
BRISBANE	1067.485	11.175	BN 230	1.83	0.97	0.94
BRISBANE	1067.965	10.695	BN 220	1.77	0.97	0.94
BRISBANE	1068.66	10	BN 210	1.66	0.96	0.94
BRISBANE	1069.045	9.615	BN 200	1.61	0.96	0.94
BRISBANE	1069.535	9.125	BN 190	1.57	0.96	0.94
BRISBANE	1070.025	8.635	BN 180	1.52	0.96	0.93
BRISBANE	1070.53	8.13	BN 170	1.45	0.95	0.93
BRISBANE	1071.04	7.62	BN 160	1.39	0.95	0.93
BRISBANE	1071.52	7.14	BN 150	1.41	0.95	0.93
BRISBANE	1072.015	6.645	BN 140	1.38	0.95	0.93
BRISBANE	1072.515	6.145	BN 130	1.31	0.94	0.93
BRISBANE	1072.995	5.665	BN 120	1.28	0.94	0.93
BRISBANE	1073.485	5.175	BN 110	1.21	0.94	0.93
BRISBANE	1074	4.66	BN 100	1.17	0.93	0.93
BRISBANE	1074.46	4.2	BN 90	1.13	0.93	0.93
BRISBANE	1074.985	3.675	BN 80	1.04	0.93	0.93

Flood Levels

Table E-3-Design Flood Profiles for the 2, 10, & 50 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	50 Year ARI WL (m AHD)	10 Year ARI WL (m AHD)	2 Year ARI WL (m AHD)
BRISBANE	1075.48	3.18	BN 70	1.02	0.93	0.92
BRISBANE	1076	2.66	BN 60	1.02	0.93	0.92
BRISBANE	1076.495	2.165	BN 50	0.96	0.92	0.92
BRISBANE	1077.01	1.65	BN 40	0.95	0.92	0.92
BRISBANE	1077.51	1.15	BN 30	0.95	0.92	0.92
BRISBANE	1078.04	0.62	BN 20	0.94	0.92	0.92
BRISBANE	1078.525	0.135	BN 10	0.92	0.92	0.92
BRISBANE	1078.66	-	-	0.92	0.92	0.92
BREMER	599.4	-	-	16.83	5.16	1.82
BREMER	600	-	-	16.83	5.16	1.82
OXLEY	599.4	-	-	8.88	1.87	1.08
OXLEY	600	-	-	8.88	1.87	1.08
BREAKFAST	599.4	-	-	2.30	1.01	0.94
BREAKFAST	600	-	-	2.30	1.01	0.94
BULIMBA	599.4	-	-	1.38	0.95	0.93
BULIMBA	600	-	-	1.38	0.95	0.93
CENTWEIR	0	-	-	11.71	2.71	1.20
CENTWEIR	0.08	-	-	11.60	2.67	1.19
INDOORWEIR	0	-	-	9.25	2.05	1.11
INDOORWEIR	0.085	-	-	9.21	1.99	1.10
WILLIAMWEIR	0	-	-	5.33	1.30	1.00
WILLIAMWEIR	0.045	-	-	4.99	1.28	0.99
VICTORIAWEIR	0	-	-	4.95	1.27	0.99
VICTORIAWEIR	0.065	-	-	4.90	1.26	0.98
CAPTAINWEIR	0	-	-	4.57	1.21	0.98
CAPTAINWEIR	0.04	-	-	4.50	1.20	0.97
STORYWEIR	0	-	-	3.90	1.15	0.96
STORYWEIR	0.085	-	-	3.83	1.14	0.95
MERIVALEWEIR	0	-	-	5.97	1.33	1.00
MERIVALEWEIR	0.08	-	-	5.38	1.30	1.00

Discharges

Table E-3-Design Flood Profiles for the 2, 10, & 50 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	50 Year ARI Q (m^3/s)	10 Year ARI Q (m^3/s)	2 Year ARI Q (m^3/s)
BRISBANE	1000.14	78.52	BN 2020	7146	1611	314
BRISBANE	1000.53	78.13	BN 2010	7143	1609	312
BRISBANE	1001.05	77.62	BN 2000	7139	1608	310
BRISBANE	1001.59	77.07	BN 1990	7134	1607	307
BRISBANE	1002.11	76.55	BN 1980	7132	1606	306
BRISBANE	1002.57	76.09	BN 1970	7130	1605	305
BRISBANE	1003.03	75.63	BN 1960	7127	1604	303
BRISBANE	1003.53	75.14	BN 1950	7120	1603	302
BRISBANE	1004.04	74.62	BN 1940	7115	1601	300
BRISBANE	1004.56	74.11	BN 1930	7108	1600	299
BRISBANE	1005.07	73.59	BN 1920	7100	1599	297
BRISBANE	1005.60	73.06	BN 1910	7092	1597	294
BRISBANE	1006.04	72.63	BN 1900	7084	1595	292
BRISBANE	1006.25	72.41	BN 1890	7256	1581	531
BRISBANE	1006.61	72.05	BN 1880	7254	1580	531
BRISBANE	1007.16	71.50	BN 1870	7251	1580	530
BRISBANE	1007.67	71.00	BN 1860	7248	1579	530
BRISBANE	1008.18	70.48	BN 1850	7242	1579	530
BRISBANE	1008.69	69.98	BN 1840	7240	1578	530
BRISBANE	1009.16	69.50	BN 1830	7239	1578	530
BRISBANE	1009.56	69.00	BN 1820	7237	1578	530
BRISBANE	1010.11	68.56	BN 1810	7234	1577	530
BRISBANE	1010.61	68.05	BN 1800	7232	1577	530
BRISBANE	1010.85	67.81	BN 1790	7231	1577	530
BRISBANE	1011.25	67.42	BN 1780	7230	1577	530
BRISBANE	1011.75	66.92	BN 1770	7227	1576	530
BRISBANE	1012.23	66.43	BN 1760	7223	1576	530
BRISBANE	1012.71	65.95	BN 1750	7219	1576	530
BRISBANE	1013.19	65.47	BN 1740	7216	1575	530
BRISBANE	1013.68	64.97	BN 1730	7212	1575	530
BRISBANE	1014.11	64.75	BN 1720	7209	1574	529
BRISBANE	1014.46	64.20	BN 1710	7206	1574	529
BRISBANE	1014.85	63.81	BN 1700	7203	1573	529
BRISBANE	1015.33	63.33	BN 1690	7202	1573	529
BRISBANE	1015.85	62.81	BN 1680	7201	1573	529
BRISBANE	1016.39	62.27	BN 1670	7200	1573	529
BRISBANE	1016.89	61.78	BN 1660	7198	1572	529
BRISBANE	1017.37	61.29	BN 1650	7196	1572	529
BRISBANE	1017.77	60.90	BN 1640	7194	1572	529
BRISBANE	1018.06	60.60	BN 1630	7192	1572	529
BRISBANE	1018.46	60.20	BN 1620	7190	1572	529
BRISBANE	1018.91	59.75	BN 1610	7189	1572	529
BRISBANE	1019.29	59.37	BN 1600	7188	1571	529
BRISBANE	1019.68	58.98	BN 1590	7185	1571	529
BRISBANE	1019.99	58.67	BN 1580	7184	1571	529
BRISBANE	1020.32	58.34	BN 1570	7183	1571	529
BRISBANE	1020.68	57.98	BN 1560	7181	1571	529
BRISBANE	1020.96	57.70	BN 1550	7180	1570	529
BRISBANE	1021.32	57.34	BN 1540	7179	1570	529
BRISBANE	1021.63	57.03	BN 1530	7177	1570	529
BRISBANE	1021.81	56.86	BN 1520	7176	1570	529
BRISBANE	1022.20	56.86	BN 1510	7175	1570	529
BRISBANE	1022.54	56.12	BN 1500	7175	1570	529
BRISBANE	1022.81	55.85	8N 1490	7174	1570	529
BRISBANE	1023.31	55.36	BN 1480	7173	1570	529
BRISBANE	1023.83	54.83	BN 1470	7173	1569	529
BRISBANE	1024.32	54.34	BN 1460	7173	1569	529
BRISBANE	1024.82	53.84	BN 1450	7172	1569	529
BRISBANE	1025.22	53.45	BN 1440	7172	1569	529
BRISBANE	1025.48	53.19	BN 1430	7172	1569	529
BRISBANE	1025.88	52.78	BN 1420	7172	1569	529
BRISBANE	1026.43	52.24	BN 1410	7172	1569	529

Discharges

Table E-3-Design Flood Profiles for the 2, 10, & 50 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	50 Year ARI Q (m^3/s)	10 Year ARI Q (m^3/s)	2 Year ARI Q (m^3/s)
BRISBANE	1026.79	51.87	BN 1400	7172	1569	529
BRISBANE	1027.03	51.63	BN 1390	7172	1569	529
BRISBANE	1027.42	51.24	BN 1380	7172	1569	529
BRISBANE	1027.93	50.73	BN 1370	7171	1568	529
BRISBANE	1028.43	50.23	BN 1360	7170	1568	529
BRISBANE	1028.72	49.94	BN 1340	7165	1568	529
BRISBANE	1028.98	49.68	BN 1330	7169	1568	529
BRISBANE	1029.44	49.22	BN 1320	7167	1568	529
BRISBANE	1029.95	48.71	BN 1310	7162	1568	529
BRISBANE	1030.55	48.11	BN 1300	7153	1568	529
BRISBANE	1031.07	47.59	BN 1290	7144	1568	529
BRISBANE	1031.48	47.18	BN 1280	7138	1568	529
BRISBANE	1031.85	46.81	BN 1270	7136	1568	529
BRISBANE	1032.11	46.55	BN 1260	7131	1568	529
BRISBANE	1032.41	46.25	BN 1250	7128	1567	529
BRISBANE	1032.83	45.83	BN 1240	7126	1567	529
BRISBANE	1033.23	45.44	BN 1230	7121	1567	529
BRISBANE	1033.64	45.03	BN 1220	7116	1567	529
BRISBANE	1034.14	44.52	BN 1210	7109	1567	529
BRISBANE	1034.63	44.03	BN 1200	7104	1567	529
BRISBANE	1035.15	43.51	BN 1190	7095	1567	529
BRISBANE	1035.66	43.00	BN 1180	7092	1567	529
BRISBANE	1036.18	42.48	BN 1170	7090	1567	529
BRISBANE	1036.62	42.05	BN 1160	7085	1567	529
BRISBANE	1036.84	41.82	BN 1150	7083	1567	529
BRISBANE	1037.00	41.66	BN 1140	7082	1567	529
BRISBANE	1037.11	41.55	BN 1120	7082	1567	529
BRISBANE	1037.23	41.43	BN 1110	7081	1567	529
BRISBANE	1037.46	41.21	BN 1100	7080	1567	529
BRISBANE	1037.86	40.81	BN 1090	7074	1567	529
BRISBANE	1038.34	40.32	BN 1080	7064	1567	529
BRISBANE	1038.85	39.81	BN 1070	7055	1567	529
BRISBANE	1039.33	39.28	BN 1060	7047	1566	529
BRISBANE	1039.70	38.96	BN 1050	7040	1566	529
BRISBANE	1039.96	38.70	BN 1040	6848	1566	565
BRISBANE	1040.29	38.28	BN 1030	6846	1566	565
BRISBANE	1040.75	37.91	BN 1020	6845	1566	565
BRISBANE	1041.12	37.54	BN 1010	6844	1566	565
BRISBANE	1041.35	37.32	BN 1000	6843	1566	565
BRISBANE	1041.58	37.08	BN 990	6843	1566	565
BRISBANE	1041.83	36.83	BN 980	6842	1566	565
BRISBANE	1042.10	36.56	BN 970	6842	1566	566
BRISBANE	1042.38	36.29	BN 960	6842	1566	566
BRISBANE	1042.71	35.95	BN 950	6842	1566	566
BRISBANE	1043.32	35.34	BN 940	6841	1565	566
BRISBANE	1043.89	34.77	BN 930	6841	1565	566
BRISBANE	1044.20	34.46	BN 920	6841	1565	566
BRISBANE	1044.47	34.19	BN 910	6841	1565	567
BRISBANE	1044.73	33.93	BN 900	6840	1565	567
BRISBANE	1045.13	33.53	BN 890	6840	1565	567
BRISBANE	1045.64	33.02	BN 880	6840	1565	567
BRISBANE	1046.03	32.63	BN 870	6840	1565	567
BRISBANE	1046.26	32.40	BN 860	6841	1565	568
BRISBANE	1046.46	32.20	BN 850	6841	1565	568
BRISBANE	1046.74	31.92	BN 840	6842	1565	568
BRISBANE	1047.13	31.54	BN 830	6843	1565	568
BRISBANE	1047.63	31.03	BN 820	6844	1565	568
BRISBANE	1048.15	30.52	BN 810	6846	1565	568
BRISBANE	1048.63	30.03	BN 800	6848	1565	568
BRISBANE	1049.01	29.65	BN 790	6848	1566	569
BRISBANE	1049.25	29.42	BN 780	6848	1566	569
BRISBANE	1049.48	29.18	BN 770	6849	1566	569

Discharges

Table E-3-Design Flood Profiles for the 2, 10, & 50 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	50 Year ARI Q (m^3/s)	10 Year ARI Q (m^3/s)	2 Year ARI Q (m^3/s)
BRISBANE	1049.73	28.93	BN 760	6849	1566	569
BRISBANE	1050.15	28.51	BN 750	6849	1566	569
BRISBANE	1050.65	28.01	BN 740	6851	1566	569
BRISBANE	1051.11	27.55	BN 730	6852	1566	570
BRISBANE	1051.63	27.03	BN 720	6852	1566	570
BRISBANE	1052.10	26.56	BN 700	6862	1566	570
BRISBANE	1052.37	26.29	BN 690	6868	1566	570
BRISBANE	1052.49	26.17	BN 670	6872	1566	570
BRISBANE	1052.63	26.03	BN 650	6875	1566	570
BRISBANE	1052.98	26.20	BN 660	6874	1566	570
BRISBANE	1053.36	25.31	BN 620	6866	1566	570
BRISBANE	1053.64	25.02	BN 610	6858	1566	571
BRISBANE	1054.27	24.39	BN 590	6848	1566	571
BRISBANE	1054.66	24.00	BN 560	6847	1566	571
BRISBANE	1054.83	23.83	BN 550	6848	1566	571
BRISBANE	1055.13	23.54	BN 540	6848	1566	571
BRISBANE	1055.35	23.31	BN 530	6848	1566	572
BRISBANE	1055.69	22.97	BN 520	6847	1566	572
BRISBANE	1056.18	22.48	BN 510	6845	1566	572
BRISBANE	1056.55	22.11	BN 500	6843	1566	572
BRISBANE	1056.78	21.88	BN 490	6842	1566	572
BRISBANE	1056.92	21.74	BN 480	6842	1566	572
BRISBANE	1057.02	21.64	BN 470	6842	1566	572
BRISBANE	1057.31	21.35	BN 460	6842	1566	572
BRISBANE	1057.79	20.87	BN 450	6842	1566	573
BRISBANE	1058.14	20.53	BN 440	6841	1566	573
BRISBANE	1058.38	20.28	BN 430	6841	1566	573
BRISBANE	1058.63	20.03	BN 420	6841	1566	573
BRISBANE	1058.89	19.78	BN 410	6841	1566	573
BRISBANE	1059.29	19.37	BN 400	6840	1566	573
BRISBANE	1059.77	18.89	BN 390	6839	1566	573
BRISBANE	1060.17	18.49	BN 380	6838	1566	573
BRISBANE	1060.44	18.22	BN 370	6837	1566	574
BRISBANE	1060.78	17.88	BN 360	6837	1566	574
BRISBANE	1061.27	17.39	BN 350	6837	1566	574
BRISBANE	1061.78	16.89	BN 340	6837	1566	574
BRISBANE	1062.28	16.38	BN 330	6837	1566	574
BRISBANE	1062.74	15.92	BN 320	6837	1566	574
BRISBANE	1063.03	15.63	BN 310	6837	1566	575
BRISBANE	1063.22	15.44	BN 300	6834	1566	582
BRISBANE	1063.48	15.18	BN 290	6834	1566	582
BRISBANE	1063.82	14.84	BN 280	6834	1566	583
BRISBANE	1064.25	14.42	BN 270	6834	1566	583
BRISBANE	1064.75	13.91	BN 260	6834	1566	583
BRISBANE	1065.26	13.40	BN 250	6834	1566	583
BRISBANE	1065.75	12.91	BN 240	6834	1566	583
BRISBANE	1066.25	12.41	BN 230	6834	1566	583
BRISBANE	1066.76	11.90	BN 220	6833	1566	584
BRISBANE	1067.25	11.41	BN 210	6833	1566	584
BRISBANE	1067.73	10.94	BN 200	6833	1566	584
BRISBANE	1068.31	10.35	BN 190	6833	1566	584
BRISBANE	1068.85	9.81	BN 180	6833	1566	584
BRISBANE	1069.29	9.37	BN 170	6834	1566	584
BRISBANE	1069.78	8.88	BN 160	6834	1566	585
BRISBANE	1070.28	8.38	BN 150	6834	1566	585
BRISBANE	1070.79	7.88	BN 140	6834	1566	585
BRISBANE	1071.28	7.38	BN 130	6834	1566	585
BRISBANE	1071.77	6.89	BN 120	6834	1566	585
BRISBANE	1072.02	6.64	BN 110	6834	1566	585
BRISBANE	1072.27	6.39	BN 100	6832	1566	590
BRISBANE	1072.76	5.90	BN 90	6832	1566	590
BRISBANE	1073.24	5.42	BN 80	6832	1566	591

Discharges

Table E-3-Design Flood Profiles for the 2, 10, & 50 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	50 Year ARI Q (m^3/s)	10 Year ARI Q (m^3/s)	2 Year ARI Q (m^3/s)
BRISBANE	1073.74	4.92	BN 70	6832	1566	591
BRISBANE	1074.23	4.43	BN 60	6832	1566	591
BRISBANE	1074.72	3.94	BN 50	6832	1566	591
BRISBANE	1075.23	3.43	BN 40	6832	1566	591
BRISBANE	1075.74	2.92	BN 30	6832	1566	591
BRISBANE	1076.25	2.41	BN 20	6832	1566	591
BRISBANE	1076.75	1.91	BN 10	6832	1566	591
BRISBANE	1077.26	1.40	-	6832	1566	591
BRISBANE	1077.78	-478.38	-	6832	1566	591
BRISBANE	1078.28	-478.28	-	6832	1566	591
BRISBANE	1078.59	-479.19	-	6832	1566	591
BREMER	599.70	0.30	-	1756	919	266
OXLEY	599.70	0.30	-	826	399	164
BREAKFAST	599.70	0.30	-	335	201	100
BULIMBA	599.70	0.30	-	538	301	161
CENTWEIR	0.04	0.04	-	17	0	0
INDOORWEIR	0.04	0.04	-	0	0	0
WILLIAMWEIR	0.02	0.02	-	0	0	0
VICTORIAWEIR	0.03	0.03	-	0	0	0
CAPTAINWEIR	0.02	0.02	-	0	0	0
STORYWEIR	0.04	0.04	-	0	0	0
MERIVALEWEIR	0.04	0.04	-	0	0	0

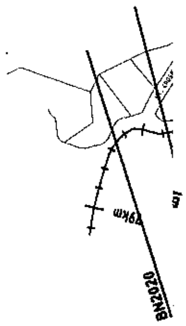
FIGURE E-3a
BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
2, 10 AND 50 YEAR ARI EVENTS (MHWS)

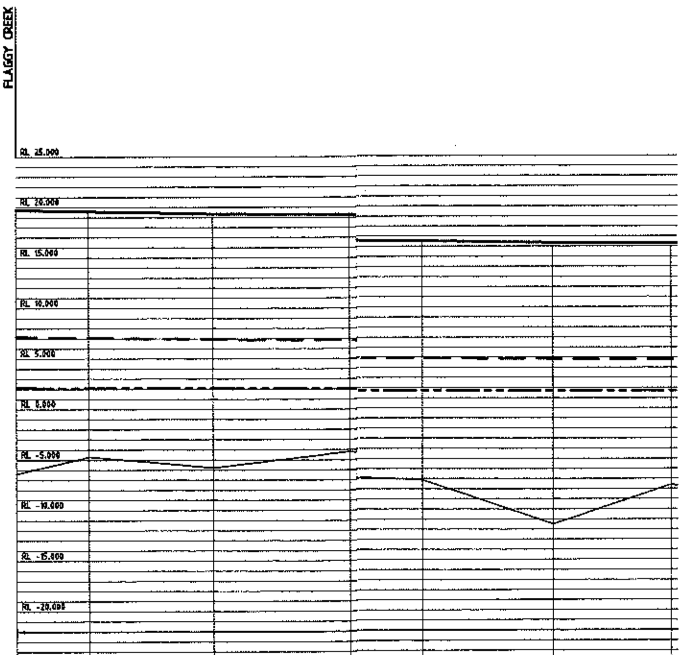
SINCLAIR KNIGHT MERZ

LEGEND

3000 — AMTD LINE

BN 1250 — SURVEYED CROSS SECTION





DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	2.120	2.100	2.080	2.050	1.740	1.720	1.710
10 YEAR ARI DESIGN FLOOD LEVEL	7.100	7.080	6.930	6.830	4.930	4.860	4.820
50 YEAR ARI DESIGN FLOOD LEVEL	19.720	19.590	19.360	19.250	16.550	16.350	16.280
BED LEVEL (m AHD)	-6.600	-4.700	-5.800	-4.200	-7.100	-11.500	-7.400
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1860	BN 1850	BN 1844
MIKE 11 CHAINAGE (km)	1000.000	1000.285	1000.775	1001.315	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	78.640	78.375	77.885	77.345	70.740	70.215	69.735

LEGEND

(S16) LOCATION AND IDENTIFICATION OF STRUCTURE

2 YEAR ARI DESIGN FLOOD

10 YEAR ARI DESIGN FLOOD

50 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

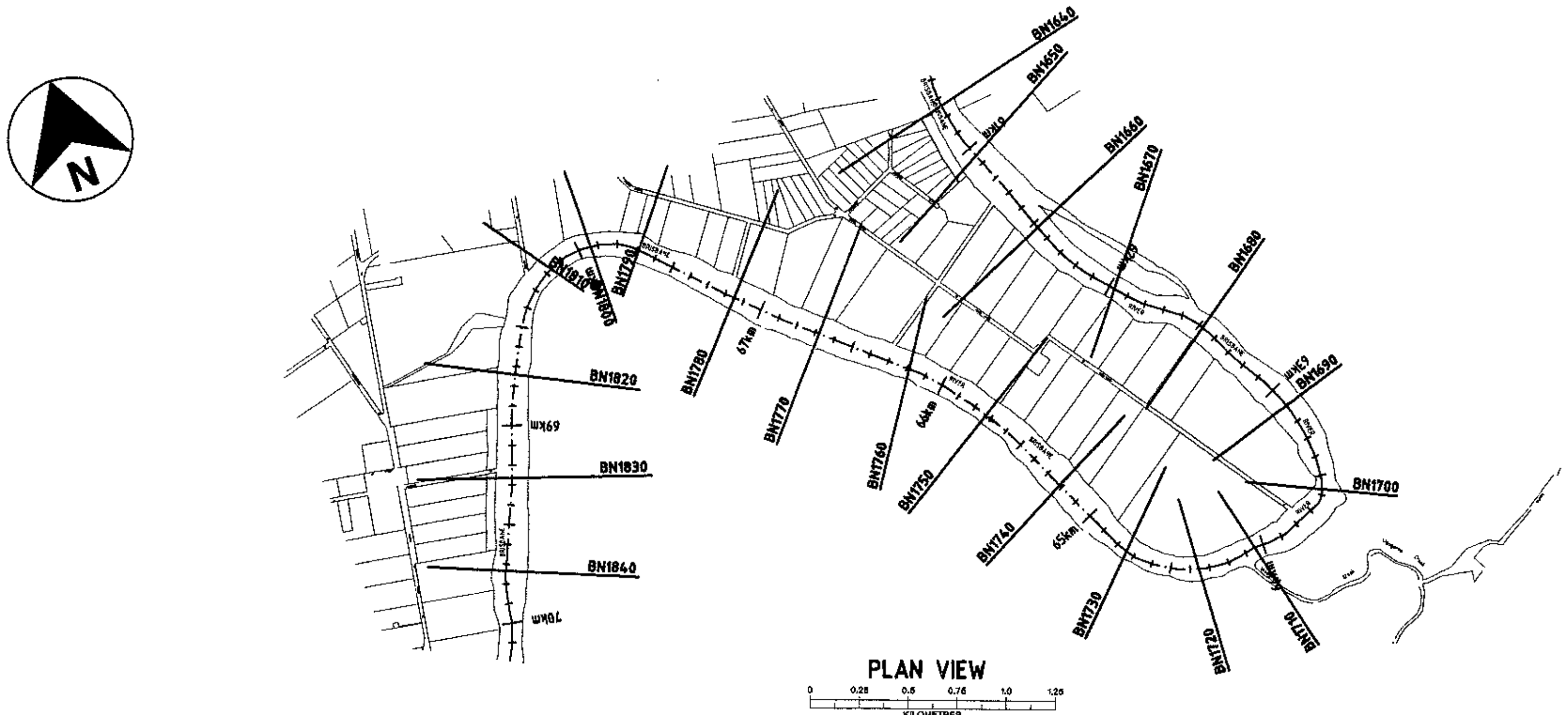
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

FILE NAME 0415.01 PLOT SCALE: 1=30 DISK N. C:\DWG JOB N. T0041.. DATE 23/3/..

SINCLAIR KNIGHT MERZ

FIGURE E-3b

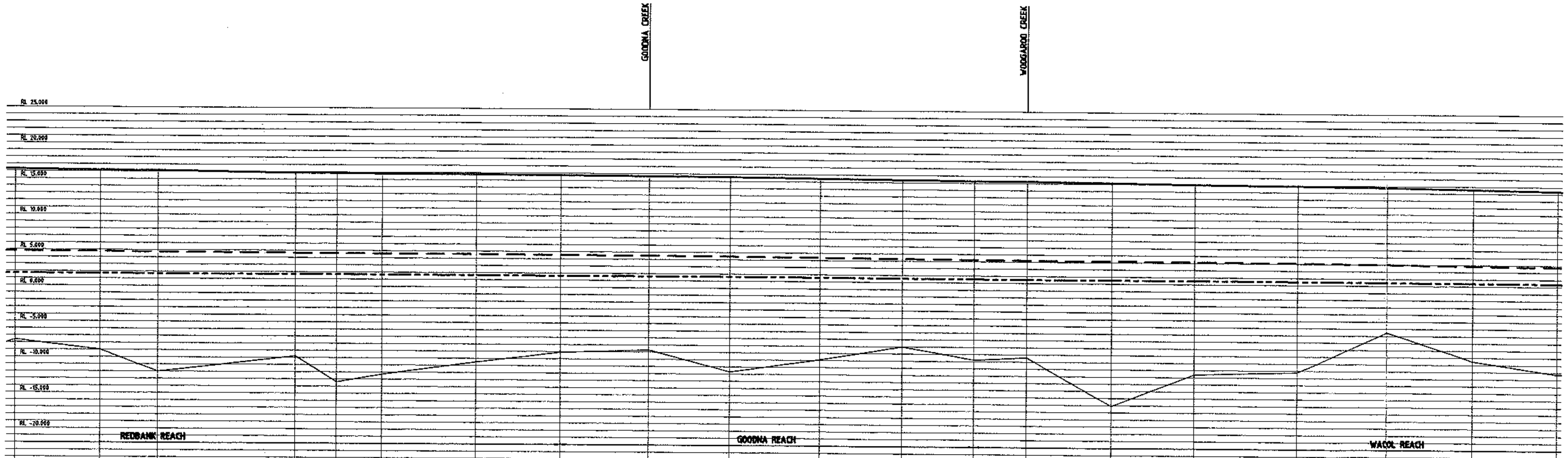
BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
2, 10 AND 50 YEAR ARI EVENTS (MHWS)



LEGEND

AMTD LINE

BN 1750 SURVEYED CROSS SECTION



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.710	1.690	1.690	1.660	1.640	1.650	1.640	1.630	1.620	1.610
10 YEAR ARI DESIGN FLOOD LEVEL	4.820	4.770	4.750	4.650	4.640	4.620	4.580	4.540	4.500	4.450
50 YEAR ARI DESIGN FLOOD LEVEL	16.280	16.180	16.150	15.870	15.850	15.790	15.750	15.730	15.650	15.580
BED LEVEL (m AHD)	-7.400	-9.000	-12.000	-9.800	-13.400	-12.300	-10.500	-9.900	-8.700	-11.700
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750
MIKE 11 CHAINAGE (km)	1008.925	1009.480	1009.720	1010.490	1010.725	1010.980	1011.510	1011.940	1012.475	1012.935
AMTD CHAINAGE (km)	69.735	69.260	68.840	68.170	67.935	67.680	67.150	66.680	66.185	65.725

2 YEAR ARI DESIGN FLOOD LEVEL	1.590	1.560	1.560	1.530	1.520	1.520	1.500	1.470	1.430	1.480
10 YEAR ARI DESIGN FLOOD LEVEL	4.390	4.310	4.240	4.190	4.180	4.160	4.080	3.580	3.440	3.740
50 YEAR ARI DESIGN FLOOD LEVEL	15.550	15.350	15.270	15.270	15.150	14.990	14.890	14.760	14.560	14.370
BED LEVEL (m AHD)	-9.900	-8.000	-9.800	-9.400	-14.100	-11.400	-11.200	-5.500	-9.500	-11.300
CROSS SECTION NUMBER	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1013.445	1013.910	1014.310	1014.610	1015.090	1015.540	1016.140	1016.640	1017.130	1017.610
AMTD CHAINAGE (km)	65.215	64.740	64.350	64.050	63.570	63.120	62.520	62.020	61.530	61.050

LEGEND

- LOCATION AND IDENTIFICATION OF STRUCTURE
- 2 YEAR ARI DESIGN FLOOD
- 10 YEAR ARI DESIGN FLOOD
- 50 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 1840 TO BN 1650

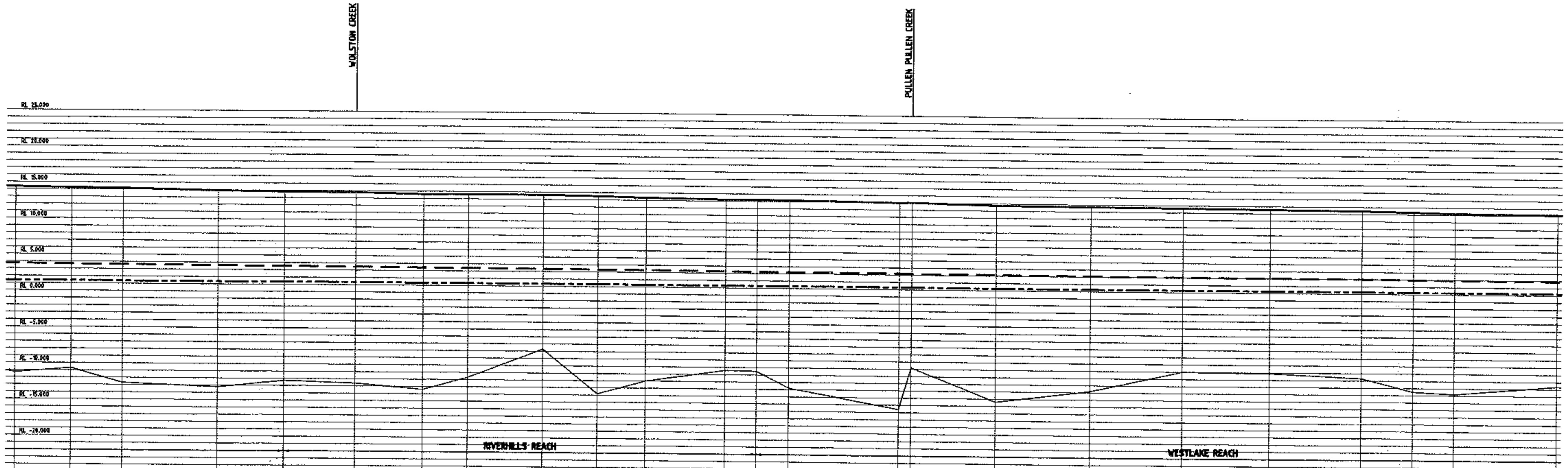
FILE NAME: 04... PLOT SCALE: 1:30... DATE: 23/...

SINCLAIR KNIGHT MERZ

FIGURE E-3c

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
2, 10 AND 50 YEAR ARI EVENTS (MHWS)

PLAN VIEW



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.400	1.390	1.380	1.370	1.360	1.350	1.340	1.340	1.330	1.330	1.320	1.300	1.300	1.300	1.290	1.290	1.280	1.270	1.260	1.260	1.250	1.240	1.240	1.230
10 YEAR ARI DESIGN FLOOD LEVEL	3.740	3.670	3.650	3.590	3.550	3.500	3.460	3.430	3.410	3.390	3.340	3.270	3.250	3.250	3.220	3.200	3.150	3.110	3.080	3.040	3.000	2.970	2.940	2.890
50 YEAR ARI DESIGN FLOOD LEVEL	14.370	14.260	14.190	13.930	13.820	13.790	13.580	13.630	13.410	13.490	13.330	13.220	13.220	13.170	13.400	13.020	12.740	12.670	12.400	12.530	12.450	12.330	12.100	12.120
BED LEVEL (m AHD)	-11.300	-10.700	-12.700	-13.200	-12.300	-12.600	-13.400	-11.200	-7.700	-13.800	-12.800	-10.400	-10.500	-12.800	-15.400	-9.860	-14.400	-12.600	-16.000	-18.100	-10.700	-12.580	-12.400	-11.600
CROSS SECTION NUMBER	BN 1650	BN 1640	BN 1630	BN 1620	BN 1610	BN 1600	BN 1590	BN 1580	BN 1570	BN 1560	BN 1550	BN 1540	BN 1530	BN 1520	BN 1510	BN 1500	BN 1490	BN 1480	BN 1470	BN 1460	BN 1450	BN 1440	BN 1430	BN 1420
MIKE 11 CHAINAGE (km)	1017.610	1017.920	1018.200	1018.725	1019.095	1019.490	1019.865	1020.115	1020.525	1020.830	1021.095	1021.539	1021.715	1021.895	1022.505	1022.575	1023.049	1023.570	1024.080	1024.563	1025.078	1025.360	1025.590	1026.170
AMTD CHAINAGE (km)	61.050	60.740	60.460	59.935	59.565	59.170	58.795	58.545	58.135	57.830	57.565	57.121	56.945	56.745	56.555	56.085	55.620	55.090	54.580	54.097	53.580	53.300	53.070	52.490

LEGEND

- (S16) LOCATION AND IDENTIFICATION OF STRUCTURE
- 2 YEAR ARI DESIGN FLOOD
- 10 YEAR ARI DESIGN FLOOD
- 50 YEAR ARI DESIGN FLOOD

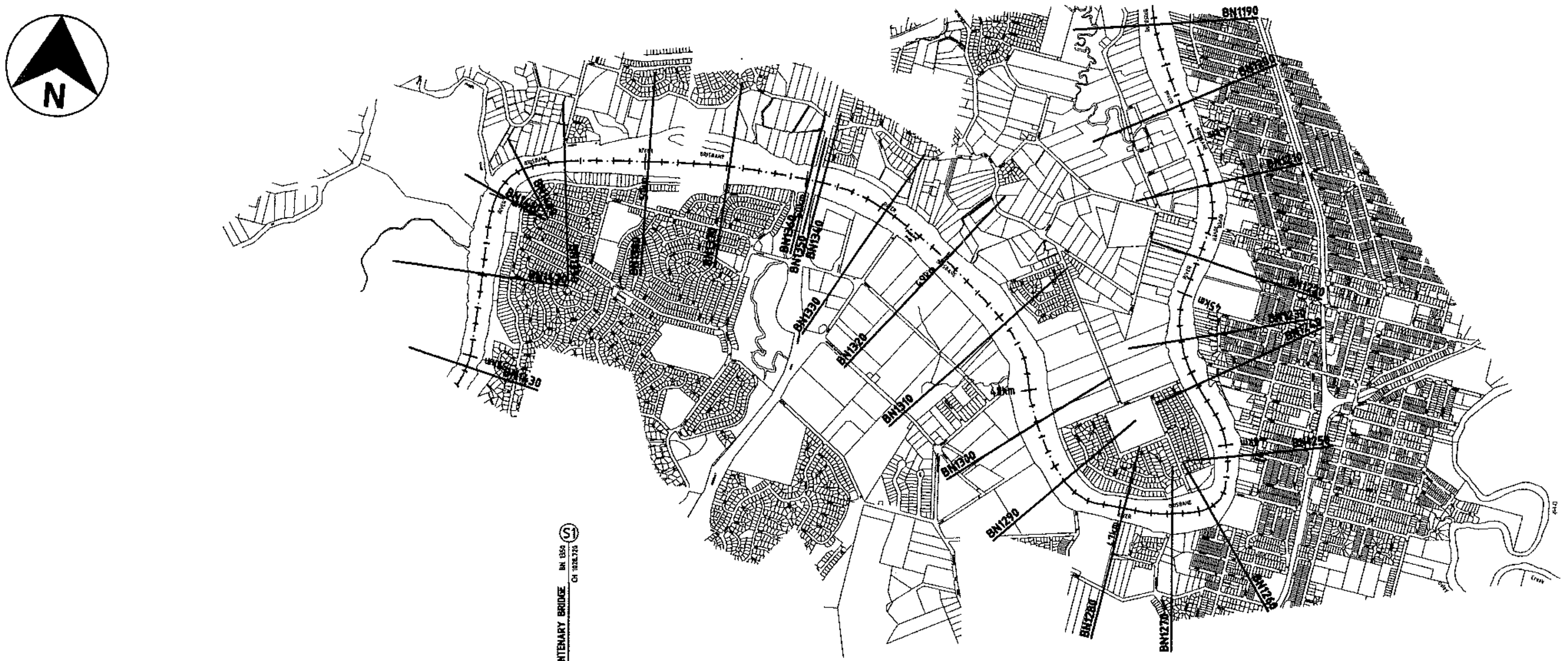
VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

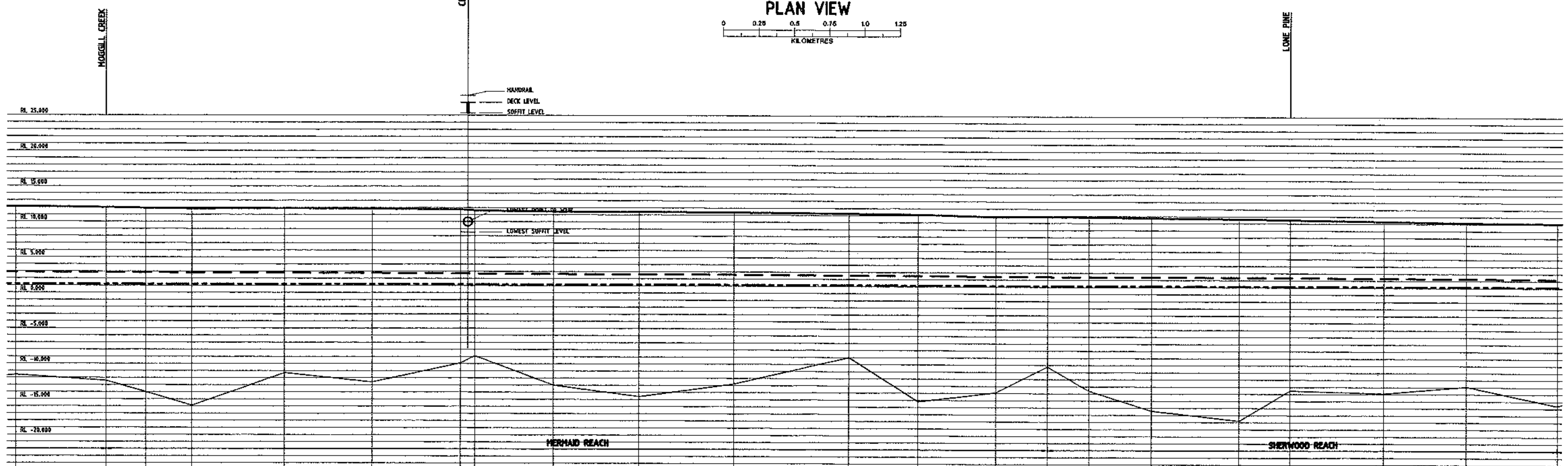
BRISBANE RIVER - BN 1650 TO BN 1420

PLOT SCALE: 1=30

FIGURE E-3d
BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
2, 10 AND 50 YEAR ARI EVENTS (MHWS)



PLAN VIEW
0 0.25 0.5 0.75 1.0 1.25
KILOMETRES



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.230	1.220	1.220	1.220	1.210	1.210	1.200	1.190	1.190	1.180	1.180
10 YEAR ARI DESIGN FLOOD LEVEL	2.890	2.850	2.820	2.790	2.780	2.760	2.730	2.670	2.630	2.610	2.590
50 YEAR ARI DESIGN FLOOD LEVEL	12.120	12.010	11.900	11.830	11.860	11.830	11.710	11.600	11.450	11.400	11.380
BED LEVEL (m AHD)	-11.600	-12.600	-14.000	-15.900	-11.300	-12.400	-9.980	-8.980	-13.800	-14.600	-12.800
CROSS SECTION NUMBER	BN 1420	BN 1410	BN 1400	BN 1390	BN 1380	BN 1370	BN 1340	BN 1340	BN 1330	BN 1320	BN 1310
MIKE 11 CHAINAGE (km)	1026.170	1026.480	1026.900	1027.160	1027.680	1028.180	1028.680	1028.740	1029.200	1029.680	1030.320
AMTD CHAINAGE (km)	52.490	51.980	51.760	51.500	50.980	50.480	49.980	49.900	49.460	48.980	48.440

2 YEAR ARI DESIGN FLOOD LEVEL	1.170	1.170	1.160	1.160	1.160	1.160	1.150	1.150	1.140	1.140	1.130
10 YEAR ARI DESIGN FLOOD LEVEL	2.550	2.510	2.440	2.440	2.420	2.420	2.390	2.370	2.320	2.280	2.240
50 YEAR ARI DESIGN FLOOD LEVEL	11.240	11.110	10.920	10.890	10.820	10.750	10.400	10.520	10.330	10.150	10.060
BED LEVEL (m AHD)	-9.880	-15.200	-13.960	-10.100	-13.400	-16.400	-17.800	-13.500	-13.700	-12.900	-15.600
CROSS SECTION NUMBER	BN 1300	BN 1290	BN 1280	BN 1270	BN 1240	BN 1250	BN 1260	BN 1230	BN 1220	BN 1210	BN 1200
MIKE 11 CHAINAGE (km)	1030.470	1031.240	1031.700	1031.995	1032.130	1032.585	1033.080	1033.370	1033.900	1034.370	1034.890
AMTD CHAINAGE (km)	47.790	47.480	46.960	46.665	46.430	46.075	45.580	45.290	44.760	44.290	43.770

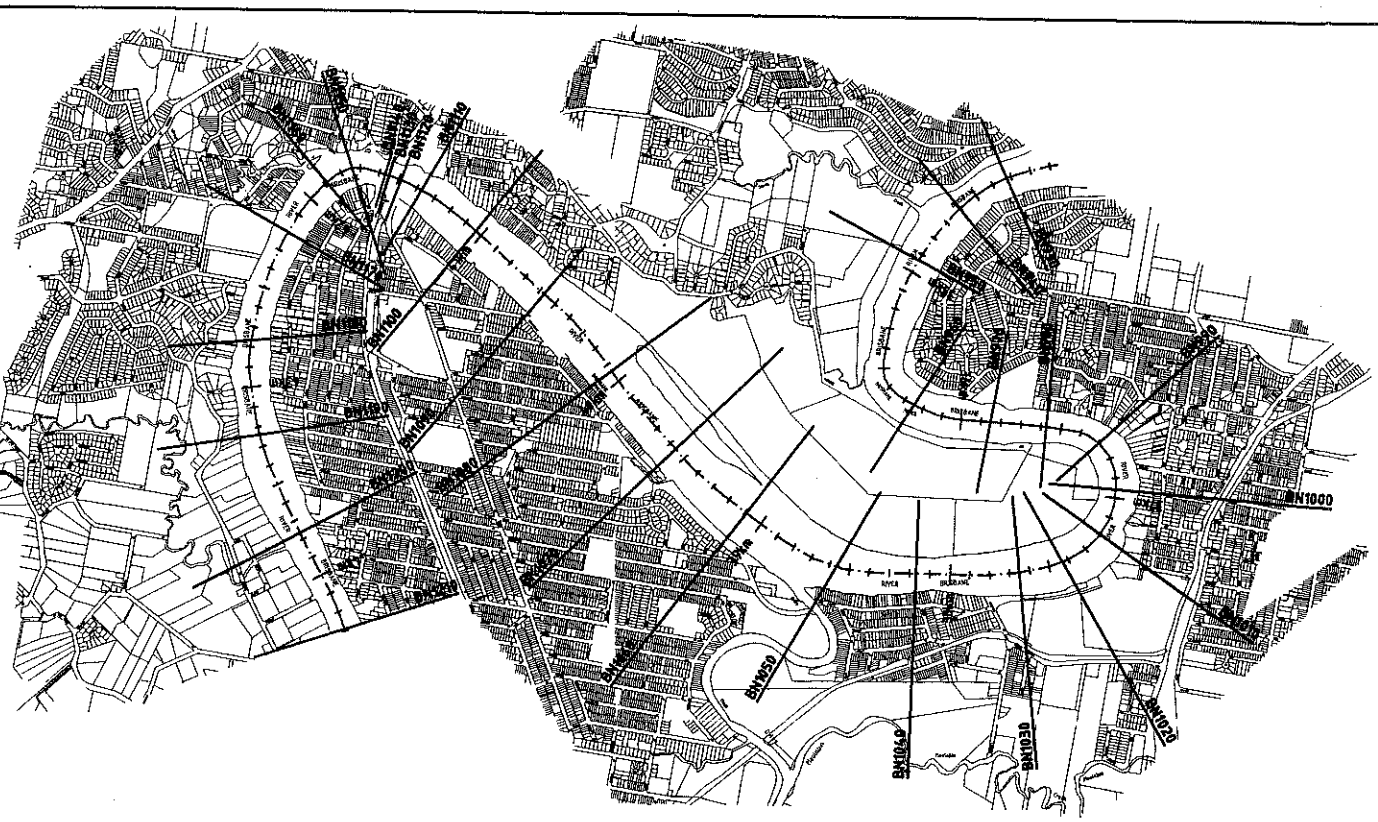
LEGEND
S16 LOCATION AND IDENTIFICATION OF STRUCTURE
2 YEAR ARI DESIGN FLOOD
10 YEAR ARI DESIGN FLOOD
50 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 1420 TO BN 1200

FIGURE E-3e

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
2, 10 AND 50 YEAR ARI EVENTS (MHWS)



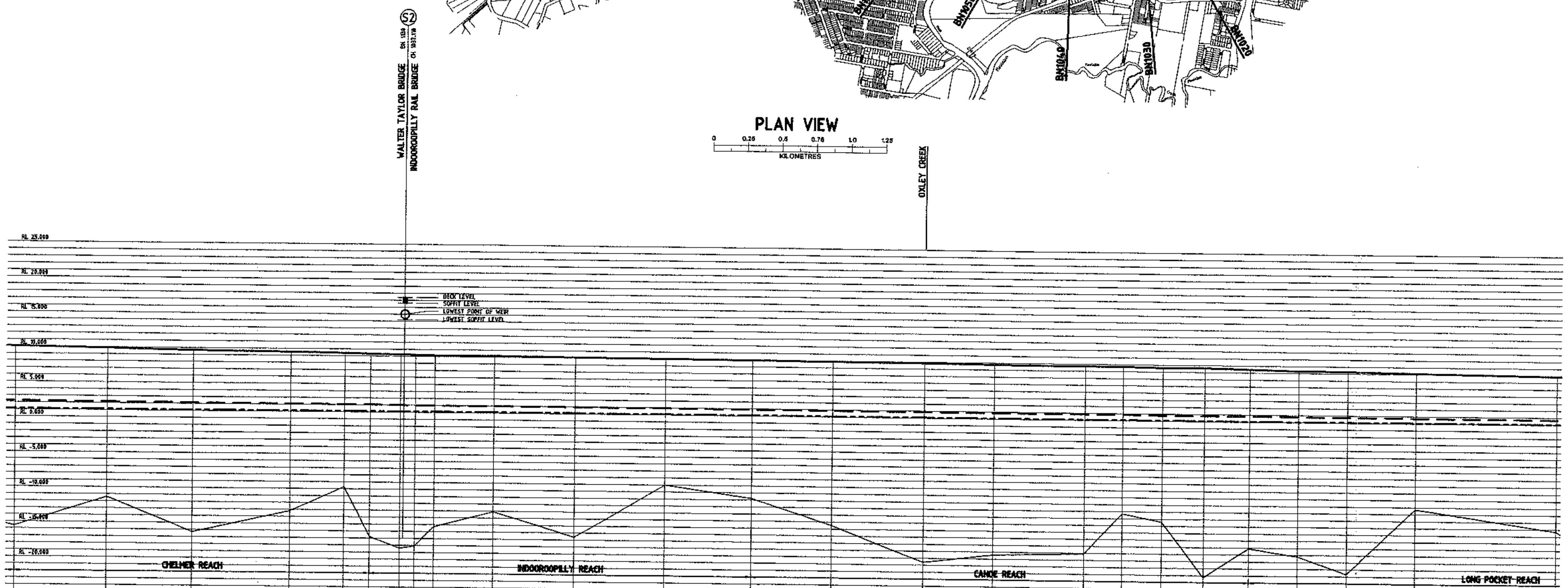
LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25
KILOMETRES



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.130	1.130	1.120	1.120	1.110	1.110	1.110	1.100	1.100	1.100	1.100	1.090	1.090
10 YEAR ARI DESIGN FLOOD LEVEL	2.240	2.190	2.150	2.100	2.080	2.070	2.050	1.990	1.990	1.980	1.930	1.930	1.900
50 YEAR ARI DESIGN FLOOD LEVEL	10.060	9.870	9.630	9.510	9.400	9.310	9.250	9.210	9.350	9.150	9.100	9.030	8.950
BED LEVEL (m AHD)	-15.400	-11.400	-16.300	-13.200	-9.700	-16.800	-18.400	-18.500	-15.300	-13.100	-16.600	-9.000	-10.300
CROSS SECTION NUMBER	BN 1200	BN 1190	BN 1180	BN 1170	BN 1160	BN 1150	BN 1140	BN 1120	BN 1110	BN 1100	BN 1090	BN 1080	BN 1070
MIKE 11 CHAINAGE (km)	1034.990	1035.414	1035.900	1036.440	1036.770	1036.915	1037.050	1037.135	1037.205	1037.625	1038.085	1038.600	1039.100
AMTD CHAINAGE (km)	43.779	43.244	42.768	42.288	41.890	41.745	41.570	41.485	41.375	41.035	40.575	40.060	39.540

2 YEAR ARI DESIGN FLOOD LEVEL	1.080	1.080	1.080	1.080	1.080	1.080	1.080	1.070	1.070	1.070	1.060	1.050
10 YEAR ARI DESIGN FLOOD LEVEL	1.870	1.870	1.860	1.840	1.830	1.810	1.810	1.790	1.770	1.770	1.730	1.670
50 YEAR ARI DESIGN FLOOD LEVEL	8.900	8.860	8.760	8.710	8.680	8.630	8.600	8.490	8.340	8.310	8.130	7.900
BED LEVEL (m AHD)	-14.500	-19.400	-18.400	-18.300	-12.300	-13.400	-21.300	-17.300	-18.200	-20.700	-11.300	-14.300
CROSS SECTION NUMBER	BN 1060	BN 1050	BN 1040	BN 1030	BN 1020	BN 1010	BN 1000	BN 990	BN 980	BN 970	BN 960	BN 950
MIKE 11 CHAINAGE (km)	1039.565	1040.090	1040.490	1041.010	1041.230	1041.460	1041.740	1041.960	1042.235	1042.515	1042.910	1043.725
AMTD CHAINAGE (km)	38.850	38.570	38.170	37.560	37.430	37.280	36.960	36.790	36.425	36.145	35.750	34.935

LEGEND

(S16) LOCATION AND IDENTIFICATION OF STRUCTURE
2 YEAR ARI DESIGN FLOOD
10 YEAR ARI DESIGN FLOOD
50 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 1200 TO BN 950

PLOT SCALE: 1=30

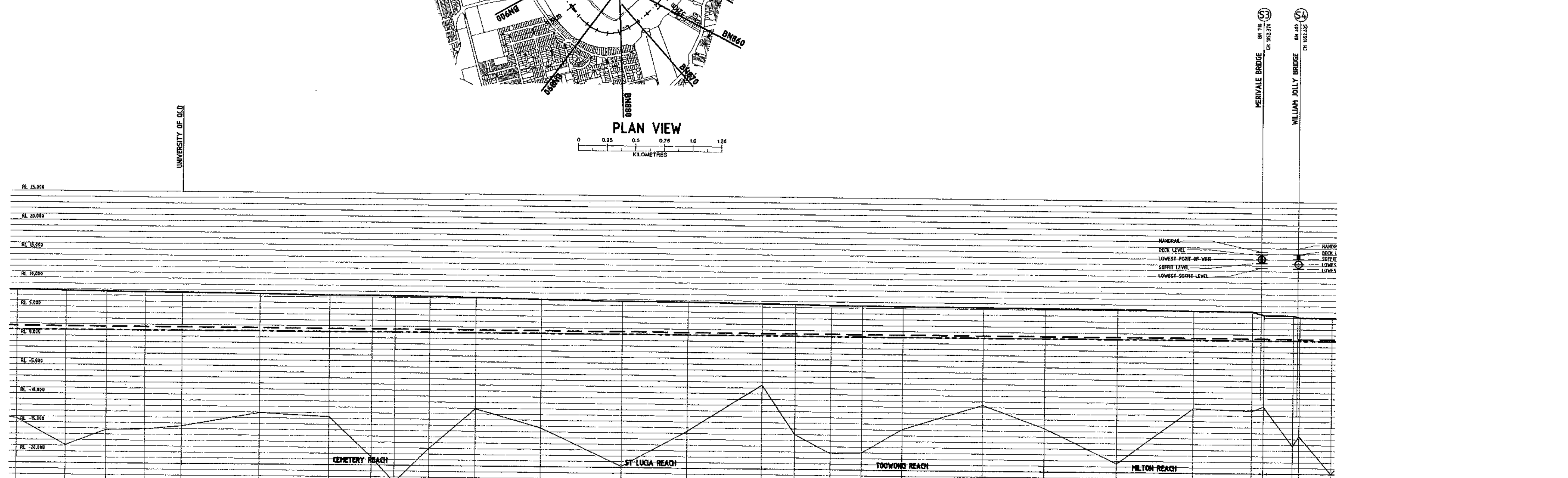
SINCLAIR KNIGHT MERZ

FIGURE E-3f

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
2, 10 AND 50 YEAR ARI EVENTS (MHWS)

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25
KILOMETRES



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.050	1.050	1.050	1.050	1.050	1.040	1.040
10 YEAR ARI DESIGN FLOOD LEVEL	1.670	1.650	1.640	1.630	1.620	1.580	1.550
50 YEAR ARI DESIGN FLOOD LEVEL	7.900	7.800	7.690	7.650	7.610	7.480	7.330
BED LEVEL (m AHD)	-14.300	-18.500	-14.200	-14.100	-15.500	-13.100	-13.700
CROSS SECTION NUMBER	BN 950	BN 940	BN 930	BN 920	BN 910	BN 900	BN 890
MIKE 11 CHAINAGE (km)	1043.735	1044.040	1044.340	1044.695	1044.860	1045.400	1045.885
AMTD CHAINAGE (km)	34.935	34.604	34.320	34.055	33.800	33.260	32.775

2 YEAR ARI DESIGN FLOOD LEVEL	1.040	1.030	1.030	1.030	1.030	1.020	1.020
10 YEAR ARI DESIGN FLOOD LEVEL	1.550	1.550	1.540	1.520	1.490	1.470	1.460
50 YEAR ARI DESIGN FLOOD LEVEL	7.300	7.270	7.240	7.100	6.890	6.730	6.730
BED LEVEL (m AHD)	-20.600	-24.900	-19.000	-12.100	-15.300	-21.800	-15.400
CROSS SECTION NUMBER	BN 880	BN 870	BN 860	BN 850	BN 840	BN 830	BN 820
MIKE 11 CHAINAGE (km)	1046.180	1046.340	1046.580	1046.900	1047.350	1047.915	1048.375
AMTD CHAINAGE (km)	32.480	32.320	32.080	31.760	31.310	30.745	30.285

2 YEAR ARI DESIGN FLOOD LEVEL	1.020	1.020	1.010	1.010	1.010	1.010	1.010
10 YEAR ARI DESIGN FLOOD LEVEL	1.420	1.420	1.400	1.400	1.400	1.380	1.370
50 YEAR ARI DESIGN FLOOD LEVEL	6.530	6.490	6.340	6.350	6.290	6.240	6.160
BED LEVEL (m AHD)	-7.500	-14.000	-19.200	-19.000	-14.900	-10.600	-16.500
CROSS SECTION NUMBER	BN 810	BN 800	BN 790	BN 780	BN 770	BN 760	BN 750
MIKE 11 CHAINAGE (km)	1048.890	1049.120	1049.370	1049.590	1049.870	1050.430	1050.860
AMTD CHAINAGE (km)	29.770	29.540	29.290	29.070	28.790	28.230	27.800

2 YEAR ARI DESIGN FLOOD LEVEL	1.010	1.000	1.000	1.000	1.000	0.990	0.990
10 YEAR ARI DESIGN FLOOD LEVEL	1.370	1.350	1.330	1.300	1.300	1.280	1.200
50 YEAR ARI DESIGN FLOOD LEVEL	6.160	6.010	5.970	5.380	5.330	4.990	4.980
BED LEVEL (m AHD)	-20.500	-10.800	-11.200	-10.400	-17.200	-15.500	-22.000
CROSS SECTION NUMBER	BN 740	BN 730	BN 720	BN 700	BN 690	BN 670	BN 660
MIKE 11 CHAINAGE (km)	1051.360	1051.895	1052.310	1052.390	1052.595	1052.640	1052.865
AMTD CHAINAGE (km)	27.300	26.765	26.350	26.270	26.065	26.020	25.795

LEGEND

- S16 LOCATION AND IDENTIFICATION OF STRUCTURE
- 2 YEAR ARI DESIGN FLOOD
- 10 YEAR ARI DESIGN FLOOD
- 50 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 950 TO BN 660

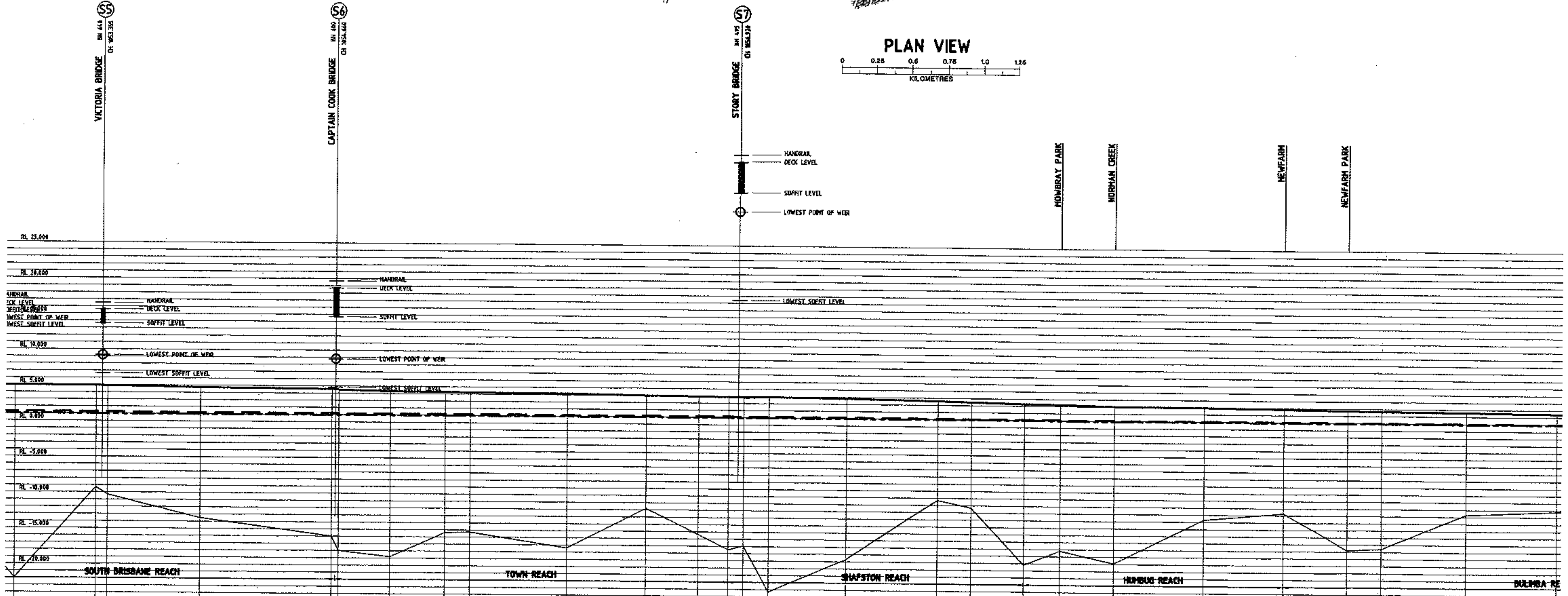
FILE NAME: 04157-61
PLOT SCALE: 1:20
DISK No: CADWG
JOB No: T00457
DATE: 23/?/97

SINCLAIR KNIGHT MERZ

FIGURE E-3g

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
2, 10 AND 50 YEAR ARI EVENTS (MHWS)

PLAN VIEW



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	0.990	0.990	0.980	0.980	0.980	0.970	0.970	0.970	0.970	0.960	0.960	0.960	0.960	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.940	0.940	0.940	0.940	0.940	0.940	0.940
10 YEAR ARI DESIGN FLOOD LEVEL	1.200	1.270	1.240	1.240	1.210	1.200	1.190	1.180	1.180	1.170	1.160	1.150	1.150	1.140	1.150	1.140	1.110	1.100	1.090	1.080	1.070	1.060	1.050	1.040	1.030	1.030	1.020
50 YEAR ARI DESIGN FLOOD LEVEL	4.980	4.950	4.900	4.720	4.570	4.500	4.300	4.260	4.240	4.170	3.980	3.930	3.900	3.830	3.920	3.810	3.570	3.460	3.280	3.240	3.040	2.990	2.850	2.720	2.640	2.600	2.450
BED LEVEL (m AHD)	-22.090	-9.300	-10.300	-13.500	-16.000	-18.000	-18.800	-15.400	-15.300	-17.400	-11.800	-15.400	-17.500	-16.900	-23.360	-18.780	-10.300	-11.300	-19.280	-17.200	-18.900	-12.700	-11.700	-16.800	-16.600	-11.700	-11.200
CROSS SECTION NUMBER	BN 660	BN 650	BN 640	BN 620	BN 610	BN 590	BN 560	BN 550	BN 540	BN 530	BN 520	BN 510	BN 500	BN 490	BN 480	BN 470	BN 460	BN 450	BN 440	BN 430	BN 420	BN 410	BN 400	BN 390	BN 380	BN 370	BN 360
MIKE 11 CHAINAGE (km)	1052.845	1053.320	1053.385	1053.900	1054.440	1054.680	1054.970	1055.200	1055.420	1055.940	1056.400	1056.695	1056.845	1056.950	1057.890	1057.530	1058.040	1058.230	1058.530	1058.735	1059.035	1059.540	1059.990	1060.345	1060.535	1061.015	1061.530
AMTD CHAINAGE (km)	25.795	25.340	25.275	24.740	24.820	23.960	23.690	23.380	23.240	22.760	22.240	21.965	21.395	21.730	21.570	21.130	20.620	20.430	20.130	19.925	19.625	19.120	18.670	18.315	18.125	17.645	17.130

LEGEND
- S16 LOCATION AND IDENTIFICATION OF STRUCTURE
- 2 YEAR ARI DESIGN FLOOD
- 10 YEAR ARI DESIGN FLOOD
- 50 YEAR ARI DESIGN FLOOD

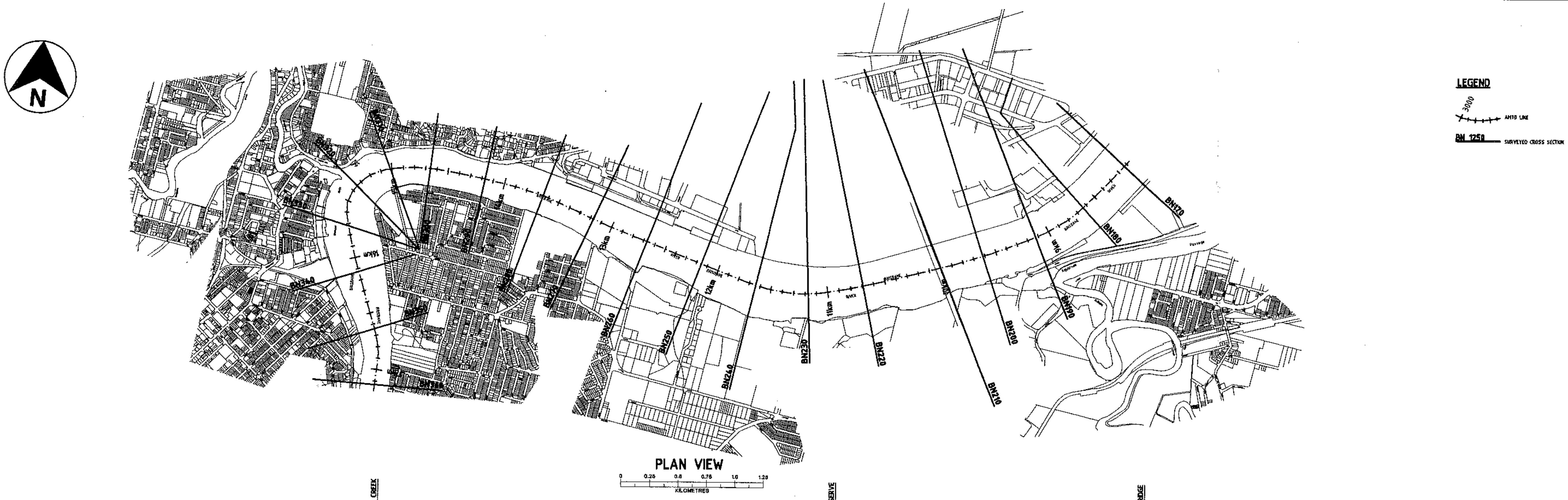
VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

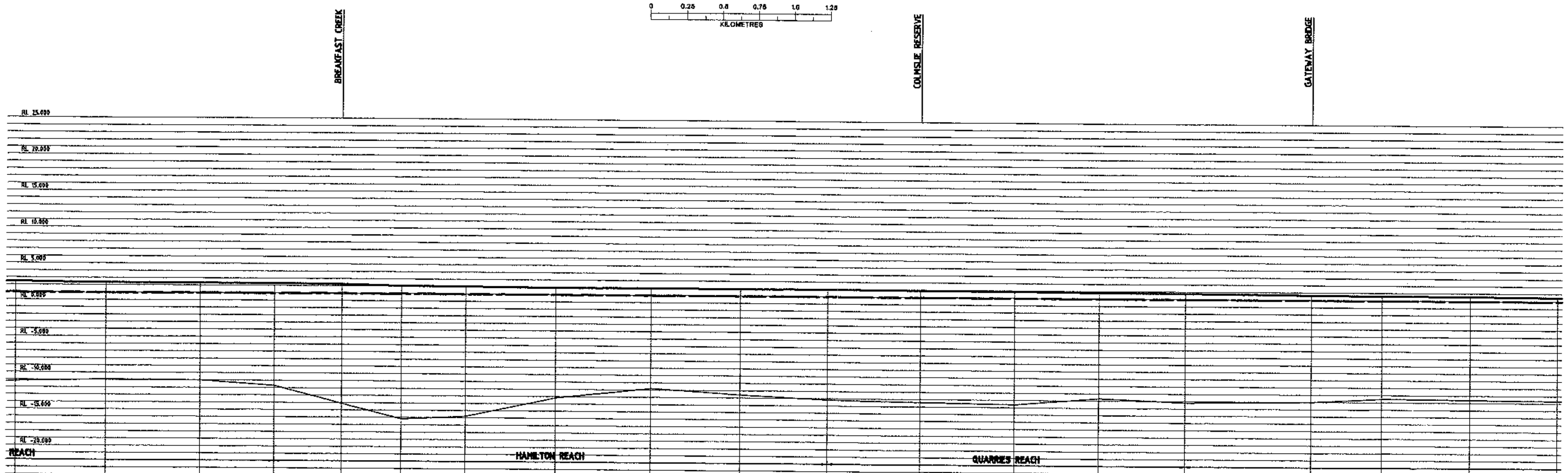
BRISBANE RIVER - BN 660 TO BN 360

PLOT SCALE: 1=30

FIGURE E-3h

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
2, 10 AND 50 YEAR ARI EVENTS (MHWS)





DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	0.940	0.940	0.940	0.944	0.948	0.940	0.940	0.944	0.940	0.940	0.940	0.944	0.940	0.940	0.940	0.944	0.940	0.940	0.938
10 YEAR ARI DESIGN FLOOD LEVEL	1.020	1.010	1.010	1.010	1.000	0.990	0.990	0.980	0.980	0.980	0.984	0.980	0.980	0.970	0.970	0.960	0.960	0.960	0.960
50 YEAR ARI DESIGN FLOOD LEVEL	2.450	2.390	2.340	2.330	2.260	2.040	2.010	1.930	1.940	1.940	1.940	1.920	1.900	1.830	1.770	1.660	1.610	1.570	1.520
BED LEVEL (m AHD)	-11.284	-10.100	-11.890	-11.700	-14.180	-16.200	-15.880	-13.280	-11.880	-12.680	-13.200	-13.490	-13.600	-12.700	-13.200	-13.000	-12.500	-12.690	-12.780
CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
MIKE 11 CHAINAGE (km)	1061.538	1062.020	1062.535	1062.940	1063.310	1063.445	1064.088	1064.490	1065.010	1065.503	1065.990	1066.505	1067.020	1067.485	1067.945	1068.440	1068.865	1069.535	1070.025
AMTD CHAINAGE (km)	17.130	16.640	16.125	15.720	15.350	15.015	14.660	14.170	13.650	13.157	12.670	12.155	11.640	11.175	10.695	10.080	9.615	9.125	8.635

LEGEND
- LOCATION AND IDENTIFICATION OF STRUCTURE
- 2 YEAR ARI DESIGN FLOOD
- 10 YEAR ARI DESIGN FLOOD
- 50 YEAR ARI DESIGN FLOOD

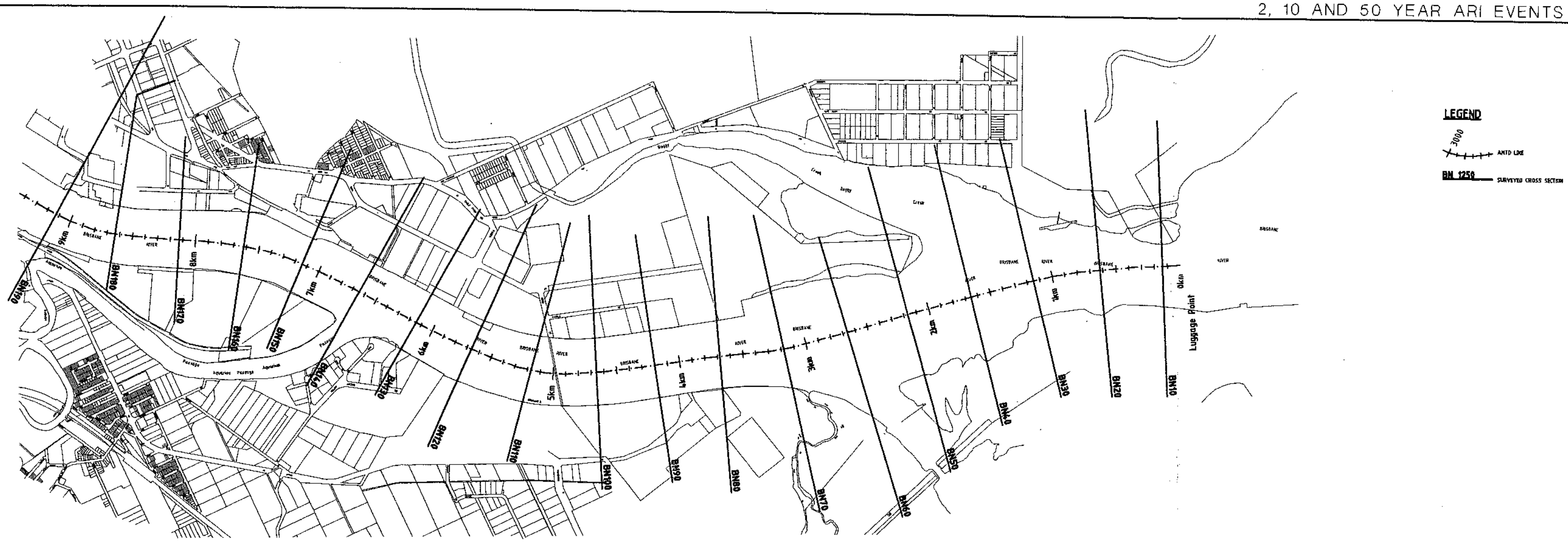
VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 360 TO BN 180

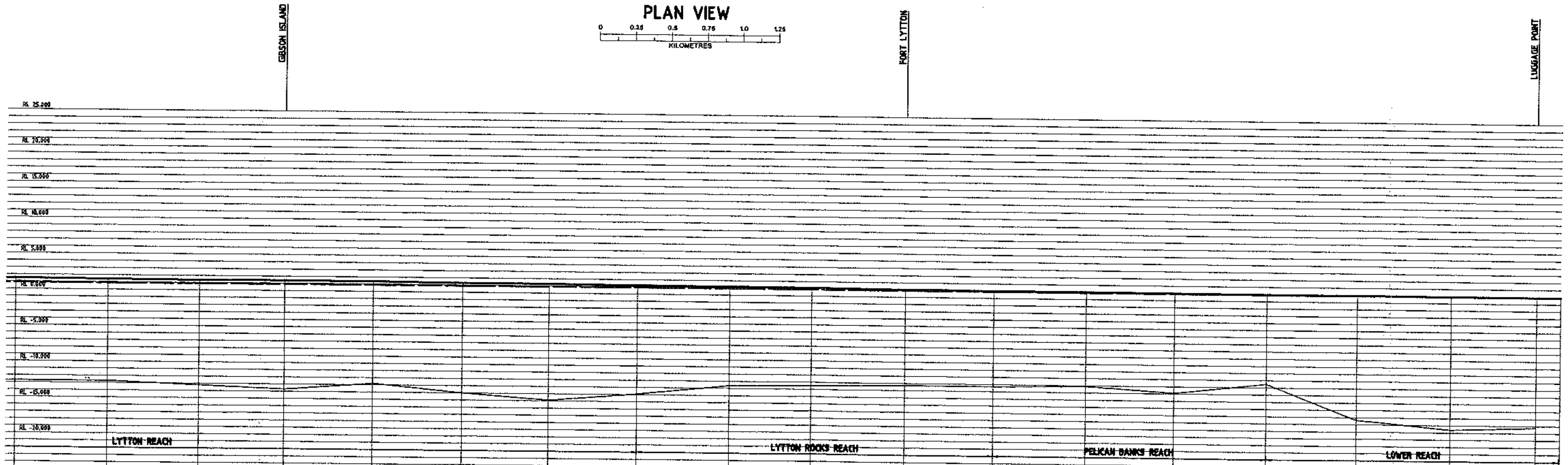
FILE ... PLOT SCALE: 1=30

FIGURE E-3i

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
2, 10 AND 50 YEAR ARI EVENTS (MHWS)



PLAN VIEW



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
10 YEAR ARI DESIGN FLOOD LEVEL	0.960	0.950	0.950	0.950	0.950	0.940	0.940	0.940	0.930	0.930	0.930	0.930	0.930	0.920	0.920	0.920	0.920	0.920	0.920
50 YEAR ARI DESIGN FLOOD LEVEL	1.520	1.450	1.390	1.410	1.380	1.310	1.280	1.210	1.170	1.130	1.040	1.020	1.020	0.960	0.950	0.950	0.940	0.920	0.920
BED LEVEL (m AHD)	-12.780	-12.700	-13.200	-13.704	-12.600	-14.000	-14.900	-13.900	-12.600	-12.500	-12.300	-12.300	-12.400	-12.900	-11.500	-16.400	-17.400	-17.200	
CROSS SECTION NUMBER	BN 180	BN 170	BN 160	BN 150	BN 140	BN 130	BN 120	BN 110	BN 100	BN 90	BN 80	BN 70	BN 60	BN 50	BN 40	BN 30	BN 20	BN 10	
MIKE 11 CHAINAGE (km)	1070.025	1070.530	1071.044	1071.520	1072.015	1072.515	1072.995	1073.485	1074.020	1074.460	1074.985	1075.480	1076.020	1076.495	1077.010	1077.510	1078.040	1078.525	1078.660
AMTD CHAINAGE (km)	8.635	8.130	7.620	7.140	6.645	6.145	5.665	5.175	4.640	4.200	3.675	3.180	2.640	2.165	1.650	1.150	0.620	0.135	0.000

LEGEND

(516) LOCATION AND IDENTIFICATION OF STRUCTURE
2 YEAR ARI DESIGN FLOOD
10 YEAR ARI DESIGN FLOOD
50 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 180 TO BN 10

FILE: 04
PLOT SCALE: 1=30

Flood Levels

Table E-4-Design Flood Profiles for the PMF & 10000 Year ARI Events

Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	PMF WL (m AHD)	10000 Year ARI WL (m AHD)
BRISBANE	1000	78.66	BN 2020	39.42	35.54
BRISBANE	1000.285	78.375	BN 2010	39.54	35.56
BRISBANE	1000.775	77.885	BN 2000	39.10	35.12
BRISBANE	1001.315	77.345	BN 1990	38.97	34.98
BRISBANE	1001.865	76.795	BN 1980	38.28	34.28
BRISBANE	1002.35	76.31	BN 1970	37.49	33.52
BRISBANE	1002.785	75.875	BN 1960	37.51	33.56
BRISBANE	1003.275	75.385	BN 1950	37.72	33.66
BRISBANE	1003.775	74.885	BN 1940	37.45	33.30
BRISBANE	1004.3	74.36	BN 1930	37.51	33.34
BRISBANE	1004.81	73.85	BN 1920	37.46	33.28
BRISBANE	1005.325	73.335	BN 1910	37.30	33.00
BRISBANE	1005.87	72.79	BN 1900	37.33	33.06
BRISBANE	1006.3	72.36	BN 1890	37.31	33.03
BRISBANE	1006.91	71.75	BN 1880	37.23	32.94
BRISBANE	1007.41	71.25	BN 1870	36.92	32.59
BRISBANE	1007.92	70.74	BN 1860	37.11	32.79
BRISBANE	1008.445	70.215	BN 1850	36.99	32.63
BRISBANE	1008.925	69.735	BN 1840	36.96	32.59
BRISBANE	1009.4	69.26	BN 1830	36.98	32.61
BRISBANE	1009.72	68.84	BN 1820	36.96	32.60
BRISBANE	1010.49	68.17	BN 1810	36.20	31.89
BRISBANE	1010.725	67.935	BN 1800	36.20	31.92
BRISBANE	1010.98	67.68	BN 1790	35.76	31.57
BRISBANE	1011.51	67.15	BN 1780	36.20	31.88
BRISBANE	1011.98	66.68	BN 1770	36.32	31.88
BRISBANE	1012.475	66.185	BN 1760	36.42	32.00
BRISBANE	1012.935	65.725	BN 1750	36.44	32.01
BRISBANE	1013.445	65.215	BN 1740	36.29	31.83
BRISBANE	1013.91	64.74	BN 1730	36.32	31.87
BRISBANE	1014.31	64.55	BN 1720	36.28	31.84
BRISBANE	1014.61	64.05	BN 1710	36.29	31.85
BRISBANE	1015.09	63.57	BN 1700	36.07	31.60
BRISBANE	1015.56	63.1	BN 1690	35.48	31.13
BRISBANE	1016.14	62.52	BN 1680	35.53	31.12
BRISBANE	1016.64	62.02	BN 1670	35.74	31.27
BRISBANE	1017.13	61.53	BN 1660	35.73	31.24
BRISBANE	1017.61	61.05	BN 1650	35.49	30.92
BRISBANE	1017.92	60.74	BN 1640	35.54	30.93
BRISBANE	1018.2	60.46	BN 1630	35.54	30.98
BRISBANE	1018.725	59.935	BN 1620	35.39	30.80
BRISBANE	1019.095	59.565	BN 1610	35.41	30.81
BRISBANE	1019.49	59.17	BN 1600	35.40	30.80
BRISBANE	1019.865	58.795	BN 1590	35.25	30.64
BRISBANE	1020.115	58.545	BN 1580	35.32	30.71
BRISBANE	1020.525	58.135	BN 1570	35.27	30.65
BRISBANE	1020.83	57.83	BN 1560	35.09	30.47
BRISBANE	1021.095	57.565	BN 1550	35.05	30.40
BRISBANE	1021.539	57.121	BN 1540	35.02	30.32
BRISBANE	1021.715	56.945	BN 1530	35.03	30.32
BRISBANE	1021.895	56.765	BN 1520	34.69	30.02
BRISBANE	1022.505	56.555	BN 1510	34.06	29.48
BRISBANE	1022.575	56.085	BN 1500	34.62	29.93
BRISBANE	1023.04	55.62	BN 1490	34.54	29.82
BRISBANE	1023.57	55.09	BN 1480	33.87	29.25
BRISBANE	1024.08	54.58	BN 1470	34.09	29.18
BRISBANE	1024.563	54.097	BN 1460	34.23	29.37
BRISBANE	1025.07	53.59	BN 1450	34.31	29.46
BRISBANE	1025.36	53.3	BN 1440	33.72	28.95
BRISBANE	1025.59	53.07	BN 1430	33.35	28.61
BRISBANE	1026.17	52.49	BN 1420	33.78	28.78
BRISBANE	1026.68	51.98	BN 1410	33.79	28.87
BRISBANE	1026.9	51.76	BN 1400	33.71	28.78

Flood Levels

Table E-4-Design Flood Profiles for the PMF & 10000 Year ARI Events

Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	PMF WL (m AHD)	10000 Year ARI WL (m AHD)
BRISBANE	1027.16	51.5	BN 1390	33.75	28.62
BRISBANE	1027.68	50.98	BN 1380	33.52	28.60
BRISBANE	1028.18	50.48	BN 1370	33.53	28.59
BRISBANE	1028.68	49.98	BN 1360	33.19	28.28
BRISBANE	1028.76	49.9	BN 1340	32.64	27.71
BRISBANE	1029.2	49.46	BN 1330	32.36	27.48
BRISBANE	1029.68	48.98	BN 1320	32.35	27.46
BRISBANE	1030.22	48.44	BN 1310	32.51	27.41
BRISBANE	1030.87	47.79	BN 1300	32.28	27.28
BRISBANE	1031.26	47.4	BN 1290	32.02	27.06
BRISBANE	1031.7	46.96	BN 1280	31.42	26.36
BRISBANE	1031.995	46.665	BN 1270	31.70	26.70
BRISBANE	1032.23	46.43	BN 1260	31.45	26.45
BRISBANE	1032.585	46.075	BN 1250	30.87	25.90
BRISBANE	1033.08	45.58	BN 1240	31.18	25.93
BRISBANE	1033.37	45.29	BN 1230	30.99	25.90
BRISBANE	1033.9	44.76	BN 1220	30.93	25.53
BRISBANE	1034.37	44.29	BN 1210	31.06	25.70
BRISBANE	1034.89	43.77	BN 1200	31.11	25.76
BRISBANE	1035.414	43.246	BN 1190	30.68	25.34
BRISBANE	1035.9	42.76	BN 1180	30.13	24.74
BRISBANE	1036.46	42.2	BN 1170	30.57	25.12
BRISBANE	1036.77	41.89	BN 1160	30.04	24.63
BRISBANE	1036.915	41.745	BN 1150	29.84	24.42
BRISBANE	1037.09	41.57	BN 1140	29.78	24.35
BRISBANE	1037.175	41.485	BN 1120	27.33	23.75
BRISBANE	1037.285	41.375	BN 1110	26.95	23.45
BRISBANE	1037.625	41.035	BN 1100	27.36	23.77
BRISBANE	1038.085	40.575	BN 1090	27.41	23.75
BRISBANE	1038.6	40.06	BN 1080	27.38	23.74
BRISBANE	1039.1	39.56	BN 1070	27.57	23.88
BRISBANE	1039.565	39.05	BN 1060	27.55	23.86
BRISBANE	1040.09	38.57	BN 1050	27.52	23.84
BRISBANE	1040.49	38.17	BN 1040	27.48	23.79
BRISBANE	1041.01	37.56	BN 1030	27.48	23.78
BRISBANE	1041.23	37.43	BN 1020	27.49	23.79
BRISBANE	1041.46	37.2	BN 1010	27.12	23.49
BRISBANE	1041.7	36.96	BN 1000	27.01	23.39
BRISBANE	1041.96	36.7	BN 990	27.00	23.10
BRISBANE	1042.235	36.425	BN 980	26.11	22.52
BRISBANE	1042.515	36.145	BN 970	26.80	22.99
BRISBANE	1042.91	35.75	BN 960	26.84	23.03
BRISBANE	1043.725	34.935	BN 950	26.71	22.89
BRISBANE	1044.06	34.6	BN 940	26.11	22.40
BRISBANE	1044.34	34.32	BN 930	25.80	22.12
BRISBANE	1044.605	34.055	BN 920	26.24	22.37
BRISBANE	1044.86	33.8	BN 910	26.16	22.20
BRISBANE	1045.4	33.26	BN 900	26.23	22.32
BRISBANE	1045.885	32.775	BN 890	26.25	22.34
BRISBANE	1046.18	32.48	BN 880	26.11	22.18
BRISBANE	1046.34	32.32	BN 870	25.63	21.82
BRISBANE	1046.58	32.08	BN 860	25.63	21.81
BRISBANE	1046.9	31.76	BN 850	25.46	21.59
BRISBANE	1047.35	31.31	BN 840	24.73	20.93
BRISBANE	1047.915	30.745	BN 830	24.53	20.75
BRISBANE	1048.375	30.285	BN 820	24.76	20.92
BRISBANE	1048.89	29.77	BN 810	24.50	20.65
BRISBANE	1049.12	29.54	BN 800	24.50	20.53
BRISBANE	1049.37	29.29	BN 790	24.61	20.70
BRISBANE	1049.59	29.07	BN 780	24.18	20.34
BRISBANE	1049.87	28.79	BN 770	24.39	20.42
BRISBANE	1050.43	28.23	BN 760	24.19	20.32
BRISBANE	1050.86	27.8	BN 750	23.86	20.03

Flood Levels

Table E-4-Design Flood Profiles for the PMF & 10000 Year ARI Events

Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	PMF WL (m AHD)	10000 Year ARI WL (m AHD)
BRISBANE	1051.36	27.3	BN 740	24.17	20.07
BRISBANE	1051.895	26.765	BN 730	24.40	20.35
BRISBANE	1052.31	26.35	BN 720	24.09	20.07
BRISBANE	1052.39	26.27	BN 700	22.56	19.36
BRISBANE	1052.595	26.065	BN 690	22.02	18.95
BRISBANE	1052.64	26.02	BN 670	20.95	17.53
BRISBANE	1053.32	25.34	BN 650	21.35	17.85
BRISBANE	1053.385	25.795	BN 660	19.18	16.48
BRISBANE	1053.9	24.76	BN 620	18.96	16.20
BRISBANE	1054.64	24.02	BN 610	18.63	15.93
BRISBANE	1054.68	23.98	BN 590	18.09	15.62
BRISBANE	1054.97	23.69	BN 560	17.16	14.85
BRISBANE	1055.28	23.38	BN 550	17.06	14.80
BRISBANE	1055.42	23.24	BN 540	17.17	14.86
BRISBANE	1055.96	22.7	BN 530	17.12	14.77
BRISBANE	1056.4	22.26	BN 520	16.84	14.27
BRISBANE	1056.695	21.965	BN 510	16.25	14.03
BRISBANE	1056.865	21.795	BN 500	17.10	14.67
BRISBANE	1056.95	21.71	BN 490	16.41	14.08
BRISBANE	1057.09	21.57	BN 480	15.72	13.60
BRISBANE	1057.53	21.13	BN 470	15.23	13.18
BRISBANE	1058.04	20.62	BN 460	14.43	12.51
BRISBANE	1058.23	20.43	BN 450	14.14	12.24
BRISBANE	1058.53	20.13	BN 440	12.98	11.33
BRISBANE	1058.735	19.925	BN 430	13.02	11.37
BRISBANE	1059.035	19.625	BN 420	12.09	10.54
BRISBANE	1059.54	19.12	BN 410	12.68	10.89
BRISBANE	1059.99	18.67	BN 400	11.82	10.27
BRISBANE	1060.345	18.315	BN 390	11.57	10.02
BRISBANE	1060.535	18.125	BN 380	10.38	9.12
BRISBANE	1061.015	17.645	BN 370	11.21	9.70
BRISBANE	1061.53	17.13	BN 360	10.02	8.75
BRISBANE	1062.02	16.64	BN 350	9.99	8.72
BRISBANE	1062.535	16.125	BN 340	10.13	8.81
BRISBANE	1062.94	15.72	BN 330	10.25	8.82
BRISBANE	1063.31	15.35	BN 320	9.92	8.53
BRISBANE	1063.645	15.015	BN 310	8.75	7.60
BRISBANE	1064	14.66	BN 300	8.60	7.48
BRISBANE	1064.49	14.17	BN 290	8.01	7.05
BRISBANE	1065.01	13.65	BN 280	8.47	7.37
BRISBANE	1065.503	13.157	BN 270	8.34	7.27
BRISBANE	1065.99	12.67	BN 260	8.56	7.43
BRISBANE	1066.505	12.155	BN 250	8.48	7.36
BRISBANE	1067.02	11.64	BN 240	8.32	7.22
BRISBANE	1067.485	11.175	BN 230	8.11	7.05
BRISBANE	1067.965	10.695	BN 220	7.84	6.82
BRISBANE	1068.66	10	BN 210	7.31	6.35
BRISBANE	1069.045	9.615	BN 200	7.53	6.32
BRISBANE	1069.535	9.125	BN 190	7.07	6.03
BRISBANE	1070.025	8.635	BN 180	6.96	5.81
BRISBANE	1070.53	8.13	BN 170	6.78	5.70
BRISBANE	1071.04	7.62	BN 160	6.56	5.45
BRISBANE	1071.52	7.14	BN 150	6.55	5.44
BRISBANE	1072.015	6.645	BN 140	6.54	5.42
BRISBANE	1072.515	6.145	BN 130	6.12	5.00
BRISBANE	1072.995	5.665	BN 120	5.75	4.75
BRISBANE	1073.485	5.175	BN 110	5.25	4.32
BRISBANE	1074	4.66	BN 100	4.71	3.90
BRISBANE	1074.46	4.2	BN 90	4.51	3.52
BRISBANE	1074.985	3.675	BN 80	3.44	2.64
BRISBANE	1075.48	3.18	8N 70	3.21	2.48
BRISBANE	1076	2.66	BN 60	2.92	2.30
BRISBANE	1076.495	2.165	BN 50	2.20	1.72

Flood Levels

Table E-4-Design Flood Profiles for the PMF & 10000 Year ARI Events

Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	PMF WL (m AHD)	10000 Year ARI WL (m AHD)
BRISBANE	1077.01	1.65	BN 40	1.73	1.43
BRISBANE	1077.51	1.15	BN 30	1.60	1.38
BRISBANE	1078.04	0.62	BN 20	1.34	1.21
BRISBANE	1078.525	0.135	BN 10	0.92	0.92
BRISBANE	1078.66	0		0.92	0.92
BREMER	599.4			37.33	33.05
BREMER	600			37.31	33.04
OXLEY	599.4			27.54	23.86
OXLEY	600			27.54	23.86
BREAKFAST	599.4			10.11	8.69
BREAKFAST	600			10.11	8.69
BULIMBA	599.4			6.53	5.42
BULIMBA	600			6.53	5.42
CENTWEIR	0			33.19	28.28
CENTWEIR	0.08			32.64	27.71
INDOORWEIR	0			29.78	24.35
INDOORWEIR	0.085			27.33	23.75
WILLIAMWEIR	0			22.02	18.95
WILLIAMWEIR	0.045			20.95	17.53
VICTORIAWEIR	0			21.35	17.85
VICTORIAWEIR	0.065			19.18	16.48
CAPTAINWEIR	0			18.63	15.93
CAPTAINWEIR	0.04			18.09	15.62
STORYWEIR	0			17.10	14.67
STORYWEIR	0.085			16.41	14.08
MERIVALEWEIR	0			24.09	20.07
MERIVALEWEIR	0.08			22.56	19.36

Discharges

Table E-4-Design Flood Profiles for the PMF & 10000 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	PMF Q (m^3/s)	10000 Year ARI Q (m^3/s)
BRISBANE	1000.143	78.52	BN 2020	29816	23871
BRISBANE	1000.53	78.13	BN 2010	29807	23863
BRISBANE	1001.045	77.62	BN 2000	29798	23856
BRISBANE	1001.59	77.07	BN 1990	29788	23848
BRISBANE	1002.107	76.55	BN 1980	29779	23841
BRISBANE	1002.567	76.09	BN 1970	29771	23837
BRISBANE	1003.03	75.63	BN 1960	29762	23831
BRISBANE	1003.525	75.14	BN 1950	29752	23822
BRISBANE	1004.037	74.62	BN 1940	29740	23813
BRISBANE	1004.555	74.11	BN 1930	29727	23802
BRISBANE	1005.067	73.59	BN 1920	29716	23793
BRISBANE	1005.598	73.06	BN 1910	29706	23783
BRISBANE	1006.035	72.63	BN 1900	29697	23776
BRISBANE	1006.25	72.41	BN 1890	35982	28387
BRISBANE	1006.605	72.05	BN 1880	35973	28380
BRISBANE	1007.16	71.50	BN 1870	35960	28370
BRISBANE	1007.665	71.00	BN 1860	35951	28364
BRISBANE	1008.183	70.48	BN 1850	35940	28356
BRISBANE	1008.685	69.98	BN 1840	35929	28348
BRISBANE	1009.162	69.50	BN 1830	35919	28341
BRISBANE	1009.56	69.00	BN 1820	35910	28334
BRISBANE	1010.105	68.56	BN 1810	35899	28326
BRISBANE	1010.607	68.05	BN 1800	35893	28322
BRISBANE	1010.853	67.81	BN 1790	35890	28320
BRISBANE	1011.245	67.42	BN 1780	35887	28317
BRISBANE	1011.745	66.92	BN 1770	35878	28311
BRISBANE	1012.228	66.43	BN 1760	35867	28304
BRISBANE	1012.705	65.95	BN 1750	35858	28297
BRISBANE	1013.19	65.47	BN 1740	35848	28290
BRISBANE	1013.678	64.97	BN 1730	35838	28282
BRISBANE	1014.11	64.75	BN 1720	35831	28277
BRISBANE	1014.46	64.20	BN 1710	35825	28273
BRISBANE	1014.85	63.81	BN 1700	35819	28268
BRISBANE	1015.325	63.33	BN 1690	35812	28263
BRISBANE	1015.85	62.81	BN 1680	35806	28258
BRISBANE	1016.39	62.27	BN 1670	35796	28251
BRISBANE	1016.885	61.78	BN 1660	35786	28244
BRISBANE	1017.37	61.29	BN 1650	35774	28235
BRISBANE	1017.765	60.90	BN 1640	35765	28228
BRISBANE	1018.06	60.60	BN 1630	35757	28222
BRISBANE	1018.463	60.20	BN 1620	35750	28217
BRISBANE	1018.91	59.75	BN 1610	35743	28212
BRISBANE	1019.293	59.37	BN 1600	35736	28206
BRISBANE	1019.678	58.98	BN 1590	35729	28201
BRISBANE	1019.99	58.67	BN 1580	35725	28198
BRISBANE	1020.32	58.34	BN 1570	35720	28194
BRISBANE	1020.678	57.98	BN 1560	35714	28189
BRISBANE	1020.963	57.70	BN 1550	35711	28187
BRISBANE	1021.317	57.34	BN 1540	35707	28183
BRISBANE	1021.627	57.03	BN 1530	35702	28179
BRISBANE	1021.805	56.86	BN 1520	35698	28177
BRISBANE	1022.2	56.86	BN 1510	35690	28172
BRISBANE	1022.54	56.12	BN 1500	35686	28170
BRISBANE	1022.808	55.85	BN 1490	35681	28166
BRISBANE	1023.305	55.36	BN 1480	35673	28160
BRISBANE	1023.825	54.83	BN 1470	35667	28155
BRISBANE	1024.321	54.34	BN 1460	35660	28151
BRISBANE	1024.816	53.84	BN 1450	35654	28145
BRISBANE	1025.215	53.45	BN 1440	35647	28140
BRISBANE	1025.475	53.19	BN 1430	35645	28138
BRISBANE	1025.88	52.78	BN 1420	35641	28135
BRISBANE	1026.425	52.24	BN 1410	35630	28128
BRISBANE	1026.79	51.87	BN 1400	35627	28125

Discharges

Table E-4-Design Flood Profiles for the PMF & 10000 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	PMF Q (m^3/s)	10000 Year ARI Q (m^3/s)
BRISBANE	1027.03	51.63	BN 1390	35624	28124
BRISBANE	1027.42	51.24	BN 1380	35617	28117
BRISBANE	1027.93	50.73	BN 1370	35609	28112
BRISBANE	1028.43	50.23	BN 1360	35602	28107
BRISBANE	1028.72	49.94	BN 1340	14571	14259
BRISBANE	1028.98	49.68	BN 1330	35595	28102
BRISBANE	1029.44	49.22	BN 1320	35585	28095
BRISBANE	1029.95	48.71	BN 1310	35573	28087
BRISBANE	1030.545	48.11	BN 1300	35558	28075
BRISBANE	1031.065	47.59	BN 1290	35548	28068
BRISBANE	1031.48	47.18	BN 1280	35541	28063
BRISBANE	1031.847	46.81	BN 1270	35534	28059
BRISBANE	1032.112	46.55	BN 1260	35529	28056
BRISBANE	1032.408	46.25	BN 1250	35524	28053
BRISBANE	1032.832	45.83	BN 1240	35519	28051
BRISBANE	1033.225	45.44	BN 1230	35511	28045
BRISBANE	1033.635	45.03	BN 1220	35503	28040
BRISBANE	1034.135	44.52	BN 1210	35492	28033
BRISBANE	1034.63	44.03	BN 1200	35482	28026
BRISBANE	1035.152	43.51	BN 1190	35471	28016
BRISBANE	1035.657	43.00	BN 1180	35461	28009
BRISBANE	1036.18	42.48	BN 1170	35452	28004
BRISBANE	1036.615	42.05	BN 1160	35445	27998
BRISBANE	1036.842	41.82	BN 1150	35442	27996
BRISBANE	1037.002	41.66	BN 1140	35439	27994
BRISBANE	1037.11	41.55	BN 1120	27525	24120
BRISBANE	1037.23	41.43	BN 1110	35438	27993
BRISBANE	1037.455	41.21	BN 1100	35435	27991
BRISBANE	1037.855	40.81	BN 1090	35426	27984
BRISBANE	1038.343	40.32	BN 1080	35414	27974
BRISBANE	1038.85	39.81	BN 1070	35399	27964
BRISBANE	1039.332	39.28	BN 1060	35385	27955
BRISBANE	1039.696	38.96	BN 1050	35374	27949
BRISBANE	1039.959	38.70	BN 1040	35210	27869
BRISBANE	1040.29	38.28	BN 1030	35208	27867
BRISBANE	1040.75	37.91	BN 1020	35204	27863
BRISBANE	1041.12	37.54	BN 1010	35201	27860
BRISBANE	1041.345	37.32	BN 1000	35199	27859
BRISBANE	1041.58	37.08	BN 990	35197	27858
BRISBANE	1041.83	36.83	BN 980	35196	27856
BRISBANE	1042.098	36.56	BN 970	35194	27855
BRISBANE	1042.375	36.29	BN 960	35193	27854
BRISBANE	1042.713	35.95	BN 950	35191	27853
BRISBANE	1043.318	35.34	BN 940	35188	27850
BRISBANE	1043.893	34.77	BN 930	35186	27848
BRISBANE	1044.2	34.46	BN 920	35184	27848
BRISBANE	1044.473	34.19	BN 910	35183	27847
BRISBANE	1044.732	33.93	BN 900	35182	27846
BRISBANE	1045.13	33.53	BN 890	35180	27845
BRISBANE	1045.643	33.02	BN 880	35177	27845
BRISBANE	1046.033	32.63	BN 870	35175	27844
BRISBANE	1046.26	32.40	BN 860	35174	27844
BRISBANE	1046.46	32.20	BN 850	35173	27844
BRISBANE	1046.74	31.92	BN 840	35172	27844
BRISBANE	1047.125	31.54	BN 830	35170	27843
BRISBANE	1047.633	31.03	BN 820	35168	27843
BRISBANE	1048.145	30.52	BN 810	35166	27841
BRISBANE	1048.633	30.03	BN 800	35163	27840
BRISBANE	1049.005	29.65	BN 790	35161	27851
BRISBANE	1049.245	29.42	BN 780	35160	27854
BRISBANE	1049.48	29.18	BN 770	35160	27859
BRISBANE	1049.73	28.93	BN 760	35159	27878
BRISBANE	1050.15	28.51	BN 750	35158	27917

Discharges

Table E-4-Design Flood Profiles for the PMF & 10000 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	PMF Q (m^3/s)	10000 Year ARI Q (m^3/s)
BRISBANE	1050.645	28.01	BN 740	35157	27983
BRISBANE	1051.11	27.55	BN 730	35156	28020
BRISBANE	1051.627	27.03	BN 720	35155	28061
BRISBANE	1052.102	26.56	BN 700	35154	28067
BRISBANE	1052.37	26.29	BN 690	31783	26468
BRISBANE	1052.492	26.17	BN 670	35153	28104
BRISBANE	1052.625	26.03	BN 650	30664	27061
BRISBANE	1052.98	26.20	BN 660	35153	28117
BRISBANE	1053.355	25.31	BN 620	29938	26711
BRISBANE	1053.643	25.02	BN 610	35153	28125
BRISBANE	1054.27	24.39	BN 590	35153	28062
BRISBANE	1054.66	24.00	BN 560	31528	26562
BRISBANE	1054.825	23.83	BN 550	35153	27998
BRISBANE	1055.125	23.54	BN 540	35153	27990
BRISBANE	1055.35	23.31	BN 530	35153	27981
BRISBANE	1055.69	22.97	BN 520	35152	27957
BRISBANE	1056.18	22.48	BN 510	35152	27911
BRISBANE	1056.547	22.11	BN 500	35152	27862
BRISBANE	1056.78	21.88	BN 490	35152	27841
BRISBANE	1056.92	21.74	BN 480	35152	27828
BRISBANE	1057.02	21.64	BN 470	35152	27828
BRISBANE	1057.31	21.35	BN 460	35152	27828
BRISBANE	1057.785	20.87	BN 450	35152	27828
BRISBANE	1058.135	20.53	BN 440	35152	27828
BRISBANE	1058.38	20.28	BN 430	35152	27827
BRISBANE	1058.633	20.03	BN 420	35152	27827
BRISBANE	1058.885	19.78	BN 410	35152	27827
BRISBANE	1059.287	19.37	BN 400	35152	27828
BRISBANE	1059.765	18.89	BN 390	35152	27827
BRISBANE	1060.168	18.49	BN 380	35152	27827
BRISBANE	1060.44	18.22	BN 370	35152	27827
BRISBANE	1060.775	17.88	BN 360	35152	27827
BRISBANE	1061.273	17.39	BN 350	35152	27825
BRISBANE	1061.775	16.89	BN 340	35151	27826
BRISBANE	1062.277	16.38	BN 330	35150	27825
BRISBANE	1062.738	15.92	BN 320	35150	27825
BRISBANE	1063.033	15.63	BN 310	35150	27824
BRISBANE	1063.217	15.44	BN 300	35158	27827
BRISBANE	1063.477	15.18	BN 290	35158	27827
BRISBANE	1063.822	14.84	BN 280	35158	27827
BRISBANE	1064.245	14.42	BN 270	35158	27827
BRISBANE	1064.75	13.91	BN 260	35158	27827
BRISBANE	1065.257	13.40	BN 250	35157	27826
BRISBANE	1065.747	12.91	BN 240	35157	27826
BRISBANE	1066.248	12.41	BN 230	35157	27825
BRISBANE	1066.762	11.90	BN 220	35157	27824
BRISBANE	1067.252	11.41	BN 210	35156	27823
BRISBANE	1067.725	10.94	BN 200	35156	27823
BRISBANE	1068.313	10.35	BN 190	35155	27822
BRISBANE	1068.852	9.81	BN 180	35154	27822
BRISBANE	1069.29	9.37	BN 170	35154	27820
BRISBANE	1069.78	8.88	BN 160	35153	27820
BRISBANE	1070.277	8.38	BN 150	35152	27819
BRISBANE	1070.785	7.88	BN 140	35153	27817
BRISBANE	1071.28	7.38	BN 130	35153	27816
BRISBANE	1071.768	6.89	BN 120	35155	27815
BRISBANE	1072.018	6.64	BN 110	35156	27815
BRISBANE	1072.268	6.39	BN 100	35156	27804
BRISBANE	1072.755	5.90	BN 90	35169	27804
BRISBANE	1073.24	5.42	BN 80	35196	27804
BRISBANE	1073.742	4.92	BN 70	35237	27804
BRISBANE	1074.23	4.43	BN 60	35278	27804
BRISBANE	1074.723	3.94	BN 50	35279	27804

Discharges

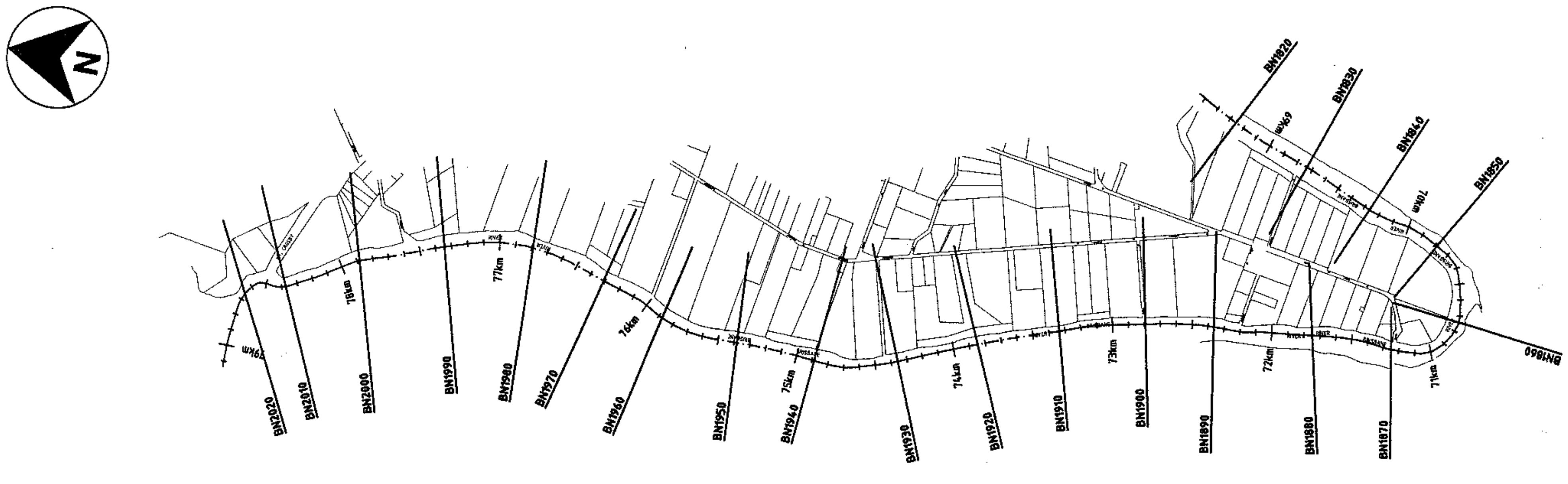
Table E-4-Design Flood Profiles for the PMF & 10000 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	PMF Q (m^3/s)	10000 Year ARI Q (m^3/s)
BRISBANE	1075.232	3.43	BN 40	35305	27803
BRISBANE	1075.74	2.92	BN 30	35291	27804
BRISBANE	1076.248	2.41	BN 20	35277	27804
BRISBANE	1076.752	1.91	BN 10	35242	27804
BRISBANE	1077.26	1.40	-	35205	27804
BRISBANE	1077.775	-478.38	-	35188	27803
BRISBANE	1078.283	-478.28	-	35186	27803
BRISBANE	1078.592	-479.19	-	35194	27803
BREMER	599.7	0.30	-	6342	4618
OXLEY	599.7	0.30	-	2363	2038
BREAKFAST	599.7	0.30	-	448	409
BULIMBA	599.7	0.30	-	533	384
CENTWEIR	0.04	0.04	-	26266	18471
INDOORWEIR	0.043	0.04	-	8117	4247
WILLIAMWEIR	0.023	0.02	-	4490	1379
VICTORIAWEIR	0.033	0.03	-	5216	1492
CAPTAINWEIR	0.02	0.02	-	3625	1508
STORYWEIR	0.043	0.04	-	0	0
MERIVALEWEIR	0.04	0.04	-	3371	1700

SINCLAIR KNIGHT MERZ

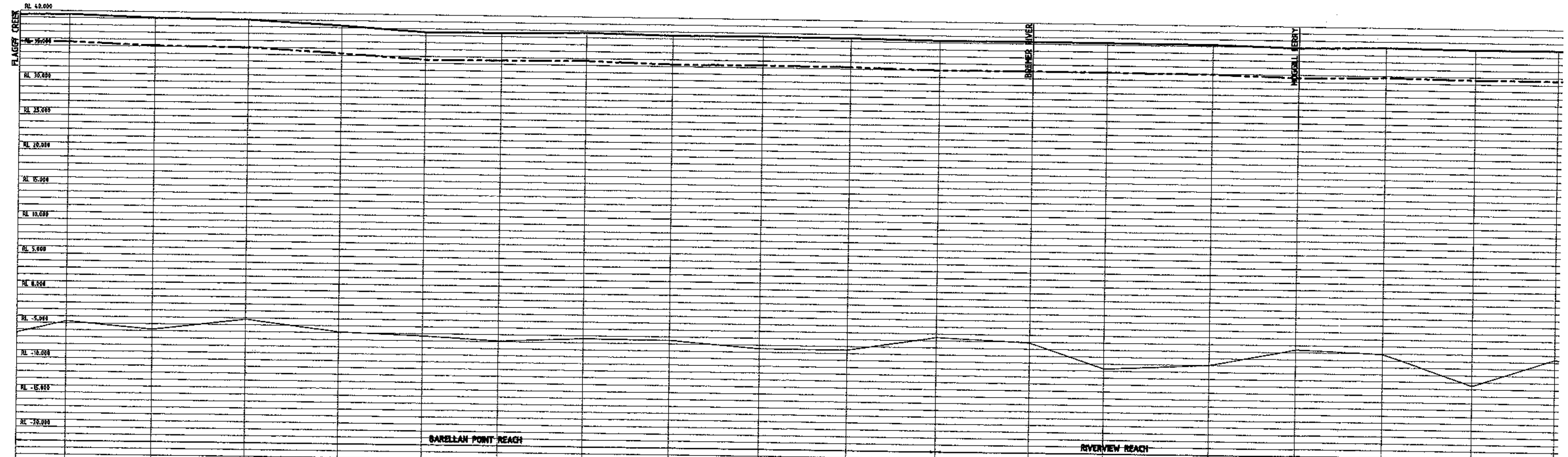
FIGURE E-4a

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
10 000 AND PMF YEAR ARI EVENTS (MHWS)



LEGEND
AMTD LINE
BN 1250 SURVEYED CROSS SECTION

PLAN VIEW
0 0.25 0.5 0.75 1.0 1.25
KILOMETRES



DATUM RL. -25.000

PMF DESIGN FLOOD LEVEL	35.540	35.540	35.120	34.780	34.280	33.520	33.560	33.440	33.300	33.340
10 000 YEAR ARI DESIGN FLOOD LEVEL	39.420	39.540	39.100	38.970	38.210	37.490	37.530	37.720	37.450	37.590
BED LEVEL (m AHD)	-6.440	-4.780	-5.800	-6.280	-5.980	-6.300	-6.960	-6.400	-6.500	-7.580
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930
MIKE 11 CHAINAGE (km)	1000.000	1000.285	1000.775	1001.315	1001.865	1002.350	1002.765	1003.275	1003.775	1004.300
AMTD CHAINAGE (km)	78.640	78.375	77.865	77.345	76.795	76.310	75.875	75.385	74.885	74.340

PMF DESIGN FLOOD LEVEL	33.280	33.000	33.060	33.030	32.940	32.590	32.790	32.430	32.590
10 000 YEAR ARI DESIGN FLOOD LEVEL	37.460	37.300	37.330	37.310	37.230	36.920	37.110	36.990	36.960
BED LEVEL (m AHD)	-7.580	-5.580	-6.100	-9.700	-9.080	-6.400	-7.180	-11.500	-7.640
CROSS SECTION NUMBER	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1004.810	1005.315	1005.870	1006.380	1006.930	1007.410	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	73.850	73.335	72.790	72.360	71.750	71.250	70.740	70.235	69.735

LEGEND
516 LOCATION AND IDENTIFICATION OF STRUCTURE
PMF DESIGN FLOOD
10 000 YEAR ARI DESIGN FLOOD

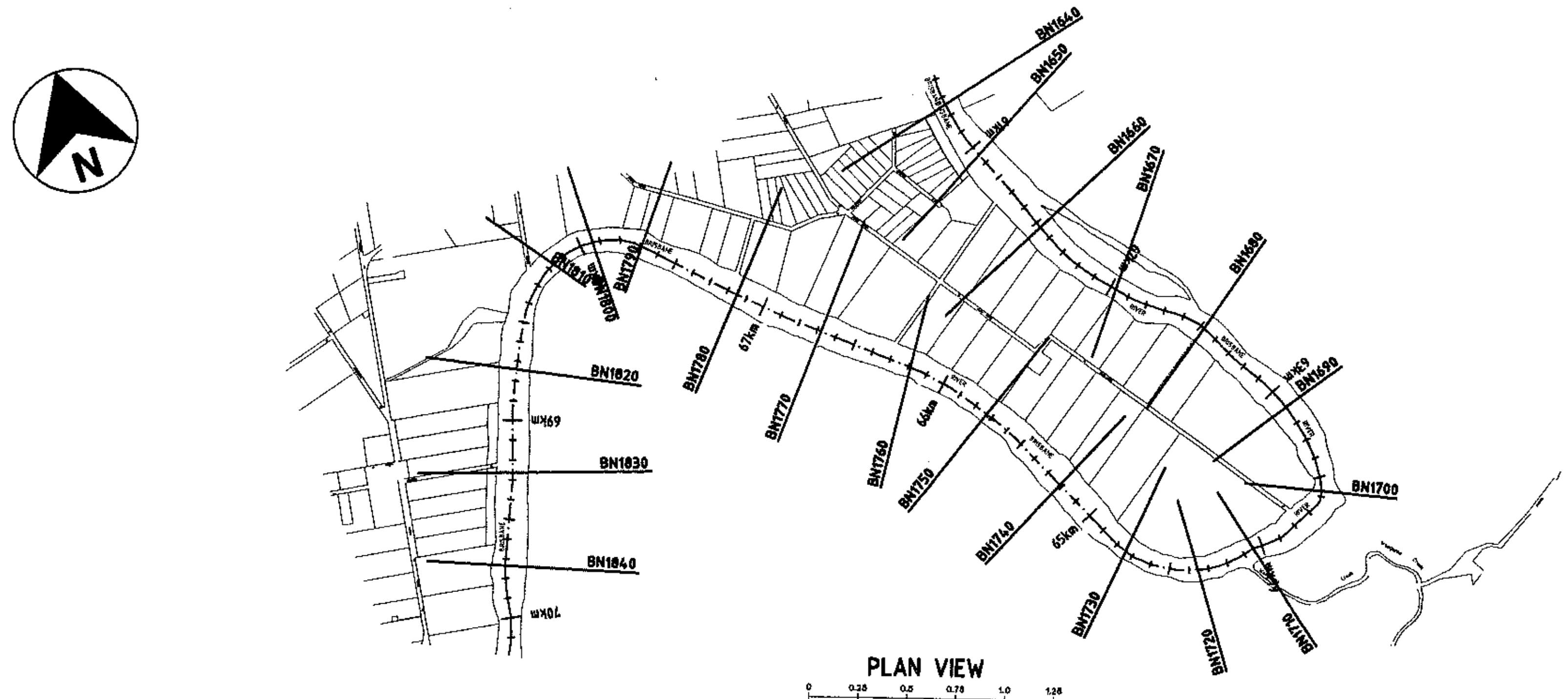
VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 2020 TO BN 1840

PLOT SCALE: 1=30

FIGURE E-4b

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
10 000 AND PMF YEAR ARI EVENTS (MHWS)



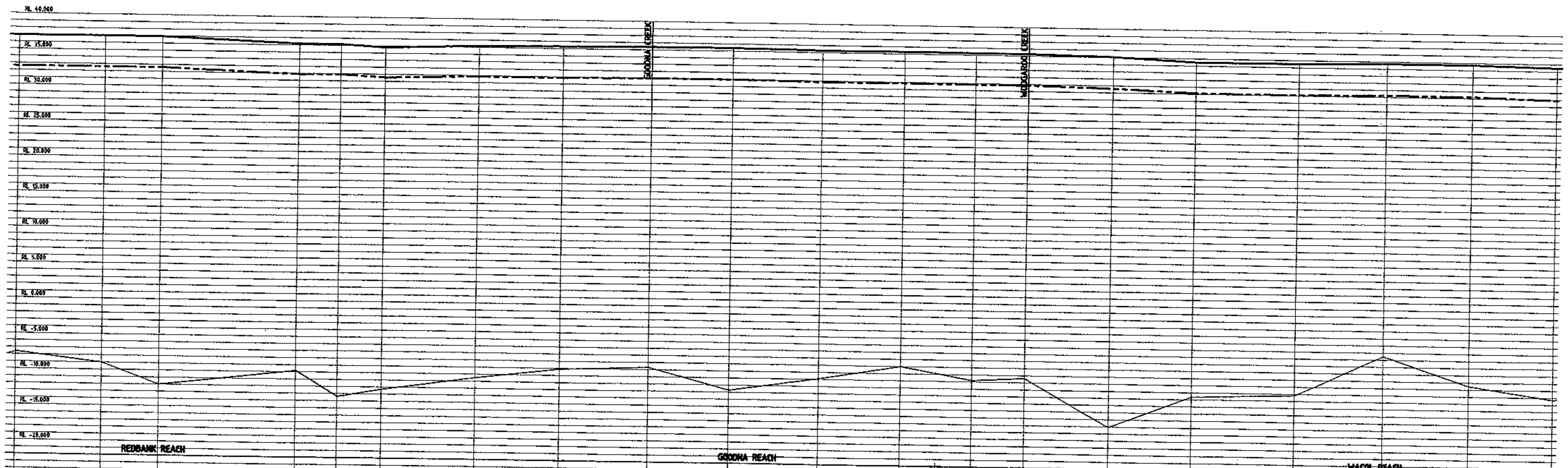
LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25
KILOMETRES



DATUM RL. -25.000

PMF DESIGN FLOOD LEVEL	32.598	32.610	32.600	31.890	31.920	31.570	31.880	31.860	32.400	32.010	31.830	31.870	31.840	31.850	31.600	31.130	31.120	31.270	31.260	30.920
10 000 YEAR ARI DESIGN FLOOD LEVEL	34.960	34.980	34.940	34.280	34.200	35.760	34.200	34.320	34.420	34.440	34.290	34.320	34.200	34.250	34.070	35.400	35.530	35.740	35.730	35.490
BED LEVEL (m AHD)	-7.600	-9.000	-12.000	-9.800	-13.400	-12.300	-10.500	-9.100	-8.700	-11.700	-9.900	-8.000	-9.800	-9.400	-16.100	-11.600	-11.200	-5.500	-9.500	-11.300
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1008.925	1009.400	1009.720	1010.690	1010.725	1010.980	1011.510	1011.900	1012.475	1012.935	1013.445	1013.910	1014.310	1014.610	1015.080	1015.540	1016.140	1016.640	1017.130	1017.610
AMTD CHAINAGE (km)	69.735	69.260	68.840	68.170	67.935	67.600	67.150	66.680	66.185	65.725	65.215	64.740	64.550	64.050	63.570	63.100	62.520	62.020	61.530	61.050

LEGEND

(516) LOCATION AND IDENTIFICATION OF STRUCTURE

——— PMF DESIGN FLOOD

– – – 10 000 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

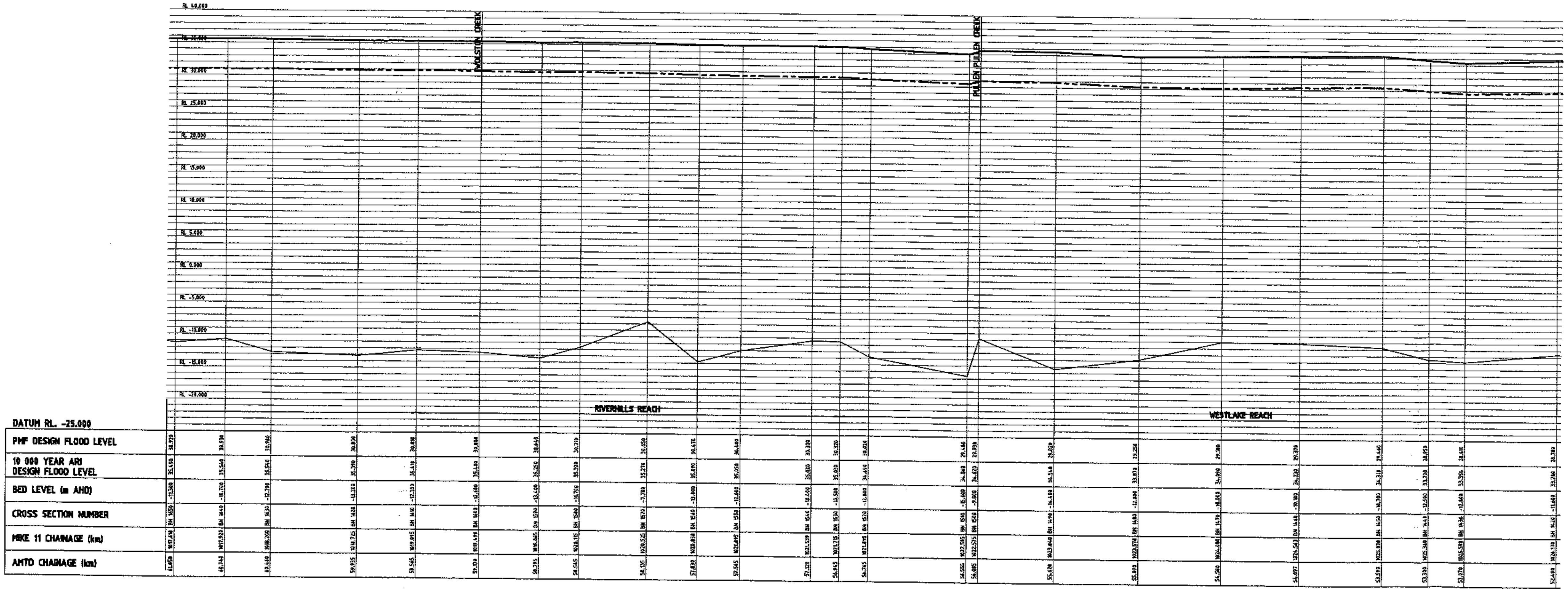
BRISBANE RIVER - BN 1840 TO BN 1650

FIGURE E-4c

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
10 000 AND PMF YEAR ARI EVENTS (MHWS)

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES

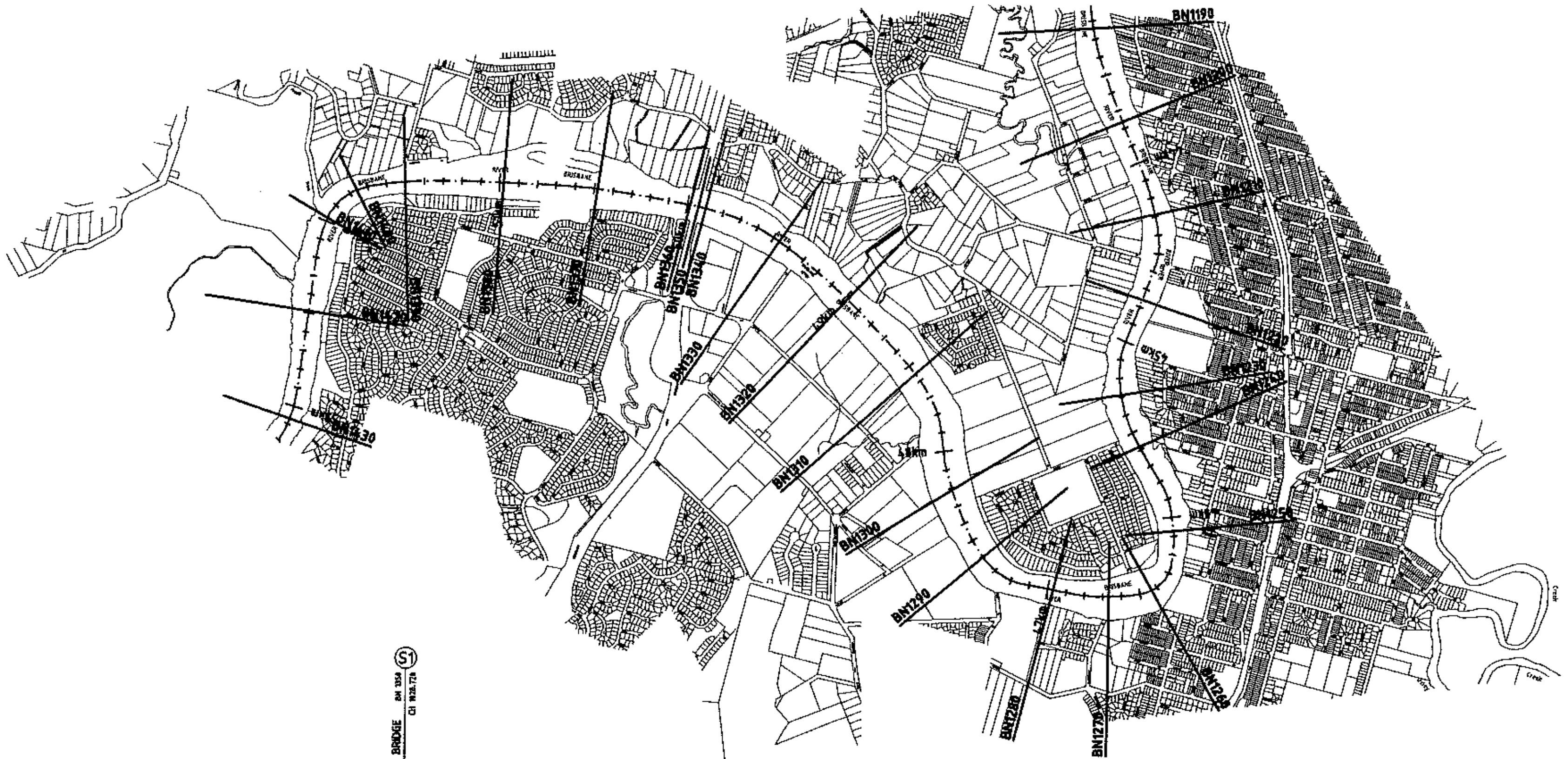


BRISBANE RIVER - BN 1650 TO BN 1420

PLOT SCALE: 1=30

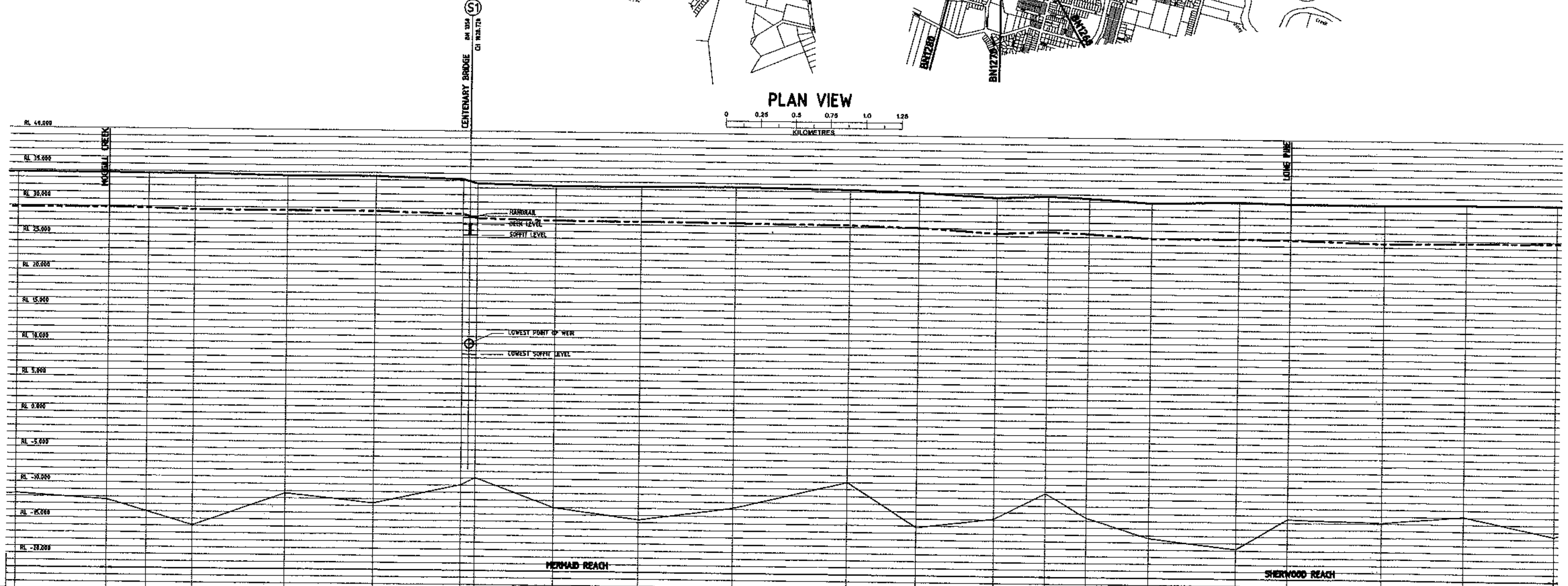
FIGURE E-4d

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
10 000 AND PMF YEAR ARI EVENTS (MHWS)



PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

PMF DESIGN FLOOD LEVEL	28.780	28.870	28.780	28.620	28.600	28.590	28.280	27.710	27.460	27.440	27.410	27.280	27.060	26.360	26.700	26.450	25.900	25.930	25.880	25.530	25.700	25.740
10 000 YEAR ARI DESIGN FLOOD LEVEL	33.780	33.790	33.710	33.750	33.570	33.530	33.190	32.640	32.360	32.350	32.510	32.280	32.020	31.420	31.380	31.650	30.870	31.100	30.990	30.930	31.060	31.130
BED LEVEL (m AHD)	-11.400	-12.400	-14.800	-15.900	-11.300	-12.400	-9.900	-8.900	-13.000	-14.600	-12.800	-9.800	-15.300	-13.900	-10.200	-13.400	-16.400	-17.800	-13.500	-13.900	-12.900	-15.400
CROSS SECTION NUMBER	BN 1420	BN 1410	BN 1400	BN 1390	BN 1380	BN 1370	BN 1360	BN 1340	BN 1330	BN 1320	BN 1310	BN 1300	BN 1290	BN 1280	BN 1270	BN 1260	BN 1250	BN 1240	BN 1230	BN 1220	BN 1210	BN 1200
MIKE 11 CHAINAGE (km)	1026.170	1026.480	1026.900	1027.160	1027.640	1028.180	1028.480	1028.760	1029.260	1029.680	1030.220	1030.870	1031.260	1031.700	1031.995	1032.230	1032.585	1033.080	1033.370	1033.900	1034.370	1034.890
AMTD CHAINAGE (km)	52.490	51.980	51.760	51.560	50.980	50.480	49.980	49.900	49.460	48.980	48.440	47.790	47.400	46.960	46.665	46.430	46.075	45.580	45.290	44.760	44.290	43.770

LEGEND

S16 LOCATION AND IDENTIFICATION OF STRUCTURE

PMF DESIGN FLOOD

10 000 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

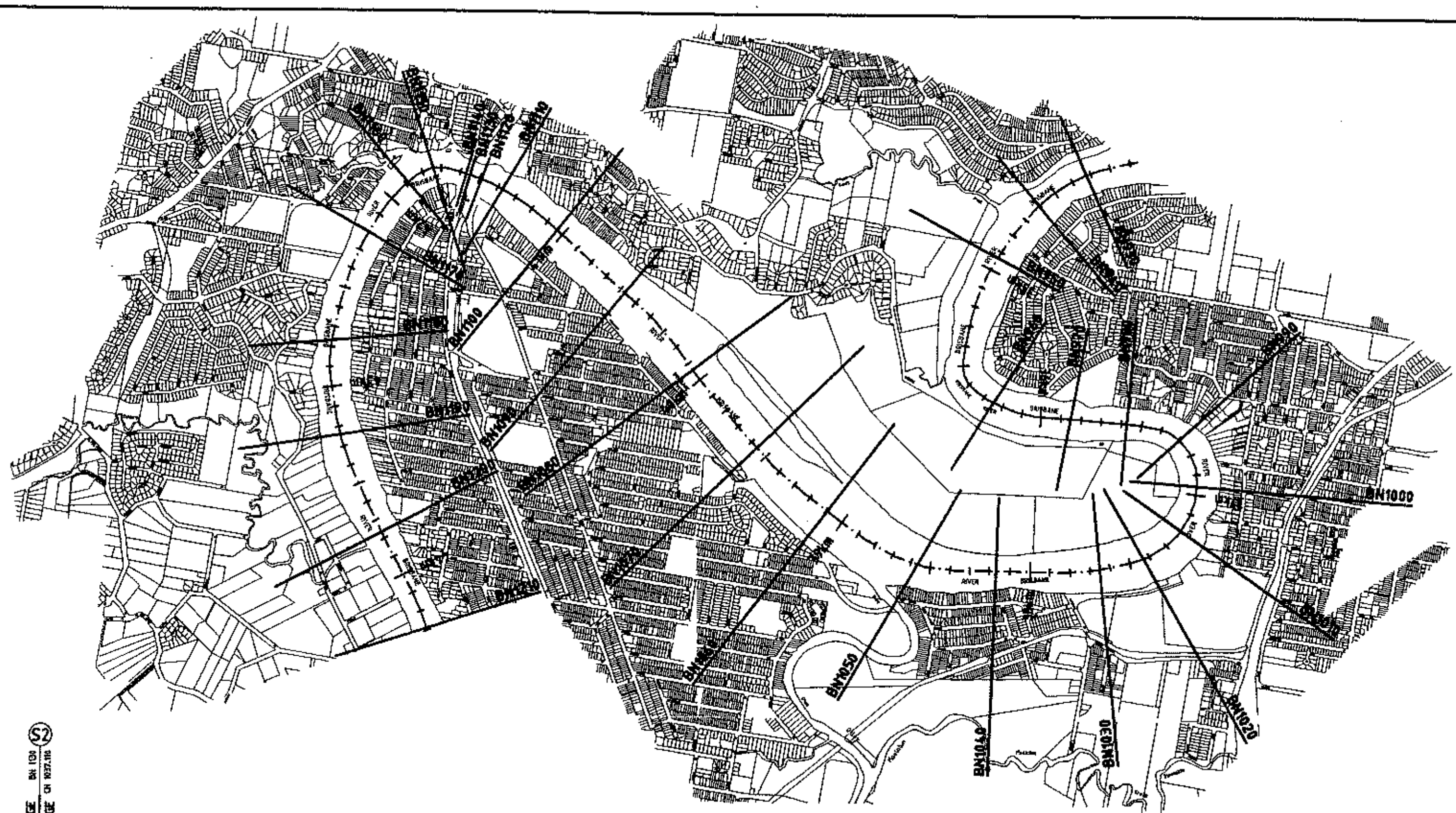
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 1420 TO BN 1200

SINCLAIR KNIGHT MERZ

FIGURE E-4e

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
10 000 AND PMF YEAR ARI EVENTS (MHWS)



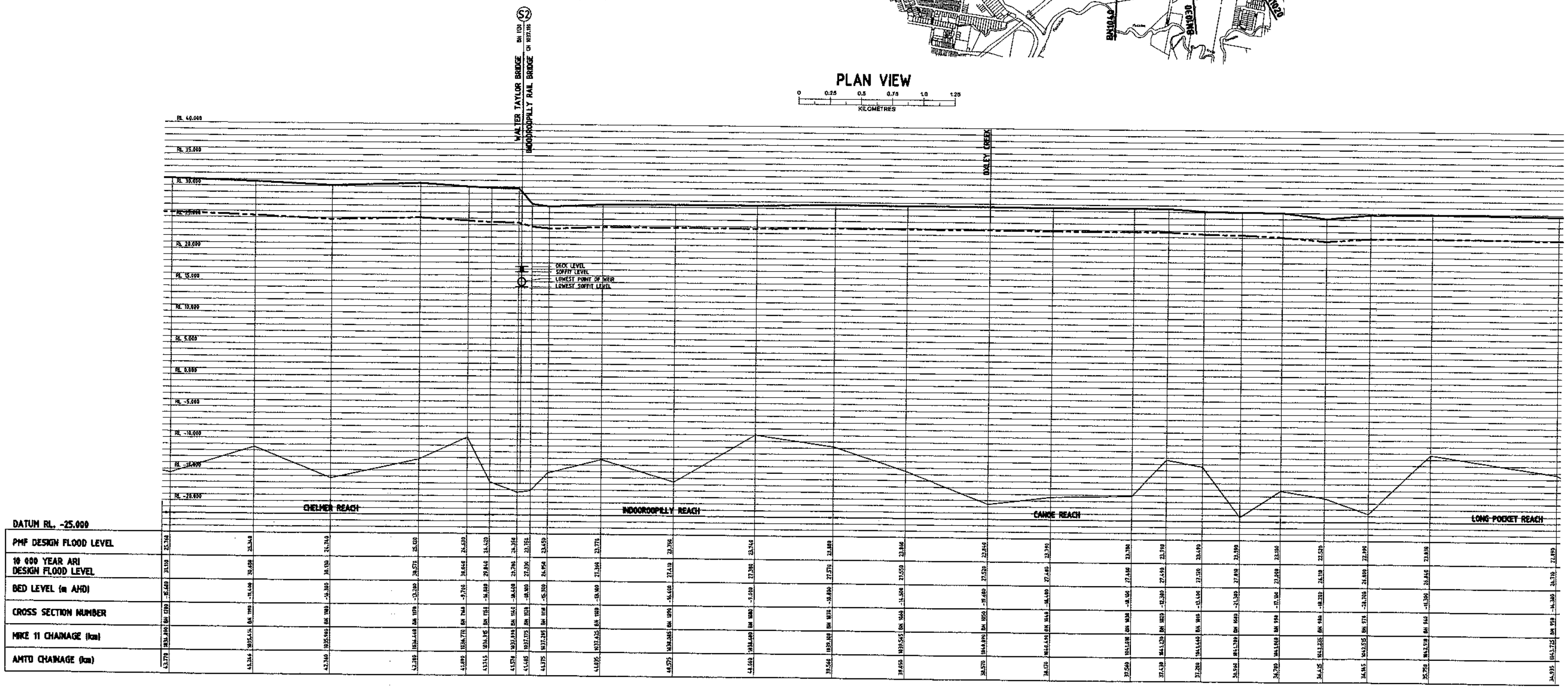
LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE

PMF DESIGN FLOOD

10 000 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

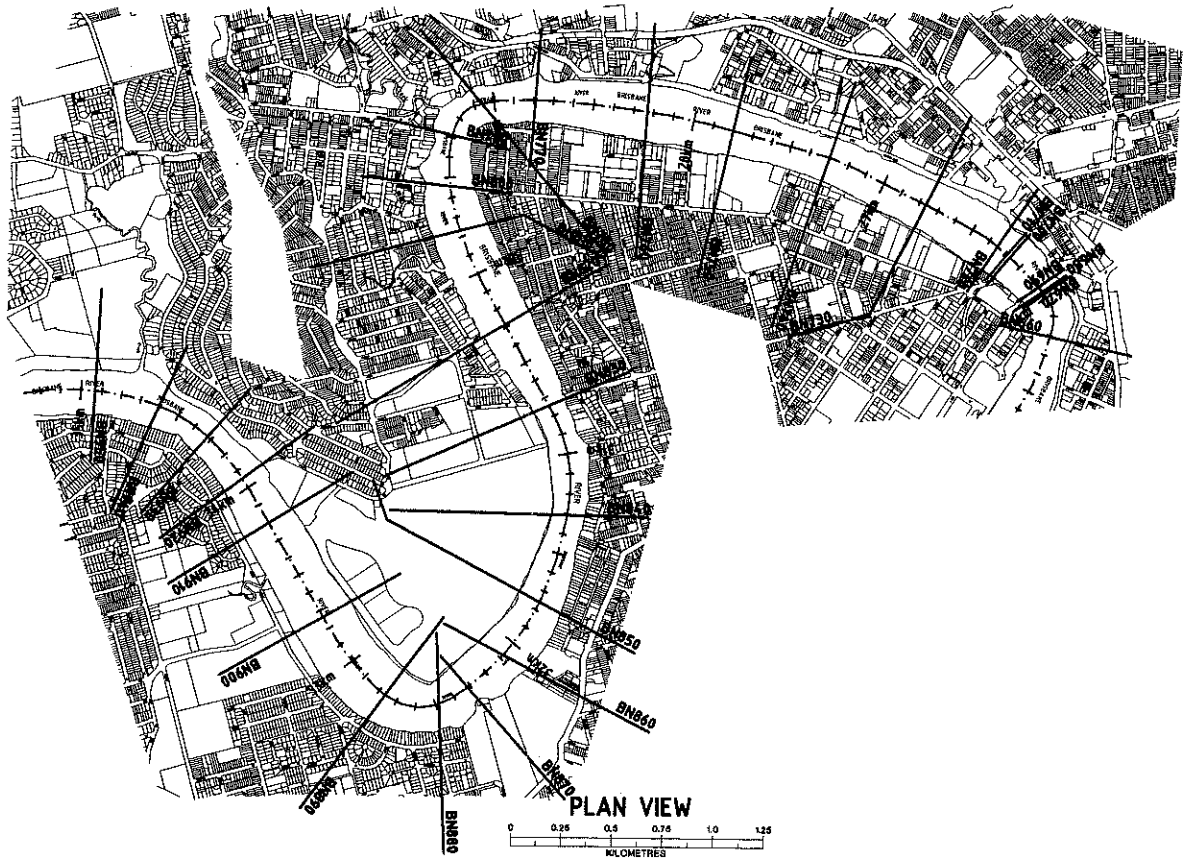
BRISBANE RIVER - BN 1200 TO BN 950

PLOT SCALE: 1=30

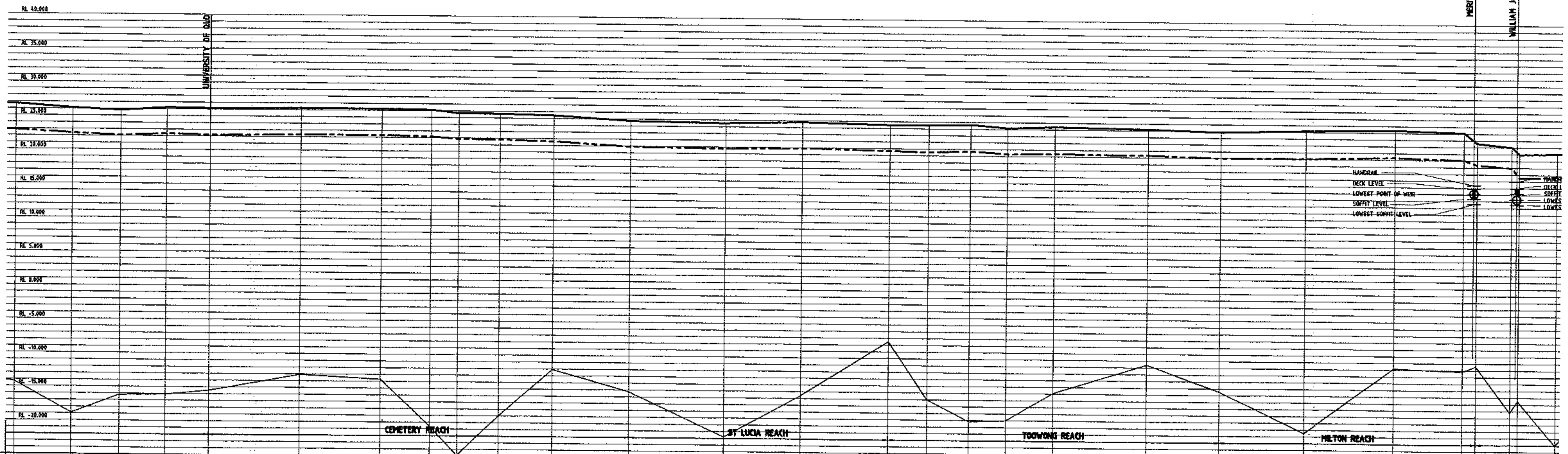
SINCLAIR KNIGHT MERZ

FIGURE E-4f

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
10 000 AND PMF YEAR ARI EVENTS (MHWS)



LEGEND
AMTD LINE
BN 1250 SURVEYED CROSS SECTION



DATUM RL. -25.000

CROSS SECTION NUMBER	PMF DESIGN FLOOD LEVEL	10 000 YEAR ARI DESIGN FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 950	22.890	24.710	-14.300	1043.725	34.935
BN 940	22.400	24.110	-18.900	1044.040	34.600
BN 930	22.120	25.880	-16.200	1044.340	34.320
BN 920	22.370	24.240	-16.100	1044.605	34.055
BN 910	22.280	24.160	-15.500	1044.840	33.800
BN 900	22.320	24.230	-13.100	1045.400	33.260
BN 890	22.340	24.250	-13.700	1045.885	32.775
BN 880	22.180	24.100	-20.400	1046.180	32.480
BN 870	21.820	25.630	-24.900	1046.340	32.320
BN 860	21.810	25.630	-19.900	1046.580	32.080
BN 850	21.590	25.440	-12.100	1046.900	31.760
BN 840	20.930	24.730	-15.300	1047.350	31.310
BN 830	20.750	24.530	-21.800	1047.915	30.745
BN 820	20.920	24.760	-15.400	1048.375	30.285
BN 810	20.650	24.580	-7.500	1048.890	29.770
BN 800	20.530	24.500	-16.800	1049.120	29.540
BN 790	20.380	24.410	-19.200	1049.370	29.290
BN 780	20.340	24.180	-19.000	1049.590	29.070
BN 770	20.420	24.390	-14.900	1049.870	28.790
BN 760	20.320	24.190	-10.400	1050.430	28.230
BN 750	20.030	23.840	-14.500	1050.860	27.800
BN 740	20.070	24.170	-20.500	1051.360	27.300
BN 730	20.350	24.400	-10.600	1051.895	26.765
BN 720	20.070	24.080	-11.200	1052.310	26.350
BN 700	19.360	22.540	-10.400	1052.390	26.270
BN 690	18.950	22.030	-17.200	1052.595	26.065
BN 670	17.530	20.950	-15.500	1052.640	26.020
BN 660	17.634	21.082	-22.800	1052.865	25.795

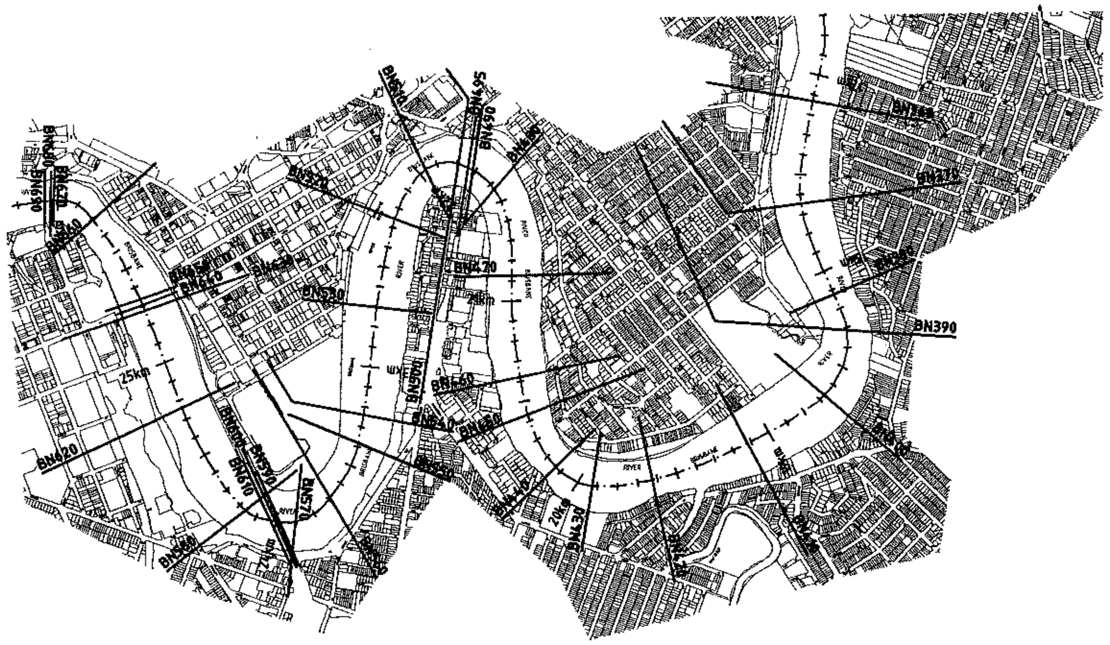
LEGEND
(S16) LOCATION AND IDENTIFICATION OF STRUCTURE
PMF DESIGN FLOOD
10 000 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 950 TO BN 660

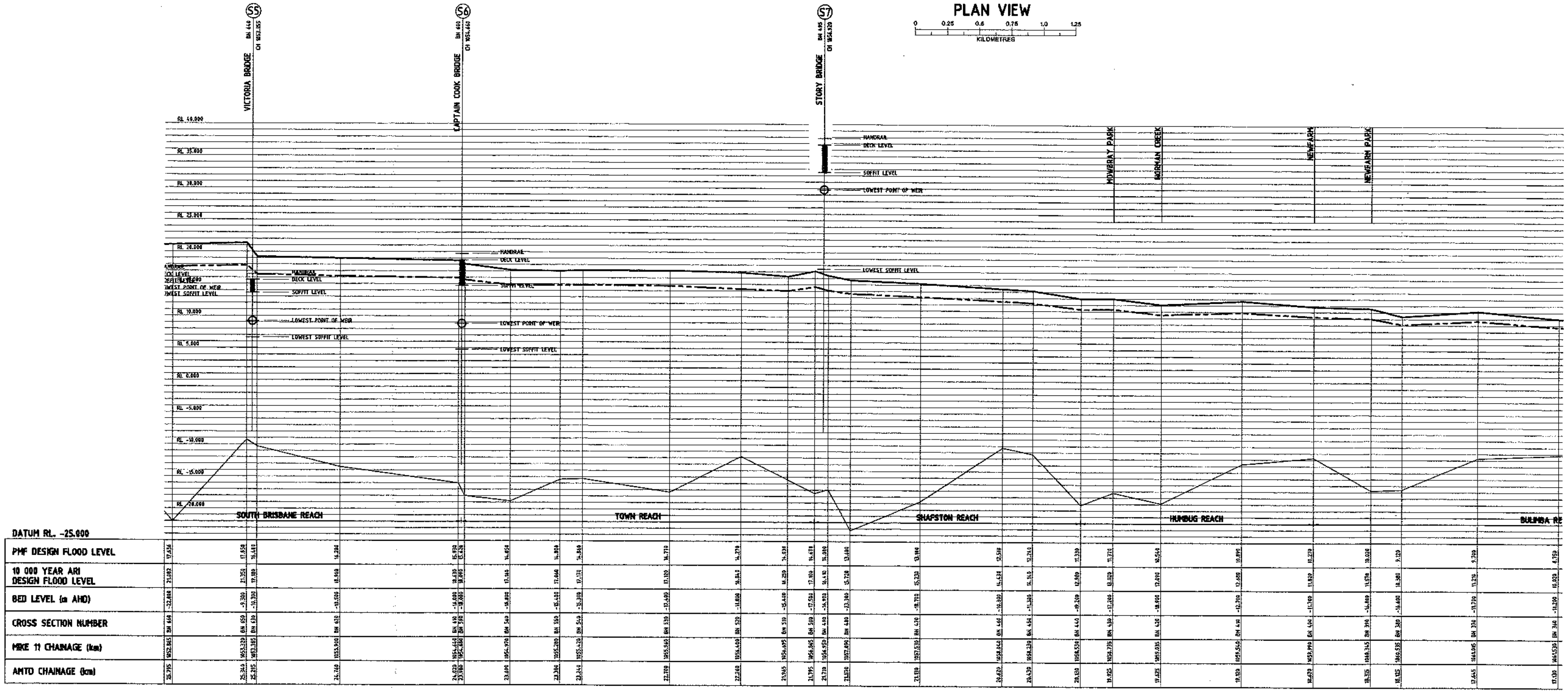
FIGURE E-4g

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
10 000 AND PMF YEAR ARI EVENTS (MHWS)



LEGEND
AMTD LINE
BN 1250 SURVEYED CROSS SECTION

PLAN VIEW
0 0.25 0.5 0.75 1.0 1.25
KILOMETRES



LEGEND
S16 LOCATION AND IDENTIFICATION OF STRUCTURE
PMF DESIGN FLOOD
10 000 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

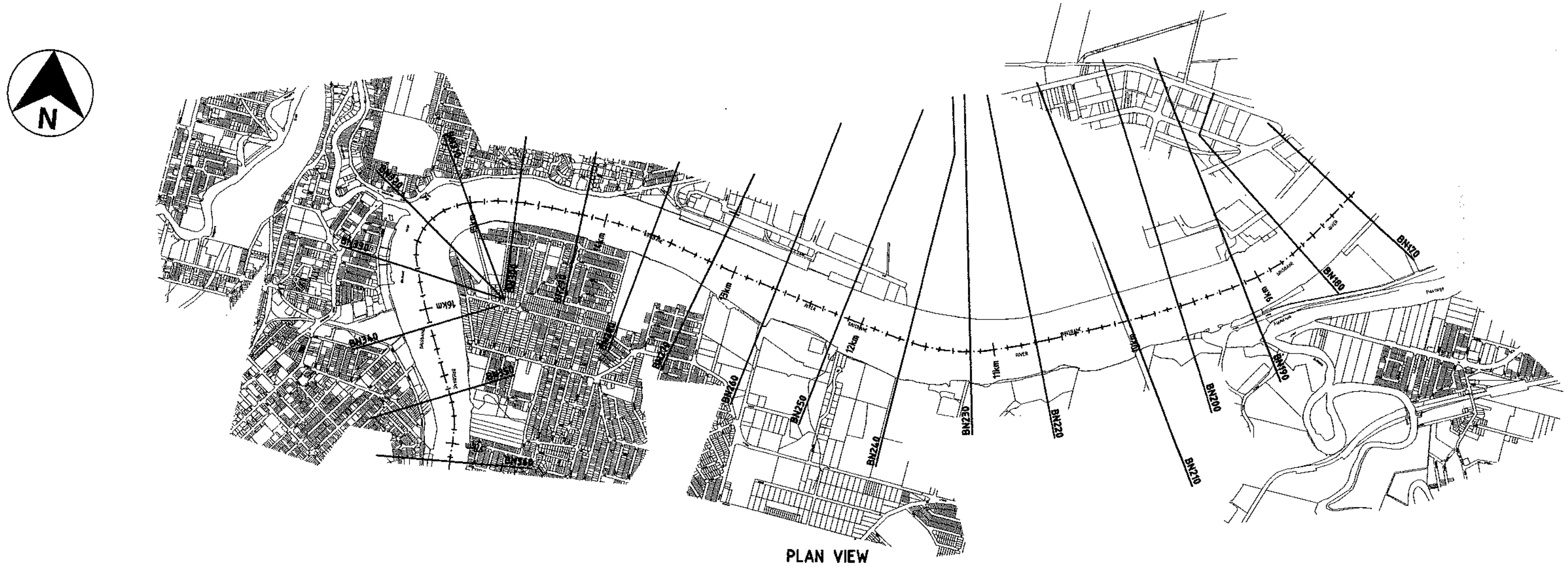
BRISBANE RIVER - BN 660 TO BN 360

FILE .041
PLOT SCALE: 1=30

FIGURE E-4h

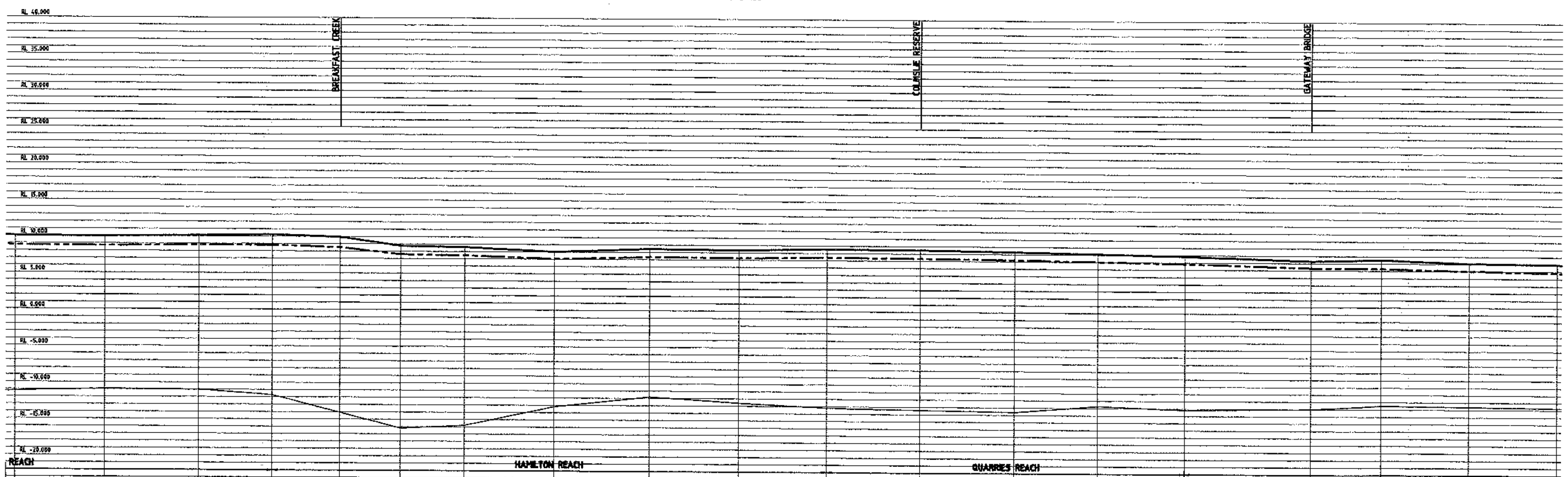
SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
10 000 AND PMF YEAR ARI EVENTS (MHWS)



PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

PMF DESIGN FLOOD LEVEL	8.750	8.720	8.810	8.820	8.530	7.600	7.480	7.050	7.370	7.270	7.430	7.360	7.220	7.050	6.820	6.350	6.320	6.030	5.810
10 000 YEAR ARI DESIGN FLOOD LEVEL	10.020	9.990	10.130	10.250	9.910	8.750	8.600	8.010	8.470	8.340	8.560	8.480	8.320	8.110	7.840	7.310	7.530	7.070	6.960
BED LEVEL (m AHD)	-11.200	-10.900	-11.000	-11.700	-14.100	-14.200	-15.800	-13.200	-11.800	-12.400	-13.200	-13.400	-13.400	-12.700	-13.200	-13.000	-12.500	-12.400	-12.700
CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
MIKE 11 CHAINAGE (km)	1061.530	1062.020	1062.535	1062.940	1063.310	1063.645	1064.000	1064.490	1065.010	1065.503	1065.990	1066.505	1067.020	1067.485	1067.965	1068.660	1069.045	1069.535	1070.025
AMTD CHAINAGE (km)	17.130	16.640	16.125	15.720	15.350	15.015	14.660	14.170	13.650	13.157	12.670	12.155	11.640	11.175	10.695	10.000	9.615	9.125	8.635

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

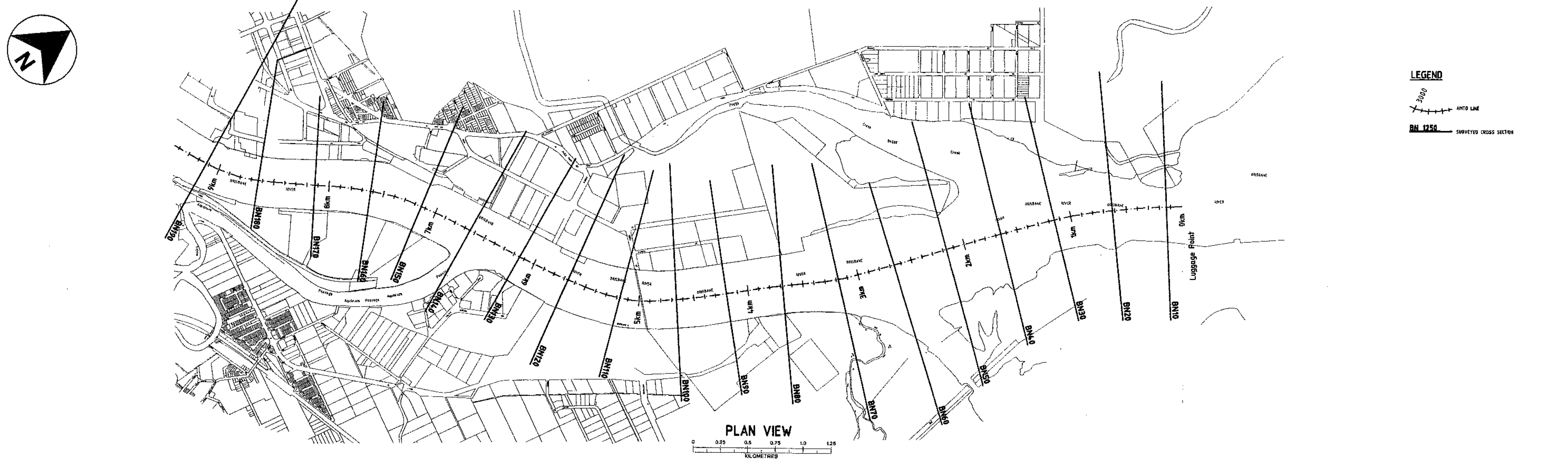
BRISBANE RIVER - BN 360 TO BN 180

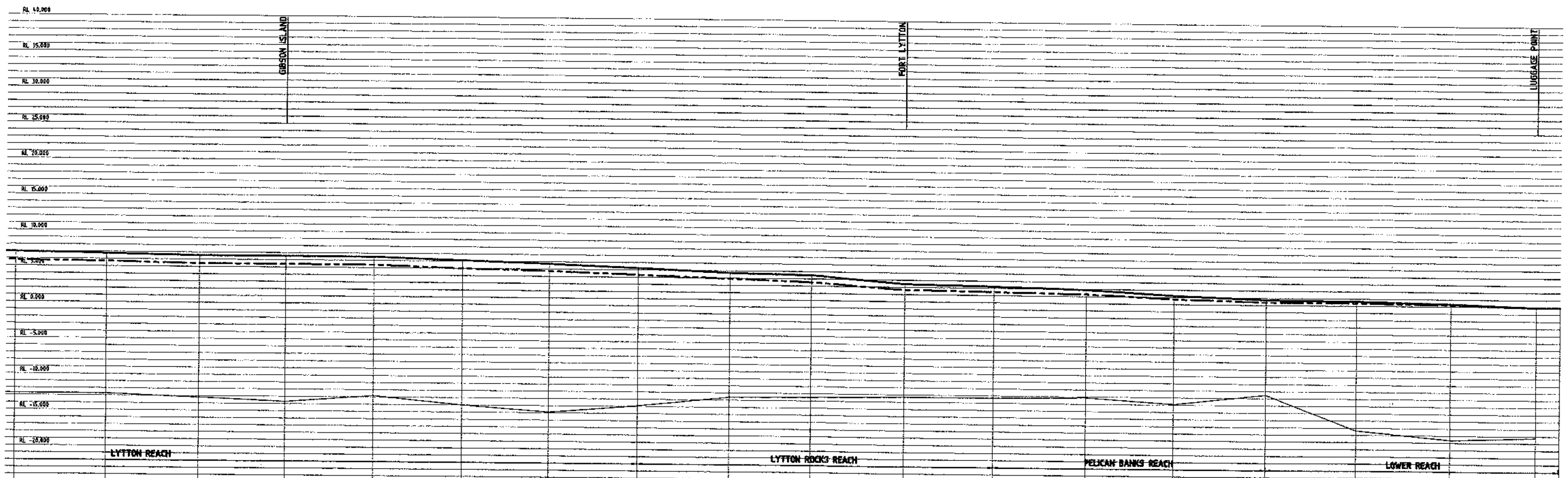
FILE [illegible]
PLOT SCALE 1=30

SINCLAIR KNIGHT MERZ

FIGURE E-4i

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
10 000 AND PMF YEAR ARI EVENTS (MHWS)





DATUM RL. -25.000

PMF DESIGN FLOOD LEVEL	5.810	5.700	5.450	5.440	5.420	5.000	4.750	4.320	3.900
10 000 YEAR ARI DESIGN FLOOD LEVEL	6.960	6.380	6.560	6.550	6.540	6.120	5.750	5.250	4.710
BED LEVEL (m AHD)	-12.700	-12.700	-13.200	-13.700	-12.600	-14.000	-14.900	-13.900	-12.600
CROSS SECTION NUMBER	BN 180	BN 170	BN 160	BN 150	BN 140	BN 130	BN 120	BN 110	BN 100
MIKE 11 CHAINAGE (km)	1070.025	1070.530	1071.040	1071.520	1072.015	1072.515	1072.995	1073.485	1074.000
AMTD CHAINAGE (km)	8.635	8.130	7.620	7.140	6.645	6.145	5.665	5.175	4.660

PMF DESIGN FLOOD LEVEL	3.520	2.640	2.480	2.300	1.720	1.430	1.380	1.210	0.920	0.920
10 000 YEAR ARI DESIGN FLOOD LEVEL	4.510	3.440	3.210	2.920	2.200	1.730	1.460	1.340	0.920	0.920
BED LEVEL (m AHD)	-12.500	-12.300	-12.300	-12.100	-12.900	-11.500	-16.400	-17.600	-17.200	
CROSS SECTION NUMBER	BN 90	BN 80	BN 70	BN 60	BN 50	BN 40	BN 30	BN 20	BN 10	
MIKE 11 CHAINAGE (km)	1074.460	1074.985	1075.480	1076.000	1076.495	1077.010	1077.510	1078.040	1078.525	1078.660
AMTD CHAINAGE (km)	4.200	3.675	3.180	2.660	2.165	1.650	1.150	0.620	0.135	0.000

LEGEND
- (S16) LOCATION AND IDENTIFICATION OF STRUCTURE
- ——— PMF DESIGN FLOOD
- – – – 10 000 YEAR ARI DESIGN FLOOD

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 180 TO BN 10

Flood Levels

Table E-5-Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	2000 Year ARI WL (m AHD)	1000 Year ARI WL (m AHD)	500 Year ARI WL (m AHD)	200 Year ARI WL (m AHD)
BRISBANE	1000	78.66	BN 2020	31.55	30.13	27.44	25.21
BRISBANE	1000.285	78.375	BN 2010	31.48	30.05	27.35	25.12
BRISBANE	1000.775	77.885	BN 2000	31.06	29.65	27.01	24.83
BRISBANE	1001.315	77.345	BN 1990	30.94	29.53	26.88	24.69
BRISBANE	1001.865	76.795	BN 1980	30.22	28.81	26.24	24.10
BRISBANE	1002.35	76.31	BN 1970	29.64	28.30	25.79	23.68
BRISBANE	1002.785	75.875	BN 1960	29.62	28.26	25.72	23.58
BRISBANE	1003.275	75.385	BN 1950	29.47	28.06	25.52	23.36
BRISBANE	1003.775	74.885	BN 1940	29.20	27.81	25.29	23.13
BRISBANE	1004.3	74.36	BN 1930	29.00	27.47	24.94	22.77
BRISBANE	1004.81	73.85	BN 1920	28.89	27.38	24.86	22.71
BRISBANE	1005.325	73.335	BN 1910	28.67	27.17	24.67	22.53
BRISBANE	1005.87	72.79	BN 1900	28.58	26.99	24.49	22.35
BRISBANE	1006.3	72.36	BN 1890	28.52	26.88	24.33	22.19
BRISBANE	1006.91	71.75	BN 1880	28.39	26.72	24.20	22.08
BRISBANE	1007.41	71.25	BN 1870	28.16	26.57	24.11	22.01
BRISBANE	1007.92	70.74	BN 1860	28.28	26.64	24.11	21.94
BRISBANE	1008.445	70.215	BN 1850	28.01	26.27	23.77	21.65
BRISBANE	1008.925	69.735	BN 1840	27.97	26.24	23.68	21.57
BRISBANE	1009.4	69.26	BN 1830	28.01	26.30	23.68	21.49
BRISBANE	1009.72	68.84	BN 1820	28.00	26.29	23.68	21.46
BRISBANE	1010.49	68.17	BN 1810	27.41	25.73	23.21	21.06
BRISBANE	1010.725	67.935	BN 1800	27.42	25.73	23.20	21.05
BRISBANE	1010.98	67.68	BN 1790	27.18	25.52	23.06	20.94
BRISBANE	1011.51	67.15	BN 1780	27.36	25.67	23.14	20.97
BRISBANE	1011.98	66.68	BN 1770	27.36	25.66	23.13	20.97
BRISBANE	1012.475	66.185	BN 1760	27.39	25.65	23.04	20.89
BRISBANE	1012.935	65.725	BN 1750	27.40	25.66	23.05	20.82
BRISBANE	1013.445	65.215	BN 1740	27.15	25.43	22.86	20.68
BRISBANE	1013.91	64.74	BN 1730	27.22	25.48	22.88	20.65
BRISBANE	1014.31	64.55	BN 1720	27.19	25.44	22.84	20.61
BRISBANE	1014.61	64.05	BN 1710	27.20	25.45	22.85	20.62
BRISBANE	1015.09	63.57	BN 1700	26.91	25.18	22.63	20.43
BRISBANE	1015.56	63.1	BN 1690	26.61	24.91	22.41	20.23
BRISBANE	1016.14	62.52	BN 1680	26.57	24.85	22.33	20.14
BRISBANE	1016.64	62.02	BN 1670	26.62	24.86	22.24	20.01
BRISBANE	1017.13	61.53	BN 1660	26.56	24.77	22.05	19.83
BRISBANE	1017.61	61.05	BN 1650	26.29	24.51	21.87	19.66
BRISBANE	1017.92	60.74	BN 1640	26.18	24.40	21.75	19.54
BRISBANE	1018.2	60.46	BN 1630	26.24	24.43	21.72	19.47
BRISBANE	1018.725	59.935	BN 1620	26.00	24.12	21.35	19.13
BRISBANE	1019.095	59.565	BN 1610	25.97	24.07	21.26	19.05
BRISBANE	1019.49	59.17	BN 1600	25.99	24.10	21.29	19.02
BRISBANE	1019.865	58.795	BN 1590	25.80	23.88	20.99	18.77
BRISBANE	1020.115	58.545	BN 1580	25.88	23.97	21.12	18.84
BRISBANE	1020.525	58.135	BN 1570	25.82	23.91	21.08	18.82
BRISBANE	1020.83	57.83	BN 1560	25.62	23.69	20.88	18.65
BRISBANE	1021.095	57.565	BN 1550	25.52	23.56	20.67	18.46
BRISBANE	1021.539	57.121	BN 1540	25.35	23.42	20.60	18.38
BRISBANE	1021.715	56.945	BN 1530	25.37	23.44	20.61	18.38
BRISBANE	1021.895	56.765	BN 1520	25.18	23.26	20.46	18.26
BRISBANE	1022.505	56.555	BN 1510	24.76	22.87	20.15	18.00
BRISBANE	1022.575	56.085	BN 1500	24.99	23.07	20.29	18.10
BRISBANE	1023.04	55.62	BN 1490	24.79	22.66	19.89	17.74
BRISBANE	1023.57	55.09	BN 1480	24.43	22.47	19.76	17.64
BRISBANE	1024.08	54.58	BN 1470	24.36	22.39	19.69	17.57
BRISBANE	1024.563	54.097	BN 1460	24.30	22.32	19.62	17.49
BRISBANE	1025.07	53.59	BN 1450	24.41	22.36	19.55	17.42
BRISBANE	1025.36	53.3	BN 1440	24.03	22.03	19.33	17.24
BRISBANE	1025.59	53.07	BN 1430	23.75	21.75	19.09	17.04
BRISBANE	1026.17	52.49	BN 1420	23.82	21.79	19.09	17.01
BRISBANE	1026.68	51.98	BN 1410	23.85	21.79	19.03	16.88
BRISBANE	1026.9	51.76	BN 1400	23.74	21.67	18.88	16.71

Flood Levels

Table E-5-Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	2000 Year ARI WL (m AHD)	1000 Year ARI WL (m AHD)	500 Year ARI WL (m AHD)	200 Year ARI WL (m AHD)
BRISBANE	1027.16	51.5	BN 1390	23.53	21.47	18.75	16.64
BRISBANE	1027.68	50.98	BN 1380	23.62	21.57	18.85	16.74
BRISBANE	1028.18	50.48	BN 1370	23.60	21.55	18.82	16.71
BRISBANE	1028.68	49.98	BN 1360	23.35	21.31	18.61	16.53
BRISBANE	1028.76	49.9	BN 1340	22.81	21.07	18.39	16.31
BRISBANE	1029.2	49.46	BN 1330	22.68	20.96	18.24	16.13
BRISBANE	1029.68	48.98	BN 1320	22.66	20.93	18.22	16.11
BRISBANE	1030.22	48.44	BN 1310	22.59	20.87	18.17	16.07
BRISBANE	1030.87	47.79	BN 1300	22.49	20.77	18.06	15.96
BRISBANE	1031.26	47.4	BN 1290	22.31	20.60	17.91	15.82
BRISBANE	1031.7	46.96	BN 1280	21.68	20.01	17.38	15.35
BRISBANE	1031.995	46.665	BN 1270	21.99	20.29	17.62	15.54
BRISBANE	1032.23	46.43	BN 1260	21.78	20.11	17.48	15.43
BRISBANE	1032.585	46.075	BN 1250	21.44	19.82	17.27	15.27
BRISBANE	1033.08	45.58	BN 1240	21.34	19.70	17.13	15.12
BRISBANE	1033.37	45.29	BN 1230	21.30	19.64	17.05	15.04
BRISBANE	1033.9	44.76	BN 1220	20.99	19.33	16.78	14.80
BRISBANE	1034.37	44.29	BN 1210	20.76	19.05	16.50	14.55
BRISBANE	1034.89	43.77	BN 1200	20.90	19.15	16.43	14.47
BRISBANE	1035.414	43.246	BN 1190	20.56	18.83	16.20	14.26
BRISBANE	1035.9	42.76	BN 1180	20.07	18.36	15.78	13.89
BRISBANE	1036.46	42.2	BN 1170	20.26	18.46	15.71	13.80
BRISBANE	1036.77	41.89	BN 1160	19.93	18.19	15.56	13.67
BRISBANE	1036.915	41.745	BN 1150	19.75	18.02	15.39	13.52
BRISBANE	1037.09	41.57	BN 1140	19.68	17.94	15.33	13.47
BRISBANE	1037.175	41.485	BN 1120	19.61	17.88	15.21	13.39
BRISBANE	1037.285	41.375	BN 1110	19.43	17.74	15.10	13.29
BRISBANE	1037.625	41.035	BN 1100	19.62	17.89	15.21	13.37
BRISBANE	1038.085	40.575	BN 1090	19.60	17.87	15.17	13.33
BRISBANE	1038.6	40.06	BN 1080	19.57	17.83	15.13	13.27
BRISBANE	1039.1	39.56	BN 1070	19.62	17.82	15.05	13.19
BRISBANE	1039.565	39.05	BN 1060	19.61	17.82	15.01	13.15
BRISBANE	1040.09	38.57	BN 1050	19.60	17.82	15.04	13.15
BRISBANE	1040.49	38.17	BN 1040	19.52	17.71	14.86	13.00
BRISBANE	1041.01	37.56	BN 1030	19.52	17.73	14.88	12.93
BRISBANE	1041.23	37.43	BN 1020	19.53	17.74	14.91	12.97
BRISBANE	1041.46	37.2	BN 1010	19.32	17.55	14.76	12.86
BRISBANE	1041.7	36.96	BN 1000	19.25	17.48	14.69	12.79
BRISBANE	1041.96	36.7	BN 990	19.04	17.29	14.53	12.66
BRISBANE	1042.235	36.425	BN 980	18.65	16.95	14.24	12.41
BRISBANE	1042.515	36.145	BN 970	18.79	16.93	14.21	12.39
BRISBANE	1042.91	35.75	BN 960	18.86	17.02	14.13	12.19
BRISBANE	1043.725	34.935	BN 950	18.70	16.83	13.85	11.91
BRISBANE	1044.06	34.6	BN 940	18.38	16.55	13.66	11.75
BRISBANE	1044.34	34.32	BN 930	18.17	16.36	13.49	11.60
BRISBANE	1044.605	34.055	BN 920	18.17	16.35	13.46	11.57
BRISBANE	1044.86	33.8	BN 910	18.15	16.32	13.43	11.54
BRISBANE	1045.4	33.26	BN 900	18.18	16.30	13.29	11.39
BRISBANE	1045.885	32.775	BN 890	18.20	16.32	13.31	11.38
BRISBANE	1046.18	32.48	BN 880	18.00	16.13	13.16	11.25
BRISBANE	1046.34	32.32	BN 870	17.84	16.00	13.06	11.18
BRISBANE	1046.58	32.08	BN 860	17.83	15.99	13.04	11.15
BRISBANE	1046.9	31.76	BN 850	17.64	15.80	12.86	10.99
BRISBANE	1047.35	31.31	BN 840	17.17	15.37	12.48	10.66
BRISBANE	1047.915	30.745	BN 830	17.01	15.20	12.28	10.46
BRISBANE	1048.375	30.285	BN 820	17.11	15.28	12.34	10.50
BRISBANE	1048.89	29.77	BN 810	16.87	15.04	12.08	10.25
BRISBANE	1049.12	29.54	BN 800	16.73	14.92	12.00	10.18
BRISBANE	1049.37	29.29	BN 790	16.87	15.01	11.99	10.09
BRISBANE	1049.59	29.07	BN 780	16.64	14.81	11.84	10.01
BRISBANE	1049.87	28.79	BN 770	16.57	14.64	11.71	9.90
BRISBANE	1050.43	28.23	BN 760	16.61	14.75	11.78	9.95
BRISBANE	1050.86	27.8	BN 750	16.41	14.56	11.61	9.78

Flood Levels

Table E-5-Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	2000 Year ARI WL (m AHD)	1000 Year ARI WL (m AHD)	500 Year ARI WL (m AHD)	200 Year ARI WL (m AHD)
BRISBANE	1051.36	27.3	BN 740	16.44	14.58	11.62	9.80
BRISBANE	1051.895	26.765	BN 730	16.36	14.49	11.50	9.66
BRISBANE	1052.31	26.35	BN 720	16.26	14.32	11.36	9.55
BRISBANE	1052.39	26.27	BN 700	15.38	13.43	10.58	8.83
BRISBANE	1052.595	26.065	BN 690	15.03	13.15	10.38	8.69
BRISBANE	1052.64	26.02	BN 670	13.18	11.86	9.50	8.10
BRISBANE	1053.32	25.34	BN 650	13.32	11.91	9.54	8.07
BRISBANE	1053.385	25.795	BN 660	12.92	11.62	9.34	7.90
BRISBANE	1053.9	24.76	BN 620	12.46	11.19	9.00	7.60
BRISBANE	1054.64	24.02	BN 610	12.31	11.02	8.82	7.42
BRISBANE	1054.68	23.98	BN 590	12.12	10.86	8.69	7.31
BRISBANE	1054.97	23.69	BN 560	11.56	10.38	8.30	6.99
BRISBANE	1055.28	23.38	BN 550	11.50	10.31	8.24	6.92
BRISBANE	1055.42	23.24	BN 540	11.53	10.33	8.23	6.91
BRISBANE	1055.96	22.7	BN 530	11.44	10.25	8.15	6.83
BRISBANE	1056.4	22.26	BN 520	11.04	9.87	7.81	6.53
BRISBANE	1056.695	21.965	BN 510	10.89	9.75	7.72	6.45
BRISBANE	1056.865	21.795	BN 500	11.28	10.05	7.87	6.49
BRISBANE	1056.95	21.71	BN 490	10.80	9.61	7.70	6.37
BRISBANE	1057.09	21.57	BN 480	10.56	9.45	7.67	6.43
BRISBANE	1057.53	21.13	BN 470	10.23	9.16	7.44	6.24
BRISBANE	1058.04	20.62	BN 460	9.70	8.67	7.02	5.87
BRISBANE	1058.23	20.43	BN 450	9.48	8.47	6.84	5.71
BRISBANE	1058.53	20.13	BN 440	8.87	7.95	6.44	5.38
BRISBANE	1058.735	19.925	BN 430	8.88	7.94	6.41	5.35
BRISBANE	1059.035	19.625	BN 420	8.30	7.43	6.00	5.01
BRISBANE	1059.54	19.12	BN 410	8.28	7.40	5.95	4.95
BRISBANE	1059.99	18.67	BN 400	7.93	7.08	5.69	4.72
BRISBANE	1060.345	18.315	BN 390	7.70	6.85	5.47	4.53
BRISBANE	1060.535	18.125	BN 380	7.12	6.38	5.15	4.30
BRISBANE	1061.015	17.645	BN 370	7.42	6.59	5.24	4.32
BRISBANE	1061.53	17.13	BN 360	6.76	6.03	4.84	4.01
BRISBANE	1062.02	16.64	BN 350	6.70	5.96	4.75	3.92
BRISBANE	1062.535	16.125	BN 340	6.73	5.97	4.73	3.88
BRISBANE	1062.94	15.72	BN 330	6.72	5.95	4.71	3.87
BRISBANE	1063.31	15.35	BN 320	6.51	5.77	4.57	3.74
BRISBANE	1063.645	15.015	BN 310	5.86	5.20	4.11	3.37
BRISBANE	1064	14.66	BN 300	5.74	5.08	4.00	3.27
BRISBANE	1064.49	14.17	BN 290	5.46	4.84	3.82	3.13
BRISBANE	1065.01	13.65	BN 280	5.63	4.98	3.91	3.19
BRISBANE	1065.503	13.157	BN 270	5.55	4.90	3.85	3.15
BRISBANE	1065.99	12.67	BN 260	5.65	4.99	3.91	3.20
BRISBANE	1066.505	12.155	BN 250	5.58	4.92	3.84	3.13
BRISBANE	1067.02	11.64	BN 240	5.47	4.81	3.77	3.07
BRISBANE	1067.485	11.175	BN 230	5.32	4.67	3.64	2.96
BRISBANE	1067.965	10.695	BN 220	5.14	4.50	3.49	2.83
BRISBANE	1068.66	10	BN 210	4.71	4.10	3.19	2.61
BRISBANE	1069.045	9.615	BN 200	4.62	4.01	3.07	2.50
BRISBANE	1069.535	9.125	BN 190	4.44	3.85	2.97	2.42
BRISBANE	1070.025	8.635	BN 180	4.18	3.64	2.82	2.31
BRISBANE	1070.53	8.13	BN 170	4.05	3.45	2.63	2.17
BRISBANE	1071.04	7.62	BN 160	3.76	3.22	2.48	2.05
BRISBANE	1071.52	7.14	BN 150	3.79	3.27	2.53	2.08
BRISBANE	1072.015	6.645	BN 140	3.74	3.20	2.47	2.04
BRISBANE	1072.515	6.145	BN 130	3.36	2.88	2.23	1.86
BRISBANE	1072.995	5.665	BN 120	3.23	2.77	2.15	1.80
BRISBANE	1073.485	5.175	BN 110	2.89	2.48	1.95	1.65
BRISBANE	1074	4.66	BN 100	2.61	2.26	1.80	1.54
BRISBANE	1074.46	4.2	BN 90	2.37	2.06	1.66	1.44
BRISBANE	1074.985	3.675	BN 80	1.83	1.62	1.37	1.23
BRISBANE	1075.48	3.18	BN 70	1.71	1.52	1.29	1.17
BRISBANE	1076	2.66	BN 60	1.66	1.49	1.28	1.17
BRISBANE	1076.495	2.165	BN 50	1.28	1.19	1.08	1.03

Flood Levels

Table E-5-Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	2000 Year ARI WL (m AHD)	1000 Year ARI WL (m AHD)	500 Year ARI WL (m AHD)	200 Year ARI WL (m AHD)
BRISBANE	1077.01	1.65	BN 40	1.16	1.10	1.03	0.99
BRISBANE	1077.51	1.15	BN 30	1.15	1.10	1.03	1.00
BRISBANE	1078.04	0.62	BN 20	1.07	1.04	0.99	0.97
BRISBANE	1078.525	0.135	BN 10	0.92	0.92	0.92	0.92
BRISBANE	1078.66	0		0.92	0.92	0.92	0.92
BREMER	599.4			28.54	26.90	24.38	22.23
BREMER	600			28.53	26.90	24.37	22.23
OXLEY	599.4			19.61	17.83	15.03	13.13
OXLEY	600			19.61	17.83	15.03	13.13
BREAKFAST	599.4			6.63	5.88	4.65	3.82
BREAKFAST	600			6.62	5.88	4.65	3.82
BULIMBA	599.4			3.73	3.20	2.47	2.03
BULIMBA	600			3.73	3.20	2.47	2.03
CENTWEIR	0			23.35	21.31	18.61	16.53
CENTWEIR	0.08			22.81	21.07	18.39	16.31
INDOORWEIR	0			19.68	17.94	15.33	13.47
INDOORWEIR	0.085			19.61	17.88	15.21	13.39
WILLIAMWEIR	0			15.03	13.15	10.38	8.69
WILLIAMWEIR	0.045			13.18	11.86	9.50	8.10
VICTORIAWEIR	0			13.32	11.91	9.54	8.07
VICTORIAWEIR	0.065			12.92	11.62	9.34	7.90
CAPTAINWEIR	0			12.31	11.02	8.82	7.42
CAPTAINWEIR	0.04			12.12	10.86	8.69	7.31
STORYWEIR	0			11.28	10.05	7.87	6.49
STORYWEIR	0.085			10.80	9.61	7.70	6.37
MERIVALEWEIR	0			16.26	14.32	11.36	9.55
MERIVALEWEIR	0.08			15.38	13.43	10.58	8.83

Discharges

Table E-5-Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	2000 Year ARI Q (m^3/s)	1000 Year ARI Q (m^3/s)	500 Year ARI Q (m^3/s)	200 Year ARI Q (m^3/s)
BRISBANE	1000.14	78.52	BN 2020	18245	16372	13370	11114
BRISBANE	1000.53	78.13	BN 2010	18236	16365	13357	11107
BRISBANE	1001.05	77.62	BN 2000	18228	16359	13349	11101
BRISBANE	1001.59	77.07	BN 1990	18219	16352	13339	11095
BRISBANE	1002.11	76.55	BN 1980	18212	16347	13331	11091
BRISBANE	1002.57	76.09	BN 1970	18208	16344	13326	11088
BRISBANE	1003.03	75.63	BN 1960	18201	16339	13318	11084
BRISBANE	1003.53	75.14	BN 1950	18188	16330	13303	11073
BRISBANE	1004.04	74.62	BN 1940	18177	16322	13289	11064
BRISBANE	1004.56	74.11	BN 1930	18158	16311	13270	11053
BRISBANE	1005.07	73.59	BN 1920	18142	16301	13255	11043
BRISBANE	1005.60	73.06	BN 1910	18131	16292	13241	11033
BRISBANE	1006.04	72.63	BN 1900	18120	16283	13226	11023
BRISBANE	1006.25	72.41	BN 1890	20756	18339	14451	11774
BRISBANE	1006.61	72.05	BN 1880	20748	18332	14444	11770
BRISBANE	1007.16	71.50	BN 1870	20736	18322	14434	11762
BRISBANE	1007.67	71.00	BN 1860	20730	18317	14429	11758
BRISBANE	1008.18	70.48	BN 1850	20720	18309	14419	11749
BRISBANE	1008.69	69.98	BN 1840	20710	18299	14413	11745
BRISBANE	1009.16	69.50	BN 1830	20701	18291	14406	11741
BRISBANE	1009.56	69.00	BN 1820	20693	18284	14398	11735
BRISBANE	1010.11	68.56	BN 1810	20683	18275	14388	11726
BRISBANE	1010.61	68.05	BN 1800	20678	18271	14384	11723
BRISBANE	1010.85	67.81	BN 1790	20676	18268	14381	11721
BRISBANE	1011.25	67.42	BN 1780	20673	18266	14379	11719
BRISBANE	1011.75	66.92	BN 1770	20665	18260	14372	11714
BRISBANE	1012.23	66.43	BN 1760	20657	18253	14365	11708
BRISBANE	1012.71	65.95	BN 1750	20649	18245	14357	11702
BRISBANE	1013.19	65.47	BN 1740	20640	18236	14348	11694
BRISBANE	1013.68	64.97	BN 1730	20631	18229	14341	11688
BRISBANE	1014.11	64.75	BN 1720	20624	18222	14334	11682
BRISBANE	1014.46	64.20	BN 1710	20619	18217	14329	11678
BRISBANE	1014.85	63.81	BN 1700	20613	18212	14323	11673
BRISBANE	1015.33	63.33	BN 1690	20606	18206	14319	11670
BRISBANE	1015.85	62.81	BN 1680	20601	18202	14315	11666
BRISBANE	1016.39	62.27	BN 1670	20592	18194	14307	11660
BRISBANE	1016.89	61.78	BN 1660	20583	18185	14298	11654
BRISBANE	1017.37	61.29	BN 1650	20571	18174	14287	11646
BRISBANE	1017.77	60.90	BN 1640	20563	18167	14281	11641
BRISBANE	1018.06	60.60	BN 1630	20556	18160	14275	11636
BRISBANE	1018.46	60.20	BN 1620	20548	18153	14268	11632
BRISBANE	1018.91	59.75	BN 1610	20541	18146	14261	11628
BRISBANE	1019.29	59.37	BN 1600	20533	18139	14255	11623
BRISBANE	1019.68	58.98	BN 1590	20525	18131	14248	11619
BRISBANE	1019.99	58.67	BN 1580	20520	18127	14244	11616
BRISBANE	1020.32	58.34	BN 1570	20514	18121	14239	11612
BRISBANE	1020.68	57.98	BN 1560	20508	18116	14233	11608
BRISBANE	1020.96	57.70	BN 1550	20505	18112	14231	11606
BRISBANE	1021.32	57.34	BN 1540	20500	18108	14227	11604
BRISBANE	1021.63	57.03	BN 1530	20493	18102	14222	11601
BRISBANE	1021.81	56.86	BN 1520	20490	18099	14219	11599
BRISBANE	1022.20	56.86	BN 1510	20485	18094	14216	11597
BRISBANE	1022.54	56.12	BN 1500	20482	18092	14214	11595
BRISBANE	1022.81	55.85	BN 1490	20476	18087	14210	11592
BRISBANE	1023.31	55.36	BN 1480	20466	18077	14202	11589
BRISBANE	1023.83	54.83	BN 1470	20459	18072	14198	11586
BRISBANE	1024.32	54.34	BN 1460	20453	18066	14193	11583
BRISBANE	1024.82	53.84	BN 1450	20444	18059	14188	11580
BRISBANE	1025.22	53.45	BN 1440	20436	18052	14182	11576
BRISBANE	1025.48	53.19	BN 1430	20433	18049	14180	11575
BRISBANE	1025.88	52.78	BN 1420	20428	18044	14177	11573
BRISBANE	1026.43	52.24	BN 1410	20416	18034	14170	11568
BRISBANE	1026.79	51.87	BN 1400	20412	18030	14166	11566

Discharges

Table E-5-Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	2000 Year ARI Q (m³/s)	1000 Year ARI Q (m³/s)	500 Year ARI Q (m³/s)	200 Year ARI Q (m³/s)
BRISBANE	1027.03	51.63	BN 1390	20409	18027	14164	11564
BRISBANE	1027.42	51.24	BN 1380	20399	18018	14158	11561
BRISBANE	1027.93	50.73	BN 1370	20390	18010	14151	11557
BRISBANE	1028.43	50.23	BN 1360	20382	18003	14146	11553
BRISBANE	1028.72	49.94	BN 1340	13489	12829	11233	10122
BRISBANE	1028.98	49.68	BN 1330	20373	17995	14139	11549
BRISBANE	1029.44	49.22	BN 1320	20360	17983	14129	11543
BRISBANE	1029.95	48.71	BN 1310	20345	17969	14119	11536
BRISBANE	1030.55	48.11	BN 1300	20326	17953	14108	11529
BRISBANE	1031.07	47.59	BN 1290	20313	17941	14098	11523
BRISBANE	1031.48	47.18	BN 1280	20304	17933	14092	11518
BRISBANE	1031.85	46.81	BN 1270	20298	17927	14088	11516
BRISBANE	1032.11	46.55	BN 1260	20292	17922	14084	11514
BRISBANE	1032.41	46.25	BN 1250	20288	17919	14082	11512
BRISBANE	1032.83	45.83	BN 1240	20285	17915	14079	11510
BRISBANE	1033.23	45.44	BN 1230	20277	17909	14074	11507
BRISBANE	1033.64	45.03	BN 1220	20267	17900	14068	11504
BRISBANE	1034.14	44.52	BN 1210	20255	17889	14062	11499
BRISBANE	1034.63	44.03	BN 1200	20240	17876	14055	11495
BRISBANE	1035.15	43.51	BN 1190	20221	17856	14044	11489
BRISBANE	1035.66	43.00	BN 1180	20206	17842	14035	11484
BRISBANE	1036.18	42.48	BN 1170	20194	17830	14028	11481
BRISBANE	1036.62	42.05	BN 1160	20180	17815	14018	11475
BRISBANE	1036.84	41.82	BN 1150	20176	17810	14015	11473
BRISBANE	1037.00	41.66	BN 1140	20171	17806	14012	11471
BRISBANE	1037.11	41.55	BN 1120	19920	17802	14011	11471
BRISBANE	1037.23	41.43	BN 1110	20169	17804	14011	11470
BRISBANE	1037.46	41.21	BN 1100	20165	17799	14008	11469
BRISBANE	1037.86	40.81	BN 1090	20151	17785	13998	11462
BRISBANE	1038.34	40.32	BN 1080	20130	17763	13982	11452
BRISBANE	1038.85	39.81	BN 1070	20103	17735	13963	11439
BRISBANE	1039.33	39.28	BN 1060	20074	17703	13943	11426
BRISBANE	1039.70	38.96	BN 1050	20056	17681	13928	11415
BRISBANE	1039.96	38.70	BN 1040	19467	16934	13322	11028
BRISBANE	1040.29	38.28	BN 1030	19462	16932	13319	11026
BRISBANE	1040.75	37.91	BN 1020	19456	16929	13315	11023
BRISBANE	1041.12	37.54	BN 1010	19450	16927	13312	11020
BRISBANE	1041.35	37.32	BN 1000	19446	16925	13310	11019
BRISBANE	1041.58	37.08	BN 990	19443	16924	13308	11018
BRISBANE	1041.83	36.83	BN 980	19440	16923	13307	11018
BRISBANE	1042.10	36.56	BN 970	19437	16922	13305	11017
BRISBANE	1042.38	36.29	BN 960	19436	16921	13304	11016
BRISBANE	1042.71	35.95	BN 950	19432	16920	13303	11016
BRISBANE	1043.32	35.34	BN 940	19424	16918	13300	11014
BRISBANE	1043.89	34.77	BN 930	19427	16917	13298	11012
BRISBANE	1044.20	34.46	BN 920	19430	16916	13296	11012
BRISBANE	1044.47	34.19	BN 910	19432	16915	13296	11010
BRISBANE	1044.73	33.93	BN 900	19435	16914	13295	11010
BRISBANE	1045.13	33.53	BN 890	19439	16912	13293	11010
BRISBANE	1045.64	33.02	BN 880	19442	16916	13291	11009
BRISBANE	1046.03	32.63	BN 870	19444	16923	13290	11013
BRISBANE	1046.26	32.40	BN 860	19446	16925	13289	11013
BRISBANE	1046.46	32.20	BN 850	19450	16925	13289	11013
BRISBANE	1046.74	31.92	BN 840	19455	16927	13288	11014
BRISBANE	1047.13	31.54	BN 830	19465	16929	13287	11014
BRISBANE	1047.63	31.03	BN 820	19475	16926	13286	11012
BRISBANE	1048.15	30.52	BN 810	19491	16926	13284	11010
BRISBANE	1048.63	30.03	BN 800	19505	16947	13282	11028
BRISBANE	1049.01	29.65	BN 790	19513	16952	13280	11029
BRISBANE	1049.25	29.42	BN 780	19515	16952	13279	11032
BRISBANE	1049.48	29.18	BN 770	19516	16960	13279	11030
BRISBANE	1049.73	28.93	BN 760	19516	16962	13278	11031
BRISBANE	1050.15	28.51	BN 750	19541	16955	13278	11027

Discharges

Table E-5-Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	2000 Year ARI Q (m^3/s)	1000 Year ARI Q (m^3/s)	500 Year ARI Q (m^3/s)	200 Year ARI Q (m^3/s)
BRISBANE	1050.65	28.01	BN 740	19552	16988	13275	11056
BRISBANE	1051.11	27.55	BN 730	19556	16998	13274	11053
BRISBANE	1051.63	27.03	BN 720	19611	17068	13276	11103
BRISBANE	1052.10	26.56	BN 700	19764	17199	13280	11116
BRISBANE	1052.37	26.29	BN 690	19741	17228	13282	11120
BRISBANE	1052.49	26.17	BN 670	19764	17204	13283	11123
BRISBANE	1052.63	26.03	BN 650	19733	17182	13284	11122
BRISBANE	1052.98	26.20	BN 660	19694	17178	13279	11040
BRISBANE	1053.36	25.31	BN 620	19494	17102	13277	11017
BRISBANE	1053.64	25.02	BN 610	19592	17105	13274	11002
BRISBANE	1054.27	24.39	BN 590	19588	16989	13274	11071
BRISBANE	1054.66	24.00	BN 560	19373	16919	13273	11044
BRISBANE	1054.83	23.83	BN 550	19574	16979	13273	11035
BRISBANE	1055.13	23.54	BN 540	19572	16984	13273	11034
BRISBANE	1055.35	23.31	BN 530	19566	16983	13272	11031
BRISBANE	1055.69	22.97	BN 520	19551	16996	13272	11026
BRISBANE	1056.18	22.48	BN 510	19530	16993	13270	11015
BRISBANE	1056.55	22.11	BN 500	19510	16983	13269	11011
BRISBANE	1056.78	21.88	BN 490	19501	16976	13268	11008
BRISBANE	1056.92	21.74	BN 480	19486	16963	13268	11004
BRISBANE	1057.02	21.64	BN 470	19478	16954	13267	11002
BRISBANE	1057.31	21.35	BN 460	19476	16942	13267	10999
BRISBANE	1057.79	20.87	BN 450	19474	16926	13266	10998
BRISBANE	1058.14	20.53	BN 440	19472	16917	13266	10997
BRISBANE	1058.38	20.28	BN 430	19470	16917	13266	10996
BRISBANE	1058.63	20.03	BN 420	19469	16918	13265	10995
BRISBANE	1058.89	19.78	BN 410	19467	16917	13265	10994
BRISBANE	1059.29	19.37	BN 400	19464	16919	13265	10992
BRISBANE	1059.77	18.89	BN 390	19455	16911	13265	10989
BRISBANE	1060.17	18.49	BN 380	19451	16907	13265	10988
BRISBANE	1060.44	18.22	BN 370	19442	16902	13264	10986
BRISBANE	1060.78	17.88	BN 360	19440	16903	13264	10986
BRISBANE	1061.27	17.39	BN 350	19427	16895	13263	10985
BRISBANE	1061.78	16.89	BN 340	19425	16899	13262	10984
BRISBANE	1062.28	16.38	BN 330	19426	16904	13262	10984
BRISBANE	1062.74	15.92	BN 320	19426	16905	13261	10983
BRISBANE	1063.03	15.63	BN 310	19425	16903	13260	10983
BRISBANE	1063.22	15.44	BN 300	19401	16873	13255	10981
BRISBANE	1063.48	15.18	BN 290	19400	16868	13255	10981
BRISBANE	1063.82	14.84	BN 280	19398	16869	13255	10981
BRISBANE	1064.25	14.42	BN 270	19396	16871	13254	10981
BRISBANE	1064.75	13.91	BN 260	19394	16873	13254	10980
BRISBANE	1065.26	13.40	BN 250	19390	16873	13253	10980
BRISBANE	1065.75	12.91	BN 240	19385	16872	13252	10980
BRISBANE	1066.25	12.41	BN 230	19379	16866	13251	10980
BRISBANE	1066.76	11.90	BN 220	19372	16859	13250	10979
BRISBANE	1067.25	11.41	BN 210	19366	16857	13249	10979
BRISBANE	1067.73	10.94	BN 200	19363	16856	13249	10979
BRISBANE	1068.31	10.35	BN 190	19359	16854	13248	10978
BRISBANE	1068.85	9.81	BN 180	19356	16852	13248	10978
BRISBANE	1069.29	9.37	BN 170	19352	16849	13247	10978
BRISBANE	1069.78	8.88	BN 160	19350	16845	13247	10978
BRISBANE	1070.28	8.38	BN 150	19349	16843	13247	10978
BRISBANE	1070.79	7.88	BN 140	19348	16843	13246	10978
BRISBANE	1071.28	7.38	BN 130	19347	16842	13246	10978
BRISBANE	1071.77	6.89	BN 120	19346	16841	13246	10978
BRISBANE	1072.02	6.64	BN 110	19345	16840	13246	10978
BRISBANE	1072.27	6.39	BN 100	19319	16812	13243	10977
BRISBANE	1072.76	5.90	BN 90	19319	16811	13243	10977
BRISBANE	1073.24	5.42	BN 80	19318	16810	13243	10977
BRISBANE	1073.74	4.92	BN 70	19318	16810	13243	10977
BRISBANE	1074.23	4.43	BN 60	19318	16810	13243	10977
BRISBANE	1074.72	3.94	BN 50	19318	16810	13243	10977

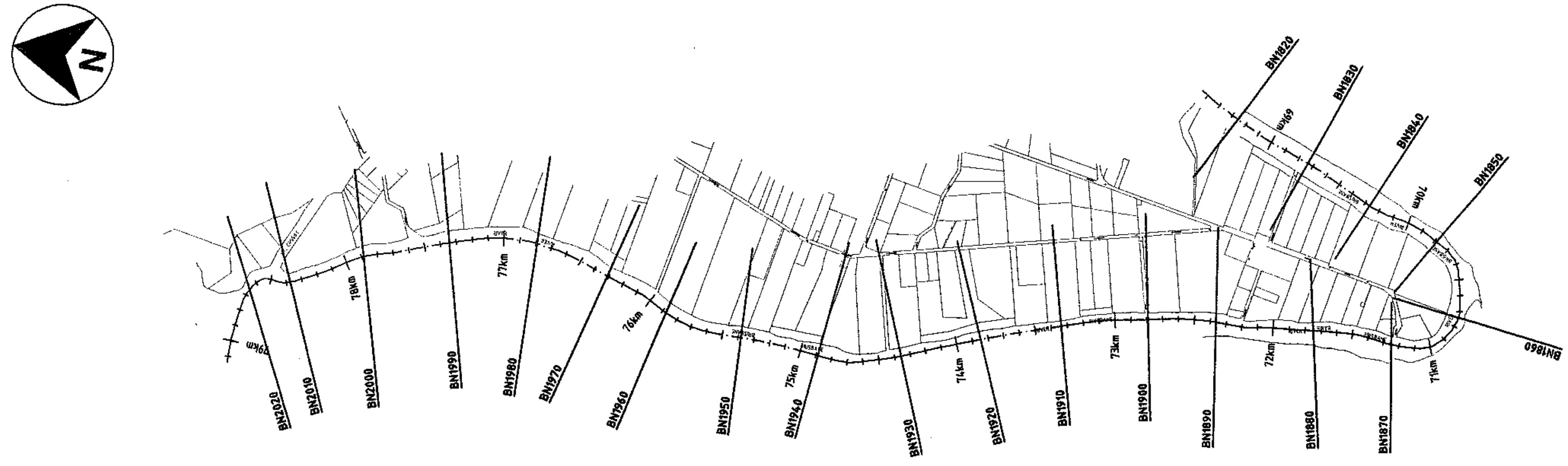
Discharges

Table E-5-Design Flood Profiles for the 2000, 1000, 500 & 200 Year ARI Events

River Branch	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	2000 Year ARI Q (m^3/s)	1000 Year ARI Q (m^3/s)	500 Year ARI Q (m^3/s)	200 Year ARI Q (m^3/s)
BRISBANE	1075.23	3.43	BN 40	19318	16810	13243	10977
BRISBANE	1075.74	2.92	BN 30	19318	16810	13243	10977
BRISBANE	1076.25	2.41	BN 20	19318	16810	13243	10977
BRISBANE	1076.75	1.91	BN 10	19318	16810	13243	10977
BRISBANE	1077.26	1.40	-	19319	16810	13243	10977
BRISBANE	1077.78	-478.38	-	19319	16811	13243	10977
BRISBANE	1078.28	-478.28	-	19319	16811	13243	10977
BRISBANE	1078.59	-479.19	-	19319	16811	13243	10977
BREMER	599.70	0.30	-	2783	2385	1920	1607
OXLEY	599.70	0.30	-	2236	1881	1073	722
BREAKFAST	599.70	0.30	-	189	145	100	84
BULIMBA	599.70	0.30	-	267	194	99	91
CENTWEIR	0.04	0.04	-	10615	5428	3052	1475
INDOORWEIR	0.04	0.04	-	438	33	0	0
WILLIAMWEIR	0.02	0.02	-	0	0	0	0
VICTORIAWEIR	0.03	0.03	-	167	50	0	0
CAPTAINWEIR	0.02	0.02	-	210	62	0	0
STORYWEIR	0.04	0.04	-	0	0	0	0
MERIVALEWEIR	0.04	0.04	-	124	0	0	0

FIGURE E-5a

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
200, 500, 1000 AND 2000 YEAR ARI EVENTS (MHWS)



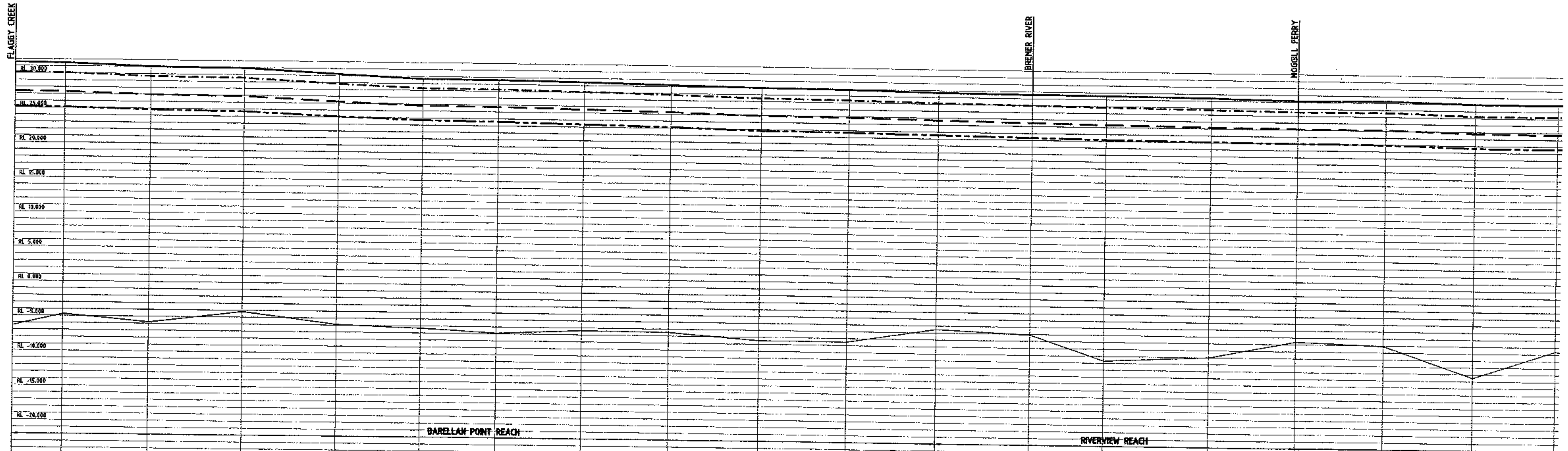
LEGEND

3000 — AMTD LINE

BN 1250 — SURVEYED CROSS SECTION

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	25.210	25.120	24.830	24.690	24.400	23.600	23.560	23.360	23.150	22.770	22.710	22.530	22.350	22.190	22.080	22.010	21.960	21.650	21.570
500 YEAR ARI DESIGN FLOOD LEVEL	27.440	27.350	27.010	26.880	26.240	25.790	25.720	25.520	25.290	24.940	24.860	24.670	24.490	24.330	24.300	24.110	24.110	23.770	23.680
1000 YEAR ARI DESIGN FLOOD LEVEL	30.130	30.050	29.650	29.530	28.810	28.300	28.260	28.060	27.810	27.470	27.380	27.170	26.990	26.860	26.720	26.570	26.640	26.270	26.240
2000 YEAR ARI DESIGN FLOOD LEVEL	31.550	31.480	31.060	30.940	30.220	29.640	29.620	29.470	29.200	29.000	28.890	28.670	28.580	28.520	28.390	28.180	28.280	28.010	27.970
BED LEVEL (m AHD)	-4.400	-4.700	-5.800	-4.200	-5.900	-6.300	-6.980	-6.400	-6.500	-7.500	-7.500	-5.500	-6.100	-9.700	-9.000	-6.600	-7.100	-11.500	-7.600
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1000.000	1000.285	1000.775	1001.335	1001.865	1002.350	1002.785	1003.275	1003.775	1004.300	1004.810	1005.325	1005.870	1006.300	1006.910	1007.410	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	78.660	78.375	77.885	77.345	76.795	76.310	75.875	75.385	74.885	74.360	73.850	73.335	72.790	72.360	71.750	71.250	70.740	70.215	69.735

BRISBANE RIVER - BN 2020 TO BN 1840

LEGEND

(55) LOCATION AND IDENTIFICATION OF STRUCTURE

2000 YEAR ARI DESIGN FLOOD LEVEL

1000 YEAR ARI DESIGN FLOOD LEVEL

500 YEAR ARI DESIGN FLOOD LEVEL

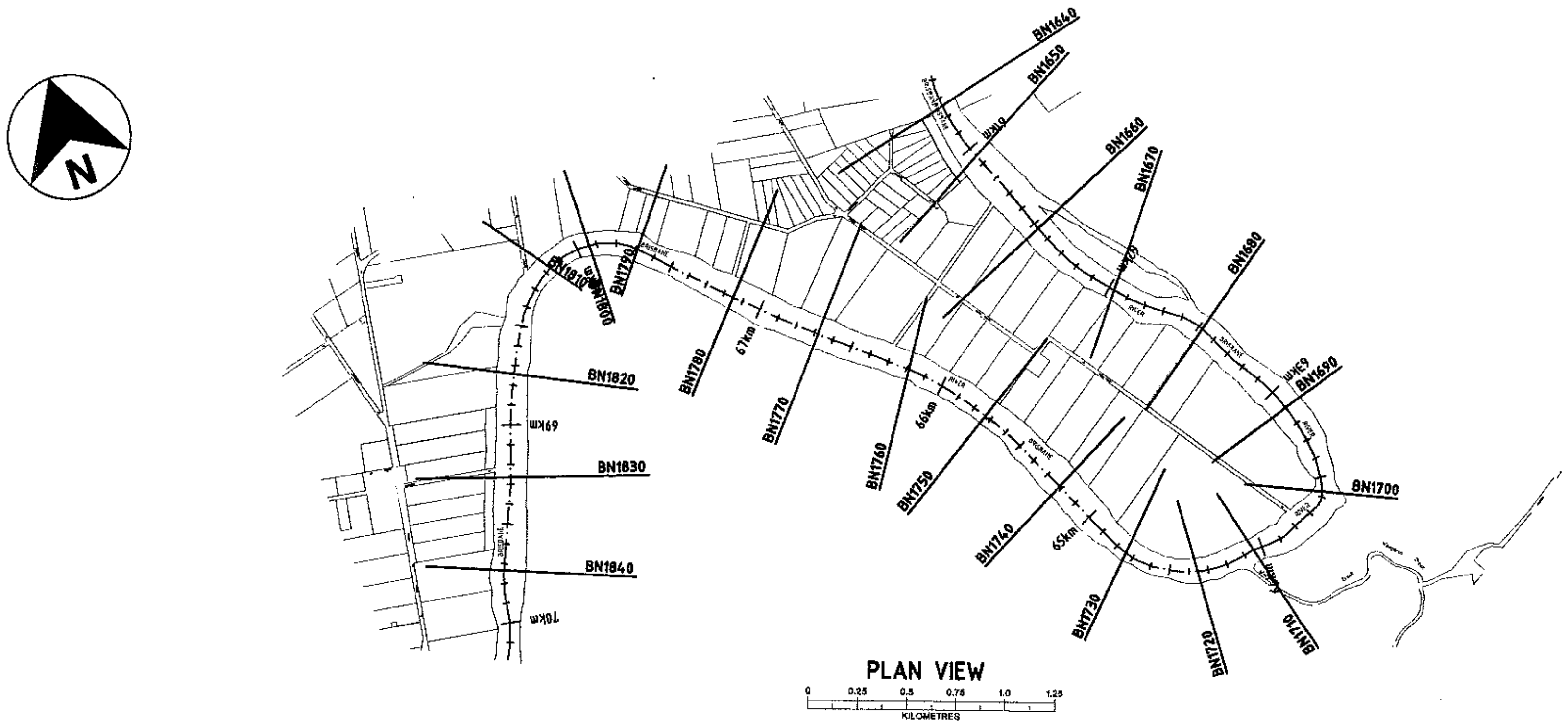
200 YEAR ARI DESIGN FLOOD LEVEL

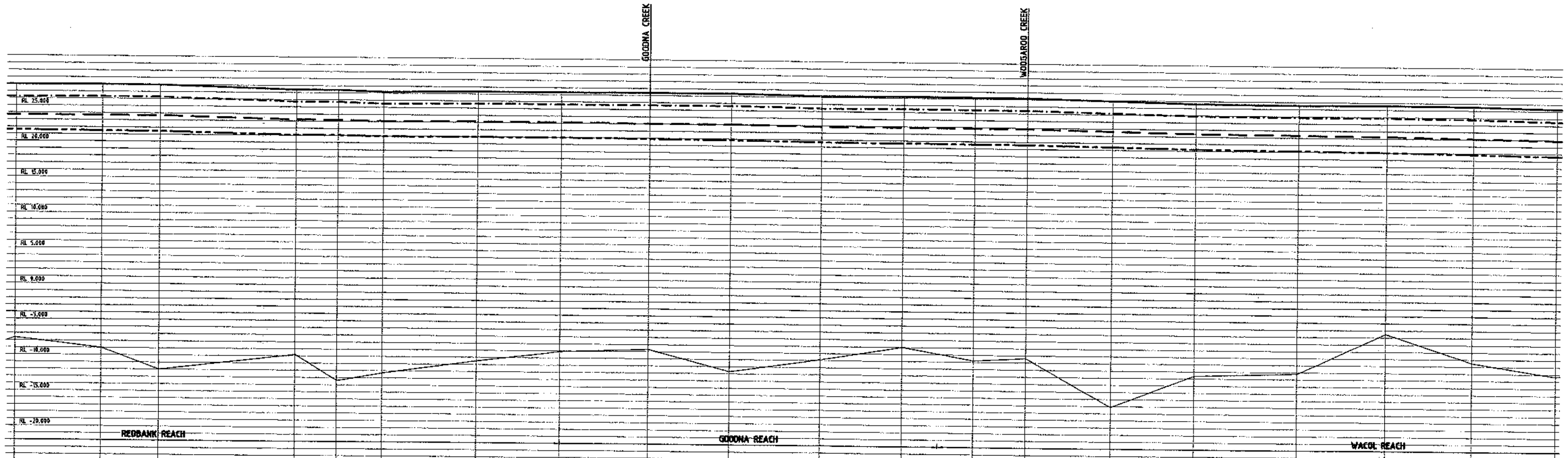
VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

FIGURE E-5b

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
200, 500, 1000 AND 2000 YEAR ARI EVENTS (MHWS)





DATUM RL. -25.000

DATUM RL. -25.000																				
200 YEAR ARI DESIGN FLOOD LEVEL	21.570	21.690	21.460	21.040	21.050	20.940	20.970	20.970	20.890	20.820	20.680	20.650	20.410	20.420	20.430	20.230	20.140	20.040	19.830	19.460
500 YEAR ARI DESIGN FLOOD LEVEL	23.680	23.680	23.680	23.210	23.200	23.060	23.140	23.130	23.040	23.050	22.860	22.880	22.840	22.850	22.630	22.410	22.330	22.240	22.050	21.870
1000 YEAR ARI DESIGN FLOOD LEVEL	26.240	26.300	26.280	25.730	25.730	25.520	25.670	25.640	25.650	25.680	25.430	25.480	25.440	25.450	25.180	24.910	24.850	24.860	24.770	24.510
2000 YEAR ARI DESIGN FLOOD LEVEL	27.970	28.010	28.000	27.410	27.420	27.130	27.360	27.360	27.390	27.400	27.150	27.220	27.190	27.200	26.910	26.410	26.570	26.620	26.560	26.290
BED LEVEL (m AHD)	-7.600	-9.900	-12.000	-9.800	-13.400	-12.300	-10.500	-9.100	-8.700	-11.700	-9.900	-8.000	-9.800	-9.400	-16.100	-11.600	-11.200	-5.500	-9.500	-11.300
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1008.925	1009.400	1009.720	1010.490	1010.725	1010.980	1011.510	1011.980	1012.475	1012.935	1013.445	1013.910	1014.380	1014.610	1015.090	1015.560	1016.140	1016.640	1017.130	1017.610
AMTD CHAINAGE (km)	69.735	69.260	68.840	68.170	67.935	67.680	67.150	66.600	66.185	65.725	65.215	64.760	64.550	64.050	63.570	63.100	62.520	62.020	61.530	61.050

BRISBANE RIVER - BN 1840 TO BN 1650

PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

FIGURE E-5c

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
200, 500, 1000 AND 2000 YEAR ARI EVENTS (MHWS)

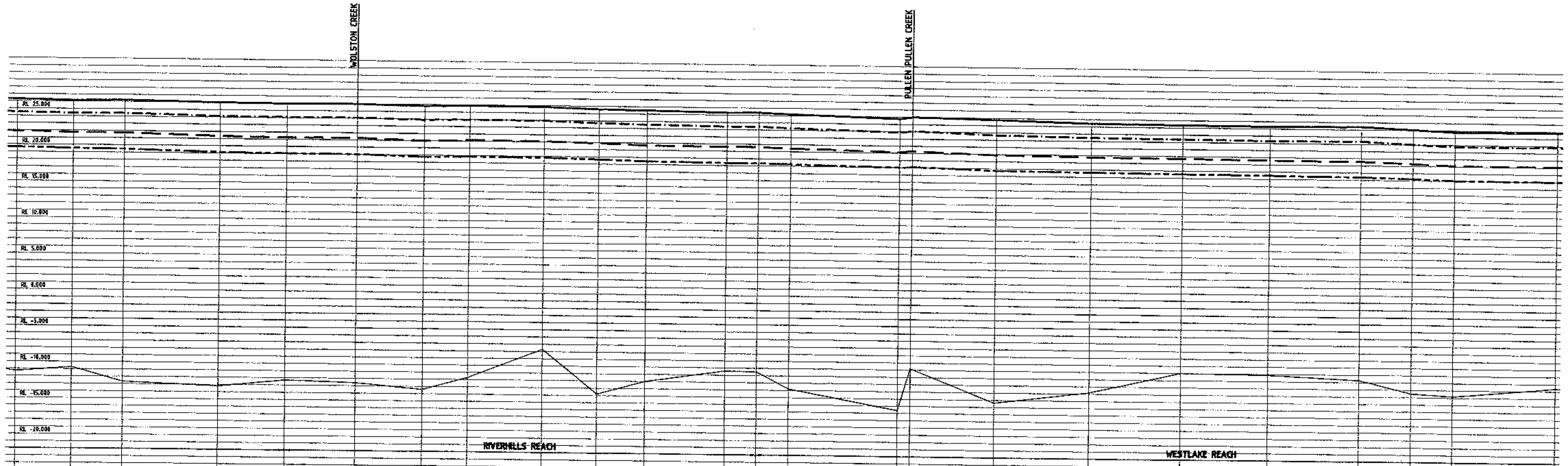
LEGEND

3000 AMTD LINE

BN 1250 SURVEYED CROSS SECTION

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	19.660	19.540	19.470	19.134	19.050	19.020	18.770	18.840	18.820	18.650	18.460	18.380
500 YEAR ARI DESIGN FLOOD LEVEL	21.870	21.750	21.720	21.350	21.260	21.250	20.990	21.120	21.080	20.880	20.670	20.600
1000 YEAR ARI DESIGN FLOOD LEVEL	24.510	24.400	24.430	24.120	24.070	24.100	23.880	23.970	23.910	23.690	23.560	23.470
2000 YEAR ARI DESIGN FLOOD LEVEL	26.290	26.180	26.240	26.000	25.970	25.990	25.800	25.880	25.820	25.670	25.520	25.350
BED LEVEL (m AHD)	-11.300	-10.700	-12.700	-13.200	-12.300	-12.600	-13.400	-11.700	-7.700	-13.800	-12.800	-10.400
CROSS SECTION NUMBER	BN 1650	BN 1640	BN 1630	BN 1620	BN 1610	BN 1600	BN 1590	BN 1580	BN 1570	BN 1560	BN 1550	BN 1540
MIKE 11 CHAINAGE (km)	1017.410	1017.920	1018.200	1018.725	1019.095	1019.490	1019.865	1020.115	1020.525	1020.830	1021.095	1021.530
AMTD CHAINAGE (km)	61.050	60.740	60.460	59.935	59.545	59.150	58.795	58.545	58.135	57.830	57.545	57.121

200 YEAR ARI DESIGN FLOOD LEVEL	18.380	18.240	18.000	18.180	17.740	17.640	17.570	17.490	17.420	17.240	17.040	17.010
500 YEAR ARI DESIGN FLOOD LEVEL	20.610	20.460	20.150	20.290	19.890	19.760	19.690	19.620	19.550	19.330	19.090	19.090
1000 YEAR ARI DESIGN FLOOD LEVEL	23.440	23.260	22.870	23.010	22.660	22.470	22.390	22.320	22.360	22.030	21.750	21.790
2000 YEAR ARI DESIGN FLOOD LEVEL	25.370	25.180	24.760	24.990	24.790	24.430	24.360	24.300	24.410	24.030	23.750	23.820
BED LEVEL (m AHD)	-10.500	-12.800	-15.600	-9.800	-14.600	-12.860	-10.000	-10.100	-10.700	-12.500	-12.600	-11.600
CROSS SECTION NUMBER	BN 1530	BN 1520	BN 1510	BN 1500	BN 1490	BN 1480	BN 1470	BN 1460	BN 1450	BN 1440	BN 1430	BN 1420
MIKE 11 CHAINAGE (km)	1021.715	1021.895	1022.505	1022.575	1023.040	1023.570	1024.080	1024.563	1025.070	1025.360	1025.590	1026.170
AMTD CHAINAGE (km)	56.945	56.765	56.555	56.085	55.620	55.090	54.580	54.097	53.590	53.300	53.070	52.490

BRISBANE RIVER - BN 1650 TO BN 1420

LEGEND

(55) LOCATION AND IDENTIFICATION OF STRUCTURE

2000 YEAR ARI DESIGN FLOOD LEVEL

1000 YEAR ARI DESIGN FLOOD LEVEL

500 YEAR ARI DESIGN FLOOD LEVEL

200 YEAR ARI DESIGN FLOOD LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

FIL 1E: 04
PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

FIGURE E-5d

BRISBANE RIVER FLOOD STUDY

MIKE 11 DESIGN FLOOD PROFILES

200, 500, 1000 AND 2000 YEAR ARI EVENTS (MHWS)

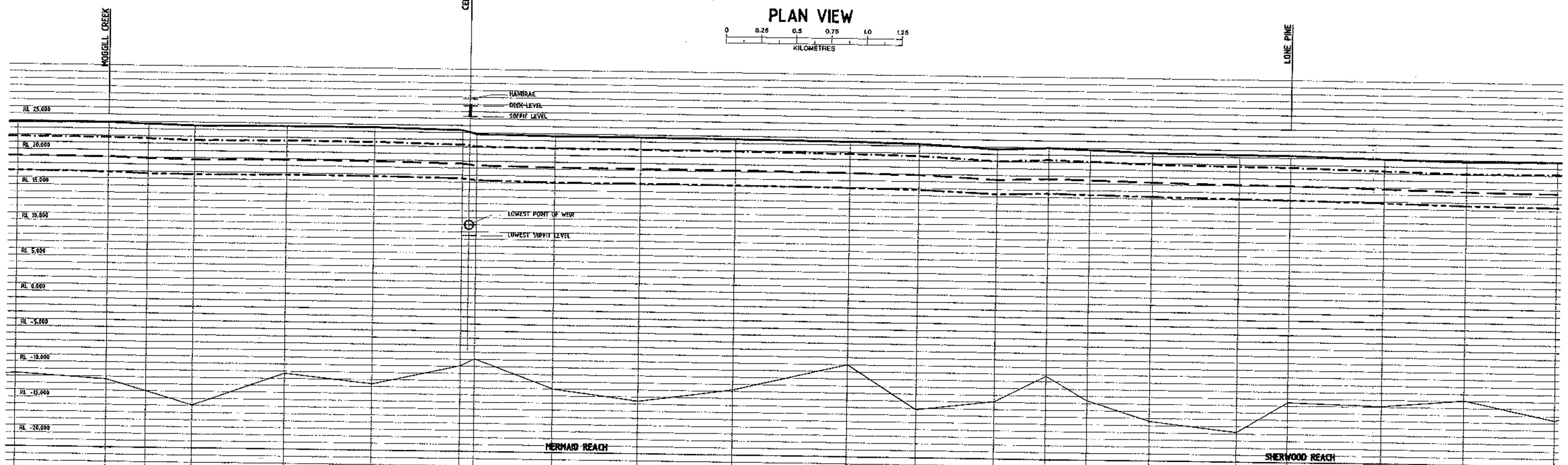
LEGEND

AMTD LINE

BN 1250 — SURVEYED CROSS SECTION

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	17.010	16.880	16.710	16.640	16.740	16.710	16.530	16.310	16.130	16.110	16.070	15.960	15.820	15.350	15.540	15.430	15.270	15.120	15.040	14.880	14.550	14.470
500 YEAR ARI DESIGN FLOOD LEVEL	19.090	19.030	18.880	18.750	18.850	18.820	18.610	18.390	18.240	18.220	18.170	18.040	17.910	17.380	17.620	17.480	17.270	17.130	17.050	16.740	16.500	16.430
1000 YEAR ARI DESIGN FLOOD LEVEL	21.790	21.790	21.670	21.670	21.570	21.550	21.310	21.070	20.960	20.930	20.870	20.770	20.600	20.010	20.290	20.110	19.820	19.700	19.640	19.330	19.050	19.050
2000 YEAR ARI DESIGN FLOOD LEVEL	23.820	23.850	23.740	23.530	23.620	23.600	23.350	22.810	22.680	22.660	22.590	22.490	22.310	21.680	21.990	21.780	21.440	21.340	21.300	20.740	20.740	20.900
BED LEVEL (m AHD)	-11.600	-12.400	-14.000	-15.900	-11.300	-12.600	-9.000	-8.900	-13.000	-14.600	-12.800	-9.000	-15.200	-13.900	-10.200	-13.400	-16.400	-17.800	-13.500	-12.900	-12.900	-15.600
CROSS SECTION NUMBER	BN 1420	BN 1410	BN 1400	BN 1390	BN 1380	BN 1370	BN 1350	BN 1340	BN 1330	BN 1320	BN 1310	BN 1300	BN 1290	BN 1280	BN 1270	BN 1260	BN 1250	BN 1240	BN 1230	BN 1220	BN 1210	BN 1200
MIKE 11 CHAINAGE (km)	1026.170	1026.680	1026.980	1027.160	1027.680	1028.180	1028.680	1028.760	1029.200	1029.680	1030.220	1030.870	1031.260	1031.700	1031.995	1032.230	1032.585	1033.080	1033.370	1033.904	1034.370	1034.090
AMTD CHAINAGE (km)	52.490	51.980	51.760	51.500	50.980	50.460	49.980	49.900	49.460	48.980	48.440	47.790	47.400	46.960	46.665	46.430	46.025	45.580	45.290	44.760	44.290	43.770

BRISBANE RIVER - BN 1420 TO BN 1200

LEGEND

(S5) LOCATION AND IDENTIFICATION OF STRUCTURE

2000 YEAR ARI DESIGN FLOOD LEVEL

1000 YEAR ARI DESIGN FLOOD LEVEL

500 YEAR ARI DESIGN FLOOD LEVEL

200 YEAR ARI DESIGN FLOOD LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

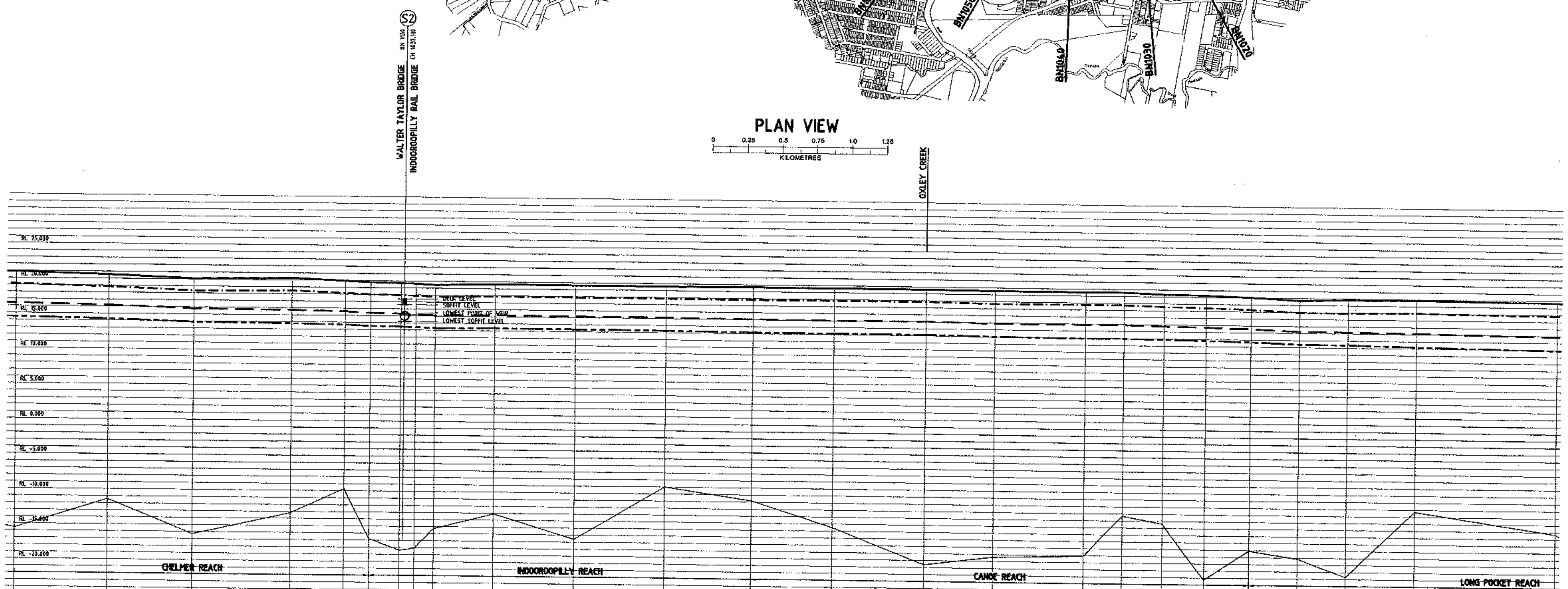
FILE NAME: 04... PLOT SCALE: 1=30

FIGURE E-5e

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
200, 500, 1000 AND 2000 YEAR ARI EVENTS (MHWS)

LEGEND
AMTD LINE
BN 1250 SURVEYED CROSS SECTION

PLAN VIEW
0 0.25 0.5 0.75 1.0 1.25
KILOMETRES



DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	14.470	14.260	13.890	13.800	13.670	13.520	13.470	13.390	13.290
500 YEAR ARI DESIGN FLOOD LEVEL	16.430	16.200	15.780	15.710	15.560	15.390	15.330	15.210	15.100
1000 YEAR ARI DESIGN FLOOD LEVEL	19.650	18.830	18.360	18.440	18.190	18.020	17.940	17.880	17.740
2000 YEAR ARI DESIGN FLOOD LEVEL	20.990	20.560	20.070	20.240	19.930	19.750	19.680	19.630	19.430
BED LEVEL (m AHD)	-15.600	-11.400	-16.300	-13.200	-9.700	-16.800	-18.400	-18.100	-15.300
CROSS SECTION NUMBER	BN 1200	BN 1190	BN 1180	BN 1170	BN 1160	BN 1150	BN 1140	BN 1120	BN 1110
MIKE 11 CHAINAGE (km)	1034.890	1035.414	1035.900	1036.460	1036.770	1036.915	1037.090	1037.175	1037.285
AMTD CHAINAGE (km)	43.770	43.246	42.760	42.200	41.890	41.745	41.570	41.485	41.375

200 YEAR ARI DESIGN FLOOD LEVEL	13.370	13.330	13.270	13.190	13.150	13.150	13.000	12.930
500 YEAR ARI DESIGN FLOOD LEVEL	15.210	15.170	15.130	15.050	15.010	15.040	14.860	14.880
1000 YEAR ARI DESIGN FLOOD LEVEL	17.890	17.870	17.830	17.820	17.820	17.820	17.710	17.730
2000 YEAR ARI DESIGN FLOOD LEVEL	19.470	19.600	19.570	19.620	19.610	19.600	19.520	19.520
BED LEVEL (m AHD)	-13.100	-16.600	-9.000	-10.800	-14.500	-19.630	-18.400	-18.100
CROSS SECTION NUMBER	BN 1100	BN 1090	BN 1080	BN 1070	BN 1060	BN 1050	BN 1040	BN 1030
MIKE 11 CHAINAGE (km)	1037.625	1038.085	1038.640	1039.180	1039.565	1040.090	1040.490	1041.010
AMTD CHAINAGE (km)	41.035	40.575	40.060	39.540	39.050	38.570	38.170	37.560

200 YEAR ARI DESIGN FLOOD LEVEL	12.970	12.860	12.790	12.660	12.410	12.390	12.190	11.910
500 YEAR ARI DESIGN FLOOD LEVEL	14.910	14.760	14.690	14.530	14.240	14.210	14.130	13.850
1000 YEAR ARI DESIGN FLOOD LEVEL	17.740	17.550	17.480	17.290	16.950	16.930	17.070	16.830
2000 YEAR ARI DESIGN FLOOD LEVEL	19.530	19.320	19.250	19.040	18.650	18.790	18.860	18.700
BED LEVEL (m AHD)	-12.300	-13.400	-21.300	-17.100	-18.200	-20.760	-11.300	-14.300
CROSS SECTION NUMBER	BN 1020	BN 1010	BN 1000	BN 990	BN 980	BN 970	BN 960	BN 950
MIKE 11 CHAINAGE (km)	1041.230	1041.460	1041.700	1041.960	1042.235	1042.515	1042.910	1043.725
AMTD CHAINAGE (km)	37.430	37.200	36.960	36.700	36.425	36.145	35.750	34.935

BRISBANE RIVER - BN 1200 TO BN 950

LEGEND
(S5) LOCATION AND IDENTIFICATION OF STRUCTURE
2000 YEAR ARI DESIGN FLOOD LEVEL
1000 YEAR ARI DESIGN FLOOD LEVEL
500 YEAR ARI DESIGN FLOOD LEVEL
200 YEAR ARI DESIGN FLOOD LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

SINCLAIR KNIGHT MERZ

FIGURE E-5f

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
200, 500, 1000 AND 2000 YEAR ARI EVENTS (MHWS)

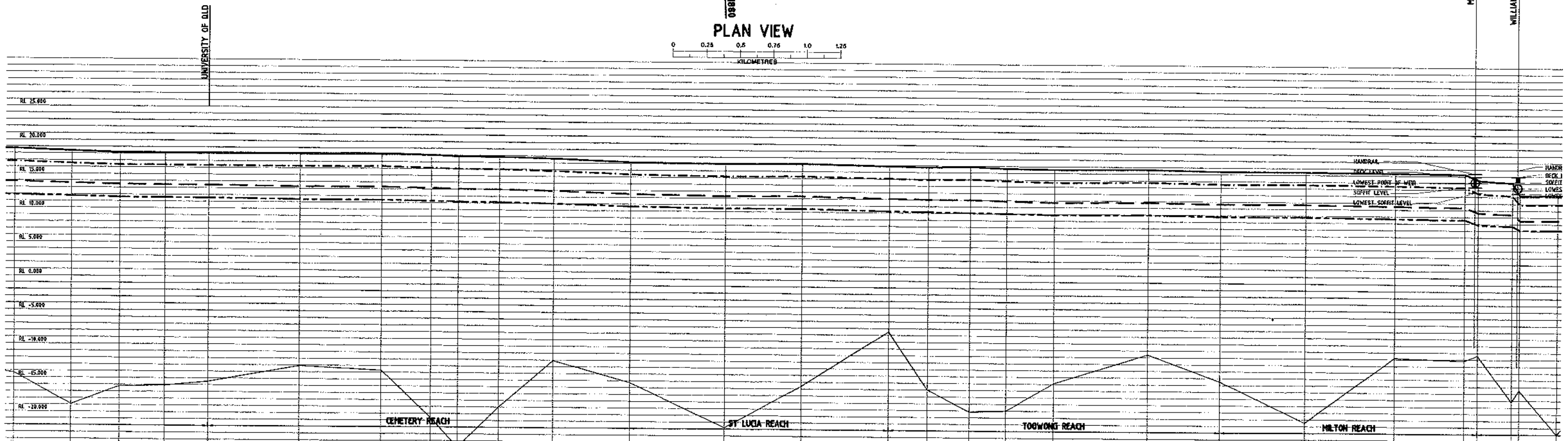
PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES

LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION



DATUM RL. -25.000

CROSS SECTION NUMBER	200 YEAR ARI DESIGN FLOOD LEVEL	500 YEAR ARI DESIGN FLOOD LEVEL	1000 YEAR ARI DESIGN FLOOD LEVEL	2000 YEAR ARI DESIGN FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 950	11.910	13.850	16.830	18.700	-14.300	1043.725	34.935
BN 940	11.750	13.660	16.550	18.380	-18.900	1044.060	34.680
BN 930	11.600	13.490	16.340	18.170	-16.200	1044.340	34.320
BN 920	11.574	13.460	16.350	18.130	-16.100	1044.605	34.055
BN 910	11.540	13.430	16.320	18.150	-15.500	1044.860	33.800
BN 900	11.390	13.290	16.300	18.180	-13.100	1045.408	33.260
BN 890	11.380	13.310	16.320	18.200	-13.700	1045.885	32.775
BN 880	11.250	13.160	16.130	18.000	-20.600	1046.180	32.480
BN 870	11.180	13.060	16.000	17.840	-24.900	1046.340	32.320
BN 860	11.150	13.040	15.990	17.830	-19.000	1046.580	32.080
BN 850	10.990	12.860	15.800	17.640	-13.100	1046.900	31.760
BN 840	10.440	12.440	15.370	17.170	-15.300	1047.350	31.310
BN 830	10.460	12.280	15.200	17.030	-21.800	1047.915	30.745
BN 820	10.500	12.360	15.280	17.110	-15.600	1048.375	30.285
BN 810	10.250	12.080	15.010	16.870	-7.500	1048.890	29.770
BN 800	10.180	12.000	14.920	16.730	-16.000	1049.120	29.540
BN 790	10.090	11.990	15.010	16.470	-19.200	1049.370	29.290
BN 780	10.010	11.840	14.810	16.440	-19.000	1049.590	29.070
BN 770	9.900	11.710	14.660	16.570	-16.900	1049.870	28.790
BN 760	9.950	11.780	14.750	16.610	-10.400	1050.430	28.230
BN 750	9.700	11.610	14.560	16.410	-14.500	1050.860	27.800
BN 740	9.800	11.620	14.580	16.440	-20.500	1051.360	27.300
BN 730	9.660	11.500	14.490	16.340	-10.800	1051.895	26.765
BN 720	9.550	11.360	14.320	16.260	-11.200	1052.318	26.350
BN 700	8.830	10.580	13.430	15.380	-10.400	1052.390	26.270
BN 690	8.690	10.380	13.150	15.030	-17.200	1052.595	26.065
BN 670	8.100	9.500	11.860	13.980	-15.500	1052.640	26.020
BN 660	8.090	9.513	11.877	13.226	-22.000	1052.665	25.995

LEGEND

(S5) LOCATION AND IDENTIFICATION OF STRUCTURE

2000 YEAR ARI DESIGN FLOOD LEVEL

1000 YEAR ARI DESIGN FLOOD LEVEL

500 YEAR ARI DESIGN FLOOD LEVEL

200 YEAR ARI DESIGN FLOOD LEVEL

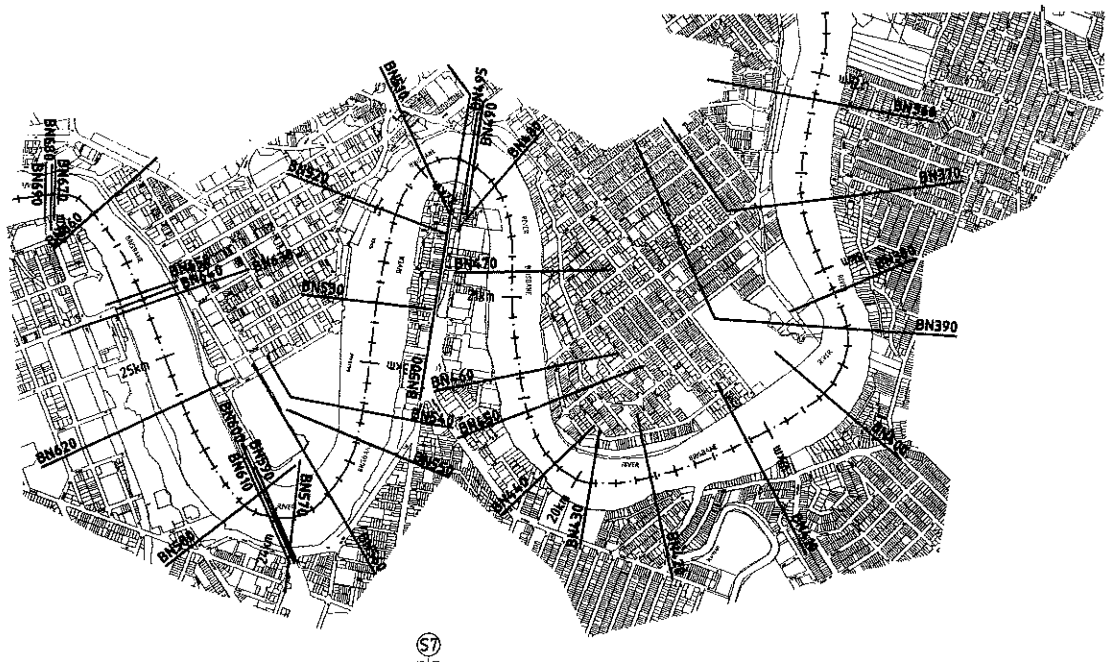
VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

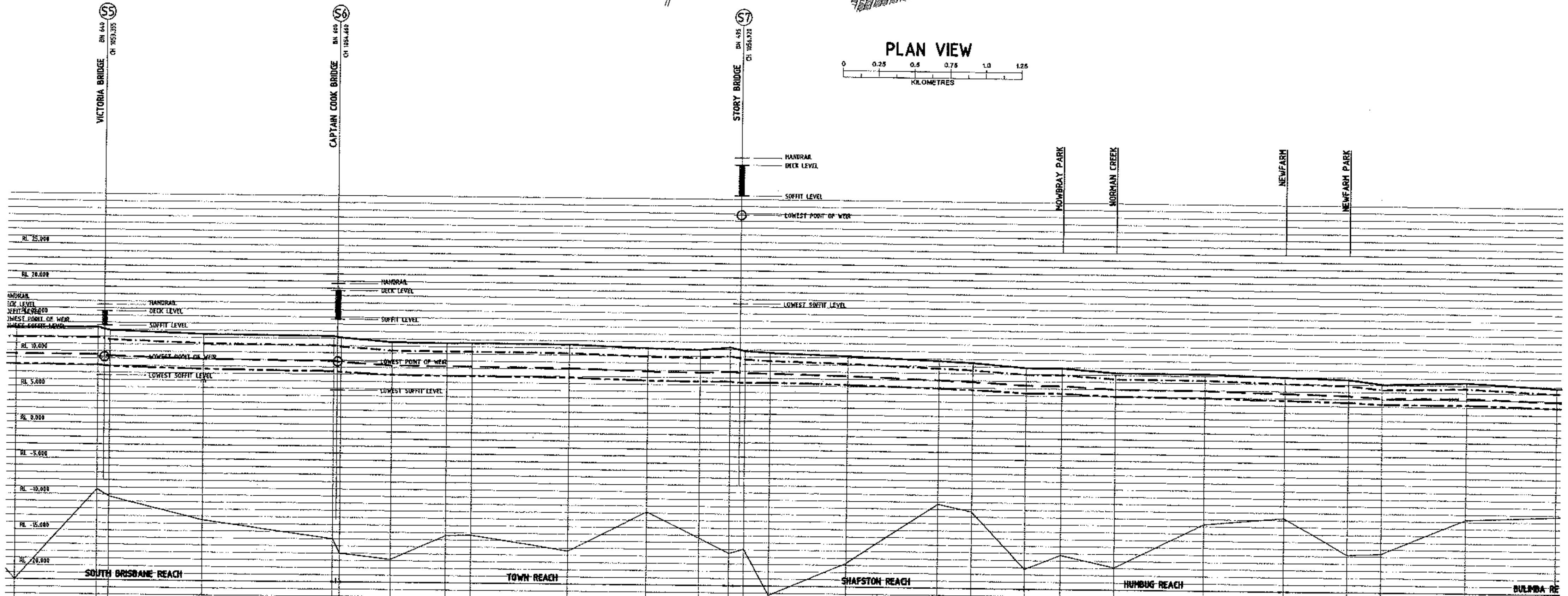
BRISBANE RIVER - BN 950 TO BN 660

FILE: 04
PLOT SCALE: 1=30

FIGURE E-5g
BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
200, 500, 1000 AND 2000 YEAR ARI EVENTS (MHWS)



LEGEND
AMTD LINE
BN 1250 SURVEYED CROSS SECTION



DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	8.090	8.070	7.960	7.600	7.420	7.390	6.990	6.920	6.910
500 YEAR ARI DESIGN FLOOD LEVEL	9.510	9.560	9.340	9.000	8.820	8.690	8.300	8.240	8.230
1000 YEAR ARI DESIGN FLOOD LEVEL	11.877	11.910	11.620	11.190	11.020	10.860	10.380	10.310	10.330
2000 YEAR ARI DESIGN FLOOD LEVEL	13.226	13.320	12.920	12.460	12.310	12.120	11.560	11.500	11.530
BED LEVEL (m AHD)	-22.000	-9.300	-10.300	-13.500	-16.000	-18.060	-18.800	-15.400	-15.300
CROSS SECTION NUMBER	BN 660	BN 650	BN 640	BN 620	BN 610	BN 600	BN 560	BN 550	BN 540
MIKE 11 CHAINAGE (km)	1052.865	1053.320	1053.385	1053.900	1054.640	1054.680	1054.970	1055.280	1055.420
AMTD CHAINAGE (km)	25.795	25.340	25.295	24.760	24.020	23.980	23.690	23.380	23.240

200 YEAR ARI DESIGN FLOOD LEVEL	6.830	6.530	6.450	6.490	6.370	6.430	6.240	5.870	5.790
500 YEAR ARI DESIGN FLOOD LEVEL	8.150	7.890	7.720	7.870	7.700	7.670	7.440	7.020	6.840
1000 YEAR ARI DESIGN FLOOD LEVEL	10.250	9.870	9.750	10.050	9.640	9.450	9.160	8.670	8.470
2000 YEAR ARI DESIGN FLOOD LEVEL	11.440	11.040	10.890	11.280	10.800	10.560	10.230	9.700	9.480
BED LEVEL (m AHD)	-17.400	-11.800	-15.400	-17.500	-16.900	-23.300	-16.700	-10.300	-11.300
CROSS SECTION NUMBER	BN 530	BN 520	BN 510	BN 500	BN 490	BN 480	BN 470	BN 460	BN 450
MIKE 11 CHAINAGE (km)	1055.960	1056.400	1056.695	1056.865	1056.950	1057.090	1057.530	1058.040	1058.230
AMTD CHAINAGE (km)	22.700	22.260	21.965	21.795	21.710	21.570	21.130	20.620	20.430

200 YEAR ARI DESIGN FLOOD LEVEL	5.380	5.350	5.010	4.950	4.920	4.530	4.300	4.320	4.010
500 YEAR ARI DESIGN FLOOD LEVEL	6.440	6.410	6.000	5.950	5.690	5.470	5.150	5.240	4.840
1000 YEAR ARI DESIGN FLOOD LEVEL	7.950	7.940	7.430	7.400	7.080	6.850	6.380	6.590	6.030
2000 YEAR ARI DESIGN FLOOD LEVEL	8.870	8.880	8.300	8.280	7.930	7.700	7.120	7.420	6.740
BED LEVEL (m AHD)	-19.200	-17.200	-18.900	-12.700	-11.700	-16.800	-16.400	-11.700	-11.200
CROSS SECTION NUMBER	BN 440	BN 430	BN 420	BN 410	BN 400	BN 390	BN 380	BN 370	BN 360
MIKE 11 CHAINAGE (km)	1058.530	1058.735	1059.035	1059.540	1059.990	1060.345	1060.535	1061.015	1061.530
AMTD CHAINAGE (km)	20.130	19.925	19.625	19.120	18.670	18.315	18.125	17.645	17.130

LEGEND
(S5) LOCATION AND IDENTIFICATION OF STRUCTURE
2000 YEAR ARI DESIGN FLOOD LEVEL
1000 YEAR ARI DESIGN FLOOD LEVEL
500 YEAR ARI DESIGN FLOOD LEVEL
200 YEAR ARI DESIGN FLOOD LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 660 TO BN 360

FILE PLOT SCALE: 1=30

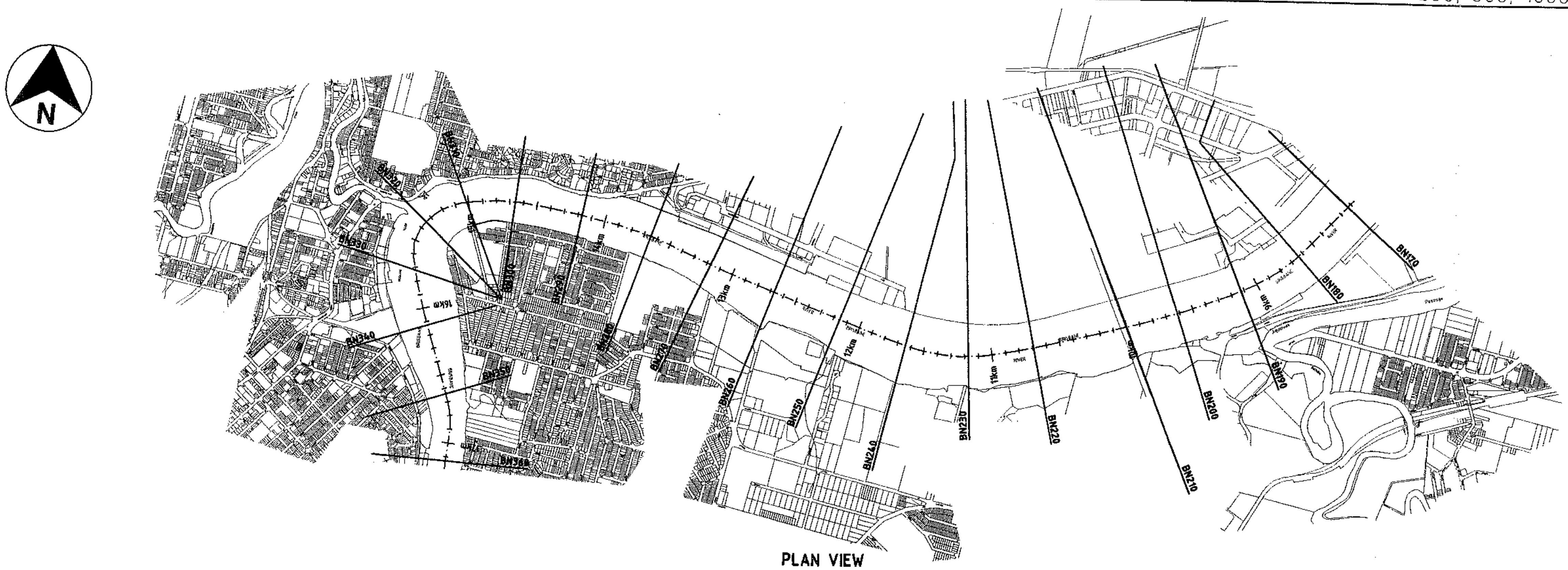
SINCLAIR KNIGHT MERZ

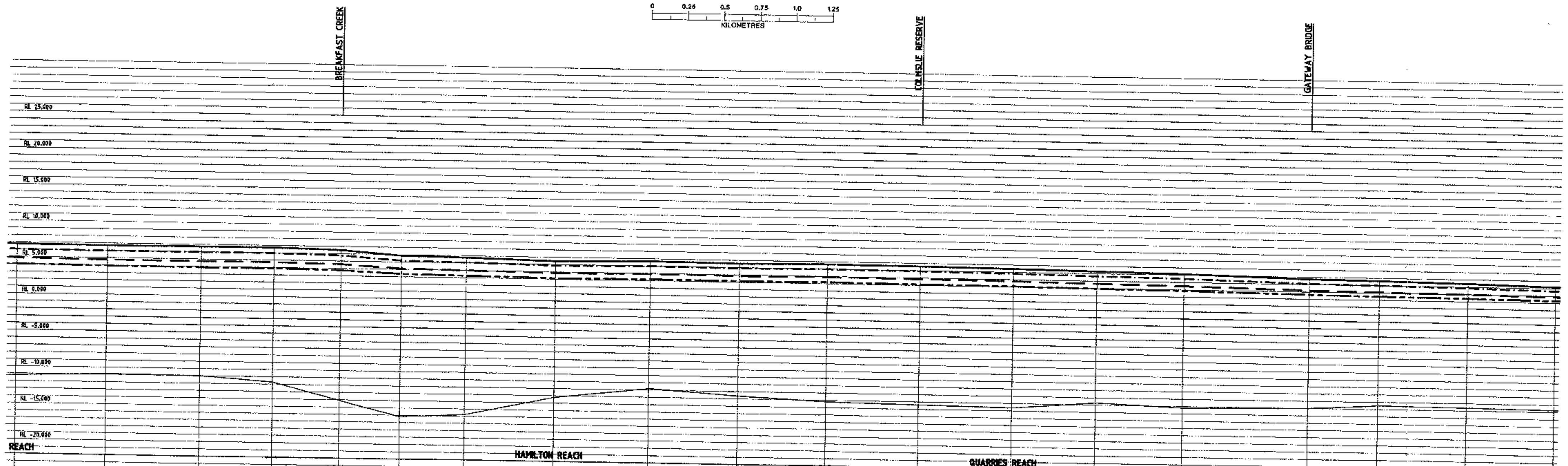
FIGURE E-5h

BRISBANE RIVER FLOOD STUDY

MIKE 11 DESIGN FLOOD PROFILES

200, 500, 1000 AND 2000 YEAR ARI EVENTS (MHWS)





DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	4.010	3.920	3.880	3.870	3.740	3.370	3.270	3.130	3.190	3.150
500 YEAR ARI DESIGN FLOOD LEVEL	4.860	4.750	4.730	4.710	4.570	4.110	4.000	3.830	3.910	3.850
1000 YEAR ARI DESIGN FLOOD LEVEL	6.030	5.960	5.970	5.950	5.770	5.200	5.080	4.860	4.980	4.900
2000 YEAR ARI DESIGN FLOOD LEVEL	6.760	6.700	6.730	6.720	6.530	5.860	5.740	5.460	5.630	5.550
BED LEVEL (m AHD)	-11.200	-10.900	-11.000	-11.700	-14.100	-16.200	-15.800	-13.200	-11.600	-12.600
CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270
MIKE 11 CHAINAGE (km)	1061.530	1062.020	1062.535	1062.940	1063.310	1063.645	1064.000	1064.490	1065.010	1065.503
ANTD CHAINAGE (km)	17.130	16.640	16.125	15.720	15.350	15.015	14.660	14.170	13.650	13.157

200 YEAR ARI DESIGN FLOOD LEVEL	3.280	3.130	3.070	2.960	2.830	2.610	2.500	2.420	2.330
500 YEAR ARI DESIGN FLOOD LEVEL	3.910	3.840	3.770	3.640	3.490	3.190	3.070	2.970	2.820
1000 YEAR ARI DESIGN FLOOD LEVEL	4.990	4.920	4.810	4.670	4.500	4.100	4.010	3.850	3.640
2000 YEAR ARI DESIGN FLOOD LEVEL	5.650	5.580	5.470	5.320	5.140	4.710	4.620	4.440	4.180
BED LEVEL (m AHD)	-13.200	-13.400	-13.400	-12.700	-13.200	-13.000	-12.500	-12.600	-12.700
CROSS SECTION NUMBER	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
MIKE 11 CHAINAGE (km)	1065.990	1066.505	1067.020	1067.485	1067.965	1068.660	1069.045	1069.535	1070.025
ANTD CHAINAGE (km)	12.670	12.155	11.640	11.175	10.695	10.000	9.615	9.125	8.635

BRISBANE RIVER - BN 360 TO BN 180

LEGEND

(55) LOCATION AND IDENTIFICATION OF STRUCTURE

2000 YEAR ARI DESIGN FLOOD LEVEL

1000 YEAR ARI DESIGN FLOOD LEVEL

500 YEAR ARI DESIGN FLOOD LEVEL

200 YEAR ARI DESIGN FLOOD LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

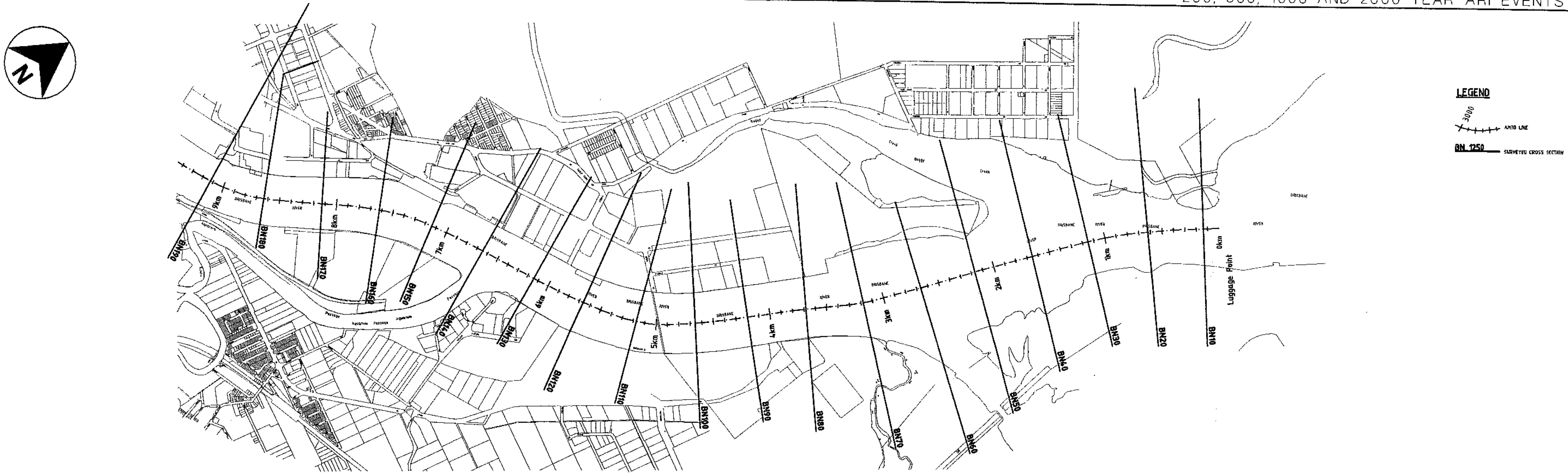
FIL IE: 04

PLOT SCALE: 1=30

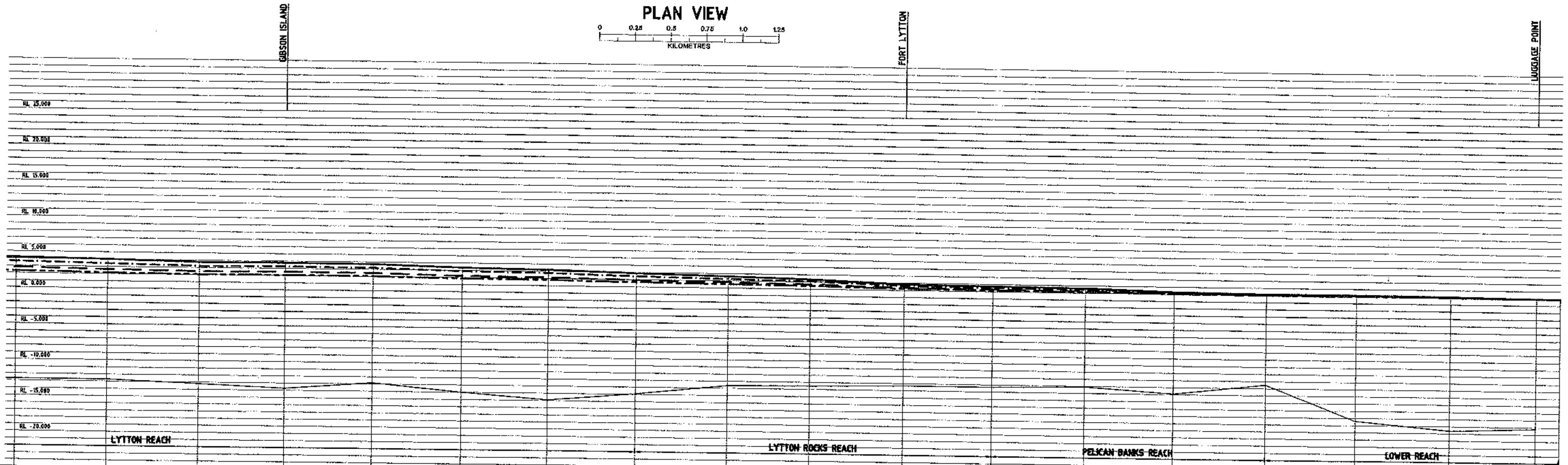
SINCLAIR KNIGHT MERZ

FIGURE E-5i

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES
200, 500, 1000 AND 2000 YEAR ARI EVENTS (MHWS)



PLAN VIEW



DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	2.330	2.170	2.050	2.080	2.040	1.840	1.800	1.650	1.540	1.440	1.330	1.170	1.170	1.030	0.990	1.000	0.970	0.920	0.920
500 YEAR ARI DESIGN FLOOD LEVEL	2.820	2.630	2.480	2.530	2.470	2.230	2.150	1.950	1.800	1.640	1.370	1.290	1.180	1.080	1.030	1.030	0.990	0.920	0.920
1000 YEAR ARI DESIGN FLOOD LEVEL	3.640	3.450	3.220	3.270	3.200	2.880	2.770	2.480	2.260	2.080	1.620	1.520	1.490	1.190	1.100	1.100	1.040	0.920	0.920
2000 YEAR ARI DESIGN FLOOD LEVEL	4.180	4.050	3.760	3.790	3.740	3.360	3.230	2.890	2.610	2.370	1.930	1.710	1.660	1.280	1.140	1.150	1.070	0.920	0.920
BED LEVEL (m AHD)	-12.700	-12.700	-13.200	-13.700	-12.800	-14.000	-14.900	-13.900	-12.600	-12.500	-12.300	-12.300	-12.100	-12.900	-11.500	-16.400	-17.400	-17.200	
CROSS SECTION NUMBER	BN 180	BN 170	BN 160	BN 150	BN 140	BN 130	BN 120	BN 110	BN 100	BN 90	BN 80	BN 70	BN 60	BN 50	BN 40	BN 30	BN 20	BN 10	
MIKE 11 CHAINAGE (km)	1070.025	1070.530	1071.040	1071.520	1072.015	1072.515	1072.995	1073.485	1074.000	1074.460	1074.985	1075.480	1076.000	1076.495	1077.010	1077.510	1078.040	1078.525	1078.660
AMTD CHAINAGE (km)	8.635	8.130	7.620	7.140	6.645	6.145	5.665	5.175	4.660	4.200	3.675	3.180	2.660	2.165	1.650	1.150	0.620	0.135	0.000

BRISBANE RIVER - BN 180 TO BN 10

LEGEND
(SS) LOCATION AND IDENTIFICATION OF STRUCTURE
2000 YEAR ARI DESIGN FLOOD LEVEL
1000 YEAR ARI DESIGN FLOOD LEVEL
500 YEAR ARI DESIGN FLOOD LEVEL
200 YEAR ARI DESIGN FLOOD LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

PLOT SCALE: 1=30

Appendix F - HEC-RAS Model Results

Table F-1 -HEC-RAS Model Calibration

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI MIKE 11 (m AHD)	100 Year ARI HEC-RAS (m AHD)	100 Year ARI Difference (m)	10 Year ARI MIKE 11 (m AHD)	10 Year ARI HEC-RAS (m AHD)	10 Year ARI Difference (m)
1000	78.66	BN 2020	22.74	23.00	-0.26	7.18	7.34	-0.16
1000.285	78.375	BN 2010	22.63	22.78	-0.15	7.08	7.22	-0.14
1000.775	77.885	BN 2000	22.36	22.47	-0.11	6.93	7.09	-0.16
1001.315	77.345	BN 1990	22.23	22.35	-0.12	6.83	6.93	-0.1
1001.865	76.795	BN 1980	21.66	21.58	0.08	6.63	6.65	-0.02
1002.35	76.31	BN 1970	21.28	21.33	-0.05	6.35	6.43	-0.08
1002.785	75.875	BN 1960	21.15	21.22	-0.07	6.21	6.30	-0.09
1003.275	75.385	BN 1950	20.9	21.01	-0.11	6.01	6.11	-0.1
1003.775	74.885	BN 1940	20.66	20.73	-0.07	5.85	5.92	-0.07
1004.3	74.36	BN 1930	20.26	20.26	0	5.63	5.67	-0.04
1004.81	73.85	BN 1920	20.21	20.31	-0.1	5.5	5.55	-0.05
1005.325	73.335	BN 1910	20.02	20.09	-0.07	5.35	5.37	-0.02
1005.87	72.79	BN 1900	19.82	19.83	-0.01	5.21	5.16	0.05
1006.3	72.36	BN 1890	19.66	19.73	-0.07	5.15	5.13	0.02
1006.91	71.75	BN 1880	19.55	19.62	-0.07	5.07	5.06	0.01
1007.41	71.25	BN 1870	19.5	19.57	-0.07	4.99	4.99	0
1007.92	70.74	BN 1860	19.41	19.47	-0.06	4.93	4.88	0.05
1008.445	70.215	BN 1850	19.16	19.21	-0.05	4.86	4.84	0.02
1008.925	69.735	BN 1840	19.08	19.15	-0.07	4.82	4.80	0.02
1009.4	69.26	BN 1830	18.99	19.03	-0.04	4.77	4.76	0.01
1009.72	68.84	BN 1820	18.96	18.99	-0.03	4.75	4.72	0.03
1010.49	68.17	BN 1810	18.61	18.68	-0.07	4.65	4.64	0.01
1010.725	67.935	BN 1800	18.6	18.65	-0.05	4.64	4.63	0.01
1010.98	67.68	BN 1790	18.52	18.60	-0.08	4.62	4.61	0.01
1011.51	67.15	BN 1780	18.51	18.58	-0.07	4.58	4.58	0
1011.98	66.68	BN 1770	18.5	18.58	-0.08	4.54	4.54	0
1012.475	66.185	BN 1760	18.42	18.48	-0.06	4.5	4.51	-0.01
1012.935	65.725	BN 1750	18.35	18.42	-0.07	4.45	4.47	-0.02
1013.445	65.215	BN 1740	18.21	18.31	-0.1	4.39	4.41	-0.02
1013.91	64.74	BN 1730	18.11	18.27	-0.16	4.31	4.34	-0.03
1014.31	64.55	BN 1720	18.05	18.19	-0.14	4.24	4.29	-0.05
1014.61	64.05	BN 1710	18.07	18.20	-0.13	4.19	4.24	-0.05
1015.09	63.57	BN 1700	17.91	17.99	-0.08	4.18	4.22	-0.04
1015.56	63.1	BN 1690	17.73	17.77	-0.04	4.14	4.18	-0.04
1016.14	62.52	BN 1680	17.62	17.69	-0.07	4.08	4.13	-0.05
1016.64	62.02	BN 1670	17.5	17.66	-0.16	3.98	4.04	-0.06
1017.13	61.53	BN 1660	17.3	17.39	-0.09	3.84	3.86	-0.02
1017.61	61.05	BN 1650	17.12	17.24	-0.12	3.74	3.78	-0.04
1017.92	60.74	BN 1640	16.99	17.12	-0.13	3.67	3.72	-0.05
1018.2	60.46	BN 1630	16.93	17.09	-0.16	3.65	3.70	-0.05
1018.725	59.935	BN 1620	16.63	16.74	-0.11	3.59	3.62	-0.03
1019.095	59.565	BN 1610	16.54	16.68	-0.14	3.55	3.58	-0.03
1019.49	59.17	BN 1600	16.51	16.66	-0.15	3.5	3.54	-0.04
1019.865	58.795	BN 1590	16.27	16.37	-0.1	3.46	3.48	-0.02
1020.115	58.545	BN 1580	16.33	16.42	-0.09	3.43	3.46	-0.03
1020.525	58.135	BN 1570	16.31	16.42	-0.11	3.41	3.43	-0.02
1020.83	57.83	BN 1560	16.17	16.26	-0.09	3.38	3.41	-0.03
1021.095	57.565	BN 1550	15.99	16.03	-0.04	3.34	3.36	-0.02
1021.539	57.121	BN 1540	15.89	15.93	-0.04	3.27	3.30	-0.03
1021.715	56.945	BN 1530	15.9	15.93	-0.03	3.25	3.28	-0.03
1021.895	56.765	BN 1520	15.81	15.85	-0.04	3.25	3.26	-0.01
1022.505	56.555	BN 1510	15.59	15.74	-0.15	3.22	3.25	-0.03
1022.575	56.085	BN 1500	15.65	15.69	-0.04	3.2	3.19	0.01
1023.04	55.62	BN 1490	15.33	15.25	0.08	3.15	3.13	0.02
1023.57	55.09	BN 1480	15.23	15.19	0.04	3.11	3.10	0.01
1024.08	54.58	BN 1470	15.17	15.08	0.09	3.08	3.05	0.03
1024.563	54.097	BN 1460	15.09	15.06	0.03	3.04	3.01	0.03
1025.07	53.59	BN 1450	15.01	14.99	0.02	3	2.97	0.03
1025.36	53.3	BN 1440	14.87	14.81	0.06	2.97	2.94	0.03
1025.59	53.07	BN 1430	14.69	14.62	0.07	2.94	2.91	0.03
1026.17	52.49	BN 1420	14.63	14.55	0.08	2.89	2.86	0.03
1026.68	51.98	BN 1410	14.5	14.42	0.08	2.85	2.82	0.03
1026.9	51.76	BN 1400	14.37	14.29	0.08	2.82	2.80	0.02
1027.16	51.5	BN 1390	14.29	14.22	0.07	2.81	2.78	0.03
1027.68	50.98	BN 1380	14.37	14.28	0.09	2.78	2.76	0.02

Table F-1 -HEC-RAS Model Calibration

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI MIKE 11 (m AHD)	100 Year ARI HEC-RAS (m AHD)	100 Year ARI Difference (m)	10 Year ARI MIKE 11 (m AHD)	10 Year ARI HEC-RAS (m AHD)	10 Year ARI Difference (m)
1028.18	50.48	BN 1370	14.33	14.22	0.11	2.76	2.73	0.03
1028.68	49.98	BN 1360	14.18	14.08	0.1	2.71	2.69	0.02
1028.76	49.9	BN 1340	14.03	13.99	0.04	2.67	2.67	0
1029.2	49.46	BN 1330	13.86	13.79	0.07	2.63	2.64	-0.01
1029.68	48.98	BN 1320	13.83	13.74	0.09	2.61	2.62	-0.01
1030.22	48.44	BN 1310	13.8	13.74	0.06	2.59	2.59	0
1030.87	47.79	BN 1300	13.68	13.65	0.03	2.55	2.55	0
1031.26	47.4	BN 1290	13.55	13.50	0.05	2.51	2.51	0
1031.7	46.96	BN 1280	13.14	13.09	0.05	2.46	2.45	0.01
1031.995	46.665	BN 1270	13.29	13.19	0.1	2.44	2.44	0
1032.23	46.43	BN 1260	13.19	13.11	0.08	2.42	2.42	0
1032.585	46.075	BN 1250	13.09	12.91	0.18	2.42	2.39	0.03
1033.08	45.58	BN 1240	12.92	12.80	0.12	2.39	2.37	0.02
1033.37	45.29	BN 1230	12.85	12.72	0.13	2.37	2.34	0.03
1033.9	44.76	BN 1220	12.64	12.52	0.12	2.32	2.29	0.03
1034.37	44.29	BN 1210	12.42	12.31	0.11	2.28	2.25	0.03
1034.89	43.77	BN 1200	12.33	12.23	0.1	2.24	2.22	0.02
1035.414	43.246	BN 1190	12.14	12.04	0.1	2.19	2.18	0.01
1035.9	42.76	BN 1180	11.83	11.70	0.13	2.15	2.13	0.02
1036.46	42.2	BN 1170	11.72	11.59	0.13	2.1	2.08	0.02
1036.77	41.89	BN 1160	11.6	11.50	0.1	2.08	2.05	0.03
1036.915	41.745	BN 1150	11.48	11.37	0.11	2.07	2.05	0.02
1037.09	41.57	BN 1140	11.42	11.19	0.23	2.05	2.03	0.02
1037.175	41.485	BN 1120	11.37	11.08	0.29	1.99	2.02	-0.03
1037.285	41.375	BN 1110	11.28	11.11	0.17	1.99	2.02	-0.03
1037.625	41.035	BN 1100	11.32	11.11	0.21	1.98	2.00	-0.02
1038.085	40.575	BN 1090	11.28	11.07	0.21	1.97	1.99	-0.02
1038.6	40.06	BN 1080	11.21	11.00	0.21	1.93	1.96	-0.03
1039.1	39.56	BN 1070	11.13	10.93	0.2	1.9	1.93	-0.03
1039.565	39.05	BN 1060	11.09	10.89	0.2	1.87	1.91	-0.04
1040.09	38.57	BN 1050	11.04	10.86	0.18	1.87	1.90	-0.03
1040.49	38.17	BN 1040	10.92	10.71	0.21	1.84	1.88	-0.04
1041.01	37.56	BN 1030	10.86	10.68	0.18	1.84	1.87	-0.03
1041.23	37.43	BN 1020	10.83	10.65	0.18	1.83	1.86	-0.03
1041.46	37.2	BN 1010	10.78	10.59	0.19	1.81	1.85	-0.04
1041.7	36.96	BN 1000	10.73	10.57	0.16	1.81	1.85	-0.04
1041.96	36.7	BN 990	10.6	10.42	0.18	1.79	1.83	-0.04
1042.235	36.425	BN 980	10.4	10.23	0.17	1.77	1.81	-0.04
1042.515	36.145	BN 970	10.38	10.20	0.18	1.77	1.80	-0.03
1042.91	35.75	BN 960	10.18	10.05	0.13	1.73	1.76	-0.03
1043.725	34.935	BN 950	9.92	9.86	0.06	1.67	1.72	-0.05
1044.06	34.6	BN 940	9.79	9.75	0.04	1.65	1.70	-0.05
1044.34	34.32	BN 930	9.65	9.62	0.03	1.64	1.69	-0.05
1044.605	34.055	BN 920	9.62	9.59	0.03	1.63	1.68	-0.05
1044.86	33.8	BN 910	9.58	9.56	0.02	1.62	1.67	-0.05
1045.4	33.26	BN 900	9.44	9.44	0	1.58	1.64	-0.06
1045.885	32.775	BN 890	9.37	9.32	0.05	1.55	1.61	-0.06
1046.18	32.48	BN 880	9.28	9.29	-0.01	1.55	1.61	-0.06
1046.34	32.32	BN 870	9.23	9.24	-0.01	1.55	1.61	-0.06
1046.58	32.08	BN 860	9.2	9.22	-0.02	1.54	1.60	-0.06
1046.9	31.76	BN 850	9.06	9.07	-0.01	1.52	1.58	-0.06
1047.35	31.31	BN 840	8.78	8.81	-0.03	1.49	1.55	-0.06
1047.915	30.745	BN 830	8.59	8.65	-0.06	1.47	1.53	-0.06
1048.375	30.285	BN 820	8.61	8.67	-0.06	1.46	1.52	-0.06
1048.89	29.77	BN 810	8.37	8.45	-0.08	1.42	1.48	-0.06
1049.12	29.54	BN 800	8.32	8.41	-0.09	1.42	1.48	-0.06
1049.37	29.29	BN 790	8.17	8.25	-0.08	1.4	1.46	-0.06
1049.59	29.07	BN 780	8.15	8.23	-0.08	1.4	1.46	-0.06
1049.87	28.79	BN 770	8.07	8.17	-0.1	1.4	1.45	-0.05
1050.43	28.23	BN 760	8.07	8.17	-0.1	1.38	1.44	-0.06
1050.86	27.8	BN 750	7.93	8.04	-0.11	1.37	1.43	-0.06
1051.36	27.3	BN 740	7.94	8.03	-0.09	1.37	1.43	-0.06
1051.895	26.765	BN 730	7.8	7.86	-0.06	1.35	1.40	-0.05
1052.31	26.35	BN 720	7.74	7.82	-0.08	1.33	1.40	-0.07
1052.39	26.27	BN 700	7.08	7.07	0.01	1.3	1.32	-0.02

Table F-1 -HEC-RAS Model Calibration

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI			10 Year ARI		
			MIKE 11 (m AHD)	HEC-RAS (m AHD)	Difference (m)	MIKE 11 (m AHD)	HEC-RAS (m AHD)	Difference (m)
1052.595	26.065	BN 690	7.01	7.01	0	1.3	1.32	-0.02
1052.64	26.02	BN 670	6.52	6.48	0.04	1.28	1.29	-0.01
1053.32	25.34	BN 650	6.47	6.41	0.06	1.27	1.29	-0.02
1053.385	25.795	BN 660	6.43	6.39	0.04	1.26	1.27	-0.01
1053.9	24.76	BN 620	6.19	6.37	-0.18	1.24	1.27	-0.03
1054.64	24.02	BN 610	6.03	6.24	-0.21	1.21	1.25	-0.04
1054.68	23.98	BN 590	5.94	6.15	-0.21	1.2	1.23	-0.03
1054.97	23.69	BN 560	5.68	6.04	-0.36	1.19	1.22	-0.03
1055.28	23.38	BN 550	5.62	5.68	-0.06	1.18	1.20	-0.02
1055.42	23.24	BN 540	5.6	5.55	0.05	1.18	1.18	0
1055.96	22.7	BN 530	5.52	5.51	0.01	1.17	1.18	-0.01
1056.4	22.26	BN 520	5.26	5.46	-0.2	1.16	1.17	-0.01
1056.695	21.965	BN 510	5.2	5.20	0	1.15	1.15	0
1056.865	21.795	BN 500	5.17	5.15	0.02	1.15	1.15	0
1056.95	21.71	BN 490	5.08	5.08	0	1.14	1.14	0
1057.09	21.57	BN 480	5.19	5.05	0.14	1.15	1.14	0.01
1057.53	21.13	BN 470	5.03	5.12	-0.09	1.14	1.15	-0.01
1058.04	20.62	BN 460	4.72	4.97	-0.25	1.11	1.14	-0.03
1058.23	20.43	BN 450	4.58	4.69	-0.11	1.1	1.11	-0.01
1058.53	20.13	BN 440	4.33	4.59	-0.26	1.09	1.11	-0.02
1058.735	19.925	BN 430	4.29	4.45	-0.16	1.08	1.10	-0.02
1059.035	19.625	BN 420	4.02	4.41	-0.39	1.07	1.09	-0.02
1059.54	19.12	BN 410	3.96	4.15	-0.19	1.06	1.08	-0.02
1059.99	18.67	BN 400	3.77	4.04	-0.27	1.05	1.07	-0.02
1060.345	18.315	BN 390	3.6	3.86	-0.26	1.04	1.05	-0.01
1060.535	18.125	BN 380	3.45	3.64	-0.19	1.03	1.04	-0.01
1061.015	17.645	BN 370	3.43	3.48	-0.05	1.03	1.04	-0.01
1061.53	17.13	BN 360	3.21	3.43	-0.22	1.02	1.03	-0.01
1062.02	16.64	BN 350	3.13	3.24	-0.11	1.01	1.02	-0.01
1062.535	16.125	BN 340	3.08	3.19	-0.11	1.01	1.02	-0.01
1062.94	15.72	BN 330	3.07	3.15	-0.08	1.01	1.01	0
1063.31	15.35	BN 320	2.97	3.15	-0.18	1	1.01	-0.01
1063.645	15.015	BN 310	2.67	3.08	-0.41	0.99	1.01	-0.02
1064	14.66	BN 300	2.6	2.77	-0.17	0.99	1.00	-0.01
1064.49	14.17	BN 290	2.49	2.71	-0.22	0.98	0.99	-0.01
1065.01	13.65	BN 280	2.53	2.49	0.04	0.98	0.98	0
1065.503	13.157	BN 270	2.51	2.49	0.02	0.98	0.98	0
1065.99	12.67	BN 260	2.54	2.48	0.06	0.98	0.98	0
1066.505	12.155	BN 250	2.49	2.50	-0.01	0.98	0.98	0
1067.02	11.64	BN 240	2.45	2.44	0.01	0.98	0.98	0
1067.485	11.175	BN 230	2.35	2.40	-0.05	0.97	0.98	-0.01
1067.965	10.695	BN 220	2.26	2.30	-0.04	0.97	0.97	0
1068.66	10	BN 210	2.1	2.21	-0.11	0.96	0.97	-0.01
1069.045	9.615	BN 200	2.02	2.07	-0.05	0.96	0.96	0
1069.535	9.125	BN 190	1.96	2.01	-0.05	0.96	0.96	0
1070.025	8.635	BN 180	1.88	1.97	-0.09	0.96	0.96	0
1070.53	8.13	BN 170	1.77	1.90	-0.13	0.95	0.95	0
1071.04	7.62	BN 160	1.68	1.81	-0.13	0.95	0.95	0
1071.52	7.14	BN 150	1.71	1.73	-0.02	0.95	0.95	0
1072.015	6.645	BN 140	1.67	1.76	-0.09	0.95	0.95	0
1072.515	6.145	BN 130	1.55	1.72	-0.17	0.94	0.95	-0.01
1072.995	5.665	BN 120	1.51	1.59	-0.08	0.94	0.94	0
1073.485	5.175	BN 110	1.4	1.56	-0.16	0.94	0.94	0
1074	4.66	BN 100	1.33	1.46	-0.13	0.93	0.94	-0.01
1074.46	4.2	BN 90	1.26	1.39	-0.13	0.93	0.93	0
1074.985	3.675	BN 80	1.12	1.33	-0.21	0.93	0.93	0
1075.48	3.18	BN 70	1.08	1.20	-0.12	0.93	0.93	0
1076	2.66	BN 60	1.08	1.15	-0.07	0.93	0.92	0.01
1076.495	2.165	BN 50	0.99	1.15	-0.16	0.92	0.93	-0.01
1077.01	1.65	BN 40	0.97	1.07	-0.1	0.92	0.92	0
1077.51	1.15	BN 30	0.97	1.02	-0.05	0.92	0.92	0
1078.04	0.62	BN 20	0.95	1.02	-0.07	0.92	0.92	0
1078.525	0.135	BN 10	0.92	1.01	-0.09	0.92	0.92	0
1078.66	0		0.92	0.92	0	0.92	0.92	0

Table F-2 - Comparison of MIKE 11 & HEC-RAS Mannings n Roughnesses

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	MIKE 11 Channel (n)	HEC-RAS Channel (n)	Ratio	MIKE 11 Bank (n)	HEC-RAS Bank (n)	Ratio
1000	78.66	BN 2020	0.075	0.0638	0.85	0.2625	0.2234	0.85
1000.285	78.375	BN 2010	0.075	0.0638	0.85	0.2625	0.2234	0.85
1000.775	77.885	BN 2000	0.075	0.0638	0.85	0.2625	0.2234	0.85
1001.315	77.345	BN 1990	0.075	0.0638	0.85	0.2625	0.2234	0.85
1001.865	76.795	BN 1980	0.075	0.0638	0.85	0.2625	0.2234	0.85
1002.35	76.31	BN 1970	0.075	0.0638	0.85	0.2625	0.2234	0.85
1002.785	75.875	BN 1960	0.075	0.0638	0.85	0.2625	0.2234	0.85
1003.275	75.385	BN 1950	0.075	0.0638	0.85	0.2625	0.2234	0.85
1003.775	74.885	BN 1940	0.075	0.0638	0.85	0.2625	0.2234	0.85
1004.3	74.36	BN 1930	0.075	0.0638	0.85	0.2625	0.2234	0.85
1004.81	73.85	BN 1920	0.075	0.0638	0.85	0.2625	0.2234	0.85
1005.325	73.335	BN 1910	0.065	0.0553	0.85	0.2275	0.1936	0.85
1005.87	72.79	BN 1900	0.065	0.0553	0.85	0.2275	0.1936	0.85
1006.3	72.36	BN 1890	0.06	0.051	0.85	0.21	0.1788	0.85
1006.91	71.75	BN 1880	0.06	0.051	0.85	0.21	0.1788	0.85
1007.41	71.25	BN 1870	0.06	0.051	0.85	0.21	0.1788	0.85
1007.92	70.74	BN 1860	0.06	0.051	0.85	0.21	0.1788	0.85
1008.445	70.215	BN 1850	0.055	0.0468	0.85	0.1925	0.1639	0.85
1008.925	69.735	BN 1840	0.055	0.0468	0.85	0.1925	0.1639	0.85
1009.4	69.26	BN 1830	0.055	0.0468	0.85	0.1925	0.1639	0.85
1009.72	68.84	BN 1820	0.055	0.0468	0.85	0.1925	0.1639	0.85
1010.49	68.17	BN 1810	0.055	0.0468	0.85	0.1925	0.1639	0.85
1010.725	67.935	BN 1800	0.055	0.0468	0.85	0.1925	0.1639	0.85
1010.98	67.68	BN 1790	0.055	0.0468	0.85	0.1925	0.1639	0.85
1011.51	67.15	BN 1780	0.055	0.0468	0.85	0.1925	0.1639	0.85
1011.98	66.68	BN 1770	0.05	0.0425	0.85	0.175	0.1488	0.85
1012.475	66.185	BN 1760	0.05	0.0425	0.85	0.175	0.1488	0.85
1012.935	65.725	BN 1750	0.065	0.0553	0.85	0.2275	0.1936	0.85
1013.445	65.215	BN 1740	0.065	0.0553	0.85	0.2275	0.1936	0.85
1013.91	64.74	BN 1730	0.065	0.0553	0.85	0.2275	0.1936	0.85
1014.31	64.55	BN 1720	0.065	0.0553	0.85	0.2275	0.1936	0.85
1014.61	64.05	BN 1710	0.065	0.0553	0.85	0.2275	0.1936	0.85
1015.09	63.57	BN 1700	0.065	0.0553	0.85	0.2275	0.1936	0.85
1015.56	63.1	BN 1690	0.065	0.0553	0.85	0.2405	0.2047	0.85
1016.14	62.52	BN 1680	0.065	0.0553	0.85	0.2405	0.2047	0.85
1016.64	62.02	BN 1670	0.065	0.0553	0.85	0.2405	0.2047	0.85
1017.13	61.53	BN 1660	0.07	0.0596	0.85	0.259	0.2202	0.85
1017.61	61.05	BN 1650	0.07	0.0596	0.85	0.259	0.2202	0.85
1017.92	60.74	BN 1640	0.07	0.0596	0.85	0.266	0.2263	0.85
1018.2	60.46	BN 1630	0.07	0.0596	0.85	0.266	0.2263	0.85
1018.725	59.935	BN 1620	0.07	0.0596	0.85	0.273	0.2321	0.85
1019.095	59.565	BN 1610	0.07	0.0596	0.85	0.273	0.2321	0.85
1019.49	59.17	BN 1600	0.07	0.0596	0.85	0.273	0.2321	0.85
1019.865	58.795	BN 1590	0.07	0.0596	0.85	0.273	0.2321	0.85
1020.115	58.545	BN 1580	0.07	0.0596	0.85	0.273	0.2321	0.85
1020.525	58.135	BN 1570	0.07	0.0596	0.85	0.273	0.2321	0.85
1020.83	57.83	BN 1560	0.07	0.0596	0.85	0.273	0.2321	0.85
1021.095	57.565	BN 1550	0.07	0.0596	0.85	0.273	0.2321	0.85
1021.539	57.121	BN 1540	0.07	0.0596	0.85	0.273	0.2321	0.85
1021.715	56.945	BN 1530	0.07	0.0596	0.85	0.273	0.2321	0.85
1021.895	56.765	BN 1520	0.07	0.0596	0.85	0.273	0.2321	0.85
1022.505	56.555	BN 1510	0.07	0.0596	0.85	0.294	0.2502	0.85
1022.575	56.085	BN 1500	0.06	0.051	0.85	0.252	0.2145	0.85
1023.04	55.62	BN 1490	0.05	0.0425	0.85	0.21	0.1788	0.85
1023.57	55.09	BN 1480	0.05	0.0425	0.85	0.21	0.1788	0.85
1024.08	54.58	BN 1470	0.05	0.0425	0.85	0.21	0.1788	0.85
1024.563	54.097	BN 1460	0.05	0.0425	0.85	0.21	0.1788	0.85
1025.07	53.59	BN 1450	0.055	0.0468	0.85	0.231	0.1964	0.85
1025.36	53.3	BN 1440	0.055	0.0468	0.85	0.231	0.1964	0.85
1025.59	53.07	BN 1430	0.055	0.0468	0.85	0.231	0.1964	0.85
1026.17	52.49	BN 1420	0.055	0.0468	0.85	0.231	0.1964	0.85
1026.68	51.98	BN 1410	0.055	0.0468	0.85	0.231	0.1964	0.85
1026.9	51.76	BN 1400	0.055	0.0468	0.85	0.231	0.1964	0.85
1027.16	51.5	BN 1390	0.045	0.0383	0.85	0.189	0.1607	0.85
1027.68	50.98	BN 1380	0.045	0.0383	0.85	0.18	0.1531	0.85
1028.18	50.48	BN 1370	0.045	0.0383	0.85	0.18	0.1531	0.85

Table F-2 - Comparison of MIKE 11 & HEC-RAS Mannings n Roughnesses

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	MIKE 11 Channel (n)	HEC-RAS Channel (n)	Ratio	MIKE 11 Bank (n)	HEC-RAS Bank (n)	Ratio
1028.68	49.98	BN 1360	0.045	0.0383	0.85	0.18	0.1531	0.85
1028.76	49.9	BN 1340	0.045	0.0383	0.85	0.18	0.1531	0.85
1029.2	49.46	BN 1330	0.045	0.0383	0.85	0.18	0.1531	0.85
1029.68	48.98	BN 1320	0.045	0.0383	0.85	0.18	0.1531	0.85
1030.22	48.44	BN 1310	0.045	0.0383	0.85	0.18	0.1531	0.85
1030.87	47.79	BN 1300	0.045	0.0383	0.85	0.18	0.1531	0.85
1031.26	47.4	BN 1290	0.06	0.051	0.85	0.24	0.2043	0.85
1031.7	46.96	BN 1280	0.06	0.051	0.85	0.24	0.2043	0.85
1031.995	46.665	BN 1270	0.06	0.051	0.85	0.24	0.2043	0.85
1032.23	46.43	BN 1260	0.06	0.051	0.85	0.252	0.2145	0.85
1032.585	46.075	BN 1250	0.06	0.051	0.85	0.24	0.2043	0.85
1033.08	45.58	BN 1240	0.06	0.051	0.85	0.252	0.2145	0.85
1033.37	45.29	BN 1230	0.06	0.051	0.85	0.252	0.2145	0.85
1033.9	44.76	BN 1220	0.06	0.051	0.85	0.252	0.2145	0.85
1034.37	44.29	BN 1210	0.06	0.051	0.85	0.252	0.2145	0.85
1034.89	43.77	BN 1200	0.06	0.051	0.85	0.252	0.2145	0.85
1035.414	43.246	BN 1190	0.06	0.051	0.85	0.252	0.2145	0.85
1035.9	42.76	BN 1180	0.06	0.051	0.85	0.252	0.2145	0.85
1036.46	42.2	BN 1170	0.06	0.051	0.85	0.252	0.2145	0.85
1036.77	41.89	BN 1160	0.06	0.051	0.85	0.3	0.2553	0.85
1036.915	41.745	BN 1150	0.06	0.051	0.85	0.3	0.2553	0.85
1037.09	41.57	BN 1140	0.06	0.051	0.85	0.3	0.2553	0.85
1037.175	41.485	BN 1120	0.05	0.0425	0.85	0.25	0.2128	0.85
1037.285	41.375	BN 1110	0.05	0.0425	0.85	0.25	0.2128	0.85
1037.625	41.035	BN 1100	0.05	0.0425	0.85	0.25	0.2128	0.85
1038.085	40.575	BN 1090	0.05	0.0425	0.85	0.25	0.2128	0.85
1038.6	40.06	BN 1080	0.045	0.0383	0.85	0.225	0.1913	0.85
1039.1	39.56	BN 1070	0.045	0.0383	0.85	0.225	0.1913	0.85
1039.565	39.05	BN 1060	0.045	0.0383	0.85	0.225	0.1913	0.85
1040.09	38.57	BN 1050	0.045	0.0383	0.85	0.225	0.1913	0.85
1040.49	38.17	BN 1040	0.045	0.0383	0.85	0.225	0.1913	0.85
1041.01	37.56	BN 1030	0.055	0.0468	0.85	0.275	0.234	0.85
1041.23	37.43	BN 1020	0.055	0.0468	0.85	0.286	0.2434	0.85
1041.46	37.2	BN 1010	0.055	0.0468	0.85	0.3025	0.2574	0.85
1041.7	36.96	BN 1000	0.055	0.0468	0.85	0.3025	0.2574	0.85
1041.96	36.7	BN 990	0.065	0.0553	0.85	0.3575	0.3041	0.85
1042.235	36.425	BN 980	0.065	0.0553	0.85	0.3575	0.3041	0.85
1042.515	36.145	BN 970	0.065	0.0553	0.85	0.3575	0.3041	0.85
1042.91	35.75	BN 960	0.065	0.0553	0.85	0.39	0.3318	0.85
1043.725	34.935	BN 950	0.065	0.0553	0.85	0.39	0.3318	0.85
1044.06	34.6	BN 940	0.065	0.0553	0.85	0.416	0.3539	0.85
1044.34	34.32	BN 930	0.065	0.0553	0.85	0.39	0.3318	0.85
1044.605	34.055	BN 920	0.065	0.0553	0.85	0.39	0.3318	0.85
1044.86	33.8	BN 910	0.065	0.0553	0.85	0.39	0.3318	0.85
1045.4	33.26	BN 900	0.065	0.0553	0.85	0.39	0.3318	0.85
1045.885	32.775	BN 890	0.065	0.0553	0.85	0.39	0.3318	0.85
1046.18	32.48	BN 880	0.06	0.051	0.85	0.36	0.3063	0.85
1046.34	32.32	BN 870	0.06	0.051	0.85	0.372	0.3164	0.85
1046.58	32.08	BN 860	0.06	0.051	0.85	0.372	0.3164	0.85
1046.9	31.76	BN 850	0.06	0.051	0.85	0.372	0.3164	0.85
1047.35	31.31	BN 840	0.06	0.051	0.85	0.372	0.3164	0.85
1047.915	30.745	BN 830	0.06	0.051	0.85	0.372	0.3164	0.85
1048.375	30.285	BN 820	0.06	0.051	0.85	0.372	0.3164	0.85
1048.89	29.77	BN 810	0.05	0.0425	0.85	0.31	0.2638	0.85
1049.12	29.54	BN 800	0.05	0.0425	0.85	0.31	0.2638	0.85
1049.37	29.29	BN 790	0.05	0.0425	0.85	0.31	0.2638	0.85
1049.59	29.07	BN 780	0.04	0.034	0.85	0.248	0.2111	0.85
1049.87	28.79	BN 770	0.033	0.028	0.85	0.2046	0.1741	0.85
1050.43	28.23	BN 760	0.033	0.028	0.85	0.2046	0.1741	0.85
1050.86	27.8	BN 750	0.033	0.028	0.85	0.2046	0.1741	0.85
1051.36	27.3	BN 740	0.033	0.028	0.85	0.2046	0.1741	0.85
1051.895	26.765	BN 730	0.035	0.0298	0.85	0.217	0.1845	0.85
1052.31	26.35	BN 720	0.03	0.0255	0.85	0.216	0.1839	0.85
1052.39	26.27	BN 700	0.03	0.0255	0.85	0.216	0.1839	0.85
1052.595	26.065	BN 690	0.03	0.0255	0.85	0.216	0.1839	0.85
1052.64	26.02	BN 670	0.03	0.0255	0.85	0.216	0.1839	0.85

Table F-2 - Comparison of MIKE 11 & HEC-RAS Mannings n Roughnesses

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	MIKE 11 Channel (n)	HEC-RAS Channel (n)	Ratio	MIKE 11 Bank (n)	HEC-RAS Bank (n)	Ratio
1053.32	25.34	BN 650	0.03	0.0255	0.85	0.216	0.1839	0.85
1053.9	24.76	BN 620	0.065	0.0553	0.85	0.468	0.3978	0.85
1054.64	24.02	BN 610	0.065	0.0553	0.85	0.468	0.3978	0.85
1054.68	23.98	BN 590	0.065	0.0553	0.85	0.468	0.3978	0.85
1054.97	23.69	BN 560	0.04	0.034	0.85	0.288	0.2448	0.85
1055.28	23.38	BN 550	0.04	0.034	0.85	0.288	0.2448	0.85
1055.42	23.24	BN 540	0.04	0.034	0.85	0.288	0.2448	0.85
1055.96	22.7	BN 530	0.04	0.034	0.85	0.288	0.2448	0.85
1056.4	22.26	BN 520	0.04	0.034	0.85	0.288	0.2448	0.85
1056.695	21.965	BN 510	0.045	0.0383	0.85	0.324	0.2754	0.85
1056.865	21.795	BN 500	0.045	0.0383	0.85	0.324	0.2754	0.85
1056.95	21.71	BN 490	0.05	0.0425	0.85	0.36	0.306	0.85
1057.09	21.57	BN 480	0.05	0.0425	0.85	0.36	0.306	0.85
1057.53	21.13	BN 470	0.05	0.0425	0.85	0.36	0.306	0.85
1058.04	20.62	BN 460	0.05	0.0425	0.85	0.36	0.306	0.85
1058.23	20.43	BN 450	0.06	0.051	0.85	0.45	0.3825	0.85
1058.53	20.13	BN 440	0.06	0.051	0.85	0.45	0.3825	0.85
1058.735	19.925	BN 430	0.06	0.051	0.85	0.45	0.3825	0.85
1059.035	19.625	BN 420	0.05	0.0425	0.85	0.375	0.3188	0.85
1059.54	19.12	BN 410	0.05	0.0425	0.85	0.375	0.3188	0.85
1059.99	18.67	BN 400	0.045	0.0383	0.85	0.3375	0.2869	0.85
1060.345	18.315	BN 390	0.035	0.0298	0.85	0.1925	0.1679	0.87
1060.535	18.125	BN 380	0.035	0.0298	0.85	0.1925	0.1679	0.87
1061.015	17.645	BN 370	0.035	0.03	0.85	0.182	0.1547	0.85
1061.53	17.13	BN 360	0.036	0.03	0.85	0.1872	0.1591	0.85
1062.02	16.64	BN 350	0.036	0.03	0.85	0.1872	0.1591	0.85
1062.535	16.125	BN 340	0.036	0.03	0.85	0.1872	0.1591	0.85
1062.94	15.72	BN 330	0.036	0.03	0.85	0.1872	0.1591	0.85
1063.31	15.35	BN 320	0.045	0.0383	0.85	0.234	0.1989	0.85
1063.645	15.015	BN 310	0.045	0.0383	0.85	0.234	0.1989	0.85
1064	14.66	BN 300	0.028	0.0238	0.85	0.084	0.0714	0.85
1064.49	14.17	BN 290	0.028	0.0238	0.85	0.084	0.0714	0.85
1065.01	13.65	BN 280	0.028	0.0238	0.85	0.084	0.0714	0.85
1065.503	13.157	BN 270	0.028	0.0238	0.85	0.084	0.0714	0.85
1065.99	12.67	BN 260	0.028	0.0238	0.85	0.0924	0.0785	0.85
1066.505	12.155	BN 250	0.028	0.0238	0.85	0.084	0.0714	0.85
1067.02	11.64	BN 240	0.028	0.0238	0.85	0.084	0.0714	0.85
1067.485	11.175	BN 230	0.028	0.0238	0.85	0.084	0.0714	0.85
1067.965	10.695	BN 220	0.028	0.0238	0.85	0.084	0.0714	0.85
1068.66	10	BN 210	0.033	0.0281	0.85	0.099	0.0842	0.85
1069.045	9.615	BN 200	0.033	0.0281	0.85	0.099	0.0842	0.85
1069.535	9.125	BN 190	0.033	0.028	0.85	0.099	0.0842	0.85
1070.025	8.635	BN 180	0.033	0.028	0.85	0.099	0.0842	0.85
1070.53	8.13	BN 170	0.033	0.028	0.85	0.099	0.0842	0.85
1071.04	7.62	BN 160	0.033	0.028	0.85	0.099	0.0842	0.85
1071.52	7.14	BN 150	0.033	0.028	0.85	0.099	0.0842	0.85
1072.015	6.645	BN 140	0.033	0.028	0.85	0.099	0.0842	0.85
1072.515	6.145	BN 130	0.033	0.028	0.85	0.099	0.0842	0.85
1072.995	5.665	BN 120	0.033	0.028	0.85	0.099	0.0842	0.85
1073.485	5.175	BN 110	0.033	0.028	0.85	0.099	0.0842	0.85
1074	4.66	BN 100	0.033	0.028	0.85	0.099	0.0842	0.85
1074.46	4.2	BN 90	0.033	0.028	0.85	0.099	0.0842	0.85
1074.985	3.675	BN 80	0.033	0.028	0.85	0.099	0.0842	0.85
1075.48	3.18	BN 70	0.033	0.028	0.85	0.099	0.0842	0.85
1076	2.66	BN 60	0.033	0.028	0.85	0.099	0.0842	0.85
1076.495	2.165	BN 50	0.033	0.028	0.85	0.099	0.0842	0.85
1077.01	1.65	BN 40	0.033	0.028	0.85	0.099	0.0842	0.85
1077.51	1.15	BN 30	0.033	0.028	0.85	0.099	0.0842	0.85
1078.04	0.62	BN 20	0.033	0.028	0.85	0.099	0.0842	0.85
1078.525	0.135	BN 10	0.033	0.028	0.85	0.099	0.0842	0.85
1078.66	0		0.033	0.028	0.85	0.099	0.0842	0.85

Table F-3 -HEC-RAS Predicted Velocities

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Total Discharge (m³/s)	100 Year ARI Average Velocity Left (m/s)	100 Year ARI Average Velocity Channel (m/s)	100 Year ARI Average Velocity Right (m/s)	Bank Full Flow Total Discharge (m³/s)	Bank Full Flow Average Velocity Left (m/s)	Bank Full Flow Average Velocity Channel (m/s)	Bank Full Flow Average Velocity Right (m/s)
1000	78.66	BN 2020	9303	0.26	1.57	0.32	13000	1.78	0.18	0.38
1000.285	78.375	BN 2010	9303	0.33	2.51	0.38	14000	2.8	0.26	0.45
1000.775	77.885	BN 2000	9303	0.35	2.89	0.44	13000	3.19	0.42	0.49
1001.315	77.345	BN 1990	9303	0.48	2.48	0.28	25000	4.17	0.59	0.69
1001.865	76.795	BN 1980	9303	0.52	3.87	0.5	29000	5.39	0.61	0.84
1002.35	76.31	BN 1970	9303	0.45	3.48	0.55	25000	5.48	0.72	0.88
1002.785	75.875	BN 1960	9303	0.44	2.83	0.42	14000	3.65	0.55	0.42
1003.275	75.385	BN 1950	9303	0.32	2.86	0.34	11000	3.29	0.41	0.37
1003.775	74.885	BN 1940	9303	0.43	3.06	0.41	25000	3.82	0.53	0.55
1004.3	74.36	BN 1930	9303	0.5	3.61	0.4	11000	3.59	0.3	0.44
1004.81	73.85	BN 1920	9303	0.25	2.05	0.3	13000	2.23	0.23	0.36
1005.325	73.335	BN 1910	9303	0.4	2.54	0.36	8000	2.38	0.37	0.32
1005.87	72.79	BN 1900	9303	0.4	2.9	0.42	7000	2.69	0.36	0.36
1006.3	72.36	BN 1890	9303	0.33	2.53	0.32	13000	2.94	0.28	0.25
1006.91	71.75	BN 1880	9473	0.26	2.44	0.39	12000	2.69	0.33	0.3
1007.41	71.25	BN 1870	9473	0.4	2.2	0.28	9000	2.11	0.38	0.25
1007.92	70.74	BN 1860	9473	0.36	2.32	0.26	10000	2.31	0.36	0.27
1008.445	70.215	BN 1850	9473	0.39	2.65	0.36	10000	2.74	0.4	0.21
1008.925	69.735	BN 1840	9473	0.37	2.44	0.32	10000	2.48	0.37	0.29
1009.4	69.26	BN 1830	9473	0.22	2.59	0.32	10000	2.61	0.23	0.32
1009.72	68.84	BN 1820	9473	0.23	2.28	0.29	11000	2.39	0.23	0.29
1010.49	68.17	BN 1810	9473	0.39	2.97	0.34	10000	3.04	0.3	0.35
1010.725	67.935	BN 1800	9473	0.27	2.83	0.34	9000	2.73	0.26	0.33
1010.98	67.68	BN 1790	9473	0.33	2.79	0.43	10000	2.84	0.33	0.44
1011.51	67.15	BN 1780	9473	0.3	2.38	0.35	10000	2.44	0.25	0.37
1011.98	66.68	BN 1770	9473	0.32	2.07	0.21	9000	2.02	0.3	0.19
1012.475	66.185	BN 1760	9473	0.29	2.22	0.24	9000	2.17	0.28	0.23
1012.935	65.725	BN 1750	9473	0.34	2.14	0.19	9000	2.09	0.33	0.17
1013.445	65.215	BN 1740	9473	0.24	2.1	0.2	9000	2.05	0.23	0.19
1013.91	64.74	BN 1730	9473	0.16	2.03	0.45	9000	1.98	0.15	0.44
1014.31	64.55	BN 1720	9473	0.25	2.09	0.44	3000	1.41	0.14	0.22
1014.61	64.05	BN 1710	9473	0.25	1.36	0.36	3000	1.22	0.24	0.24
1015.09	63.57	BN 1700	9473	0.31	2.04	0.22	14000	2.49	0.32	0.25
1015.56	63.1	BN 1690	9473	0.3	2.53	0.21	11000	2.68	0.32	0.22
1016.14	62.52	BN 1680	9473	0.28	2.22	0.17	9000	2.14	0.27	0.23
1016.64	62.02	BN 1670	9473	0.19	1.67	0.14	11000	1.72	0.21	0.13
1017.13	61.53	BN 1660	9473	0.38	2.61	0.26	13000	2.74	0.39	0.32
1017.61	61.05	BN 1650	9473	0.29	2.46	0.21	12000	2.56	0.32	0.27
1017.92	60.74	BN 1640	9473	0.29	2.57	0.28	11000	2.6	0.31	0.31
1018.2	60.46	BN 1630	9473	0.21	2.14	0.25	9000	2.08	0.2	0.24
1018.725	59.935	BN 1620	9473	0.22	2.85	0.32	13000	3.23	0.26	0.35
1019.095	59.565	BN 1610	9473	0.24	2.46	0.19	13000	2.7	0.28	0.25
1019.49	59.17	BN 1600	9473	0.27	2.02	0.21	6000	1.7	0.21	0.19
1019.865	58.795	BN 1590	9473	0.3	2.7	0.23	7000	2.34	0.31	0.17
1020.115	58.545	BN 1580	9473	0.32	1.97	0.25	11000	2.09	0.26	0.27
1020.525	58.135	BN 1570	9473	0.23	1.33	0.13	12000	1.44	0.22	0.15
1020.83	57.83	BN 1560	9473	0.27	2.02	0.21	9000	1.95	0.25	0.2
1021.095	57.565	BN 1550	9473	0.3	2.64	0.28	11000	2.78	0.28	0.3
1021.539	57.121	BN 1540	9473	0.22	2.38	0.29	12000	2.49	0.28	0.32
1021.715	56.945	BN 1530	9473	0.22	2.01	0.21	13000	2.19	0.27	0.24
1021.895	56.765	BN 1520	9473	0.28	2.14	0.31	12000	2.4	0.26	0.26
1022.505	56.555	BN 1510	9473	0.26	2.34	0.26	11000	2.52	0.28	0.18
1022.575	56.085	BN 1500	9473	0.19	2.06	0.27	11000	2.16	0.22	0.26
1023.04	55.62	BN 1490	9473	0.3	3.19	0.27	14000	3.72	0.39	0.29
1023.57	55.09	BN 1480	9473	0.25	2.84	0.29	13000	3.23	0.26	0.34
1024.08	54.58	BN 1470	9473	0.24	2.8	0.3	9000	2.7	0.22	0.28
1024.563	54.097	BN 1460	9473	0.25	2.36	0.23	17000	2.95	0.33	0.21
1025.07	53.59	BN 1450	9473	0.16	2.21	0.26	11000	2.32	0.18	0.25
1025.36	53.3	BN 1440	9473	0.3	2.69	0.26	14000	3.16	0.38	0.36
1025.59	53.07	BN 1430	9473	0.36	3.07	0.24	16000	3.84	0.49	0.33
1026.17	52.49	BN 1420	9473	0.32	2.6	0.19	9000	2.48	0.3	0.21
1026.68	51.98	BN 1410	9473	0.25	2.61	0.17	9000	2.51	0.24	0.15

Table F-3 -HEC-RAS Predicted Velocities

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Total Discharge (m³/s)	100 Year ARI Average Velocity Left (m/s)	100 Year ARI Average Velocity Channel (m/s)	100 Year ARI Average Velocity Right (m/s)	Bank Full Flow Total Discharge (m³/s)	Bank Full Flow Average Velocity Left (m/s)	Bank Full Flow Average Velocity Channel (m/s)	Bank Full Flow Average Velocity Right (m/s)
1026.9	51.76	BN 1400	9473	0.27	2.89	0.35	11000	3.06	0.29	0.34
1027.16	51.5	BN 1390	9473	0.24	2.89	0.2	13000	3.26	0.25	0.27
1027.68	50.98	BN 1380	9473	0.25	2.17	0.31	40000	3.69	0.6	0.52
1028.18	50.48	BN 1370	9473	0.2	2.13	0.35	18000	2.66	0.32	0.47
1028.68	49.98	BN 1360	9473	0.26	2.41	0.23	9000	2.32	0.25	0.22
1028.76	49.9	BN 1340	9473	0.21	2.53	0.37	10000	2.52	0.23	0.38
1029.2	49.46	BN 1330	9473	0.32	2.95	0.3	10000	2.94	0.3	0.32
1029.68	48.98	BN 1320	9473	0.24	2.78	0.26	11000	2.88	0.22	0.28
1030.22	48.44	BN 1310	9473	0.26	2.31	0.27	18000	2.79	0.38	0.26
1030.87	47.79	BN 1300	9473	0.2	2.24	0.22	13000	2.39	0.29	0.21
1031.26	47.4	BN 1290	9473	0.27	2.55	0.23	9000	2.44	0.27	0.21
1031.7	46.96	BN 1280	9473	0.38	3.29	0.28	14000	3.85	0.38	0.34
1031.995	46.665	BN 1270	9473	0.26	2.35	0.21	9000	2.24	0.24	0.2
1032.23	46.43	BN 1260	9473	0.32	2.36	0.2	9000	2.26	0.31	0.19
1032.585	46.075	BN 1250	9473	0.24	2.71	0.19	9000	2.59	0.23	0.18
1033.08	45.58	BN 1240	9473	0.23	2.57	0.21	6000	1.99	0.17	0.09
1033.37	45.29	BN 1230	9473	0.21	2.55	0.22	14000	2.9	0.3	0.26
1033.9	44.76	BN 1220	9473	0.27	2.72	0.29	14000	3.09	0.39	0.32
1034.37	44.29	BN 1210	9473	0.33	2.85	0.22	12000	3.09	0.26	0.26
1034.89	43.77	BN 1200	9473	0.27	2.51	0.26	7000	2.15	0.22	0.19
1035.414	43.246	BN 1190	9473	0.24	2.59	0.29	14000	2.88	0.28	0.37
1035.9	42.76	BN 1180	9473	0.27	3.08	0.36	14000	3.61	0.34	0.39
1036.46	42.2	BN 1170	9473	0.2	2.62	0.3	10000	2.58	0.2	0.3
1036.77	41.89	BN 1160	9473	0.18	2.47	0.24	9000	2.34	0.17	0.23
1036.915	41.745	BN 1150	9473	0.16	2.74	0.22	13000	3.09	0.23	0.25
1037.09	41.57	BN 1140	9473	0.27	3.11	0.22	6000	2.33	0.16	0.15
1037.175	41.485	BN 1120	9473	0.25	3.03	0.23	12000	3.35	0.34	0.27
1037.285	41.375	BN 1110	9473	0.18	2.74	0.22	13000	3.09	0.24	0.25
1037.625	41.035	BN 1100	9473	0.17	2.4	0.23	9000	2.26	0.16	0.22
1038.085	40.575	BN 1090	9473	0.12	2.11	0.18	9000	1.99	0.11	0.17
1038.6	40.06	BN 1080	9473	0.14	2.08	0.2	7000	1.81	0.1	0.16
1039.1	39.56	BN 1070	9473	0.14	2.12	0.2	7000	1.85	0.11	0.17
1039.565	39.05	BN 1060	9473	0.13	1.89	0.2	5000	1.46	0.08	0.12
1040.09	38.57	BN 1050	8883	0.13	1.72	0.17	5000	1.31	0.12	0.08
1040.49	38.17	BN 1040	8883	0.16	2.32	0.22	9000	2.33	0.16	0.22
1041.01	37.56	BN 1030	8883	0.13	1.9	0.16	7000	1.7	0.08	0.12
1041.23	37.43	BN 1020	8883	0.13	1.9	0.13	9000	1.9	0.13	0.14
1041.46	37.2	BN 1010	8883	0.15	1.98	0.15	9000	1.99	0.15	0.14
1041.7	36.96	BN 1000	8883	0.07	1.9	0.11	10000	2.03	0.09	0.12
1041.96	36.7	BN 990	8883	0.16	2.36	0.15	9000	2.37	0.16	0.15
1042.235	36.425	BN 980	8883	0.14	2.67	0.11	7000	2.31	0.14	0.09
1042.515	36.145	BN 970	8883	0.2	2.32	0.14	13000	2.84	0.21	0.2
1042.91	35.75	BN 960	8883	0.15	2.42	0.1	11000	2.66	0.19	0.13
1043.725	34.935	BN 950	8883	0.1	2.08	0.14	9000	2.09	0.1	0.14
1044.06	34.6	BN 940	8883	0.09	2.16	0.12	9000	2.18	0.09	0.12
1044.34	34.32	BN 930	8883	0.11	2.36	0.13	9000	2.38	0.11	0.14
1044.605	34.055	BN 920	8883	0.11	2.1	0.14	9000	2.12	0.11	0.15
1044.86	33.8	BN 910	8883	0.12	1.88	0.14	8000	1.79	0.1	0.13
1045.4	33.26	BN 900	8883	0.11	1.83	0.12	6000	1.53	0.05	0.1
1045.885	32.775	BN 890	8883	0.14	1.89	0.11	6000	1.61	0.07	0.09
1046.18	32.48	BN 880	8883	0.07	1.7	0.07	7000	1.47	0.05	0.05
1046.34	32.32	BN 870	8883	0.07	1.8	0.06	6000	1.39	0.05	0.04
1046.58	32.08	BN 860	8883	0.12	1.77	0.07	7000	1.54	0.09	0.05
1046.9	31.76	BN 850	8883	0.13	2.16	0.13	25000	3.6	0.25	0.25
1047.35	31.31	BN 840	8883	0.13	2.63	0.13	7000	2.29	0.1	0.08
1047.915	30.745	BN 830	8883	0.11	2.55	0.12	7000	2.21	0.08	0.08
1048.375	30.285	BN 820	8883	0.09	1.81	0.11	9000	1.82	0.09	0.11
1048.89	29.77	BN 810	8883	0.15	2.26	0.09	25000	3.38	0.23	0.27
1049.12	29.54	BN 800	8883	0.12	2.19	0.12	4000	1.37	0.05	0.06
1049.37	29.29	BN 790	8883	0.12	2.59	0.11	6000	2.07	0.1	0.06
1049.59	29.07	BN 780	8883	0.09	2.46	0.1	9000	2.48	0.1	0.1
1049.87	28.79	BN 770	8883	0.12	2.55	0.17	9000	2.57	0.12	0.17

Table F-3 -HEC-RAS Predicted Velocities

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Total Discharge (m^3/s)	100 Year ARI Average Velocity Left (m/s)	100 Year ARI Average Velocity Channel (m/s)	100 Year ARI Average Velocity Right (m/s)	Bank Full Flow Total Discharge (m^3/s)	Bank Full Flow Average Velocity Left (m/s)	Bank Full Flow Average Velocity Channel (m/s)	Bank Full Flow Average Velocity Right (m/s)
1050.43	28.23	BN 760	8883	0.12	2.26	0.13	9000	2.27	0.12	0.13
1050.86	27.8	BN 750	8883	0.11	2.55	0.16	9000	2.57	0.11	0.14
1051.36	27.3	BN 740	8883	0.1	2.33	0.12	7000	2.05	0.05	0.07
1051.895	26.765	BN 730	8883	0.13	2.73	0.14	14000	3.04	0.23	0.24
1052.31	26.35	BN 720	8883	0.2	2.6	0.16	7000	2.31	0.15	0.12
1052.39	26.27	BN 700	8883	0.23	2.71	0.12	7000	2.39	0.18	0.12
1052.595	26.065	BN 690	8883	0.14	2.83	0.1	6000	2.23	0.08	0.08
1052.64	26.02	BN 670	8883	0.12	2.58	0.13	7000	2.21	0.07	0.1
1053.32	25.34	BN 650	8883	0.08	2.74	0.09	7000	2.33	0.04	0.07
1053.385	25.795	BN 660	8883	0.22	2.57	0.13	14000	3.16	0.3	0.18
1053.9	24.76	BN 620	8883	0.19	2.55	0.14	10000	2.7	0.21	0.12
1054.64	24.02	BN 610	8883	0.08	2.57	0.14	14000	3.13	0.17	0.21
1054.68	23.98	BN 590	8883	0.07	1.59	0.13	3000	0.75	0.02	0.04
1054.97	23.69	BN 560	8883		1.81	0.12	5000	1.24		0.03
1055.28	23.38	BN 550	8883	0.12	2.53	0.14	30000	4.89	0.36	0.27
1055.42	23.24	BN 540	8883	0.13	2.46	0.07	11000	2.79	0.16	0.09
1055.96	22.7	BN 530	8883	0.11	2.43	0.1	11000	2.73	0.15	0.13
1056.4	22.26	BN 520	8883	0.12	2.18	0.05	9000	2.2	0.12	0.05
1056.695	21.965	BN 510	8883	0.12	2.78	0.1	9000	2.8	0.12	0.1
1056.865	21.795	BN 500	8883	0.09	2.65	0.09	9000	2.67	0.09	0.09
1056.95	21.71	BN 490	8883	0.11	2.75	0.07	11000	3.14	0.1	0.12
1057.09	21.57	BN 480	8883	0.12	2.62	0.09	11000	3	0.11	0.13
1057.53	21.13	BN 470	8883	0.08	2.06	0.08	10000	2.24	0.06	0.1
1058.04	20.62	BN 460	8883	0.06	2.31	0.08	25000	4.28	0.21	0.12
1058.23	20.43	BN 450	8883	0.14	2.74	0.11	35000	5.64	0.32	0.3
1058.53	20.13	BN 440	8883	0.1	2.78	0.1	18000	4.13	0.24	0.21
1058.735	19.925	BN 430	8883	0.09	2.85	0.06	9000	2.88	0.09	0.06
1059.035	19.625	BN 420	8883	0.11	2.61	0.08	9000	2.63	0.11	0.09
1059.54	19.12	BN 410	8883	0.11	2.98	0.09	13000	3.81	0.19	0.16
1059.99	18.67	BN 400	8883	0.08	2.25	0.09	18000	3.4	0.2	0.15
1060.345	18.315	BN 390	8883	0.07	2.29	0.1	13000	2.88	0.12	0.11
1060.535	18.125	BN 380	8883	0.09	2.64	0.08	40000	5.7	0.25	0.42
1061.015	17.645	BN 370	8883	0.1	2.94	0.11	12000	3.66	0.14	0.06
1061.53	17.13	BN 360	8883	0.09	2.6	0.08	11000	2.97	0.12	0.12
1062.02	16.64	BN 350	8883	0.16	2.83		11000	3.28	0.17	0.06
1062.535	16.125	BN 340	8883	0.1	2.56	0.15	9000	2.58	0.08	0.15
1062.94	15.72	BN 330	8883	0.17	2.17	0.1	9000	2.19	0.17	0.1
1063.31	15.35	BN 320	8883	0.09	1.75	0.06	9000	1.77	0.09	0.06
1063.645	15.015	BN 310	8872	0.07	1.9	0.09	9000	1.91	0.06	0.09
1064	14.66	BN 300	8872	0.14	2.82	0.18	10000	3.09	0.11	0.21
1064.49	14.17	BN 290	8872	0.11	2.61	0.13	9000	2.64	0.11	0.13
1065.01	13.65	BN 280	8872	0.08	2.71	0.14	9000	2.74	0.07	0.14
1065.503	13.157	BN 270	8872	0.07	2.14	0.17	9000	2.16	0.08	0.17
1065.99	12.67	BN 260	8872	0.07	1.92		14000	2.67	0.22	0.12
1066.505	12.155	BN 250	8872	0.12	1.53	0.04	14000	2.12	0.04	0.13
1067.02	11.64	BN 240	8872	0.08	1.69	0.08	14000	2.29	0.2	0.17
1067.485	11.175	BN 230	8872	0.18	1.71	0.1	14000	2.37	0.3	0.16
1067.965	10.695	BN 220	8872	0.22	2.02	0.13	9000	2.04	0.23	0.14
1068.66	10	BN 210	8872	0.15	2.17	0.13	14000	2.97	0.24	0.24
1069.045	9.615	BN 200	8872	0.23	2.34	0.27	14000	3.27	0.19	0.27
1069.535	9.125	BN 190	8872	0.03	2.32	0.2	14000	3.24	0.17	0.22
1070.025	8.635	BN 180	8872	0.32	2.13	0.15	14000	2.98	0.46	0.2
1070.53	8.13	BN 170	8872	0.07	2.02	0.23	14000	2.87	0.1	0.18
1071.04	7.62	BN 160	8872	0.15	2.07	0.1	14000	2.94	0.12	0.12
1071.52	7.14	BN 150	8872	0.19	2.03	0.13	14000	2.9	0.2	0.19
1072.015	6.645	BN 140	8872	0.14	1.51	0.06	13000	2.08	0.08	0.13
1072.515	6.145	BN 130	8872	0.13	1.44	0.05	14000	1.99	0.12	0.14
1072.995	5.665	BN 120	8858	0.14	1.84	0.08	13000	2.55	0.21	0.09
1073.485	5.175	BN 110	8858	0.11	1.72	0.08	14000	2.51	0.19	0.19
1074	4.66	BN 100	8858	0.12	1.91	0.21	14000	2.82	0.22	0.13
1074.46	4.2	BN 90	8858	0.14	1.86	0.17	14000	2.76	0.2	0.17
1074.985	3.675	BN 80	8858	0.09	1.84	0.14	14000	2.75	0.13	0.1

Table F-3 -HEC-RAS Predicted Velocities

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Total Discharge (m^3/s)	100 Year ARI Average Velocity Left (m/s)	100 Year ARI Average Velocity Channel (m/s)	100 Year ARI Average Velocity Right (m/s)	Bank Full Flow Total Discharge (m^3/s)	Bank Full Flow Average Velocity Left (m/s)	Bank Full Flow Average Velocity Channel (m/s)	Bank Full Flow Average Velocity Right (m/s)
1075.48	3.18	BN 70	8858	0.16	2.06	0.16	14000	3.12	0.27	0.26
1076	2.66	BN 60	8858	0.06	1.8	0.2	9000	1.83	0.06	0.2
1076.495	2.165	BN 50	8858	0.09	1.25	0.15	14000	1.9	0.14	0.24
1077.01	1.65	BN 40	8858	0.17	1.47	0.22	14000	2.21	0.28	0.35
1077.51	1.15	BN 30	8858	0.09	1.22	0.15	14000	1.89	0.11	0.25
1078.04	0.62	BN 20	8858	0.05	0.87	0.06	40000	3.28	0.18	0.22
1078.525	0.135	BN 10	8858	0.05	0.93	0.04	25000	2.51	0.15	0.15
1078.66	0		8858	0.33	1.5	0.08	40000	6.8	1.5	0.35

Table F-4 -HEC-RAS Predicted Conveyances

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI							20 Year ARI						
			Total Conveyance (m^3/s)	Channel Conveyance (m^3/s)	Left Conveyance (m^3/s)	Right Conveyance (m^3/s)	%Channel Conveyance (%)	% Left Conveyance (%)	% Right Conveyance (%)	Total Conveyance (m^3/s)	Channel Conveyance (m^3/s)	Left Conveyance (m^3/s)	Right Conveyance (m^3/s)	%Channel Conveyance (%)	% Left Conveyance (%)	% Right Conveyance (%)
1000	78.66	BN 2020	671222.4	621588	26163.7	23470.7	92.6	3.9	3.5	297984.4	284690.5	8099.2	5194.7	95.5	2.7	1.7
1000.285	78.375	BN 2010	515222.8	397585.4	29316.1	88321	77.2	5.7	17.1	216127.3	192620.1	7031.1	16476	89.1	3.3	7.6
1000.775	77.885	BN 2000	450811.7	392162.1	48277.4	10372.2	87.0	10.7	2.3	204102	193666.7	7387.4	3047.9	94.9	3.6	1.5
1001.315	77.345	BN 1990	506657.2	392127.8	98473.7	16055.6	77.4	19.4	3.2	210055.7	182049.4	26212.6	1793.6	86.7	12.5	0.9
1001.865	76.795	BN 1980	327814.5	301854.3	16176.3	9783.9	92.1	4.9	3.0	154388	147424.7	4088.9	2854.5	95.5	2.6	1.8
1002.35	76.31	BN 1970	356343.6	320313.3	19533.6	16498.7	89.9	5.5	4.6	155685.9	149889.7	2894.7	2901.5	96.3	1.9	1.9
1002.785	75.875	BN 1960	443217.3	400284.2	18388.6	24544.5	90.3	4.1	5.5	200739.4	189378	4603.3	6758.1	94.3	2.3	3.4
1003.275	75.385	BN 1950	427781.9	363224.7	25388.1	39169.1	84.9	5.9	9.2	169320.5	165463.3	458.5	3398.7	97.7	0.3	2.0
1003.775	74.885	BN 1940	414382.9	331829.6	35530.7	47022.7	80.1	8.6	11.3	175538.3	156940.8	10031.2	8566.3	89.4	5.7	4.9
1004.3	74.36	BN 1930	353388	287084.6	9301	57022.4	81.2	2.6	16.1	143878.9	137502.2	2637.3	3739.4	95.6	1.8	2.6
1004.81	73.85	BN 1920	580467.6	490713.1	9916	79838.6	84.5	1.7	13.8	213957.8	208373.2	1768.4	3796.2	97.4	0.8	1.8
1005.325	73.335	BN 1910	549383.4	429191.5	84030.1	36161.8	78.1	15.3	6.8	202882.3	182865.8	15883	4133.4	90.1	7.8	2.0
1005.87	72.79	BN 1900	482785.8	375651.9	96636.3	10497.4	77.8	20.0	2.2	174540.5	160926.5	12459.3	1154.8	92.2	7.1	0.7
1006.3	72.36	BN 1890	627678	582841.3	32866.4	11970.4	92.9	5.2	1.9	277343.5	269626.9	5136.9	2579.7	97.2	1.9	0.9
1006.91	71.75	BN 1880	659120.1	587560.8	56119.4	15440	89.1	8.5	2.3	279289.6	269518.9	5240.7	4529.9	96.5	1.9	1.6
1007.41	71.25	BN 1870	705484.5	588599.4	87691.5	29193.5	83.4	12.4	4.1	275600.9	253619.8	15159.2	6821.8	92.0	5.5	2.5
1007.92	70.74	BN 1860	671892.8	484586	151433.8	35872.9	72.1	22.5	5.3	242544.1	210217.8	28680.3	3646	86.7	11.8	1.5
1008.445	70.215	BN 1850	680048.8	639532.4	17398	23118.4	94.0	2.6	3.4	321354.4	312824.6	4012.1	4517.7	97.3	1.2	1.4
1008.925	69.735	BN 1840	700327.1	663793.8	13799	22734.3	94.8	2.0	3.2	301879.6	294776.1	3178.4	3925.2	97.6	1.1	1.3
1009.4	69.26	BN 1830	684019.7	627454.1	14869.8	41695.8	91.7	2.2	6.1	309244.4	299131.7	3657.6	6455.2	96.7	1.2	2.1
1009.72	68.84	BN 1820	750085.4	679150.5	21998.1	48938.8	90.5	2.9	6.5	319649	314625.6	2162.3	2861.1	98.4	0.7	0.9
1010.49	68.17	BN 1810	588181	551712	17879.4	18589.8	93.8	3.0	3.2	265531.7	261184	2060.8	2286.9	98.4	0.8	0.9
1010.725	67.935	BN 1800	638332.1	608946.4	23553.7	5831.9	95.4	3.7	0.9	313072.7	306449.9	4834.4	1788.4	97.9	1.5	0.6
1010.98	67.68	BN 1790	639056.2	603747.8	24108.9	11199.4	94.5	3.8	1.8	304359.3	296798	4300.5	3260.8	97.5	1.4	1.1
1011.51	67.15	BN 1780	733663.8	643784.5	52758.1	37121.2	87.7	7.2	5.1	318014.3	305038.5	5491.3	7484.5	95.9	1.7	2.4
1011.98	66.68	BN 1770	913440.9	732396.7	161098.5	19945.7	80.2	17.6	2.2	352110.9	335089.9	15590.2	1430.7	95.2	4.4	0.4
1012.475	66.185	BN 1760	846460.1	722877.2	112963.4	10819.6	85.4	13.3	1.3	349811.2	330961.5	16689.2	2160.5	94.6	4.8	0.6
1012.935	65.725	BN 1750	672473.5	574539.8	77963.3	19970.4	85.4	11.6	3.0	267652.9	261919	5434.1	299.8	97.9	2.0	0.1
1013.445	65.215	BN 1740	677667	616501.5	36534.5	24630.9	91.0	5.4	3.6	283566.4	276610.2	6607.9	348.3	97.5	2.3	0.1
1013.91	64.74	BN 1730	695963.4	459145.4	17493.7	219324.3	66.0	2.5	31.5	263026.5	203083.3	336.9	59606.4	77.2	0.1	22.7
1014.31	64.55	BN 1720	699521	476923.9	59381.6	163215.6	68.2	8.5	23.3	287393.3	223887.9	1302.2	42203.2	83.7	0.5	15.8
1014.61	64.05	BN 1710	815366.3	610453.8	65771.1	139141.5	74.9	8.1	17.1	228391.5	187699.2	6888	31804.3	82.9	3.0	14.0
1015.09	63.57	BN 1700	770020.1	739126.9	12655.7	18237.4	98.0	1.8	2.4	390518.9	384855.2	2572.8	3090.9	98.5	0.7	0.8
1015.56	63.1	BN 1690	577049.4	559199.9	3893.2	13956.2	96.9	0.7	2.4	273158.8	268842.8	576.8	3739.1	98.4	0.2	1.4
1016.14	62.52	BN 1680	658088.6	611141.4	36815.9	10131.3	92.9	5.6	1.5	295665.2	290919.8	2423	2322.4	98.4	0.8	0.8
1016.64	62.02	BN 1670	732139	706102.8	20850	5186.2	96.4	2.8	0.7	242882.9	240954.7	372.9	1555.3	99.2	0.2	0.6
1017.13	61.53	BN 1660	486084.8	386702	71944.2	27438.5	79.6	14.8	5.6	180699	166717.1	13052.1	929.8	92.3	7.2	0.5
1017.61	61.05	BN 1650	536681.8	463512	58434	14715.7	86.4	10.9	2.7	217181.3	213823.1	2622.1	736	98.5	1.2	0.3
1017.92	60.74	BN 1640	514664.3	427450.1	52811.8	34402.5	83.1	10.3	6.7	203392.2	199724.3	2984.5	683.4	96.2	1.5	0.3
1018.2	60.46	BN 1630	618492.5	556870.4	25464.4	36157.7	90.0	4.1	5.8	261713.4	257767.2	1993.9	1952.4	98.5	0.8	0.7
1018.725	59.935	BN 1620	478127.7	453718.1	10433.7	13976	94.9	2.2	2.9	228915.7	224946.6	1865.8	2103.2	98.3	0.8	0.9
1019.095	59.565	BN 1610	539386.6	504088.5	21051.1	14247	93.5	3.9	2.6	240208.1	237668.4	1673.9	865.8	98.9	0.7	0.4
1019.49	59.17	BN 1600	648879.5	542273.1	81976.1	24630.3	83.6	12.6	3.8	265408.3	250269.5	12024	3114.8	94.3	4.5	1.2
1019.865	58.795	BN 1590	496394.5	460272.2	9961	26181.3	92.7	2.0	5.3	229025.9	224771	2270.4	1984.5	98.1	1.0	0.9
1020.115	58.545	BN 1580	649470.7	557186.3	48424.5	43860	85.8	7.5	8.8	267639.6	247673.6	11942.1	8023.9	92.5	4.5	3.0
1020.525	58.135	BN 1570	908289.3	855385.3	38164.1	14739.9	94.2	4.2	1.6	356332.2	342261.1	7953.9	6117.2	96.1	2.2	1.7
1020.83	57.83	BN 1560	677729	640305.4	28766	8657.7	94.5	4.2	1.3	328016.9	321172.8	5443.6	1400.5	97.9	1.7	0.4
1021.095	57.565	BN 1550	494801.8	473488.2	13766	7547.6	95.7	2.8	1.5	228196.4	225114	2293.9	788.6	98.6	1.0	0.3
1021.539	57.121	BN 1540	537541.4	487342.7	36850.9	13347.9	90.7	6.9	2.5	229394.5	222566.7	3918.5	2909.3	97.0	1.7	1.3
1021.715	56.945	BN 1530	612563.8	561063.2	44979.2	6521.4	91.6	7.3	1.1	243553.1	237790.1	5275.3	487.8	97.6	2.2	0.2
1021.895	56.765	BN 1520	600540.6	567345.9	6303.3	26891.3	94.5	1.0	4.5	267583.3	260984.5	1184.3	5414.4	97.5	0.4	2.0
1022.505	56.555	BN 1510	556927.8	543898.1	4037.7	8991.9	97.7	0.7	1.6	274115.9	272466.9	501.5	1147.5	99.4	0.2	0.4
1022.575	56.085	BN 1500	690698.5	612392.7	7777.8	70528	88.7	1.1	10.2	271311	260185.4	1249.6	9876	95.9	0.5	3.6
1023.04	55.62	BN 1490	584705	552597.4	22174.4	9933.2	94.5	3.8	1.7	291380.7	287733.8	1987.1	1659.8	98.7	0.7	0.6
1023.57	55.09	BN 1480	628106.1	614666.4	10314.6	3125.1	97.9	1.6	0.5	293372.8	291443.3	1472.1	457.4	99.3	0.5	0.2
1024.08	54.58	BN 1470	617847.1	594403.3	19921.8	3522	96.2	3.2	0.6	278245.1	272782.2	4886.2	576.8	98.0	1.8	0.2
1024.563	54.097	BN 1460	705088.3	685997.8	14186.5	4904.1	97.3	2.0	0.7	293302.6	291141.7	1517.7	643.2	99.3	0.5	0.2
1025.07	53.59	BN 1450	702430.6	682746.8	10008.4	9675.5	97.2	1.4	1.4	303542.4	299688.4	1950.6	1905.4	98.7	0.6	0.6
1025.36	53.3	BN 1440	602887.9	577207	11825.7	13835.2	95.7	2.0	2.3	280158.3	277312.8	1829	1016.5	99.0	0.7	0.4
1025.59	53.07	BN 1430	519847.2	504595.1	7939.8	7312.3	97.1	1.5	1.4	244909.4	243192.7	1078.4	638.3	99.3	0.4	0.3
1026.17	52.49	BN 1420	611947.3	584126.8	6389.3	21431.2	95.5	1.0	3.5	276892.4	274171.1	1277.4	1443.8	99.0	0.5	0.5
1026.68	51.98	BN 1410	609004.7	583141.3	20131.7	5731.7	95.8	3.3	0.9	280081.6	276347.4	3266.3	467.8	98.7	1.2	0.2
1026.9	51.78	BN 1400	569578.2	542965.4	18286.4	8324.4	95.3	3.2	1.5	280155.2	275813.9	2775.1	1766.1	98.4	1.0	0.6
1027.16	51.5	BN 1390	693145.3	669036.8	15333.5	8775.1	98.5	2.2	1.3	342518.8	339708.6	2618.7	191.5	99.2	0.8	0.1
1027.68	50.98	BN 1380	858765.6	779691.2	57232.8	21841.5	90.8	6.7	2.5	353616.2	344921.6	4542	4152.6	97.5	1.3	1.2
1028.18	50.48	BN 1370	863385.2	801062.3	28360.4	33962.5	92.8	3.3	3.9	359125.1	349624	2713.2	6787.9	97.4	0.8	1.9
1028.68	49.98	BN 1360	763501.4	714208.3	47126.7	2186.4	93.5	6.2	0.3	314248.8	313512.7	511.4	224.8	99.8	0.2	0.1
1028.76	49.9	BN 1340	722225.9	889448.2	22509.9	10267.8	95.5	3.1	1.4	302976.8	300382.6	1147.4	1446.8	99.1	0.4	0.5
1029.2	49.46	BN 1330	652872.1	608689.7	28158.7	16025.6	93.2	4.3	2.5	297948.5	293521.9	3362.9	1063.7	98.5	1.1	0.4
1029.68	48.98	BN 1320	723809.9	872448.9	28014.9	23348	92.9	3.9	3.2	352717.5	347034.9	3460.5	2222	98.4	1.0	0.6
1030.22	48.44	BN 1310	824598.3	721508.3	84205.7	18884.4	87.5	10.2	2.3	347365.4	338878.4	5708.2	2780.6	97.6	1.6	0.8
1030.87	47.79	BN 1300	792016.1	755414.7	24608.5	11992.9	95.4	3.1	1.5	319531.6	316835.8	1166.4	1529.4	99.2	0.4	0.5
1031.26	47.4	BN 1290	546947.7	506866.6	11510.5	28570.7	92.7	2.1	5.2	234522.8	233486.3	468.4	568.1	99.6	0.2	0.2
1031.7	46.96	BN 1280	438875.8	427846.4	3869.3	7160	97.5	0.9	1.6	219101.9	217595	557.4	949.5	99.3	0.3	0.4
1031.995	46.665	BN 1270	595708.1	549384.6	33381.9	12941.5	92.2	5.6	2.2	259133	255805.8	1577.1	1750.1	98.7	0.6	0.7
1032.23	46.43	BN 1260	597386.8	571615.5	12338.9	13432.3	95.7	2.1	2.2	276814.3	272307.5	2288.7	2220.2	98.4	0.8	0.8
1032.585	46.075	BN 1250	549890.4	541797.3	1210.9	6882.3	98.5	0.2	1.3	286532.9	285360.9	152.6	1019.4	99.6	0.1	0.4
1033.08	45.58	BN 1240	577166.2	556708.1	7473.9	12984.2	96.5	1.3	2.2	293165.1	292011.9	606.2	547.1	99.8	0.2	0.2
1033.37	45.29	BN 1230	550104.7	525319.8	16688.2	8096.8	95.5	3.0	1.5	255936	254350	450.9	1135.1	99.4	0.2	0.4
1033.9	44.76	BN 1220	527727.4	491612.7	30932.5	5182.3	93.2	5.9	1.0	249972.8	248809.5	418.4	744.9	99.5	0.2	0.3
1034.37	44.29	BN 1210	501857.3	485813.3	3675.8	12368.2	96.8	0.7	2.5	249564.2	247966	800.3	798	99.4	0.3	0.3
1034.89	43.77	BN 1200	581942.7	520848.4	7298.9	53795.4	89.5	1.3	9.2	278352.9	273968.3	1219.9	3164.7	98.4	0.4	1.1
1035.414	43.246	BN 1190	527556.4	491925.3	9284.4	26346.7	93.2	1.8	5.0	240733.3	237652.1	1517.7	1563.6	98.7	0.6	0.6
1035.9	42.76	BN 1180	459801.2	446262.1	9280	4259.1	97.1	2.0	0.9	235820.5	234123.6	890.9	805.9	99.3	0.4	0.3
1036.46	42.2	BN 1170	522409.8	475408.1	6025.2	40976.4	91.0	1.2	7.8	239440.1	237066.3	177.1	2196.7	99.0	0.1	0.9
1036.77	41.89	BN 1160	524387.8	506392	8646.1	9349.7	96.6	1.6	1.8	233362.7	231256.6	755.7	1350.4	99.1	0.3	0.8

Table F-4 -HEC-RAS Predicted Conveyances

MIKE 11	AMTD	Cross	100 Year ARI							20 Year ARI						
Chainage (km)	Chainage (km)	Section Number	Total Conveyance (m³/s)	Channel Conveyance (m³/s)	Left Conveyance (m³/s)	Right Conveyance (m³/s)	%Channel Conveyance (%)	% Left Conveyance (%)	% Right Conveyance (%)	Total Conveyance (m³/s)	Channel Conveyance (m³/s)	Left Conveyance (m³/s)	Right Conveyance (m³/s)	%Channel Conveyance (%)	% Left Conveyance (%)	% Right Conveyance (%)
1036.915	41.745	BN 1150	521717.5	510187.3	9567.8	1962.5	97.8	1.8	0.4	274588.8	274210.2	222.5	156	99.9	0.1	0.1
1037.09	41.57	BN 1140	483242.3	456311.4	5981.6	949.3	98.5	1.3	0.2	253118	252501.1	515.6	101.4	99.8	0.2	0.0
1037.175	41.485	BN 1120	564281.4	557053.4	5781.9	1446.1	98.7	1.0	0.3	306769.8	305858.4	751	160.4	99.7	0.2	0.1
1037.285	41.375	BN 1110	606397.5	596210.3	8751.2	1436.1	98.3	1.4	0.2	314160.3	313549.8	446.8	163.7	99.8	0.1	0.1
1037.625	41.035	BN 1100	668273	630874.6	34023.8	3374.6	94.4	5.1	0.5	315934.3	313468.9	1904.5	560.9	99.2	0.6	0.2
1038.085	40.575	BN 1090	771984.2	742871	25861.2	3251.9	96.2	3.3	0.4	377507.2	376667.8	401.2	438.2	99.8	0.1	0.1
1038.6	40.06	BN 1080	780244.8	718142.9	30081.4	32020.5	92.0	3.9	4.1	310550.6	307875	190.6	2485	99.1	0.1	0.8
1039.1	39.56	BN 1070	776720.8	693532.4	24707	58481.4	89.3	3.2	7.5	310879.2	305094.6	542.8	5241.7	98.1	0.2	1.7
1039.565	39.05	BN 1060	867365.1	777865.6	34320.2	55179.2	89.7	4.0	6.4	346554.9	341946.8	339.7	4268.4	98.7	0.1	1.2
1040.09	38.57	BN 1050	1010995	916934.7	47541.3	46518.8	90.7	4.7	4.6	495829.5	486939.2	6420.9	2469.5	98.2	1.3	0.5
1040.49	38.17	BN 1040	774854.1	686485.9	48835.6	39532.6	88.6	6.3	5.1	386371.8	382326.7	1769.8	2275.3	99.0	0.5	0.6
1041.01	37.56	BN 1030	727859.4	700994	9042.3	17823.1	96.3	1.2	2.4	360015	359064.4	210.2	740.4	99.7	0.1	0.2
1041.23	37.43	BN 1020	716622.3	678474.5	25394.4	12753.3	94.7	3.5	1.8	340943.3	339325.3	917.1	700.9	99.5	0.3	0.2
1041.46	37.2	BN 1010	689903	655959	22749.7	11194.3	95.1	3.3	1.6	331966	330325.2	1238.5	402.3	99.5	0.4	0.1
1041.7	36.96	BN 1000	822816.1	810255.6	3167.6	9392.9	98.5	0.4	1.1	481987.2	481430.7	161.7	394.7	99.9	0.0	0.1
1041.96	36.7	BN 990	514229.1	493029.9	13853.9	7345.3	95.9	2.7	1.4	269583	269118	319.2	145.9	99.8	0.1	0.1
1042.235	36.425	BN 980	464312.4	460631.3	820.2	2860.9	99.2	0.2	0.6	262709.1	262427.7	87.1	194.3	99.9	0.0	0.1
1042.515	36.145	BN 970	530357.8	521212.6	3583.5	5561.8	98.3	0.7	1.0	297021.4	296149.4	538.6	333.4	99.7	0.2	0.1
1042.91	35.75	BN 960	463325.4	451600.6	10414	1310.8	97.5	2.2	0.3	230165.4	229675.6	323.7	166.2	99.8	0.1	0.1
1043.725	34.935	BN 950	544818.6	528239.1	1716.4	14863	97.0	0.3	2.7	274679.2	274342.4	89.1	247.7	99.9	0.0	0.1
1044.08	34.6	BN 940	573049.8	567722.2	4648.3	679.4	99.1	0.8	0.1	330809.5	330241.4	499.1	68.9	99.8	0.2	0.0
1044.34	34.32	BN 930	501480.6	494859.2	6136.7	484.7	98.7	1.2	0.1	277576.5	277250.9	278.2	47.5	99.9	0.1	0.0
1044.605	34.055	BN 920	552262.3	540052.6	8369.9	3839.8	97.8	1.5	0.7	294222.1	293702.2	194	325.8	99.8	0.1	0.1
1044.86	33.8	BN 910	587261.9	571132.3	14228.3	1901.3	97.3	2.4	0.3	296647.7	296110.7	402.8	134.1	99.8	0.1	0.0
1045.4	33.28	BN 900	586104.1	568694.5	12159.6	5250	97.0	2.1	0.9	284003.6	283176.1	349.5	478	99.7	0.1	0.2
1045.685	32.775	BN 890	565435.6	530787.6	24979.4	9668.6	93.9	4.4	1.7	265384.8	264571.1	387.5	426.2	99.7	0.1	0.2
1046.18	32.48	BN 880	820526.6	807794.2	8263.4	4449	98.4	1.0	0.5	495585.4	495136	381.1	88.3	99.9	0.1	0.0
1046.34	32.32	BN 870	794004.1	791792.3	1028.6	1163.3	99.7	0.1	0.1	500124.9	500053.7	50.8	20.5	100.0	0.0	0.0
1046.58	32.08	BN 860	732690.6	726053.1	3288.8	3346.8	99.1	0.4	0.5	415601.5	415089.7	441.4	70.4	99.9	0.1	0.0
1046.9	31.76	BN 850	538437.8	530011.9	739.1	7686.7	98.4	0.1	1.4	271392.6	271139.9	75.9	176.8	99.9	0.0	0.1
1047.35	31.31	BN 840	477695.5	472604.9	292.8	4797.8	98.9	0.1	1.0	271995.9	271772.7	27.8	195.5	99.9	0.0	0.1
1047.915	30.745	BN 830	527418.8	517333.5	1241.3	8844	98.1	0.2	1.7	323947.8	323677.2	107.9	162.7	99.9	0.0	0.1
1048.375	30.285	BN 820	683513.9	660039.3	3219.7	20254.9	96.6	0.5	3.0	373076.8	372913	65.4	98.4	100.0	0.0	0.0
1048.89	29.77	BN 810	550818.9	543625.3	4281.6	2911.9	98.7	0.8	0.5	249710.2	249470.2	178.3	61.7	99.9	0.1	0.0
1049.12	29.54	BN 800	636618.9	627580	5293.4	3745.6	98.6	0.8	0.6	339679.2	339250.2	233.6	195.3	99.9	0.1	0.1
1049.37	29.29	BN 790	556375.6	547247.9	4626	4501.7	98.4	0.8	0.8	313385	313120.4	219	45.6	99.9	0.1	0.0
1049.59	29.07	BN 780	772196.5	760155	9080.4	2961.2	98.4	1.2	0.4	457627.4	457234.8	234	158.6	99.9	0.1	0.0
1049.87	28.79	BN 770	843340.3	835567.1	5785.5	1987.7	99.1	0.7	0.2	468646.7	468279.1	119.2	248.4	99.9	0.0	0.1
1050.43	28.23	BN 760	886615.7	859995.1	15766.6	10854	97.0	1.8	1.2	440791.8	440355.4	172.7	263.7	99.9	0.0	0.1
1050.86	27.8	BN 750	813467.8	804339.1	7461.3	1667.4	98.9	0.9	0.2	439398.7	438879.4	419.6	99.6	99.9	0.1	0.0
1051.36	27.3	BN 740	979428.2	952199.1	12336.1	14892.9	97.2	1.3	1.5	575758.4	575078.7	478.2	201.5	99.9	0.1	0.0
1051.895	26.765	BN 730	683051.1	656656.1	16530.2	9864.8	96.1	2.4	1.4	343492.1	342942.3	403.6	146.2	99.8	0.1	0.0
1052.31	26.35	BN 720	826267.9	821116.9	3802.5	1348.5	99.4	0.5	0.2	423834.1	423449.5	294.5	90.1	99.9	0.1	0.0
1052.39	26.27	BN 700	771904	769066.6	1992.7	844.7	99.6	0.3	0.1	415511.5	415092.7	339.5	79.3	99.9	0.1	0.0
1052.595	26.065	BN 690	797430.8	795181.6	1892.9	356.3	99.7	0.2	0.0	472184.2	472002.1	156.1	26	100.0	0.0	0.0
1052.64	26.02	BN 670	895785.6	893203.9	1421.3	1160.4	99.7	0.2	0.1	569525.2	569226.8	216.2	82.1	99.9	0.0	0.0
1053.32	25.34	BN 650	882519.1	880037.7	2297	184.4	99.7	0.3	0.0	588820.6	588788	12.9	19.7	100.0	0.0	0.0
1053.385	25.795	BN 660	765884	765438.2	66.1	359.7	99.9	0.0	0.0	406043	405985.1	15.4	42.5	100.0	0.0	0.0
1053.9	24.76	BN 620	759175.4	757286.8	1321	567.7	99.8	0.2	0.1	393298.8	393123	142.3	33.5	100.0	0.0	0.0
1054.64	24.02	BN 610	373898.8	370545.2	1384.3	1969.3	99.1	0.4	0.5	212549.6	212320.6	2.6	226.4	99.9	0.0	0.1
1054.68	23.98	BN 590	616422.4	614173.6	244.4	2004.4	99.6	0.0	0.3	361637.9	361185.1	22.1	430.8	99.9	0.0	0.1
1054.97	23.69	BN 560	573725.1	569553.7		4171.4	99.3	0.0	0.7	357108.4	356593.8		514.6	99.9	0.0	0.1
1055.28	23.38	BN 550	400070	397761.2	465.1	1843.7	99.4	0.1	0.5	253767.6	253538.2	40.6	188.8	99.9	0.0	0.1
1055.42	23.24	BN 540	410564.2	408816.7	1152.3	595.2	99.6	0.3	0.1	263595.4	263446.5	105.9	43	99.9	0.0	0.0
1055.96	22.7	BN 530	637301.7	633943.7	850.4	2707.6	99.5	0.1	0.4	388711.2	388552.4	27.7	131.1	100.0	0.0	0.0
1056.4	22.26	BN 520	690060.6	688476.9	1074.2	509.6	99.8	0.2	0.1	418039.8	417856.9	182.9		100.0	0.0	0.0
1056.695	21.965	BN 510	524245.3	522904.2	1181.4	159.8	99.7	0.2	0.0	318747.9	318505.8	242.1		99.9	0.1	0.0
1056.865	21.795	BN 500	595182.5	593834.1	1276.3	72.1	99.8	0.2	0.0	386837.3	386572.1	265.2	0	99.9	0.1	0.0
1056.95	21.71	BN 490	595869.8	594157.3	1386.6	325.8	99.7	0.2	0.1	409070.3	408955.1	115.2		100.0	0.0	0.0
1057.09	21.57	BN 480	555727.1	553599.5	1640.1	487.5	99.6	0.3	0.1	379754.8	379474.6	279.9		99.9	0.1	0.0
1057.53	21.13	BN 470	716434.8	714459.8	595.7	1379.3	99.7	0.1	0.2	518694.3	518346.5	153.5	194.3	99.9	0.0	0.0
1058.04	20.62	BN 460	566752.6	566476.8	198.9	77	100.0	0.0	0.0	384351.3	384327.1	14.4	9.7	100.0	0.0	0.0
1058.23	20.43	BN 450	428051.1	427585.2	187.5	278.4	99.9	0.0	0.1	275538.1	275451.6	27.6	58.8	100.0	0.0	0.0
1058.53	20.13	BN 440	428012.9	427313.3	253	448.7	99.8	0.1	0.1	281715.8	281612.4	81.2	22.2	100.0	0.0	0.0
1058.735	19.925	BN 430	457763.4	457234.5	153.9	375	99.9	0.0	0.1	327315.8	327269.5	25.1	21	100.0	0.0	0.0
1059.035	19.625	BN 420	413429.8	412057.8	292.4	1079.6	99.7	0.1	0.3	293647	293405	40	202	99.9	0.0	0.1
1059.54	19.12	BN 410	369076.9	365485.8	2577.6	1013.4	99.0	0.7	0.3	270675.8	270604.9	61.1	9.9	100.0	0.0	0.0
1059.99	18.67	BN 400	439801.5	437174.5	2089.5	537.5	99.4	0.5	0.1	307965.7	307827.3	12.4	126	100.0	0.0	0.0
1060.345	18.315	BN 390	480513.4	479728.2	153.6	631.7	99.8	0.0	0.1	328888.6	328774	51.8	60.7	100.0	0.0	0.0
1060.535	18.125	BN 380	481090.3	476514.3	97	4478.9	99.0	0.0	0.9	362444	362415.9	16.6	11.4	100.0	0.0	0.0
1061.015	17.645	BN 370	483664.5	483441.8	90.3	132.3	100.0	0.0	0.0	376366.8	376323.3	15.6	28	100.0	0.0	0.0
1061.53	17.13	BN 360	621836.4	618471.4	1387.3	1977.7	99.5	0.2	0.3	455869.6	455788.9	77	5.7	100.0	0.0	0.0
1062.02	16.64	BN 350	578440.4	577834.7	605.7		99.9	0.1	0.0	444602.7	444435	167.7		100.0	0.0	0.0
1062.535	16.125	BN 340	633435.3	632449.8	759.8	225.8	99.8	0.1	0.0	481617.6	481159.4	396.4	61.8	99.9	0.1	0.0
1062.94	15.72	BN 330	646348.4	643794.4	607.3	1946.7	99.6	0.1	0.3	484072.7	463442.5	195.7	434.6	99.9	0.0	0.1
1063.31	15.35	BN 320	802660.3	800728.6	483.7	1446.1	99.8	0.1	0.2	577484.5	577148.1	154.2	182.2	99.9	0.0	0.0
1063.645	15.015	BN 310	780613.9	776163.5	1131	3319.4	99.4	0.1	0.4	580580.8	580450.8	38.6	71.3	100.0	0.0	0.0
1064	14.66	BN 300	558124.1	555085.5	2421.7	617	99.5	0.4	0.1	445954.5	445018.7	733.6	202.2	99.8	0.2	0.0
1064.49	14.17	BN 290	464257.9	463091.8	1074.1	92	99.7	0.2	0.0	373629.5	373239.8	368.2	21.5	99.9	0.1	0.0
1065.01	13.65	BN 280	433184.8	432467.3	615.2	82.2	99.8	0.1	0.0	354494.8	354317.5	155.8	21.6	99.9	0.0	0.0
1065.503	13.157	BN 270	891344.5	889667.4	1106.4	570.6	99.8	0.1	0.1	730841.7	730533.7	123	185.1	100.0	0.0	0.0
1065.99	12.67	BN 260	1009295	1008513	782.6		99.9	0.1	0.0	839072.4	838875.4	196.9		100.0	0.0	0.0
1066.505	12.155	BN 250	1268449	1268072	165.3	211.4	100.0	0.0	0.0	1052410	1052367	42.8		100.0	0.0	0.0
1067.02	11.64	BN 240	1059809	1057229	2002.6	576.6	99.8	0.2	0.1	861251.6	861094.9	118.7	37.9	100.0	0.0	0.0
1067.485	11.175	BN 230	1141640	1135654	2314.6	3871	99.5	0.2	0.3	949708	948439.4	807.3	461.3	99.9	0.1	0.0
1067.965	10.695	BN 220	845854.8	840329.6	775.5	4749.8	99.3	0.1	0.6	684733.1	682804	212.5	1716.6	99.7	0.0	0.3

Table F-4 -HEC-RAS Predicted Conveyances

MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Total Conveyance (m^3/s)	100 Year ARI Channel Conveyance (m^3/s)	100 Year ARI Left Conveyance (m^3/s)	100 Year ARI Right Conveyance (m^3/s)	100 Year ARI %Channel Conveyance (%)	100 Year ARI % Left Conveyance (%)	100 Year ARI % Right Conveyance (%)	20 Year ARI Total Conveyance (m^3/s)	20 Year ARI Channel Conveyance (m^3/s)	20 Year ARI Left Conveyance (m^3/s)	20 Year ARI Right Conveyance (m^3/s)	20 Year ARI %Channel Conveyance (%)	20 Year ARI % Left Conveyance (%)	20 Year ARI % Right Conveyance (%)
1068.66	10	BN 210	802929.8	799237.1	46.4	3646.3	99.5	0.0	0.5	663944.1	663161.6	14.2	768.3	99.9	0.0	0.1
1069.045	9.615	BN 200	699538.5	698381.5	276.1	878.9	99.8	0.0	0.1	582574.1	582138.1	74.2	361.8	99.9	0.0	0.1
1069.535	9.125	BN 190	729623.3	728012.1	0.3	1610.8	99.8	0.0	0.2	620291.6	619611.6		680	99.9	0.0	0.1
1070.025	8.635	BN 180	672305.4	666931	3948.2	1426.2	99.2	0.6	0.2	574509.8	571363.4	2372.6	773.8	99.5	0.4	0.1
1070.53	8.13	BN 170	735552.1	734877.8	4.8	669.5	99.9	0.0	0.1	638408.4	638085.6	1.8	321	99.9	0.0	0.1
1071.04	7.62	BN 160	681083.6	680755.3	303	25.3	100.0	0.0	0.0	592053.5	591942.3	108.4	2.7	100.0	0.0	0.0
1071.52	7.14	BN 150	693197.6	691897.2	393.5	906.9	99.8	0.1	0.1	610126.3	609472.6	162.5	491.2	99.9	0.0	0.1
1072.015	6.645	BN 140	1144556	1142322	819.2	1414.7	99.8	0.1	0.1	1045402	1044709	443.2	249.8	99.9	0.0	0.0
1072.515	6.145	BN 130	815512.8	815222.7	152.5	137.7	100.0	0.0	0.0	689386.3	689316.6	69.5	0.1	100.0	0.0	0.0
1072.995	5.665	BN 120	860113.4	858733.8	1182.5	197.1	99.8	0.1	0.0	788135.1	787441	640.2	54	99.9	0.1	0.0
1073.485	5.175	BN 110	870575.9	869381.6	73.5	1121	99.9	0.0	0.1	794800.6	794707.4	34.7	58.5	100.0	0.0	0.0
1074	4.66	BN 100	734284.6	733359.6	241.4	683.6	99.9	0.0	0.1	674989.7	874448	99.3	442.4	99.9	0.0	0.1
1074.46	4.2	BN 90	752408.9	752119.2	102.6	187.2	100.0	0.0	0.0	698863.3	698682.6	59.5	121.3	100.0	0.0	0.0
1074.985	3.675	BN 80	759350.6	759161	125.2	64.4	100.0	0.0	0.0	711950.9	711856.9	54	39.9	100.0	0.0	0.0
1075.48	3.18	BN 70	630096.3	629958.3	58.3	79.7	100.0	0.0	0.0	600026.1	599929.4	40.6	56.1	100.0	0.0	0.0
1076	2.66	BN 60	699155.8	694187.9	174	4793.9	99.3	0.0	0.7	669722.1	665613.8	60.5	3847.8	99.4	0.0	0.6
1076.495	2.165	BN 50	1024902	1017693	106.2	7102.7	99.3	0.0	0.7	982467.1	976544.2	75.1	5847.9	99.4	0.0	0.6
1077.01	1.65	BN 40	640102.4	624091.8	944.6	15066	97.5	0.1	2.4	619894.9	605984.4	815.7	13094.8	97.8	0.1	2.1
1077.51	1.15	BN 30	979495	969485.4	556.9	9450.7	99.0	0.1	1.0	959806.3	950537.6	487.6	8781.1	99.0	0.1	0.9
1078.04	0.62	BN 20	1810954	1810598	26.7	329.6	100.0	0.0	0.0	1786151	1785846	23.1	281.7	100.0	0.0	0.0
1078.525	0.135	BN 10	2024518	2023294	1090.2	133.7	99.9	0.1	0.0	2006622	2005547	961.4	113.5	99.9	0.0	0.0
1078.66	0		1247635	1221080	26495.4	60	97.9	2.1	0.0	1247635	1221080	26495.4	60	97.9	2.1	0.0

Appendix G - Hydraulic Reference Sheets

CENTENARY BRIDGE

HYDRAULIC STRUCTURE REFERENCE SHEET - VERS 3.1

CREEK:	Brisbane River	DATE OF SURVEY	
LOCATION:	Centenary Highway	UBD REF:	177 Q17
AERIAL PHOTO No:	Film BCC100, Sheet 5	STRUCTURE ID	S1
BCC XS No:	BN 1350	AMTD(m):	49 940

STRUCTURE DESCRIPTION: Bridge; Concrete Piers and Superstructure

STRUCTURE SIZE: 4 Spans @ 42.3m; 1 Span @ 48.3m.
For Culverts: Number of cells/pipes & sizes For Bridges: Number of Spans & their lengths.

UPSTREAM INVERT LEVEL: -15.9 UPSTREAM OBVERT LEVEL:

DOWNSTREAM INVERT LEVEL: -15.9 DOWNSTREAM OBVERT LEVEL:
For culverts give floor level. For bridges give bed level.

For Culverts
LENGTH OF CULVERT BARREL AT INVERT (m):

LENGTH OF CULVERT BARREL AT OBVERT (m):

TYPE OF LINING:
(e.g. concrete, stones, brick, corrugated iron)

IS THERE A SURVEYED WEIR PROFILE?
If yes give details ie. plan number and/or survey book number.
Note This Section should be the highest part of the road eg crown, kerb, hand rails guard rails whichever is higher.

WEIR WIDTH (m): 10.6m LOWEST POINT OF WEIR (m AHD): 10.0m PIER WIDTH: 0.76m
(In the direction of flow, ie. distance from u/s face to d/s face)

HEIGHT OF GUARD RAILS: 1067mm

DESCRIPTION OF ALL HAND AND GAURD RAILS AND HEIGHTS TO TOP AND UNDERSIDE OF GUARD RAILS.

Posts:	102mm x 102mm
Verticals:	16mm dia
Handrails:	102 x 52 TFC

The following should also be provided.
Wingwall and Headwall details, entrance details eg pipe flush with embankment or projecting, socket or square end, details of entrance rounding, levels.
For Bridges, details of piers and section under bridge including abutment details.
Specify Survey Book No.

CONSTRUCTION DATE OF CURRENT STRUCTURE: PLAN NUMBER:

HAS THE STRUCTURE BEEN UPGRADED? No
If yes, explain type and date of upgrade. Include plan number and location if applicable.

ADDITIONAL COMMENTS: Structure has approximately 41 year ARI flood Immunity

SUMMARY OF STRUCTURE CHARACTERISTICS:

ARI	DISCHARGE		WATER SURFACE	MAX	AREA		VELOCITY	
	Qweir	Qstructure	ELEVATION	AFFLUX	WEIR	STRUCTURE	WEIR	STRUCTURE
(years)	(m^3/s)	(m^3/s)	(m) AHD	(mm)	(m^2)	(m^2)	(m\s)	(m\s)
PMF	26266	14571	33.19	0.55	8904	3389	2.95	4.30
10000	18471	14259	28.28	0.57	6597	3316	2.80	4.30
2000	10615	13489	23.35	0.54	4006	3306	2.65	4.08
1000	5428	12829	21.31	0.24	3193	3289	1.70	3.90
500	3052	11233	18.61	0.22	1908	3256	1.60	3.45
200	1475	10122	16.53	0.22	997	3265	1.48	3.10
100	418	8912	14.18	0.15	418	3301	1.00	2.70
50	17	7165	11.71	0.05	17	2866	1.40	2.50
20	-	3443	6.14	0.08	-	1812	-	1.90
10	-	1568	2.71	0.04	-	1307	-	1.20
5	-	935	1.69	0.02	-	1140	-	0.82
2	-	529	1.2	0.01	-	1058	-	0.50

Note: Qweir & Qstructure are the maximum discharges through the structure and may occur at different times.

STRUCTURE 1-CENTENARY BRIDGE (LOOKING UPSTREAM)

INDOOROOPILLY - WALTER TAYLOR BRIDGE

HYDRAULIC STRUCTURE REFERENCE SHEET - VERS 3.1

CREEK:	Brisbane River	DATE OF SURVEY	
LOCATION:	Honour Avenue	UBD REF:	178 K7
AERIAL PHOTO No:	Film BCC100, Sheet 4	STRUCTURE ID	S2
BCC XS No:	BN 1130	AMTD(m):	41 550

STRUCTURE DESCRIPTION: Single span suspension bridge; concrete towers; steel girders; timber decking.

STRUCTURE SIZE: Span: 152.4m
For Culverts: Number of cells/pipes & sizes For Bridges: Number of Spans & their lengths.

UPSTREAM INVERT LEVEL: -15.9 UPSTREAM OBVERT LEVEL:

DOWNSTREAM INVERT LEVEL: -15.7 DOWNSTREAM OBVERT LEVEL:
For culverts give floor level. For bridges give bed level.

For Culverts
LENGTH OF CULVERT BARREL AT INVERT (m):

LENGTH OF CULVERT BARREL AT OBVERT (m):

TYPE OF LINING:
(e.g. concrete, stones, brick, corrugated iron)

IS THERE A SURVEYED WEIR PROFILE?
If yes give details ie. plan number and/or survey book number.
Note This Section should be the highest part of the road eg crown, kerb, hand rails guard rails whichever is higher.

WEIR WIDTH (m): 10.3m LOWEST POINT OF WEIR (m AHD): 15.0m PIER WIDTH: 10.1m
(In the direction of flow, ie. distance from u/s face to d/s face) (Base of tower)

HEIGHT OF GUARD RAILS: 1067 mm

DESCRIPTION OF ALL HAND AND GAURD RAILS AND HEIGHTS TO TOP AND UNDERSIDE OF GUARD RAILS.

Galv. steel chain fencing

The following should also be provided.
Wingwall and Headwall details, entrance details eg pipe flush with embankment or projecting, socket or square end, details of entrance rounding, levels.
For Bridges, details of piers and section under bridge including abutment details.
Specify Survey Book No.

CONSTRUCTION DATE OF CURRENT STRUCTURE: PLAN NUMBER:

HAS THE STRUCTURE BEEN UPGRADED? No
If yes, explain type and date of upgrade. Include plan number and location if applicable.

ADDITIONAL COMMENTS: Greater than 100 year ARI flood immunity

NB Walter Taylor Bridge & Albert Bridge modelled as a single bridge

INDOOROOPILLY - RAIL BRIDGE

HYDRAULIC STRUCTURE REFERENCE SHEET - VERS 3.1

CREEK:	Brisbane River	DATE OF SURVEY	
LOCATION:	Railway crossing, Indooroopilly	UBD REF:	178 K7
AERIAL PHOTO No:	Film BCC100, Sheet 4	STRUCTURE ID	S2
BCC XS No:	BN 1130	AMTD(m):	41 550

STRUCTURE DESCRIPTION: Truss bridge; Steel superstructure; Concrete piers.

STRUCTURE SIZE: 2 Spans @ 104.2m
For Culverts: Number of cells/pipes & sizes For Bridges: Number of Spans & their lengths.

UPSTREAM INVERT LEVEL: -15.9 UPSTREAM OBVERT LEVEL:

DOWNSTREAM INVERT LEVEL: -15.7 DOWNSTREAM OBVERT LEVEL:
For culverts give floor level. For bridges give bed level.

For Culverts
LENGTH OF CULVERT BARREL AT INVERT (m):

LENGTH OF CULVERT BARREL AT OBVERT (m):

TYPE OF LINING:
(e.g. concrete, stones, brick, corrugated iron)

IS THERE A SURVEYED WEIR PROFILE?
If yes give details ie. plan number and/or survey book number.
Note This Section should be the highest part of the road eg crown, kerb, hand rails guard rails whichever is higher.

WEIR WIDTH (m): 8.4m LOWEST POINT OF WEIR (m AHD): 15.0m PIER WIDTH:
(In the direction of flow, ie. distance from u/s face to d/s face)

HEIGHT OF GUARD RAILS: 1067 mm

DESCRIPTION OF ALL HAND AND GAURD RAILS AND HEIGHTS TO TOP AND UNDERSIDE OF GUARD RAILS.

The following should also be provided.
Wingwall and Headwall details, entrance details eg pipe flush with embankment or projecting, socket or square end, details of entrance rounding, levels.
For Bridges, details of piers and section under bridge including abutment details.
Specify Survey Book No.

CONSTRUCTION DATE OF CURRENT STRUCTURE: PLAN NUMBER:

HAS THE STRUCTURE BEEN UPGRADED? No
If yes, explain type and date of upgrade. Include plan number and location if applicable.

ADDITIONAL COMMENTS: Greater than 100 year ARI immunity

NB Walter Taylor Bridge & Albert Bridge modelled as a single bridge

SUMMARY OF STRUCTURE CHARACTERISTICS:

ARI (years)	DISCHARGE Qweir (m^3/s)	DISCHARGE Qstructure (m^3/s)	WATER SURFACE ELEVATION (m) AHD	MAX AFFLUX (mm)	AREA WEIR (m^2)	AREA STRUCTURE (m^2)	VELOCITY WEIR (m\s)	VELOCITY STRUCTURE (m\s)
PMF	8117	27525	29.78	2.45	1249	4170	6.5	6.6
10000	4247	24120	24.35	0.6	809	4088	5.25	5.9
2000	438	19920	19.68	0.07	219	4065	2	4.9
1000	33	17802	17.94	0.06	19	4046	1.7	4.4
500	-	14011	15.33	0.12	-	3892	-	3.6
200	-	11470	13.47	0.08	-	3700	-	3.1
100	-	9226	11.42	0.11	-	3181	-	2.9
50	-	7082	9.25	0.04	-	2833	-	2.5
20	-	3409	4.57	0.15	-	2041	-	1.67
10	-	1567	2.05	0.06	-	1741	-	0.9
5	-	934	1.41	0.02	-	1583	-	0.59
2	-	529	1.11	0.01	-	1511	-	0.35

Note: Qweir & Qstructure are the maximum discharges through the structure and may occur at different times.

STRUCTURE 2-INDOOROOPILLY BRIDGES (LOOKING UPSTREAM)

STRUCTURE 2-INDOOROOPILLY BRIDGES (LOOKING DOWNSTREAM)

MERIVAL BRIDGE

HYDRAULIC STRUCTURE REFERENCE SHEET - VERS 3.1

CREEK: Brisbane River		DATE OF SURVEY	
LOCATION: Railway Link: South Brisbane - Roma Street		UBD REF:	159 J11
AERIAL PHOTO No:	Film BCC100, Sheet 3	STRUCTURE ID	S3
BCC XS No:	BN 710	AMTD(m):	26 290

STRUCTURE DESCRIPTION: Single span arch bridge and approaches; Concrete deck & piers.

STRUCTURE SIZE: Centre span: 132.9m; Approach spans either side: 33.45m.
For Culverts: Number of cells/pipes & sizes For Bridges: Number of Spans & their lengths.

UPSTREAM INVERT LEVEL: -15.9 UPSTREAM OBVERT LEVEL:

DOWNSTREAM INVERT LEVEL: -15.4 DOWNSTREAM OBVERT LEVEL:
For culverts give floor level. For bridges give bed level.

For Culverts
LENGTH OF CULVERT BARREL AT INVERT (m):

LENGTH OF CULVERT BARREL AT OBVERT (m):

TYPE OF LINING:
(e.g. concrete, stones, brick, corrugated iron)

IS THERE A SURVEYED WEIR PROFILE?
If yes give details ie. plan number and/or survey book number.
Note This Section should be the highest part of the road eg crown, kerb, hand rails guard rails whichever is higher.

WEIR WIDTH (m): 13.4m LOWEST POINT OF WEIR (m AHD): 15.1m PIER WIDTH: Varies
(In the direction of flow, ie. distance from u/s face to d/s face)

HEIGHT OF GUARD RAILS: 1067 mm

DESCRIPTION OF ALL HAND AND GAURD RAILS AND HEIGHTS TO TOP AND UNDERSIDE OF GUARD RAILS.

The following should also be provided.
Wingwall and Headwall details, entrance details eg pipe flush with embankment or projecting, socket or square end, details of entrance rounding, levels.
For Bridges, details of piers and section under bridge including abutment details.
Specify Survey Book No.

CONSTRUCTION DATE OF CURRENT STRUCTURE: PLAN NUMBER:

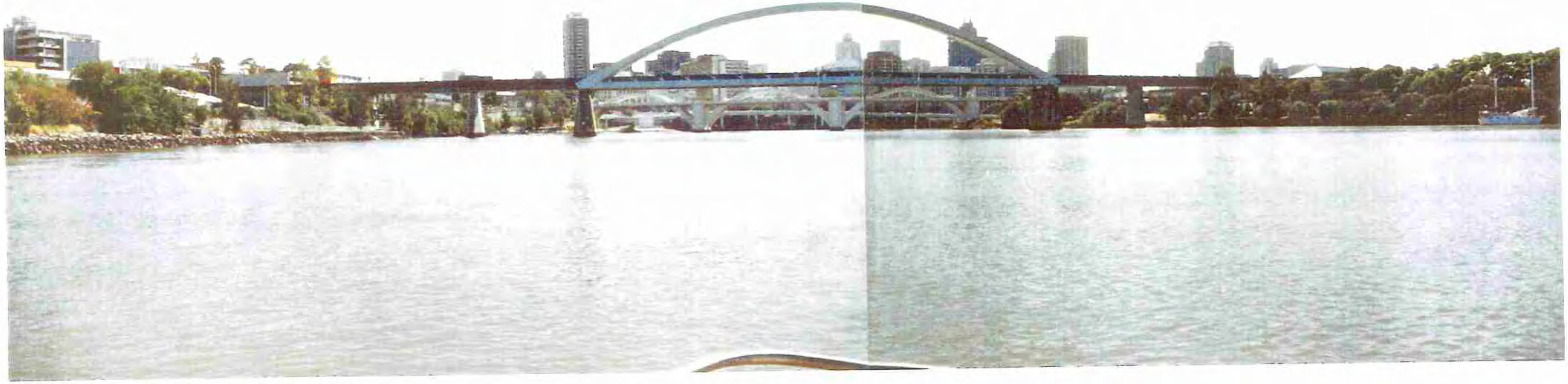
HAS THE STRUCTURE BEEN UPGRADED? No
If yes, explain type and date of upgrade. Include plan number and location if applicable.

ADDITIONAL COMMENTS: Greater than 100 year ARI immunity

SUMMARY OF STRUCTURE CHARACTERISTICS:

ARI	DISCHARGE		WATER SURFACE	MAX	AREA		VELOCITY	
(years)	Qweir (m^3/s)	Qstructure (m^3/s)	ELEVATION (m) AHD	AFFLUX (mm)	WEIR (m^2)	STRUCTURE (m^2)	WEIR (m\s)	STRUCTURE (m\s)
PMF	3371	31783	24.09	1.53	648	4414	5.2	7.20
10000	1700	26470	20.07	0.71	415	4412	4.1	6.00
2000	124	19741	16.26	0.88	62	3525	2.0	5.60
1000	-	17228	14.32	0.89	-	3132	-	5.50
500	-	12282	11.36	0.78	-	2456	-	5.00
200	-	11120	9.55	0.72	-	2366	-	4.70
100	-	9001	7.74	0.66	-	2023	-	4.45
50	-	6868	5.97	0.59	-	1761	-	3.90
20	-	3317	2.55	0.16	-	1508	-	2.20
10	-	1566	1.33	0.03	-	1491	-	1.05
5	-	982	1.11	0.01	-	1444	-	0.68
2	-	570	1	0	-	1425	-	0.40

Note: Qweir & Qstructure are the maximum discharges through the structure and may occur at different times.



STRUCTURE 3-MERIVALE BRIDGE (LOOKING DOWNSTREAM)

WILLIAM JOLLY BRIDGE

HYDRAULIC STRUCTURE REFERENCE SHEET - VERS 3.1

CREEK:	Brisbane River	DATE OF SURVEY	
LOCATION:	Grey Street	UBD REF:	159 K11
AERIAL PHOTO No:	Film BCC100, Sheet 3	STRUCTURE ID	S4
BCC XS No:	BN 680	AMTD(m):	26 035

STRUCTURE DESCRIPTION: Arch bridge with approaches; Concrete and granite piers, steel girders, concrete deck.

STRUCTURE SIZE: 3 spans @ 72.5m.
For Culverts: Number of cells/pipes & sizes For Bridges: Number of Spans & their lengths.

UPSTREAM INVERT LEVEL: -15.9 UPSTREAM OBVERT LEVEL:

DOWNSTREAM INVERT LEVEL: -15.4 DOWNSTREAM OBVERT LEVEL:
For culverts give floor level. For bridges give bed level.

For Culverts
LENGTH OF CULVERT BARREL AT INVERT (m):

LENGTH OF CULVERT BARREL AT OBVERT (m):

TYPE OF LINING:
(e.g. concrete, stones, brick, corrugated iron)

IS THERE A SURVEYED WEIR PROFILE?
If yes give details ie. plan number and/or survey book number.
Note This Section should be the highest part of the road eg crown, kerb, hand rails guard rails whichever is higher.

WEIR WIDTH (m): 20.1m LOWEST POINT OF WEIR (m AHD): 14.3m PIER WIDTH: 6.6m
(In the direction of flow, ie. distance from u/s face to d/s face)

HEIGHT OF GUARD RAILS: 1067 mm

DESCRIPTION OF ALL HAND AND GAURD RAILS AND HEIGHTS TO TOP AND UNDERSIDE OF GUARD RAILS.

Concrete balustrade

The following should also be provided.
Wingwall and Headwall details, entrance details eg pipe flush with embankment or projecting, socket or square end, details of entrance rounding, levels.
For Bridges, details of piers and section under bridge including abutment details.
Specify Survey Book No.

CONSTRUCTION DATE OF CURRENT STRUCTURE: PLAN NUMBER:

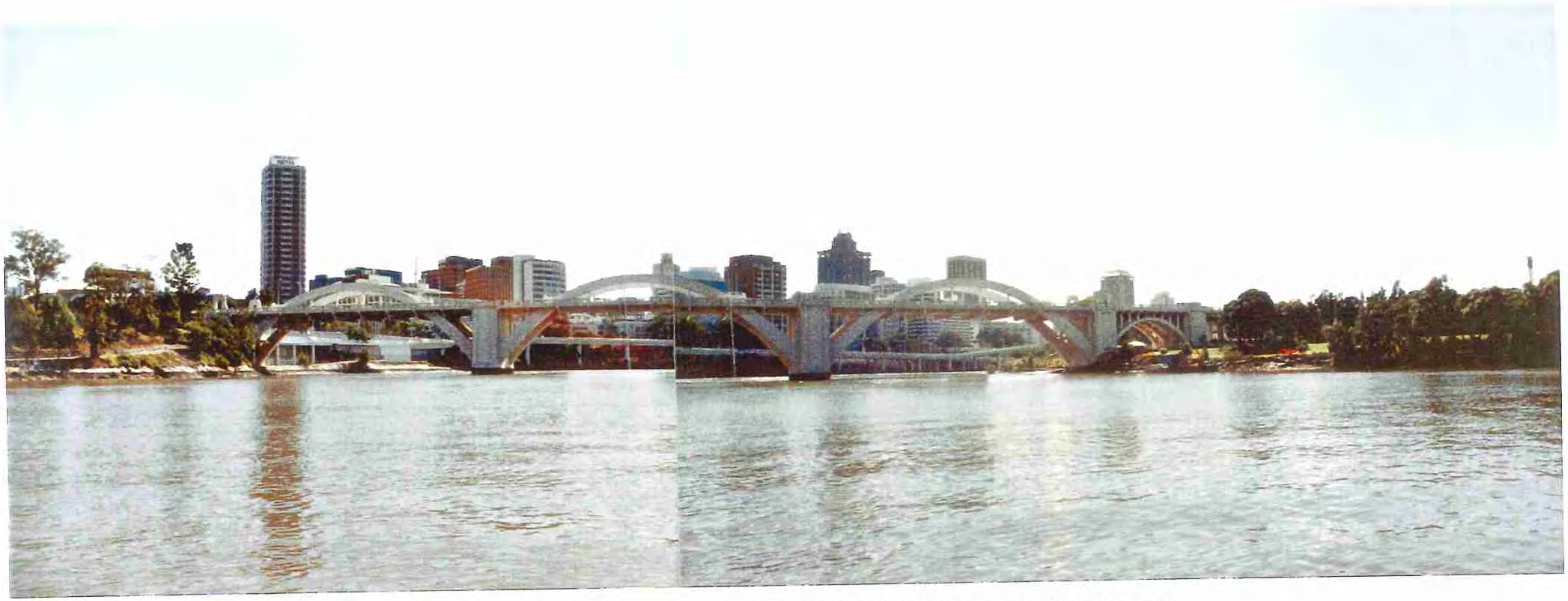
HAS THE STRUCTURE BEEN UPGRADED? No
If yes, explain type and date of upgrade. Include plan number and location if applicable.

ADDITIONAL COMMENTS: Greater than 100 year ARI immunity

SUMMARY OF STRUCTURE CHARACTERISTICS:

ARI	DISCHARGE		WATER SURFACE	MAX	AREA		VELOCITY	
(years)	Qweir (m^3/s)	Qstructure (m^3/s)	ELEVATION (m) AHD	AFFLUX (mm)	WEIR (m^2)	STRUCTURE (m^2)	WEIR (m\s)	STRUCTURE (m\s)
PMF	4490	30664	22.02	1.07	863	3566	5.2	8.6
10000	1379	27061	18.95	1.42	394	3165	3.5	8.6
2000	-	19733	15.03	1.85	-	2667	-	7.4
1000	-	17182	13.15	1.29	-	2643	-	6.5
500	-	13284	10.38	0.88	-	2506	-	5.3
200	-	11122	8.69	0.59	-	2224	-	5.0
100	-	9031	7.01	0.49	-	2150	-	4.2
50	-	6875	5.33	0.34	-	2022	-	3.4
20	-	3317	2.38	0.07	-	1783	-	1.9
10	-	1566	1.3	0.02	-	1702	-	0.9
5	-	982	1.1	0.01	-	1637	-	0.6
2	-	570	1	0.01	-	1629	-	0.4

Note: Qweir & Qstructure are the maximum discharges through the structure and may occur at different times.



STRUCTURE 4-WILLIAM JOLLY BRIDGE (LOOKING DOWNSTREAM)

VICTORIA BRIDGE

HYDRAULIC STRUCTURE REFERENCE SHEET - VERS 3.1

CREEK:	Brisbane River	DATE OF SURVEY	
LOCATION:	Melbourne Street	UBD REF:	159 M12
AERIAL PHOTO No:	Film BCC100, Sheet 3	STRUCTURE ID	S5
BCC XS No:	BN 640	AMTD(m):	25 305

STRUCTURE DESCRIPTION: Concrete bridge; Single span with cantilever ends resting on abutments.

STRUCTURE SIZE: Centre span: 136.1m; End contilevers: 85.3m.
For Culverts: Number of cells/pipes & sizes For Bridges: Number of Spans & their lengths.

UPSTREAM INVERT LEVEL: -15.9 UPSTREAM OBVERT LEVEL:

DOWNSTREAM INVERT LEVEL: -15.4 DOWNSTREAM OBVERT LEVEL:
For culverts give floor level. For bridges give bed level.

For Culverts
LENGTH OF CULVERT BARREL AT INVERT (m):

LENGTH OF CULVERT BARREL AT OBVERT (m):

TYPE OF LINING:
(e.g. concrete, stones, brick, corrugated iron)

IS THERE A SURVEYED WEIR PROFILE?
If yes give details ie. plan number and/or survey book number.
Note This Section should be the highest part of the road eg crown, kerb, hand rails guard rails whichever is higher.

WEIR WIDTH (m): 21.9m LOWEST POINT OF WEIR (m AHD): 9.2m PIER WIDTH: 4.0m (Base)
(In the direction of flow, ie. distance from u/s face to d/s face)

HEIGHT OF GUARD RAILS: 1067 mm

DESCRIPTION OF ALL HAND AND GAURD RAILS AND HEIGHTS TO TOP AND UNDERSIDE OF GUARD RAILS.

The following should also be provided.
Wingwall and Headwall details, entrance details eg pipe flush with embankment or projecting, socket or square end, details of entrance rounding, levels.
For Bridges, details of piers and section under bridge including abutment details.
Specify Survey Book No.

CONSTRUCTION DATE OF CURRENT STRUCTURE: PLAN NUMBER:

HAS THE STRUCTURE BEEN UPGRADED? No
If yes, explain type and date of upgrade. Include plan number and location if applicable.

ADDITIONAL COMMENTS: Greater than 100 year ARI immunity

SUMMARY OF STRUCTURE CHARACTERISTICS:

ARI	DISCHARGE		WATER SURFACE	MAX	AREA		VELOCITY	
	Qweir	Qstructure	ELEVATION	AFFLUX	WEIR	STRUCTURE	WEIR	STRUCTURE
(years)	(m^3/s)	(m^3/s)	(m) AHD	(mm)	(m^2)	(m^2)	(m\s)	(m\s)
PMF	5216	29938	19.18	0.22	931	4217	5.60	7.10
10000	1492	26711	17.85	1.37	271	4174	5.50	6.40
2000	167	19494	13.32	0.4	93	4148	1.80	4.70
1000	50	17102	11.91	0.29	42	4072	1.20	4.20
500	-	13277	9.54	0.2	-	3688	-	3.60
200	-	11017	8.07	0.17	-	3497	-	3.15
100	-	9004	6.47	0.04	-	3335	-	2.70
50	-	6866	4.95	0.05	-	2985	-	2.30
20	-	3317	2.27	0.02	-	2288	-	1.45
10	-	1566	1.27	0.01	-	2061	-	0.76
5	-	982	1.08	0	-	1964	-	0.50
2	-	570	0.99	0.01	-	1966	-	0.29

Note: Qweir & Qstructure are the maximum discharges through the structure and may occur at different times.

STRUCTURE 5-VICTORIA BRIDGE (LOOKING UPSTREAM)

CAPTAIN COOK BRIDGE

HYDRAULIC STRUCTURE REFERENCE SHEET - VERS 3.1

CREEK:	Brisbane River	DATE OF SURVEY	
LOCATION:	Riverside Expressway	UBD REF:	159 R16
AERIAL PHOTO No:	Film BCC100, Sheet 3	STRUCTURE ID	S6
BCC XS No:	BN 600	AMTD(m):	24 000

STRUCTURE DESCRIPTION: Bridge; Concrete piers, girders and deck.

STRUCTURE SIZE: 1 @ 42.7m; 1 @ 182.9m; 1 @ 146.3m; 1 @ 109.7m; 1 @ 73.2m.
For Culverts: Number of cells/pipes & sizes For Bridges: Number of Spans & their lengths.

UPSTREAM INVERT LEVEL: -15.9 UPSTREAM OBVERT LEVEL:

DOWNSTREAM INVERT LEVEL: -15.4 DOWNSTREAM OBVERT LEVEL:
For culverts give floor level. For bridges give bed level.

For Culverts
LENGTH OF CULVERT BARREL AT INVERT (m):

LENGTH OF CULVERT BARREL AT OBVERT (m):

TYPE OF LINING:
(e.g. concrete, stones, brick, corrugated iron)

IS THERE A SURVEYED WEIR PROFILE?
If yes give details ie. plan number and/or survey book number.
Note This Section should be the highest part of the road eg crown, kerb, hand rails guard rails whichever is higher.

WEIR WIDTH (m): 27.1m LOWEST POINT OF WEIR (m AHD): 8.8m PIER WIDTH: 5.6m
(In the direction of flow, ie. distance from u/s face to d/s face) (Base)

HEIGHT OF GUARD RAILS: 1067 mm

DESCRIPTION OF ALL HAND AND GAURD RAILS AND HEIGHTS TO TOP AND UNDERSIDE OF GUARD RAILS.

The following should also be provided.
Wingwall and Headwall details, entrance details eg pipe flush with embankment or projecting, socket or square end, details of entrance rounding, levels.
For Bridges, details of piers and section under bridge including abutment details.
Specify Survey Book No.

CONSTRUCTION DATE OF CURRENT STRUCTURE: PLAN NUMBER:

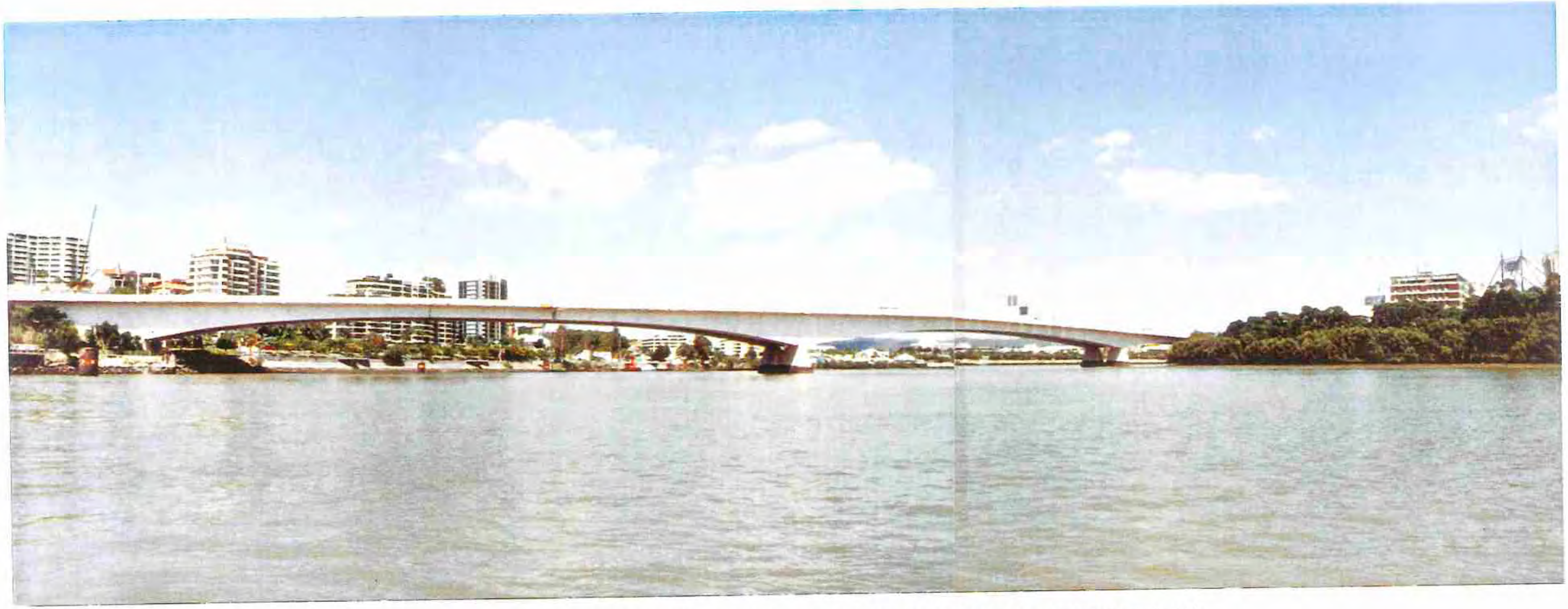
HAS THE STRUCTURE BEEN UPGRADED? No
If yes, explain type and date of upgrade. Include plan number and location if applicable.

ADDITIONAL COMMENTS: Greater than 100 year ARI immunity

SUMMARY OF STRUCTURE CHARACTERISTICS:

ARI	DISCHARGE		WATER SURFACE ELEVATION	MAX AFFLUX	AREA		VELOCITY	
(years)	Qweir (m^3/s)	Qstructure (m^3/s)	(m) AHD	(mm)	WEIR (m^2)	STRUCTURE (m^2)	WEIR (m\s)	STRUCTURE (m\s)
PMF	3625	31528	18.63	0.54	1450	7332	2.50	4.30
10000	1508	26562	15.93	0.31	794	7277	1.90	3.65
2000	210	19373	12.31	0.19	117	6680	1.80	2.90
1000	62	16919	11.02	0.16	56	6385	1.10	2.65
500	-	13273	8.82	0.13	-	5530	-	2.40
200	-	11044	7.42	0.11	-	5137	-	2.15
100	-	8987	6.03	0.09	-	4494	-	2.00
50	-	6847	4.57	0.05	-	3913	-	1.75
20	-	3316	2.09	0.03	-	3015	-	1.10
10	-	1566	1.21	0.01	-	2747	-	0.57
5	-	982	1.06	0.01	-	2654	-	0.37
2	-	571	0.98	0.01	-	2719	-	0.21

Note: Qweir & Qstructure are the maximum discharges through the structure and may occur at different times.



STRUCTURE 6-CAPTAIN COOK BRIDGE (LOOKING UPSTREAM)

STORY BRIDGE

HYDRAULIC STRUCTURE REFERENCE SHEET - VERS 3.1

CREEK:	Brisbane River	DATE OF SURVEY	
LOCATION:	Bradfield Highway	UBD REF:	160 B9
AERIAL PHOTO No:	Film BCC100, Sheet 3	STRUCTURE ID	S7
BCC XS No:	BN 495	AMTD(m):	21 740

STRUCTURE DESCRIPTION: Suspension bridge; Steel superstructure, concrete piers. Single span with cantilever ends and an extensive southern approach.

STRUCTURE SIZE: Centre span: 281.6m; Cantilever ends: 82.1m.
For Culverts: Number of cells/pipes & sizes For Bridges: Number of Spans & their lengths.

UPSTREAM INVERT LEVEL: -15.9 UPSTREAM OBVERT LEVEL:

DOWNSTREAM INVERT LEVEL: -15.5 DOWNSTREAM OBVERT LEVEL:
For culverts give floor level. For bridges give bed level.

For Culverts
LENGTH OF CULVERT BARREL AT INVERT (m):

LENGTH OF CULVERT BARREL AT OBVERT (m):

TYPE OF LINING:
(e.g. concrete, stones, brick, corrugated iron)

IS THERE A SURVEYED WEIR PROFILE?
If yes give details ie. plan number and/or survey book number.
Note This Section should be the highest part of the road eg crown, kerb, hand rails guard rails whichever is higher.

WEIR WIDTH (m): 28.2m LOWEST POINT OF WEIR (m AHD): 29.8m PIER WIDTH: 9.6m (Base)
(In the direction of flow, ie. distance from u/s face to d/s face)

HEIGHT OF GUARD RAILS: 1067 mm

DESCRIPTION OF ALL HAND AND GAURD RAILS AND HEIGHTS TO TOP AND UNDERSIDE OF GUARD RAILS.

The following should also be provided.
Wingwall and Headwall details, entrance details eg pipe flush with embankment or projecting, socket or square end, details of entrance rounding, levels.
For Bridges, details of piers and section under bridge including abutment details.
Specify Survey Book No.

CONSTRUCTION DATE OF CURRENT STRUCTURE: PLAN NUMBER:

HAS THE STRUCTURE BEEN UPGRADED? No
If yes, explain type and date of upgrade. Include plan number and location if applicable.

ADDITIONAL COMMENTS: Greater than 100 year ARI immunity

SUMMARY OF STRUCTURE CHARACTERISTICS:

ARI (years)	DISCHARGE Qweir (m^3/s)	Qstructure (m^3/s)	WATER SURFACE ELEVATION (m) AHD	MAX AFFLUX (mm)	AREA WEIR (m^2)	STRUCTURE (m^2)	VELOCITY WEIR (m\s)	STRUCTURE (m\s)
PMF	-	35152	17.1	0.69	-	7479	-	4.7
10000	-	27828	14.67	0.59	-	6472	-	4.3
2000	-	19486	11.28	0.48	-	5128	-	3.8
1000	-	16963	10.05	0.44	-	4585	-	3.7
500	-	13268	7.87	0.17	-	4021	-	3.3
200	-	11004	6.49	0.12	-	3550	-	3.1
100	-	8902	5.17	0.09	-	3179	-	2.8
50	-	6842	2.4	0.07	-	2851	-	2.4
20	-	3316	1.84	0.02	-	2369	-	1.4
10	-	1566	1.15	0.01	-	2175	-	0.72
5	-	983	1.02	0.01	-	2137	-	0.46
2	-	572	0.96	0.01	-	2119	-	0.27

Note: Qweir & Qstructure are the maximum discharges through the structure and may occur at different times.

STRUCTURE 7-STORY BRIDGE (LOOKING UPSTREAM)

SINCLAIR KNIGHT MERZ

GATEWAY BRIDGE

HYDRAULIC STRUCTURE REFERENCE SHEET - VERS 3.1

CREEK: Brisbane River		DATE OF SURVEY	
LOCATION: Gateway Motorway		UBD REF:	141 M20
AERIAL PHOTO No:	Film BCC100, Sheet 2	STRUCTURE ID	
BCC XS No:	BN210	AMTD(m):	10 000

STRUCTURE DESCRIPTION: Bridge; Concrete piers, girders and deck.
Single span with cantilever ends and extensive north and south approachs.

STRUCTURE SIZE: Centre span: 260m; Contilever ends: 130m.
For Culverts: Number of cells/pipes & sizes For Bridges: Number of Spans & their lengths.

UPSTREAM INVERT LEVEL: UPSTREAM OBVERT LEVEL:

DOWNSTREAM INVERT LEVEL: DOWNSTREAM OBVERT LEVEL:
For culverts give floor level. For bridges give bed level.

For Culverts
LENGTH OF CULVERT BARREL AT INVERT (m):

LENGTH OF CULVERT BARREL AT OBVERT (m):

TYPE OF LINING:
(e.g. concrete, stones, brick, corrugated iron)

IS THERE A SURVEYED WEIR PROFILE?
If yes give details ie. plan number and/or survey book number.
Note This Section should be the highest part of the road eg crown, kerb, hand rails guard rails whichever is higher.

WEIR WIDTH (m): 21.9m LOWEST POINT OF WEIR (m AHD): >PMF Flood Level PIER WIDTH: 13.5m
(In the direction of flow, ie. distance from u/s face to d/s face)

HEIGHT OF GUARD RAILS: 1067 mm

DESCRIPTION OF ALL HAND AND GAURD RAILS AND HEIGHTS TO TOP AND UNDERSIDE OF GUARD RAILS.

The following should also be provided.
Wingwall and Headwall details, entrance details eg pipe flush with embankment or projecting, socket or square end, details of entrance rounding, levels.
For Bridges, details of piers and section under bridge including abutment details.
Specify Survey Book No.

CONSTRUCTION DATE OF CURRENT STRUCTURE: PLAN NUMBER:

HAS THE STRUCTURE BEEN UPGRADED? No
If yes, explain type and date of upgrade. Include plan number and location if applicable.

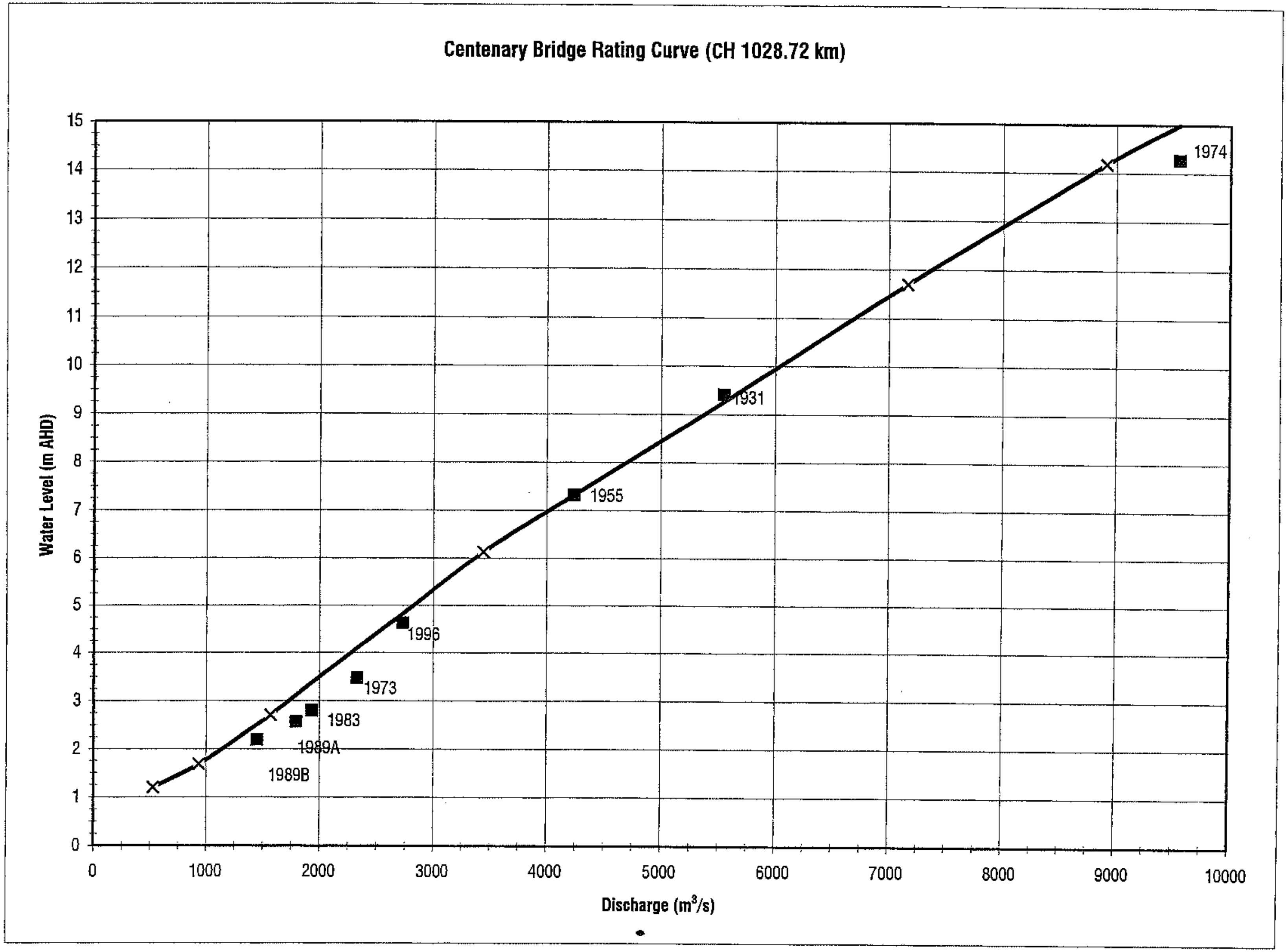
ADDITIONAL COMMENTS: Greater than 100 year ARI immunity

STRUCTURE 8-GATEWAY BRIDGE (LOOKING UPSTREAM)

Appendix H - Rating Curves at Structures

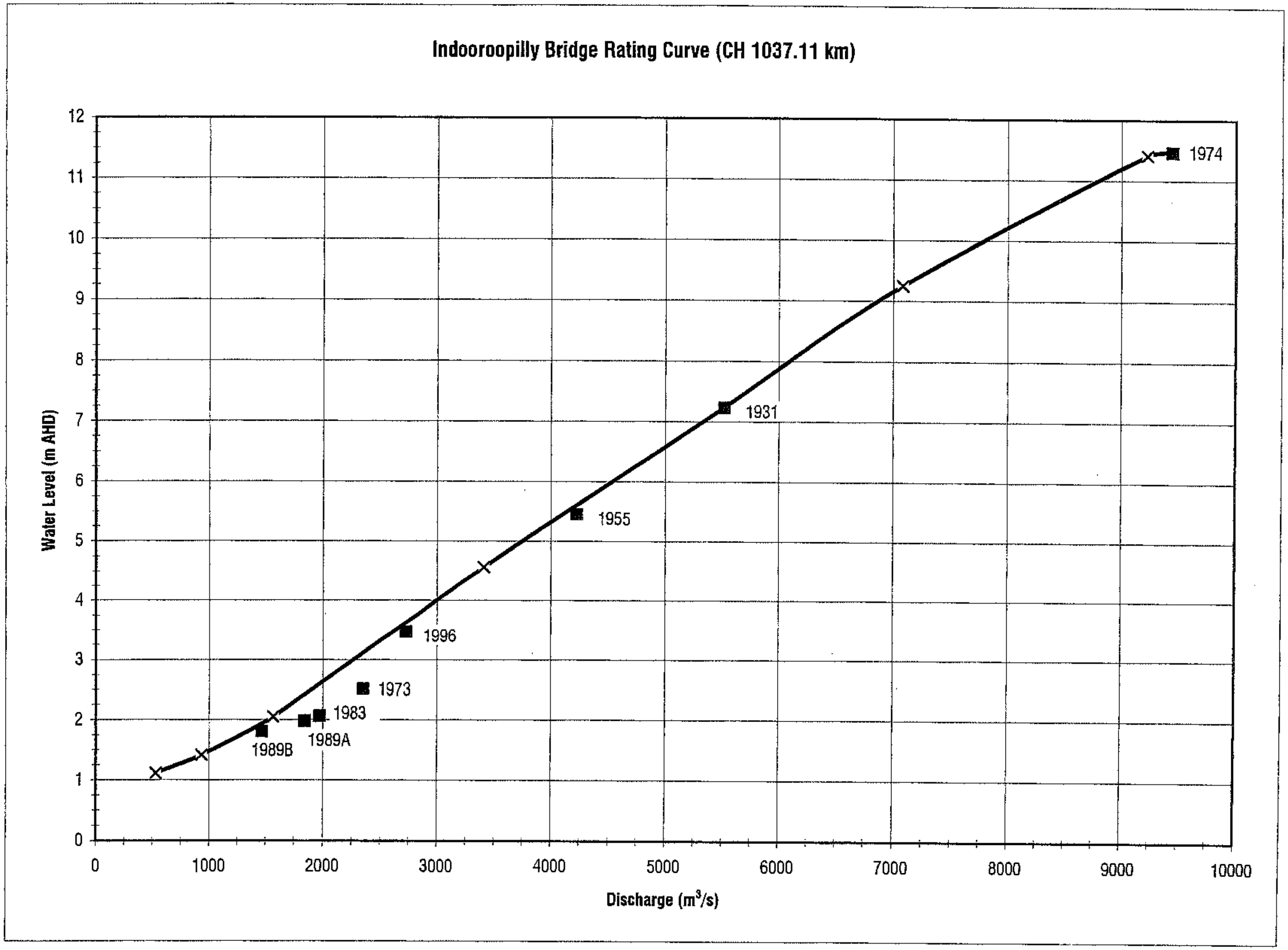
Centenary Bridge
CH 1028.72

Q (m^3/s)	Design WL (m AHD)
529	1.2
935	1.68
1568	2.71
3443	6.14
7165	11.71
8912	14.18



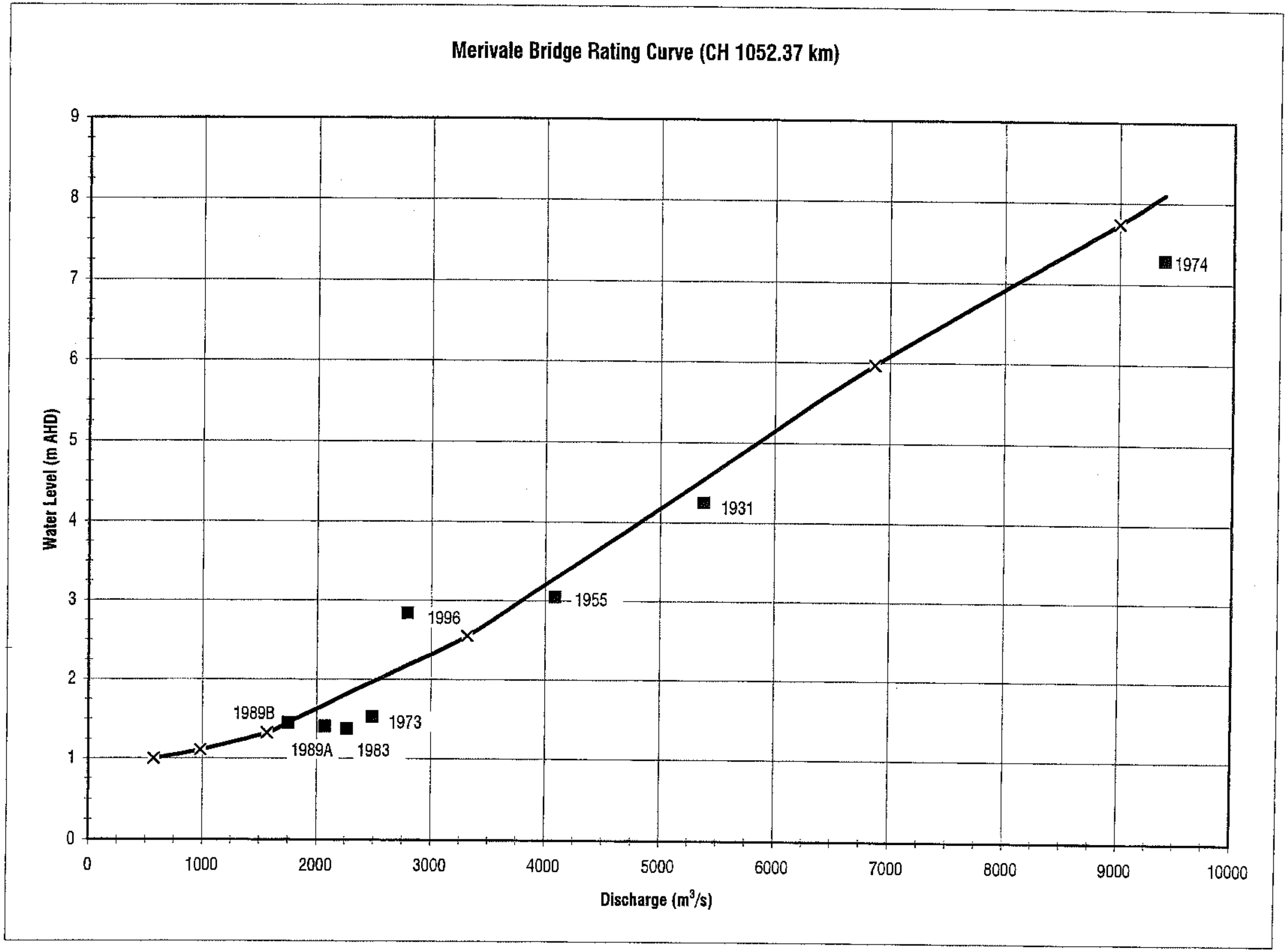
Indooroopilly Bridge
1037.11

Q (m^3/s)	Design WL (m AHD)
529	1.11
934	1.41
1567	2.05
3409	4.57
7082	9.25
9226	11.42



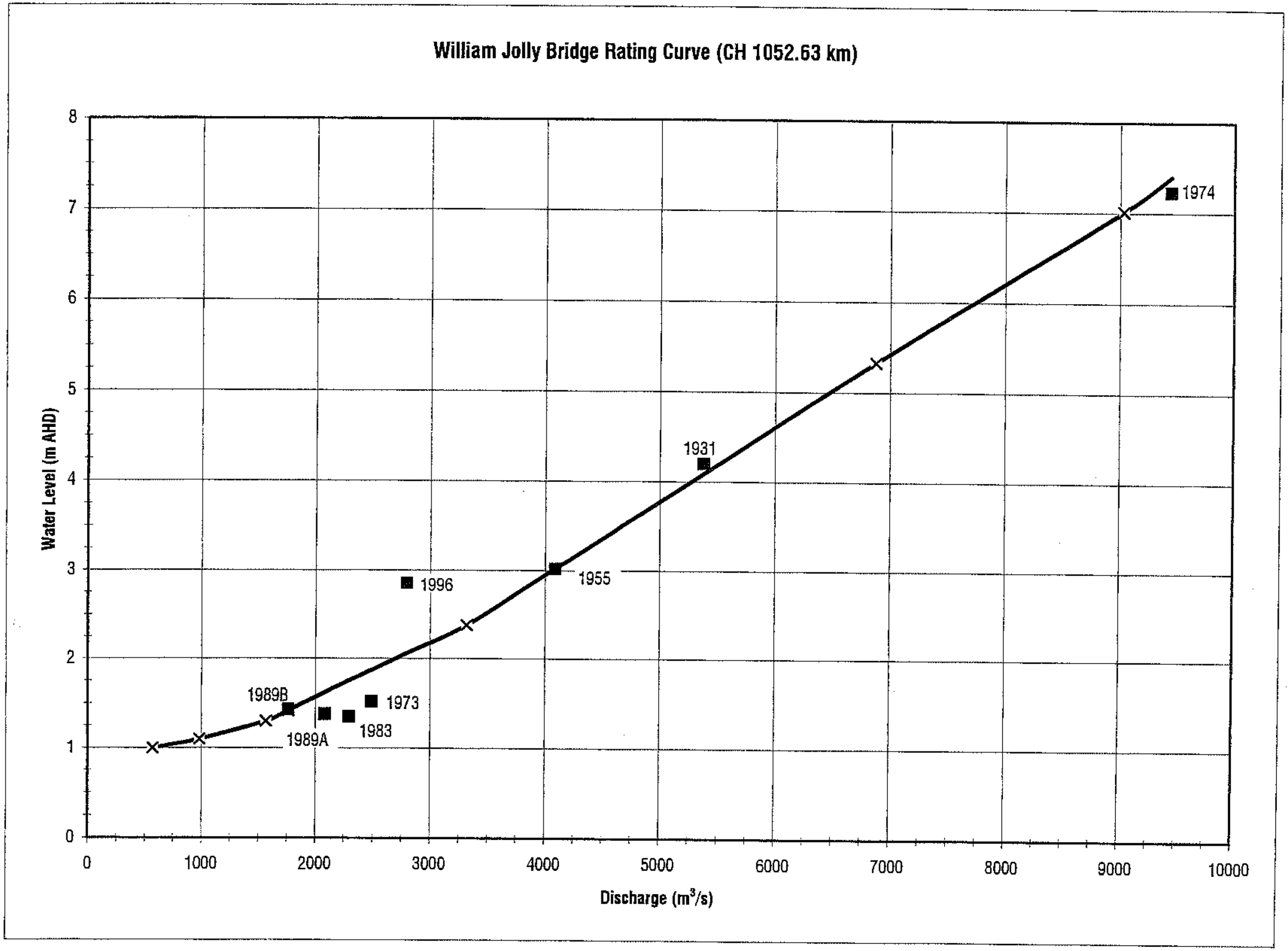
Merivale Bridge
1052.37

Q (m^3/s)	Design WL (m AHD)
570	1.00
982	1.11
1566	1.33
3317	2.55
6868	5.97
9001	7.74



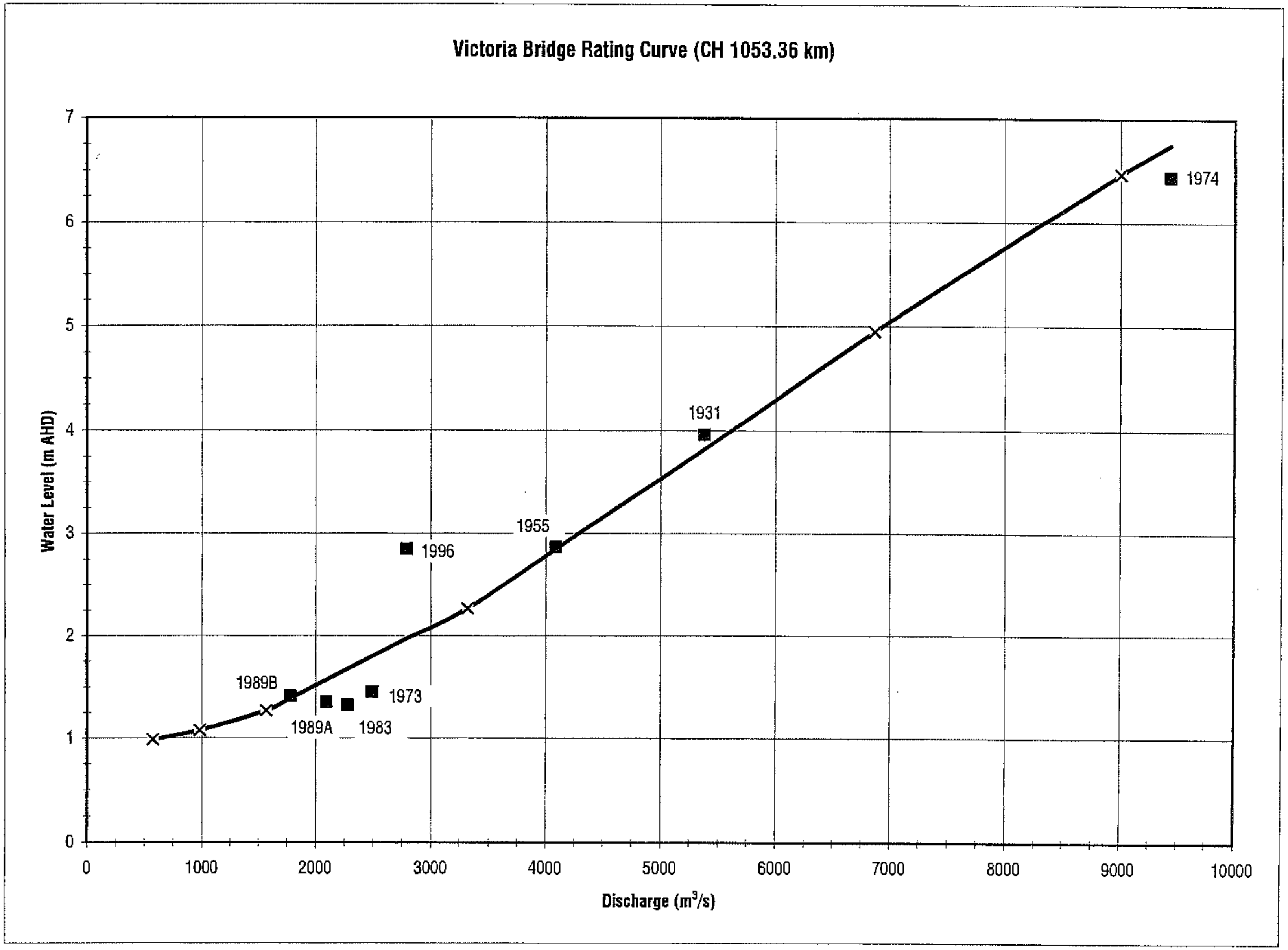
William Jolly Bridge
1052.625

Q (m^3/s)	Design WL (m AHD)
570	1.00
982	1.10
1566	1.30
3317	2.38
6875	5.33
9031	7.01



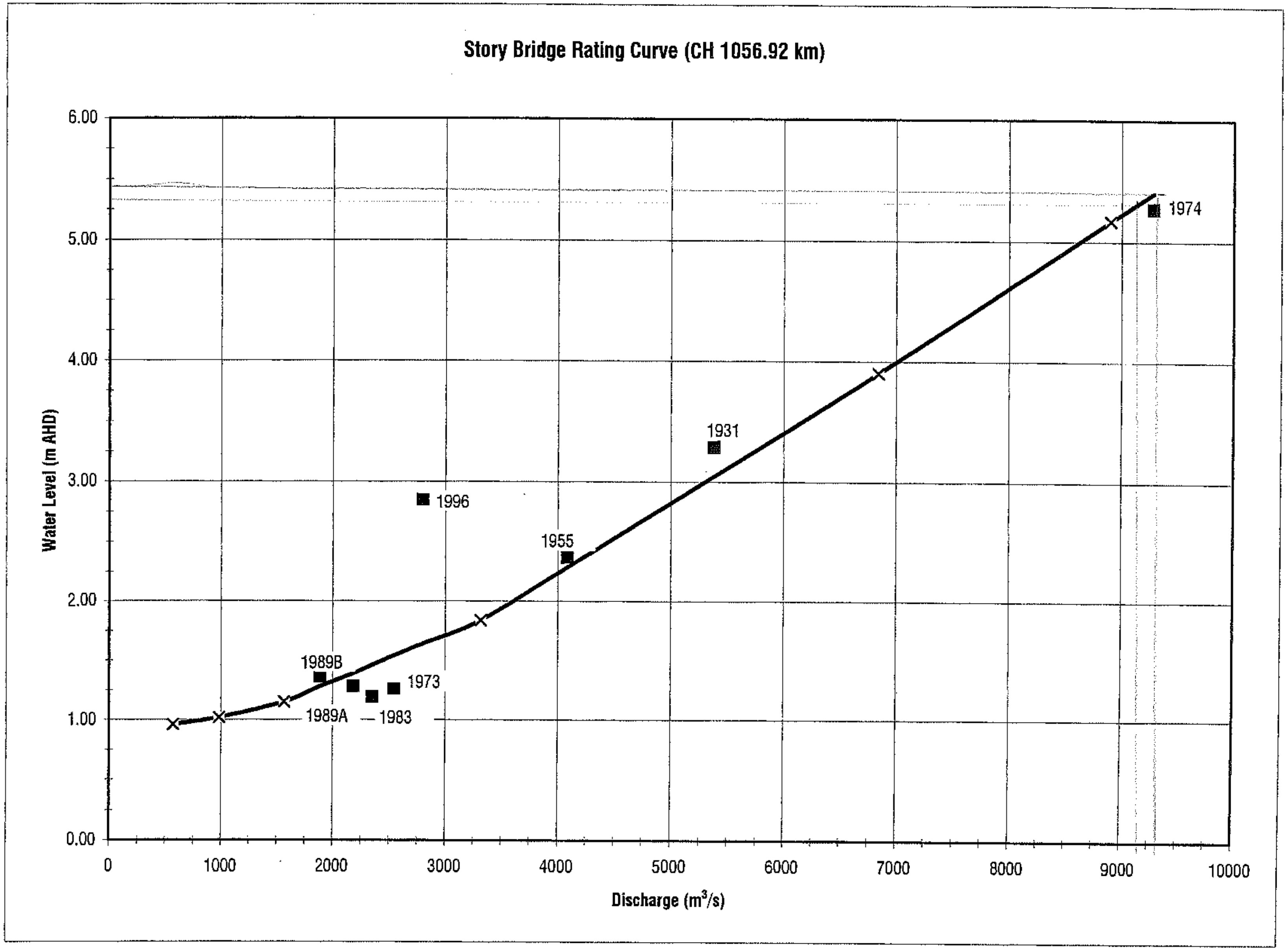
Victoria Bridge
1053.355

Q (m^3/s)	Design WL (m AHD)
571	0.99
982	1.08
1566	1.27
3317	2.27
6866	4.95
9004	6.47



Story Bridge
1056.92

Q (m^3/s)	Design WL (m AHD)
572	0.96
983	1.02
1566	1.15
3316	1.84
6842	3.90
8902	5.17



Brisbane City Council
October 1997

Brisbane River Flood Study

Waterway Management Report

DRAFT

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1. Introduction

The Brisbane River Flood Study is a major initiative of the Brisbane City Council to establish design flood levels along the lower reach of the Brisbane River. Additional outcomes of the investigation will be to set flood regulation lines , a revegetation strategy compatible with hydraulic constraints and a flood forecasting model.

The Waterway Management Report is the third in a series of progress reports. This report uses the calibrated hydraulic model (MIKE 11) developed in the calibration phase of this study along with 100 year ARI design event estimated in the Design Events phase of this study. These results were used to determine the impacts that waterway revegetation and the delineation of regulation lines will have on the Brisbane River floodplain. Once these impacts have been determined development levels will be set giving consideration to floodplain development and the adopted revegetation strategy.

The remaining progress report to be provided for this study is the Flood Mapping Report.

2. Waterway Management

2.1 General Strategy

This component of the study required application of the calibrated hydraulic model for the lower Brisbane River to determine a revegetation strategy and delineate flood regulation lines.

The brief required that the combined effect of revegetation and rehabilitation, encroachment of development on the floodplain outside the regulation line and crossings of the river (upgraded as necessary) does not increase the 100 year ARI flood level by more than approximately 150 mm. After discussions with council it was decided that increases in water level up to 170 mm would be acceptable in selected locations provided private residences were not significantly effected.

2.2 Collation of Environmental Data

Prior to the commencement of the Waterway Management Strategy it was necessary to liaise with the Bikeway, Transport Planning Section and the Environment Management and Planning Sections of the Brisbane City Council.

Through contact with the Environmental Management and Planning Departments a data sheet containing various names and addresses of Environmental Groups throughout Queensland was obtained.

Specific groups were targeted according to their proximity to the Brisbane River and questionnaires were prepared and sent to these groups. Approximately 500 questionnaires to members of the specific community groups were sent however to date the response has been poor with only 3 questionnaires returned. A summary sheet of these questionnaires has not as yet been prepared as late responses are expected.

Discussions with the Bikeway, Transport Planning Section revealed that no major works have been planned over the next five years with the exception of the construction of a new bikeway along Coronation Drive between the William Jolly Bridge and Victoria Bridge. These works involve the construction of a structure approximately 4.5 metres in width and about 1 metre above high tide level. The structure is to be built outside the existing freeway structure to avoid problems with freeway foundations.

This structure was not included in the hydraulic modelling as the decrease in conveyance due to the decrease in channel area would be negligible. Similarly due to the location and size of this structure it was considered that the resulting impacts would be negligible as the structure would be drowned out during a 100 year ARI event.

The existing bikeway running adjacent to Coronation Drive is also to be upgraded within the next few years however this project is in the preliminary phase and therefore no information was available.

2.3 Revegetation Strategy

It was proposed that the revegetation strategy would be developed primarily from information supplied by each of the surveyed community groups however due to the poor response limited revegetation locations were identified. Other areas had to therefore be located using photographic maps, topographical information and field surveys.

Most of the locations that have been identified for revegetation are currently open space areas. Revegetation of private residential areas has not been investigated as it was considered that these areas would generally be small and therefore have a negligible effect on the floodplain.

The combination of community groups input and the additional investigation resulted in a proposed revegetation strategy. This proposed revegetation strategy is presented in **Figures 2-1a to 2-1f -Brisbane River Flood Study - Revegetation Strategy.**

Figures 2-1a to 2-1f also presents locations where significant areas of vegetation currently exist. These locations may or may not represent areas of ecological significance. It is recommended that should development occur at any of the above locations some form of environmental investigation be undertaken to assess the possible ecological impacts.

The approach used to investigate the revegetation strategy for the Brisbane River was to increase mannings n roughness parameters within the calibrated hydraulic model (MIKE 11) to reflect changes imposed by the proposed revegetation.

Since the hydraulic model bank roughnesses at most locations exceeded 0.15 (to allow for bend losses), a sensitivity analysis was conducted to assess the impacts that revegetation would have on the 100 year flood level.

The sensitivity analysis was carried out by reducing the roughness values to 0.15 at the proposed revegetation locations. It was found that this reduction in roughness values caused the existing case 100 year ARI flood levels to decrease by 10 to 50 mm at these locations. The roughness values were then increased to their original values and 0.15 was added. This resulted in an increase in flood levels at these locations of between 10 to 50 mm above the existing 100 year ARI case. It was therefore concluded that the river was not sensitive to changes in bank roughness conditions.

The proposed revegetation strategy applies to locations where revegetation is below the 100 year ARI flood inundation level. Tree planting has been tested in all proposed locations as fully uncontrolled revegetation.

Fully unconstrained revegetation for the Brisbane River was defined as uncontrolled planting where manning roughnesses have been applied in the hydraulic model to a value of 0.15 above those values determined during the calibration of the MIKE 11 hydraulic model.

Extent of revegetation will be discussed on an individual reach basis in **Section 2-5 - Hydraulic Testing of Waterway Strategy Options** of this report.

2.4 Regulation Line Assessment

Regulation lines are used by council as a control on development encroaching onto the floodplains of major creeks and rivers. They are set to ensure that works such as placement of fill does not compromise existing flood immunity.

Interim regulation lines can be defined as offsets from real property boundaries. Interim lines have not been supplied by council for this study hence regulation lines have been set using the calibrated MIKE 11 hydraulic model results.

This work was principally based on the worst case design scenario of the occurrence of the 100 year ARI flood under current catchment development superimposed with the regulation lines and revegetation strategy in place. The geometry of river cross sections was adjusted to reflect flood conveyance and storage in the areas outside the regulation lines. The combined effect of this encroachment and the revegetation strategy was considered as described in **Section 2-5 - Hydraulic Testing of Waterway Strategy Options** of this report.

In some reaches, several solutions to the regulation line location and revegetation strategy satisfy the hydraulic constraints. In these locations practical regulation lines were adopted after consideration of planning, environmental and economic criteria.

A final check was made to ensure that regulation lines provided a minimum 15 m buffer to the top of the river bank to manage future erosion and sedimentation problems. Where development already existed within this 15 m buffer, the rule was disregarded to eliminate these properties from within the regulation lines.

Development levels were then set at 300 mm above the 100 year ARI flood with the revegetation and regulation lines in place. Where the Moreton Bay 100 year ARI storm surge levels were higher than the 100 year ARI river levels the surge levels were used.

2.5 Hydraulic Testing of Waterway Strategy Options

The regulation lines were finalised on the above basis to produce a reasonable balance between regulation line requirements and water level increases.

Most emphasis was placed on existing developed areas and any recommended zoning adjustments have been based purely on a hydraulic basis and prior to a change of rezoning other factors should be considered.

A summary of the processes involved and the decisions made in preparing the combined regulation line and revegetation strategy is provided in this section. The assessment is detailed on a reach by reach description.

Brisbane River Flood Study –

Placement of the regulation lines are presented in **Figures 2-2a to 2-2m - Proposed Regulation Lines** and corresponding flood level information is presented in **Table 2-1 - Flood levels, Affluxes and Top Widths for Brisbane River - Regulation Lines and Revegetation Combined**.

During the Regulation line assessment, it was found that the hydraulic model was sensitive to the placement of the regulation lines above the Centenary Bridge.

This sensitivity was most likely due to the regulation lines forming a relatively consistent cross section which in turn increased the peak discharges downstream in the order of 200 to 300 m^3/s.

This increase in discharge had a significant impact in flood levels downstream of the Centenary Bridge and hence the moving of regulation line upstream of Centenary Bridge was very restrictive.

Reach 1 - Upper Boundary

Cross Sections: BN2020 to BN1980
Chainages: 1000 km to 1001.865 km
AMTD: 78.66 km to 76.795 km

Potential Flooding

No flooding of residences will occur in this reach. Any flooding which does occur will only inundate open space within the Brisbane City Boundary.

Revegetation

- No revegetation was assessed in this reach.
- As there is considerable natural vegetation throughout this reach, the riverbanks could be considered as areas of ecological importance.

Regulation Lines

- Regulation lines in this reach are at the extent of inundation lines.
- The range of affluxes in this reach with revegetation and regulation lines in place was from 70 to 80 mm.

Zoning Adjustments

- Current zoning through this reach is predominantly Open Space and Non-Urban. As no private residences are affected by the inundation lines, no rezoning for this reach has been recommended.

Reach 2 - Barellan Point

Cross Sections: BN1970 to BN1910
Chainages: 1002.35 km to 1005.325 km
AMTD: 76.310 km to 73.335 km

Potential Flooding

From BN1970 to BN1930, flooding will affect those properties along Hawkesbury Road. From BN1920 to BN1910, several properties in Hawkesbury Road, and one in Matfield Street will be affected by flooding in a 1 in 100 year flood event.

Revegetation

- No revegetation was assessed in this reach.
- As there is considerable natural vegetation throughout this reach, the riverbanks could be considered as areas of ecological importance.

Regulation Lines

- Regulation lines in this reach are set at the extent of inundation.
- The range of affluxes in this reach with revegetation and regulation lines in place was from 90 to 110 mm.

Zoning Adjustments

- Current zoning throughout this reach is Open Space and Non-Urban. As no private dwellings are affected by the inundation lines, no rezoning for this reach has been recommended.

Reach 3 - Riverview

Cross Sections: BN1900 to BN1870
Chainages: 1005.87 km to 1007.41 km
AMTD: 72.79 km to 71.25 km

Potential Flooding

Properties along Hawkesbury Road, Myora Street, Aitcheson Street and Moggill Road will be partially affected by flooding in a 1 in 100 year flood event.

Revegetation

- At BN1870 (reserve at Moggill Ferry), full tree planting was tested with flood level increases of 10 mm.
- All revegetation is to a standard of roughness, n = 0.15
- As there is considerable existing vegetation throughout this reach, the riverbanks could be considered as areas of ecological significance.

Regulation Lines

- Regulation lines in this reach have been set at the extent of inundation.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 50 to 110 mm.

Zoning Adjustments

- Zoning in this reach is predominantly Open Space along the riverbank and Future Urban.
- No rezoning has been recommended for this reach.

Reach 4 - Redbank

Cross-Sections: BN1860 to BN1770
Chainages: 1007.920 km to 1011.980 km
AMTD: 70.740 km to 66.680 km

Potential Flooding

The majority of flooding in this reach occurs onto open space.

At BN1860, flooding occurs back onto the start of Moggill Road, however the extent of flooding appears to occur over open space.

From BN1840 to BN1820, a localised area of flooding spreads back into Moggill Road inundating any properties in Aitcheson Street.

Flooding from BN1820 to BN1810 reaches Moggill / Malfield Road, but there does not appear to be any dwellings affected.

Properties along the river side of Prior's Pocket Road will be affected by flooding to some extent.

Revegetation

- No revegetation was assessed in this reach.
- There is considerable existing vegetation along the riverbanks, and also a large patch from BN1770 to BN1820, therefore the riverbanks could be considered zones of ecological significance.

Regulation Lines

1900 LB
1770 LB
except

- Regulation lines in this reach have been set at the extent of inundation. 1860 RB 1830 RB 1820 RB
- From BN1840 to BN1830, regulation lines extend into some rural residential properties to a minor extent.
- From BN1860 to BN1850, regulation lines significantly affect several rural residential properties.
- The range of affluxes in this reach with revegetation and regulation lines in place was from 80 to 90 mm.

Zoning Adjustments

- From BN1860 to BN1850, sections of those rural residential zoned properties significantly affected by the regulation lines should be rezoned to Open Space (OS).

Reach 5 - Goodna

Cross Section:	BN1760 to BN 1720
Chainage:	1012.475 km to 1014.110 km
AMTD:	66.185 km to 64.550 km

Potential Flooding

Considerable flooding will occur in a 1 in 100 year event on Prior's pocket.

From BN1750 to BN1710, flooding extends right back to the kink in Priors Pocket Road, covering the entire point, except for two patches of higher ground.

Revegetation

- No revegetation was assessed in this reach.
- Considerable vegetation exists right along the riverbanks in this reach. The riverbanks could be considered as areas of ecological significance.

Regulation Lines

- Regulation lines in this reach are set at the extent of inundation lines. except 1750 RB
- The point at the end of Priors Pocket Road is completely inundated to BN1730
- The range of affluxes in this reach with revegetation and regulation lines in place was from 80 to 90 mm.

Zoning Adjustments

- Properties throughout this reach are currently zoned Open Space or Non-Urban. As such, no adjustments to rezoning throughout this reach are recommended.

<u>**Reach 6 - Wacol**</u>

Cross Section: BN1710 to BN 1610
Chainages: 1014.610 km to 1019.095 km
AMTD: 64.050 km to 59.565 km

Potential Flooding

From BN1710 to BN1670, Priors Pocket is flooded back until the kink in Priors Pocket Road.

From BN1660 to BN1650, properties in Priors Pocket Road and part of Avonmore Street will be affected by flooding in a 1 in 100 year ARI storm event.

From BN1640 to BN1630, flooding follows an unknown creek (adjacent Stratford Street), and inundates the rear of several properties west of Livesay Road, inundation spreads north to Ellerby Street.

From BN1620 to BN1610, properties along Vanwall and Zelita Road will suffer inundation to some extent, as will the Department of Primary Industry Land.

Revegetation

- No revegetation was assessed in the Wacol reach.
- From BN1610 to BN1700 there is considerable existing vegetation. The riverbanks in these areas could be considered as areas of considerable ecological significance.

1680 LB
1630 LB

Regulation Lines

1690 RB
to
1650 RB

- Regulation lines in this reach are set at the extent of inundation.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 100 to 110 mm.

Zoning Adjustments

- Properties throughout this reach are zoned as Special Use, Non-Urban or Open Space.
- No recommendations for rezoning in this reach have been made.

Reach 7 - Riverhills

Cross Section: BN1600 to BN1530
Chainage: 1019.49 km to 1021.715 km
AMTD: 59.170 km to 59.945 km

Potential Flooding

At Bn1530, a localised area of flooding inundates those properties adjacent to the park bounded by Juba and Zambesi Streets, with flooding extending up into Horizon Drive.

From BN1540 to BN1550, flooding extends over the largely undeveloped areas bounded by Pauluna, Loddon Streets and Westlake Drive. Numerous residences will also be inundated in a 1 in 100 year flood event. On the western side of the river properties in Lather Road will suffer some extent of flooding.

From BN1570 to BN1600, an extensive area of flooding occurs in the Moggill Country Club, Booker Place and the swimming pool. However flooding does extend into a significant number of residential areas in Sugarwood Street, Ghost Gum Street up to Moggill Road, Birkin Road and across into Banyan Street.

At BN1600, flooding follows Wolston Creek, however the majority of this flooded area appears to be undeveloped.

Revegetation

- From BN1530 to BN1540 (Juba Street Park), full tree planting was tested with flood level increases of 20 mm.
- All revegetation is to a standard of roughness, n = 0.15
- From BN1560 to BN1600, there is considerable existing vegetation, therefore the riverbanks in this area could be considered zones of ecological significance.

1560 Buffer RB
1550 Buffer LB
1530 " LB

Regulation Lines

1600 LB
1540 LB
1590 RB
1580 RB
1570 RB

- Regulation lines in this reach are set at the extent of inundation.
- From BN1600 to BN1590, a block of property zoned as Future Urban will be affected considerably by the regulation lines.
- From BN1580 to BN1530, numerous residential properties will be affected by the regulation lines.
- The range of affluxes in this reach with revegetation and regulation lines in place ranges from 110 to 120 mm.

Zoning Adjustments

- The block of Future Urban property from BN1600 to BN1590 should be rezoned to Open Space
- From BN1580 to BN1530, those waterfront Residential A properties in Lather Street and Sumner Road should be rezoned to Open Space (OS).

Reach 8 - Westlake

Cross Section: BN1520 to BN1410
Chainages: 1021.895 km to 1026.680 km
AMTD: 56.765 km to 51.980 km

Potential Flooding

From BN1510 to BN1500, flooding generally follows Pullen Pullen Creek, with those properties bordering the creek suffering inundation in a 1 in 100 year ARI storm event. This area appears to be largely open space.

From BN1470 to BN1480, those properties in Westlake Drive will experience varying degrees of flooding.

Significant flooding occurs from BN1470 to BN1460, with floodwaters extending into Westlake and the properties surrounding it. Properties as far south as Raeside Street, east to Pending Street and west to the end of Westlake Drive will suffer flooding.

Another very large area of flooding occurs between BN1450 and BN1440 due to Mt Omaney Creek. The McLeod Country Golf Course, park, treatment works and the Jamboree Heights Primary school will all be inundated in a 1 in 100 year flood event. Properties into Horizon Drive, Westlake Drive and Arrabri Avenue will also all suffer flooding.

At BN1400 flooding will occur along an unknown creek (adjacent to Moggill Creek), with floodwaters extending into largely undeveloped land. Properties on the northern side of Moggill Creek will also suffer problems with inundation as will the University of Queensland Veterinary Farm.

Revegetation

- At BN1410 (Jindalee Park), full tree planting was tested with flood level increases of 10 mm.
- All revegetation is to a standard of roughness n = 0.15.
- There is considerable existing vegetation along the riverbanks throughout this reach. Therefore, the banks in this reach could be classified as zones of ecological significance.

Regulation Lines

- Regulation lines are set at the extent of inundation at BN1440.
- The regulation lines at BN 1470 have been moved until maximum allowable afflux has been achieved.
- BN 1460 used a combination of the buffer rule and extent of inundation to achieve the maximum allowable afflux.
- BN 1450 used a combination of moving the regulation line on the left bank and extent of inundation on the right bank to achieve the maximum allowable afflux.

- BN 1410 used a combination of the buffer rule and the moving of regulation line on the right bank until the maximum allowable afflux was obtained.
- The remainder of the reach adheres to the 15m buffer rule.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 110 to 140mm.

Zoning Adjustments

- From BN1440 to BN1480, those riverside properties zoned Residential A in Callabonah Street, Barcoorah Street Westlake Drive and Carnegie Street should be rezoned to Open Space.
- From BN1430 to BN1420 those properties zoned Residential A in Mt Omaney Drive and Coolaroo Drive should be rezoned to Open Space.

Reach 9 - Mermaid Reach

Cross Section: BN1400 to BN1270
Chainages: 1026.900 km to 1031.995 km
AMTD: 51.76 km to 44.665 km

Potential Flooding

Extensive flooding of properties occurs throughout the whole of this reach. Between BN1270 and BN1280, a localised area of flooding inundates properties as far south as Cliveden Avenue with flooding occurring in parts of Teesdale Street, Richmond Street and Oxley Terrace and west to properties in Blackheath Road.

From BN1290 to BN1340, the largely undeveloped area bounded by Seventeen Mile Rocks Road will be inundated in a 1 in 100 year ARI storm event. Also in this region, properties in Newland Street and the Fig Tree Pocket Pony Club will also suffer flooding.

From BN1340 to BN1360 flooding occurs through the watercourse (located near Jindalee Bridge) and extends past Oldfield Road. Properties in Yallambee Road, Capitol Drive, Sinnamon Road and parts of Oldfield Road will all be inundated in a 1 in 100 year storm event.

From BN1370 to BN1400, a large area of flooding occurs through a highly developed residential area. Flooding will extend as far South as Curragundi Road and into a section of Arabri Avenue between sections BN1380 and BN1390. From BN 1390 to BN1400, this flooding is limited to properties along Mt Omaney Drive and Bareena Avenue. On the northern side of the river, flooding occurs through mostly undeveloped land north into Scenic Road.

Revegetation

- At BN1400 (Jindalee Park), full tree planting was tested with flood level increases 0.01 m. All revegetation is to a standard of roughness, n = 0.15.
- There is considerable existing vegetation throughout this reach and the riverbanks may therefore be considered areas of ecological significance.

Regulation Lines

- BN1400 and BN1380 the right bank used the 15 m buffer rule and the left bank regulation line has been move until the maximum allowable afflux has been achieved.
- At BN1360 the left bank regulation line has been set at inundation and the right bank has been set using the 15 m buffer rule.
- From BN1270 through to BN1300, regulation lines are set along the riverbank and only affect areas already zoned Open Space.
- Regulation lines extend significantly into areas zoned as future urban and future industry between sections BN1330 and BN1320.

- At BN1330, several properties zoned Residential A are affected by regulation lines.
- At all other locations the 15 m buffer rule has been applied to regulation lines throughout this reach.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 100 to 170 mm.

Zoning Adjustments

- The property zoned future urban and future industry between sections BN1300 and BN1330, should be rezoned to Open Space, extending back to Sinnamon Road.
- Residential A properties at section BN1330, should be assessed as to the extent to which inundation lines affect the properties and zoned Open Space as appropriate.

Reach 10 - Sherwood Reach

Cross Section: BN1260 to BN1200
Chainage: 1032.230 km to 1034.890 km
AMTD: 46.430 km to 43.770 km

Potential Flooding

From BN1200 to BN1210, properties bounding Cubberla Creek will all suffer flooding in a 1 in 100 year ARI storm event, especially those properties in Jesmond Drive, Needham Street, Ningana Street, Aminga Street and Sprenga, Karella and Thiesfield Streets. On the Eastern side of the River, some properties in Molonga Terrace, Long Street and Kianga Streets will all experience flooding.

From BN1220 to BN1230, Sherwood Forest Park and those streets bounding it, will suffer inundation, especially Turner, Jolimont, Ferry and Joseph Streets. On the Western side, some properties in Jesmond road will experience a degree of flooding.

In the 100 year ARI event, extensive flooding into residential areas will occur between BN1240 and BN1260, with only the higher properties in the Cylene Court and Michelangelo / Botticelli Street vicinity being unaffected.

Revegetation

- From BN1250 to BN1260 (Mandalay Park) and at BN1220 (Sherwood Forest Park), full tree planting was tested with flood level increases of 0.01m and 0.03m respectively.
- All revegetation is to standard of roughness of n = 0.15
- From BN1240 to BN1260, there is considerable existing vegetation and therefore, the riverbanks may be considered as areas of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- Between BN1200 and BN1210, regulation lines will extend into existing private residences and also into an area of land zoned as future urban.
- From BN1220 to BN1260, numerous private residences will be affected by the regulation lines to a certain extent.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 60 to 170 mm.

Zoning Adjustments

- The property designated as future urban should be partially rezoned to incorporate an open space corridor to the extent of the regulation lines between BN1200 and BN1220.
- From BN1230 to BN1260, properties zoned Residential A should be assessed to determine the extent to which regulation lines affect properties. Those properties significantly affected by the regulation lines should be rezoned to Open Space.

Reach 11 - Chelmer Reach

Cross Section: BN1190 to BN1150
Chainage: 1035.474 km to 1036.915 km
AMTD: 43.246 km to 41.745 km

Potential Flooding

In this reach, flooding is limited to a localised pocket between sections BN1160 and BN1170, with some flooding on the Eastern side.

The localised flooding between sections BN1160 and BN1170 extends as far inwards as Moggill Road and is bounded on the southern side by Boundary Road, with some flooding into Market and Minkara Streets. Flooding on the Northern side generally follows Witton Creek, with flooding extending into Kate Street, Vera Street and Aaron Place. On the eastern side, properties in Longman Terrace, Sutton and Morley Streets will all suffer inundation in a 1 in 100 year ARI flood.

Between sections BN1170 and BN1180, another localised area of flooding occurs causing inundation in properties located in Brinkworth Place, Jainba and Jerrang Streets.

From BN1180 to BN1190, properties bounding Cubberla Creek will experience flooding problems, especially those properties in Dobell Street and parts of Clandon and Forlong Streets.

Revegetation

- No revegetation was assessed in this reach.
- As there is considerable existing vegetation throughout this whole reach, the riverbanks and the areas bounding Cubberla Creek, could be considered an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- Throughout this reach, regulation lines will extend significantly into private residential properties. Some properties will be affected by the regulation lines to a greater extent than others.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 30 to 120 mm.

Zoning Adjustments

- Rezone those Residential A properties, significantly affected by the regulation lines, to Open Space (OS), especially those properties in Sutton Street and Morley Street.

Reach 12 - Indooroopilly Reach

Cross Section: BN1140 to BN1070
Chainage: 1037.090 km to 1039.100 km
AMTD: 41.570 km to 39.560 km

Potential Flooding

There is an extensive area of flooding of this whole reach, especially on the Chelmer side of the river. From BN1110 to BN1070, flooding occurs as far back as Kitchener / Appel Street with this corridor narrowing at BN1080 to Chanter Street. Chelmer Oval, Faulkner park, Graceville Memorial Park, the Graceville Primary School and a very large number of residences will all be inundated in a 1 in 100 year ARI flood event.

On the Eastern side of the river, flooding is limited to Thomas and Sir John Chandler Park, with some properties in Ivy Street, Clarence Road and Glencairn Avenue suffering some flooding.

Revegetation

- No revegetation was assessed in this reach.
- There is considerable existing vegetation throughout this reach, thus the riverbanks could be considered an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- Regulation lines from BN1070 to BN1080 extend into residential dwellings.
- From BN1090 to BN1140, considerable private residences will be affected by regulation lines.
- Regulation lines at BN1070 used the 15m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at this location.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 20 to 140 mm.

Zoning Adjustments

- Rezone Residential A properties in Leybourne Street and Queenscroft Avenue between BN1070 and BN1080 to Open Space (OS).
- Properties in Ivy and Roseberry Streets should be rezoned from Residential A to Open Space.

Reach 13 - Canoe Reach

Cross Section: BN1060 to BN990
Chainage: 1039.565 km to 1041.960 km
AMTD: 39.095 km to 36.700 km

Potential Flooding

The majority of flooding in this reach is confined to the Oxley Creek / Moolabin Creek areas, with some localised pockets of inundation.

From BN1060 to BN1040, properties bounding Oxley Creek will all suffer inundation with the limits being Tweedale/Blackwood Street to the west and David Street to the east with those higher properties in King Arthur Terrace, Merlin and Camelot Streets being immune to flooding. Sir John Chandler Park and the Indooroopilly Golf Course will be completely inundated in a 1 in 100 year flood event.

From BN1020 to BN1010, flooding occurs through the Yeerongpilly Animal Research Institute and floods some properties in Paragon and Ortive Streets. Flooding along Moolabin Creek is also a problem in this area, with the Brisbane Golf Course and properties back to Tennyson Memorial Avenue and Station Road being affected.

From BN1000 to BN990, the main problem areas in a 1 in 100 year flood event will be Stevens Street and Nelson Street back to Fairfield Road. Some properties in Yeronga, Feez and Astolat Streets will also be affected by flooding to some extent.

Revegetation

- From BN1020 to BN1030 (adjacent Yeerongpilly Animal Research Institute), full tree planting was tested with flood level increases of the order of 0.01 m.
- All revegetation is to a standard of roughness of $n = 0.15$.
- There is considerable existing vegetation throughout this reach, thus the riverbanks could be considered an area of ecological significance.

Regulation Lines

- Regulation lines at BN1060 to BN 990 used the 15 m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at these locations.
- From BN990 to BN1010 and from BN1040 to BN1060, regulation lines will extend into the rear of numerous private dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 50 to 110 mm.

Zoning Adjustments

- Rezoning of Residential B dwellings in Rome Street south, Astolat Street, Feez, Yeronga and Steven Streets to Open Space (OS) is recommended between BN990 and BN1010.
- It is also recommended that from sections BN1040 and BN1060, those Residential A properties in King Arthur Terrace, Verney Road East, Jarda Street and White Street should be rezoned to Open Space (OS).

Reach 14 - Long Pocket Reach

Cross Section:	BN980 to BN910
Chainage:	1042.235 km to 1044.860 km
AMTD:	36.425 km to 33.800 km

Potential Flooding

The majority of flooding in this reach is confined to the Indooroopilly Golf Course, with some local flooding in the Yeronga area.

From BN980 to BN970, some minor flooding will occur to properties located in Instow Street and the Yeronga Animal Hospital will also be affected.

From BN960 to BN950, the flooding becomes more widespread with properties along the Esplanade, Diane Street, Ormadale Street, Oriana Crescent and Aranui Street all being affected. Flooding on the eastern side of the river will affect the CSIRO to some extent.

From BN940 to BN930, flooding is limited to Brisbane Corso and Orlando Road with some properties in Otaki and Ormuz Roads also being affected.

In a 1 in 100 year flood event, flooding will extend to Hyde Road from BN920 to BN910, affecting properties as far south as Utzon, Grounds and Siedler Streets. Goodwin Park will also be inundated.

Revegetation

- From BN940 to BN960 (Sandy Creek), full tree planting was tested with flood level increases of the order of 10 mm.
- Community Groups suggest that existing vegetation on the banks around the confluence of Sandy Creek should be revegetated using native flora. This has therefore been included in the modelling to the n = 0.15 standard.
- There is considerable existing vegetation throughout the whole reach, and the riverbanks could therefore be considered an area of ecological significance.

Regulation Lines

- Regulation lines at BN980 to 960 used the 15 m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at these locations.
- At BN910, regulation lines are set at the riverbank with the inclusion of a 15 m buffer zone.
- From BN920 to BN960 and BN990, regulation lines will pass through numerous private residences.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 50 to 90 mm.

Zoning Adjustments

- Rezoning of waterfront existing Residential A properties in Brisbane Corso, Ormadale Road and Kadumba Street to Open Space (OS) is recommended throughout this reach.

Reach 15 - Cemetery Reach

Cross Section: BN900 to BN830
Chainage: 1045.400 km to 1047.915 km
AMTD: 33.260 km to 30.745 km

Potential flooding

There is considerable flooding in this reach from BN870 through to BN900.

At BN900, flooding mainly affects the Downs Oval, Leyshan Park and Fehlberg Oval. In a 1 in 100 year ARI flood event, properties as far back as the Railway line, Kadumba Street and a small area as far back as Cowper Street will all be affected by flooding. Properties in William Parade, Turner Avenue and Brougham Street will also suffer inundation.

From BN890 to BN880, a large area of flooding extends as far east as the railway line, south to Fairfield Road / Sydney Street/Cruthley Street and north into the cemetery.

Flooding is limited to the riverbank areas with some properties in Rosecliff and Borva Streets being affected by flooding from BN870 to BN840. It is anticipated that the University of Queensland will be affected by flooding as well. However, additional topographical and cadastral information is required before this can be finalised.

At BN830, a small area of localised flooding occurs in a 1 in 100 year flood event. Properties in Athens Street, Dudley Street and Glenfield will all be affected by flooding. On the southern side of the river, flooding extends as far back as to affect properties in Underhill Street.

Revegetation

- At BN900 (Brisbane Corso Reserve), full tree planting was tested with flood level increases of the order of 0 mm.
- All revegetation is to a standard of roughness of n = 0.15.
- There is considerable existing vegetation throughout this reach, and thus the riverbanks may be considered an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- From BN830 to BN860, regulation lines will extend past the Open Space buffer zone and into the rear of numerous Residential B dwellings. The University of Queensland will also be significantly affected by the regulation lines.
- From BN880 to BN890, the 15 m buffer rule causes regulation lines to extend into private residences.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 50 mm.

Zoning Adjustments

- Rezone waterfront Residential B dwellings in Dudley Street, Fraser Terrace, Rosecliff and Borva Streets to Open Space (OS).
- From BN880 to BN890, rezone waterfront residences in Brisbane Corso to Open Space (OS).

Reach 16 - St Lucia Reach

Cross Section: BN820 to BN810
Chainage: 1048.375 km to 1048.890 km
AMTD: 30.285 km to 29.770 km

Potential Flooding

There is a considerable flooding of residential areas in this reach.

On the St Lucia side, properties as far back as Sixth Avenue at BN820 and Sir Fred Schonell Drive at BN810 are inundated in a 1 in 100 year flood event. Parts of Mitre, Durham and Warren Streets are also affected.

On the northern side, flooding extends as far as Jumna Street at BN820 and Cordaeux Street at BN810.

Revegetation

- At BN810 (Orliegh Park), full tree planting was tested with no flood level increases.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- From BN810 to BN820, due to the 15 m buffer rule, regulation lines will extend into numerous residential dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 0 to 20 mm.

Zoning Adjustments

- Although a zone of Open Space along Orleigh, Avebury and Glenfield Streets has already been defined, this should be extended to include those existing waterfront Residential B properties in these streets.
- On the St Lucia side, those waterfront residential B properties in Hiron, Laurence and Macquarie Streets should be rezoned to Open Space (OS).

Reach 17 - Toowong Reach

Cross Section:	BN800 to Bn750
Chainage:	1049.120 km to 1050.860 km
AMTD:	29.540 km to 27.800 km

Potential Flooding

Flooding in this reach is concentrated around Toowong Creek and a few small areas of localised flooding. The Hill End / West End side of the River is consistently flooded.

At BN800, a small pocket of flooding occurs as far south as Armadale Street, east to Austral Street and west to Glen Olive Lane. On the northern side of the river, properties back to Drury Street/ Cordeaux Street will suffer inundation.

At BN 790, flooding in a 100 year ARI flood event is concentrated around Toowong Creek. Flooding occurs as far South in places as Whitmore Street and west to Josling Street with some properties in Mayne, Holmes and Herbert Streets being affected.

From BN780 to BN770, the main problems with flooding in a 1 in 100 year ARI flood event occurs through Hillend Terrace, Forbes, Drury Streets and Ferry Road. Some properties in Brisbane Street and Glen Road in Toowong will also suffer flooding problems.

From BN760 to BN750 there are large areas of flooding. On the West End side of the river, flooding extends as far back as Montague Road. On the Toowong side, there are two localised flooding areas, one extending along Landsborough Street up to Osyth / Cadell Street and back down to the railway line. The other pocket of flooding extends along Park Avenue to Milton Road and again back to the railway line. Higher properties in the area bounded by Dunmore Terrace, Lang Parade and Chasely Street are immune to flooding.

Revegetation

- From BN790 to BN800 (Orliegh Park) and at BN750 (Scott Street open Space), full tree planting was tested with flood level increases of the order of 10 mm.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- At BN750, regulation lines are located at property boundaries.
- From BN 760 to BN790, regulation lines will pass through a block of Residential B dwellings and through numerous properties zoned SD.
- At BN800, regulation lines are located at the riverbank.

- The range of affluxes in this reach with revegetation and regulation lines in place varies from 10 to 70 mm.

Zoning Adjustments

- From BN760 through to BN790, those waterfront Residential B properties should be rezoned to Open Space (OS), particularly those located in Archer Street, Land Street, Glen Road, Brisbane Street and Sandford Street.

Reach 18 - Milton Reach

Cross Section: BN740 to BN700
Chainage: 1051.360 km to 1052.390 km
AMTD: 27.300 km to 26.270 km

Potential Flooding

Flooding in this reach is mainly concentrated on the West End side of the river, but a lack of contour information limits the determination of the extent of actual flooding.

At BN730, there is a localised area of flooding in Milton, extending back to Milton Road with several properties in Baroona Road being affected. This flooding extends out to Park Street at its worst.

From BN720 to BN700, problems with inundation in a 1 in 100 year storm event occur as far back as Oxford Street on the eastern side of the river.

Revegetation

- No revegetation was assessed through this reach.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- At BN700, regulation lines are located at the riverbank.
- From BN720 through to BN740, the regulation lines extend into properties zoned as special development.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 40 to 60 mm.

Zoning Adjustments

- The majority of this reach is zoned Special development, therefore no rezoning of this reach has been recommended.

Reach 19 - South Brisbane Reach

Cross Section: BN690 to BN600
Chainage: 1052.595 km to
AMTD: 26.065 km to

Potential Flooding

Properties along Garden's Point Road and Wharf Road will experience problems with flooding in a 1 in 100 year storm event. Southbank will be inundated as will Stanley Street, Grey Street and parts of Melbourne Street.

Revegetation

- No revegetation was assessed throughout this reach.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN600 through to BN690, regulation lines are generally located at the riverbank.
- Affluxes in this reach with revegetation and regulation lines in place range from 40 to 60 mm.

Zoning Adjustments

- As no intrusion into private residences occurs in this reach, no rezoning adjustments are recommended.

Reach 20 - Town Reach

Cross Section: BN590 to BN500
Chainage: 1054.680 km to 1056.865 km
AMTD: 23.980 km to 21.965 km

Potential Flooding

The major areas of concern with respect to inundation in a 1 in 100 year flood in this reach are sections of the city and Kangaroo Point.

From BN590 to BN550, properties along River Terrace, Lower River Terrace and Garden's Point Road will all experience problems with flood inundation.

From BN540 to BN530, the Botanic Gardens will be inundated as will the City back to Charlotte Street, with parts of Mary, Margaret, Albert and Edward Streets experiencing flooding. Properties in Felix and Eagle Streets will experience flooding as will parts of Bright, Thornton and Hamilton Streets.

From BN520 to BN500, properties on Kangaroo Point back to the end of Anderson Street will experience problems with flooding in a 1 in 100 year ARI flood. On the City side, properties in Howard Street up to Queen Street will suffer inundation. At BN500, some properties in Bowen Street will experience problems with flooding.

Revegetation

- From BN540 to BN560, full tree planting was tested with flood level increases in the order of 10 mm. All revegetation is to a standard of roughness of n = 0.15.
- At section BN520, there is considerable existing vegetation and may be classified as an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN500 to BN530, regulation lines will pass through existing properties zoned Special Development.
- From BN540 to BN590, regulation lines extend into property already zoned Open Space.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 40 to 80 mm.

Zoning Adjustments

- As the regulation lines do not affect any private residences, no rezoning for this reach has been recommended.

Reach 22 - Humbug Reach

Cross Section: BN430 to BN400
Chainage: 1058.735 km to 1059.990 km
AMTD: 19.925 km to 18.670 km

Potential Flooding

This reach has localised flooding problems associated with Norman Creek.

From BN420 to BN410, there is extensive flooding associated with properties adjacent to Norman Creek. Properties as far northeast as Overend and Wordsworth Streets will experience inundation, as will properties to the west in Barker, Ashfield and Clarendon Streets to Mowbray Terrace.

At BN420, a localised area of flooding occurs in Moray and Sargent Streets to Mountford Road with Oxlade Drive and parts of Hazelwood Street being inundated.

Revegetation

- No revegetation was assessed through this reach.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN400 to BN430, the 15m buffer rule has resulted in regulation lines being situated through private dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 40 to 50 mm.

Zoning Adjustments

- Properties zoned Residential A along Wynnum Road and Wendell Street should be rezoned Open Space.
- From BN420 to BN430, properties along Laidlaw Parade zoned Residential B should be rezoned to Open Space.
- Consideration should also be given to rezoning properties currently zoned Special Development between BN400 and BN430 to Open Space.

Reach 23 - Bulimba Reach

Cross Section: BN390 to BN330
Chainage: 1060.345 km to 1062.940 km
AMTD: 18.315 km to 15.720 km

Potential Flooding

From BN370 to BN350, there is a very large area of flooding primarily covering residential dwellings. The large industrial area bounded by Stuart and Barramul Streets will be flooded and the flooding will extend inwards as far as Riding Road in places, south to Orchard Street and north to Oxford Road.

At BN370, there will be some flooding associated with properties in Gordon, Scott and parts of Malcolm Streets.

From BN350 to BN330, another localised area of flooding extends through a primarily industrial area back to Commercial road, generally following Breakfast Creek Road north to Breakfast Creek. The higher properties in Newstead Avenue and Halford Streets are the exception to the flooding.

Revegetation

- At BN340 (Newstead Terrace Reserve), full tree planting was tested with no increases in flood level.
- All revegetation is a standard of roughness of n = 0.15.
- Sections of BN390 can be considered an area of ecological significance due to the existing vegetation.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN320 through to BN390, regulation lines are situated through numerous private dwellings and properties zoned service trades.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 10 to 30 mm.

Zoning Adjustments

- Blocks of residential A dwellings along Quay Street, Leura Terrace, Barton Road, Gordon Street, Scott Street, Uhlman Street and Aaron Avenue should be rezoned to open space.
- Consideration to rezoning all waterfront service industries to open space should also be given consideration.

Reach 24 - Hamilton Reach

Cross Section: BN320 to BN260
Chainage: 1068.310 km to 1065.990 km
AMTD: 15.30 km to 12.670 km

Potential Flooding

At BN270, properties in Taylor Street and lower ends of Carbeen, Karthena and Michael Streets will experience flooding in a 1 in 100 year flood event.

McConnell Street, Merry Street, Melrose, Cowper, River end of Kenbury, Bulimba, Banya, Johnston, Harrison, Tennyson and Shakespeare Streets will all suffer from flooding.

Revegetation

- No revegetation has been assessed for this reach.
- At BN290 there is existing vegetation and, as such, the riverbank in this area could be considered as a zone of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN260 to BN290, regulation lines are situated at the edge of the riverbank.
- From BN290 to BN310, the 15m buffer rule has resulted in the regulation lines being situated through private residences along McConnell Street.
- At BN320, regulation lines are situated along the riverbank edge.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 10 to 30 mm.

Zoning Adjustments

- Properties zoned residential in McConnell Street between BN290 and BN300 should be rezoned to open space.

Reach 25 - Quarries Reach

Cross Section: BN250 - BN220
Chainage: 1066.505 km to 1067.965 km
AMTD: 12.155 km to 10.695 km

Potential Flooding

At BN250, properties in Riverside Place back to Lytton Street will all suffer from inundation in a 1 in 100 year storm event.

From BN230 to BN220, flooding will occur onto the Royal Queensland Golf Course.

Revegetation

- From BN220 to BN230 (Royal Queensland Golf Course), full tree planting was tested with an increase in flood levels of 10 mm.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- Regulation lines in this reach include a maximum allowance of 30m for wharves and associated waterfront development. This is in lieu of the 15 m buffer rule.
- From BN220 to BN240, regulation lines follow the riverbank.
- At BN250, regulation lines extend into existing properties. However, the flooding extends into properties zoned waterfront activities and an allowance has been made for wharves in lieu of the 15 m buffer zone.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 0 to 20 mm.

Zoning Adjustments

- Zoning through this reach is predominantly waterfront activities and industrial. As such, no recommendations for rezoning have been made.

Reach 26 - Lytton Reach

Cross Section:	BN210 - BN110
Chainage:	1068.660 km to 1073.485 km
AMTD:	10.00 km to 5.175 km

Potential Flooding

At BN190, flooding during a 1 in 100 year flood event will affect those properties along Macarthur Avenue.

From BN170 to BN160, flooding occurs into Unwin Road, Randle Street, parts of Macarthur Avenue and back into the airport.

From BN130 to BN120, flooding only appears to occur in open space areas.

Revegetation

- No revegetation was assessed in this reach.

Regulation Lines

- Regulation lines in this reach include an maximum allowance of 30 m for wharves and associated waterfront development. This is in lieu of the 15 m buffer rule.
- Regulation lines in this reach are situated at the riverbank.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 0 to 10 mm.

Zoning Adjustments

- Properties in this reach are predominantly zoned industrial or waterfront industry. No modifications to the zonings is required.

Reach 27 - Lytton Rocks Reach

Cross Section: BN100 to BN70
Chainage: 1074 km to 1075.480 km
AMTD: 4.660 km to 3.180 km

Potential Flooding

This reach experiences extensive flooding, especially from BN110 to BN90, where floodwaters inundate properties in Pritchard Street, South Street, Lytton Road, Trade Street and Export Street. Flooding also affects properties in Pamela and Tingara Streets all the way through to Boggy Creek.

Revegetation

- At BN70 and BN90, full tree planting was tested with an increase in flood levels of approximately 10 mm.
- All revegetation is a standard of roughness of n = 0.15.
- The occurrence of existing vegetation at section BN80 indicates that the riverbanks in this section could be considered a zone of ecological significance.

Regulation Lines

- Regulation lines in this reach include an maximum allowance of 30 m for wharves and associated waterfront development. This is in lieu of the 15 m buffer rule.
- Regulation lines in this reach generally follow the bank profile. From BN70 to BN80, some intrusion into the bank does occur, however in this instance an allowance has been made for wharves and associated waterfront development.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 0 to 10 mm.

Zoning Adjustments

- As this reach is predominantly zoned industrial and waterfront development, no rezoning recommendations have been made.

Reach 28 - Pelican Banks Reach

Cross Section:	BN60 to BN40
Chainage:	1076 km to 1077.010 km
AMTD:	2.66 km to 1.650 km

Potential Flooding

No developed properties appear to be affected by flooding through this reach, although there will be some flooding throughout existing low lying areas.

Revegetation

- From BN40 to BN60, full tree planting was tested with no increase in flood levels.
- All revegetation is to a standard of roughness of n = 0.15.
- Due to the existing natural vegetation, the riverbanks at section BN40 could be considered a zone of ecological significance.

Regulation Lines

- Regulation lines in this reach include a maximum allowance of 30m for wharves and associated waterfront development from BN60. This is in lieu of the 15 m buffer rule.
- Regulation lines in this reach generally follow the riverbank. Some intrusion into the bank occurs at section BN50, however this is into undeveloped swampy land.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 0 mm.

Zoning Adjustments

- This reach is predominantly zoned industrial and waterfront development. As such, no recommendations for rezoning have been made for this reach.

Reach 29 - Lower Reach

Cross Section: BN30 to BN0
Chainage: 1077.510 km to 1078.66 km
AMTD: 1.150 km to 0 km

Potential Flooding

In a 1 in 100 year flood event, flooding will affect existing grain and container terminals on Fisherman Island to some extent.

Revegetation

- From BN10 to BN30, full tree planting was tested with no increase in flood levels.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- Regulation lines in this reach are generally located in low lying areas.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 0 mm.

Zoning Adjustments

- This reach is mainly zoned industrial or waterfront industry. No rezoning through this reach is recommended.

Table 2-1 - Flood Levels, Affluxes and Top Widths for Brisbane River - Regulation Lines & Revegetation Combined

Reach Name	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Existing Conditions (m AHD)	Reveg + Reglines (m AHD)	Difference (m)	Top Width (m)
UPPER BOUNDARY	1000	78.66	BN 2020	22.76	22.83	0.07	335.9
UPPER BOUNDARY	1000.285	78.375	BN 2010	22.56	22.64	0.08	533.7
UPPER BOUNDARY	1000.775	77.885	BN 2000	22.38	22.46	0.08	484.3
UPPER BOUNDARY	1001.315	77.345	BN 1990	22.28	22.36	0.08	569.0
UPPER BOUNDARY	1001.865	76.795	BN 1980	21.75	21.83	0.08	301.6
BARALLEN POINT	1002.35	76.31	BN 1970	21.43	21.52	0.09	341.5
BARALLEN POINT	1002.785	75.875	BN 1960	21.34	21.43	0.09	307.2
BARALLEN POINT	1003.275	75.385	BN 1950	20.91	21.01	0.1	273.6
BARALLEN POINT	1003.775	74.885	BN 1940	20.78	20.87	0.09	425.1
BARALLEN POINT	1004.3	74.36	BN 1930	20.19	20.3	0.11	258.8
BARALLEN POINT	1004.81	73.85	BN 1920	20.29	20.4	0.11	802.8
BARALLEN POINT	1005.325	73.335	BN 1910	20.08	20.18	0.1	466.6
RIVERVIEW	1005.87	72.79	BN 1900	19.9	20.01	0.11	731.0
RIVERVIEW	1006.3	72.36	BN 1890	19.72	19.83	0.11	293.3
RIVERVIEW	1006.91	71.75	BN 1880	19.64	19.75	0.11	739.3
RIVERVIEW	1007.41	71.25	BN 1870	19.59	19.64	0.05	566.7
REDBANK	1007.92	70.74	BN 1860	19.28	19.36	0.08	452.2
REDBANK	1008.445	70.215	BN 1850	19.16	19.24	0.08	285.1
REDBANK	1008.925	69.735	BN 1840	19.08	19.16	0.08	292.4
REDBANK	1009.4	69.26	BN 1830	18.98	19.06	0.08	525.2
REDBANK	1009.72	68.84	BN 1820	18.95	19.03	0.08	585.3
REDBANK	1010.49	68.17	BN 1810	18.58	18.66	0.08	247.8
REDBANK	1010.725	67.935	BN 1800	18.58	18.67	0.09	325.6
REDBANK	1010.98	67.68	BN 1790	18.5	18.58	0.08	278.6
REDBANK	1011.51	67.15	BN 1780	18.49	18.57	0.08	477.0
REDBANK	1011.98	66.68	BN 1770	18.49	18.58	0.09	811.6
GOODNA	1012.475	66.185	BN 1760	18.41	18.49	0.08	755.7
GOODNA	1012.935	65.725	BN 1750	18.33	18.42	0.09	749.2
GOODNA	1013.445	65.215	BN 1740	18.2	18.28	0.08	856.7
GOODNA	1013.91	64.74	BN 1730	18.1	18.19	0.09	938.6
GOODNA	1014.31	64.55	BN 1720	18.05	18.14	0.09	896.7
WACOL	1014.61	64.05	BN 1710	18.07	18.16	0.09	923.7
WACOL	1015.09	63.57	BN 1700	17.92	18.02	0.1	406.9
WACOL	1015.56	63.1	BN 1690	17.74	17.84	0.1	449.4
WACOL	1016.14	62.52	BN 1680	17.65	17.75	0.1	550.1
WACOL	1016.64	62.02	BN 1670	17.52	17.63	0.11	634.6
WACOL	1017.13	61.53	BN 1660	17.27	17.38	0.11	615.2
WACOL	1017.61	61.05	BN 1650	17.13	17.24	0.11	944.8
WACOL	1017.92	60.74	BN 1640	16.96	17.07	0.11	822.2
WACOL	1018.2	60.46	BN 1630	16.93	17.04	0.11	807.9
WACOL	1018.725	59.935	BN 1620	16.61	16.72	0.11	372.0
WACOL	1019.095	59.565	BN 1610	16.5	16.61	0.11	522.2
RIVERHILLS	1019.49	59.17	BN 1600	16.49	16.6	0.11	829.7
RIVERHILLS	1019.865	58.795	BN 1590	16.25	16.37	0.12	665.3
RIVERHILLS	1020.115	58.545	BN 1580	16.31	16.42	0.11	718.9
RIVERHILLS	1020.525	58.135	BN 1570	16.29	16.4	0.11	535.4
RIVERHILLS	1020.83	57.83	BN 1560	16.14	16.26	0.12	371.9
RIVERHILLS	1021.095	57.565	BN 1550	15.95	16.07	0.12	251.9
RIVERHILLS	1021.539	57.121	BN 1540	15.86	15.97	0.11	704.1
RIVERHILLS	1021.715	56.945	BN 1530	15.87	15.98	0.11	744.9
WESTLAKE	1021.895	56.765	BN 1520	15.78	15.89	0.11	349.1
WESTLAKE	1022.505	56.555	BN 1510	15.58	15.7	0.12	238.4
WESTLAKE	1022.575	56.085	BN 1500	15.6	15.74	0.14	365.0
WESTLAKE	1023.04	55.62	BN 1490	15.33	15.46	0.13	338.3
WESTLAKE	1023.57	55.09	BN 1480	15.28	15.41	0.13	246.1
WESTLAKE	1024.08	54.58	BN 1470	15.23	15.36	0.13	311.5
WESTLAKE	1024.563	54.097	BN 1460	15.16	15.29	0.13	296.5
WESTLAKE	1025.07	53.59	BN 1450	15.05	15.19	0.14	437.7
WESTLAKE	1025.36	53.3	BN 1440	14.89	15.02	0.13	330.9

Table 2-1 - Flood Levels, Affluxes and Top Widths for Brisbane River - Regulation Lines & Revegetation Combined

Reach Name	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Existing Conditions (m AHD)	Reveg + Reglines (m AHD)	Difference (m)	Top Width (m)
WESTLAKE	1025.59	53.07	BN 1430	14.69	14.83	0.14	263.3
WESTLAKE	1026.17	52.49	BN 1420	14.56	14.69	0.13	241.8
WESTLAKE	1026.68	51.98	BN 1410	14.43	14.55	0.12	336.7
MERMAID	1026.9	51.76	BN 1400	14.28	14.38	0.1	248.2
MERMAID	1027.16	51.5	BN 1390	14.13	14.27	0.14	238.4
MERMAID	1027.68	50.98	BN 1380	14.23	14.34	0.11	515.8
MERMAID	1028.18	50.48	BN 1370	14.2	14.32	0.12	381.9
MERMAID	1028.68	49.98	BN 1360	14.09	14.22	0.13	485.8
MERMAID	1028.76	49.9	BN 1340	13.93	14.08	0.15	263.1
MERMAID	1029.2	49.46	BN 1330	13.79	13.92	0.13	285.3
MERMAID	1029.68	48.98	BN 1320	13.81	13.93	0.12	467.7
MERMAID	1030.22	48.44	BN 1310	13.82	13.9	0.08	405.0
MERMAID	1030.87	47.79	BN 1300	13.74	13.87	0.13	279.0
MERMAID	1031.26	47.4	BN 1290	13.58	13.75	0.17	225.0
MERMAID	1031.7	46.96	BN 1280	13.26	13.42	0.16	187.1
MERMAID	1031.995	46.665	BN 1270	13.36	13.52	0.16	303.0
SHERWOOD	1032.23	46.43	BN 1260	13.24	13.4	0.16	327.3
SHERWOOD	1032.585	46.075	BN 1250	13.09	13.15	0.06	222.1
SHERWOOD	1033.08	45.58	BN 1240	12.88	13.01	0.13	242.0
SHERWOOD	1033.37	45.29	BN 1230	12.72	12.89	0.17	270.2
SHERWOOD	1033.9	44.76	BN 1220	12.54	12.61	0.07	240.2
SHERWOOD	1034.37	44.29	BN 1210	12.38	12.49	0.11	220.0
SHERWOOD	1034.89	43.77	BN 1200	12.35	12.42	0.07	243.4
CHELMER	1035.414	43.246	BN 1190	12.04	12.16	0.12	249.3
CHELMER	1035.9	42.76	BN 1180	11.75	11.85	0.1	256.7
CHELMER	1036.46	42.2	BN 1170	11.59	11.56	-0.03	208.8
CHELMER	1036.77	41.89	BN 1160	11.44	11.5	0.06	301.5
CHELMER	1036.915	41.745	BN 1150	11.3	11.35	0.05	217.0
INDOOROOPILLY	1037.09	41.57	BN 1140	11.25	11.3	0.05	216.7
INDOOROOPILLY	1037.175	41.485	BN 1120	11.19	11.2	0.01	192.9
INDOOROOPILLY	1037.285	41.375	BN 1110	11.09	11.16	0.07	197.9
INDOOROOPILLY	1037.625	41.035	BN 1100	11.18	11.2	0.02	281.7
INDOOROOPILLY	1038.085	40.575	BN 1090	11.19	11.21	0.02	278.5
INDOOROOPILLY	1038.6	40.06	BN 1080	11.18	11.2	0.02	408.0
INDOOROOPILLY	1039.1	39.56	BN 1070	11.14	11.28	0.14	883.4
CANOE	1039.565	39.05	BN 1060	11.14	11.23	0.09	754.5
CANOE	1040.09	38.57	BN 1050	11.1	11.17	0.07	567.2
CANOE	1040.49	38.17	BN 1040	10.97	11.04	0.07	458.5
CANOE	1041.01	37.56	BN 1030	11.01	11.1	0.09	534.7
CANOE	1041.23	37.43	BN 1020	10.98	11.05	0.07	573.4
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CANOE	1041.7	36.96	BN 1000	10.87	10.94	0.07	456.0
CANOE	1041.96	36.7	BN 990	10.73	10.84	0.11	438.6
LONG POCKET	1042.235	36.425	BN 980	10.57	10.66	0.09	401.0
LONG POCKET	1042.515	36.145	BN 970	10.55	10.63	0.08	398.0
LONG POCKET	1042.91	35.75	BN 960	10.4	10.45	0.05	384.5
LONG POCKET	1043.725	34.935	BN 950	10.09	10.16	0.07	291.1
LONG POCKET	1044.06	34.6	BN 940	9.97	10.04	0.07	265.0
LONG POCKET	1044.34	34.32	BN 930	9.83	9.89	0.06	228.4
LONG POCKET	1044.605	34.055	BN 920	9.79	9.86	0.07	319.6
LONG POCKET	1044.86	33.8	BN 910	9.76	9.81	0.05	318.4
CEMETERY	1045.4	33.26	BN 900	9.6	9.65	0.05	522.4
CEMETERY	1045.885	32.775	BN 890	9.53	9.52	-0.01	671.5
CEMETERY	1046.18	32.48	BN 880	9.44	9.47	0.03	501.9
CEMETERY	1046.34	32.32	BN 870	9.38	9.42	0.04	317.8
CEMETERY	1046.58	32.08	BN 860	9.34	9.39	0.05	493.7
CEMETERY	1046.9	31.76	BN 850	9.18	9.21	0.03	386.1
CEMETERY	1047.35	31.31	BN 840	8.87	8.88	0.01	214.9
CEMETERY	1047.915	30.745	BN 830	8.69	8.7	0.01	233.0

Table 2-1 - Flood Levels, Affluxes and Top Widths for Brisbane River - Regulation Lines & Revegetation Combined

Reach Name	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Existing Conditions (m AHD)	Reveg + Reglines (m AHD)	Difference (m)	Top Width (m)
ST LUCIA	1048.375	30.285	BN 820	8.71	8.71	0	317.4
ST LUCIA	1048.89	29.77	BN 810	8.47	8.49	0.02	357.5
TOOWOONG	1049.12	29.54	BN 800	8.42	8.45	0.03	274.6
TOOWOONG	1049.37	29.29	BN 790	8.27	8.28	0.01	237.4
TOOWOONG	1049.59	29.07	BN 780	8.25	8.27	0.02	329.4
TOOWOONG	1049.87	28.79	BN 770	8.16	8.17	0.01	237.9
TOOWOONG	1050.43	28.23	BN 760	8.13	8.2	0.07	686.5
TOOWOONG	1050.86	27.8	BN 750	7.96	7.99	0.03	259.6
MILTON	1051.36	27.3	BN 740	7.92	7.98	0.06	363.9
MILTON	1051.895	26.765	BN 730	7.75	7.81	0.06	520.8
MILTON	1052.31	26.35	BN 720	7.65	7.7	0.05	346.6
MILTON	1052.39	26.27	BN 700	6.97	7.01	0.04	288.3
SOUTH BRISBANE	1052.595	26.065	BN 690	6.89	6.94	0.05	229.2
SOUTH BRISBANE	1052.64	26.02	BN 670	6.33	6.37	0.04	254.6
SOUTH BRISBANE	1053.32	25.34	BN 650	6.28	6.34	0.06	304.1
SOUTH BRISBANE	1053.385	25.795	BN 660	6.22	6.27	0.05	345.0
SOUTH BRISBANE	1053.9	24.76	BN 620	5.98	6.04	0.06	304.9
SOUTH BRISBANE	1054.64	24.02	BN 610	5.87	5.92	0.05	500.4
TOWN	1054.68	23.98	BN 590	5.78	5.82	0.04	415.2
TOWN	1054.97	23.69	BN 560	5.52	5.6	0.08	319.4
TOWN	1055.28	23.38	BN 550	5.49	5.54	0.05	280.1
TOWN	1055.42	23.24	BN 540	5.49	5.54	0.05	325.5
TOWN	1055.96	22.7	BN 530	5.47	5.52	0.05	359.0
TOWN	1056.4	22.26	BN 520	5.25	5.31	0.06	299.7
TOWN	1056.695	21.965	BN 510	5.24	5.3	0.06	268.8
TOWN	1056.865	21.795	BN 500	5.24	5.28	0.04	260.2
SHAFSTON	1056.95	21.71	BN 490	5.14	5.19	0.05	286.3
SHAFSTON	1057.09	21.57	BN 480	5.25	5.31	0.06	307.8
SHAFSTON	1057.53	21.13	BN 470	5.09	5.15	0.06	273.8
SHAFSTON	1058.04	20.62	BN 460	4.78	4.83	0.05	291.8
SHAFSTON	1058.23	20.43	BN 450	4.64	4.69	0.05	294.4
SHAFSTON	1058.53	20.13	BN 440	4.37	4.43	0.06	245.7
HUMBUG	1058.735	19.925	BN 430	4.35	4.39	0.04	282.0
HUMBUG	1059.035	19.625	BN 420	4.04	4.09	0.05	225.7
HUMBUG	1059.54	19.12	BN 410	4	4.04	0.04	343.1
HUMBUG	1059.99	18.67	BN 400	3.82	3.86	0.04	383.3
BULIMBA	1060.345	18.315	BN 390	3.63	3.64	0.01	250.5
BULIMBA	1060.535	18.125	BN 380	3.5	3.53	0.03	219.1
BULIMBA	1061.015	17.645	BN 370	3.46	3.48	0.02	302.1
BULIMBA	1061.53	17.13	BN 360	3.25	3.27	0.02	267.9
BULIMBA	1062.02	16.64	BN 350	3.16	3.19	0.03	325.9
BULIMBA	1062.535	16.125	BN 340	3.12	3.14	0.02	464.1
BULIMBA	1062.94	15.72	BN 330	3.1	3.13	0.03	537.3
HAMILTON	1063.31	15.35	BN 320	2.99	3.02	0.03	467.3
HAMILTON	1063.645	15.015	BN 310	2.7	2.72	0.02	334.2
HAMILTON	1064	14.66	BN 300	2.63	2.64	0.01	343.8
HAMILTON	1064.49	14.17	BN 290	2.52	2.53	0.01	324.3
HAMILTON	1065.01	13.65	BN 280	2.56	2.57	0.01	394.3
HAMILTON	1065.503	13.157	BN 270	2.53	2.54	0.01	391.6
HAMILTON	1065.99	12.67	BN 260	2.57	2.58	0.01	479.1
QUARRIES	1066.505	12.155	BN 250	2.5	2.52	0.02	483.7
QUARRIES	1067.02	11.64	BN 240	2.46	2.47	0.01	429.4
QUARRIES	1067.485	11.175	BN 230	2.37	2.37	0	429.5
QUARRIES	1067.965	10.695	BN 220	2.27	2.28	0.01	424.8
LYTTON	1068.66	10	BN 210	2.12	2.12	0	448.5
LYTTON	1069.045	9.615	BN 200	2.03	2.04	0.01	417.4
LYTTON	1069.535	9.125	BN 190	1.96	1.97	0.01	453.6
LYTTON	1070.025	8.635	BN 180	1.89	1.9	0.01	443.6
LYTTON	1070.53	8.13	BN 170	1.79	1.79	0	457.9

Table 2-1 - Flood Levels, Affluxes and Top Widths for Brisbane River - Regulation Lines & Revegetation Combined

Reach Name	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Existing Conditions (m AHD)	Reveg + Reglines (m AHD)	Difference (m)	Top Width (m)
LYTTON	1071.04	7.62	BN 160	1.69	1.7	0.01	473.9
LYTTON	1071.52	7.14	BN 150	1.72	1.73	0.01	454.8
LYTTON	1072.015	6.645	BN 140	1.68	1.69	0.01	879.5
LYTTON	1072.515	6.145	BN 130	1.56	1.57	0.01	451.1
LYTTON	1072.995	5.665	BN 120	1.52	1.52	0	483.7
LYTTON	1073.485	5.175	BN 110	1.41	1.42	0.01	497.4
LYTTON ROCKS	1074	4.66	BN 100	1.34	1.34	0	468.7
LYTTON ROCKS	1074.46	4.2	BN 90	1.27	1.27	0	515.6
LYTTON ROCKS	1074.985	3.675	BN 80	1.12	1.13	0.01	512.9
LYTTON ROCKS	1075.48	3.18	BN 70	1.09	1.08	-0.01	797.3
PELICAN BANKS	1076	2.66	BN 60	1.09	1.09	0	1075.7
PELICAN BANKS	1076.495	2.165	BN 50	0.98	0.97	-0.01	871.7
PELICAN BANKS	1077.01	1.65	BN 40	0.97	0.97	0	1438.6
LOWER	1077.51	1.15	BN 30	0.97	0.97	0	939.8
LOWER	1078.04	0.62	BN 20	0.95	0.95	0	765.4
LOWER	1078.525	0.135	BN 10	0.92	0.92	0	469.1
LOWER	1078.66	-	-	0.92	0.92	0	2999.7

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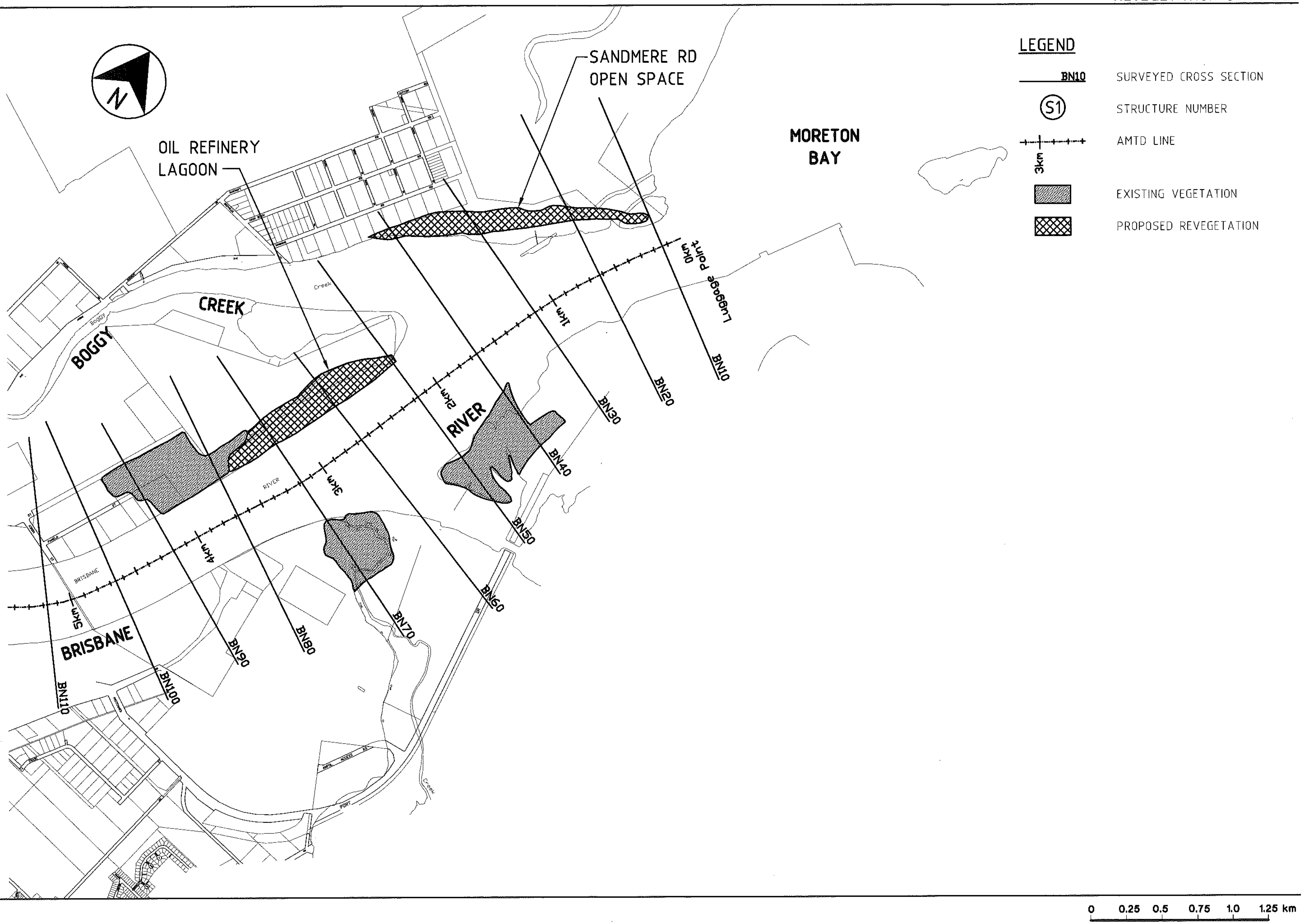
FIGURE 2-1a
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY



PLOT SCALE: 1=25

FIGURE 2-1b
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY

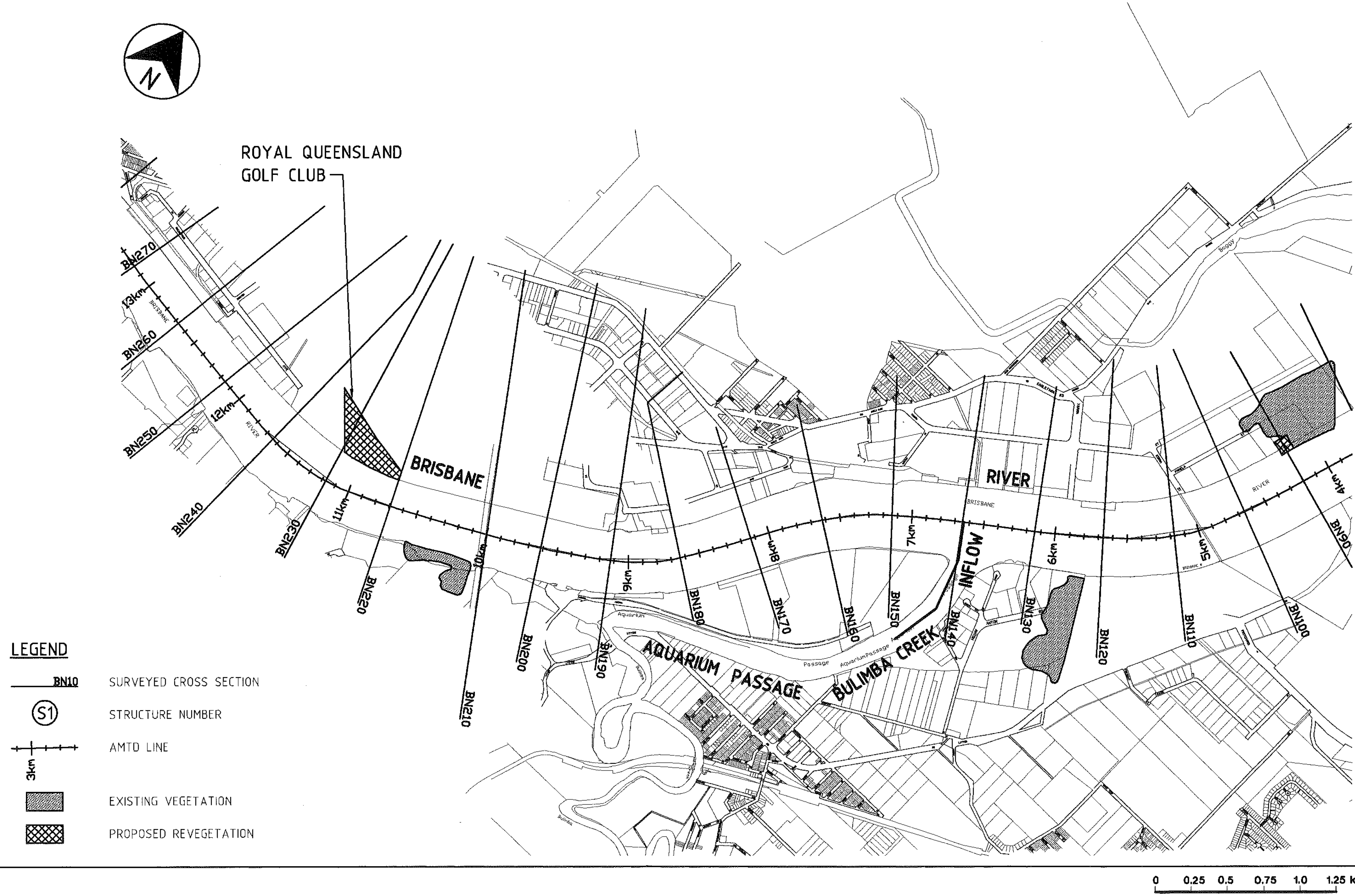
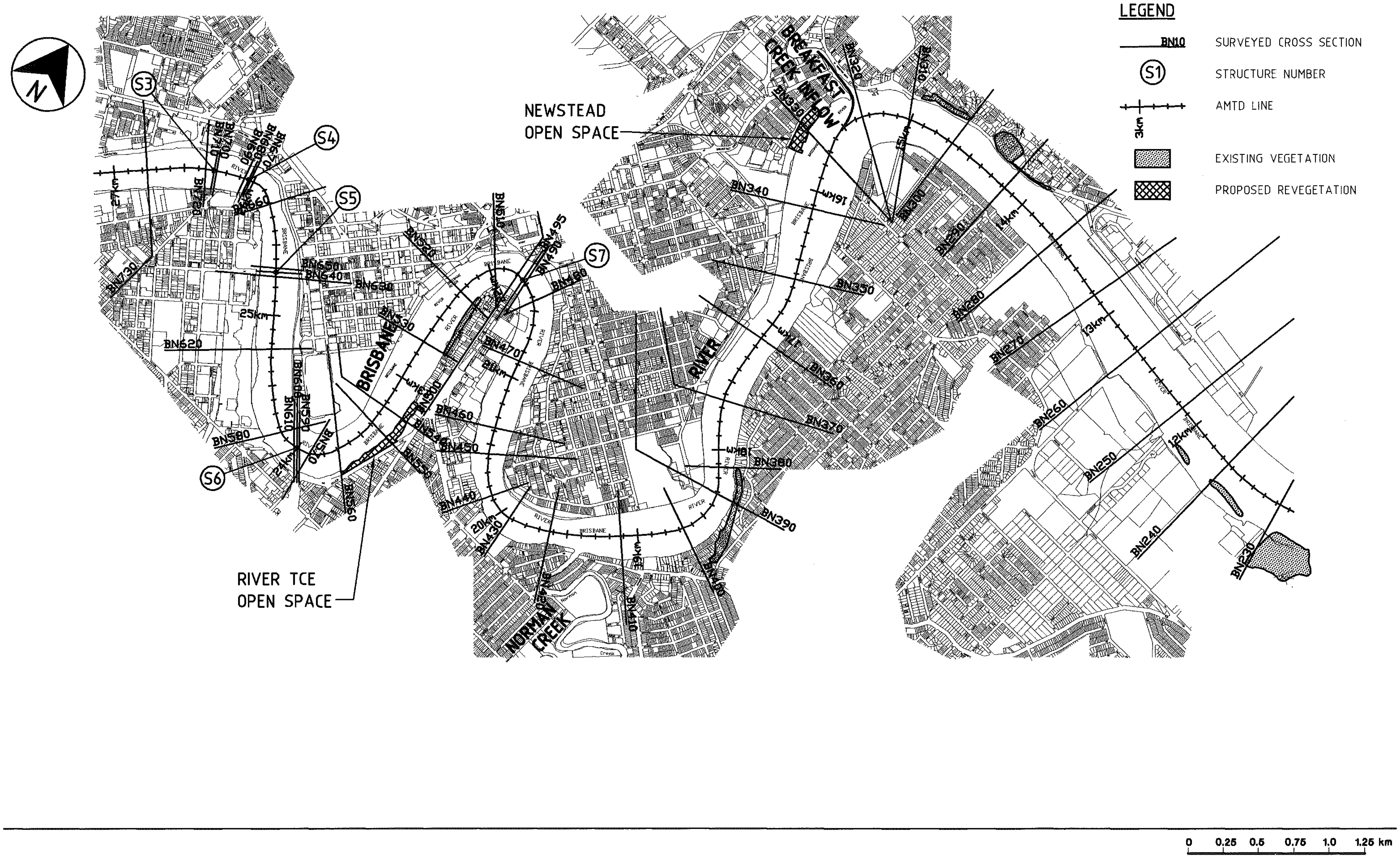


FIGURE 2-1c

BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY



FILE NAME: 04157... PLOT SCALE: 1:25

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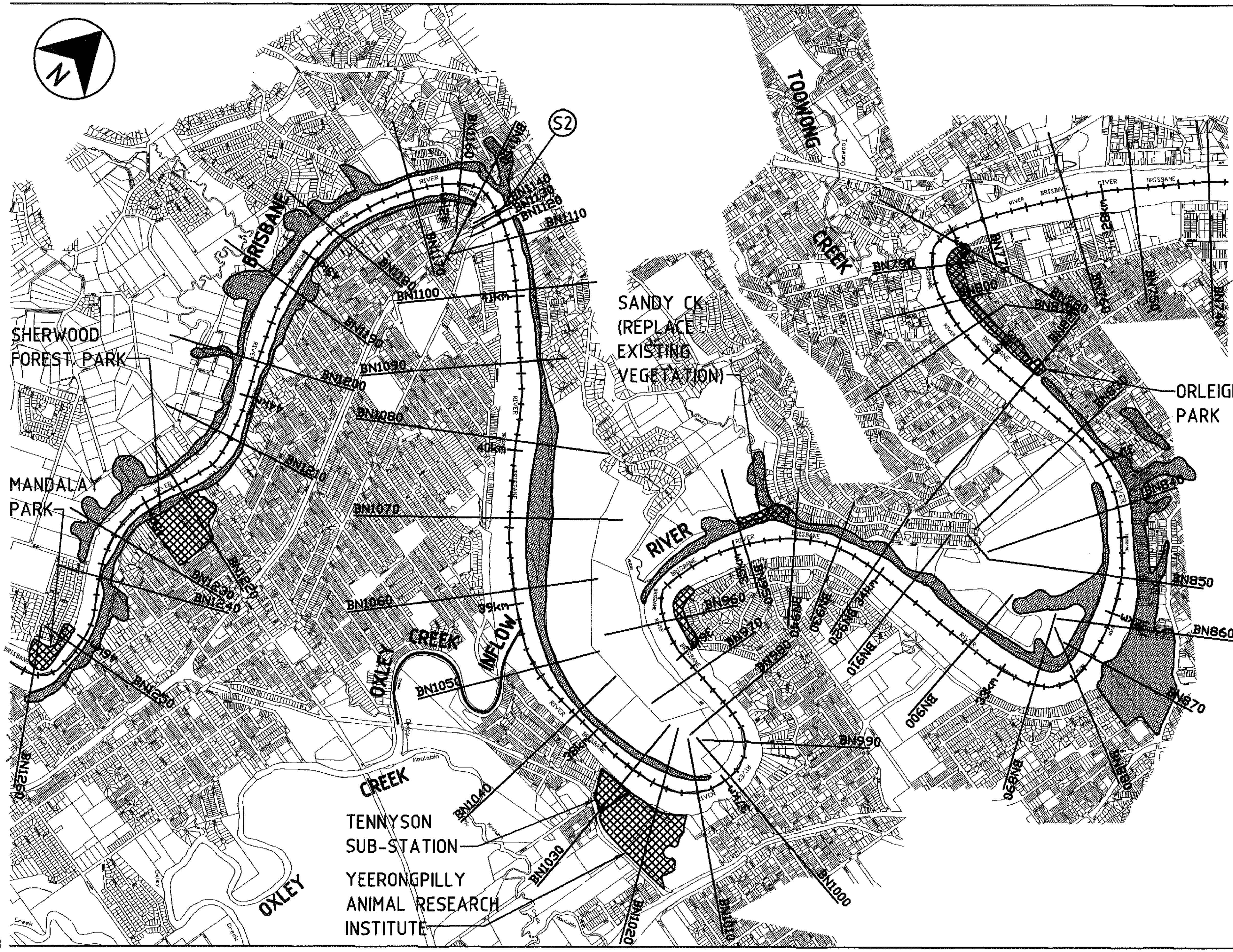
FIGURE 2-1d
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY



LEGEND

BN10 SURVEYED CROSS SECTION

(S1) STRUCTURE NUMBER

AMTD LINE

3km

EXISTING VEGETATION

PROPOSED REVEGETATION

0 0.25 0.5 0.75 1.0 1.25 km

FILE ...... 0415 ..
PLOT SCALE: 1=25

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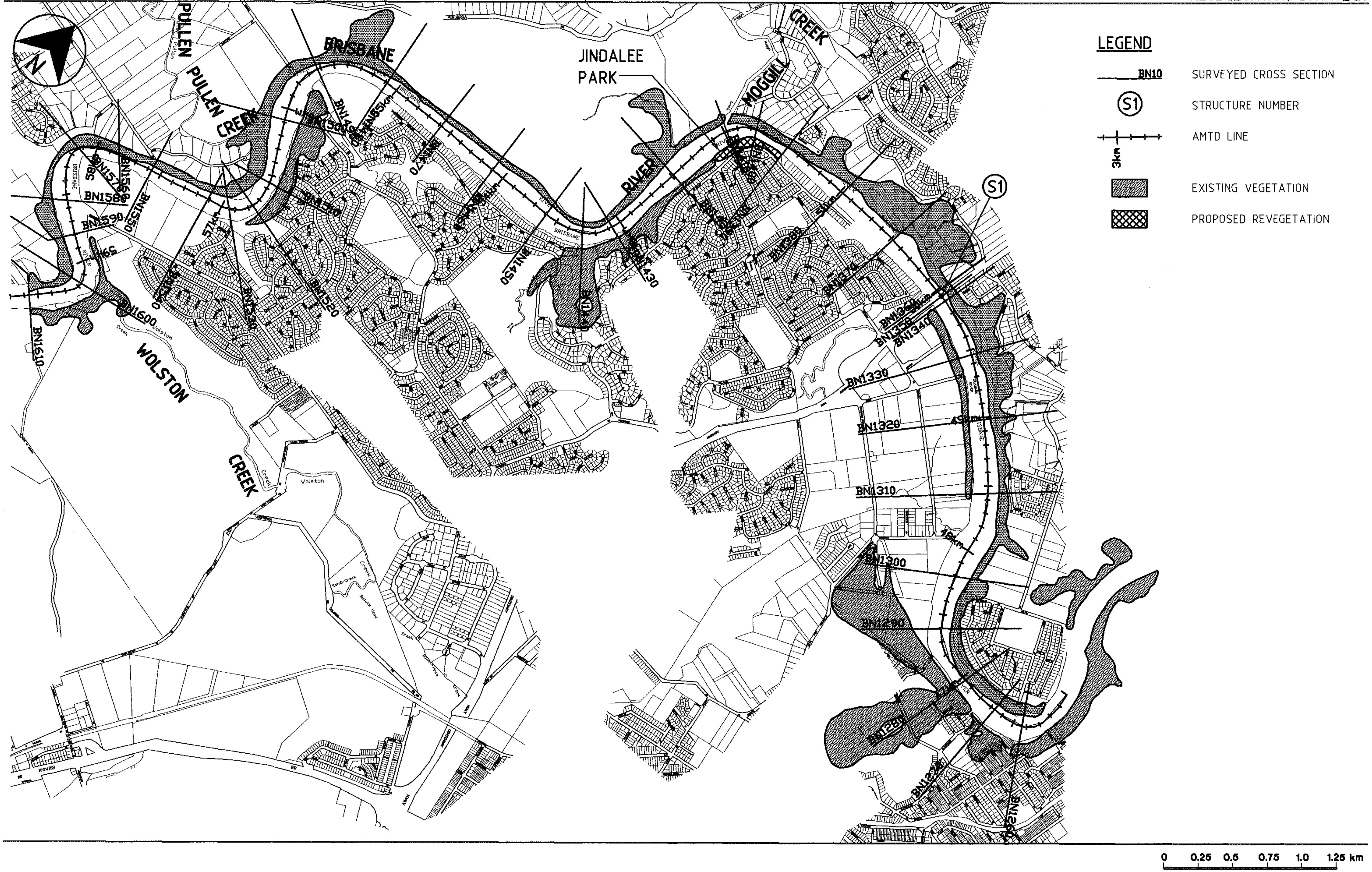
FIGURE 2-1e

BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY



FILE 0415
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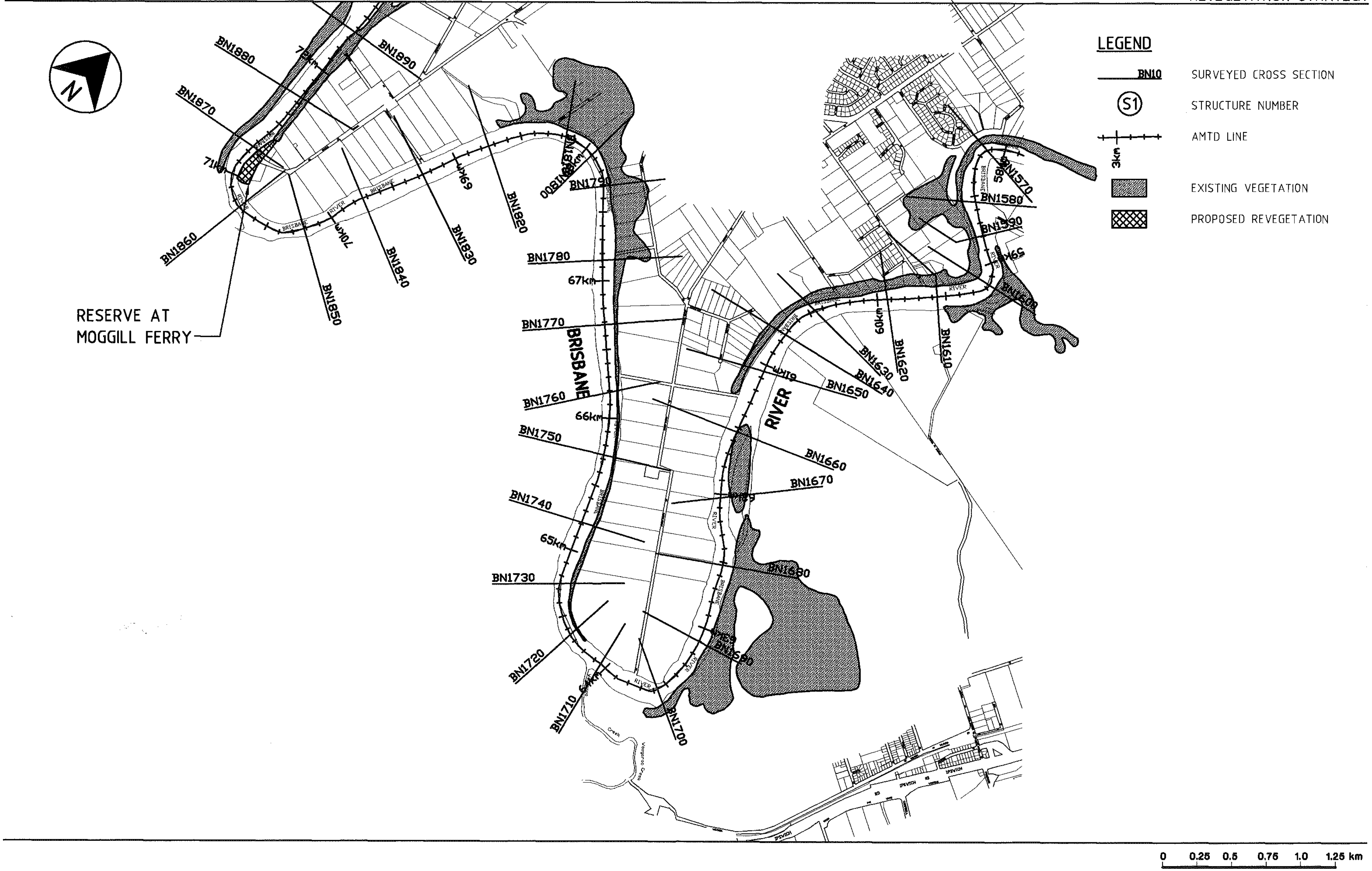
FIGURE 2-1f
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY



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Brisbane City Council
October 1997

Brisbane River Flood Study

Waterway Management Report

DRAFT

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Contents

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1. Introduction

The Brisbane River Flood Study is a major initiative of the Brisbane City Council to establish design flood levels along the lower reach of the Brisbane River. Additional outcomes of the investigation will be to set flood regulation lines , a revegetation strategy compatible with hydraulic constraints and a flood forecasting model.

The Waterway Management Report is the third in a series of progress reports. This report uses the calibrated hydraulic model (MIKE 11) developed in the calibration phase of this study along with 100 year ARI design event estimated in the Design Events phase of this study. These results were used to determine the impacts that waterway revegetation and the delineation of regulation lines will have on the Brisbane River floodplain. Once these impacts have been determined development levels will be set giving consideration to floodplain development and the adopted revegetation strategy.

The remaining progress report to be provided for this study is the Flood Mapping Report.

2. Waterway Management

2.1 General Strategy

This component of the study required application of the calibrated hydraulic model for the lower Brisbane River to determine a revegetation strategy and delineate flood regulation lines.

The brief required that the combined effect of revegetation and rehabilitation, encroachment of development on the floodplain outside the regulation line and crossings of the river (upgraded as necessary) does not increase the 100 year ARI flood level by more than approximately 150 mm. After discussions with council it was decided that increases in water level up to 170 mm would be acceptable in selected locations provided private residences were not significantly effected.

2.2 Collation of Environmental Data

Prior to the commencement of the Waterway Management Strategy it was necessary to liaise with the Bikeway, Transport Planning Section and the Environment Management and Planning Sections of the Brisbane City Council.

Through contact with the Environmental Management and Planning Departments a data sheet containing various names and addresses of Environmental Groups throughout Queensland was obtained.

Specific groups were targeted according to their proximity to the Brisbane River and questionnaires were prepared and sent to these groups. Approximately 500 questionnaires to members of the specific community groups were sent however to date the response has been poor with only 3 questionnaires returned. A summary sheet of these questionnaires has not as yet been prepared as late responses are expected.

Discussions with the Bikeway, Transport Planning Section revealed that no major works have been planned over the next five years with the exception of the construction of a new bikeway along Coronation Drive between the William Jolly Bridge and Victoria Bridge. These works involve the construction of a structure approximately 4.5 metres in width and about 1 metre above high tide level. The structure is to be built outside the existing freeway structure to avoid problems with freeway foundations.

This structure was not included in the hydraulic modelling as the decrease in conveyance due to the decrease in channel area would be negligible. Similarly due to the location and size of this structure it was considered that the resulting impacts would be negligible as the structure would be drowned out during a 100 year ARI event.

The existing bikeway running adjacent to Coronation Drive is also to be upgraded within the next few years however this project is in the preliminary phase and therefore no information was available.

2.3 Revegetation Strategy

It was proposed that the revegetation strategy would be developed primarily from information supplied by each of the surveyed community groups however due to the poor response limited revegetation locations were identified. Other areas had to therefore be located using photographic maps, topographical information and field surveys.

Most of the locations that have been identified for revegetation are currently open space areas. Revegetation of private residential areas has not been investigated as it was considered that these areas would generally be small and therefore have a negligible effect on the floodplain.

The combination of community groups input and the additional investigation resulted in a proposed revegetation strategy. This proposed revegetation strategy is presented in **Figures 2-1a to 2-1f -Brisbane River Flood Study - Revegetation Strategy.**

Figures 2-1a to 2-1f also presents locations where significant areas of vegetation currently exist. These locations may or may not represent areas of ecological significance. It is recommended that should development occur at any of the above locations some form of environmental investigation be undertaken to assess the possible ecological impacts.

The approach used to investigate the revegetation strategy for the Brisbane River was to increase mannings n roughness parameters within the calibrated hydraulic model (MIKE 11) to reflect changes imposed by the proposed revegetation.

Since the hydraulic model bank roughnesses at most locations exceeded 0.15 (to allow for bend losses), a sensitivity analysis was conducted to assess the impacts that revegetation would have on the 100 year flood level.

The sensitivity analysis was carried out by reducing the roughness values to 0.15 at the proposed revegetation locations. It was found that this reduction in roughness values caused the existing case 100 year ARI flood levels to decrease by 10 to 50 mm at these locations. The roughness values were then increased to their original values and 0.15 was added. This resulted in an increase in flood levels at these locations of between 10 to 50 mm above the existing 100 year ARI case. It was therefore concluded that the river was not sensitive to changes in bank roughness conditions.

The proposed revegetation strategy applies to locations where revegetation is below the 100 year ARI flood inundation level. Tree planting has been tested in all proposed locations as fully uncontrolled revegetation.

Fully unconstrained revegetation for the Brisbane River was defined as uncontrolled planting where manning roughnesses have been applied in the hydraulic model to a value of 0.15 above those values determined during the calibration of the MIKE 11 hydraulic model.

Extent of revegetation will be discussed on an individual reach basis in **Section 2-5 - Hydraulic Testing of Waterway Strategy Options** of this report.

2.4 Regulation Line Assessment

Regulation lines are used by council as a control on development encroaching onto the floodplains of major creeks and rivers. They are set to ensure that works such as placement of fill does not compromise existing flood immunity.

Interim regulation lines can be defined as offsets from real property boundaries. Interim lines have not been supplied by council for this study hence regulation lines have been set using the calibrated MIKE 11 hydraulic model results.

This work was principally based on the worst case design scenario of the occurrence of the 100 year ARI flood under current catchment development superimposed with the regulation lines and revegetation strategy in place. The geometry of river cross sections was adjusted to reflect flood conveyance and storage in the areas outside the regulation lines. The combined effect of this encroachment and the revegetation strategy was considered as described in **Section 2-5 - Hydraulic Testing of Waterway Strategy Options** of this report.

In some reaches, several solutions to the regulation line location and revegetation strategy satisfy the hydraulic constraints. In these locations practical regulation lines were adopted after consideration of planning, environmental and economic criteria.

A final check was made to ensure that regulation lines provided a minimum 15 m buffer to the top of the river bank to manage future erosion and sedimentation problems. Where development already existed within this 15 m buffer, the rule was disregarded to eliminate these properties from within the regulation lines.

Development levels were then set at 300 mm above the 100 year ARI flood with the revegetation and regulation lines in place. Where the Moreton Bay 100 year ARI storm surge levels were higher than the 100 year ARI river levels the surge levels were used.

2.5 Hydraulic Testing of Waterway Strategy Options

The regulation lines were finalised on the above basis to produce a reasonable balance between regulation line requirements and water level increases.

Most emphasis was placed on existing developed areas and any recommended zoning adjustments have been based purely on a hydraulic basis and prior to a change of rezoning other factors should be considered.

A summary of the processes involved and the decisions made in preparing the combined regulation line and revegetation strategy is provided in this section. The assessment is detailed on a reach by reach description.

Brisbane River Flood Study –

Placement of the regulation lines are presented in **Figures 2-2a to 2-2m - Proposed Regulation Lines** and corresponding flood level information is presented in **Table 2-1 - Flood levels, Affluxes and Top Widths for Brisbane River - Regulation Lines and Revegetation Combined**.

During the Regulation line assessment, it was found that the hydraulic model was sensitive to the placement of the regulation lines above the Centenary Bridge.

This sensitivity was most likely due to the regulation lines forming a relatively consistent cross section which in turn increased the peak discharges downstream in the order of 200 to 300 m^3/s.

This increase in discharge had a significant impact in flood levels downstream of the Centenary Bridge and hence the moving of regulation line upstream of Centenary Bridge was very restrictive.

Reach 1 - Upper Boundary

Cross Sections: BN2020 to BN1980
Chainages: 1000 km to 1001.865 km
AMTD: 78.66 km to 76.795 km

Potential Flooding

No flooding of residences will occur in this reach. Any flooding which does occur will only inundate open space within the Brisbane City Boundary.

Revegetation

- No revegetation was assessed in this reach.
- As there is considerable natural vegetation throughout this reach, the riverbanks could be considered as areas of ecological importance.

Regulation Lines

- Regulation lines in this reach are at the extent of inundation lines.
- The range of affluxes in this reach with revegetation and regulation lines in place was from 70 to 80 mm.

Zoning Adjustments

- Current zoning through this reach is predominantly Open Space and Non-Urban. As no private residences are affected by the inundation lines, no rezoning for this reach has been recommended.

Reach 2 - Barellan Point

Cross Sections: BN1970 to BN1910
Chainages: 1002.35 km to 1005.325 km
AMTD: 76.310 km to 73.335 km

Potential Flooding

From BN1970 to BN1930, flooding will affect those properties along Hawkesbury Road. From BN1920 to BN1910, several properties in Hawkesbury Road, and one in Matfield Street will be affected by flooding in a 1 in 100 year flood event.

Revegetation

- No revegetation was assessed in this reach.
- As there is considerable natural vegetation throughout this reach, the riverbanks could be considered as areas of ecological importance.

Regulation Lines

- Regulation lines in this reach are set at the extent of inundation. BN 1970 - BN1910
- The range of affluxes in this reach with revegetation and regulation lines in place was from 90 to 110 mm. 0 -40

Zoning Adjustments

- Current zoning throughout this reach is Open Space and Non-Urban. As no private dwellings are affected by the inundation lines, no rezoning for this reach has been recommended.

except 1970 LB * - check

Reach 3 - Riverview

Cross Sections: BN1900 to BN1870
Chainages: 1005.87 km to 1007.41 km
AMTD: 72.79 km to 71.25 km

Potential Flooding

Properties along Hawkesbury Road, Myora Street, Aitcheson Street and Moggill Road will be partially affected by flooding in a 1 in 100 year flood event.

Revegetation

- At BN1870 (reserve at Moggill Ferry), full tree planting was tested with flood level increases of 10 mm.
- All revegetation is to a standard of roughness, n = 0.15
- As there is considerable existing vegetation throughout this reach, the riverbanks could be considered as areas of ecological significance.

Regulation Lines

- Regulation lines in this reach have been set at the extent of inundation.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 50 to 110 mm.

Zoning Adjustments

- Zoning in this reach is predominantly Open Space along the riverbank and Future Urban.
- No rezoning has been recommended for this reach.

Reach 4 - Redbank

Cross-Sections: BN1860 to BN1770
Chainages: 1007.920 km to 1011.980 km
AMTD: 70.740 km to 66.680 km

Potential Flooding

The majority of flooding in this reach occurs onto open space.

At BN1860, flooding occurs back onto the start of Moggill Road, however the extent of flooding appears to occur over open space.

From BN1840 to BN1820, a localised area of flooding spreads back into Moggill Road inundating any properties in Aitcheson Street.

Flooding from BN1820 to BN1810 reaches Moggill / Malfield Road, but there does not appear to be any dwellings affected.

Properties along the river side of Prior's Pocket Road will be affected by flooding to some extent.

Revegetation

- No revegetation was assessed in this reach.
- There is considerable existing vegetation along the riverbanks, and also a large patch from BN1770 to BN1820, therefore the riverbanks could be considered zones of ecological significance.

Regulation Lines

1900 LB
1770 LB
except
1860 RB
1830 RB
1820 RB

- Regulation lines in this reach have been set at the extent of inundation.
- From BN1840 to BN1830, regulation lines extend into some rural residential properties to a minor extent.
- From BN1860 to BN1850, regulation lines significantly affect several rural residential properties.
- The range of affluxes in this reach with revegetation and regulation lines in place was from 80 to 90 mm.

Zoning Adjustments

- From BN1860 to BN1850, sections of those rural residential zoned properties significantly affected by the regulation lines should be rezoned to Open Space (OS).

Reach 5 - Goodna

Cross Section: BN1760 to BN 1720
Chainage: 1012.475 km to 1014.110 km
AMTD: 66.185 km to 64.550 km

Potential Flooding

Considerable flooding will occur in a 1 in 100 year event on Prior's pocket.

From BN1750 to BN1710, flooding extends right back to the kink in Priors Pocket Road, covering the entire point, except for two patches of higher ground.

Revegetation

- No revegetation was assessed in this reach.
- Considerable vegetation exists right along the riverbanks in this reach. The riverbanks could be considered as areas of ecological significance.

Regulation Lines

- Regulation lines in this reach are set at the extent of inundation lines. except 1750 RB
- The point at the end of Priors Pocket Road is completely inundated to BN1730
- The range of affluxes in this reach with revegetation and regulation lines in place was from 80 to 90 mm.

Zoning Adjustments

- Properties throughout this reach are currently zoned Open Space or Non-Urban. As such, no adjustments to rezoning throughout this reach are recommended.

Reach 6 - Wacol

Cross Section: BN1710 to BN 1610
Chainages: 1014.610 km to 1019.095 km
AMTD: 64.050 km to 59.565 km

Potential Flooding

From BN1710 to BN1670, Priors Pocket is flooded back until the kink in Priors Pocket Road.

From BN1660 to BN1650, properties in Priors Pocket Road and part of Avonmore Street will be affected by flooding in a 1 in 100 year ARI storm event.

From BN1640 to BN1630, flooding follows an unknown creek (adjacent Stratford Street), and inundates the rear of several properties west of Livesay Road, inundation spreads north to Ellerby Street.

From BN1620 to BN1610, properties along Vanwall and Zelita Road will suffer inundation to some extent, as will the Department of Primary Industry Land.

Revegetation

- No revegetation was assessed in the Wacol reach.
- From BN1610 to BN1700 there is considerable existing vegetation. The riverbanks in these areas could be considered as areas of considerable ecological significance. 1680 LB 1630 LB

Regulation Lines

- Regulation lines in this reach are set at the extent of inundation. 1690 RB to 1650 RB
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 100 to 110 mm.

Zoning Adjustments

- Properties throughout this reach are zoned as Special Use, Non-Urban or Open Space.
- No recommendations for rezoning in this reach have been made.

Reach 7 - Riverhills

Cross Section: BN1600 to BN1530
Chainage: 1019.49 km to 1021.715 km
AMTD: 59.170 km to 59.945 km

Potential Flooding

At Bn1530, a localised area of flooding inundates those properties adjacent to the park bounded by Juba and Zambesi Streets, with flooding extending up into Horizon Drive.

From BN1540 to BN1550, flooding extends over the largely undeveloped areas bounded by Pauluna, Loddon Streets and Westlake Drive. Numerous residences will also be inundated in a 1 in 100 year flood event. On the western side of the river properties in Lather Road will suffer some extent of flooding.

From BN1570 to BN1600, an extensive area of flooding occurs in the Moggill Country Club, Booker Place and the swimming pool. However flooding does extend into a significant number of residential areas in Sugarwood Street, Ghost Gum Street up to Moggill Road, Birkin Road and across into Banyan Street.

At BN1600, flooding follows Wolston Creek, however the majority of this flooded area appears to be undeveloped.

Revegetation

- From BN1530 to BN1540 (Juba Street Park), full tree planting was tested with flood level increases of 20 mm.
- All revegetation is to a standard of roughness, n = 0.15
- From BN1560 to BN1600, there is considerable existing vegetation, therefore the riverbanks in this area could be considered zones of ecological significance.

1560 Buffer RB
1550 Buffer LB
1530 " LB

Regulation Lines

- Regulation lines in this reach are set at the extent of inundation.
- From BN1600 to BN1590, a block of property zoned as Future Urban will be affected considerably by the regulation lines.
- From BN1580 to BN1530, numerous residential properties will be affected by the regulation lines.
- The range of affluxes in this reach with revegetation and regulation lines in place ranges from 110 to 120 mm.

1600 LB
1540 LB
1590 RB
1580 RB
1570 RB

Zoning Adjustments

- The block of Future Urban property from BN1600 to BN1590 should be rezoned to Open Space
- From BN1580 to BN1530, those waterfront Residential A properties in Lather Street and Sumner Road should be rezoned to Open Space (OS).

Reach 8 - Westlake

Cross Section: BN1520 to BN1410
Chainages: 1021.895 km to 1026.680 km
AMTD: 56.765 km to 51.980 km

Potential Flooding

From BN1510 to BN1500, flooding generally follows Pullen Pullen Creek, with those properties bordering the creek suffering inundation in a 1 in 100 year ARI storm event. This area appears to be largely open space.

From BN1470 to BN1480, those properties in Westlake Drive will experience varying degrees of flooding.

Significant flooding occurs from BN1470 to BN1460, with floodwaters extending into Westlake and the properties surrounding it. Properties as far south as Raeside Street, east to Pending Street and west to the end of Westlake Drive will suffer flooding.

Another very large area of flooding occurs between BN1450 and BN1440 due to Mt Omaney Creek. The McLeod Country Golf Course, park, treatment works and the Jamboree Heights Primary school will all be inundated in a 1 in 100 year flood event. Properties into Horizon Drive, Westlake Drive and Arrabri Avenue will also all suffer flooding.

At BN1400 flooding will occur along an unknown creek (adjacent to Moggill Creek), with floodwaters extending into largely undeveloped land. Properties on the northern side of Moggill Creek will also suffer problems with inundation as will the University of Queensland Veterinary Farm.

Revegetation

- At BN1410 (Jindalee Park), full tree planting was tested with flood level increases of 10 mm.
- All revegetation is to a standard of roughness n = 0.15.
- There is considerable existing vegetation along the riverbanks throughout this reach. Therefore, the banks in this reach could be classified as zones of ecological significance.

Regulation Lines

- Regulation lines are set at the extent of inundation at BN1440.
- The regulation lines at BN 1470 have been moved until maximum allowable afflux has been achieved.
- BN 1460 used a combination of the buffer rule and extent of inundation to achieve the maximum allowable afflux.
- BN 1450 used a combination of moving the regulation line on the left bank and extent of inundation on the right bank to achieve the maximum allowable afflux.

- BN 1410 used a combination of the buffer rule and the moving of regulation line on the right bank until the maximum allowable afflux was obtained.
- The remainder of the reach adheres to the 15m buffer rule.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 110 to 140mm.

Zoning Adjustments

- From BN1440 to BN1480, those riverside properties zoned Residential A in Callabonah Street, Barcoorah Street Westlake Drive and Carnegie Street should be rezoned to Open Space.
- From BN1430 to BN1420 those properties zoned Residential A in Mt Omaney Drive and Coolaroo Drive should be rezoned to Open Space.

Reach 9 - Mermaid Reach

Cross Section: BN1400 to BN1270
Chainages: 1026.900 km to 1031.995 km
AMTD: 51.76 km to 44.665 km

Potential Flooding

Extensive flooding of properties occurs throughout the whole of this reach. Between BN1270 and BN1280, a localised area of flooding inundates properties as far south as Cliveden Avenue with flooding occurring in parts of Teesdale Street, Richmond Street and Oxley Terrace and west to properties in Blackheath Road.

From BN1290 to BN1340, the largely undeveloped area bounded by Seventeen Mile Rocks Road will be inundated in a 1 in 100 year ARI storm event. Also in this region, properties in Newland Street and the Fig Tree Pocket Pony Club will also suffer flooding.

From BN1340 to BN1360 flooding occurs through the watercourse (located near Jindalee Bridge) and extends past Oldfield Road. Properties in Yallambee Road, Capitol Drive, Sinnamon Road and parts of Oldfield Road will all be inundated in a 1 in 100 year storm event.

From BN1370 to BN1400, a large area of flooding occurs through a highly developed residential area. Flooding will extend as far South as Curragundi Road and into a section of Arabri Avenue between sections BN1380 and BN1390. From BN 1390 to BN1400, this flooding is limited to properties along Mt Omaney Drive and Bareena Avenue. On the northern side of the river, flooding occurs through mostly undeveloped land north into Scenic Road.

Revegetation

- At BN1400 (Jindalee Park), full tree planting was tested with flood level increases 0.01 m. All revegetation is to a standard of roughness, n = 0.15.
- There is considerable existing vegetation throughout this reach and the riverbanks may therefore be considered areas of ecological significance.

Regulation Lines

- BN1400 and BN1380 the right bank used the 15 m buffer rule and the left bank regulation line has been move until the maximum allowable afflux has been achieved.
- At BN1360 the left bank regulation line has been set at inundation and the right bank has been set using the 15 m buffer rule.
- From BN1270 through to BN1300, regulation lines are set along the riverbank and only affect areas already zoned Open Space.
- Regulation lines extend significantly into areas zoned as future urban and future industry between sections BN1330 and BN1320.

- At BN1330, several properties zoned Residential A are affected by regulation lines.
- At all other locations the 15 m buffer rule has been applied to regulation lines throughout this reach.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 100 to 170 mm.

Zoning Adjustments

- The property zoned future urban and future industry between sections BN1300 and BN1330, should be rezoned to Open Space, extending back to Sinnamon Road.
- Residential A properties at section BN1330, should be assessed as to the extent to which inundation lines affect the properties and zoned Open Space as appropriate.

Reach 10 - Sherwood Reach

Cross Section: BN1260 to BN1200
Chainage: 1032.230 km to 1034.890 km
AMTD: 46.430 km to 43.770 km

Potential Flooding

From BN1200 to BN1210, properties bounding Cubberla Creek will all suffer flooding in a 1 in 100 year ARI storm event, especially those properties in Jesmond Drive, Needham Street, Ningana Street, Aminga Street and Sprenga, Karella and Thiesfield Streets. On the Eastern side of the River, some properties in Molonga Terrace, Long Street and Kianga Streets will all experience flooding.

From BN1220 to BN1230, Sherwood Forest Park and those streets bounding it, will suffer inundation, especially Turner, Jolimont, Ferry and Joseph Streets. On the Western side, some properties in Jesmond road will experience a degree of flooding.

In the 100 year ARI event, extensive flooding into residential areas will occur between BN1240 and BN1260, with only the higher properties in the Cylene Court and Michelangelo / Botticelli Street vicinity being unaffected.

Revegetation

- From BN1250 to BN1260 (Mandalay Park) and at BN1220 (Sherwood Forest Park), full tree planting was tested with flood level increases of 0.01m and 0.03m respectively.
- All revegetation is to standard of roughness of n = 0.15
- From BN1240 to BN1260, there is considerable existing vegetation and therefore, the riverbanks may be considered as areas of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- Between BN1200 and BN1210, regulation lines will extend into existing private residences and also into an area of land zoned as future urban.
- From BN1220 to BN1260, numerous private residences will be affected by the regulation lines to a certain extent.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 60 to 170 mm.

Zoning Adjustments

- The property designated as future urban should be partially rezoned to incorporate an open space corridor to the extent of the regulation lines between BN1200 and BN1220.
- From BN1230 to BN1260, properties zoned Residential A should be assessed to determine the extent to which regulation lines affect properties. Those properties significantly affected by the regulation lines should be rezoned to Open Space.

Reach 11 - Chelmer Reach

Cross Section: BN1190 to BN1150
Chainage: 1035.474 km to 1036.915 km
AMTD: 43.246 km to 41.745 km

Potential Flooding

In this reach, flooding is limited to a localised pocket between sections BN1160 and BN1170, with some flooding on the Eastern side.

The localised flooding between sections BN1160 and BN1170 extends as far inwards as Moggill Road and is bounded on the southern side by Boundary Road, with some flooding into Market and Minkara Streets. Flooding on the Northern side generally follows Witton Creek, with flooding extending into Kate Street, Vera Street and Aaron Place. On the eastern side, properties in Longman Terrace, Sutton and Morley Streets will all suffer inundation in a 1 in 100 year ARI flood.

Between sections BN1170 and BN1180, another localised area of flooding occurs causing inundation in properties located in Brinkworth Place, Jainba and Jerrang Streets.

From BN1180 to BN1190, properties bounding Cubberla Creek will experience flooding problems, especially those properties in Dobell Street and parts of Clandon and Forlong Streets.

Revegetation

- No revegetation was assessed in this reach.
- As there is considerable existing vegetation throughout this whole reach, the riverbanks and the areas bounding Cubberla Creek, could be considered an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- Throughout this reach, regulation lines will extend significantly into private residential properties. Some properties will be affected by the regulation lines to a greater extent than others.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 30 to 120 mm.

Zoning Adjustments

- Rezone those Residential A properties, significantly affected by the regulation lines, to Open Space (OS), especially those properties in Sutton Street and Morley Street.

Reach 12 - Indooroopilly Reach

Cross Section: BN1140 to BN1070
Chainage: 1037.090 km to 1039.100 km
AMTD: 41.570 km to 39.560 km

Potential Flooding

There is an extensive area of flooding of this whole reach, especially on the Chelmer side of the river. From BN1110 to BN1070, flooding occurs as far back as Kitchener / Appel Street with this corridor narrowing at BN1080 to Chanter Street. Chelmer Oval, Faulkner park, Graceville Memorial Park, the Graceville Primary School and a very large number of residences will all be inundated in a 1 in 100 year ARI flood event.

On the Eastern side of the river, flooding is limited to Thomas and Sir John Chandler Park, with some properties in Ivy Street, Clarence Road and Glencairn Avenue suffering some flooding.

Revegetation

- No revegetation was assessed in this reach.
- There is considerable existing vegetation throughout this reach, thus the riverbanks could be considered an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- Regulation lines from BN1070 to BN1080 extend into residential dwellings.
- From BN1090 to BN1140, considerable private residences will be affected by regulation lines.
- Regulation lines at BN1070 used the 15m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at this location.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 20 to 140 mm.

Zoning Adjustments

- Rezone Residential A properties in Leybourne Street and Queenscroft Avenue between BN1070 and BN1080 to Open Space (OS).
- Properties in Ivy and Roseberry Streets should be rezoned from Residential A to Open Space.

Reach 13 - Canoe Reach

Cross Section: BN1060 to BN990
Chainage: 1039.565 km to 1041.960 km
AMTD: 39.095 km to 36.700 km

Potential Flooding

The majority of flooding in this reach is confined to the Oxley Creek / Moolabin Creek areas, with some localised pockets of inundation.

From BN1060 to BN1040, properties bounding Oxley Creek will all suffer inundation with the limits being Tweedale/Blackwood Street to the west and David Street to the east with those higher properties in King Arthur Terrace, Merlin and Camelot Streets being immune to flooding. Sir John Chandler Park and the Indooroopilly Golf Course will be completely inundated in a 1 in 100 year flood event.

From BN1020 to BN1010, flooding occurs through the Yeerongpilly Animal Research Institute and floods some properties in Paragon and Ortive Streets. Flooding along Moolabin Creek is also a problem in this area, with the Brisbane Golf Course and properties back to Tennyson Memorial Avenue and Station Road being affected.

From BN1000 to BN990, the main problem areas in a 1 in 100 year flood event will be Stevens Street and Nelson Street back to Fairfield Road. Some properties in Yeronga, Feez and Astolat Streets will also be affected by flooding to some extent.

Revegetation

- From BN1020 to BN1030 (adjacent Yeerongpilly Animal Research Institute), full tree planting was tested with flood level increases of the order of 0.01 m.
- All revegetation is to a standard of roughness of $n = 0.15$.
- There is considerable existing vegetation throughout this reach, thus the riverbanks could be considered an area of ecological significance.

Regulation Lines

- Regulation lines at BN1060 to BN 990 used the 15 m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at these locations.
- From BN990 to BN1010 and from BN1040 to BN1060, regulation lines will extend into the rear of numerous private dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 50 to 110 mm.

Zoning Adjustments

- Rezoning of Residential B dwellings in Rome Street south, Astolat Street, Feez, Yeronga and Steven Streets to Open Space (OS) is recommended between BN990 and BN1010.
- It is also recommended that from sections BN1040 and BN1060, those Residential A properties in King Arthur Terrace, Verney Road East, Jarda Street and White Street should be rezoned to Open Space (OS).

Reach 14 - Long Pocket Reach

Cross Section: BN980 to BN910
Chainage: 1042.235 km to 1044.860 km
AMTD: 36.425 km to 33.800 km

Potential Flooding

The majority of flooding in this reach is confined to the Indooroopilly Golf Course, with some local flooding in the Yeronga area.

From BN980 to BN970, some minor flooding will occur to properties located in Instow Street and the Yeronga Animal Hospital will also be affected.

From BN960 to BN950, the flooding becomes more widespread with properties along the Esplanade, Diane Street, Ormadale Street, Oriana Crescent and Aranui Street all being affected. Flooding on the eastern side of the river will affect the CSIRO to some extent.

From BN940 to BN930, flooding is limited to Brisbane Corso and Orlando Road with some properties in Otaki and Ormuz Roads also being affected.

In a 1 in 100 year flood event, flooding will extend to Hyde Road from BN920 to BN910, affecting properties as far south as Utzon, Grounds and Siedler Streets. Goodwin Park will also be inundated.

Revegetation

- From BN940 to BN960 (Sandy Creek), full tree planting was tested with flood level increases of the order of 10 mm.
- Community Groups suggest that existing vegetation on the banks around the confluence of Sandy Creek should be revegetated using native flora. This has therefore been included in the modelling to the n = 0.15 standard.
- There is considerable existing vegetation throughout the whole reach, and the riverbanks could therefore be considered an area of ecological significance.

Regulation Lines

- Regulation lines at BN980 to 960 used the 15 m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at these locations.
- At BN910, regulation lines are set at the riverbank with the inclusion of a 15 m buffer zone.
- From BN920 to BN960 and BN990, regulation lines will pass through numerous private residences.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 50 to 90 mm.

Zoning Adjustments

- Rezoning of waterfront existing Residential A properties in Brisbane Corso, Ormadale Road and Kadumba Street to Open Space (OS) is recommended throughout this reach.

Reach 15 - Cemetery Reach

Cross Section: BN900 to BN830
Chainage: 1045.400 km to 1047.915 km
AMTD: 33.260 km to 30.745 km

Potential flooding

There is considerable flooding in this reach from BN870 through to BN900.

At BN900, flooding mainly affects the Downs Oval, Leyshan Park and Fehlberg Oval. In a 1 in 100 year ARI flood event, properties as far back as the Railway line, Kadumba Street and a small area as far back as Cowper Street will all be affected by flooding. Properties in William Parade, Turner Avenue and Brougham Street will also suffer inundation.

From BN890 to BN880, a large area of flooding extends as far east as the railway line, south to Fairfield Road / Sydney Street/Cruthley Street and north into the cemetery.

Flooding is limited to the riverbank areas with some properties in Rosecliff and Borva Streets being affected by flooding from BN870 to BN840. It is anticipated that the University of Queensland will be affected by flooding as well. However, additional topographical and cadastral information is required before this can be finalised.

At BN830, a small area of localised flooding occurs in a 1 in 100 year flood event. Properties in Athens Street, Dudley Street and Glenfield will all be affected by flooding. On the southern side of the river, flooding extends as far back as to affect properties in Underhill Street.

Revegetation

- At BN900 (Brisbane Corso Reserve), full tree planting was tested with flood level increases of the order of 0 mm.
- All revegetation is to a standard of roughness of n = 0.15.
- There is considerable existing vegetation throughout this reach, and thus the riverbanks may be considered an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- From BN830 to BN860, regulation lines will extend past the Open Space buffer zone and into the rear of numerous Residential B dwellings. The University of Queensland will also be significantly affected by the regulation lines.
- From BN880 to BN890, the 15 m buffer rule causes regulation lines to extend into private residences.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 50 mm.

Zoning Adjustments

- Rezone waterfront Residential B dwellings in Dudley Street, Fraser Terrace, Rosecliff and Borva Streets to Open Space (OS).
- From BN880 to BN890, rezone waterfront residences in Brisbane Corso to Open Space (OS).

Reach 16 - St Lucia Reach

Cross Section: BN820 to BN810
Chainage: 1048.375 km to 1048.890 km
AMTD: 30.285 km to 29.770 km

Potential Flooding

There is a considerable flooding of residential areas in this reach.

On the St Lucia side, properties as far back as Sixth Avenue at BN820 and Sir Fred Schonell Drive at BN810 are inundated in a 1 in 100 year flood event. Parts of Mitre, Durham and Warren Streets are also affected.

On the northern side, flooding extends as far as Jumna Street at BN820 and Cordaeux Street at BN810.

Revegetation

- At BN810 (Orliegh Park), full tree planting was tested with no flood level increases.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- From BN810 to BN820, due to the 15 m buffer rule, regulation lines will extend into numerous residential dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 0 to 20 mm.

Zoning Adjustments

- Although a zone of Open Space along Orleigh, Avebury and Glenfield Streets has already been defined, this should be extended to include those existing waterfront Residential B properties in these streets.
- On the St Lucia side, those waterfront residential B properties in Hiron, Laurence and Macquarie Streets should be rezoned to Open Space (OS).

Reach 17 - Toowong Reach

Cross Section: BN800 to Bn750
Chainage: 1049.120 km to 1050.860 km
AMTD: 29.540 km to 27.800 km

Potential Flooding

Flooding in this reach is concentrated around Toowong Creek and a few small areas of localised flooding. The Hill End / West End side of the River is consistently flooded.

At BN800, a small pocket of flooding occurs as far south as Armadale Street, east to Austral Street and west to Glen Olive Lane. On the northern side of the river, properties back to Drury Street/ Cordeaux Street will suffer inundation.

At BN 790, flooding in a 100 year ARI flood event is concentrated around Toowong Creek. Flooding occurs as far South in places as Whitmore Street and west to Josling Street with some properties in Mayne, Holmes and Herbert Streets being affected.

From BN780 to BN770, the main problems with flooding in a 1 in 100 year ARI flood event occurs through Hillend Terrace, Forbes, Drury Streets and Ferry Road. Some properties in Brisbane Street and Glen Road in Toowong will also suffer flooding problems.

From BN760 to BN750 there are large areas of flooding. On the West End side of the river, flooding extends as far back as Montague Road. On the Toowong side, there are two localised flooding areas, one extending along Landsborough Street up to Osyth / Cadell Street and back down to the railway line. The other pocket of flooding extends along Park Avenue to Milton Road and again back to the railway line. Higher properties in the area bounded by Dunmore Terrace, Lang Parade and Chasely Street are immune to flooding.

Revegetation

- From BN790 to BN800 (Orliegh Park) and at BN750 (Scott Street open Space), full tree planting was tested with flood level increases of the order of 10 mm.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- At BN750, regulation lines are located at property boundaries.
- From BN 760 to BN790, regulation lines will pass through a block of Residential B dwellings and through numerous properties zoned SD.
- At BN800, regulation lines are located at the riverbank.

- The range of affluxes in this reach with revegetation and regulation lines in place varies from 10 to 70 mm.

Zoning Adjustments

- From BN760 through to BN790, those waterfront Residential B properties should be rezoned to Open Space (OS), particularly those located in Archer Street, Land Street, Glen Road, Brisbane Street and Sandford Street.

Reach 18 - Milton Reach

Cross Section: BN740 to BN700
Chainage: 1051.360 km to 1052.390 km
AMTD: 27.300 km to 26.270 km

Potential Flooding

Flooding in this reach is mainly concentrated on the West End side of the river, but a lack of contour information limits the determination of the extent of actual flooding.

At BN730, there is a localised area of flooding in Milton, extending back to Milton Road with several properties in Baroona Road being affected. This flooding extends out to Park Street at its worst.

From BN720 to BN700, problems with inundation in a 1 in 100 year storm event occur as far back as Oxford Street on the eastern side of the river.

Revegetation

- No revegetation was assessed through this reach.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- At BN700, regulation lines are located at the riverbank.
- From BN720 through to BN740, the regulation lines extend into properties zoned as special development.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 40 to 60 mm.

Zoning Adjustments

- The majority of this reach is zoned Special development, therefore no rezoning of this reach has been recommended.

Reach 19 - South Brisbane Reach

Cross Section: BN690 to BN600
Chainage: 1052.595 km to
AMTD: 26.065 km to

Potential Flooding

Properties along Garden's Point Road and Wharf Road will experience problems with flooding in a 1 in 100 year storm event. Southbank will be inundated as will Stanley Street, Grey Street and parts of Melbourne Street.

Revegetation

- No revegetation was assessed throughout this reach.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN600 through to BN690, regulation lines are generally located at the riverbank.
- Affluxes in this reach with revegetation and regulation lines in place range from 40 to 60 mm.

Zoning Adjustments

- As no intrusion into private residences occurs in this reach, no rezoning adjustments are recommended.

Reach 20 - Town Reach

Cross Section: BN590 to BN500
Chainage: 1054.680 km to 1056.865 km
AMTD: 23.980 km to 21.965 km

Potential Flooding

The major areas of concern with respect to inundation in a 1 in 100 year flood in this reach are sections of the city and Kangaroo Point.

From BN590 to BN550, properties along River Terrace, Lower River Terrace and Garden's Point Road will all experience problems with flood inundation.

From BN540 to BN530, the Botanic Gardens will be inundated as will the City back to Charlotte Street, with parts of Mary, Margaret, Albert and Edward Streets experiencing flooding. Properties in Felix and Eagle Streets will experience flooding as will parts of Bright, Thornton and Hamilton Streets.

From BN520 to BN500, properties on Kangaroo Point back to the end of Anderson Street will experience problems with flooding in a 1 in 100 year ARI flood. On the City side, properties in Howard Street up to Queen Street will suffer inundation. At BN500, some properties in Bowen Street will experience problems with flooding.

Revegetation

- From BN540 to BN560, full tree planting was tested with flood level increases in the order of 10 mm. All revegetation is to a standard of roughness of $n = 0.15$.
- At section BN520, there is considerable existing vegetation and may be classified as an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN500 to BN530, regulation lines will pass through existing properties zoned Special Development.
- From BN540 to BN590, regulation lines extend into property already zoned Open Space.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 40 to 80 mm.

Zoning Adjustments

- As the regulation lines do not affect any private residences, no rezoning for this reach has been recommended.

Reach 22 - Humbug Reach

Cross Section: BN430 to BN400
Chainage: 1058.735 km to 1059.990 km
AMTD: 19.925 km to 18.670 km

Potential Flooding

This reach has localised flooding problems associated with Norman Creek.

From BN420 to BN410, there is extensive flooding associated with properties adjacent to Norman Creek. Properties as far northeast as Overend and Wordsworth Streets will experience inundation, as will properties to the west in Barker, Ashfield and Clarendon Streets to Mowbray Terrace.

At BN420, a localised area of flooding occurs in Moray and Sargent Streets to Mountford Road with Oxlade Drive and parts of Hazelwood Street being inundated.

Revegetation

- No revegetation was assessed through this reach.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN400 to BN430, the 15m buffer rule has resulted in regulation lines being situated through private dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 40 to 50 mm.

Zoning Adjustments

- Properties zoned Residential A along Wynnum Road and Wendell Street should be rezoned Open Space.
- From BN420 to BN430, properties along Laidlaw Parade zoned Residential B should be rezoned to Open Space.
- Consideration should also be given to rezoning properties currently zoned Special Development between BN400 and BN430 to Open Space.

Reach 23 - Bulimba Reach

Cross Section: BN390 to BN330
Chainage: 1060.345 km to 1062.940 km
AMTD: 18.315 km to 15.720 km

Potential Flooding

From BN370 to BN350, there is a very large area of flooding primarily covering residential dwellings. The large industrial area bounded by Stuart and Barramul Streets will be flooded and the flooding will extend inwards as far as Riding Road in places, south to Orchard Street and north to Oxford Road.

At BN370, there will be some flooding associated with properties in Gordon, Scott and parts of Malcolm Streets.

From BN350 to BN330, another localised area of flooding extends through a primarily industrial area back to Commercial road, generally following Breakfast Creek Road north to Breakfast Creek. The higher properties in Newstead Avenue and Halford Streets are the exception to the flooding.

Revegetation

- At BN340 (Newstead Terrace Reserve), full tree planting was tested with no increases in flood level.
- All revegetation is a standard of roughness of n = 0.15.
- Sections of BN390 can be considered an area of ecological significance due to the existing vegetation.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN320 through to BN390, regulation lines are situated through numerous private dwellings and properties zoned service trades.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 10 to 30 mm.

Zoning Adjustments

- Blocks of residential A dwellings along Quay Street, Leura Terrace, Barton Road, Gordon Street, Scott Street, Uhlman Street and Aaron Avenue should be rezoned to open space.
- Consideration to rezoning all waterfront service industries to open space should also be given consideration.

Reach 24 - Hamilton Reach

Cross Section: BN320 to BN260
Chainage: 1068.310 km to 1065.990 km
AMTD: 15.30 km to 12.670 km

Potential Flooding

At BN270, properties in Taylor Street and lower ends of Carbeen, Karthena and Michael Streets will experience flooding in a 1 in 100 year flood event.

McConnell Street, Merry Street, Melrose, Cowper, River end of Kenbury, Bulimba, Banya, Johnston, Harrison, Tennyson and Shakespeare Streets will all suffer from flooding.

Revegetation

- No revegetation has been assessed for this reach.
- At BN290 there is existing vegetation and, as such, the riverbank in this area could be considered as a zone of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN260 to BN290, regulation lines are situated at the edge of the riverbank.
- From BN290 to BN310, the 15m buffer rule has resulted in the regulation lines being situated through private residences along McConnell Street.
- At BN320, regulation lines are situated along the riverbank edge.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 10 to 30 mm.

Zoning Adjustments

- Properties zoned residential in McConnell Street between BN290 and BN300 should be rezoned to open space.

Reach 25 - Quarries Reach

Cross Section: BN250 - BN220
Chainage: 1066.505 km to 1067.965 km
AMTD: 12.155 km to 10.695 km

Potential Flooding

At BN250, properties in Riverside Place back to Lytton Street will all suffer from inundation in a 1 in 100 year storm event.

From BN230 to BN220, flooding will occur onto the Royal Queensland Golf Course.

Revegetation

- From BN220 to BN230 (Royal Queensland Golf Course), full tree planting was tested with an increase in flood levels of 10 mm.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- Regulation lines in this reach include a maximum allowance of 30m for wharves and associated waterfront development. This is in lieu of the 15 m buffer rule.
- From BN220 to BN240, regulation lines follow the riverbank.
- At BN250, regulation lines extend into existing properties. However, the flooding extends into properties zoned waterfront activities and an allowance has been made for wharves in lieu of the 15 m buffer zone.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 0 to 20 mm.

Zoning Adjustments

- Zoning through this reach is predominantly waterfront activities and industrial. As such, no recommendations for rezoning have been made.

Reach 26 - Lytton Reach

Cross Section: BN210 - BN110
Chainage: 1068.660 km to 1073.485 km
AMTD: 10.00 km to 5.175 km

Potential Flooding

At BN190, flooding during a 1 in 100 year flood event will affect those properties along Macarthur Avenue.

From BN170 to BN160, flooding occurs into Unwin Road, Randle Street, parts of Macarthur Avenue and back into the airport.

From BN130 to BN120, flooding only appears to occur in open space areas.

Revegetation

- No revegetation was assessed in this reach.

Regulation Lines

- Regulation lines in this reach include an maximum allowance of 30 m for wharves and associated waterfront development. This is in lieu of the 15 m buffer rule.
- Regulation lines in this reach are situated at the riverbank.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 0 to 10 mm.

Zoning Adjustments

- Properties in this reach are predominantly zoned industrial or waterfront industry. No modifications to the zonings is required.

Reach 27 - Lytton Rocks Reach

Cross Section: BN100 to BN70
Chainage: 1074 km to 1075.480 km
AMTD: 4.660 km to 3.180 km

Potential Flooding

This reach experiences extensive flooding, especially from BN110 to BN90, where floodwaters inundate properties in Pritchard Street, South Street, Lytton Road, Trade Street and Export Street. Flooding also affects properties in Pamela and Tingara Streets all the way through to Boggy Creek.

Revegetation

- At BN70 and BN90, full tree planting was tested with an increase in flood levels of approximately 10 mm.
- All revegetation is a standard of roughness of n = 0.15.
- The occurrence of existing vegetation at section BN80 indicates that the riverbanks in this section could be considered a zone of ecological significance.

Regulation Lines

- Regulation lines in this reach include an maximum allowance of 30 m for wharves and associated waterfront development. This is in lieu of the 15 m buffer rule.
- Regulation lines in this reach generally follow the bank profile. From BN70 to BN80, some intrusion into the bank does occur, however in this instance an allowance has been made for wharves and associated waterfront development.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 0 to 10 mm.

Zoning Adjustments

- As this reach is predominantly zoned industrial and waterfront development, no rezoning recommendations have been made.

Reach 28 - Pelican Banks Reach

Cross Section:	BN60 to BN40
Chainage:	1076 km to 1077.010 km
AMTD:	2.66 km to 1.650 km

Potential Flooding

No developed properties appear to be affected by flooding through this reach, although there will be some flooding throughout existing low lying areas.

Revegetation

- From BN40 to BN60, full tree planting was tested with no increase in flood levels.
- All revegetation is to a standard of roughness of n = 0.15.
- Due to the existing natural vegetation, the riverbanks at section BN40 could be considered a zone of ecological significance.

Regulation Lines

- Regulation lines in this reach include a maximum allowance of 30m for wharves and associated waterfront development from BN60. This is in lieu of the 15 m buffer rule.
- Regulation lines in this reach generally follow the riverbank. Some intrusion into the bank occurs at section BN50, however this is into undeveloped swampy land.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 0 mm.

Zoning Adjustments

- This reach is predominantly zoned industrial and waterfront development. As such, no recommendations for rezoning have been made for this reach.

Reach 29 - Lower Reach

Cross Section:	BN30 to BN0
Chainage:	1077.510 km to 1078.66 km
AMTD:	1.150 km to 0 km

Potential Flooding

In a 1 in 100 year flood event, flooding will affect existing grain and container terminals on Fisherman Island to some extent.

Revegetation

- From BN10 to BN30, full tree planting was tested with no increase in flood levels.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- Regulation lines in this reach are generally located in low lying areas.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 0 mm.

Zoning Adjustments

- This reach is mainly zoned industrial or waterfront industry. No rezoning through this reach is recommended.

Table 2-1 - Flood Levels, Affluxes and Top Widths for Brisbane River - Regulation Lines & Revegetation Combined

Reach Name	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Existing Conditions (m AHD)	Reveg + Reglines (m AHD)	Difference (m)	Top Width (m)
UPPER BOUNDARY	1000	78.66	BN 2020	22.76	22.83	0.07	335.9
UPPER BOUNDARY	1000.285	78.375	BN 2010	22.56	22.64	0.08	533.7
UPPER BOUNDARY	1000.775	77.885	BN 2000	22.38	22.46	0.08	484.3
UPPER BOUNDARY	1001.315	77.345	BN 1990	22.28	22.36	0.08	569.0
UPPER BOUNDARY	1001.865	76.795	BN 1980	21.75	21.83	0.08	301.6
BARALLEN POINT	1002.35	76.31	BN 1970	21.43	21.52	0.09	341.5
BARALLEN POINT	1002.785	75.875	BN 1960	21.34	21.43	0.09	307.2
BARALLEN POINT	1003.275	75.385	BN 1950	20.91	21.01	0.1	273.6
BARALLEN POINT	1003.775	74.885	BN 1940	20.78	20.87	0.09	425.1
BARALLEN POINT	1004.3	74.36	BN 1930	20.19	20.3	0.11	258.8
BARALLEN POINT	1004.81	73.85	BN 1920	20.29	20.4	0.11	802.8
BARALLEN POINT	1005.325	73.335	BN 1910	20.08	20.18	0.1	466.6
RIVERVIEW	1005.87	72.79	BN 1900	19.9	20.01	0.11	731.0
RIVERVIEW	1006.3	72.36	BN 1890	19.72	19.83	0.11	293.3
RIVERVIEW	1006.91	71.75	BN 1880	19.64	19.75	0.11	739.3
RIVERVIEW	1007.41	71.25	BN 1870	19.59	19.64	0.05	566.7
REDBANK	1007.92	70.74	BN 1860	19.28	19.36	0.08	452.2
REDBANK	1008.445	70.215	BN 1850	19.16	19.24	0.08	285.1
REDBANK	1008.925	69.735	BN 1840	19.08	19.16	0.08	292.4
REDBANK	1009.4	69.26	BN 1830	18.98	19.06	0.08	525.2
REDBANK	1009.72	68.84	BN 1820	18.95	19.03	0.08	585.3
REDBANK	1010.49	68.17	BN 1810	18.58	18.66	0.08	247.8
REDBANK	1010.725	67.935	BN 1800	18.58	18.67	0.09	325.6
REDBANK	1010.98	67.68	BN 1790	18.5	18.58	0.08	278.6
REDBANK	1011.51	67.15	BN 1780	18.49	18.57	0.08	477.0
REDBANK	1011.98	66.68	BN 1770	18.49	18.58	0.09	811.6
GOODNA	1012.475	66.185	BN 1760	18.41	18.49	0.08	755.7
GOODNA	1012.935	65.725	BN 1750	18.33	18.42	0.09	749.2
GOODNA	1013.445	65.215	BN 1740	18.2	18.28	0.08	856.7
GOODNA	1013.91	64.74	BN 1730	18.1	18.19	0.09	938.6
GOODNA	1014.31	64.55	BN 1720	18.05	18.14	0.09	896.7
WACOL	1014.61	64.05	BN 1710	18.07	18.16	0.09	923.7
WACOL	1015.09	63.57	BN 1700	17.92	18.02	0.1	406.9
WACOL	1015.56	63.1	BN 1690	17.74	17.84	0.1	449.4
WACOL	1016.14	62.52	BN 1680	17.65	17.75	0.1	550.1
WACOL	1016.64	62.02	BN 1670	17.52	17.63	0.11	634.6
WACOL	1017.13	61.53	BN 1660	17.27	17.38	0.11	615.2
WACOL	1017.61	61.05	BN 1650	17.13	17.24	0.11	944.8
WACOL	1017.92	60.74	BN 1640	16.96	17.07	0.11	822.2
WACOL	1018.2	60.46	BN 1630	16.93	17.04	0.11	807.9
WACOL	1018.725	59.935	BN 1620	16.61	16.72	0.11	372.0
WACOL	1019.095	59.565	BN 1610	16.5	16.61	0.11	522.2
RIVERHILLS	1019.49	59.17	BN 1600	16.49	16.6	0.11	829.7
RIVERHILLS	1019.865	58.795	BN 1590	16.25	16.37	0.12	665.3
RIVERHILLS	1020.115	58.545	BN 1580	16.31	16.42	0.11	718.9
RIVERHILLS	1020.525	58.135	BN 1570	16.29	16.4	0.11	535.4
RIVERHILLS	1020.83	57.83	BN 1560	16.14	16.26	0.12	371.9
RIVERHILLS	1021.095	57.565	BN 1550	15.95	16.07	0.12	251.9
RIVERHILLS	1021.539	57.121	BN 1540	15.86	15.97	0.11	704.1
RIVERHILLS	1021.715	56.945	BN 1530	15.87	15.98	0.11	744.9
WESTLAKE	1021.895	56.765	BN 1520	15.78	15.89	0.11	349.1
WESTLAKE	1022.505	56.555	BN 1510	15.58	15.7	0.12	238.4
WESTLAKE	1022.575	56.085	BN 1500	15.6	15.74	0.14	365.0
WESTLAKE	1023.04	55.62	BN 1490	15.33	15.46	0.13	338.3
WESTLAKE	1023.57	55.09	BN 1480	15.28	15.41	0.13	246.1
WESTLAKE	1024.08	54.58	BN 1470	15.23	15.36	0.13	311.5
WESTLAKE	1024.563	54.097	BN 1460	15.16	15.29	0.13	296.5
WESTLAKE	1025.07	53.59	BN 1450	15.05	15.19	0.14	437.7
WESTLAKE	1025.36	53.3	BN 1440	14.89	15.02	0.13	330.9

Table 2-1 - Flood Levels, Affluxes and Top Widths for Brisbane River - Regulation Lines & Revegetation Combined

Reach Name	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Existing Conditions (m AHD)	Reveg + Reglines (m AHD)	Difference (m)	Top Width (m)
WESTLAKE	1025.59	53.07	BN 1430	14.69	14.83	0.14	263.3
WESTLAKE	1026.17	52.49	BN 1420	14.56	14.69	0.13	241.8
WESTLAKE	1026.68	51.98	BN 1410	14.43	14.55	0.12	336.7
MERMAID	1026.9	51.76	BN 1400	14.28	14.38	0.1	248.2
MERMAID	1027.16	51.5	BN 1390	14.13	14.27	0.14	238.4
MERMAID	1027.68	50.98	BN 1380	14.23	14.34	0.11	515.8
MERMAID	1028.18	50.48	BN 1370	14.2	14.32	0.12	381.9
MERMAID	1028.68	49.98	BN 1360	14.09	14.22	0.13	485.8
MERMAID	1028.76	49.9	BN 1340	13.93	14.08	0.15	263.1
MERMAID	1029.2	49.46	BN 1330	13.79	13.92	0.13	285.3
MERMAID	1029.68	48.98	BN 1320	13.81	13.93	0.12	467.7
MERMAID	1030.22	48.44	BN 1310	13.82	13.9	0.08	405.0
MERMAID	1030.87	47.79	BN 1300	13.74	13.87	0.13	279.0
MERMAID	1031.26	47.4	BN 1290	13.58	13.75	0.17	225.0
MERMAID	1031.7	46.96	BN 1280	13.26	13.42	0.16	187.1
MERMAID	1031.995	46.665	BN 1270	13.36	13.52	0.16	303.0
SHERWOOD	1032.23	46.43	BN 1260	13.24	13.4	0.16	327.3
SHERWOOD	1032.585	46.075	BN 1250	13.09	13.15	0.06	222.1
SHERWOOD	1033.08	45.58	BN 1240	12.88	13.01	0.13	242.0
SHERWOOD	1033.37	45.29	BN 1230	12.72	12.89	0.17	270.2
SHERWOOD	1033.9	44.76	BN 1220	12.54	12.61	0.07	240.2
SHERWOOD	1034.37	44.29	BN 1210	12.38	12.49	0.11	220.0
SHERWOOD	1034.89	43.77	BN 1200	12.35	12.42	0.07	243.4
CHELMER	1035.414	43.246	BN 1190	12.04	12.16	0.12	249.3
CHELMER	1035.9	42.76	BN 1180	11.75	11.85	0.1	256.7
CHELMER	1036.46	42.2	BN 1170	11.59	11.56	-0.03	208.8
CHELMER	1036.77	41.89	BN 1160	11.44	11.5	0.06	301.5
CHELMER	1036.915	41.745	BN 1150	11.3	11.35	0.05	217.0
INDOOROOPILLY	1037.09	41.57	BN 1140	11.25	11.3	0.05	216.7
INDOOROOPILLY	1037.175	41.485	BN 1120	11.19	11.2	0.01	192.9
INDOOROOPILLY	1037.285	41.375	BN 1110	11.09	11.16	0.07	197.9
INDOOROOPILLY	1037.625	41.035	BN 1100	11.18	11.2	0.02	281.7
INDOOROOPILLY	1038.085	40.575	BN 1090	11.19	11.21	0.02	278.5
INDOOROOPILLY	1038.6	40.06	BN 1080	11.18	11.2	0.02	408.0
INDOOROOPILLY	1039.1	39.56	BN 1070	11.14	11.28	0.14	883.4
CANOE	1039.565	39.05	BN 1060	11.14	11.23	0.09	754.5
CANOE	1040.09	38.57	BN 1050	11.1	11.17	0.07	567.2
CANOE	1040.49	38.17	BN 1040	10.97	11.04	0.07	458.5
CANOE	1041.01	37.56	BN 1030	11.01	11.1	0.09	534.7
CANOE	1041.23	37.43	BN 1020	10.98	11.05	0.07	573.4
CANOE	1041.46	37.2	BN 1010	10.93	10.98	0.05	520.1
CANOE	1041.7	36.96	BN 1000	10.87	10.94	0.07	456.0
CANOE	1041.96	36.7	BN 990	10.73	10.84	0.11	438.6
LONG POCKET	1042.235	36.425	BN 980	10.57	10.66	0.09	401.0
LONG POCKET	1042.515	36.145	BN 970	10.55	10.63	0.08	398.0
LONG POCKET	1042.91	35.75	BN 960	10.4	10.45	0.05	384.5
LONG POCKET	1043.725	34.935	BN 950	10.09	10.16	0.07	291.1
LONG POCKET	1044.06	34.6	BN 940	9.97	10.04	0.07	265.0
LONG POCKET	1044.34	34.32	BN 930	9.83	9.89	0.06	228.4
LONG POCKET	1044.605	34.055	BN 920	9.79	9.86	0.07	319.6
LONG POCKET	1044.86	33.8	BN 910	9.76	9.81	0.05	318.4
CEMETERY	1045.4	33.26	BN 900	9.6	9.65	0.05	522.4
CEMETERY	1045.885	32.775	BN 890	9.53	9.52	-0.01	671.5
CEMETERY	1046.18	32.48	BN 880	9.44	9.47	0.03	501.9
CEMETERY	1046.34	32.32	BN 870	9.38	9.42	0.04	317.8
CEMETERY	1046.58	32.08	BN 860	9.34	9.39	0.05	493.7
CEMETERY	1046.9	31.76	BN 850	9.18	9.21	0.03	386.1
CEMETERY	1047.35	31.31	BN 840	8.87	8.88	0.01	214.9
CEMETERY	1047.915	30.745	BN 830	8.69	8.7	0.01	233.0

Table 2-1 - Flood Levels, Affluxes and Top Widths for Brisbane River - Regulation Lines & Revegetation Combined

Reach Name	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Existing Conditions (m AHD)	Reveg + Reglines (m AHD)	Difference (m)	Top Width (m)
ST LUCIA	1048.375	30.285	BN 820	8.71	8.71	0	317.4
ST LUCIA	1048.89	29.77	BN 810	8.47	8.49	0.02	357.5
TOOWOONG	1049.12	29.54	BN 800	8.42	8.45	0.03	274.6
TOOWOONG	1049.37	29.29	BN 790	8.27	8.28	0.01	237.4
TOOWOONG	1049.59	29.07	BN 780	8.25	8.27	0.02	329.4
TOOWOONG	1049.87	28.79	BN 770	8.16	8.17	0.01	237.9
TOOWOONG	1050.43	28.23	BN 760	8.13	8.2	0.07	686.5
TOOWOONG	1050.86	27.8	BN 750	7.96	7.99	0.03	259.6
MILTON	1051.36	27.3	BN 740	7.92	7.98	0.06	363.9
MILTON	1051.895	26.765	BN 730	7.75	7.81	0.06	520.8
MILTON	1052.31	26.35	BN 720	7.65	7.7	0.05	346.6
MILTON	1052.39	26.27	BN 700	6.97	7.01	0.04	288.3
SOUTH BRISBANE	1052.595	26.065	BN 690	6.89	6.94	0.05	229.2
SOUTH BRISBANE	1052.64	26.02	BN 670	6.33	6.37	0.04	254.6
SOUTH BRISBANE	1053.32	25.34	BN 650	6.28	6.34	0.06	304.1
SOUTH BRISBANE	1053.385	25.795	BN 660	6.22	6.27	0.05	345.0
SOUTH BRISBANE	1053.9	24.76	BN 620	5.98	6.04	0.06	304.9
SOUTH BRISBANE	1054.64	24.02	BN 610	5.87	5.92	0.05	500.4
TOWN	1054.68	23.98	BN 590	5.78	5.82	0.04	415.2
TOWN	1054.97	23.69	BN 560	5.52	5.6	0.08	319.4
TOWN	1055.28	23.38	BN 550	5.49	5.54	0.05	280.1
TOWN	1055.42	23.24	BN 540	5.49	5.54	0.05	325.5
TOWN	1055.96	22.7	BN 530	5.47	5.52	0.05	359.0
TOWN	1056.4	22.26	BN 520	5.25	5.31	0.06	299.7
TOWN	1056.695	21.965	BN 510	5.24	5.3	0.06	268.8
TOWN	1056.865	21.795	BN 500	5.24	5.28	0.04	260.2
SHAFSTON	1056.95	21.71	BN 490	5.14	5.19	0.05	286.3
SHAFSTON	1057.09	21.57	BN 480	5.25	5.31	0.06	307.8
SHAFSTON	1057.53	21.13	BN 470	5.09	5.15	0.06	273.8
SHAFSTON	1058.04	20.62	BN 460	4.78	4.83	0.05	291.8
SHAFSTON	1058.23	20.43	BN 450	4.64	4.69	0.05	294.4
SHAFSTON	1058.53	20.13	BN 440	4.37	4.43	0.06	245.7
HUMBUG	1058.735	19.925	BN 430	4.35	4.39	0.04	282.0
HUMBUG	1059.035	19.625	BN 420	4.04	4.09	0.05	225.7
HUMBUG	1059.54	19.12	BN 410	4	4.04	0.04	343.1
HUMBUG	1059.99	18.67	BN 400	3.82	3.86	0.04	383.3
BULIMBA	1060.345	18.315	BN 390	3.63	3.64	0.01	250.5
BULIMBA	1060.535	18.125	BN 380	3.5	3.53	0.03	219.1
BULIMBA	1061.015	17.645	BN 370	3.46	3.48	0.02	302.1
BULIMBA	1061.53	17.13	BN 360	3.25	3.27	0.02	267.9
BULIMBA	1062.02	16.64	BN 350	3.16	3.19	0.03	325.9
BULIMBA	1062.535	16.125	BN 340	3.12	3.14	0.02	464.1
BULIMBA	1062.94	15.72	BN 330	3.1	3.13	0.03	537.3
HAMILTON	1063.31	15.35	BN 320	2.99	3.02	0.03	467.3
HAMILTON	1063.645	15.015	BN 310	2.7	2.72	0.02	334.2
HAMILTON	1064	14.66	BN 300	2.63	2.64	0.01	343.8
HAMILTON	1064.49	14.17	BN 290	2.52	2.53	0.01	324.3
HAMILTON	1065.01	13.65	BN 280	2.56	2.57	0.01	394.3
HAMILTON	1065.503	13.157	BN 270	2.53	2.54	0.01	391.6
HAMILTON	1065.99	12.67	BN 260	2.57	2.58	0.01	479.1
QUARRIES	1066.505	12.155	BN 250	2.5	2.52	0.02	483.7
QUARRIES	1067.02	11.64	BN 240	2.46	2.47	0.01	429.4
QUARRIES	1067.485	11.175	BN 230	2.37	2.37	0	429.5
QUARRIES	1067.965	10.695	BN 220	2.27	2.28	0.01	424.8
LYTTON	1068.66	10	BN 210	2.12	2.12	0	448.5
LYTTON	1069.045	9.615	BN 200	2.03	2.04	0.01	417.4
LYTTON	1069.535	9.125	BN 190	1.96	1.97	0.01	453.6
LYTTON	1070.025	8.635	BN 180	1.89	1.9	0.01	443.6
LYTTON	1070.53	8.13	BN 170	1.79	1.79	0	457.9

Table 2-1 - Flood Levels, Affluxes and Top Widths for Brisbane River - Regulation Lines & Revegetation Combined

Reach Name	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	100 Year ARI Existing Conditions (m AHD)	Reveg + Reglines (m AHD)	Difference (m)	Top Width (m)
LYTTON	1071.04	7.62	BN 160	1.69	1.7	0.01	473.9
LYTTON	1071.52	7.14	BN 150	1.72	1.73	0.01	454.8
LYTTON	1072.015	6.645	BN 140	1.68	1.69	0.01	879.5
LYTTON	1072.515	6.145	BN 130	1.56	1.57	0.01	451.1
LYTTON	1072.995	5.665	BN 120	1.52	1.52	0	483.7
LYTTON	1073.485	5.175	BN 110	1.41	1.42	0.01	497.4
LYTTON ROCKS	1074	4.66	BN 100	1.34	1.34	0	468.7
LYTTON ROCKS	1074.46	4.2	BN 90	1.27	1.27	0	515.6
LYTTON ROCKS	1074.985	3.675	BN 80	1.12	1.13	0.01	512.9
LYTTON ROCKS	1075.48	3.18	BN 70	1.09	1.08	-0.01	797.3
PELICAN BANKS	1076	2.66	BN 60	1.09	1.09	0	1075.7
PELICAN BANKS	1076.495	2.165	BN 50	0.98	0.97	-0.01	871.7
PELICAN BANKS	1077.01	1.65	BN 40	0.97	0.97	0	1438.6
LOWER	1077.51	1.15	BN 30	0.97	0.97	0	939.8
LOWER	1078.04	0.62	BN 20	0.95	0.95	0	765.4
LOWER	1078.525	0.135	BN 10	0.92	0.92	0	469.1
LOWER	1078.66	-	-	0.92	0.92	0	2999.7

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FIGURE 2-1a
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY

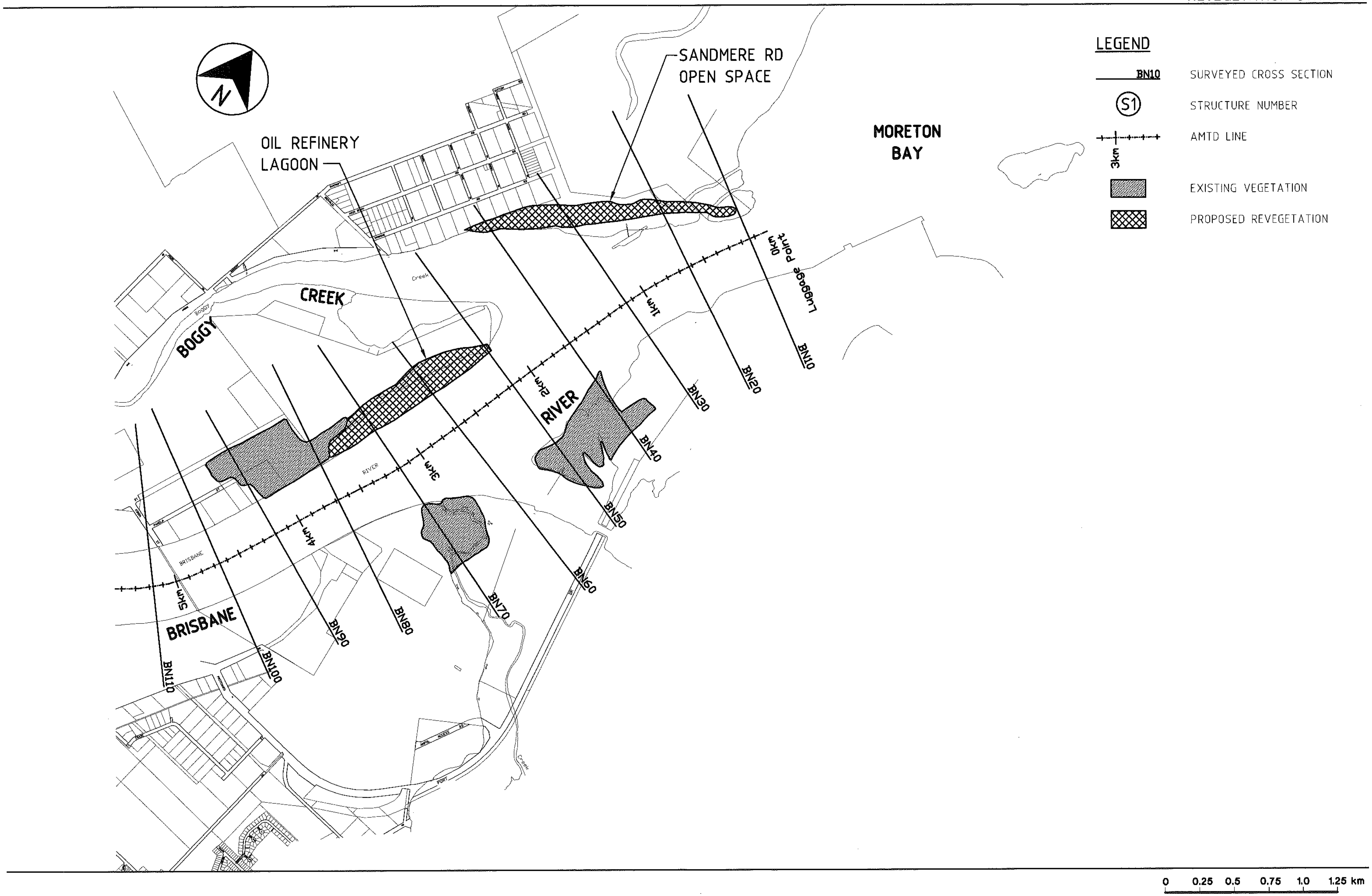

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FIGURE 2-1b
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY

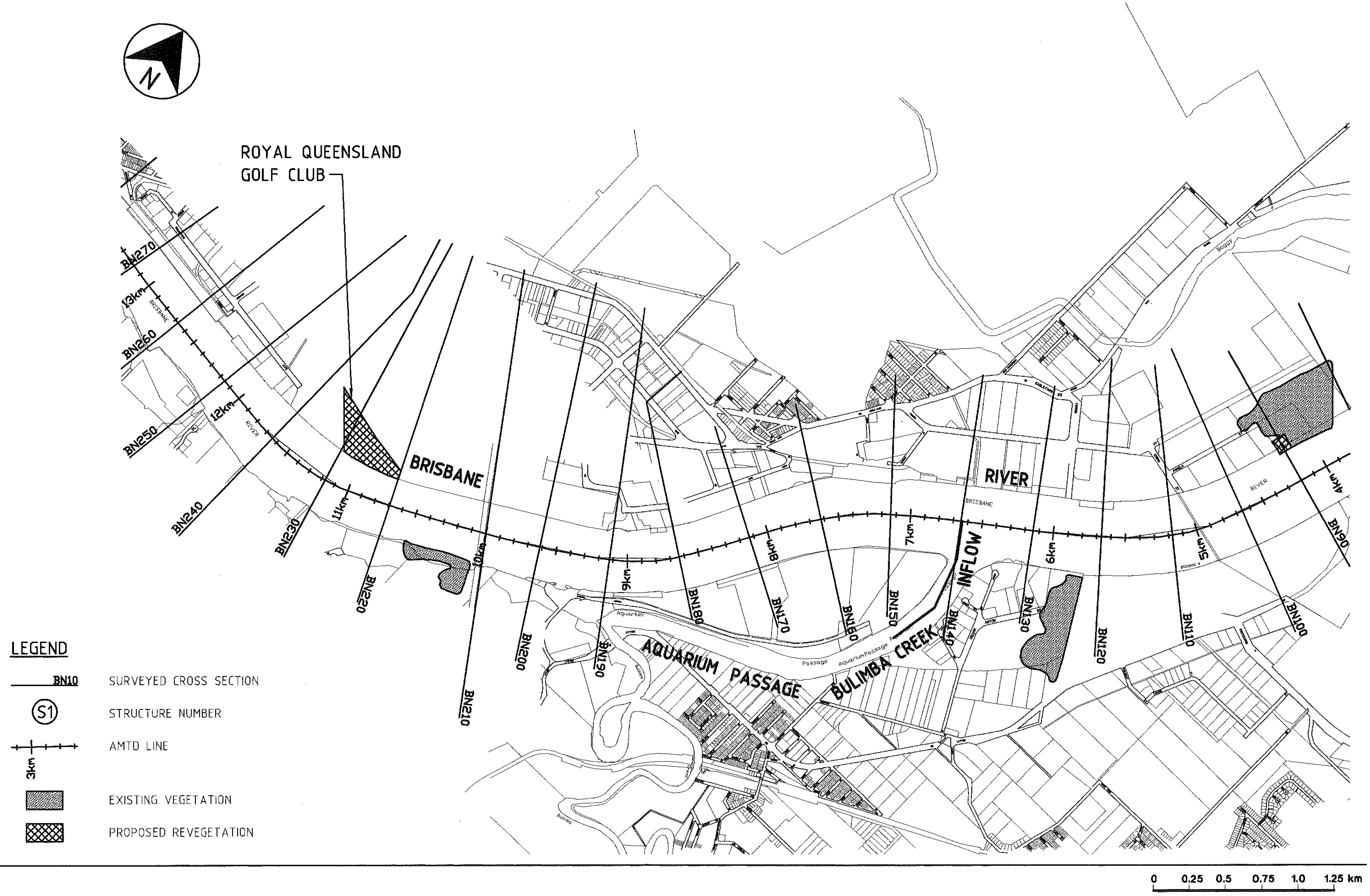

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FIGURE 2-1c
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY

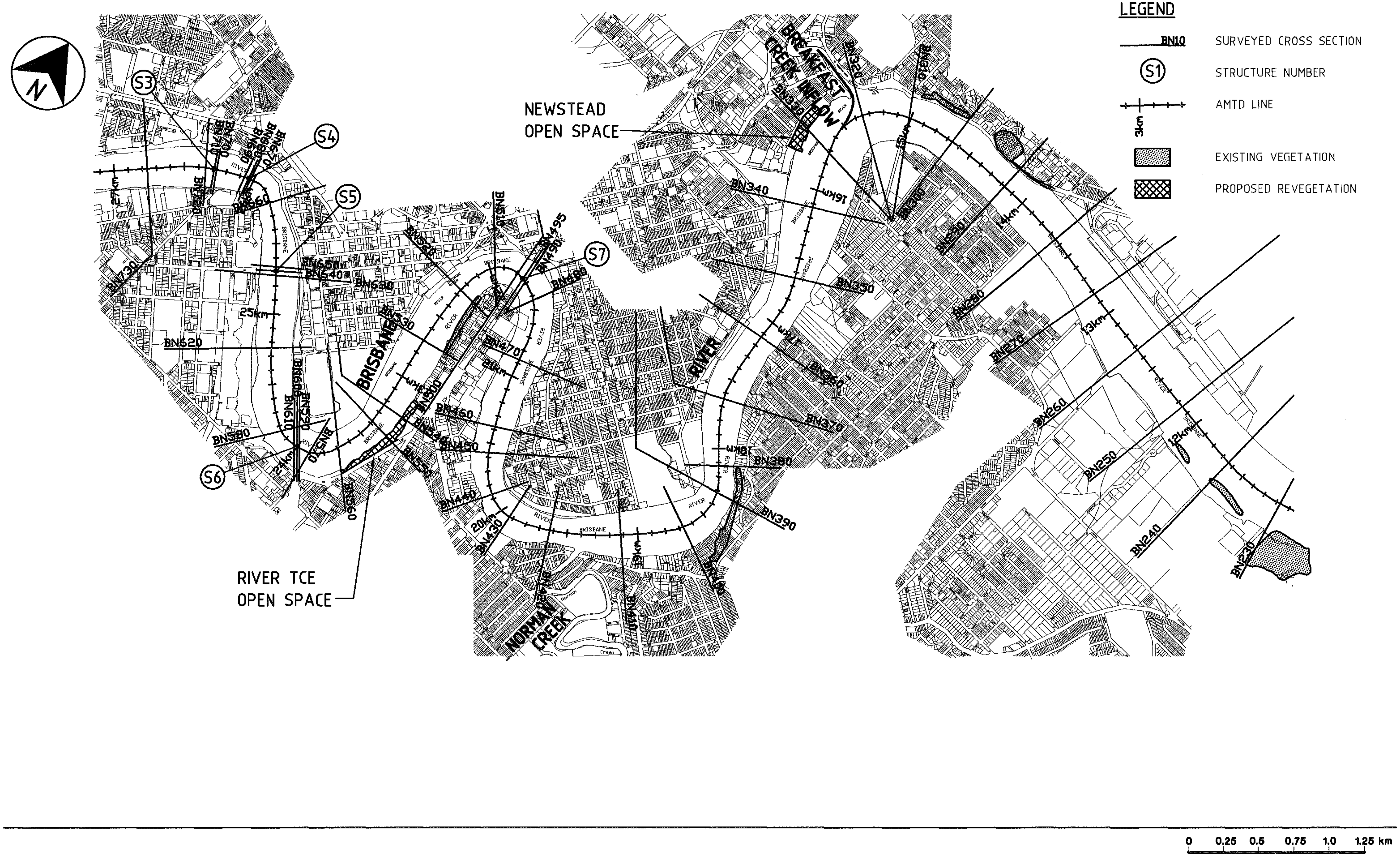

FIGURE 2-1d
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY

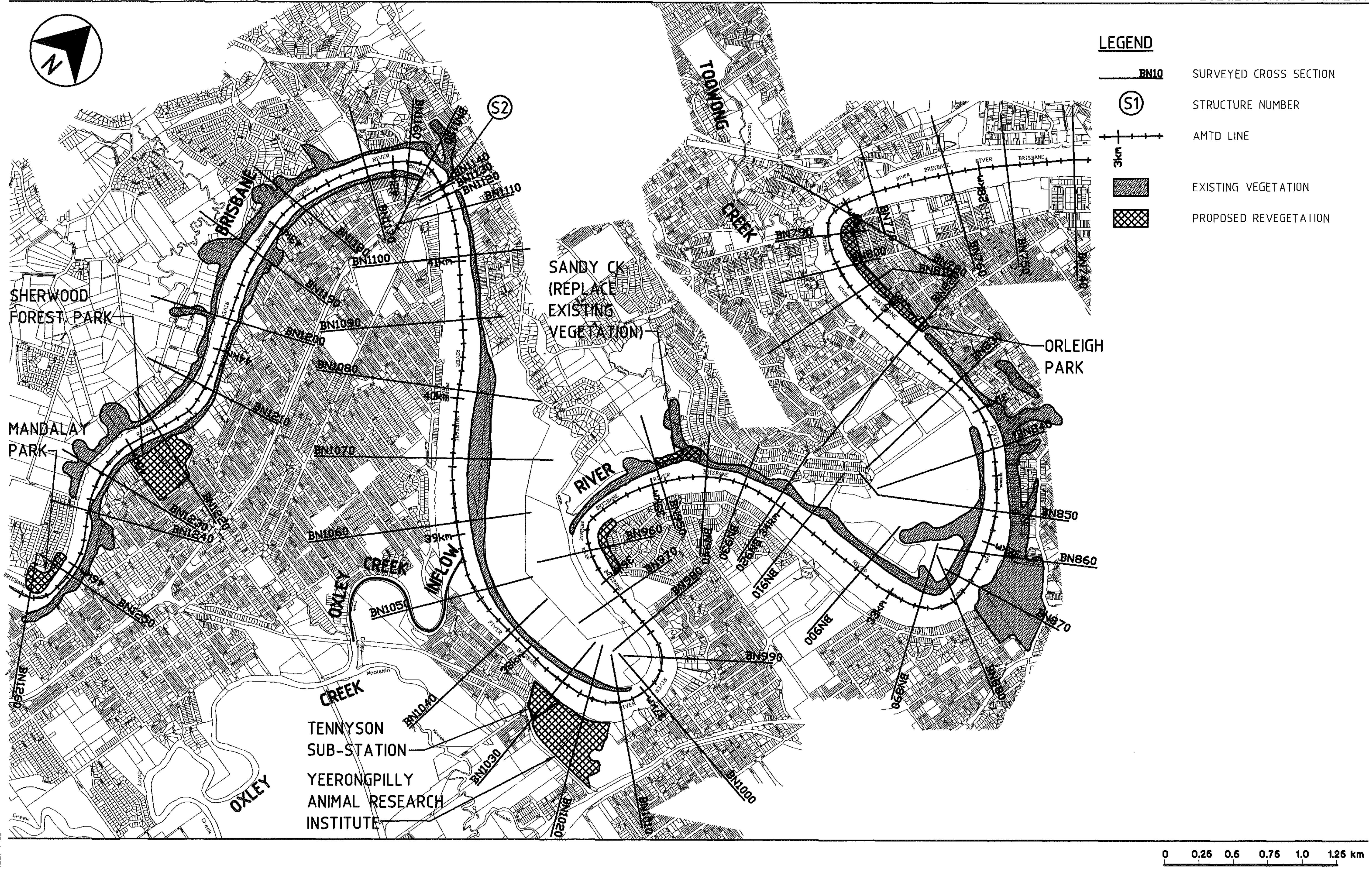

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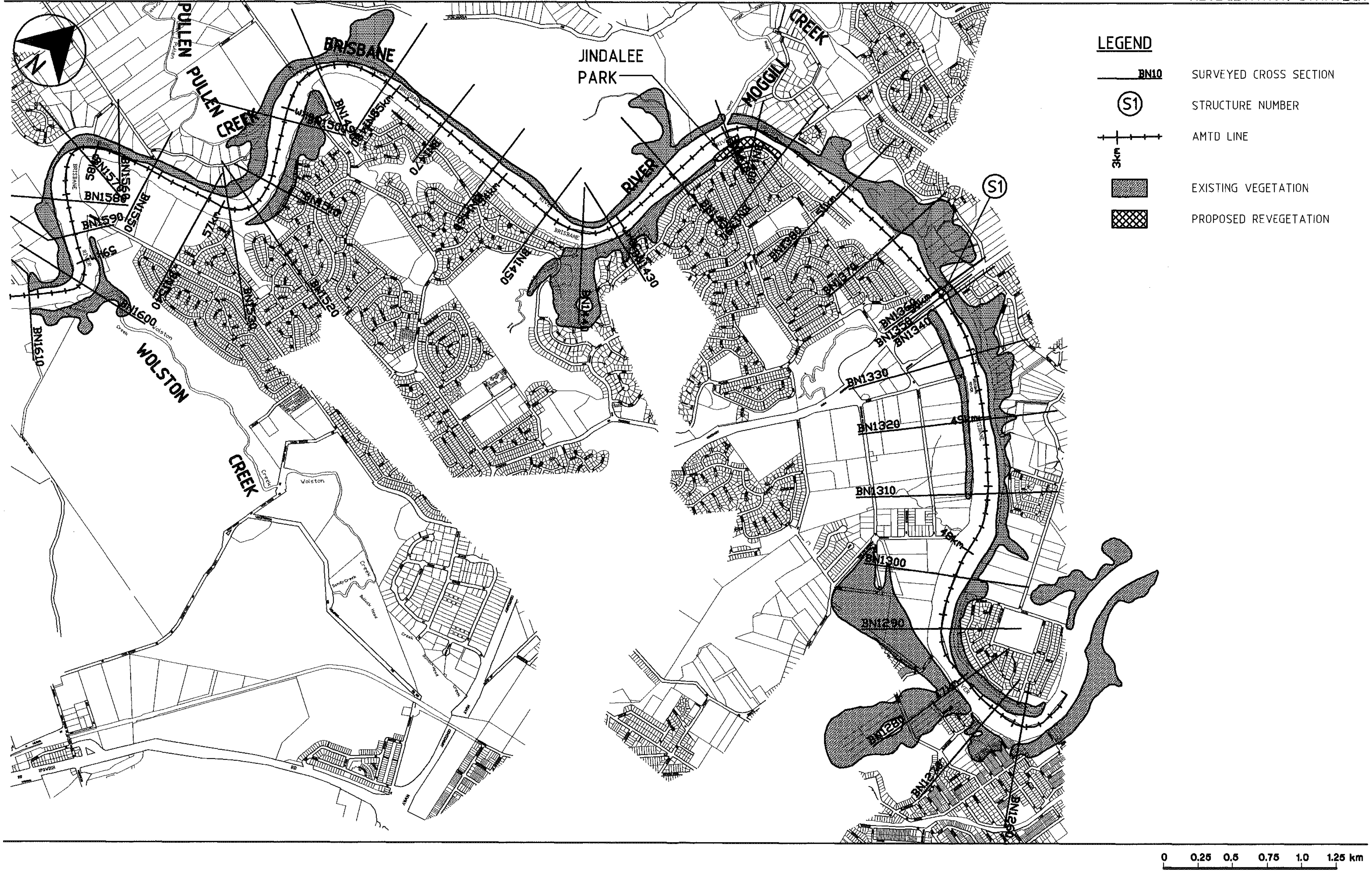
FIGURE 2-1e
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY



FILE ...... 0415_
PLOT SCALE: 1=25

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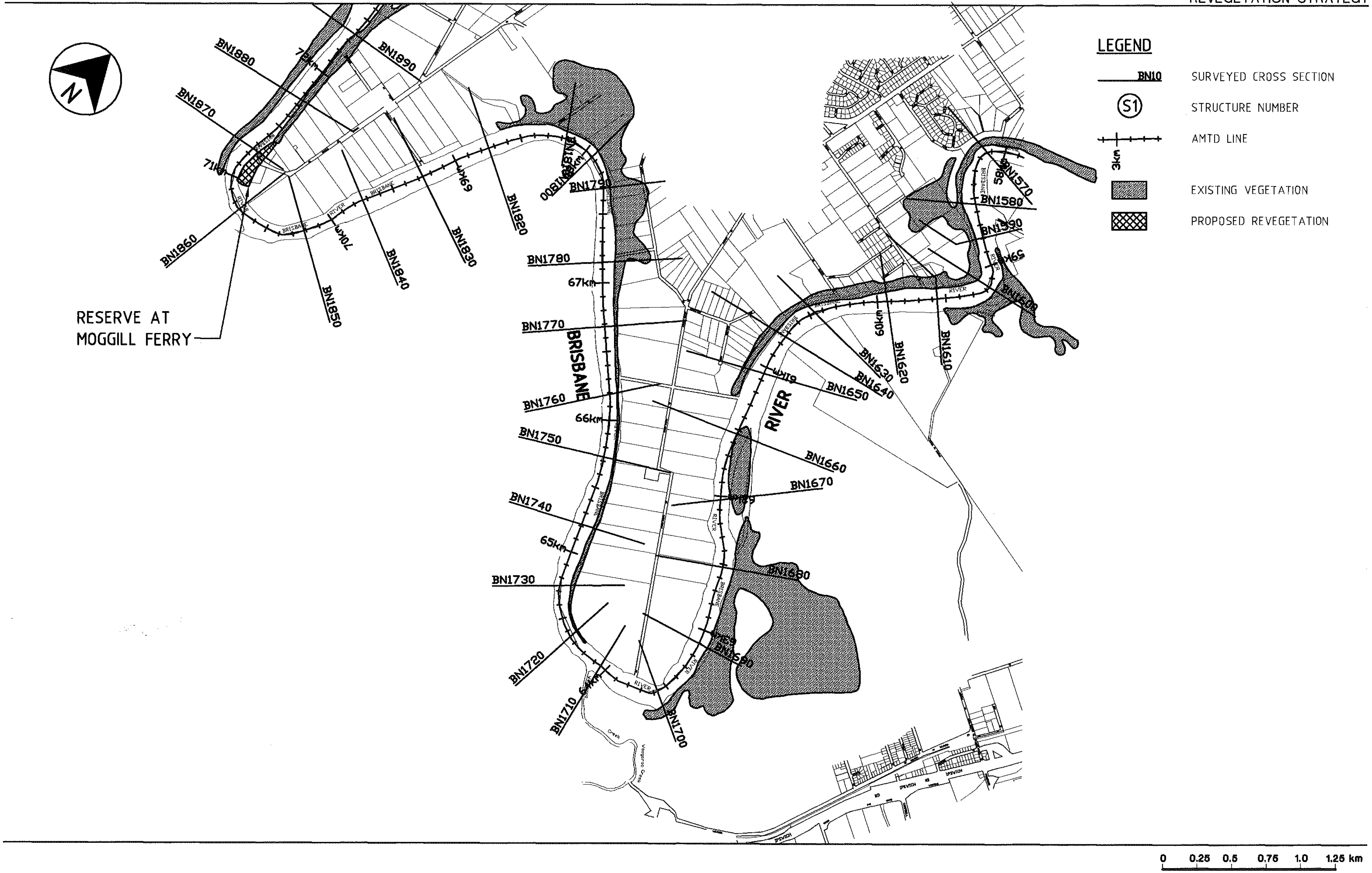
FIGURE 2-1f
BRISBANE RIVER FLOOD STUDY
REVEGETATION STRATEGY



FILE ... 0415 ... PLOT SCALE: 1=25

Brisbane City Council
February 1998

Flood Contour Report

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Contents

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Table 2-1 - Radio Telemetry Rainfall Stations (cont)

	Primary Gauge		Secondary Gauge	
RAFTS Node	Rainfall Station Name	Station Number	Rainfall Station Name	Station Number
BUL1	Mt Gravatt	BMR138	Wishart	BMR803
BUL2	Rochedale	BMR709	Wishart	BMR803
BUL3	Carindale	BMR830	Wishart	BMR803
BUL4	Carindale	BMR706	Carindale	BMR830
BUL5	Carindale	BMR706	Morningside	PVR029
BUL6	Hemmant	BMR527	Wynnum	WVR521
BUL7	Hemmant	BMR527	Wynnum	WVR521
BUL#	Wishart	BMR803	Rochedale	BMR709
BUL-OUT	Hemmant	BMR527	Wynnum	WVR521
NRM1	Morningside	PVR029	Bowen Hills	BVR524
NRM2	Hemmant	BMR527	Toombul	KVR557
NRM3	Lytton	BNR739	Hemmant	BMR527

2.3 Conversion of RAFTS Hydrographs to MIKE 11 TXT Format

The Brisbane City Council have supplied the software program RTOM11 which generates a TXT file from the hydrographs exported from the RAFTS model. This RTOM11 program allows users to enter a start date, end date and base flow component and generates a file that can be directly imported into MIKE 11. This file is used to compile boundary series data in MIKE 11.

2.4 Development of the MIKE 11 Flood Forecasting Model

Initially it was conceived that the hydraulic portion of the flood forecasting model would be carried out using HEC-RAS. Preliminary work found that HEC-RAS was unsuitable in this instance due to the dynamic nature of the Brisbane River and hence an alternative approach was sought.

The MIKE 11 hydrodynamic hydraulic model was considered to be the most appropriate model for use as the flood forecasting model for the Brisbane River. The hydraulic flood forecasting model was based on the existing case model developed in the calibration phase of this study. During calibration of this model it was found that two sets of channel roughness parameters had to be adopted, one set for the smaller events and one set for the larger events (**Section 6.5.3 Model Calibration Report**). Basically two sets of roughness parameters had to be adopted to account for the additional losses at bends during larger flood events.

The requirement to validate the flood forecasting model was to replicate results of two flood events to within 150 mm. This demonstration was to use the largest calibration event since installation of the radio telemetry gauges and one large synthetic event. The two events used for this demonstration were:

- 100 year ARI design event, and
- the May 1996 calibration event.

100 Year ARI Event

The inflow hydrographs predicted by the hydrological flood forecasting model were converted and input into the MIKE 11 model at the five locations specified in **Section 2.2** of this report.

The 100 year flood was considered to be a large event and hence the large set of roughness parameters were used. The flood forecasting model predicted flood levels within 10 mm at all locations of those predicted during the design events phase of the study. A comparison of flood levels is presented in **Table A1 - Flood Forecasting Model Results**.

1996 Calibration Event

The inflow hydrographs predicted by the hydrological flood forecasting model were converted and input into the MIKE 11 model at the five locations specified in **Section 2.2** of this report.

The 1996 flood was considered to be a small flood and hence the small set of roughness parameters were used. This resulted in predicted flood levels to within 80 mm of those predicted during the calibration phase of the study. A comparison of flood levels is presented in **Table A1 - Flood Forecasting Model Results**.

A sensitivity check was also conducted to identify the impacts on flood levels if the set of large roughness parameters were used to analysis the small floods. For the 1996 event it was found that flood levels were over estimated by up to 850 mm.

Given the limited extent of flooding experienced within the lower Brisbane River in May 1996, most emphasis was placed on the 100 year ARI event as this size event would cause significant flooding throughout the reach.

The problem with the adoption of two sets of roughness parameters is the uncertainty as to what size flood constitutes the use of the large or small roughness parameter set. It was therefore recommended that one set of roughness parameters be adopted for the flood forecasting model and it was considered that it was most appropriate to adopt the large set of roughness parameters as this would ensure a conservative estimate of flood levels for smaller events.

2.5 Isolated Areas and Escape Routes

The effectiveness of the flood forecasting system for the Brisbane River is dependent upon the assessment of when river crossings are cut by flood waters and the duration of closure.

The majority of Brisbane City is urbanised to some extent and is well serviced by access roads from within and outside the City boundary. The major access/escape routes for all areas within the City boundary and the river crossings which are responsible for servicing these routes are shown on **Figure 2-2a** to **Figure 2-2b - Major Access/Escape Routes - Brisbane City.**

A detailed hydraulic analysis has been conducted for the major public bridges/crossings which are located on the access/escape routes.
Flood immunities , lowest weir level and time of inundation for each structure is listed in **Table 2-2 - Design Flood Capacities of Major Structures**. The structure capacity was taken as being the design flow having a peak flood level coincident with the lowest point of the weir structure. (assuming unblocked handrails). The crossing was assumed to be blocked once a depth of flow of 300 mm occurred over the weir.

Table 2-2 - Design Flood Capacities of Major Structures

Structure ID	Structure Name	Flood Immunity (years)	Lowest Weir Level (m AHD)	Duration of Closure 50 year ARI (hours)	Duration of Closure 100 year ARI (hours)
1	Centenary	41	10.0	29.5	59.5
2	Indooroopilly	>100	15.0	-	-
3	Merivale	>100	15.1	-	-
4	William Jolly	>100	14.3	-	-
5	Victoria	>100	9.2	-	-
6	Captain Cook	>100	8.8	-	-
7	Story	>100	29.8	-	-
8	Gateway	>PMF	>PMF	-	-

Within the Brisbane City Boundary many escape routes are available to the public. From **Table 2-2** it can be seen that all river crossings have a flood immunity of greater than 100 years except for the Centenary Bridge. The following discussion will relate to the 100 year ARI flood event unless otherwise specified.

Should the Centenary Bridge become inundated, escape routes are available in both directions along the Centenary Freeway. Depending on flood levels (ie 41 to 100 years ARI) the Centenary Freeway may become cut at the Cubberla Creek Crossing isolating the stretch of road between the Centenary Bridge and the Cubberla Creek Crossing. For these cases people may have to be evacuated.

The Merivale, William Jolly and Victoria Bridges have a flood immunity of greater than 100 years ARI however due to the detail of level information the immunity of the South Brisbane approaches for these structures is questionable.

Priors Pocket is another location were the public may become isolated during the 100 year ARI flood. Available topographical information shows that Priors Pocket Road is cut at approximately RL 17.0 m AHD. For the 100 year ARI flood this flood level is reached approximately 85 hours after the commencement of the event. Early warning should therefore provide residents with the opportunity to evacuate along Priors Pocket Road.

Another potential area of isolation is Fig Tree Pocket. Again, topographical information shows that Fig Tree Pocket Road is cut at RL 10.0 m AHD. The flood level is reached approximately 72 hours after the beginning of the 100 year ARI flood event. Residents will be able to escape along Fig Tree Pocket Road if given sufficient warning.

Areas between the River mouth and the Gateway Bridge become significantly inundated during the 100 Year ARI Moreton Bay Storm Surge plus Greenhouse Effects Case (Tailwater Level RL 2.5 m AHD). Should these conditions occur major evacuations would be required as possible escape routes are limited.

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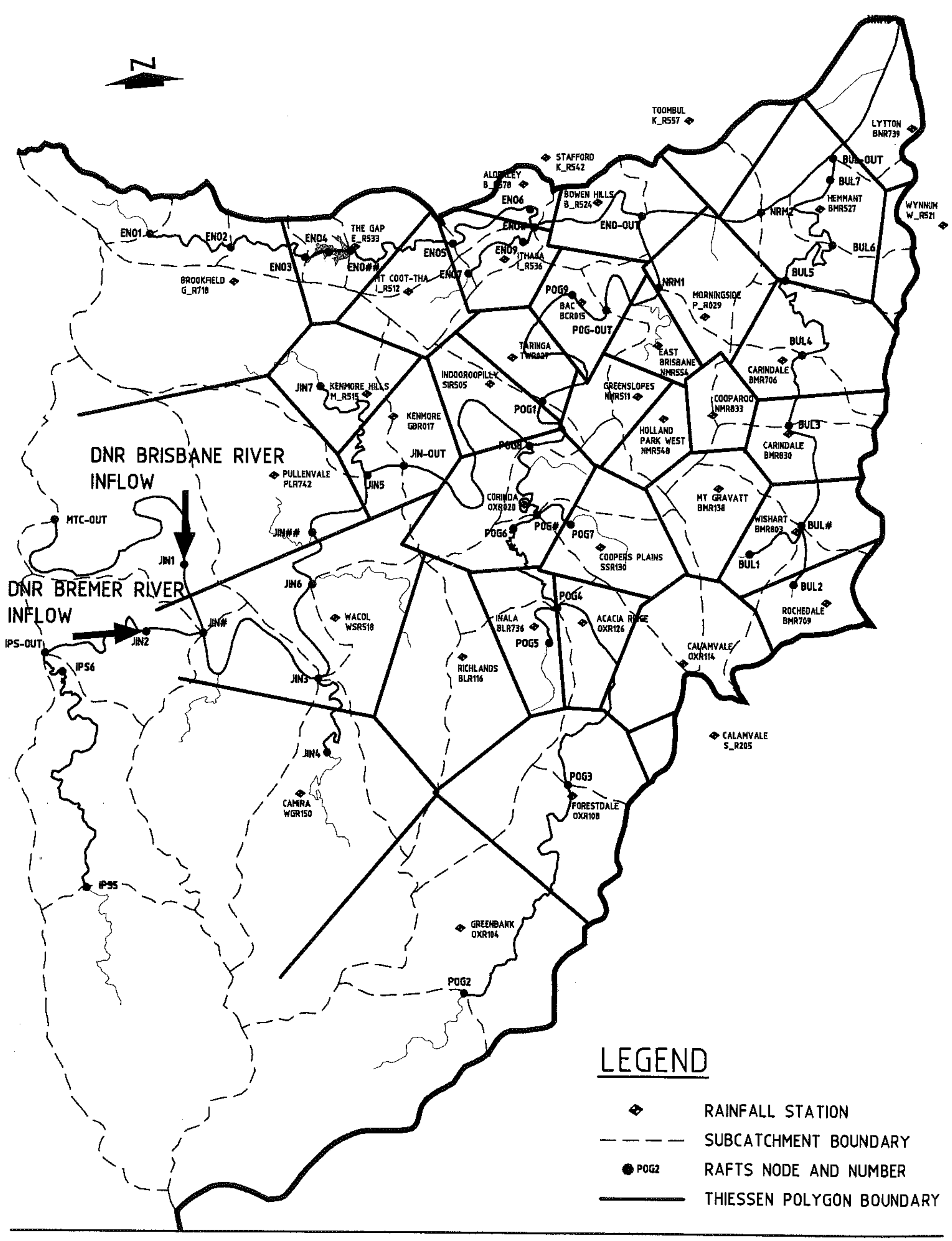
FIGURE 2-1

BRISBANE RIVER FLOOD STUDY
THIESSEN POLYGONS FOR
RADIO TELEMETRY RAINFALL STATIONS



FILE NAME: 4157THES DISK N°: G:\T004157 JOB N°: T004157 DATE: 4-2-98

3. Flood Mapping

3.1 Overview

Topographical information provided by BIMAP was used for the flood mapping phase of the Brisbane River Flood Study. Inundation lines, flood contours and high\low hazard maps were generated with the aid of this information.

3.2 Design Flood Inundation Mapping

Following completion of the development level, regulation line and revegetation strategy, a series of 1:10000 scale maps were prepared illustrating the extent of inundation for the 100 year ARI and 20 year ARI flood events.

The maps appear as Drawings 4157-IN1 to 4157-IN7 accompanying this report.

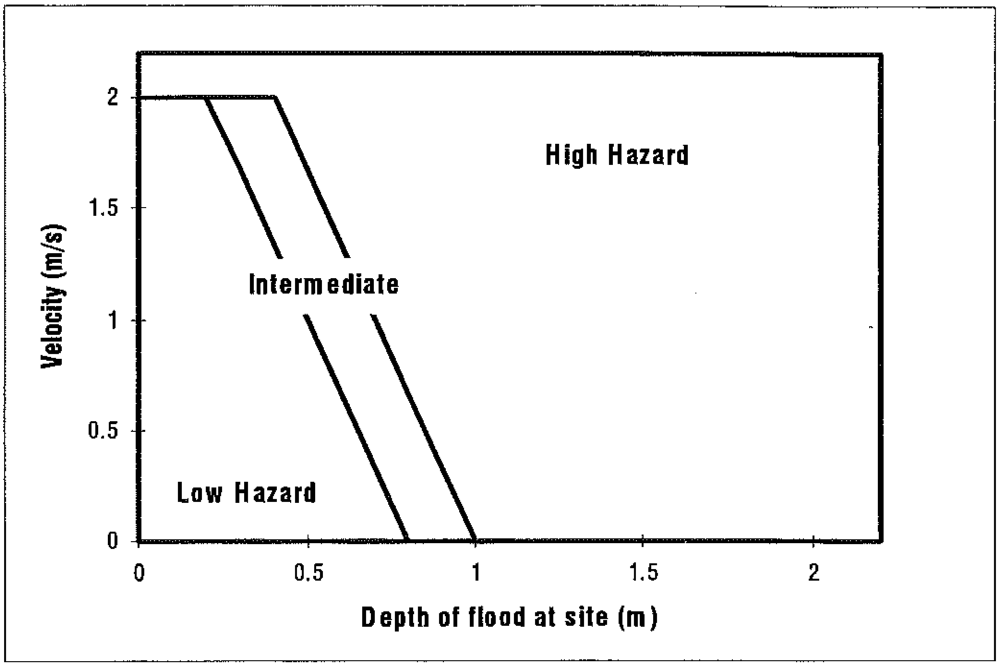
3.3 Flood Hazard Maps

Following the preparation of the HEC-RAS modelling and the inundation maps, the flood hazard mapping was prepared in accordance with the New South Wales Floodplain Development Manual. This manual specifies a depth and velocity criteria which defines whether a water depth and velocity combination is considered high or low flood hazard. **Figure 3-1 - New South Wales Floodplain Hazard Criteria** shows the relationship between depth and velocity when assessing high or low floodplain hazard.

The results from the HEC-RAS model for the 100 year ARI flood show that the overbank velocities are generally below 0.5 m/s with a maximum overbank velocity of 1.1 m/s. At the site where the velocity is 1.1 m/s the maximum allowable depth before the floodplain becomes high hazard according to **Figure 3-1** is approximately 0.75 m. Similarly for velocities below 0.5 m/s the maximum allowable depth before the floodplain becomes high hazard is 0.9 m.

Given these results and the fact that the minimum contour interval on the topographical maps is 1 m, it was considered that depth was the governing factor for high hazard areas on the floodplain. It was therefore assumed that at any site, if the depth of water was 1 m or greater the area was high hazard. This assumption was considered to be slightly conservative.

Figure 3-1 - New South Wales Floodplain Hazard Criteria



The flood hazard maps for the Brisbane River are presented in Drawings 4157-H1 to 4157-H7.

3.4 Flood Contouring

Initially the flood contouring phase of the study was to be conducted using the two dimensional hydrodynamic model FasTABS. This model uses digital terrain data (mesh) to calculate super-elevations at river bends and produces a DXF file which is translated into a flood contour map. When the digital terrain data was supplied it was found that the information did not include any bathometry and hence surveyed cross sectional information had to be merged with the mesh. This presented a minor problem however due to the size of the files of the digital terrain data provided, manipulation of the data was a slow process. This task was not made easier by the fact that the data was broken up into 15 files each containing a section of mesh. No key map was provided to locate the areas that each of these file contained and as FastTABS was only able to open one file at a time (due to size of file) it was difficult and arduous task to merge the survey information with the digital terrain data.

After spending a significant amount of time trying to manipulate the data with little progress, a meeting with council was set up to discuss whether BIMAP would be able to merge the file and reduce the amount of extraneous data to enable the files to be input directly into FasTABS. The outcome of this meeting was basically that due to the size of the Brisbane River FasTABS could not be efficiently utilised and an alternative methodology should be sought. The resulting methodology was to use levels predicted by the MIKE 11 hydraulic model and apply super-elevations at bends to account for the two dimensional flow effects.

Using the flood levels for the 100 year ARI flood event (regulation lines and revegetation in place) flood contours were calculated at 0.1 m flood level intervals along the Lower Brisbane River reach (upper city boundary to the river mouth) using linear interpolation methods between flood levels at model cross sections. These levels were assumed to be located at the AMTD line on the cross section.

Super-elevations at bends were then calculated using the formula (Chow 1959) :

$$\Delta h = V^2_{max}/g[20r_c/3b - 16r_c^3/b^3 + (4r_c^2/b^2 - 1)^2 \ln\{(2r_c + b)/(2r_c - b)\}]$$

where

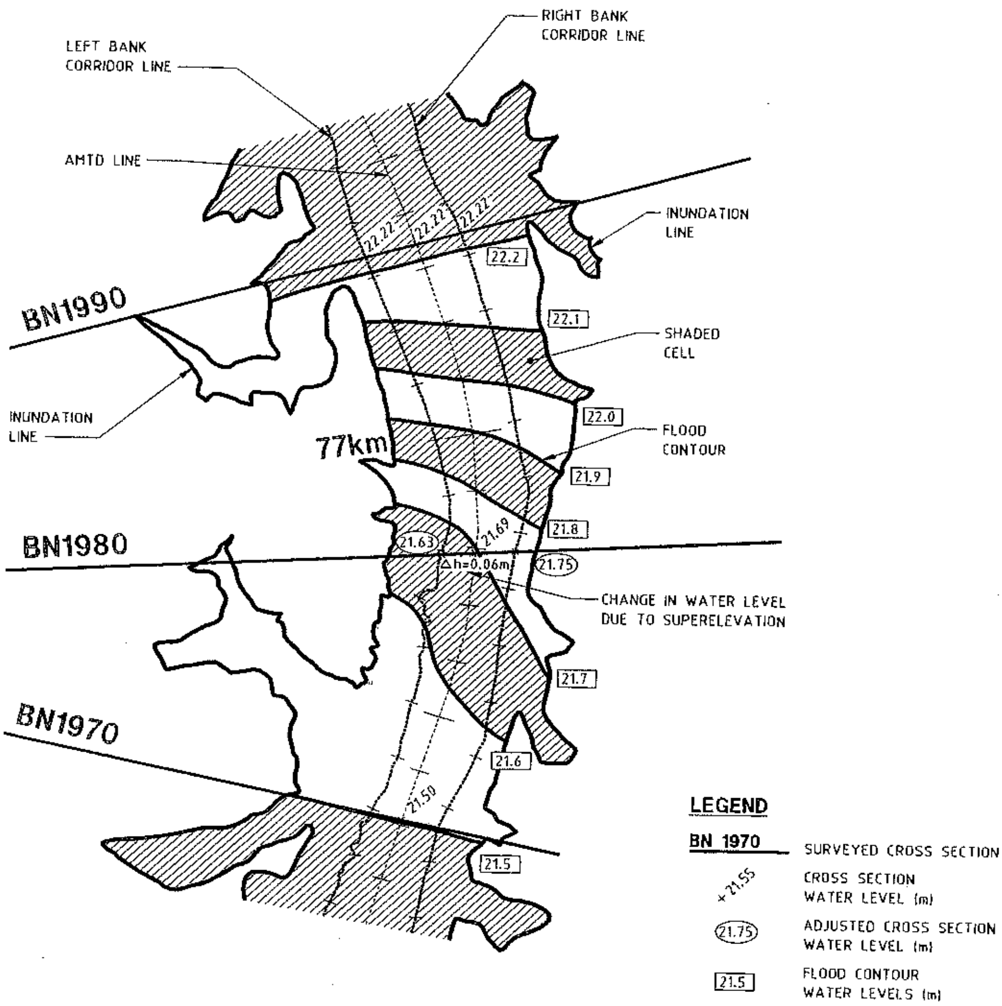
Δh = change in water level (m)
V^2_{max} = maximum velocity at bend (m/s)
g = gravity (9.81 m/s^2)
r_c = radius of bend at center of river (m) (ie AMTD line)
b = width of river (m) (assumed to be the distance between the cadastral boundaries defined for the river corridor)

Once Δh had been calculated this value was added or subtracted to the level at the AMTD line depending on whether the inside or the outside of the bend was being determined.

For example, in **Figure 3-2 - Flood Contouring Example** the MIKE 11 predicted water level at the AMTD line at the mid point of the bend (BN1980) was 21.69 m AHD. At this location a Δh of 0.06 m was calculated and therefore the water level at the inside of the bend was calculated to be 21.63 m AHD and the water level at the outside of the bend was calculated to be 21.75 m AHD. The MIKE 11 predicted water level at BN1990 was calculated to be 22.22 m AHD and this was assumed to be a constant level across the cross section. Water levels at 0.1 m increments were then calculated via linear interpolation between cross sections BN1990 and BN1980 along the left bank creek corridor line, the right bank creek corridor line and the AMTD line. This interpolation was then repeated between cross sections BN1980 and BN1970. Flood contours were then plotted by drawing

a line through each point with the same water level along the AMTD, left bank creek corridor line, the right bank creek corridor line. The flood contours were then extended to the inundation lines. This extension of the flood contour lines was based on general trends of the flood contour between the left bank creek corridor line and the right bank creek corridor line.
The above procedure was repeated for each bend from the Brisbane River mouth to the upstream city boundary (BN2020). Flood cells were then formed by shading alternate cells between flood contours to form a database of local flood information.

Figure 3-2 - Flood Contouring Example



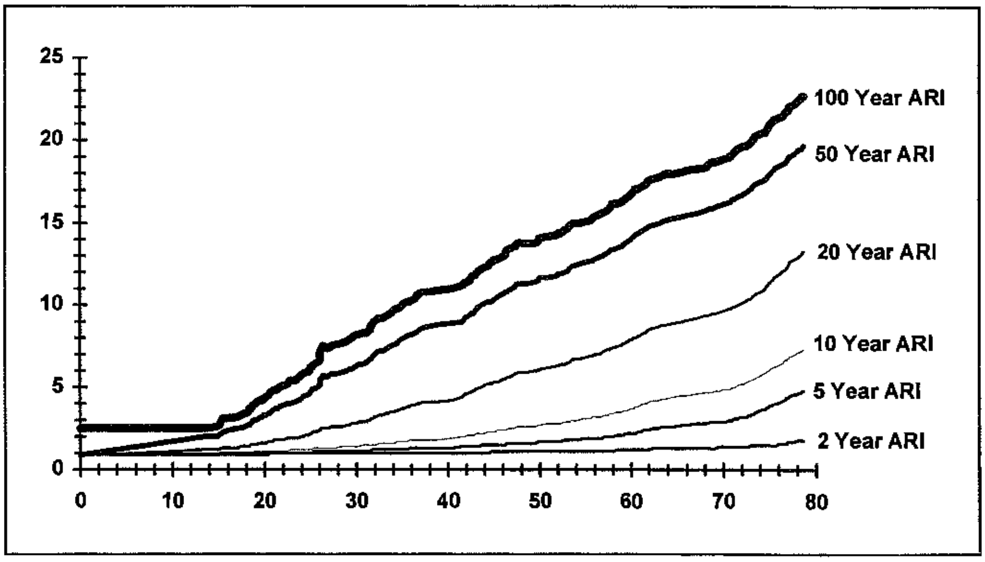
The flood contour maps are presented in Drawings 4157-FC1 to 4157-FC9.

3.5 Applicability of Flood Contours to Smaller Flood Events

The flood contours have been prepared based on the 100 year ARI flood with the regulation lines and revegetation strategy in place. The appropriateness of these contours to the smaller floods (2 year ARI to 50 year ARI) has been determined by comparing each of the respective profiles. **Figure 3-2 - Flood Contour Profile Comparison** illustrates the similarities and differences for the varying ARI flood events.

Below AMTD chainage 14 km (0 to 14 km AMTD) the 100 year ARI profile shows a flood contour level of 2.5 m AHD. This flood contour level reflects the 100 year ARI Moreton Bay storm surge flood level (0.21 m AHD) plus an allowance of 0.3 m for future greenhouse effects. From **Figure 3-3** it can be seen that between 0 - 14 km AMTD the adopted flood contours would not be applicable for floods other than the 100 year ARI event.

Figure 3-3 - Flood Contour Profile Comparison



Between AMTD chainage 14 - 78.6 km it can be seen from **Figure 3-3** that the 100 year and 50 year ARI flood levels are similar in characteristics and the adopted flood contours would generally be applicable with the use of an appropriate correction factor.

For the floods with an ARI less than 50 years the predicted profiles illustrate a high degree of derivation from the 100 year profile and therefore the adopted flood contours would not be applicable.

4. Conclusions

The flood mapping report documents the development of a suitable flood forecasting model, hazard maps, inundation plans and flood contours. These tasks have been completed and the following conclusions have been drawn.

- The flood forecasting model was developed and consisted of the RAFTS hydrologic and MIKE 11 hydraulic models. Both of these models were required to account for tidal fluctuations and complex dynamic systems within the Brisbane River.

- Radio Telemetry Rainfall Gauge Data was used as input into the RAFTS model within the Brisbane City Boundary.

- Radio Telemetry Rainfall Gauges were unavailable in the Bremer and Upper Catchments and therefore inflow hydrographs (to be provided by DNR) were used as Brisbane River (upstream city boundary) and Bremer River inflows for the RAFTS model. The Department of Natural Resources inflows accounted for complex dam operations that the RAFTS model can not model.

- Flood forecast model verification was conducted on the 1996 historical event and the 100 year ARI event. Flood forecasting results were within 80 mm at all locations for the 1996 event and 10 mm at all locations for the 100 year ARI design event when compared to results predicted in the calibration and design phases of the study.

- Two sets of roughness parameters were used in the validation of the flood forecasting model. It is recommended that the large set of roughness parameters be adopted for future flood forecasting as this will provide a conservative estimate of flood levels for smaller events.

- Escape routes and isolated areas have been identified however flood warnings must be issued to allow sufficient time for evacuation.

- Flood inundation maps have been prepared for the 100 year and 20 year ARI flood events.

- Flood hazard maps have been prepared for the 100 year ARI flood event.

- Flood contours were developed at 0.1 m intervals using MIKE 11 cross section levels and super-elevation formula at bends.

Appendix A - Flood Forecasting Model Results

TABLE A1 - Flood Forecasting Model Results

			1996 Flood Event					100 Year ARI Event		
MIKE 11 CHAINAGE	AMTD CHAINAGE	CROSS SECTION	Small "n" MIKE 11	Small "n" FF Model	Small "n" Difference	Large "n" FF Model	Large "n" Difference	Large "n" MIKE 11	Large "n" FF Model	Large "n" Difference
1000	78.66	BN 2020	9.49	9.5	0.01	9.9	0.41	22.76	22.76	0.00
1000.285	78.375	BN 2010	9.40	9.41	0.01	9.82	0.42	22.57	22.57	0.00
1000.775	77.885	BN 2000	9.23	9.24	0.01	9.68	0.45	22.29	22.29	0.00
1001.315	77.345	BN 1990	9.09	9.1	0.01	9.58	0.49	22.20	22.20	0.00
1001.865	76.795	BN 1980	8.84	8.85	0.01	9.38	0.54	21.68	21.68	0.00
1002.35	76.310	BN 1970	8.57	8.58	0.01	9.19	0.62	21.48	21.48	0.00
1002.785	75.875	BN 1960	8.47	8.48	0.01	9.15	0.68	21.46	21.46	0.00
1003.275	75.385	BN 1950	8.25	8.26	0.01	8.99	0.74	21.13	21.13	0.00
1003.775	74.885	BN 1940	8.06	8.07	0.01	8.84	0.78	20.86	20.86	0.00
1004.3	74.360	BN 1930	7.80	7.82	0.02	8.62	0.82	20.41	20.41	0.00
1004.81	73.850	BN 1920	7.68	7.69	0.01	8.53	0.85	20.37	20.38	0.01
1005.325	73.335	BN 1910	7.53	7.55	0.02	8.41	0.88	20.20	20.20	0.00
1005.87	72.790	BN 1900	7.38	7.39	0.01	8.23	0.85	19.89	19.89	0.00
1006.3	72.360	BN 1890	7.37	7.39	0.02	8.17	0.80	19.72	19.72	0.00
1006.91	71.750	BN 1880	7.27	7.28	0.01	8	0.73	19.51	19.51	0.00
1007.41	71.250	BN 1870	7.21	7.22	0.01	7.91	0.70	19.48	19.48	0.00
1007.92	70.740	BN 1860	7.04	7.05	0.01	7.75	0.71	19.19	19.19	0.00
1008.445	70.215	BN 1850	6.99	7.01	0.02	7.66	0.67	19.02	19.02	0.00
1008.925	69.735	BN 1840	6.93	6.95	0.02	7.61	0.68	18.96	18.96	0.00
1009.4	69.260	BN 1830	6.85	6.87	0.02	7.54	0.69	18.86	18.86	0.00
1009.72	68.940	BN 1820	6.81	6.83	0.02	7.51	0.70	18.85	18.85	0.00
1010.49	68.170	BN 1810	6.65	6.67	0.02	7.37	0.72	18.50	18.50	0.00
1010.725	67.935	BN 1800	6.65	6.66	0.01	7.37	0.72	18.52	18.52	0.00
1010.98	67.680	BN 1790	6.60	6.62	0.02	7.33	0.73	18.44	18.44	0.00
1011.51	67.150	BN 1780	6.54	6.56	0.02	7.28	0.74	18.43	18.43	0.00
1011.98	66.680	BN 1770	6.47	6.49	0.02	7.22	0.75	18.43	18.43	0.00
1012.475	66.185	BN 1760	6.39	6.41	0.02	7.14	0.75	18.33	18.33	0.00
1012.935	65.725	BN 1750	6.32	6.34	0.02	7.07	0.75	18.22	18.22	0.00
1013.445	65.215	BN 1740	6.26	6.28	0.02	7.01	0.75	18.14	18.14	0.00
1013.91	64.750	BN 1730	6.19	6.21	0.02	6.94	0.75	18.08	18.08	0.00
1014.31	64.350	BN 1720	6.11	6.13	0.02	6.87	0.76	18.05	18.05	0.00
1014.61	64.050	BN 1710	6.06	6.08	0.02	6.82	0.76	18.08	18.08	0.00
1015.09	63.570	BN 1700	6.05	6.07	0.02	6.8	0.75	17.94	17.95	0.01
1015.56	63.100	BN 1690	5.97	6	0.03	6.73	0.76	17.81	17.81	0.00
1016.14	62.520	BN 1680	5.91	5.94	0.03	6.67	0.76	17.71	17.72	0.01
1016.64	62.020	BN 1670	5.80	5.82	0.02	6.57	0.77	17.62	17.62	0.00
1017.13	61.530	BN 1660	5.66	5.68	0.02	6.4	0.74	17.39	17.39	0.00
1017.61	61.050	BN 1650	5.56	5.58	0.02	6.23	0.67	17.26	17.26	0.00
1017.92	60.740	BN 1640	5.48	5.51	0.03	6.12	0.64	17.10	17.10	0.00
1018.2	60.460	BN 1630	5.49	5.51	0.02	6.08	0.59	17.02	17.03	0.01
1018.725	59.935	BN 1620	5.42	5.45	0.03	5.96	0.54	16.69	16.70	0.01
1019.095	59.565	BN 1610	5.37	5.39	0.02	5.86	0.49	16.56	16.56	0.00
1019.49	59.170	BN 1600	5.33	5.36	0.03	5.78	0.45	16.45	16.45	0.00
1019.865	58.795	BN 1590	5.28	5.31	0.03	5.68	0.40	16.15	16.15	0.00
1020.115	58.545	BN 1580	5.28	5.3	0.02	5.64	0.36	16.25	16.25	0.00
1020.525	58.135	BN 1570	5.27	5.3	0.03	5.6	0.33	16.22	16.22	0.00
1020.83	57.830	BN 1560	5.23	5.25	0.02	5.53	0.30	16.07	16.07	0.00
1021.095	57.565	BN 1550	5.16	5.19	0.03	5.45	0.29	15.86	15.86	0.00
1021.539	57.121	BN 1540	5.10	5.13	0.03	5.33	0.23	15.69	15.69	0.00
1021.715	56.945	BN 1530	5.10	5.13	0.03	5.31	0.21	15.72	15.72	0.00
1021.895	56.765	BN 1520	5.09	5.12	0.03	5.28	0.19	15.65	15.65	0.00
1022.105	56.555	BN 1510	5.09	5.11	0.02	5.26	0.17	15.53	15.53	0.00
1022.575	56.085	BN 1500	5.02	5.05	0.03	5.18	0.16	15.45	15.46	0.01
1023.04	55.620	BN 1490	4.92	4.95	0.03	5.1	0.18	15.21	15.21	0.00
1023.57	55.090	BN 1480	4.88	4.91	0.03	5.08	0.20	15.12	15.12	0.00
1024.08	54.580	BN 1470	4.81	4.84	0.03	5.02	0.21	15.07	15.07	0.00
1024.563	54.097	BN 1460	4.72	4.75	0.03	4.94	0.22	15.01	15.01	0.00
1025.07	53.590	BN 1450	4.67	4.7	0.03	4.88	0.21	14.91	14.91	0.00
1025.36	53.300	BN 1440	4.60	4.64	0.04	4.81	0.21	14.77	14.77	0.00
1025.59	53.070	BN 1430	4.54	4.57	0.03	4.74	0.20	14.61	14.61	0.00
1026.17	52.490	BN 1420	4.51	4.54	0.03	4.7	0.19	14.48	14.49	0.01
1026.68	51.980	BN 1410	4.43	4.46	0.03	4.61	0.18	14.38	14.38	0.00
1026.9	51.760	BN 1400	4.38	4.42	0.04	4.56	0.18	14.25	14.25	0.00
1027.16	51.500	BN 1390	4.35	4.39	0.04	4.52	0.17	14.11	14.11	0.00
1027.68	50.980	BN 1380	4.32	4.36	0.04	4.5	0.18	14.17	14.17	0.00
1028.18	50.480	BN 1370	4.27	4.31	0.04	4.48	0.21	14.19	14.20	0.01
1028.68	49.980	BN 1360	4.17	4.21	0.04	4.43	0.26	14.06	14.06	0.00

TABLE A1 - Flood Forecasting Model Results

MIKE 11 CHAINAGE	AMTD CHAINAGE	CROSS SECTION	1996 Flood Event					100 Year ARI Event		
			Small "n" MIKE 11	Small "n" FF Model	Small "n" Difference	Large "n" FF Model	Large "n" Difference	Large "n" MIKE 11	Large "n" FF Model	Large "n" Difference
1028.72	49.940	BN1350								
1028.76	49.900	BN 1340	4.08	4.12	0.04	4.35	0.27	13.91	13.91	0.00
1029.2	49.460	BN 1330	3.98	4.03	0.05	4.29	0.31	13.80	13.80	0.00
1029.68	48.980	BN 1320	3.95	3.99	0.04	4.28	0.33	13.82	13.82	0.00
1030.22	48.440	BN 1310	3.89	3.93	0.04	4.26	0.37	13.82	13.82	0.00
1030.87	47.790	BN 1300	3.79	3.84	0.05	4.23	0.44	13.75	13.75	0.00
1031.26	47.400	BN 1290	3.71	3.76	0.05	4.18	0.47	13.59	13.59	0.00
1031.7	46.960	BN 1280	3.59	3.65	0.06	4.04	0.45	13.21	13.21	0.00
1031.995	46.665	BN 1270	3.60	3.65	0.05	3.99	0.39	13.31	13.31	0.00
1032.23	46.430	BN 1260	3.57	3.62	0.05	3.94	0.37	13.18	13.18	0.00
1032.585	46.075	BN 1250	3.52	3.57	0.05	3.85	0.33	12.94	12.94	0.00
1033.08	45.580	BN 1240	3.48	3.54	0.06	3.79	0.31	12.79	12.79	0.00
1033.37	45.290	BN 1230	3.43	3.49	0.06	3.73	0.30	12.68	12.68	0.00
1033.9	44.760	BN 1220	3.35	3.41	0.06	3.65	0.30	12.45	12.45	0.00
1034.37	44.290	BN 1210	3.29	3.35	0.06	3.6	0.31	12.29	12.29	0.00
1034.89	43.770	BN 1200	3.23	3.29	0.06	3.53	0.30	12.19	12.19	0.00
1035.414	43.246	BN 1190	3.15	3.21	0.06	3.42	0.27	11.94	11.94	0.00
1035.9	42.760	BN 1180	3.06	3.12	0.06	3.29	0.23	11.65	11.66	0.01
1036.46	42.200	BN 1170	2.98	3.05	0.07	3.17	0.19	11.35	11.35	0.00
1036.77	41.890	BN 1160	2.95	3.02	0.07	3.11	0.16	11.28	11.28	0.00
1036.915	41.745	BN 1150	2.92	2.99	0.07	3.06	0.14	11.12	11.12	0.00
1037.09	41.570	BN 1140	2.93	2.99	0.06	3.06	0.13	11.07	11.07	0.00
1037.11	41.550	BN 1130								
1037.175	41.485	BN 1120	2.79	2.86	0.07	2.93	0.14	10.98	10.98	0.00
1037.285	41.375	BN 1110	2.77	2.84	0.07	2.9	0.13	10.93	10.93	0.00
1037.625	41.035	BN 1100	2.73	2.81	0.08	2.86	0.13	10.91	10.91	0.00
1038.085	40.575	BN 1090	2.72	2.79	0.07	2.85	0.13	10.93	10.93	0.00
1038.6	40.060	BN 1080	2.63	2.71	0.08	2.8	0.17	10.91	10.91	0.00
1039.1	39.560	BN 1070	2.54	2.62	0.08	2.77	0.23	10.90	10.90	0.00
1039.565	39.095	BN 1060	2.49	2.57	0.08	2.76	0.27	10.92	10.92	0.00
1040.09	38.570	BN 1050	2.46	2.55	0.09	2.76	0.30	10.84	10.84	0.00
1040.49	38.170	BN 1040	2.40	2.48	0.08	2.71	0.31	10.71	10.71	0.00
1041.01	37.650	8N 1030	2.38	2.46	0.08	2.71	0.33	10.74	10.75	0.01
1041.23	37.430	BN 1020	2.36	2.44	0.08	2.68	0.32	10.71	10.71	0.00
1041.46	37.200	BN 1010	2.32	2.4	0.08	2.64	0.32	10.62	10.62	0.00
1041.7	36.960	BN 1000	2.32	2.4	0.08	2.64	0.32	10.59	10.59	0.00
1041.96	36.700	BN 990	2.27	2.34	0.07	2.58	0.31	10.45	10.45	0.00
1042.235	36.425	BN 980	2.21	2.29	0.08	2.53	0.32	10.30	10.30	0.00
1042.515	36.145	BN 970	2.20	2.28	0.08	2.52	0.32	10.29	10.29	0.00
1042.91	35.750	BN 960	2.12	2.19	0.07	2.44	0.32	10.22	10.23	0.01
1043.725	34.935	BN 950	1.94	2.01	0.07	2.28	0.34	9.91	9.91	0.00
1044.06	34.600	BN 940	1.91	1.98	0.07	2.24	0.33	9.75	9.75	0.00
1044.34	34.320	BN 930	1.86	1.92	0.06	2.18	0.32	9.58	9.59	0.01
1044.605	34.055	BN 920	1.84	1.9	0.06	2.15	0.31	9.53	9.53	0.00
1044.86	33.800	BN 910	1.81	1.87	0.06	2.11	0.30	9.49	9.50	0.01
1045.4	33.260	BN 900	1.73	1.79	0.06	2.01	0.28	9.31	9.31	0.00
1045.885	32.775	BN 890	1.71	1.72	0.01	1.9	0.19	9.17	9.17	0.00
1046.18	32.480	BN 880	1.71	1.72	0.01	1.89	0.18	9.09	9.09	0.00
1046.34	32.320	BN 870	1.71	1.72	0.01	1.88	0.17	9.02	9.02	0.00
1046.58	32.080	BN 860	1.70	1.72	0.02	1.85	0.15	8.97	8.97	0.00
1046.9	31.760	BN 850	1.70	1.71	0.01	1.77	0.07	8.78	8.78	0.00
1047.35	31.310	BN 840	1.70	1.71	0.01	1.72	0.02	8.41	8.41	0.00
1047.915	30.745	BN 830	1.70	1.71	0.01	1.72	0.02	8.17	8.17	0.00
1048.375	30.285	BN 820	1.69	1.7	0.01	1.72	0.03	8.23	8.24	0.01
1048.89	29.770	BN 810	1.69	1.7	0.01	1.71	0.02	8.00	8.00	0.00
1049.12	29.540	BN 800	1.69	1.7	0.01	1.71	0.02	7.94	7.94	0.00
1049.37	29.290	BN 790	1.69	1.69	0.00	1.71	0.02	7.75	7.76	0.01
1049.59	29.070	BN 780	1.68	1.69	0.01	1.7	0.02	7.74	7.74	0.00
1049.87	28.790	BN 770	1.68	1.69	0.01	1.7	0.02	7.63	7.63	0.00
1050.43	28.230	BN 760	1.68	1.68	0.00	1.7	0.02	7.61	7.61	0.00
1050.86	27.800	BN 750	1.67	1.68	0.01	1.69	0.02	7.46	7.46	0.00
1051.36	27.300	BN 740	1.67	1.68	0.01	1.69	0.02	7.46	7.46	0.00
1051.895	26.765	BN 730	1.67	1.67	0.00	1.68	0.01	7.30	7.30	0.00
1052.31	26.350	BN 720	1.66	1.67	0.01	1.68	0.02	7.40	7.41	0.01
1052.37	26.290	BN 710								
1052.39	26.270	BN 700	1.66	1.66	0.00	1.68	0.02	7.23	7.23	0.00
1052.595	26.065	BN 690	1.66	1.66	0.00	1.67	0.01	7.14	7.14	0.00

TABLE A1 - Flood Forecasting Model Results

			1996 Flood Event					100 Year ARI Event		
MIKE 11 CHAINAGE	AMTD CHAINAGE	CROSS SECTION	Small "n" MIKE 11	Small "n" FF Model	Small "n" Difference	Large "n" FF Model	Large "n" Difference	Large "n" MIKE 11	Large "n" FF Model	Large "n" Difference
1052.607	26.053	BN 680								
1052.64	26.020	BN 670	1.65	1.66	0.01	1.67	0.02	6.63	6.63	0.00
1052.865	25.795	BN 660	1.65	1.66	0.01	1.67	0.02	6.49	6.49	0.00
1053.32	25.340	BN 650	1.65	1.65	0.00	1.67	0.02	6.42	6.42	0.00
1053.356	25.304	BN 640								
1053.385	25.275	BN630	1.65	1.65	0.00	1.66	0.01	6.24	6.24	0.00
1053.9	24.760	BN 620	1.64	1.65	0.01	1.66	0.02	5.85	5.85	0.00
1054.64	24.020	BN 610	1.64	1.64	0.00	1.65	0.01	5.78	5.78	0.00
1054.66	24.000	BN 600								
1054.68	23.980	BN 590	1.64	1.64	0.00	1.65	0.01	5.70	5.70	0.00
1054.97	23.690	BN 560	1.64	1.64	0.00	1.65	0.01	5.45	5.45	0.00
1055.28	23.380	BN 550	1.64	1.64	0.00	1.65	0.01	5.40	5.40	0.00
1055.42	23.240	BN 540	1.64	1.64	0.00	1.64	0.00	5.40	5.40	0.00
1055.96	22.700	BN 530	1.63	1.63	0.00	1.64	0.01	5.34	5.34	0.00
1056.4	22.260	BN 520	1.63	1.63	0.00	1.64	0.01	5.09	5.09	0.00
1056.695	21.965	BN 510	1.63	1.63	0.00	1.63	0.00	5.03	5.03	0.00
1056.865	21.795	BN 500	1.63	1.63	0.00	1.63	0.00	5.22	5.22	0.00
1056.92	21.740	BN 495								
1056.95	21.710	BN 490	1.63	1.63	0.00	1.63	0.00	5.12	5.12	0.00
1057.09	21.570	BN 480	1.63	1.63	0.00	1.63	0.00	4.97	4.97	0.00
1057.53	21.130	BN 470	1.63	1.62	-0.01	1.63	0.00	4.83	4.83	0.00
1058.04	20.620	BN 460	1.62	1.62	0.00	1.63	0.01	4.58	4.58	0.00
1058.23	20.430	BN 450	1.62	1.62	0.00	1.63	0.01	4.50	4.50	0.00
1058.53	20.130	BN 440	1.62	1.62	0.00	1.62	0.00	4.37	4.37	0.00
1058.735	19.925	BN 430	1.62	1.62	0.00	1.62	0.00	4.41	4.41	0.00
1059.035	19.625	BN 420	1.62	1.61	-0.01	1.62	0.00	4.13	4.13	0.00
1059.54	19.120	BN 410	1.61	1.61	0.00	1.62	0.01	4.09	4.09	0.00
1059.99	18.670	BN 400	1.61	1.61	0.00	1.61	0.00	3.88	3.88	0.00
1060.345	18.315	BN 390	1.61	1.61	0.00	1.61	0.00	3.65	3.65	0.00
1060.535	18.125	BN 380	1.61	1.61	0.00	1.61	0.00	3.50	3.50	0.00
1061.015	17.645	BN 370	1.61	1.6	-0.01	1.61	0.00	3.45	3.45	0.00
1061.53	17.130	BN 360	1.60	1.6	0.00	1.6	0.00	3.24	3.24	0.00
1062.02	16.640	BN 350	1.60	1.6	0.00	1.6	0.00	3.16	3.16	0.00
1062.535	16.125	BN 340	1.60	1.59	-0.01	1.6	0.00	3.12	3.12	0.00
1062.94	15.720	BN 330	1.59	1.59	0.00	1.59	0.00	3.11	3.11	0.00
1063.31	15.350	BN 320	1.59	1.59	0.00	1.59	0.00	2.99	3.00	0.01
1063.645	15.015	BN 310	1.59	1.59	0.00	1.59	0.00	2.72	2.72	0.00
1064	14.660	BN 300	1.59	1.58	-0.01	1.59	0.00	2.68	2.68	0.00
1064.49	14.170	BN 290	1.58	1.58	0.00	1.58	0.00	2.55	2.55	0.00
1065.01	13.650	BN 280	1.58	1.58	0.00	1.58	0.00	2.57	2.57	0.00
1065.503	13.157	BN 270	1.58	1.57	-0.01	1.58	0.00	2.53	2.53	0.00
1065.99	12.670	BN 260	1.58	1.57	-0.01	1.58	0.00	2.54	2.54	0.00
1066.505	12.155	BN 250	1.57	1.57	0.00	1.57	0.00	2.46	2.46	0.00
1067.02	11.640	BN 240	1.57	1.57	0.00	1.57	0.00	2.43	2.43	0.00
1067.485	11.175	BN 230	1.57	1.57	0.00	1.57	0.00	2.32	2.32	0.00
1067.965	10.695	BN 220	1.57	1.56	-0.01	1.57	0.00	2.20	2.20	0.00
1068.66	10.000	BN 210	1.56	1.56	0.00	1.56	0.00	2.02	2.02	0.00
1069.045	9.615	BN 200	1.56	1.56	0.00	1.56	0.00	1.95	1.95	0.00
1069.535	9.125	BN 190	1.56	1.55	-0.01	1.55	-0.01	1.89	1.89	0.00
1070.025	8.635	BN 180	1.55	1.55	0.00	1.55	0.00	1.82	1.82	0.00
1070.53	8.130	BN 170	1.55	1.55	0.00	1.55	0.00	1.72	1.72	0.00
1071.04	7.620	BN 160	1.55	1.54	-0.01	1.54	-0.01	1.64	1.64	0.00
1071.52	7.140	BN 150	1.54	1.54	0.00	1.54	0.00	1.67	1.67	0.00
1072.015	6.645	BN 140	1.54	1.54	0.00	1.54	0.00	1.56	1.56	0.00
1072.515	6.145	BN 130	1.54	1.53	-0.01	1.53	-0.01	1.50	1.50	0.00
1072.995	5.665	BN 120	1.53	1.53	0.00	1.53	0.00	1.46	1.46	0.00
1073.485	5.175	BN 110	1.53	1.53	0.00	1.53	0.00	1.36	1.36	0.00
1074	4.660	BN 100	1.53	1.52	-0.01	1.53	0.00	1.29	1.29	0.00
1074.46	4.200	BN 90	1.52	1.52	0.00	1.52	0.00	1.22	1.22	0.00
1074.985	3.675	BN 80	1.52	1.52	0.00	1.52	0.00	1.09	1.09	0.00
1075.48	3.180	BN 70	1.51	1.51	0.00	1.51	0.00	1.06	1.06	0.00
1076	2.660	BN 60	1.51	1.51	0.00	1.51	0.00	1.07	1.07	0.00
1076.495	2.165	BN 50	1.51	1.51	0.00	1.51	0.00	0.96	0.96	0.00
1077.01	1.650	BN 40	1.51	1.51	0.00	1.51	0.00	0.96	0.96	0.00
1077.51	1.150	BN 30	1.51	1.51	0.00	1.51	0.00	0.97	0.97	0.00
1078.04	0.620	BN 20	1.51	1.51	0.00	1.51	0.00	0.95	0.95	0.00
1078.525	0.135	BN 10	1.51	1.51	0.00	1.51	0.00	0.92	0.92	0.00

SINCLAIR KNIGHT MERZ

Brisbane City Council
February 1998

Brisbane River Flood Study

FINAL DRAFT REPORT

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Acknowledgments

Sinclair Knight Merz would like to thank the following organisations for their assistance throughout this study.

Department of Natural Resources (DNR)
Bureau of Meteorology (BOM)
South East Queensland Water Board (SEQWB)

In particular, we would like to thank Terry Malone (BOM), John Ruffini (DNR) and Garry Grant (SEQWB) for without their help and supply of information our task would have been much more difficult.

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Executive Summary

Sinclair Knight Merz were commissioned on the 5 November 1996 by Brisbane City Council to undertake a flood study of Brisbane River.

The **primary objectives** of the study were;

- to provide technically based flood development levels along the length of the Brisbane River within the confines of the Brisbane City Boundary, and
- develop a Flood Forecasting Model.

The **secondary objectives** of the study were to;

- set flood regulation lines, and
- to develop a revegetation strategy compatible with hydraulic constraints.

The modelling and investigation undertaken in this study will form the basis for a floodplain management strategy for the Brisbane River.

The study involved the collection and analysis of available rainfall, survey and hydrographic data. Using this data a hydrologic and hydraulic model was developed, calibrated and tested using four historical flood events. These floods were;

- January 1974
- May 1996
- June 1983 and
- Late April 1989

Following calibration, the models were then verified against the following historical events:

- February 1931
- March 1955
- Early April 1989 and
- July 1973

Data for the February 1931 and March 1955 historical events was not available during the calibration/verification phase of the study and verification of these events was performed at a later date.

The hydrologic modelling has been carried out using the XP-RAFTS hydrologic model. This model converts rainfall to runoff after considering catchment storage effects and losses.

The MIKE 11 hydrodynamic hydraulic model was selected for the hydraulic analysis.

Calibration of the hydrologic and hydraulic models has been carried out in parallel to ensure river storage between the two models were consistent. Parameters within the hydrologic model were adjusted until a good match between continuous historical streamflow records and predicted streamflows were achieved. These flows were then used in the hydraulic model and calibration was conducted until predicted flood levels provided a good match between continuous historical flood level data and peak flood levels. The discharge hydrographs routed through MIKE 11 were then compared to the discharge hydrographs produced by RAFTS. This process was repeated until the discharge hydrographs produced by each model were consistent to within 10%.

The MIKE 11 hydraulic model was calibrated to recorded historical flood levels primarily through variation of Manning's n roughness parameters along the river.

Good calibration of both the hydrologic and hydraulic models have been obtained. These results were achieved on the basis of;

- maintaining realistic loss rates over the entire catchment
- maintaining realistic river roughness parameters representative of the current river configuration and
- obtaining a satisfactory hydraulic performance of the major structures.

An analysis of design storm events was then performed to establish design flood characteristics in the Brisbane River using the calibrated hydrologic RAFTS model and the hydraulic MIKE 11 model. A range of varying average recurrence intervals from 2 year ARI through to Probable Maximum Precipitation were analysed.

The hydrologic analysis was performed for existing catchment conditions to determine inflow hydrographs for the calculation of design flood profiles for the Brisbane River. These design events been analysed assuming simplified operations of Wivenhoe and Somerset Dams as RAFTS cannot model the complex operations associated with these dams. The design flood profiles have been prepared using MIKE 11. The tabulated results from these profiles provide peak flood levels and discharges at each cross section within the extent of the hydraulic model (river mouth to upstream city boundary).

Major hydraulic structures along the Brisbane River were assessed individually and it was found that three of these structures generated affluxes in excess of the 150 mm for the 100 year ARI flood event. It was concluded that no upgrades of these structures should occur due to the high costs involved in undertaking such a project.

The waterway management component of this study required application of the hydraulic model of the Brisbane River to delineate flood regulation lines, determine a revegetation strategy and to assess stream rehabilitation.

Regulation Line Strategy

Regulation lines are used by Council as a control on development encroaching onto the floodplains of major rivers and creeks. They are set to ensure that works such as placement of fill does not compromise existing flood immunity.

As no interim regulation lines were in place for the Brisbane River, regulation lines were set using the calibrated hydraulic MIKE 11 model. This work was principally based on the 'worst case' design scenario of the 100 year ARI flood event with regulation lines and revegetation strategy in place.

Revegetation Strategy

A revegetation strategy for the Brisbane River (river mouth to upper city boundary) has been developed which complies with the current Strategic Plan for the Management of Brisbane Waterways. The testing was conducted using the 100 year ARI design flood.

The approach taken was generally to adhere to the interim Waterway Corridor widths for the Brisbane River. These widths are generally practical in terms of width of river corridor to private property boundaries. They also provide a sufficient width to act as wildlife corridors.

The proposed revegetation strategy applies to areas both within and beyond the waterway corridors. Tree planting has been proposed and tested for areas beyond the waterway corridor as private landholders may revegetate these areas. It has been assumed that this will create the worst case scenario.

All proposed revegetation has been tested by adding 0.15 to existing case Manning's n roughness parameters as this was assumed to be the worst case tree planting density. The maximum increase in flood levels throughout the reach due to proposed revegetation was predicted to be 20 mm.

In some reaches several solutions to the regulation line location and the revegetation strategy satisfy the hydraulic constraints. In these areas the most practical solution was adopted considering planning, environmental and economic criteria.

A flood forecasting model has also been developed for the Brisbane River in conjunction with an assessment of possible escape routes and areas within the city boundary that become isolated during flood events. Since the Brisbane River system is effected by tidal influences, a hydrologic and hydraulic model had to be developed. These models will form an integral part of the PROPHET flood warning system that will enable the forecasting of flood levels at key locations on the Brisbane River. These models require rainfall information from radio telemetry gauges within the confines of the city boundary and inflow hydrographs provided by the DNR at the upstream Brisbane City Boundary and Bremer River inflow points. These hydrographs account for the complex dam operations that cannot be accurately modelled by the RAFTS hydrologic model.

A flood contouring exercise was conducted using MIKE 11 predicted flood levels and super-elevation formula to produce two dimensional flood surface along the hydraulic reach of the Brisbane River. Initially it was proposed that the two dimensional hydrodynamic model FastTABS would be used to post process one dimensional results generated by MIKE 11 to produce these contours however due to the size of the river, FastTABS was unable cope with the amount of digital terrain data that was required to complete this process.

Finally a community consultation process was conducted during the course of the study. An Information Bulletin/Questionnaire was distributed to 13 community groups offering these groups the opportunity to respond to a survey which was primarily concerned with the revegetation and rehabilitation of the river corridor. The response from the community groups was considered to be poor however 100% of the respondents agree with revegetation of the river corridor.

1. Introduction

The Brisbane River Flood Study is a major initiative of the Brisbane City Council to establish design flood levels along the lower reach of Brisbane River. Additional outcomes of the investigation shall be the setting of flood regulation lines, a revegetation strategy compatible with hydraulic constraints and a flood forecasting model.

This is the final report which comprises of the four (4) progress reports generated throughout the study. These progress reports consisted of:

- Calibration Report
- Design Event Report
- Waterway Management Report
- Flood Mapping Report.

2. Catchment Description

The extent of the Brisbane Valley catchment is shown in **Figure 2-1 - Locality Plan**. It covers an area of 13 570 square kilometres and is bounded to the west by the Great Dividing Range and by a number of smaller coastal ranges to the east and north. Most of the catchment comprises of forest and grazing land, with the exception of the Brisbane - Ipswich metropolitan areas and numerous small rural townships.

Cooyar Creek, Emu Creek and Cressbrook Creek are the main tributaries of the upper Brisbane River and have headwaters in the Great Dividing Range. Cooyar Creek is the most northerly of the upper Brisbane River tributaries and tends to have the lowest annual rainfalls recorded within the catchment.

The Stanley River is the only major tributary of the Brisbane River that flows westwards and its source is the Conandale and D'Aguilar Ranges near the coast. This part of the Brisbane River catchment is relatively steep and receives the highest rainfall.

Lockyer Creek is the largest tributary of the Brisbane River in terms of catchment size, with a total area of 2 600 square kilometres. The lower floodplains of the Lockyer Valley are used for intensive agriculture, including vegetables and small crops. The hilly upper parts of the catchment to the south and west is mainly forest.

The Bremer River occupies the south west corner of the Brisbane Valley and has its headwaters in the Little Liverpool Range. Its catchment is generally hilly and lightly forested. A major tributary of the Bremer River is Warrill Creek. The lower reaches of the Bremer River flows through the City of Ipswich.

The Brisbane River and its major tributaries are regulated by several dams and reservoirs. A list of major dam structures is given in **Table 2-1 - Major Dams in the Brisbane Valley**. The largest storages are associated with Somerset Dam and Wivenhoe Dam.

Table 2-1 - Major Dams in the Brisbane Valley

Damsite	River/Creek	Year of Completion	Capacity at Full Supply Level (ML)
Wivenhoe	Brisbane	1985	1 150 000
Somerset	Stanley	1959	369 750
Cressbrook	Cressbrook	1982	78 300
Perseverance	Perseverance	1965	30 300
Atkinson	Buaraba	1970	31 300
Lake Manchester	Cabbage Tree	1916	25 700
Mt Crosby Weir	Brisbane	1901	2 590
Moongerah Dam	Reynolds	1961	92 500
Enoggera Creek	Enoggera	1866	4 500

Somerset Dam is a multi-purpose dam owned by the South East Queensland Water Board and operated by Brisbane City Council. It supplies water for Brisbane, Ipswich and adjacent shires, has a limited power generation capacity and is also used for recreation purposes. A major role of the dam is for flood mitigation and a temporary flood storage of 524 000 ML is available.

Wivenhoe Dam is the largest dam structure in the Brisbane Valley and commands about half of the total Brisbane River catchment. It has a major effect on river hydrology due to its large flow regulation capacity. About 1 450 000 ML of flood storage is available at the dam.

For the purpose of hydrologic modelling the Brisbane River catchment can be divided into six broad subcatchments. The boundary of each subcatchment; defined as Upper Brisbane, Somerset, Wivenhoe, Lockyer, Bremer and Lower Brisbane, are shown in **Figure 2-2 - Brisbane River Subcatchments**

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FIGURE 2.1
BRISBANE RIVER FLOOD STUDY
LOCALITY PLAN

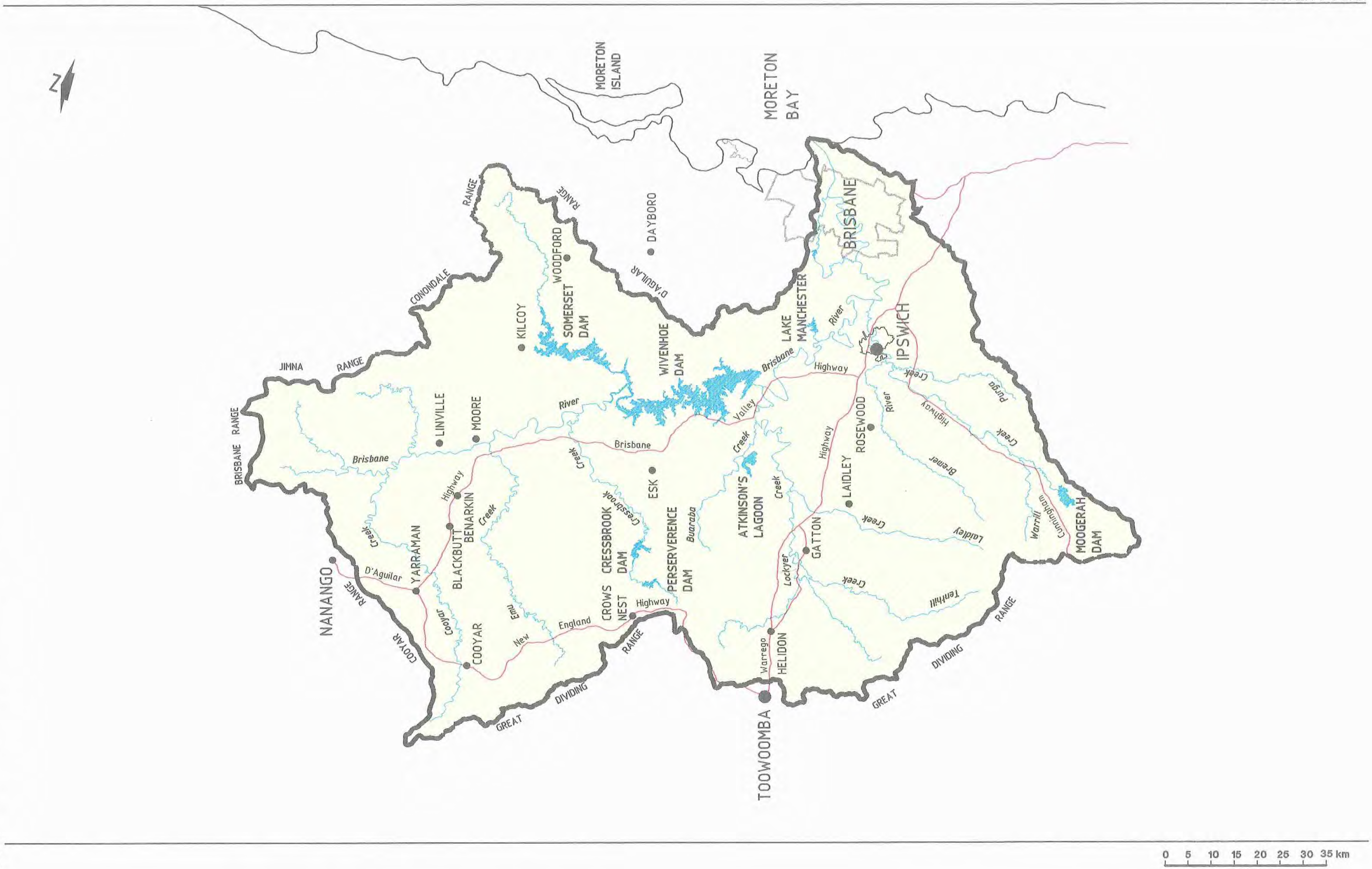

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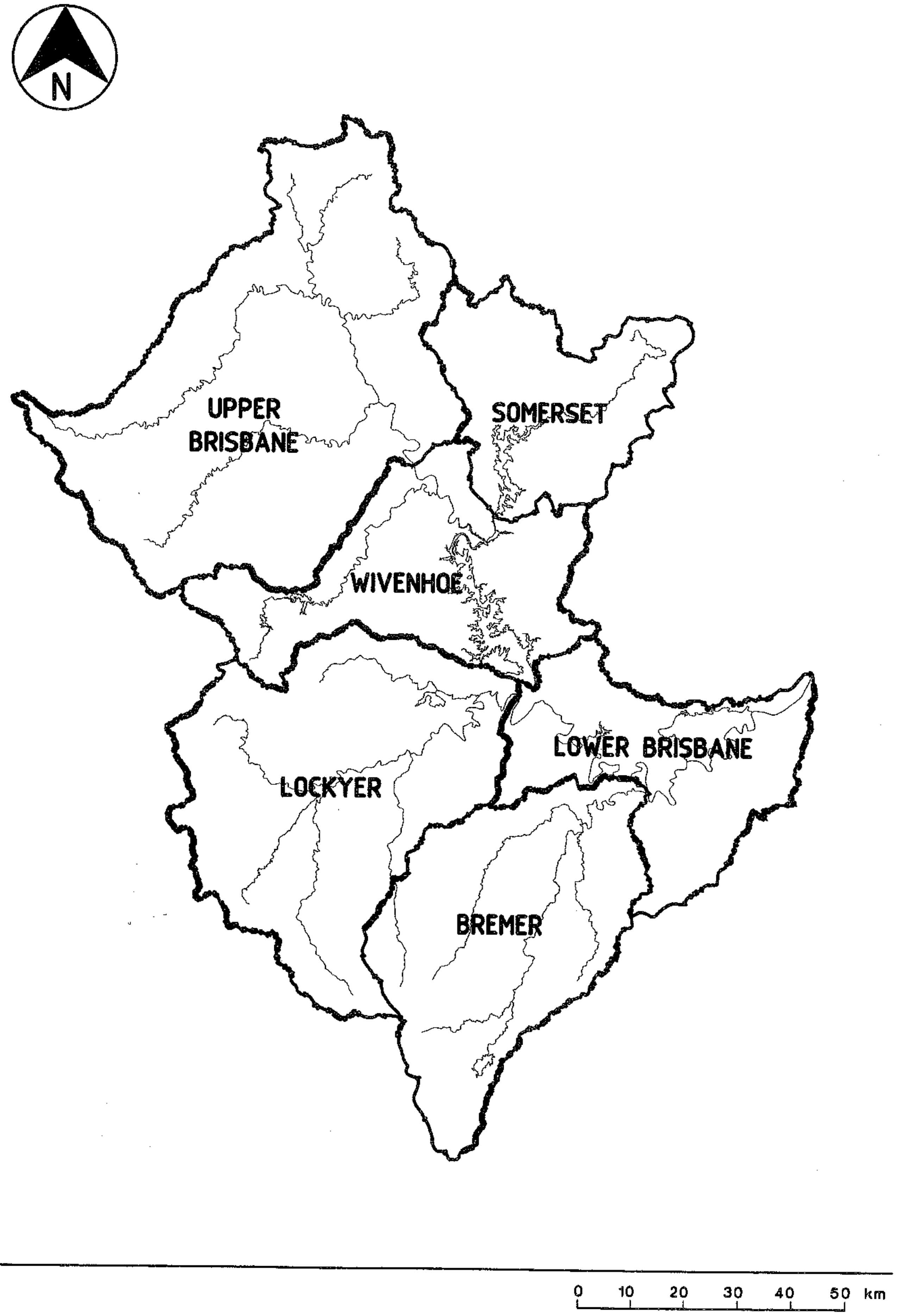
FIGURE 2.2
BRISBANE RIVER FLOOD STUDY
BRISBANE RIVER SUBCATCHMENTS



3. Available Data

3.1 Stream Gauges

Available Stream Gauges

Recorded flood hydrographs at key locations in the Brisbane River system are required for the purpose of hydrologic model calibration.

The network of stream gauges associated with the Brisbane River catchment is shown in **Figure 3-1 - Stream Gauge Locations** and detailed in **Table 3-1 - Brisbane River Stream Gauge Summary**. Several stream gauges have historical records extending over a period of more than eighty years. The majority of stream recorders were installed during the post 1960 period. Some gauges have been decommissioned including Brisbane River at Middle Creek, Cressbrook Creek at Damsite (both due to dam construction) and Warrill Creek at Kalbar.

Table 3-1 - Brisbane River Stream Gauge Summary

Number	Stream	Site	Record	% Catchment Area
Upper Brisbane River				
143015	Cooyar Creek	Damsite	1968 - date	7
143007	Brisbane River	Linville	1964 - date	15
143010	Emu Creek	Boat Mtn	1976 - date	7
143009	Brisbane River	Gregors Creek	1962 - date	29
143002	Brisbane River	Fulham Vale	1920 - 1965	29
Somerset and Wivenhoe				
143305	Stanley River	Somerset Dam	1935 - date	10
143008	Brisbane River	Middle Creek	1962 - 1982	49
143036	Brisbane River	Wivenhoe Dam	1986 - date	52
143901	Stanley River	Woodford	1918 date	2
143303	Stanley River	Peachester	1927 - date	1
143013	Cressbrook Creek	Damsite	1965 - 1981	2
143006	Tinton	Cressbrook Ck	1928 - 1980	3
143302	Stanley River	Silverton	1919 - 1968	10

Table 3-1 - Brisbane River Stream Gauge Summary (Continued)

Lockyer				
143203	Lockyer Creek	Helidon	1926 - date	3
143212	Tenthill Creek	Tenthill	1968 - date	3
143225	Laidley Creek	Showground	1984 - date	2
143210A	Lockyer Creek	Lyons Bridge	1909 - date	19
143210B	Lockyer Creek	Rifle Range	1988 - date	19
143907	Brisbane River	Lowood	1909 - date	77
143905	Lockyer Creek	Glenore Grove	1955 - date	16
143904	Lockyer Creek	Gatton	1929 - date	12
143204	Lockyer Creek	Wilsons Weir	1953 - 1982	12
143206	Brisbane River	Brightveiw Weir	1953 - 1973	18
Bremer and Lower Brisbane				
143001	Brisbane River	Savages Cross	1909 - date	78
143003	Brisbane River	Mt Crosby	1900 - date	78
143110	Bremer River	Adams Bridge	1968 - date	1
143107	Bremer River	Walloon	1961 - date	5
143102	Warrill Creek	Kalbar	1912 - 1973	3
143108	Warrill Creek	Amberley	1961 - date	7
143113	Purga Creek	Loamside	1973 - date	2
143911	Bremer River	David Trumpy	1893 - date	14
143915	Brisbane River	Moggill	1965 - date	94
143982	Brisbane River	Jindalee	1974?	95
143919	Brisbane River	Port Office	1841 - date	100
143101	Warrill Creek	Mudtapilly	1914 - 1953	6

Note: % catchment area estimated as proportion of total Brisbane River Catchment (equal to 13 570 km^2) upstream of the streamgauge.

Several streamgauges are located in the upper tributaries of the Brisbane River system and command a relatively small fraction of the total catchment draining to the City of Brisbane. About ten gauges have drainage areas less than 5 percent of the total Brisbane Valley catchment and are of secondary importance in the RAFTS model calibration process.

The primary streamgauges used for model calibration purposes include:

- Brisbane River at Linville - includes Cooyar Creek and headwaters of Brisbane River.
- Brisbane River at Gregors Creek - downstream of Linville and includes streamflows from Emu Creek, Maronghi Creek and Ivory Creek.

- Brisbane River at Middle Creek - is sited downstream of the Stanley River confluence and was closed in August 1982 due to the construction of Wivenhoe Dam. Records since 1959 includes the flow regulation effects of Somerset Dam,

- Brisbane River at Lowood - is sited downstream of the confluence of Brisbane River and Lockyer Creek.

- Brisbane River at Savages Crossing and Mt Crosby - are both long term streamgauge sites and are important in isolating flow travel times and channel routing effects along the mid-reach section of the Brisbane River (between the Lockyer Creek and Bremer River junctions).

- Brisbane River at Moggill, Jindalee and Post Office Gauge are downstream of the Bremer River and are located within the coverage of the Brisbane River MIKE 11 model.

- Lockyer Creek at Glenore Grove - accounts for about 85% of the Lockyer Creek catchment (which in turn is of the order of 20% of the total Brisbane River catchment).

- Lockyer Creek at Lyons Bridge and Rifle Range are sited near the Brisbane River. Gauge heights are subject to backwater effects associated with Brisbane River floodwaters.

- Warrill Creek at Amberley measure streamflows at a major tributary of the Bremer River catchment.

- Bremer River at David Trumpy Bridge is located near the Brisbane River and gauge heights are affected by incidence of flooding within the Brisbane River. The Bremer River catchment contributes to about 15 percent of the total Brisbane River catchment area.

A series of telemetric alert gauges have been established within the catchment for flood warning purposes and are utilised by the Department of Natural Resource and the Bureau of Meteorology. Most of these stream gauges have been installed in the last five years and are also shown in **Figure 3-1 - Stream Gauge Locations**. A listing of selected gauges is given in **Table 3-2 - Brisbane River Flood Alert Gauges**.

Table 3-2 - Brisbane River Flood Alert Gauges

Alert Number	Stream	Site
Upper Brisbane		
6709	Brisbane River	Devon Hills
6515	Brisbane River	Gregors Creek
Somerset and Wivenhoe		
6554	Cressbrook Creek	Rosentreters Bridge
6575	Brisbane River	Caboonbah
Lockyer		
6634	Lockyer Creek	Lyon
21019	Laidley Creek	Thornton
7078	Laidley Creek	Mulgowie
7167	Laidley Creek	Warrego Highway
Bremer and Lower Brisbane		
21025	Western Creek	Kuss Road
7020	Bremer River	Rosewood
6572	Warrill Creek	Harrisville
6740	Purga Creek	Washpool

Note: This table excludes alert stations located in Brisbane metropolitan area.

Stream Gauge Rating Curves

Stage discharge curves are available at the majority of streamgauges and were supplied by the Hydrology Section, Bureau of Meteorology.

Somerset Dam and Wivenhoe Dam Discharges

Inflow and outflow hydrographs associated with Somerset Dam and Wivenhoe Dam for several floods were supplied by Surface Water Assessment, Department of Natural Resources. The inflows are synthetic hydrographs derived from historical lake level data and storage outflow records.

3.2 Rainfall Data

Daily rainfall data and representative pluviograph data is required to describe the areal and temporal distribution of rainfall associated with historical flood events.

A total of about 60 rainfall stations were applied in this flood study and the coverage of these stations within and adjacent to the catchment is shown in **Figure 3-2 - Rainfall Station Locations.** A listing of stations is compiled in **Appendix A.**

Pluviometers, which record the temporal variation of rainfall during a storm, are distributed within the catchment as indicated on **Figure 3-3 - Pluviometer Locations**. These recorders are owned and operated by various authorities including the Bureau of Meteorology, Department of Natural Resources, Brisbane City Council, Toowoomba City Council and CSIRO. Several pluviometers have been recently installed a part of a flood alert system for the Brisbane River. A listing of pluviometers is also compiled in **Appendix A**.

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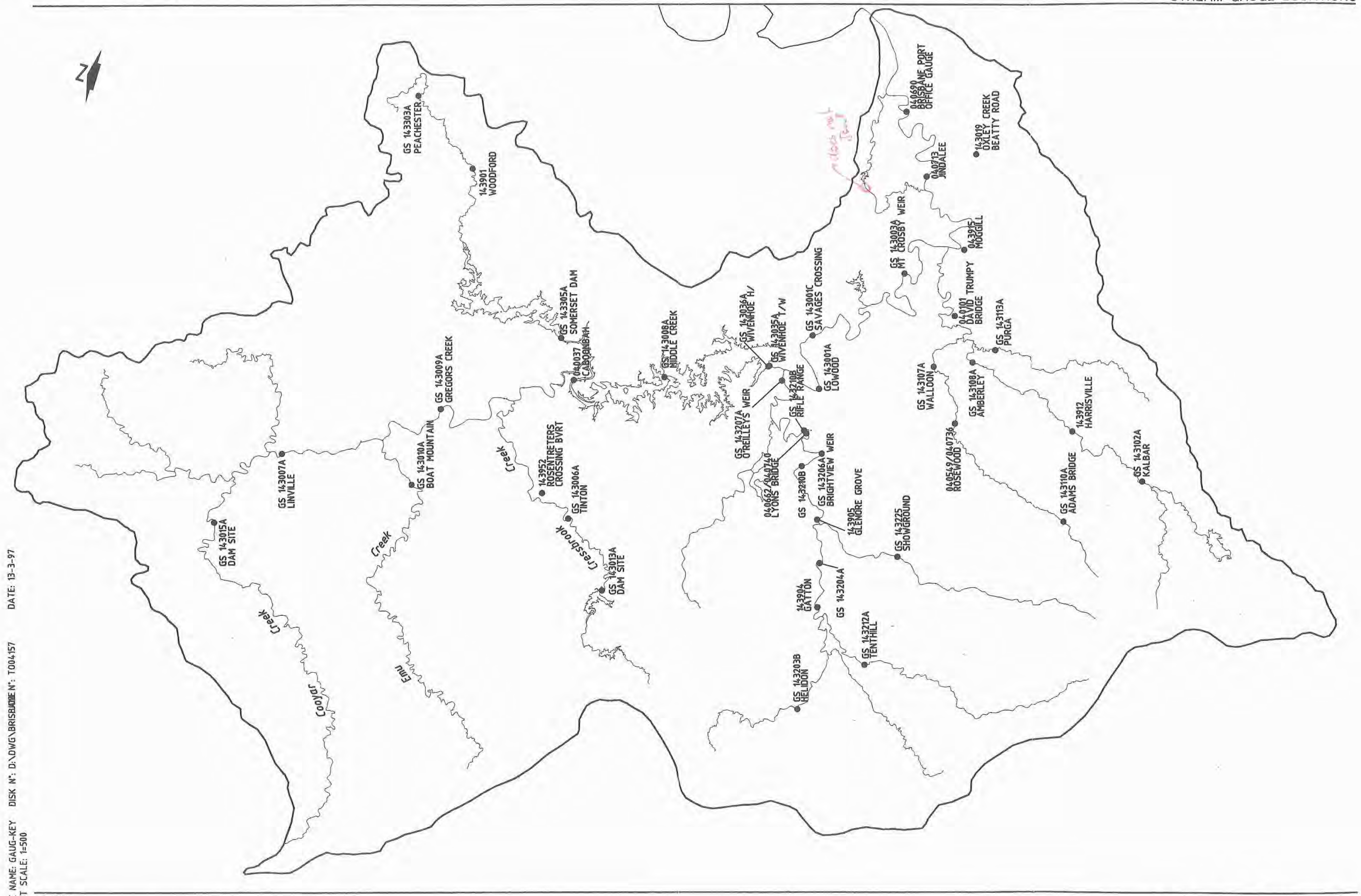
FIGURE 3.1
BRISBANE RIVER FLOOD STUDY
STREAM GAUGE LOCATIONS



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LEGEND
● STREAM GAUGE LOCATION

0 5 10 15 20 25 km

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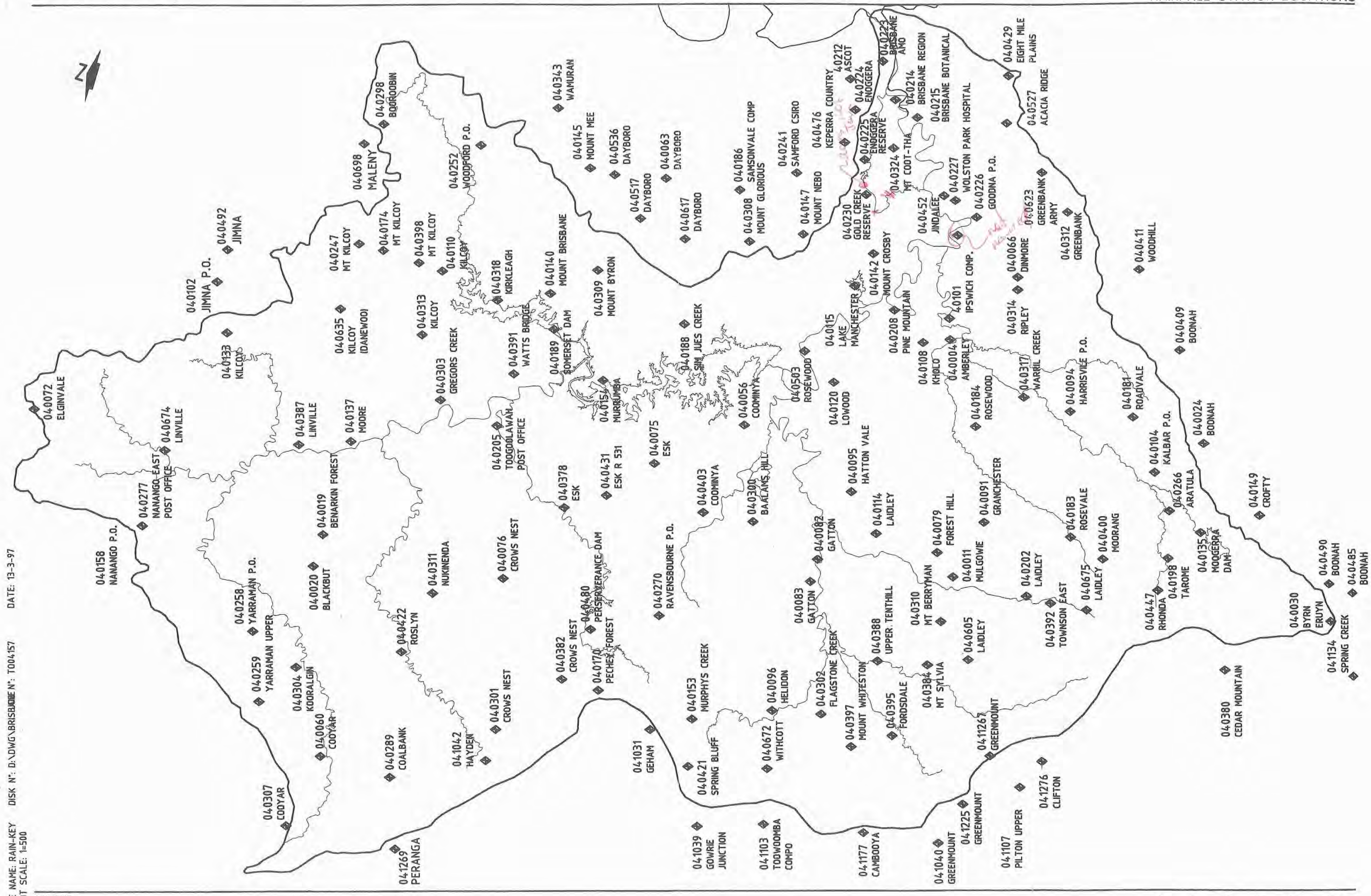
FIGURE 3.2
BRISBANE RIVER FLOOD STUDY
RAINFALL STATION LOCATIONS



LEGEND
◆ RAINFALL STATION

FILE NAME: RAIN-KEY DISK N°: D:\DWG\BRISBANE N°: T004157 DATE: 13-3-97
PLOT SCALE: 1=500

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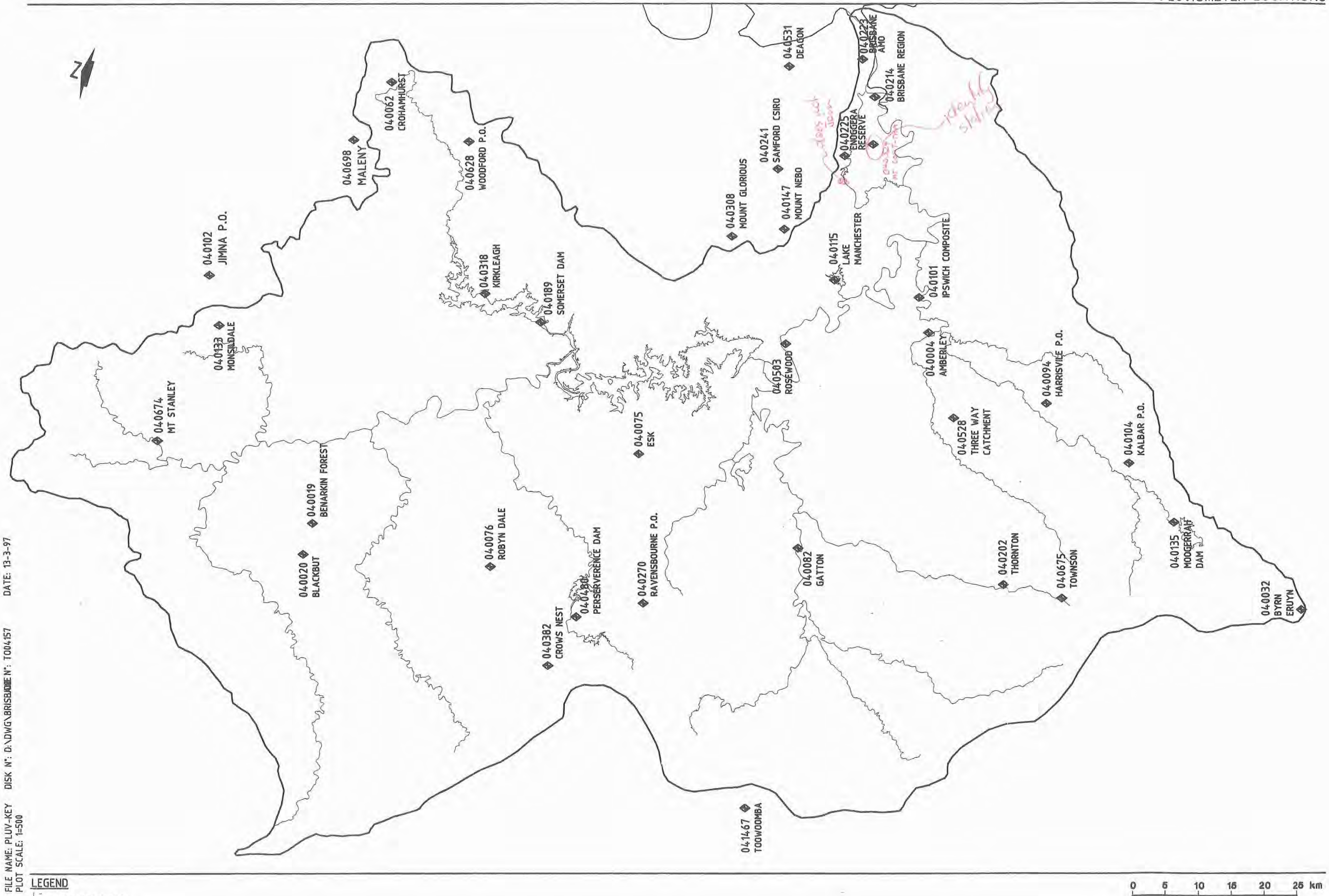
FIGURE 3.3
BRISBANE RIVER FLOOD STUDY
PLUVIOMETER LOCATIONS



LEGEND

◆ PLUVIOMETER

FILE NAME: PLUV-KEY DISK N°: D:\DWG\BRISBANE N°: T004157 DATE: 13-3-97
PLOT SCALE: 1=500

4. Review of Previous Hydrologic Studies

4.1 Overview

The most significant past study of the Brisbane River catchment was undertaken by the Department of Primary Industries (now Department of Natural Resources or DNR) for the South East Queensland Water Board during the period 1991 to 1994. The study was associated primarily with Somerset Dam and Wivenhoe Dam and included a revision of design floods, the development of runoff routing and hydraulic models and a management system for the flood operation of the dams.

This section summarises the main hydrologic outcomes of the DNR study associated with model calibration.

4.2 Hydrologic Model Calibration

The development of hydrologic models by DNR is documented in `Brisbane River Flood Hydrology - Runoff Routing Model Calibration' (Vol 1 and 2, September 1991).

An overview of past flood investigations associated with Somerset Dam and Wivenhoe Dam was provided in the DNR report. The most significant of these studies were the original design flood estimates for Wivenhoe Dam completed in 1977 (Hausler and Porter, 1977) and a 1983 revision of these design flows (Weeks, 1983).

Runoff routing model techniques were applied in the 1983 revision and involved calibration against seven historical floods; July 1965, March 1967, June 1967, January 1968, December 1971, January 1971 and January 1976.

WT42PC, a RORB type runoff routing model, was used by DNR in their 1991 study. A total of 24 individual models were set up corresponding to streamgauge locations and calibrated against historical data.

The seven floods used by Weeks (1983) were applied by DNR in addition to floods in June 1983, early April 1989 and late April 1989.

The subdivision of the Brisbane River catchment into 24 separate models which are then linked together such that hydrographs from upstream models form inputs into downstream models is a technique adopted by DNR from flood analysis done for Warragamba Dam, Sydney (Deen, Craig, Sable 1988).

During the calibration phase, recorded hydrographs were used as upstream inflows into several of the WT42PC models in preference to predicted hydrographs. For example, recorded hydrographs available for Brisbane River at Linville and Emu Creek at Boat Mountain were used as direct inflows into the WT42PC model of the Brisbane River upstream of Gregors Creek (refer to **Figure 3-1 - Stream Gauge Locations** for gauge locations).

The preferential use of recorded hydrographs in place of predicted hydrographs from upstream WT42PC models made it difficult to review the performance of the full network model of the Brisbane River (comprising of the individual WT42PC models linked together) in predicting flood hydrographs at the lower reaches of the catchment.

Calibration of the individual WT42PC models was based on matching of peak discharges and flood volumes by adjusting rainfall loss rates and catchment storage parameters (k and m).

The initial loss - continuing loss type of rainfall loss was used in the model calibration. Initial loss rates were adjusted to match the rising limb of the recorded hydrograph. A significant variability in loss rates was noted, both between the individual models for the same storm and over the range of storms that were modelled. Generally the initial loss ranged from 0 to 300 mm and continuing loss rate varied from 0.1 to 9.7 mm/hr. The upper end of the adopted losses are higher than expected for South East Queensland (AR&R, 1987).

The catchment storage parameter, k, was varied within each WT42PC model for each calibration event, generating an extensive set of k values. A k value was nominated for each individual model based on a weighted average; the bias being in proportion to the peak discharge of the calibration event. On this basis, the model parameters were weighted towards larger magnitude floods.

5. Hydrologic Modelling

5.1 RAFTS Model Description

The objective of the hydrologic analysis was to develop a model that would adequately reproduce historical storm events and reliably predict design flood discharge hydrographs for the Brisbane River catchment.

The runoff routing model, RAFTS, was used for hydrologic modelling purposes. This program was originally developed by Willing and Partners and the Snowy Mountains Engineering Corporation in 1974 and was first distributed as the Regional Stormwater Model (RSWM).

RAFTS has been applied to watersheds ranging from rural to fully urban with catchment areas varying from less than 1 hectare to several thousand square kilometres. Since the 1980's, WP Software have added refinements to the RAFTS software including an EXPERT graphical environment, unsteady flow routing and simulation of retarding basin storages.

5.2 Comparison with URBS Model

As outlined in Section 4, the Department of Natural Resources developed a series of WT42 models of the Brisbane River catchment as part of the flood management of Wivenhoe Dam and Somerset Dam. This program has become the basis of a runoff routing model, URBS, developed jointly by the Brisbane City Council and Department of Natural Resources. URBS has been modified to become an integrated flood forecasting model and is used for this purpose by the Bureau of Meteorology. Presently, the Bureau has an operational URBS model of the Brisbane River catchment as part of its flood alert system.

Both URBS and RAFTS have the capacity to model separately the catchment storage effects (ie routing along overland flowpaths and minor tributaries draining to the major creeks) and channel storage (ie routing associated with the major creeks and channels). The URBS and RAFTS modelling approaches are different and some of these differences are summarised in **Table 5-1 - Comparison of URBS and RAFTS Storage Routing.**

Table 5-1 - Comparison of URBS and RAFTS Storage Routing

RAFTS Model	URBS Model
Catchment Storage	
$S = \left[\frac{0.285A^{0.52}}{(1+U)^{1.97} S_c^{0.5}} \right] Q^m$ where S = storage (m^3h/s) A = catchment area (km^2) Q = discharge (m^3/s) U = fraction urbanisation S_c = drainage slope (%) m = storage non-linearity exponent (default = 0.715) Also RAFTS has optional storage factor, PERN, based on the average roughness of the catchment.	$S = \left[\frac{\beta A^{0.5} (1+F)^2}{(1+U)^2} \right] Q^m$ where S = storage (m^3h/s) A = catchment area (km^2) Q = discharge (m^3/s) U = fraction urbanisation F = fraction forest β = lag parameter m = storage non-linearity exponent (default = 0.8)
Channel Routing	
Two options are available 1. Simple lag where flood hydrograph is displaced in time by a user-specified delay with zero attenuation. 2. Muskingum - Cunge Routing with routing parameters are calculated from slope, geometry and roughness.	One option 1. Muskingum Routing with direct user inputs of routing parameters (x and α)

5.3 RAFTS Model Setup

Model Layout

A RAFTS model of the Brisbane River catchment was developed to predict runoff hydrographs from rainfall for both historic and design storms.

The schematisation of the model is shown in the following series of four plans included in this report:

- **Figure 5-1a - RAFTS Layout - Bremer and Lower Brisbane**
- **Figure 5-1b - RAFTS Layout - Lockyer**
- **Figure 5-1c - RAFTS Layout - Somerset and Wivenhoe**
- **Figure 5-1d - RAFTS Layout - Upper Brisbane**

A single RAFTS model was setup that has full coverage of the Brisbane River catchment. The breakup of the model layout into the four main geographical areas shown in **Figure 5.1a** to **5.1d** was done for presentation only.

The RAFTS model consists of several major elements as follows:

- **General Nodes** - the `building blocks' of the model. Routing of flows from each catchment local to each node is routed through a conceptual storage (see **Table 5-1** for details on catchment storage). Many of the nodes coincide (or are close to) streamgauges which enable comparison between recorded and predicted hydrographs.

- **Basin Nodes** - are a special type of RAFTS node in which inflow hydrographs are routed through a user specified storage. In the case of the Brisbane River Flood Study, basin nodes were used to model dam storages and significant temporary flood storage zones within the river system.

- **Links** - provide a connection between nodes and include channel routing effects (see **Table 5-1** for details on channel routing).

The delineation of RAFTS subarea boundaries, and hence the basic model structure, is based on the DNR WT42 models used for real time flood forecasting. A consistent node numbering system has been applied. In several cases `dummy' nodes have been added (these are denoted with the suffix with one or more `#' or `+').

RAFTS Model Parameters
During the model setup phase, the input of several types of model parameters was required prior to undertaking RAFTS calibration and verification:

- **Subarea Properties** - include the local catchment area, the percentage impervious of the catchment surface, the vectored slope of the subcatchment and a surface roughness factor (PERN).

- **Link Properties** - generally, hydrographs were lagged between subarea nodes based on travel time.

The subarea and link properties were incorporated into the RAFTS model based on available data. Parameters including area, percentage impervious, and slope were fixed. Surface roughness factor and link travel times were subject to adjustment during the course of model calibration.

The basis of parameter selection during the RAFTS model setup phase was:

- **Catchment areas** - the area of the local catchment assigned to each node was based on the catchment subdivision of the DNR flood forecasting models. These node areas were typically of the order of 5 000 to 10 000 ha.

- **Percentage impervious** - zero percentage impervious was adopted for most of the catchment, given its predominant rural and natural landuses. RAFTS derives an equivalent fraction urbanisation (referred to as U in **Table 5-1**) using the percentage impervious assigned to each node. On this basis, the majority of the catchment also had a zero fraction urbanisation. In the Brisbane metropolitan area, the assumed percentage impervious varied from 20 to 50% to account for catchment urbanisation.

- **Slope** - a slope of 2% was globally applied throughout the RAFTS model. This assumption leads to a constant factor in the catchment storage relationship, making it more consistent with the URBS model approach.

- **Surface roughness** - this is an empirical factor based on the average Mannings n of the catchment surface. A Mannings n value of 0.05, consistent with rural landuse, were globally applied in the RAFTS model. This factor was varied during model calibration.

- **Link lag** - initial estimates of lags between nodes were based on interpretation of travel time plots between streamgauges supplied by the Hydrology Section, Bureau of Meteorology. These plots were based on the time difference of the incidence of peak gauge height for a range of historical floods.

Rainfall Losses and for

An initial loss / continuing loss model, ~~similar to the approved used by DNR,~~ was employed in the RAFTS calibration. These losses are used to predict the runoff volume generated from the catchment in response to rainfall and includes two components:

- **Initial Loss** - a loss (in mm) accounting for infiltration effects that is deducted from rainfall prior to the occurrence of surface runoff. Typical values of Initial loss range from 0 to 150 mm.

- **Continuing Loss** - a constant loss rate (in mm/hr) that is deducted from the rainfall over the duration of the storm. Typical continuing loss rates fall in a range from 0 to 3.5 mm/hr.

Initial loss and continuing losses were assumed to be uniform within each of the six broad areas shown in **Figure 2-2 - Brisbane River Subcatchments**.

Basin Nodes

Basin nodes were used in the RAFTS model to account for temporary flood storage effects at key locations within the Brisbane River and its tributaries. The stage-storage discharge relationship assigned to each of these nodes was based on matching the shape and peak discharge of predicted and gauged hydrograph downstream of the nodes.

Basin nodes were also used in the RAFTS model to simulate existing dam storages. For the smaller dams, a simple stage-storage volume - outflow discharge curve based on the dam outlet configuration and the storage volume was used. This data was supplied by DNR and was applied to the dams listed in **Table 2-1 - Major Dams in the Brisbane Valley** with the exception of Wivenhoe and Somerset Dams. It was assumed that the dam storage level was at full supply level at the start of each calibration flood.

Somerset Dam and Wivenhoe Dam are major flood mitigation structures and the regulation of outflows by setting of the dam spillway gates is governed by a set of flood operation rules. Spillway operation depends in part on flooding conditions prevailing downstream of Wivenhoe Dam due to less regulated tributary flows such as Lockyer Creek.

During the RAFTS model calibration phase, recorded or synthetic hydrographs of Somerset and Wivenhoe Dam outflows were used as direct inputs. This approach effectively divided the Brisbane Valley catchment into the following (based on the subcatchments shown on **Figure 2-2**):

- **Somerset** - upstream of Somerset Dam and hence modelling inflows to this dam.
- **Upper Brisbane and Wivenhoe** - upstream of Wivenhoe Dam including upper Brisbane River, Cooyar Creek, Emu Creek and Cressbrook Creek. Regulated flows from Somerset Dam were directly ~~imputed~~ input based on historical data.
- **Lockyer, Bremer and Lower Brisbane** - the remainder of the Brisbane River catchment including Lockyer Creek, Bremer River and the lower Brisbane River. In this case, outflow hydrographs from Wivenhoe Dam were used as direct inputs.

For the case of historical floods prior to the completion of Wivenhoe Dam in 1985, the division of the Brisbane Valley catchment simplified to:

- **Somerset** - upstream of Somerset Dam
- **Upper Brisbane, Wivenhoe, Lockyer, Bremer and Lower Brisbane** - the remainder of the Brisbane River catchment and downstream of Somerset Dam. Recorded outflow hydrographs from this dam were used as inputs.

5.4 RAFTS Model Validation

General Approach

The approach taken in model validation, in accordance to the study brief, was to derive a single set of catchment and channel routing parameters that would be applicable to the entire range of historical floods under consideration. Rainfall loss rates could be adjusted depending on antecedent moisture conditions and other factors.

Calibration against data recorded for a minimum of four floods was required including the January 1974 flood. Another four floods of varying magnitude were used to verify the model performance.

Achieving a consistency between RAFTS and MIKE 11 prediction of flood discharge at key points within the Brisbane River was also a requirement of the calibration process.

The focus of the RAFTS modelling is to generate inflow hydrographs for the Brisbane River MIKE 11 model which extends from the Inner Bar to upstream of the Moggill gauge. A high priority was achieving an acceptable calibration at locations towards the lower reaches of the Brisbane River and also at stream gauges distributed within the catchment at key points of interest (refer to primary streamgauges in Section 3.1).

Selection of Calibration and Verification Floods

A summary of major Brisbane River floods and the availability of hydrological data (rainfalls and streamflows) and hydraulic data (flood levels and discharges in the Brisbane metropolitan area) is given in **Table 5-2 - Data Availability for Major Historical Floods.**

Table 5-2 - Data Availability for Major Historical Floods

Flood	Hydrologic Data	Hydraulic Data
February 1931	✓	✓
March 1955	✓	✓
July 1965	✓	
March 1967	✓	
June 1967	✓	✓
January 1968	✓	✓
December 1971	✓	
July 1973	✓	✓
January 1974	✓	✓
January 1976	✓	✓
June 1983	✓	✓
April 1989 a	✓	✓
April 1989 b	✓	✓
May 1996	✓	✓

Note:
1. Floods modelled by DNR for validation of WT42 and RUBICON models are shaded.
2. Limited data also available for the February 1893 flood.

The historical floods can be grouped as:

- **Pre-Somerset Dam** - Floods that occurred prior to the construction of Somerset Dam. There is some confusion regarding the date in which Somerset Dam was constructed. Although the dam was completed in 1959, construction began in 1943 and it is believed that the war caused construction to be ceased. At this point, it is believed that the dam was completed all except for the radial area flood spillway gates.

- **Pre-Wivenhoe Dam** - floods that occurred prior to the construction of Wivenhoe Dam which was operational in 1985. The June 1983 flood occurred during the construction phase when the dam spillway was at a near completion stage.

- **Post-Wivenhoe Dam** - floods that occurred after completion of Wivenhoe Dam in 1985.

Table 5-3 - Historical Calibration and Verification Floods provides a list of the events used in the RAFTS and MIKE 11 model validation. The selection of historical floods took into account various factors including the availability of both hydrologic and hydraulic datasets for the same flood. A higher weighting towards recent floods was applied as these tended to have more data available for calibration purposes, however the 1931 and 1955 events were included as these were the only floods considered to be of medium magnitude.

A selection of floods to have full coverage of both pre-Wivenhoe Dam and post-Wivenhoe Dam conditions was also undertaken. The floods used for RAFTS and MIKE 11 model validation covered a historical period from 1931 to 1996.

Table 5-3 - Historical Calibration and Verification Events

Event	Period of Event	Type
January 1974	24/01/74 to 28/01/74	Calibration
June 1983	20/06/83 to 23/06/83	Calibration
Late April 1989	24/04/89 to 27/04/89	Calibration
May 1996	31/04/96 to 07/05/96	Calibration
February 1931	01/02/31 to 06/02/31	Verification
March 1955	26/03/55 to 29/03/55	Verification
July 1973	01/07/73 to 09/07/73	Verification
Early April 1989	31/3/89 to 04/04/89	Verification

Major Dam Discharges

A major consideration in the RAFTS calibration was the flood regulation characteristics of the two major dams; Somerset Dam and Wivenhoe Dam. The hydrologic effect of Somerset Dam started after its completion in 1959 and full operation of the larger Wivenhoe Dam was initiated in 1985.

Estimates of inflow and outflow hydrographs at both dams for a range of historical floods were available and are compiled as **Figure 5-2 - Wivenhoe Dam Discharges** and **Figure 5-3 - Somerset Dam Discharges.** These are synthetic hydrographs produced by Brisbane City Council and estimated from measured storage levels and records of spillway gate settings. In the case of Wivenhoe releases, DNR suggests that the outflow hydrographs may be over estimated by between 15 to 20 percent, especially for the lesser floods that occurred in early and late April 1989 (SEQWB, October 1994)

No dam releases for both Wivenhoe Dam and Somerset Dam were reported for the May 1996 flood. Data on Somerset Dam releases during the July 1973 flood was unavailable.

5.5 RAFTS Calibration - January 1974 Flood

The January 1974 flood was the first event used in the calibration process and is by far the largest of the floods considered. A significant amount of historical data is available for calibration; including rainfalls, streamflows and flood levels in the Brisbane River.

The 1974 flood occurred prior to construction of Wivenhoe Dam and is thus representative of pre-Wivenhoe Dam conditions. This is also the case for the July 1973 verification flood.

Rainfall

Rainfall occurred over a four day period commencing on mid 24 January 1974. **Figure 5-4 - Rainfall Distribution - January 1974 Storm** presents the spatial distribution of rainfall across the Brisbane River catchment.

Rainfall tended to increase in a easterly direction, with highest values being recorded at stations along the D'Aguilar Range and further south at Mount Glorious and Mount Nebo. Total four day rainfall ranged from 120 mm to 1 306 mm. Selected pluviograph patterns are shown on **Figure 5-5- Representative Pluviographs - January 1974 Flood**. Peak rainfall intensities tended to occur on 26 January. The Brisbane metropolitan area recorded a sequence of three storms, the first and largest burst occurred on 25 January.

Rainfall Losses

The losses used to reproduce the rising limb and total volume of the recorded hydrograph at key streamgauge are given in **Table 5-4 - Rainfall Losses - January 1974 Calibration**.

Table 5-4 - Rainfall Losses - January 1974 Calibration

Sub-Catchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	0	2.5
Somerset	0	2.5
Wivenhoe	0	2.5
Lockyer	0	2.5
Bremer	0	0
Lower Brisbane	0	2.5

Catchment Storage

By calibration to the 1974 flood data, especially against the general shape of recorded hydrographs, the following PERN values were applied:

- PERN equal to 0.11 - was used for Wivenhoe and Upper Brisbane subcatchments.

- PERN equal to 0.05 - was used for Somerset, Lockyer Bremer and Lower Brisbane subcatchments.

Channel Routing

A simple lag time assigned to each RAFTS link was found generally to reproduce the channel routing behaviour as recorded by the available stream gauges. For example, the Brisbane River stream gauge data at Savages Crossing and Mt Crosby shows no attenuation of peak discharge. This trend was also the case between the Moggill and Jindalee gauge sites.

On this basis, link lag times were adjusted to match the recorded timing of hydrographs. Hydrographs attenuation due to local storage effects was found to be significant at the following three key sites:

- **Lowood** - Lockyer Creek enters the Brisbane River upstream of Lowood. The lower reaches of Lockyer Creek is low lying floodplain subject to extensive inundation during major floods. Thus, the Lockyer Creek confluence represents a large temporary flood storage and its ponding effect is controlled by Brisbane River backwater.

- **Moggill** - The Bremer River enters the Brisbane River upstream of the Moggill gauge. On a similar basis as the Lockyer Creek - Brisbane River confluence, a significant amount of temporary flood storage is available in the lower Bremer River which is regulated by local backwater conditions from the Brisbane River.

- **Harrisville** - The Warrill Creek floodplain near Harrisville has substantial storage routing effects, based on recorded hydrographs in this area.

Channel storage effects at the above locations were modelled by basin nodes. A stage-storage-discharge relationship was derived at each storage, based on achieving a match against predicted and recorded downstream hydrographs. The storage relationships are shown as:

- **Figure 5-6 - Channel Storage Curves at Lowood**
- **Figure 5-7 - Channel Storage Curves at Moggill**
- **Figure 5-8 - Channel Storage Curves at Harrisville**

Storage Curve A at Lowood (presented in **Figure 5-6**) gave the best fit against recorded streamgauge data for the January 1974 flood.

Recorded and Predicted Hydrographs
Plots of recorded and RAFTS predicted hydrographs for the January 1974 calibration are compiled in **Appendix B** (Figure B-1a to B-1d). A summary is given in **Table 5-5 - RAFTS Calibration - January 1974 Flood.**

Predicted peak discharges within the coverage of the MIKE 11 model (ie at Moggill, Jindalee and Port Office) are within 1 to 3 percent of recorded peaks, RAFTS estimates hydrograph volumes are 13 to 14 percent below measured volumes at Moggill and Jindalee. Part of this volume mismatch can be attributed to inconsistently high flows recorded at Moggill after the hydrograph recession and, similarly, high flows at Jindalee prior to the start of the hydrograph rising limb. At Port Office gauge, the predicted and measured flood volume are within 2 percent.

At other key sites in the Brisbane Valley, predicted peak discharges are within 0 to 13 percent of gauged discharges, except for Lockyer Creek at Lyons Bridge, Bremer River at David Trumpy Bridge and Warrill Creek at Amberley. The Lockyer Creek and Bremer River gauges are subject to backwater effects from Brisbane River.

Table 5-5 - RAFTS Calibration - January 1974 Flood

Number	Stream	Site	Peak Discharge (m^3/s) Gauged	Peak Discharge (m^3/s) Predicted	Peak Discharge (m^3/s) Diff(%)	Discharge Volume (GL) Gauged	Discharge Volume (GL) Predicted	Discharge Volume (GL) Diff(%)	Comments
Upper Brisbane									
143015	Cooyar Ck	Damsite	967	585	-40	105	94	-10	
143007	Brisbane Rv	Linville	2 100	1 912	-9	181	220	+22	
143010	Emu Ck	Boat Mtn	1 054	882	-16	151	131	-13	
143009	Brisbane Rv	Gregors	3 750	3 829	+2	651	556	-15	
Somerset & Wivenhoe									
143305	Stanley Rv	Somerset Dam	3 587	3 119	-13	591	465	-21	
143008	Brisbane Rv	Middle Ck	4 813	5 429	+13	1 055	1 054	0	
143901	Stanley Rv	Woodford	1 111	1 332	+20	186	148	-20	
143303	Stanley Rv	Peachester	360	500	+39	77	56	-27	
143013	Cressbrook	Damsite	202	410	+103	33	48	+45	
Lockyer									
143203	Lockyer Ck	Helidon	1 308	858	-34	108	60	-44	
143210A	Lockyer Ck	Lyons Bridge	2 650	3 750	+42	492	475	-3	Backwater effect at gauge
143805	Lockyer Ck	Glenore Grove	3 900	3 466	-11	395	398	0	
143904	Lockyer Ck	Gatton	2 120	2 400	+13	132	200	+52	
143907	Brisbane Rv	Lowood	7 397	7 471	+1	1 891	1 743	-8	
Bremer & Lower Brisbane									
143001	Brisbane Rv	Savages Cross	7 340	7 497	+2	2 031	1 836	-10	
143003	Brisbane Rv	Mt Crosby	7 456	7 503	0	2 185	1 983	-9	
143110	Bremer Rv	Adams Bridge	349	531	+52	46	65	+41	
143108	Warrill Ck	Amberley	1 576	2 132	+35	294	385	+31	
143113	Purga Ck	Loamside	400	868	+117	55	106	+93	Poor rating at high flows
143019	Oxley Ck	Beatty Rd	985	966	-2	98	85	-13	
143911	Bremer Rv	David Trumpy	4 000	4 891	+22	994	876	-11	Backwater effect at gauge
143915	Brisbane Rv	Moggill	9 346	9 663	+3	3 472	2 971	-14	Gauge flow high at end
143982	Brisbane Rv	Jindalee	9 493	9 670	+2	3 567	3 111	-13	Gauge flow high at start
143919	Brisbane Rv	Port Office	9 800	9 675	+1	3 343	3 269	-2	

Note: 1. Primary stream gauges are shaded.

5.6 RAFTS Calibration - June 1983 Flood

The June 1983 flood was a significant flood in the Upper Brisbane and Wivenhoe parts of the Brisbane Valley. Wivenhoe Dam was under construction and four of the five spillway monoliths were built to final crest level. The flood occurred prior to the installation of spillway gates and thus outflow from the dam was unregulated.

The 1983 flood data represents a transition between pre-Wivenhoe Dam and post-Wivenhoe Dam conditions.

Rainfall

Rainfall occurred over a period of three days commencing 20 June 1983. The spatial distribution of rainfall within the Brisbane River catchment is presented in **Figure 5-9 - Rainfall Distribution - June 1983 Storm**. Rainfalls varied from about 40 mm to 240 mm.

As shown in **Figure 5-10 - Representative Pluviographs - June 1983 Storm**, two rainfall peaks occurred with the latter burst recorded on the morning of 22 June generally being dominant.

Rainfall Losses

The losses applied during the June 1983 flood calibration are given in **Table 5-6 - Rainfall Losses - June 1983 Calibration.**

Table 5-6 - Rainfall Losses - June 1983 Calibration

Subcatchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	0	2.5
Somerset	0	1.5
Wivenhoe	0	2.5
Lockyer	0	2.5
Bremer	0	0
Lower Brisbane	0	2.5

Catchment Storage

A PERN coefficient of 0.05 was applied to all subcatchments.

Channel Routing

Link lag times used in the 1974 calibration were used except for upstream of the partially constructed Wivenhoe Dam. Faster travel times were used in the drowned reach of the Brisbane River from Somerset Dam to Wivenhoe Dam (Node WIV12 to WIV-OUT) to account for flood wave celerity effects.

At the channel storage nodes assigned at Lowood, Moggill and Harrisville, the storage curves used for the January 1974 flood calibration were applied except for a modified storage relationship at Lowood. This is shown as Storage Curve B on **Figure 5-6 - Channel Storage Curves at Lowood.**

Recorded and Predicted Hydrographs
Plots of recorded and RAFTS predicted hydrographs for the June 1983 calibration are compiled in **Appendix B (Figure B-2a** to **B-2c**) and summarised in **Table 5-7 - RAFTS Calibration - June 1983 Flood.**

The match between predicted and recorded flows at key sites are generally within acceptable limits. Flows based on the Brisbane River gauge at Moggill are substantially lower than RAFTS predicted discharge. This trend was also present in the analysis of both the early and late April 1989 events (refer to Section 5.7 and 5.13). These three floods of the lower Brisbane River were of similar magnitude and less than 2 000 m^3/s.

Also the Moggill hydrograph volume based on the gauge data is substantially less than the volume recorded upstream at Savages Creek. On this basis, it is suggested that the Moggill rating curve be adjusted for moderate floods (less than 2 000 m^3/s). There also may be a need to have a rating curve dependent on downstream tide levels at this site.

Table 5-7 - RAFTS Calibration - June 1983 Flood

Number	Stream	Site	Peak Discharge (m^3/s)			Discharge Volume (GL)			Comments
			Gauged	Predicted	Diff(%)	Gauged	Predicted	Diff(%)	
Upper Brisbane									
143015	Cooyar Ck	Damsite	707	1 159	+64	51	70	+37	
143007	Brisbane Rv	Linville	2 090	2 204	+5	148	146	-1	
143010	Emu Ck	Boat Mtn	885	1 188	+34	47	75	+60	
143009	Brisbane Rv	Gregors Ck	3 850	4 118	+7	332	309	-7	
Somerset & Wivenhoe									
143305	Stanley Rv	Somerset Dam	2 236	2 316	+4	260	177	-32	
143036	Brisbane Rv	Wivenhoe Dam	5 900	5 849	-1	776	739	-5	Synthetic gauged hydrograph
143303	Stanley Rv	Peachester	310	362	+17	27	16	-41	
Lockyer									
143203	Lockyer Ck	Helidon	619	540	-13	41	29	-29	
143212	Tenthill Ck	Tenthill	183	345	+89	15	21	+40	
143210A	Lockyer Ck	Lyons Bridge	2 290	2 379	+4	166	156	-6	Backwater effect at gauge
143905	Lockyer Ck	Glenore Grove	2 100	2 261	+8	218	126	-42	
Bremer & Lower Brisbane									
143001	Brisbane Rv	Savages Cross	1 641	1 513	-8	721	614	-15	
143110	Bremer Rv	Adams Bridge	132	128	-3	10	12	+20	
143107	Bremer Rv	Walloon	387	830	+114	33	72	+118	
143108	Warrill Ck	Amberley	383	398	+4	50	79	+58	
143113	Purga Ck	Loamside	141	235	+67	12	21	+75	
143911	Bremer Rv	David Trumpy	2 045	1 405	-31	119	184	+55	Gauge record incomplete
143915	Brisbane Rv	Moggill	1 457	2 029	+39	450	855	+90	Recorded volume < Savages Crossing

Note: 1. Primary streamgauges are shaded.

5.7 RAFTS Calibration - Late April 1989 Flood

The late April 1989 flood was a significant event in the Upper Brisbane and Somerset parts of the catchment. It occurred about three weeks after the incidence of a flood of similar magnitude (early April 1989 flood used for verification).

The flood regulation function of Wivenhoe Dam was in full operation during the 1989 floods as indicated by the dam outflow hydrographs presented in **Figure 5-2 - Wivenhoe Dam Discharges**. Releases from Wivenhoe Dam during the late 1989 flood continued for a period of four days after the cessation of dam inflows.

On this basis, the late April 1989 flood (in addition to the early April 1989 verification and May 1996 calibration events) are representative of post-Wivenhoe Dam conditions.

Rainfall

As shown in **Figure 5-11 - Rainfall Distribution - Late 1989 Storm**, the highest rainfalls were recorded in the upper parts of the Somerset subcatchment. Total rainfalls up to 355 mm were recorded over a three day period. In the Lockyer and Bremer areas of the catchment, rainfalls were substantially less and generally fell in the range of 50 to 100 mm.

Selected rainfall temporal patterns are presented in **Figure 5-12 - Representative Pluviographs - Late April 1989 Storm**. All stations recorded a storm burst during mid 26 April and at some locations including Ravensbourne, Moongerah Dam and Kirkleagh, this burst was preceded by a similar rainfall pattern on 25 April.

Rainfall Losses

Table 5-8 - Rainfall Losses - Late April 1989 Calibration lists the initial and continuing losses applied in the hydrograph calibration.

Table 5-8 - Rainfall Losses - Late April 1989 Calibration

Subcatchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	30	2.5
Somerset	30	0
Wivenhoe	30	2.5
Lockyer	30	2.5
Bremer	10	0
Lower Brisbane	30	2.5

Catchment Storage

A PERN coefficient of 0.05 was applied to all subcatchments.

Catchment Routing

The late April 1989 flood was the first event analysed that incorporated controlled flood regulation at Wivenhoe Dam.

Link lag times were a modified set of travel times used in the June 1983 flood when the dam was under construction. In the case of the late April 1989 flood calibration, travel times were reduced in the Brisbane River reach from the dam wall to the upstream extent of the Wivenhoe Dam storage (Node WIV7 to WIV-OUT).

During the calibration process, travel times were also reduced in the Brisbane River reach from Linville to Scrub Creek (Node GRE1 to GRE-OUT).

At the channel storage nodes assigned at Lowood, Moggill and Harrisville, the storage curves used in the June 1983 flood calibration were used.

Recorded and Predicted Hydrographs
Plots of recorded and RAFTS predicted hydrographs for the late April 1989 calibration are presented in **Appendix B** (**Figure B-3a** to **B-3d**). Further details are given in **Table 5-9 - RAFTS Calibration - Late April 1989 Flood.**

Recorded and predicted discharge peaks at key sites are generally matched within about 15 percent.

The synthetic inflow hydrograph at Wivenhoe Dam has an unrealistic discharge `spike' and this accounts for the discrepancy with RAFTS peak discharge at this location.

Table 5-9 - RAFTS Calibration - Late April 1989 Flood

Number	Stream	Site	Peak Discharge (m^3/s)			Discharge Volume (GL)			Comments
			Gauged	Predicted	Diff(%)	Gauged	Predicted	Diff(%)	
Upper Brisbane									
143015	Cooyar Ck	Damsite	436	648	+49	34	47	+38	
143007	Brisbane Rv	Linville	2 214	2 178	-2	116	128	+10	
143010	Emu Ck	Boat Mtn	610	612	0	39	45	+15	
143009	Brisbane Rv	Gregors Ck	3 250	3 457	+6	297	238	-20	Lag error in gauge
Somerset & Wivenhoe									
143305	Stanley Rv	Somerset Dam	3 639	2 620	-28	337	273	-19	
143036	Brisbane Rv	Wivenhoe Dam	9 632	4 750	-50	792	682	-14	Spike in synthetic hydrograph
143901	Stanley Rv	Woodford	642	1 089	+70	201	111	-45	
143303	Stanley Rv	Peachester	431	729	+69	34	53	+56	
Lockyer									
143203	Lockyer Ck	Helidon	499	184	-63	19	11	-42	
143212	Tenthill Ck	Tenthill	89	70	-17	15	7	-53	
143225	Laidley Ck	Showground	119	46	-61	16	4.3	-73	
143905	Lockyer Ck	Glenore Grove	422	409	-3	67	34	-49	
Bremer & Lower Brisbane									
143001	Brisbane Rv	Savages Cross	1 406	1 210	-14	815	753	-8	
143110	Bremer Rv	Adams Bridge	96	79	-18	6.3	9	+43	
143107	Bremer Rv	Walloon	259	521	+101	20	51	+155	
143108	Warrill Ck	Amberley	252	290	+15	41	64	+56	
143113	Purga Ck	Loamside	112	169	+51	11	15	+36	
143911	Bremer Rv	David Trumpy	773	873	+13	74	139	+88	Gauge record incomplete
143915	Brisbane Rv	Moggill	1 200	1 400	+17	752	931	+24	

Note: 1. Primary streamgauges are shaded.

5.8 RAFTS Calibration - May 1996 Flood

The flood of May 1996 caused extensive flooding of rural areas throughout the Brisbane Valley, especially in the Laidley and Lockyer Creek areas. Significant flows were also recorded along the Bremer River and Warrill Creek and this caused moderate flooding at Ipswich. A full description of the meteorological and hydrologic aspects of the May 1996 flood has been prepared by the Bureau of Meteorology (BOM, 1996).

No dam releases during the May 1996 flood were reported at both Somerset Dam and Wivenhoe Dam.

Rainfall

Rainfall associated with the May 1996 flood occurred over a period of several days. Eight day rainfall totals within the Brisbane Valley are shown in **Figure 5-13 - Rainfall Distribution - May 1996 Storm**. Maximum rainfalls of in excess of 1 000 mm were recorded at Mount Glorious. As shown in **Figure 5-14 - Representative Pluviographs - May 1996 Storm**, the rainfall pattern was multi-peaked with recorded intensities generally less than 4 mm/hr with peaks of the order of 10 mm/hr.

Rainfall Losses

Table 5-10 - Rainfall Losses - May 1996 Calibration lists the rainfall losses assigned to each Brisbane River subcatchment.

Table 5-10 - Rainfall Losses - May 1996 Calibration

Subcatchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	150	2.5
Somerset	150	2.0
Wivenhoe	150	2.5
Lockyer	140	1.2
Bremer	100	1.5
Lower Brisbane	100	1.5

Catchment Storage

A PERN coefficient of 0.05 was applied to all subcatchments.

Channel Routing

Link lag times within the RAFTS model and channel storage properties at Lowood, Moggill and Harrisville were identical to those used in the late April 1989 flood calibration.

Recorded and Predicted Hydrographs

Plots of recorded and RAFTS predicted hydrographs for the May 1996 calibration are presented in **Appendix B** (**Figures B-4a** to **B-4d**). Further summary information is compiled in **Table 5-11 - RAFTS Calibration - May 1996 Flood**. For the lower reaches of the Brisbane River, peak discharges are predicted by RAFTS to within 5 percent of gauged flows.

Table 5-11 - RAFTS Calibration - May 1996 Flood

Number	Stream	Site	Peak Discharge (m^3/s)			Discharge Volume (GL)			Comments
			Gauged	Predicted	Diff(%)	Gauged	Predicted	Diff(%)	
Upper Brisbane									
143015	Cooyar Ck	Damsite	41	74	+80	9.3	6.4	-31	Relatively low flow
143007	Brisbane Rv	Linville	57	75	+32	17.4	6.9	-60	Relatively low flow
143010	Emu Ck	Boat Mtn	388	198	-49	39	18	-54	
143009	Brisbane Rv	Gregors Ck	479	340	-29	76	52	-32	
Somerset & Wivenhoe									
143036	Brisbane Rv	Wivenhoe Dam	2 386	2 644	+11	343	232	-32	
Lockyer									
143203	Lockyer Ck	Helidon	739	259	-65	93	34	-63	
143212	Tenthill Ck	Tenthill	628	592	-6	71	107	+51	
143225	Laidley Ck	Showground	540	485	-10	66	76	+15	
143907	Brisbane Rv	Lowood	2 020	2 088	+3	525	578	+10	
143905	Lockyer Ck	Glenore Grove	2 460	2 253	-8	476	410	-14	
Bremer & Lower Brisbane									
143001	Brisbane Rv	Savages Cross	2 011	2 102	+5	532	609	+14	
143110	Bremer Rv	Adams Bridge	225	199	-12	35	24	-31	
7020	Bremer Rv	Rosewood	781	766	-2	155	126	-19	
6572	Warrill Ck	Harrisville	376	568	+51	88	80	-9	
143107	Bremer Rv	Walloon	726	837	+15	127	140	+10	
143102	Warrill Ck	Kalbar	426	533	+25	52	56	+8	
143108	Warrill Ck	Amberley	402	384	-4	129	100	-22	
143019	Oxley Ck	Beatty Rd	237	297	+25	49	42	-14	
143915	Brisbane Rv	Moggill	2 792	2 807	0	761	1 028	+35	Record incomplete

Note: 1. Primary streamgauges are shaded.

5.9 RAFTS Verification - February 1931

The 1931 historical flood event commenced on the 1 Feb 1931 and continued for a period of five days. This event was the second largest flood recorded this century and was considered to be an important flood in the verification process.

Limited stream gauge information was available in the lower reaches of the Brisbane River however it was considered that there was sufficient information to provide some indication of the reliability of the RAFTS model output.

Wivenhoe and Somerset Dams were not constructed for this event and the RAFTS model was adjusted accordingly.

Rainfall

One of the main concerns modelling this event was the lack of pluviograph information. Pluviographs provide temporal variation throughout the catchment during a storm.

To account for spatial variation, rainfall depths for the event were calculated and these depths were input into Civilcad where isohyetal maps were generated. **Figure 5-15 - Isohyetal Map - February 1931 Flood** illustrates the rainfall depths for the Brisbane River Catchment.

Rainfall depths were then interpolated at each sub-area and input into the software package HYDCON where appropriate temporal patterns were applied. HYDCON is a software package produced by Sinclair Knight Merz specifically for this study.

A single temporal pattern was applied over the entire catchment for the 1931 flood which was measured at Brisbane Regional Office. This was the only temporal pattern (other than daily rainfall information) available for this flood event.

After inspection of the daily rainfall data it was considered that the temporal pattern over the catchment was reasonably consistent for the lower part of the catchment. However for the upper catchment the rainfall commenced half to a full day earlier than in the lower catchments (Lower Brisbane and Bremer catchments). To account for these effects the temporal pattern for the upper catchments was applied half a day earlier as illustrated in **Figure 5-16 - Representative Pluviographs - February 1931 Storm.**

Rainfall Losses

Table 5-12 - Rainfall Losses - February 1931 Verification lists the initial and continuing losses used for the pre Wivenhoe and pre Somerset Dam verification event.

Table 5-12- Rainfall Losses - February 1931 Verification

Subcatchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	150	3.5
Somerset	120	3.0
Wivenhoe	150	3.5
Lockyer	100	2.5
Bremer	40	1.0
Lower Brisbane	40	1.0

The above losses are consistent with the loss rates used for the previous calibration/verification events although the maximum continuing loss had to be increased from a previous maximum of 3 mm/hr to 3.5 mm/hr.

Catchment Storage

The PERN value applied to the catchment were applied as follows:

- PERN equal to 0.11 - was used for Wivenhoe, Somerset and the Upper Brisbane subcatchments.
- PERN equal to 0.05 - was used for Lockyer, Bremer and Lower Brisbane subcatchments.

These PERN values reflect the absence of Wivenhoe and Somerset Dams.

Storage properties assigned at Lowood, Moggill and Harrisville basin nodes were identical to those used in the 1974 flood ~~verification~~ calibration

Channel Routing

Channel routing within the Somerset subcatchment were modified to account for the effects of Somerset Dam not being constructed during this event. Lag times were adjusted until a good match of the Savages Crossing hydrograph was achieved.

Recorded and Predicted Hydrographs

Plots of recorded and RAFTS predicted hydrographs for the February 1931 flood are compiled in **Appendix B - RAFTS Results (Figure B-5)** and summary details are given in **Table 5-13 - RAFTS Verification - February 1931 Flood Event.**

Table 5-13-Rafts Verification - February 1931 Flood

Number	Stream	Site	Peak Discharge (m^3/s)			Discharge Volume (GL)			Comments
			Gauged	Predicted	Diff (%)	Gauged	Predicted	Diff (%)	
Upper Brisbane									
143002	Brisbane	Fulham Vale	3005	3150	+4.9	338340	287870	-15.0	
Somerset and Wivenhoe									
143303	Stanley	Peachester	625	640	+2.9	59330	35760	-40.0	
Lockyer									
143203	Lockyer	Helidon	370	545	+45.0	33310	23230	-30.0	
Bremer and Lower Brisbane									
143102	Warrill	Kalbar	40	245	+499	1920	16620	+765	Poor Data
143101	Warrill	Mudtapilly	260	285	+9.7	20970	27930	+33.0	Key Location
143001	Brisbane	Savages Crossing	5575	5685	+2.0	1009760	915750	-9.0	Key location

Highlight

The main object of this verification was to match hydrographs at Savages Crossing and Mudtapilly as these locations directly influence the inflow into the Lower Brisbane River.

5.10 RAFTS Verification - March 1955

The 1955 flood event commenced on the 26 March 1955 and was the third largest recorded flood event this century. The event continued over a period of three days. Although Somerset Dam was not fully completed for the 1955 flood event, it was modelled because the dam storage was completed.

Rainfall
A similar procedure to that adopted for the 1931 flood event was used for the 1955 event. An isohyetal map was generated and rainfall depths were interpolated using Civilcad. HYDCON was used to apply the temporal patterns at each sub area. **Figure 5-17 - Isohyetal Map - March 1955 Flood** presents rainfall depths over the Brisbane River Catchment

For this event a temporal pattern was available at the Brisbane Regional Office and Somerset Dam hence temporal variation over the catchment could be better represented in the 1931 event. The Theissen polygon method was applied to the catchment to determine the area of influence for each of these temporal patterns. **Figure 5-18 - Representative Pluviographs - March 1955 Storm** illustrates each of these temporal patterns.

Rainfall Losses
Table 5-14 - Rainfall Losses - March 1955 Verification lists the initial and continuing losses used for the pre Wivenhoe and Somerset Dam verification events.

Table 5-14 - Rainfall Losses - March 1955 Verification

Subcatchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	20	1.8
Somerset	130	2.5
Wivenhoe	20	1.8
Lockyer	85	2.5
Bremer	50	1.5
Lower Brisbane	100	2.5

The loss parameters used for this verification event conform to the values used for the previous calibration and verification events.

Catchment Storage

The PERN value applied to the catchment was 0.5 except for Wivenhoe and the Upper Brisbane subcatchment where a PERN coefficient 0f 0.11 was used. These PERN values reflect the absence of Wivenhoe Dam.

Channel Routing

The link travel times and storage properties assigned at Lowood, Moggill and Harrisville basin nodes were identical to those used in the July 1973 flood verification.

5.11 Recorded and Predicted Hydrographs

Plots of recorded and RAFTS predicted hydrographs for the March 1955 flood are compiled in **Appendix B (Figure B-6a to B-6b)** and summary details are given in **Table 5-15 - RAFTS Verification - March 1955 Flood Event.**

Table 5-15 - Rafts Verification - March 1955 Flood

Number	Stream	Site	Peak Discharge (m^3/s)			Discharge Volume (GL)			Comments
			Gauged	Predicted	Diff (%)	Gauged	Predicted	Diff (%)	
Upper Brisbane									
143002	Brisbane	Fulham Vale	5090	4800	-5.6	437310	414570	-5.2	
Somerset and Wivenhoe									
143006	Cressbrook Ck	Tinton	485	480	-1.2	27120	44680	+65.0	
143303	Stanley	Peachester	455	425	-6.9	104690	15870	-85.0	
Lockyer									
143206	Lockyer	Brightview Weir	620	800	+31.0	48850	45230	-7.4	
143204	Lockyer	Wilsons Weir	934	931	-0.3	201470	65950	-67.0	
143203	Lockyer	Helidon	225	235	+4.5	14930	10100	-32.0	
Bremer and Lower Brisbane									
143102	Warrill	Kalbar	3314	348	+5.1	32220	19600	-39.0	Key location
143001	Brisbane	Savages Crossing	5270	5085	-3.5	1125840	758900	-33.0	Key Location

Again most emphasis for the matching of hydrographs was placed on two primary stream gauges, Savages Crossing and Kalbar. These gauges were the predominant gauges for estimating inflows into the Lower Brisbane River for the 1955 flood event.

5.12 RAFTS Verification - July 1973 Flood

The July 1973 flood was the first of two floods used to verify the RAFTS model. It is representative of pre-Wivenhoe conditions and the RAFTS assumptions used in the January 1974 flood calibration were checked against recorded July 1973 flood data.

Records on Somerset Dam outflows were not available for this verification event.

Rainfall

The spatial distribution of rainfalls over a eight day period commencing 1 July 1973 is shown in **Figure 5-19 - Rainfall Distribution - July 1973 Storm.** Highest rainfalls were registered in the upper Somerset area and the lowest readings were associated with the southern parts of the Bremer River subcatchment.

Rainfall temporal patterns recorded in the Brisbane Valley were highly variable as indicated in **Figure 5-20 - Representative Pluviographs - July 1973 Storm.**

Rainfall Losses

Table 5-16 - Rainfall Losses - July 1973 Verification lists the initial and continuing losses used in the pre-Wivenhoe Dam verification analysis.

Table 5-16 - Rainfall Losses - July 1973 Verification

Subcatchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	100	3.0
Somerset	100	2.5
Wivenhoe	100	3.0
Lockyer	100	1.2
Bremer	120	2.5
Lower Brisbane	100	2.5

Catchment Storage

A PERN coefficient of 0.05 was applied, except for the Wivenhoe and Upper Brisbane areas where a PERN coefficient of 0.11 was used.

Channel Routing

The link travel times and storage properties assigned at Lowood, Moggill and Harrisville basin nodes were identical to those used in the January 1974 flood calibration.

Recorded and Predicted Hydrographs

Plots of recorded and RAFTS predicted hydrographs for the July 1973 flood are compiled in **Appendix B** (**Figures B-7a** to **B-7b**) and summary details are given in **Table 5-17 - RAFTS Verification - July 1973 Flood.**

Table 5-17 - RAFTS Verification - July 1973 Flood

Number	Stream	Site	Peak Discharge (m^3/s) Gauged	Predicted	Diff(%)	Discharge Volume (GL) Gauged	Predicted	Diff(%)	Comments
Upper Brisbane									
143015	Cooyar Ck	Damsite	430	399	-7	43	35	-19	High gauged flows prior to flood
143007	Brisbane Rv	Linville	373	1 492	+300	71	127	+80	Gauged flow less than Cooyar Ck
143010	Emu Ck	Boat Mtn	354	337	-5	33	29	-12	
143009	Brisbane Rv	Gregors Ck	2 702	2 559	-5	255	228	-10	
Somerset & Wivenhoe									
143008	Brisbane Rv	Middle Ck	2 442	2 871	+18	632	298	-53	Somerset Dam outflow not modelled
143013	Cressbrook	Damsite	30	67	+120	6.9	7.1	+3	
Lockyer									
143203	Lockyer Ck	Helidon	96	94	-2	23	5.3	-80	High gauged flows prior to flood
143210A	Lockyer Ck	Lyons Bridge	130	563	+330	32	66	+110	Backwater effect at gauge
Bremer & Lower Brisbane									
143001	Brisbane Rv	Savages Cross	2 711	2 610	-4	788	796	+1	
143003	Brisbane Rv	Mt Crosby	2 484	2614	+5	736	824	+12	
143107	Bremer Rv	Walloon	71	114	+60	10.0	7.3	-27	
143108	Warrill Ck	Amberley	3.3	6.4	+90	0.7	0.6	-14	Very low flows

Note: 1. Primary streamgauges are shaded.

5.13 RAFTS Verification - Early April 1989 Flood

To validate the post-Wivenhoe Dam assumptions established by RAFTS calibration against the late April 1989 and May 1996 floods, available data for the early April 1989 flood was used as a model verification.

The early April 1989 flood was a minor event in the western Brisbane Valley and only small flows were recorded for Cooyar Creek, Emu Creek and Lockyer Creek. The flood regulation effect of Wivenhoe Dam was evident during the flood as indicated in **Figure 5-2 - Wivenhoe Dam Discharges.**

Rainfall

Total rainfalls recorded at various stations within the Brisbane Valley are presented as **Figure 5-21 - Rainfall Distribution - Early April 1989 Storm**. The western part of the catchment generally received less than 100 mm of rainfall over the five day period from 31 March to 4 April 1989. Highest rainfalls were recorded at the headwaters of the Stanley River (Somerset) and further south towards Mount Glorious.

Figure 5-22 - Representative Pluviographs - Early April 1989 Storm indicates that peak rainfall intensities occurred during a period from late 31 March to mid 1 April 1989.

Rainfall Losses

Rainfall losses used in the post-Wivenhoe Dam verification analysis are given in **Table 5-18 - Rainfall Losses - Early April 1989 Verification.**

Table 5-18 - Rainfall Losses - Early April 1989 Verification

Subcatchment	Initial Loss (mm)	Continuing Loss (mm/hr)
Upper Brisbane	50	2.5
Somerset	50	1.5
Wivenhoe	50	2.5
Lockyer	120	0
Bremer	120	0
Lower Brisbane	120	0

Catchment Storage

A PERN coefficient of 0.05 was applied globally in the RAFTS model.

Channel Routing

The link travel times and storage properties assigned at Lowood, Moggill and Harrisville basin nodes were the same as those used in the post-Wivenhoe calibration against the late April 1989 and May 1996 floods.

of

Recorded and Predicted Hydrographs

Plots of recorded and RAFTS predicted hydrographs are compiled in **Appendix B (Figures B-8a** to **B-8c**). A summary of peak flows and hydrograph volumes is given in **Table 5-19 - RAFTS verification - Early April 1989 Flood**.

Table 5-19 - RAFTS Verification - Early April 1989 Flood

Number	Stream	Site	Peak Discharge (m^3/s)			Discharge Volume (GL)			Comments
			Gauged	Predicted	Diff(%)	Gauged	Predicted	Diff(%)	
Upper Brisbane									
143015	Cooyar Ck	Damsite	35	30	-14	4.3	3.1	-28	Relatively low flow
143007	Brisbane Rv	Linville	1 307	1 452	+11	98	69	-30	
143010	Emu Ck	Boat Mtn	27	5	-81	4.0	0.5	-88	Relatively low flow
143009	Brisbane Rv	Gregors Ck	1 711	1 587	-7	141	109	-23	
Somerset & Wivenhoe									
143036	Brisbane Rv	Wivenhoe Dam	4 722	3 644	-23	639	594	-7	Synthetic gauged hydrograph
Lockyer									
143212	Tenthill Ck	Tenthill	37	62	+68	6.8	2.5	-63	Relatively low flow
143225	Laidley Ck	Showground	95	121	+27	11.4	8.2	-28	
143210A	Lockyer Ck	Lyons Bridge	91	196	+115	14	20	+43	Backwater effect at gauge
143905	Lockyer Ck	Glenore Grove	104	174	+67	33	15	-55	Record in error
Bremer & Lower Brisbane									
143001	Brisbane Rv	Savages Cross	1 434	1 525	+6	677	696	+3	
143110	Bremer Rv	Adams Bridge	78	22	-72	5.8	1.3	-78	
143107	Bremer Rv	Walloon	164	503	+207	24	36	+50	
143108	Warrill Ck	Amberley	211	157	-26	33	24	-27	
143113	Purga Ck	Loamside	112	234	+109	11	15	+36	
143911	Bremer Rv	David Trumpy	530	612	+15	61	83	+36	
143915	Brisbane Rv	Moggill	1 080	1 773	+64	382	840	+120	Record incomplete

Note: 1. Primary streamgauges are shaded.

5.14 Adopted RAFTS Model Parameters

RAFTS Storage

By a process of calibration and verification against a series of historical floods, a set of RAFTS storage parameters were determined. These parameters tended to fall into three groups; pre-Somerset Dam conditions prior to 1943, pre-Wivenhoe Dam conditions prior to 1985 and post-Wivenhoe Dam conditions following completion of the dam. **Table 5-20 - Summary of RAFTS Storage Parameters** provides an overview of adopted storage properties.

Table 5-20- Summary of RAFTS Storage Parameters

Storage Type	Pre-Somerset Dam Conditions	Pre-Wivenhoe Dam Conditions	Post-Wivenhoe Dam Conditions
Catchment Storage	PERN = 0.05 except PERN =0.11 for Upper Brisbane	PERN = 0.05 except PERN = 0.11 for Wivenhoe and Upper Brisbane	PERN = 0.05
Channel Routing	Link travel times based on timing of record hydrographs Basin node storage at Lowood (storage curve A), Moggill and Harrisville as shown in Figures 5-6,5-7 and 5-8	Link times based on timing of recorded hydrographs Basin node storage at Lowood (storage curve A), Moggill and Harrisville as shown in Figures 5-6,5-7 and 5-8	Link travel times as per Pre-Wivenhoe conditions, modified to account for Wivenhoe Dam drowned reach Basin node storage as per Pre-Wivenhoe conditions, except storage curve B used at Lowood.

Notes:
1. Pre-Wivenhoe conditions based on calibration against January 1974 flood and verified against June 1973 flood.
2. Post-Wivenhoe conditions based on calibration against late April 1989 and May 1996 floods. Verified against early April 1989 flood.

The difference in model factors, such as faster link travel times upstream of the dam for post-Wivenhoe Dam conditions, can be directly attributed to the physical presence of the Wivenhoe Dam lake. Other factors, such as the adopted PERN coefficient in the Wivenhoe and Upper Brisbane areas, are due to the state of vegetative growth in the catchment at the time of flood.

As a check on the sensitivity of predicted hydrographs to assumptions on storage parameters, the January 1974 and June 1973 events were rerun assuming post-Wivenhoe Dam storage conditions (except for link travel times). A PERN value of 0.05 was applied throughout the RAFTS model and storage curve A was used at the Lowood basin node.

Plots of predicted hydrographs are compiled in **Appendix B** (**Figure B-9a** for July 1973 flood and **Figure B-10a** and **B-10b** for January 1974 flood). Summary details at key gauges are given in **Table 5-21 - July 1973 and January 1974 Flood ~~Analysis - Post Wivenhoe Storage~~**.
Sensitivity Analysis.

Table 5-21 - July 1973 and January 1974 ~~Flood Analysis~~ - Post Wivenhoe Storage ~~Flood~~ Sensitivity Analysis

Number	Stream	Site	Peak Discharge (m^3/s) Gauged	Predicted	Diff (%)
July 1973 Flood					
143009	Brisbane Rv	Gregors Ck	2 702	3 276	+21
143008	Brisbane Rv	Middle Ck	2 242	3 561	+59
143001	Brisbane Rv	Savages Cross	2 711	2 274	-16
143003	Brisbane Rv	Mt Crosby	2 484	2 276	-8
January 1974 Flood					
143007	Brisbane Rv	Linville	2 100	2 430	+16
143009	Brisbane Rv	Gregors Ck	3 750	4 358	+14
143008	Brisbane Rv	Middle Ck	4 813	5 903	+23
143907	Brisbane Rv	Lowood	7 397	7 840	+6
143001	Brisbane Rv	Savages Cross	7 340	7 868	+7
143003	Brisbane Rv	Mt Crosby	7 456	7 874	+6
143915	Brisbane Rv	Moggill	9 346	10 226	+12
143919	Brisbane Rv	Port Office	9 800	10 247	+5

The reduced catchment storage within the Upper Brisbane and Wivenhoe areas tended to increase predicted discharge peaks compared to the calibrated values (refer to **Tables 5.21** and **5.5**). Towards the lower reaches of the Brisbane River, the difference between predicted and recorded peaks are less than 10 percent. The change in node storage properties at Lowood introduces a steeper hydrograph in the January 1974 flood.

Rainfall Losses

An overview of initial and continuing losses used in the RAFTS calibration and verification analysis is given in **Table 5-22 - Summary of RAFTS Rainfall Losses.**

Table 5-22 - Summary of RAFTS Rainfall Losses

Subcatchment	February 1931	March 1955	July 1973	January 1974	June 1983	Early April 1989	Late April 1989	May 1996
Upper Brisbane	150 & 3.5	20 & 1.8	100 & 3.0	0 & 2.5	0 & 2.5	100 & 3.0	30 & 2.5	150 & 2.5
Somerset	120 & 3.0	130 & 2.5	100 & 2.5	0 & 2.5	0 & 1.5	100 & 2.5	30 & 0	150 & 2.0
Wivenhoe	150 & 3.5	20 & 1.8	100 & 3.0	0 & 2.5	0 & 2.5	100 & 3.0	30 & 2.5	150 & 2.5
Lockyer	100 & 2.5	85 & 2.5	100 & 1.2	0 & 2.5	0 & 2.5	100 & 1.2	30 & 2.5	140 & 1.2
Bremer	40 & 1.0	50 & 1.5	120 & 2.5	0 & 0	0 & 0	120 & 2.5	10 & 0	100 & 1.5
Lower Brisbane	40 & 1.0	100 & 2.5	100 & 2.5	0 & 2.5	0 & 2.5	100 & 2.5	30 & 2/5	100 & 1.5

Note: 0 & 2.5 denotes 0 mm initial loss and 2.5 mm continuing loss.

The above losses fall in the expected range for South East Queensland and shall be used as input into the selection of appropriate losses for design flood analysis.

SINCLAIR KNIGHT MERZ

FIGURE 5.1a

BRISBANE RIVER FLOOD STUDY

RAFTS LAYOUT - BREMER AND LOWER BRISBANE

NODE	GAUGE
MTC-OUT	BRISBANE RIVER AT MT CROSBY
JIN#	BRISBANE RIVER AT MOGGILL
JIN-OUT	BRISBANE RIVER AT JINDALEE
POG-OUT	BRISBANE RIVER AT PORT OFFICE
WAL4	BREMER RIVER AT ADAMS BRIDGE
WAL###	BREMER RIVER AT ROSEWOOD
WAL-OUT	BREMER RIVER AT WALLOON — 3107A
IPS##	BREMER RIVER AT DAVID TRUMPY
KAL-OUT	WARRILL CREEK AT KALBAR
AMB#	WARRILL CREEK AT HARRISVILLE
AMB-OUT	WARRILL CREEK AT AMBERLY
PUR-OUT	PURGA CREEK AT LOAMSIDE
PUR2	PURGA CREEK AT WASHPOOL
WAL##	WESTERN CREEK AT KUSS ROAD

Table: LIST OF STREAM GAUGES

LEGEND

- CATCHMENT BOUNDARY
- RAFTS SUB-AREA BOUNDARY
- RAFTS GENERAL NODE
- RAFTS LINK
- RAFTS NODE AT STREAM GAUGE
- RAFTS BASIN NODE

0 1 2 3 4 5 10 15 km

FILE NAME: CATCH... PLOT SCALE: 1:300

FIGURE 5.1b
BRISBANE RIVER FLOOD STUDY
RAFTS LAYOUT - LOCKYER

LIST OF STREAM GAUGES	
NODE	GAUGE
HEL-OUT	LOCKYER CREEK AT HELIDON
TEN-OUT	TENTHILL CREEK AT TENTHILL
SH05	LAIDLEY CREEK AT SHOWGROUND
SH04	LAIDLEY CREEK AT MULGOWIE
SH03	LAIDLEY CREEK AT THORNTON
LYO#	LAIDLEY CREEK AT WARREGO HIGHWAY
LYO-OUT	LOCKYER CREEK AT LYONS BRIDGE
LYO-OUT	LOCKYER CREEK AT RIFLE RANGE
LYO2	LOCKYER CREEK AT GLENORE GROVE
GAT-OUT	LOCKYER CREEK AT GATTON
SAV10	BRISBANE RIVER AT LOWOOD

LEGEND
- CATCHMENT BOUNDARY
- RAFTS SUB-AREA BOUNDARY
- RAFTS GENERAL NODE
- RAFTS LINK
- RAFTS NODE AT STREAM GAUGE
- RAFTS BASIN NODE

0 1 2 3 4 5 10 15 km

FILE … CATC… PLOT SCALE: 1=300 DIS… D:\DL… ISBR… T004… D… 1-3-9…

FIGURE 5.1c

BRISBANE RIVER FLOOD STUDY
RAFTS LAYOUT - SOMERSET AND WIVENHOE

KEY MAP

NOT TO SCALE

LIST OF STREAM GAUGES

NODE	GAUGE
SOM5	STANLEY RIVER AT PEACHESTER
SOM8	STANLEY RIVER AT WOODFORD
SOM-OUT	STANLEY RIVER AT SOMERSET DAM
WIV+	BRISBANE RIVER AT MIDDLE CREEK
WIV-OUT	BRISBANE RIVER AT WIVENHOE DAM
WIV12	BRISBANE RIVER AT CABOONBAH
CRE-OUT	CRESSBROOK CREEK AT DAM SITE
WIV3	CRESSBROOK CREEK AT ROSENTRETERS

LEGEND

- CATCHMENT BOUNDARY
- RAFTS SUB-AREA BOUNDARY
- RAFTS GENERAL NODE
- RAFTS LINK
- RAFTS NODE AT STREAM GAUGE
- RAFTS BASIN NODE

0 1 2 3 4 5 10 15km

FILE ... CATC... PLOT SCALE: 1=300

SINCLAIR KNIGHT MERZ

FIGURE 5.1d

BRISBANE RIVER FLOOD STUDY

RAFTS LAYOUT - UPPER BRISBANE RIVER

KEY MAP

NOT TO SCALE

LIST OF STREAM GAUGES	
NODE	GAUGE
COO-OUT	COOYER CREEK AT DAM SITE
LIN-OUT	BRISBANE RIVER AT LINVILLE
GRE18	BRISBANE RIVER AT GREGORS CREEK
EMU-OUT	EMU CREEK AT BOAT MOUNTAIN
GRE2	BRISBANE RIVER AT DEVON HILLS

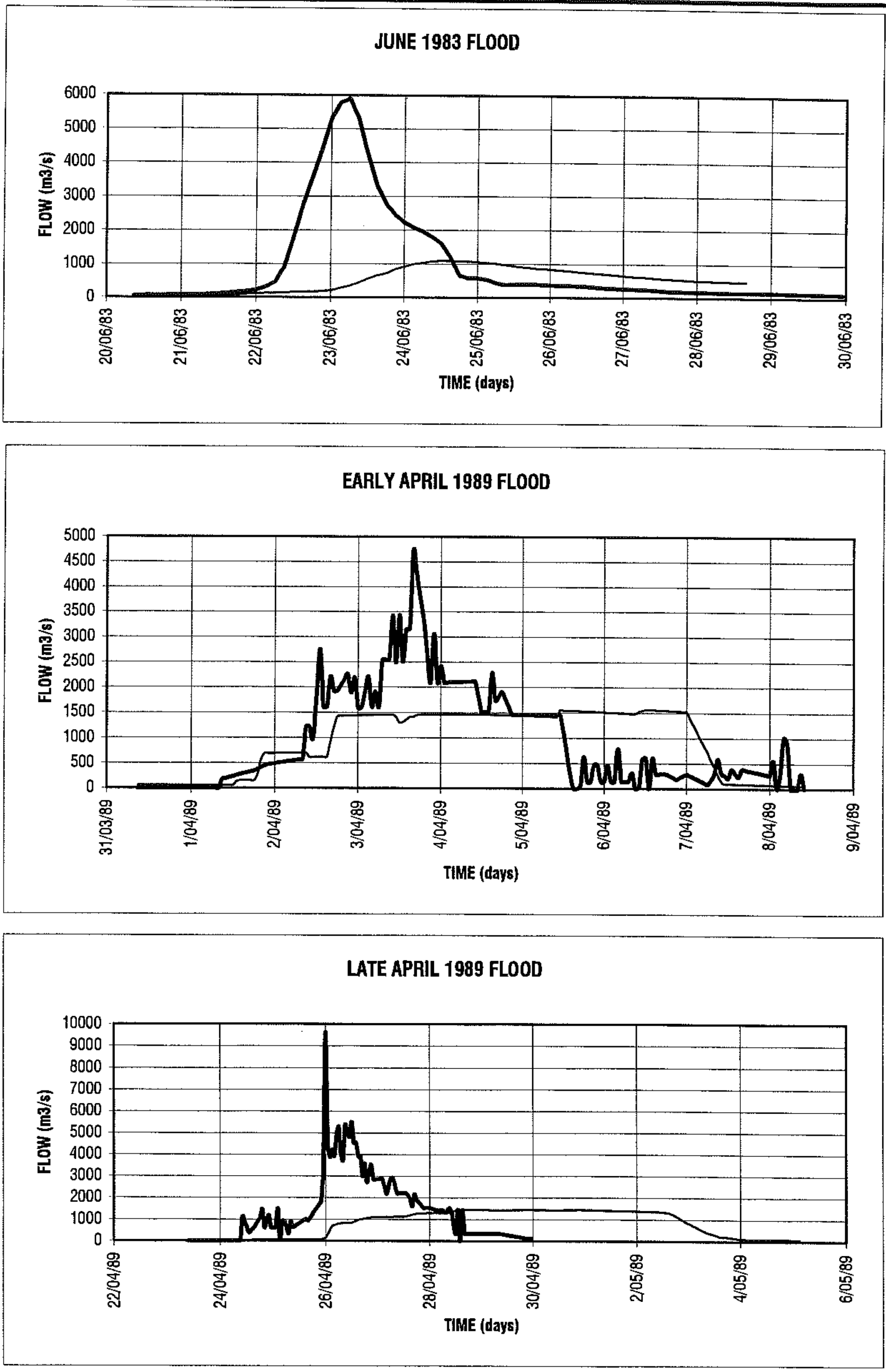
LEGEND

- CATCHMENT BOUNDARY
- RAFTS SUB-AREA BOUNDARY
- RAFTS GENERAL NODE
- RAFTS LINK
- RAFTS NODE AT STREAM GAUGE
- RAFTS BASIN NODE

0 1 2 3 4 5 10 15 km

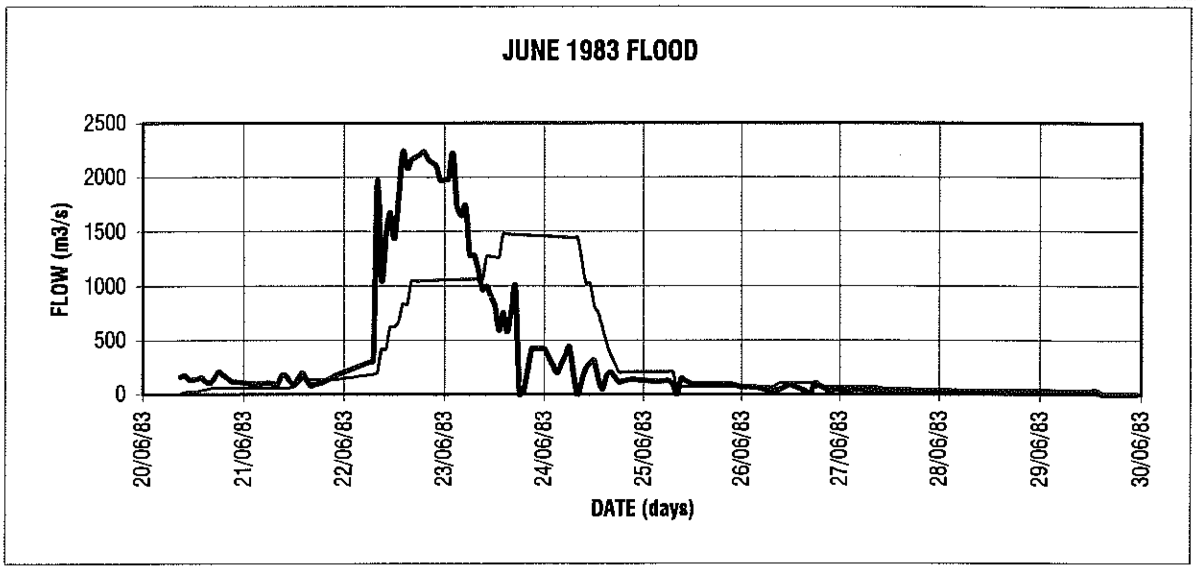
PLOT SCALE: 1=300

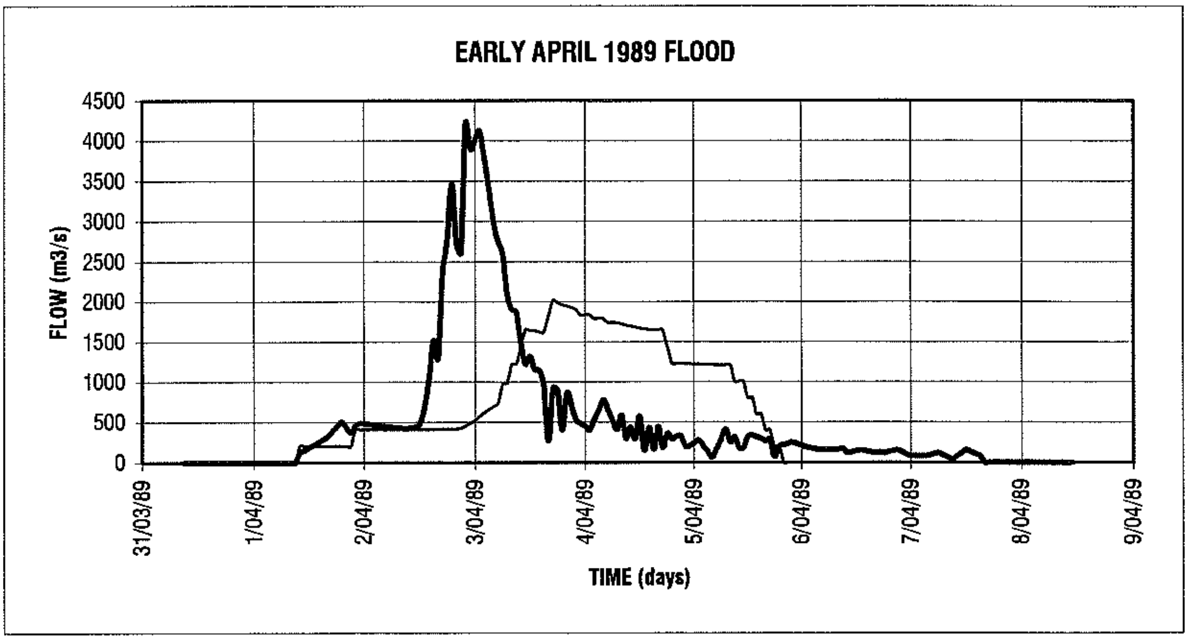
Figure 5-2 - Wivenhoe Dam Discharges

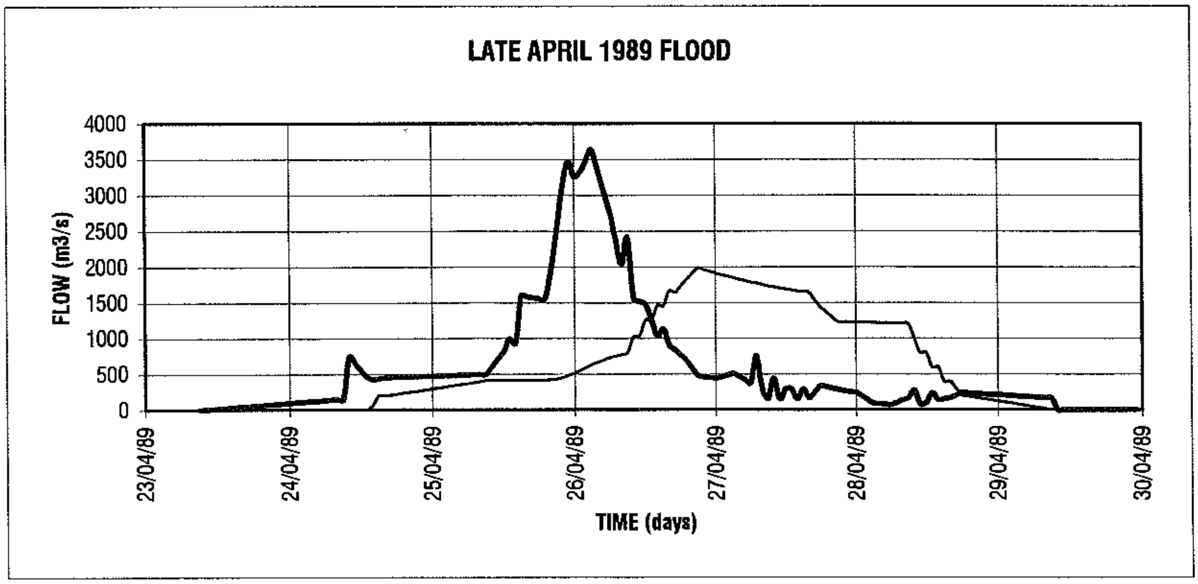


LEGEND
----- Inflow
----- Outflow

Figure 5-3 - Somerset Dam Discharges







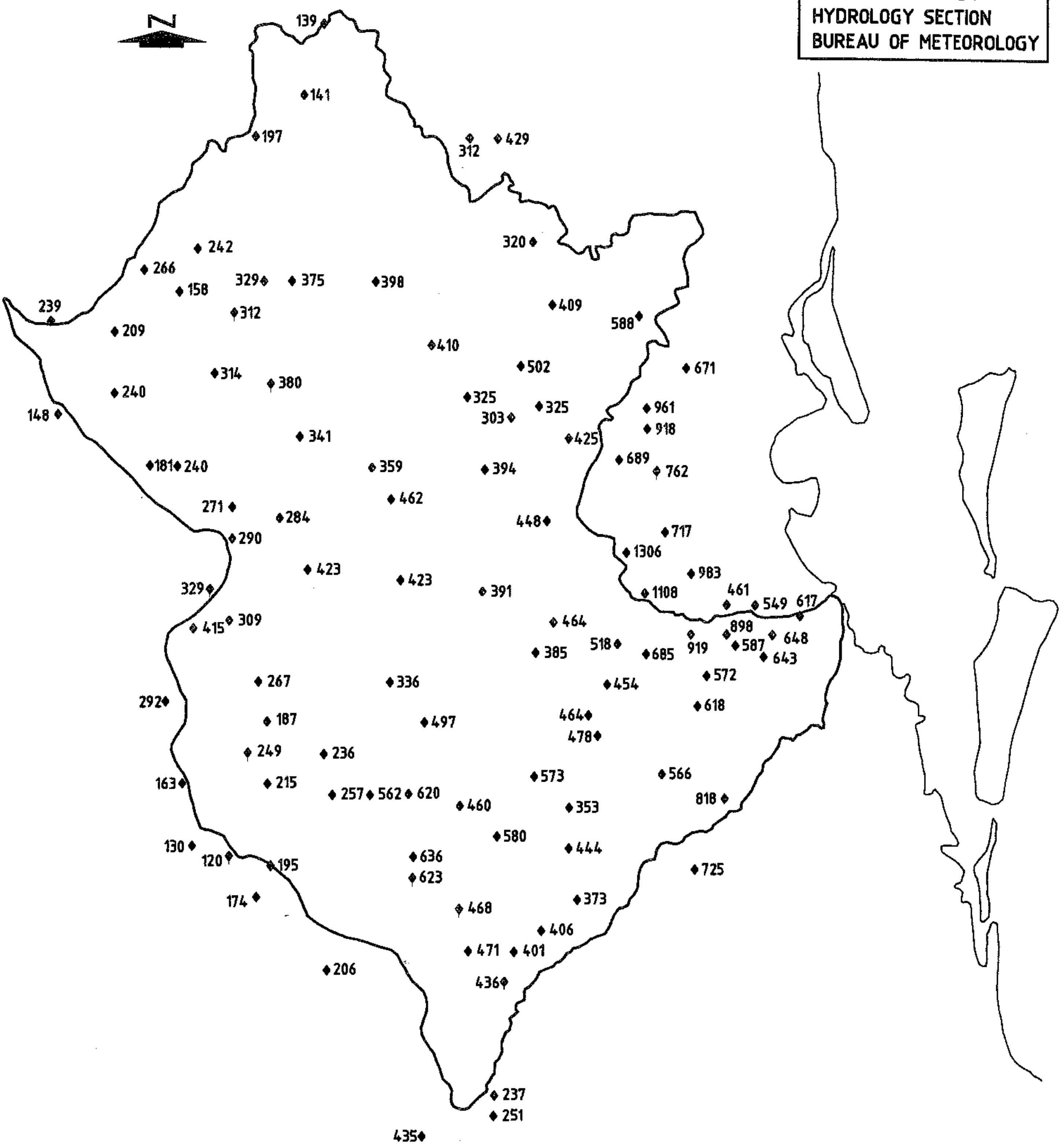
LEGEND
----- Inflow
----- Outflow

FIGURE 5.4

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
RAINFALL DISTRIBUTION
- JANUARY 1974 STORM

DATA COMPILED BY
HYDROLOGY SECTION
BUREAU OF METEOROLOGY



STORM DURATION - 9am 24/01/74 TO 9am 28/01/74

LEGEND

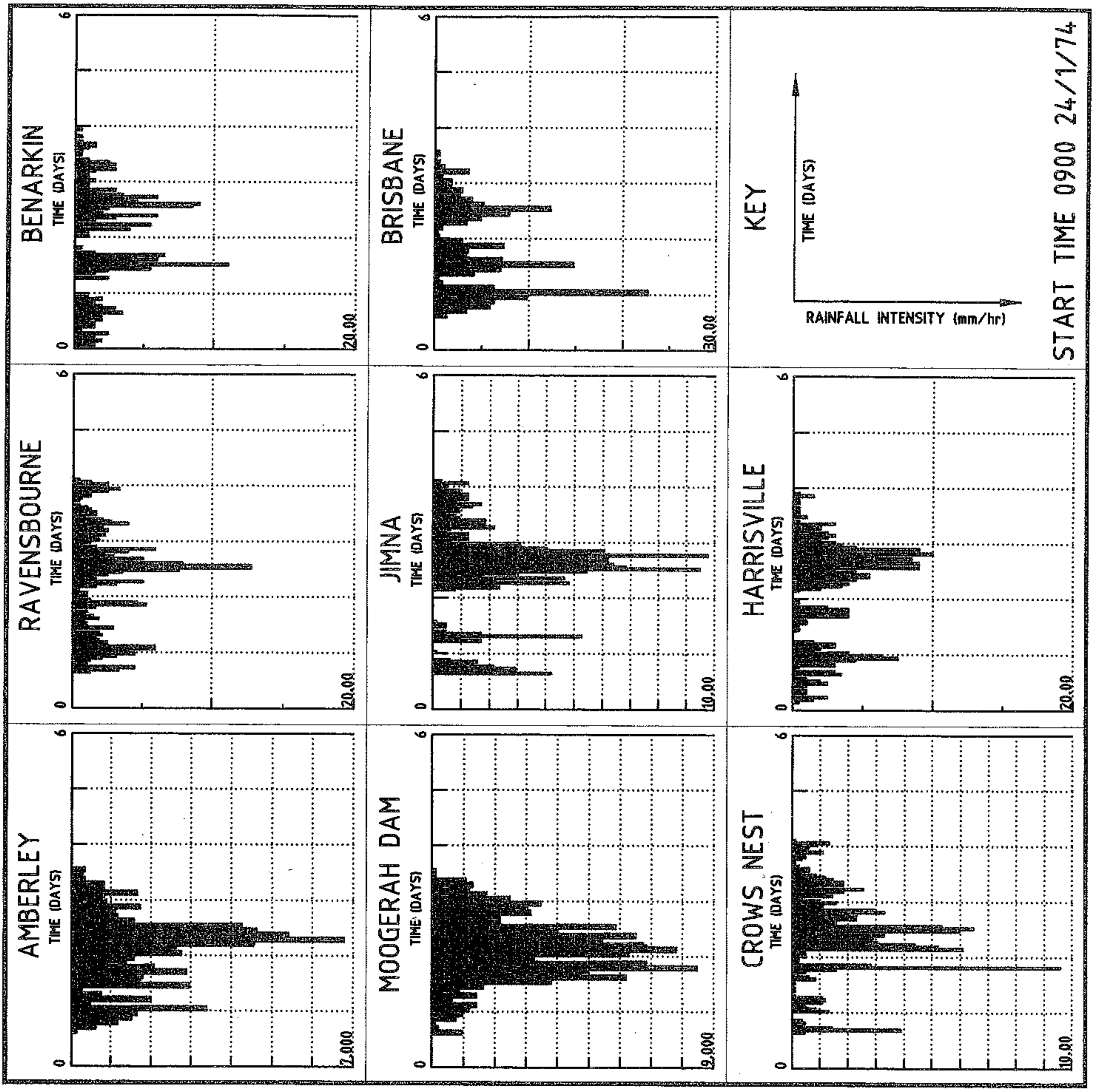
♦ 70 RAINFALL (mm)

0 10 20 30 40 50 km

FILE NAME: RAIN-74 DISK N°: D:\DWG\BRISBANE N°: T004157 DATE: 10-3-97
PLOT SCALE: 1-...

SINCLAIR KNIGHT MERZ

FIGURE 5.5
BRISBANE RIVER FLOOD STUDY
REPRESENTATIVE PLUVIOGRAPHS
- JANUARY 1974 STORM



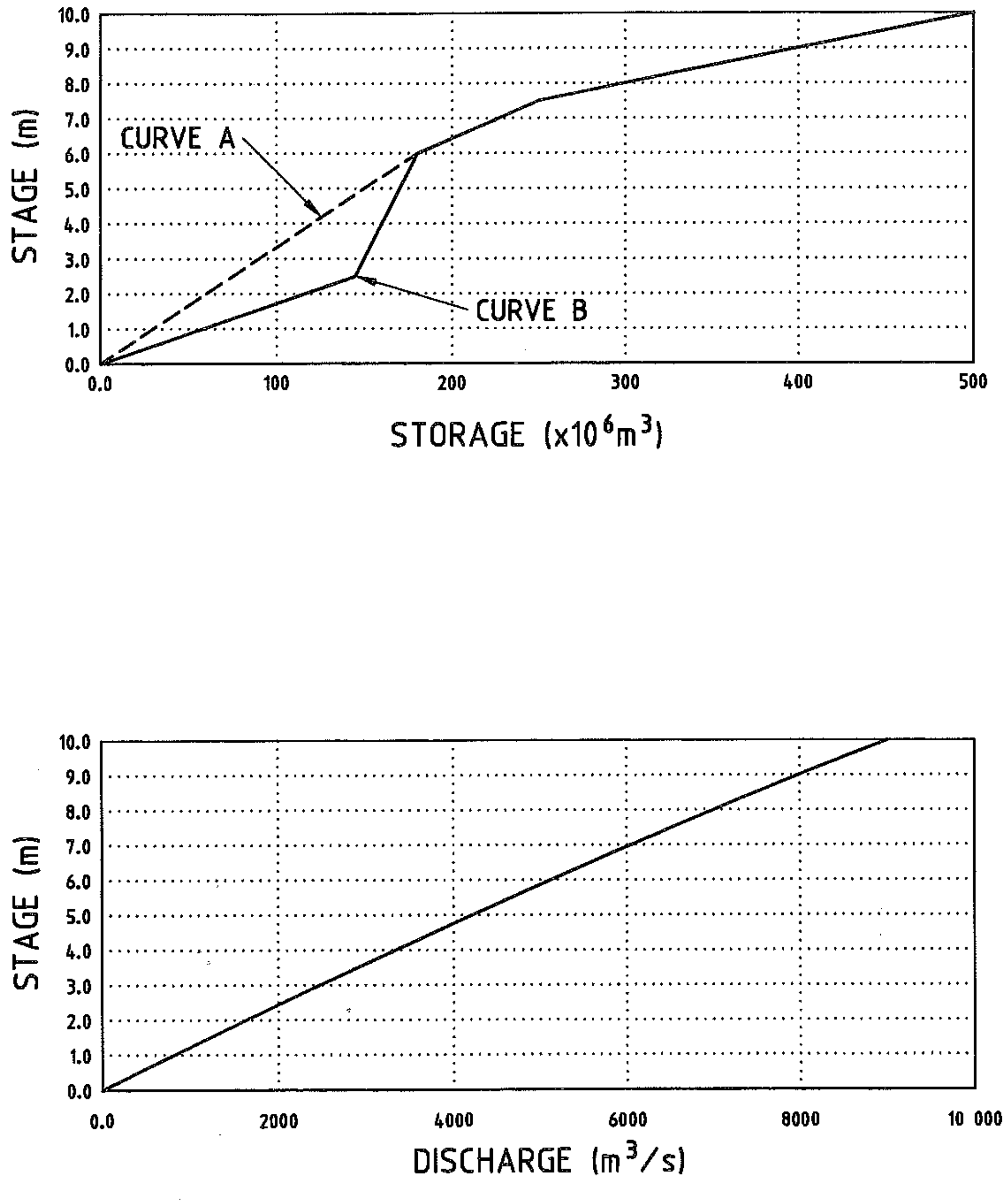
DISK N°: D:\DWG\BRISBANE N°: T004157 DATE: 14/3/97

FILE NAME: CG13
PL... SCALE: 1-..

SINCLAIR KNIGHT MERZ

FIGURE 5.6

BRISBANE RIVER FLOOD STUDY
CHANNEL STORAGE CURVES AT LOWOOD

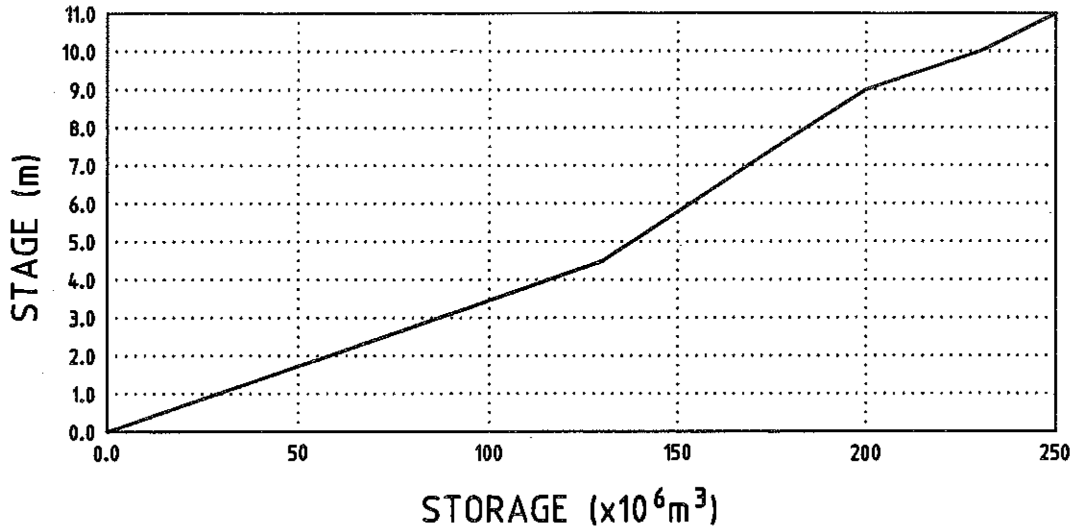


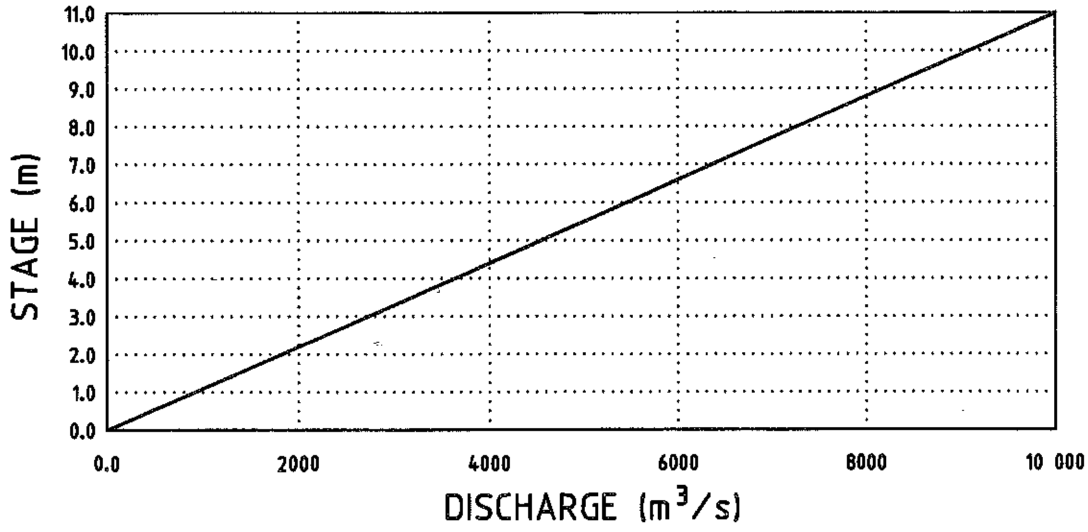
FILE NAME: CURVES DISK Nº: D:\DWG\BRISBANE Nº: T004157 DATE: 14/3/97
PLOT SCALE: 1=1

SINCLAIR KNIGHT MERZ

FIGURE 5.7

BRISBANE RIVER FLOOD STUDY
CHANNEL STORAGE CURVES AT MOGGILL





FILF NAME: CURVFS DISK Nº: D:\DWG\BRISB... Nº: T00... DATF: 14/3/97
PLO. SCALE: 1=1

SINCLAIR KNIGHT MERZ

FIGURE 5.8

BRISBANE RIVER FLOOD STUDY
CHANNEL STORAGE CURVES AT HARRISVILLE

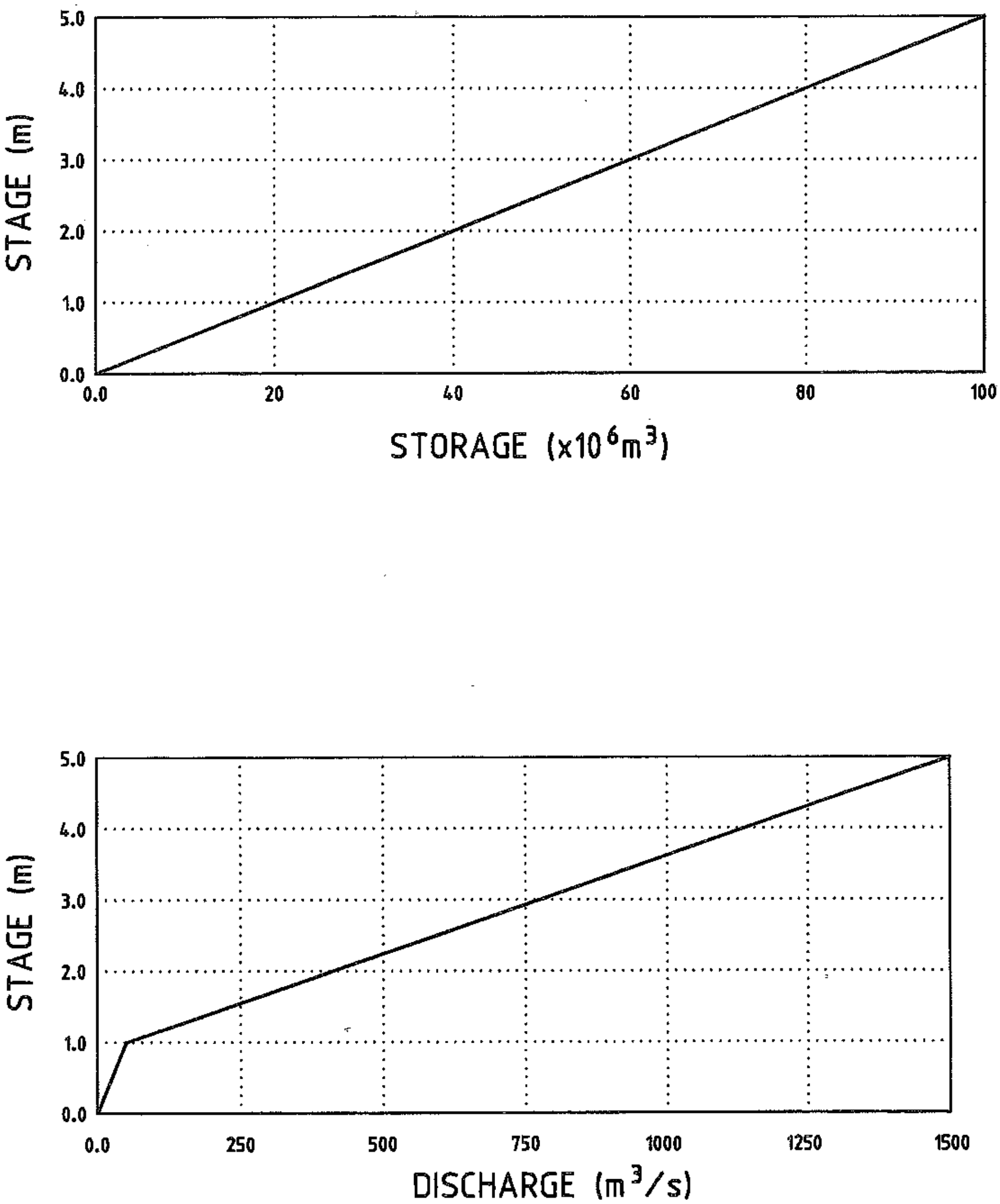
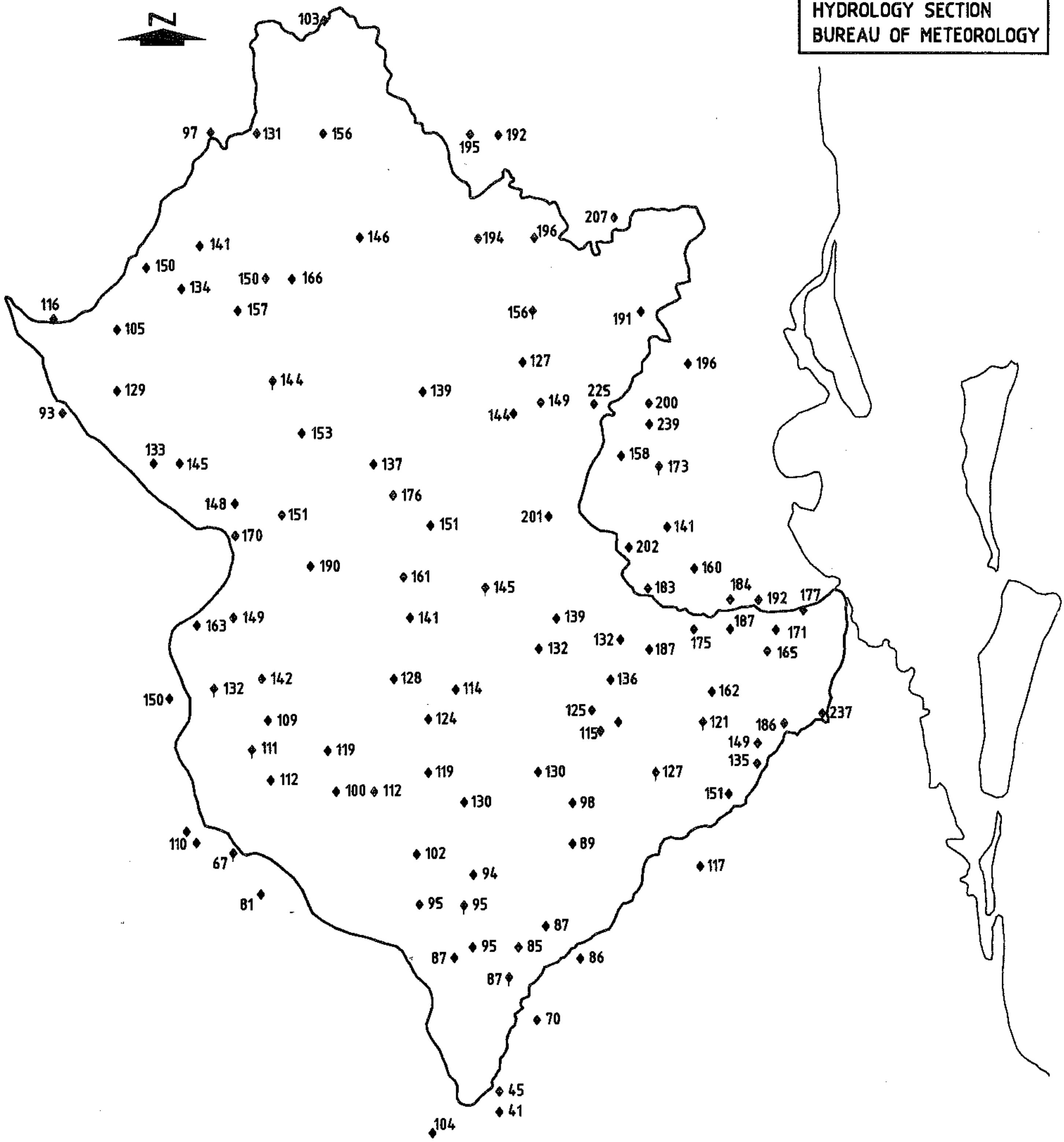


FIGURE 5.9

BRISBANE RIVER FLOOD STUDY
RAINFALL DISTRIBUTION
- JUNE 1983 STORM

SINCLAIR KNIGHT MERZ

DATA COMPILED BY
HYDROLOGY SECTION
BUREAU OF METEOROLOGY



STORM DURATION - 9am 20/06/83 TO 9am 23/06/83

LEGEND

70 RAINFALL (mm)

0 10 20 30 40 50 km

DATE: 10-3-97

DISK N°: D:\DWG\BRISBANE FILE N°: T004157

FILE NAME: RAIN-83

PLOT SCALE 1:...

FIGURE 5.10
BRISBANE RIVER FLOOD STUDY
REPRESENTATIVE PLUVIOGRAPHS
- JUNE 1983 STORM

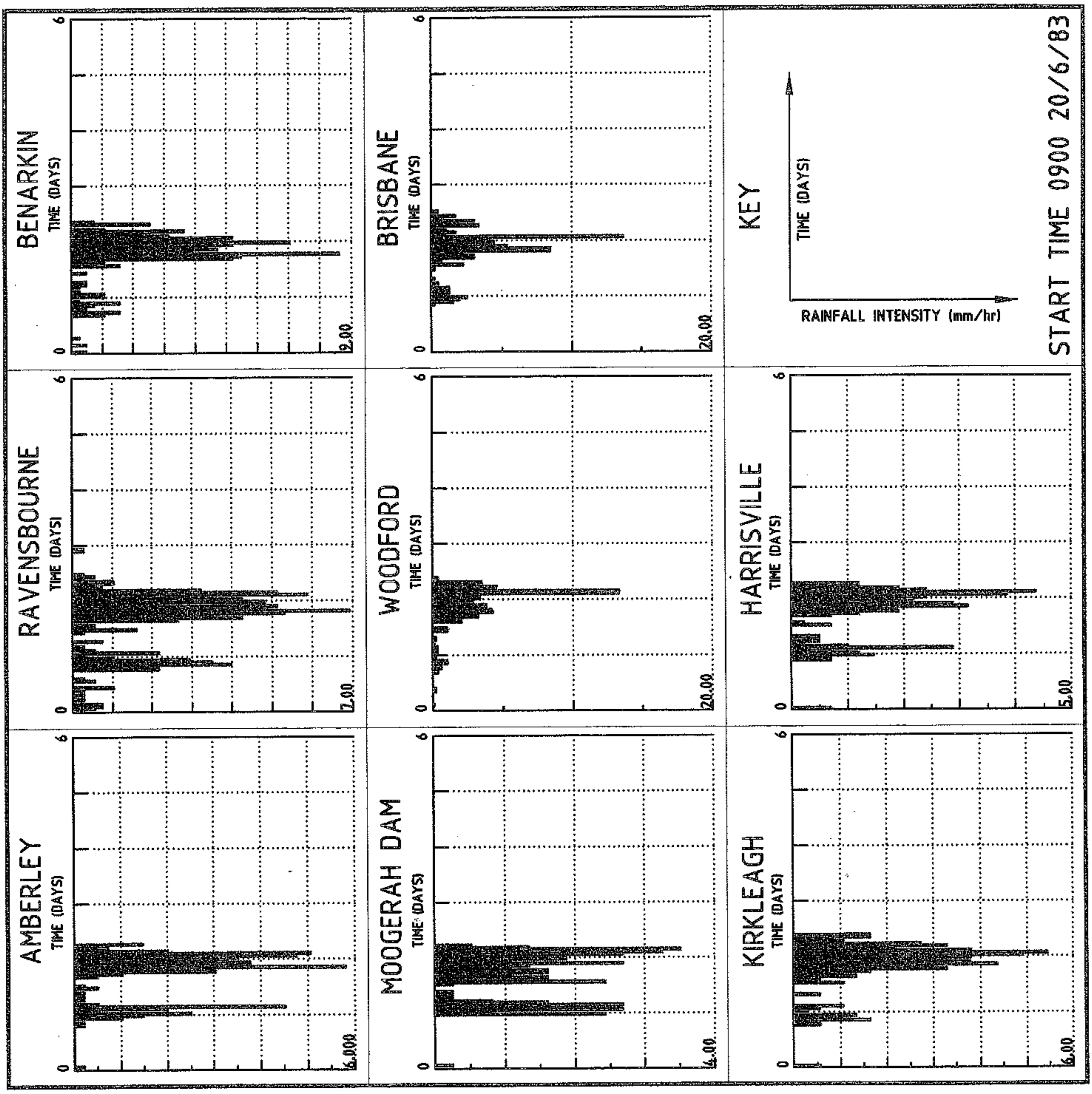
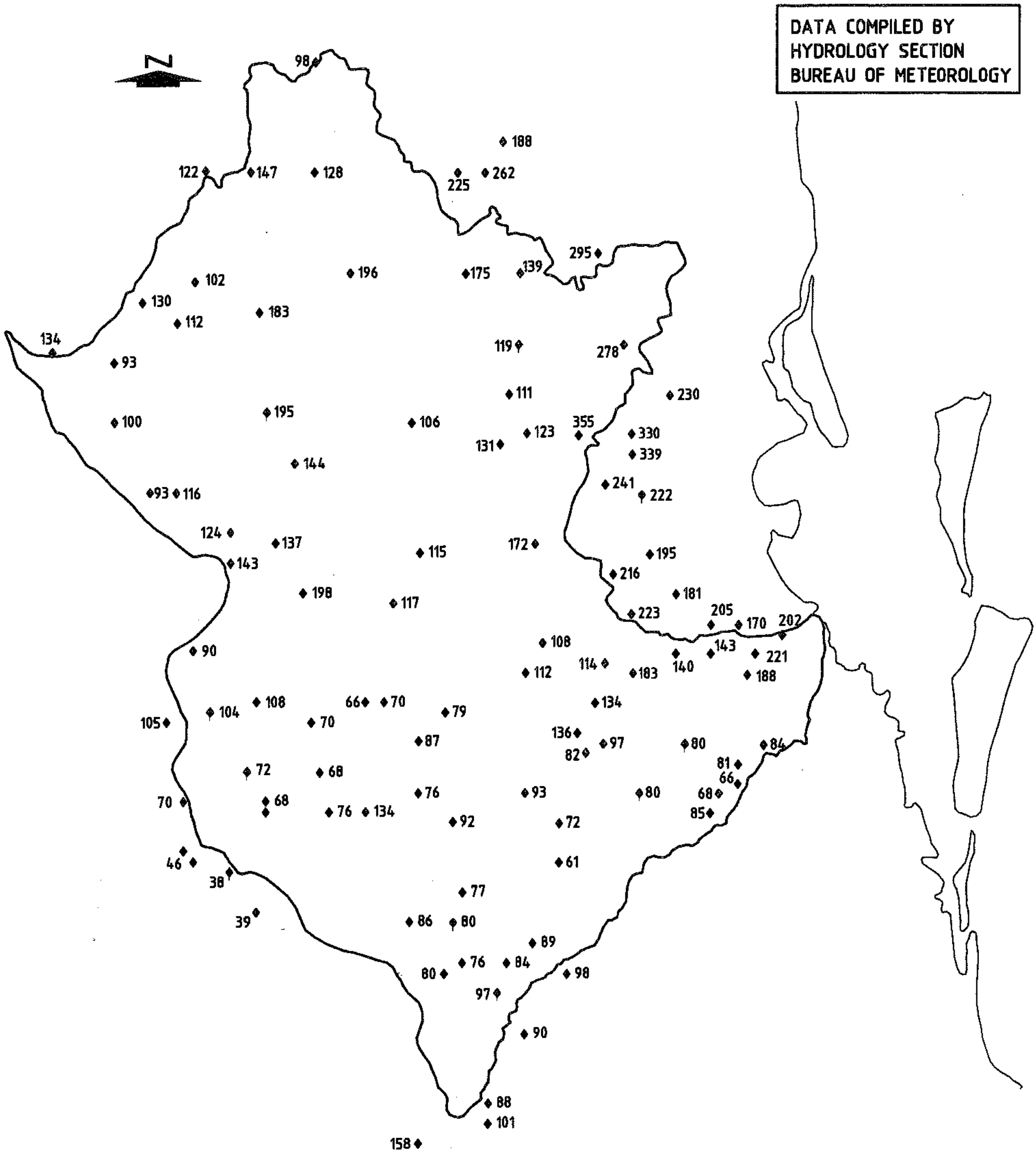


FIGURE 5.11

BRISBANE RIVER FLOOD STUDY
RAINFALL DISTRIBUTION
- LATE APRIL 1989 STORM

SINCLAIR KNIGHT MERZ



STORM DURATION - 9am 24/04/89 TO 9am 27/04/89

LEGEND

◆ 70 RAINFALL (mm)

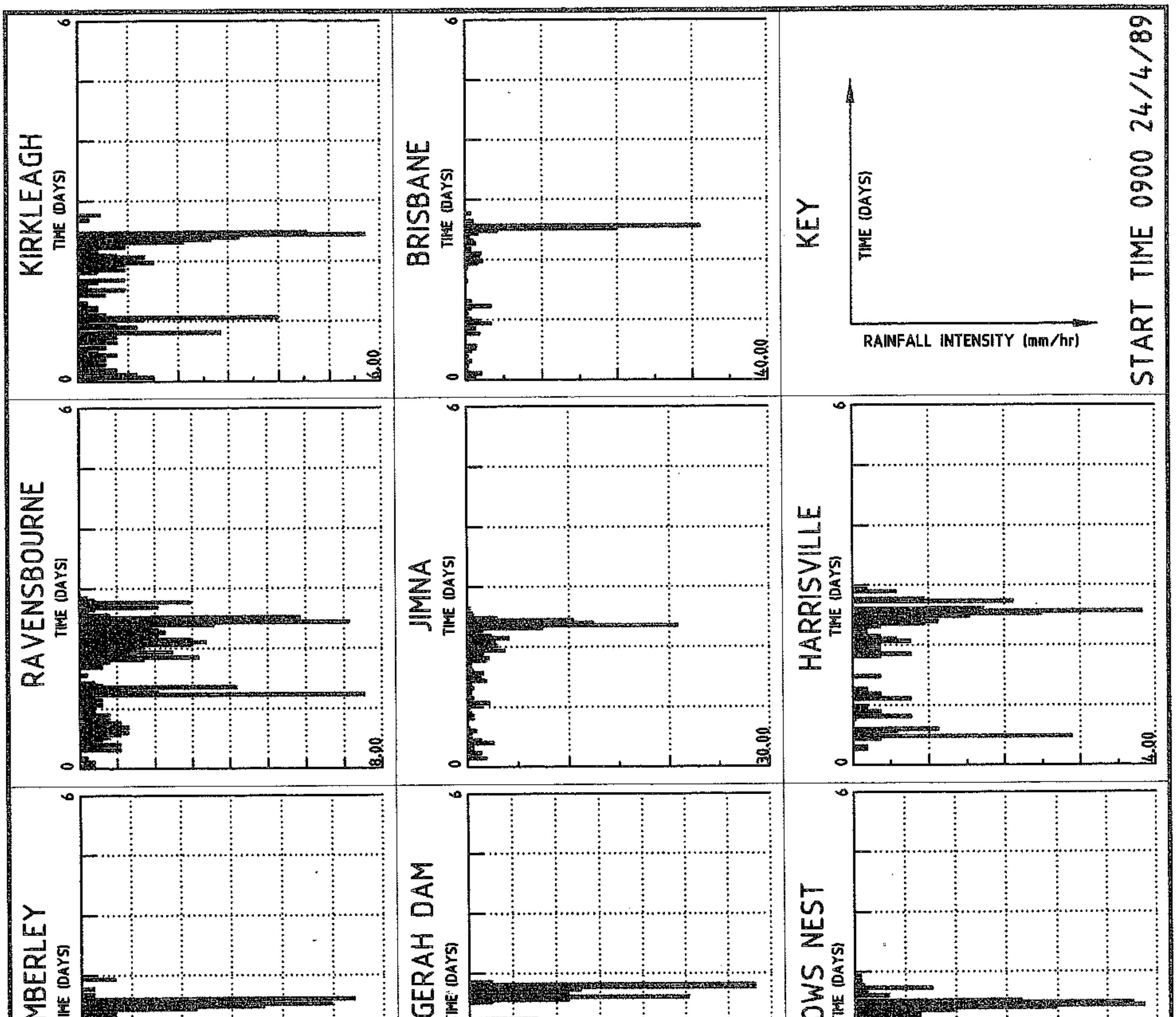
0 10 20 30 40 50 km

FILE NAME: RAI... PLOT SCALE: 1=1000 DWG No: D:\... BRISB... TOOL... DATE: 10-3-97

FIGURE 5.12

BRISBANE RIVER FLOOD STUDY
REPRESENTATIVE PLUVIOGRAPHS
- LATE APRIL 1989 STORM

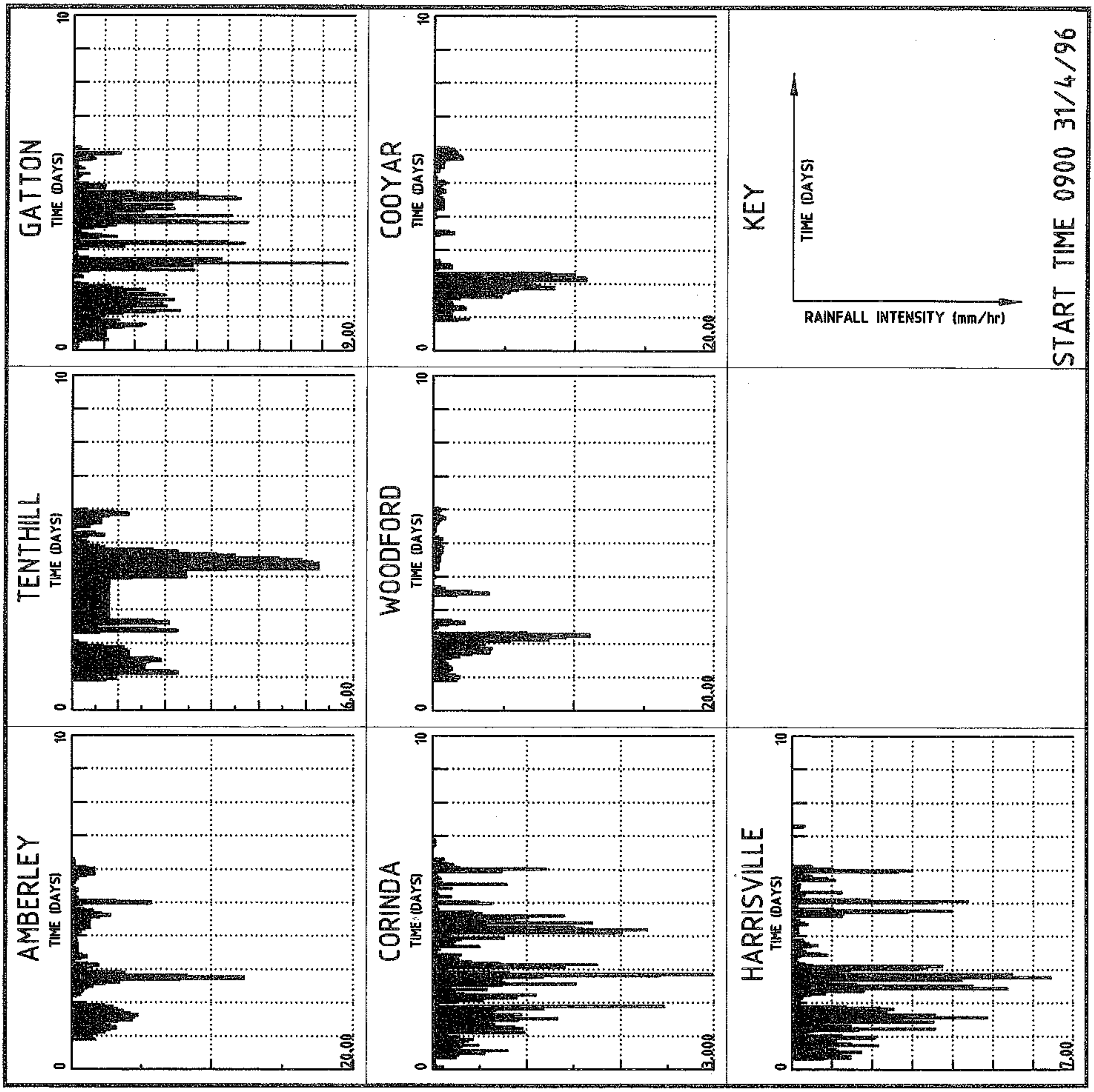
SINCLAIR KNIGHT MERZ



FILE NAME: CGK_N-96
PLOT SCALE: 1:80
DISK No: D:\DWG\BRISBANE
DWG No: T001157
DATE: 14/2/97

SINCLAIR KNIGHT MERZ

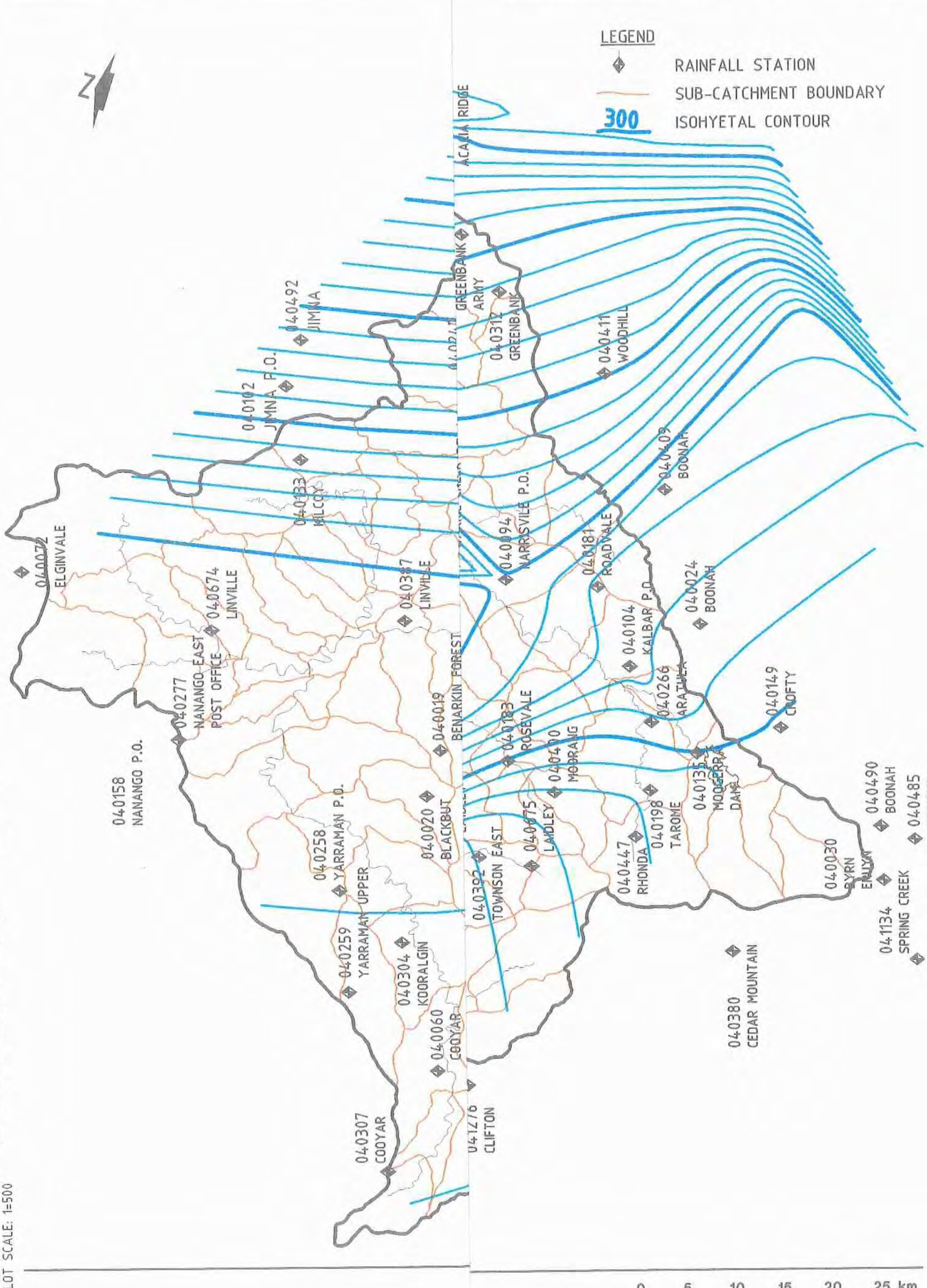
FIGURE 5.14
BRISBANE RIVER FLOOD STUDY REPRESENTATIVE PLUVIOGRAPHS - MAY 1996 STORM



SINCLAIR KNIGHT MERZ

FIGURE 5-15

BRISBANE RIVER FLOOD STUDY
ISOHYETAL MAP - FEBRUARY 1931 STORM

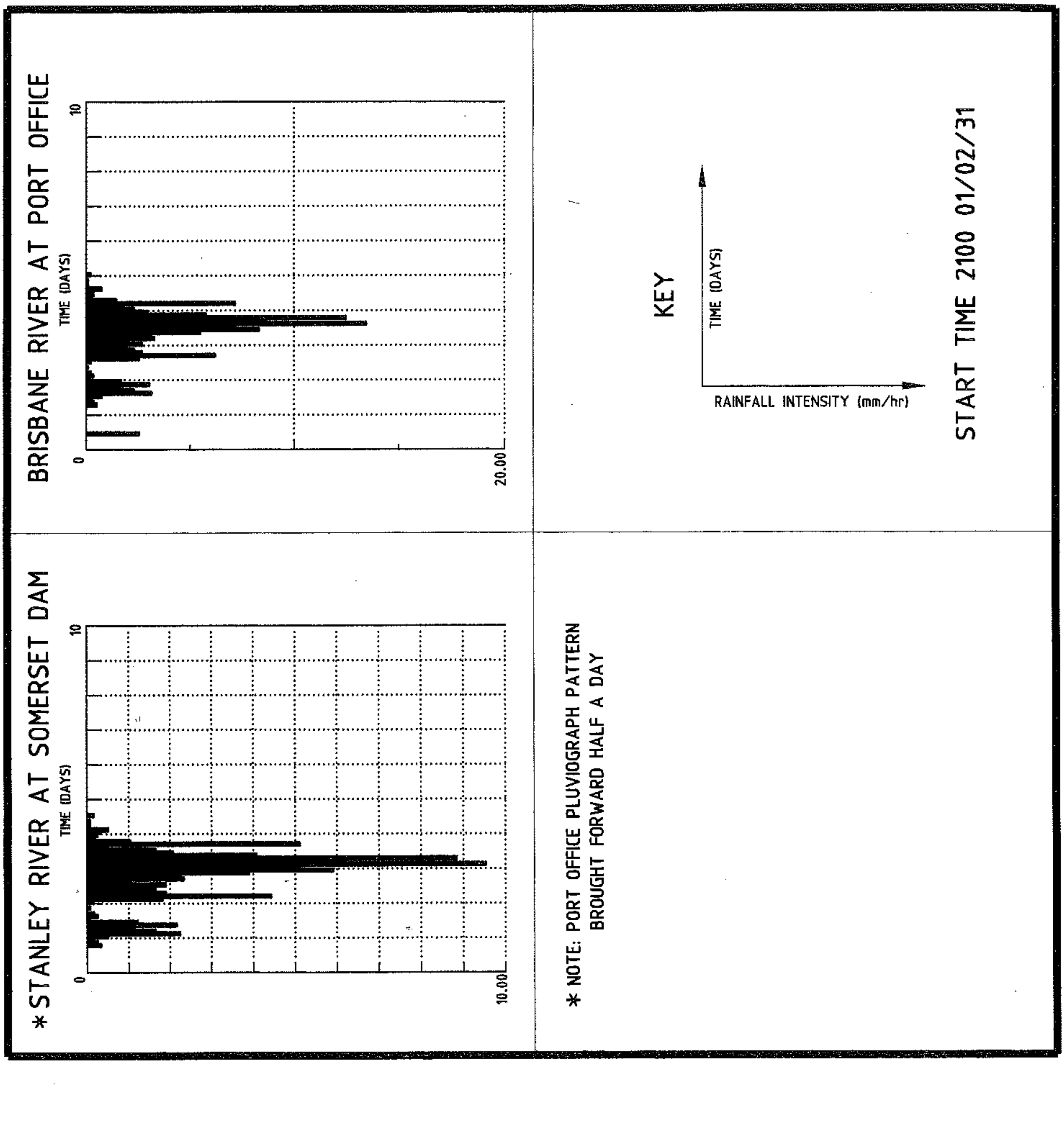


FILE ... 041... D:\... BRISB... T004... 29-7...
PLOT SCALE: 1=500

SINCLAIR KNIGHT MERZ

FIGURE 5-16

BRISBANE RIVER FLOOD STUDY
REPRESENTATIVE PLUVIOGRAPHS
- FEBRUARY 1931 STORM



FILE NAME: PLUV31 DISK N°: D:\DWG\BRISBANE N°: T004157 DATE: 21/8/97
PLOT SCALE: 1-00

SINCLAIR KNIGHT MERZ

FIGURE 5-17

BRISBANE RIVER FLOOD STUDY

ISOHYETAL MAP - MARCH 1955 STORM

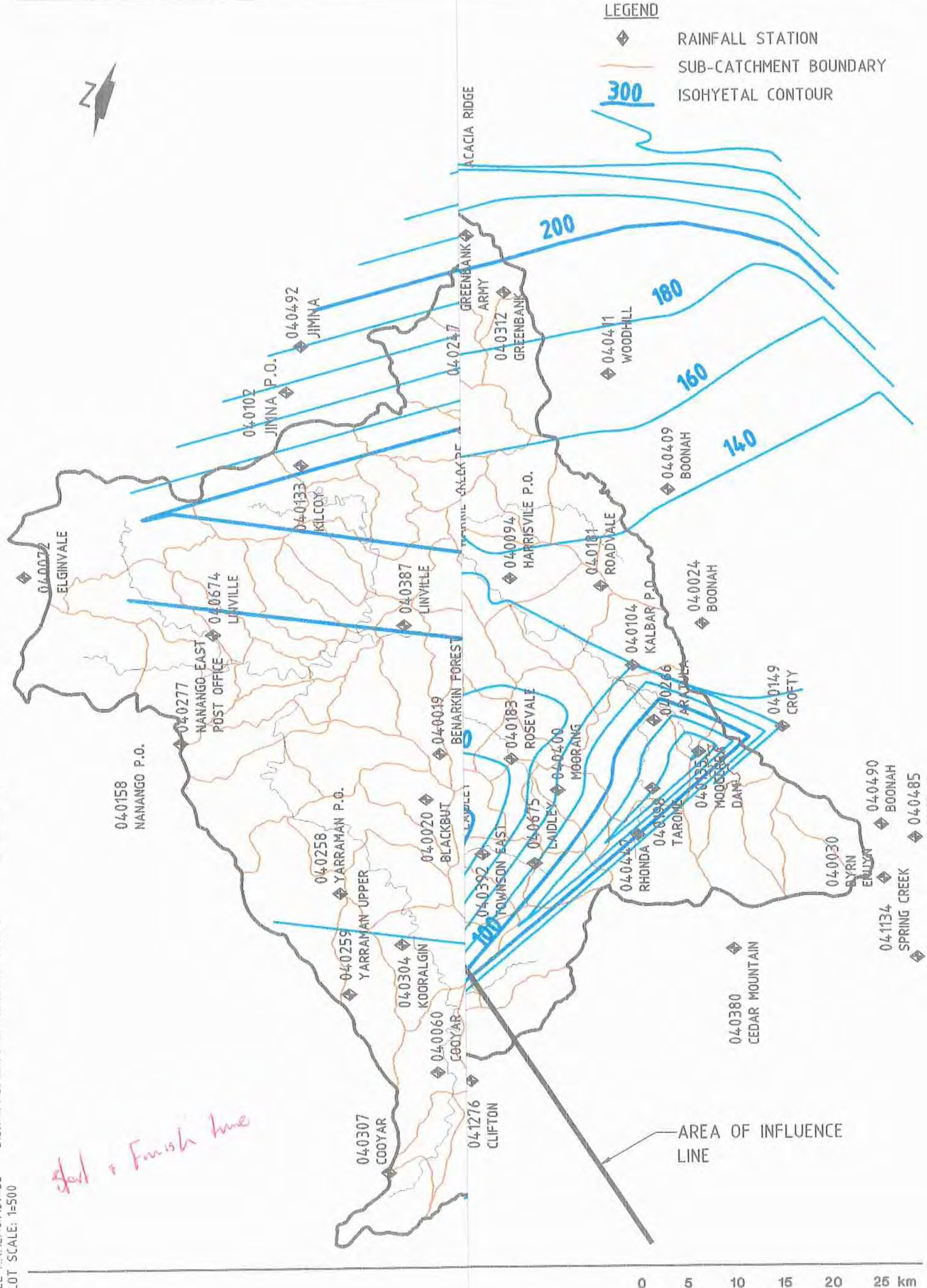
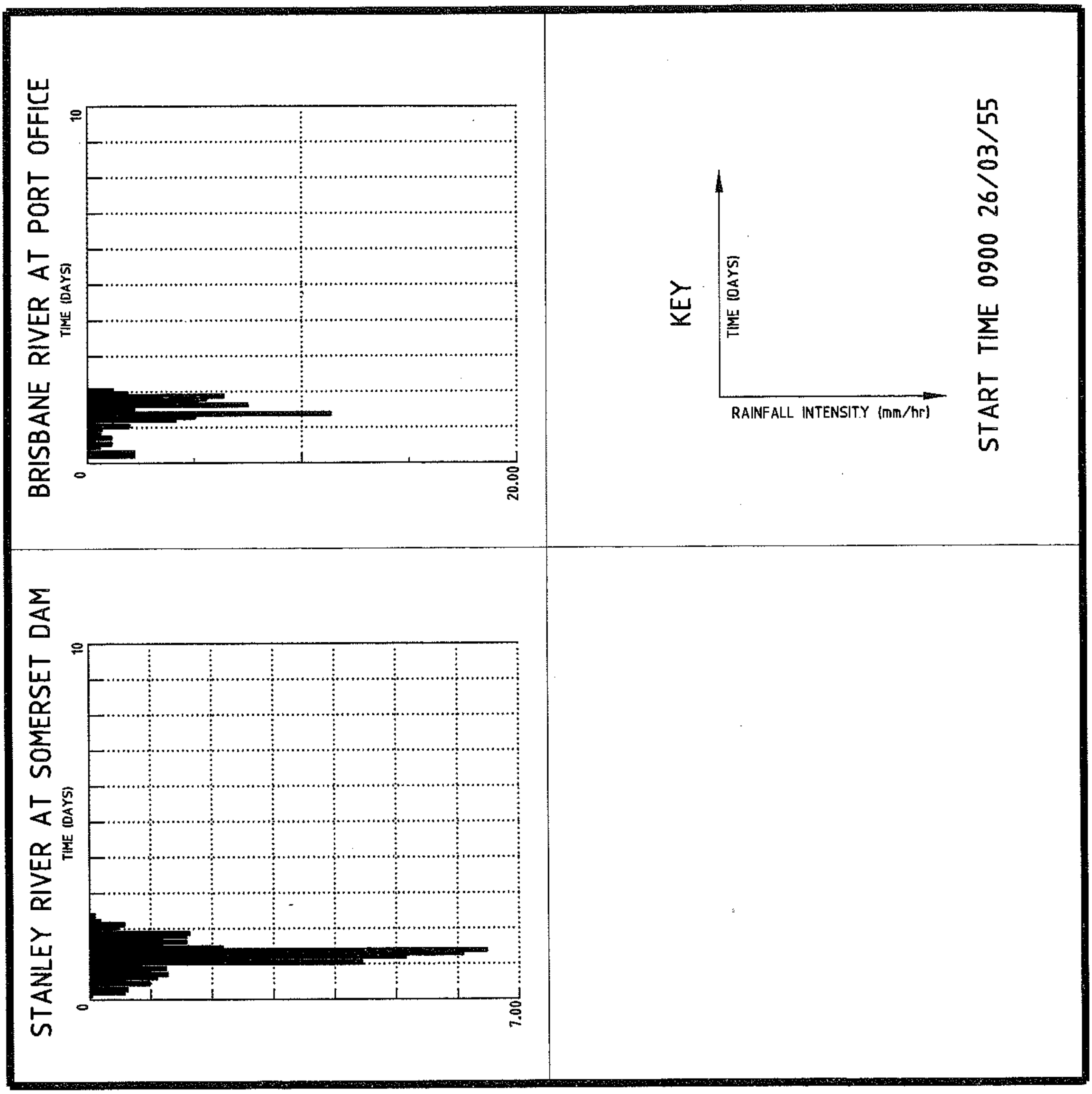


FIGURE 5-18

BRISBANE RIVER FLOOD STUDY
REPRESENTATIVE PLUVIOGRAPHS
- MARCH 1955 STORM

SINCLAIR KNIGHT MERZ



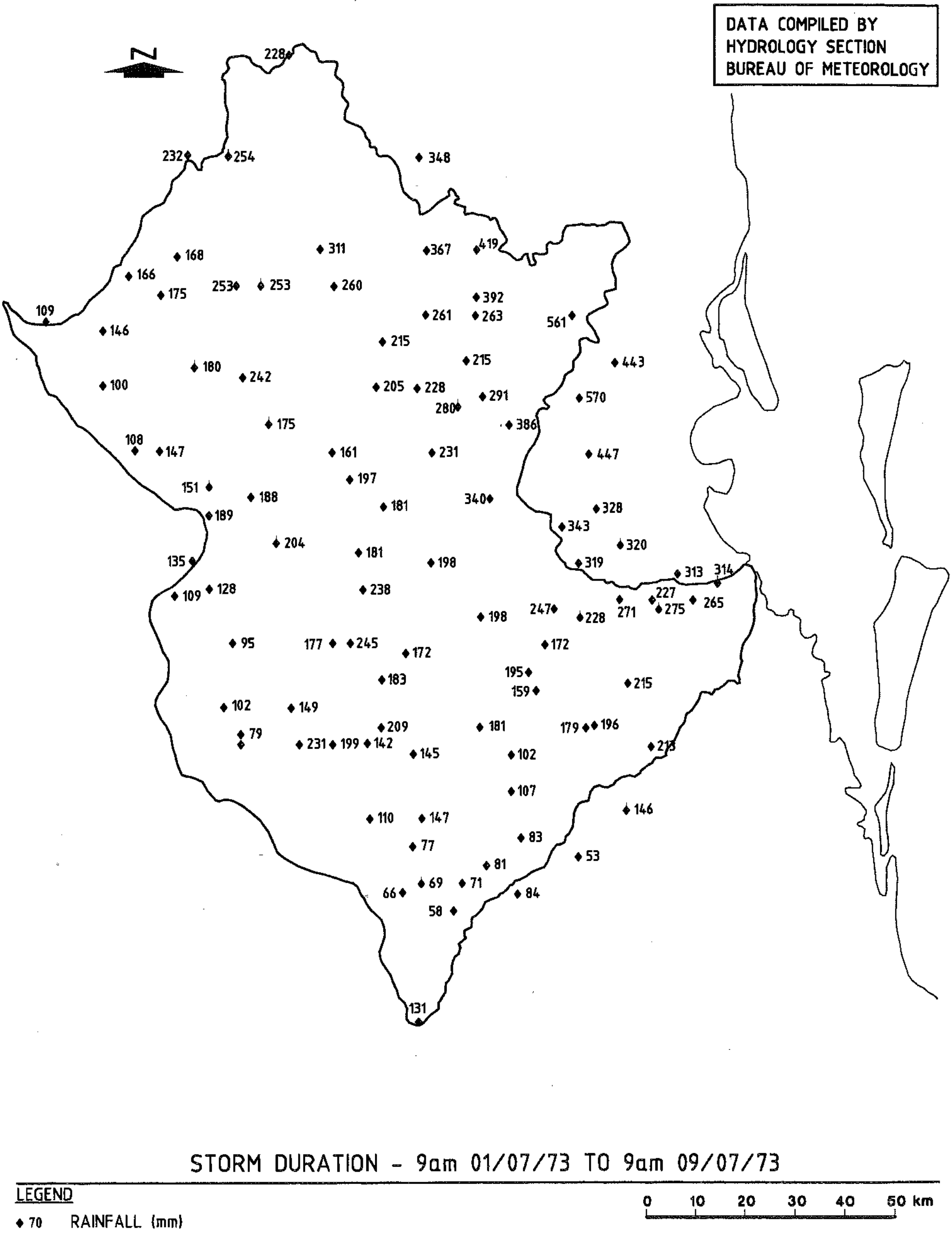
DATE: 21/8/97

PLOT SCALE: 1=80

FIGURE 5-19

BRISBANE RIVER FLOOD STUDY
RAINFALL DISTRIBUTION
- JULY 1973 STORM

SINCLAIR KNIGHT MERZ



DATE: 10-3-97
DISK N°: D:\DWG\BRISBANE FILE N°: T004157
FILE NAME: RAIN-73
PLOT SCALE: 1=1000

SINCLAIR KNIGHT MERZ

FIGURE 5-20

BRISBANE RIVER FLOOD STUDY
REPRESENTATIVE PLUVIOGRAPHS
- JULY 1973 STORM

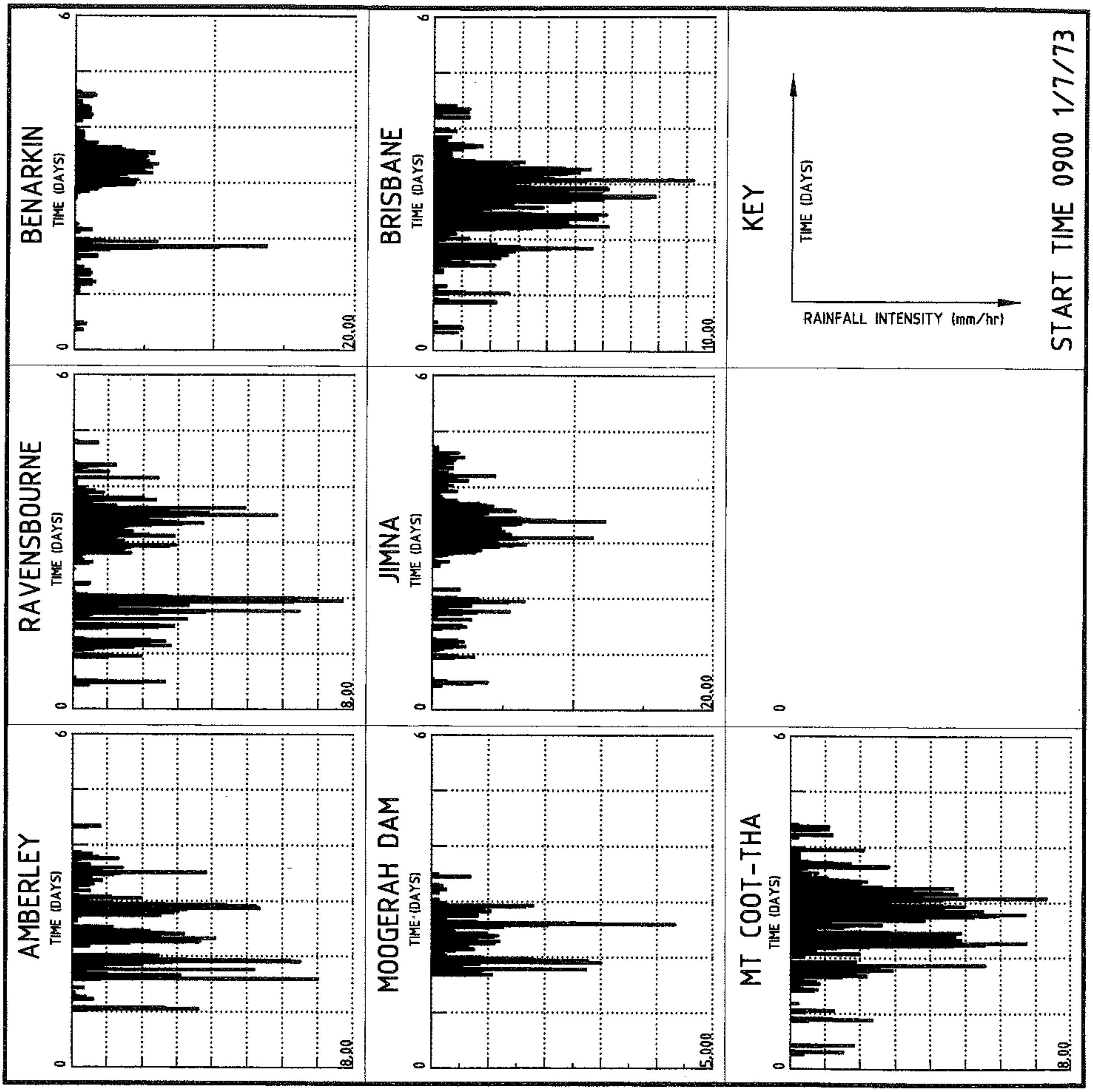
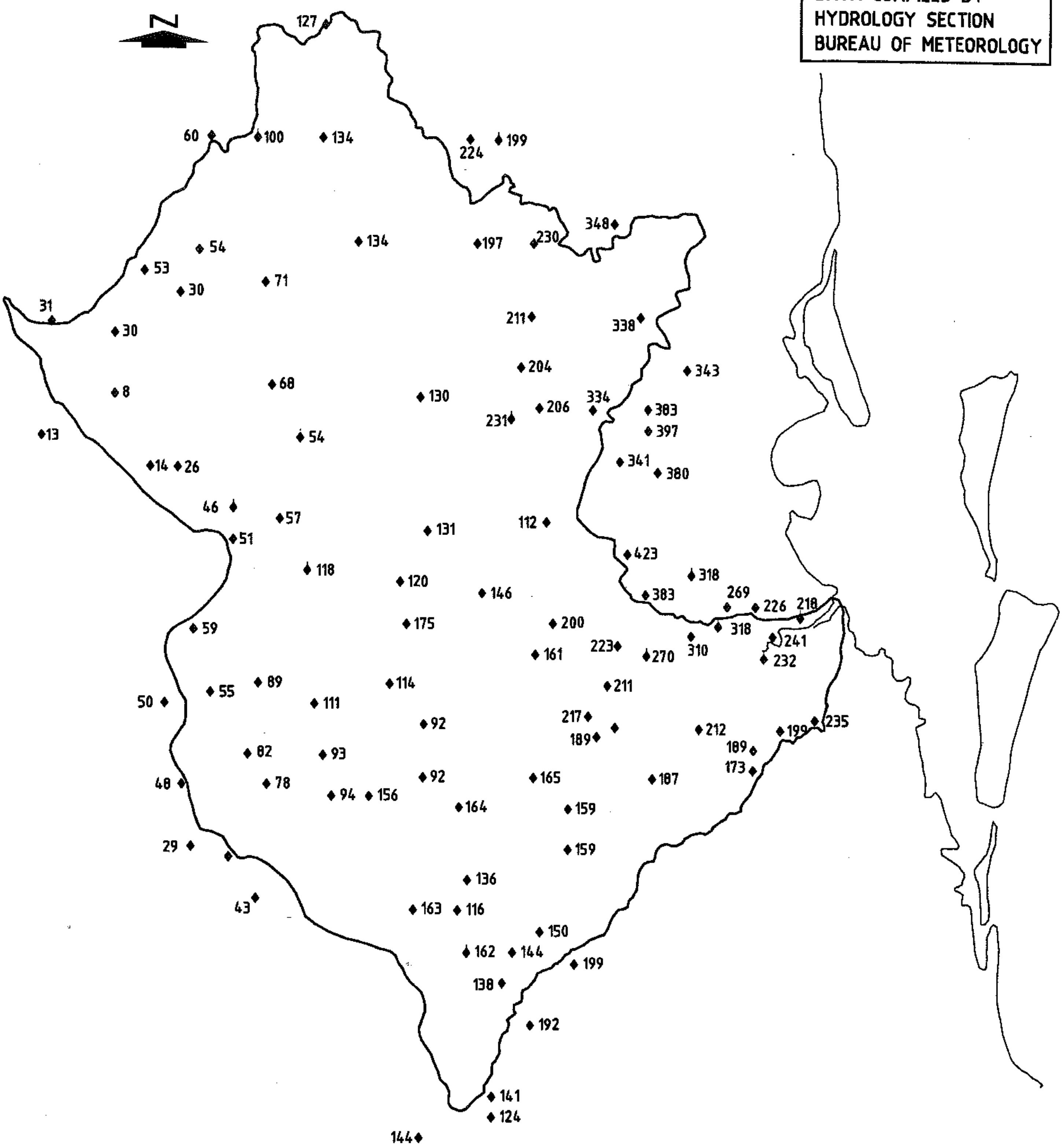


FIGURE 5-21

BRISBANE RIVER FLOOD STUDY
RAINFALL DISTRIBUTION
- EARLY APRIL 1989 STORM

SINCLAIR KNIGHT MERZ

DATA COMPILED BY
HYDROLOGY SECTION
BUREAU OF METEOROLOGY



STORM DURATION - 9am 31/03/89 TO 9am 04/04/89

LEGEND

◆ 70 RAINFALL (mm)

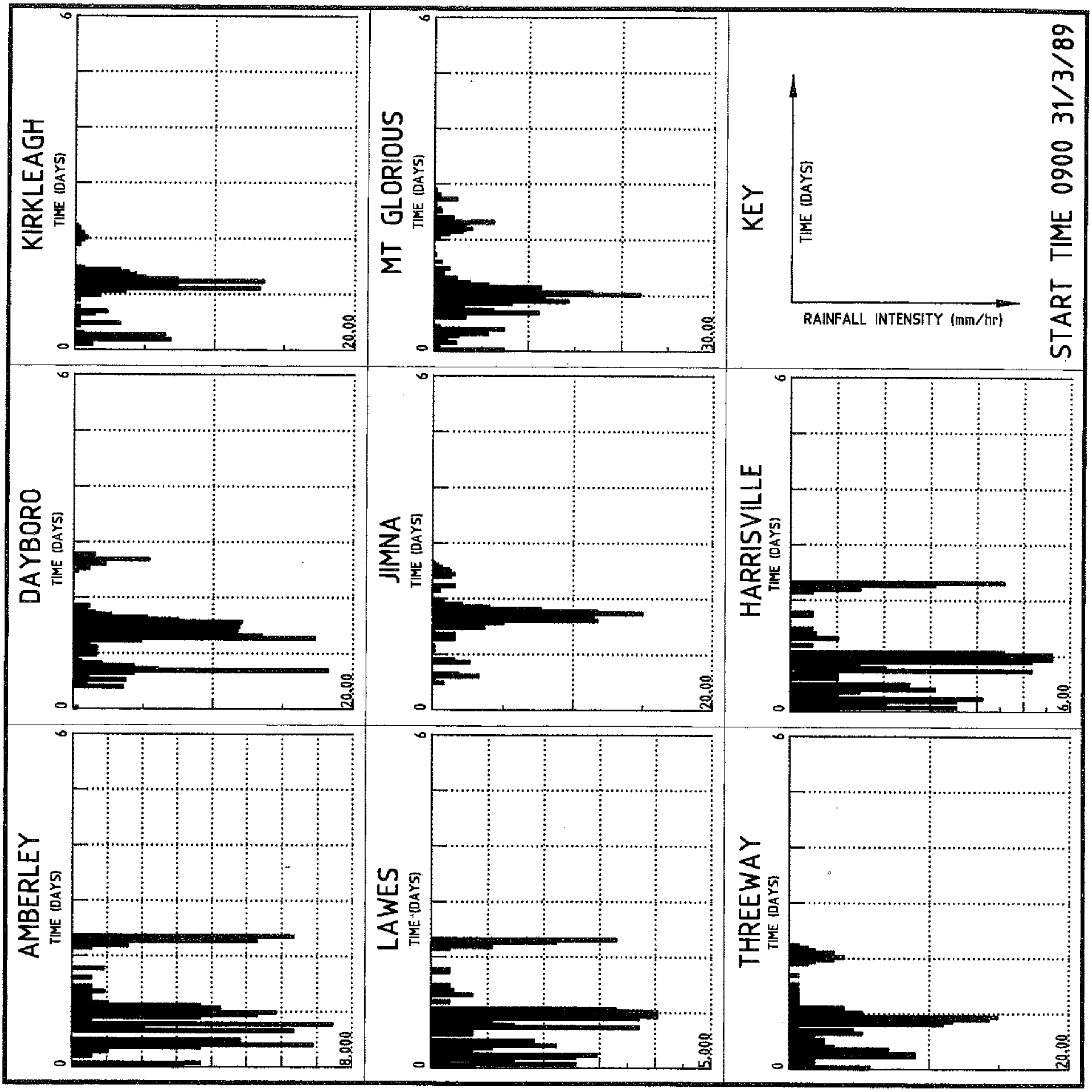
0 10 20 30 40 50 km

FILE NAME: RAIN-89A PLOT SCALE: 1=1000 DISK N°: D:\DWG\BRISBANE N°: T00/157 DATE: 10-3-97

SINCLAIR KNIGHT MERZ

FIGURE 5-22

BRISBANE RIVER FLOOD STUDY
REPRESENTATIVE PLUVIOGRAPHS
- EARLY APRIL 1989 STORM



PLOT SCALE: 1=80

6. Hydraulic Model

6.1 Overview

The overall purpose of any hydraulic modelling is to describe the movement or behaviour of floods as they pass through the channel system and associated floodplains. Flood levels, extent of inundation and flow velocities at various locations along the study reach are computed in the process.

In order for the model results to be reliable, it is necessary to calibrate and verify the hydraulic model. The calibration process involves the matching of calculated levels with recorded levels for as many recorded events as possible. Characteristics such as channel roughness parameters and appropriate model schematisation are derived in the calibration process.

The next major step after calibrating the model is to test or verify the model by using the model parameters derived during the calibration phase. This process is necessary in order to ensure that the model accurately describes the hydraulic behaviour of the channel system both for recorded events as well as for design events.

The one-dimensional hydrodynamic model, MIKE 11 developed by the Danish Hydraulic Institute was selected for the hydraulic analysis. HEC-RAS, the industry standard steady-state one-dimensional model was used to check the hydraulic behaviour of major structures located along the river in the study area.

This section of the report describes the hydraulic modelling of the Brisbane River system with respect to the calibration and verification processes.

6.2 MIKE 11 Model Description

The MIKE 11 hydrodynamic model was developed by the Danish Hydraulic Institute and it is a one-dimensional unsteady-state model used to simulate flows in channels of various configurations.

The model is based on an implicit finite-difference approach and can be applied to looped networks and quasi two-dimensional flow simulations. The model is capable of simulating sub-critical as well as super-critical flow conditions through a numerical scheme which adapts according to local flow conditions.

Inputs to the model include discharge hydrographs at various inflow points, water level or discharge hydrographs at the downstream boundary of the model, cross-sectional data and channel roughness values.

6.3 HEC-RAS Model Description

HEC-RAS has been developed to predict water surface profiles for steady flow in natural or constructed channels. The computational procedure is based on the solution of the one dimensional energy equation with energy losses due to friction evaluated from Manning's equation. Effects of hydraulic structures such as bridges, culverts and weirs can be readily incorporated. For the purpose of this study, HEC-RAS has been used to check the performance of the MIKE 11 model at bridge structures.

6.4 Model Establishment

6.4.1 Brisbane River System Schematisation

Brisbane River was represented by one main branch in the MIKE 11 model which extends from the Western Inner Bar to the Brisbane City Council boundary which is located approximately 79 km upstream.

Additional branches located at the confluences of the Bremer River, Oxley Creek , Enoggera Creek and Bulimba Creek were included in the model to allow major inflows and storages from these tributaries to be taken into account. Storages associated with smaller tributaries were not considered to be significant and therefore were not included in the model.

This was considered to be a reasonable representation as peak inflows from major tributaries within the hydraulic model reach occur well before peak inflows from the upper Brisbane River catchment (ie. upstream of the Brisbane City Boundary). This allowed floodwater to be backed up into each tributary and provided a simulated storage at each confluence. Model branches and major confluence locations are shown in **Figure 6-1a to 6-1g - MIKE 11 Model Structure.**

Surveyed data provided by Brisbane City Council was used to describe the cross-sectional geometry of the Brisbane River system in the model. The geometry of the adjoining tributaries consisted of Brisbane River survey data (connection to Brisbane River) and derived levels from topographical information for the upstream cross sections. Locations of the cross-sections used in the model are shown in **Figure 6-1a to 6-1g - MIKE 11 Model Structure.** A total of 197 cross-sections were used to represent the geometry of the Brisbane River system and a further 8 cross sections for the four adjoining tributaries being modelled.

6.4.2 Boundary Conditions

Discharge hydrographs simulated by the hydrologic model, RAFTS, for the various recorded events were used as boundary conditions at the upstream ends of the hydraulic model and 4 intermediate locations representing sub-catchment inflows along the creeks. These locations are illustrated on **Figure 6-1a to 6-1g - MIKE 11 Model Structure.**

Recorded water levels in the Brisbane River at the Western Inner Bar were used as the downstream boundary conditions for the events being modelled.

6.4.3 Hydraulic Structures

A total of 8 waterway crossings are located within the Brisbane River study area as shown in **Figure 6-1a to 6-1g - MIKE 11 Model Structure.** Geometry and hydraulic capacity vary considerably between crossings, but they can all be grouped into bridge structure types.

Bridge Structures consist of a road decking supported by piers. This type of structure has the highest capacity to accommodate flood discharges without overtopping. Changes to waterway geometry are usually minor compared to other structures such as culverts, except for the piers and encroachment of the creek by the bridge abutments.

Two types of flow regimes were allowed for in the hydraulic modelling of waterway structures:

Weir Type Flow is the flow over a crest such as a road or top of a pipeline. This occurs when the roadway is overtopped and may be either free flow (low downstream water levels causing critical flow conditions at the structure) or submerged flow (high downstream water levels `drowning' out the weir flow). The weirs for this study were modelled within a separate link branch. This allowed weir flow to be estimated at each bridge structure.

Culvert Type Flow is the flow through a culvert opening. The hydraulics of culvert flow are dependent on factors such as downstream submergence, culvert dimensions and geometry, friction effects and whether the culvert is flowing partially full or is pressurised.

The modelling approach for each bridge structure was a combination of culvert and weir flow. Flows below the bridge deck were assumed to approximate a culvert type regime.

A relationship between water level and available waterway width was developed from cross sectional information. Reductions in waterway area due to piers and bridge skewness were taken into account. The level-width curve was then input into MIKE 11.

This approach was applied to flows below the bridge deck. For overtopping conditions, the road crest geometry was specified directly into MIKE 11 and modelled as a broad crested weir.

A brief description of each structure is provided below.

1. Centenary Bridge - A multi span structure consisting of a constant deck depth with 6 piers and abutments encroaching within the waterway area. During the 1974 flood event a barge was sunk immediately upstream of the bridge to avoid bridge damage occurring. This may have caused a reduction of the conveyance through the waterway.

2. Indooroopilly Bridge - There are two bridges in this location these being the Walter Taylor Bridge and the Indooroopilly Rail Bridge. For modelling purposes the two bridges were combined and assumed to be a composite structure. Anecdotal evidence suggests that the combination of these two structures reduce the waterway area and cause a choking effect.

3. The Merivale Bridge - This rail bridge was constructed after the 1974 flood event. It has been included for all events occurring after 1974.

4. William Jolly Bridge - This bridge is situated approximately 250 m downstream of the Merivale bridge. The bridge is a multi span bridge with arched chords joining the piers at low levels. It is considered that these arched chords may cause some minor afflux to occur due to the reduction in waterway area.

5. Victoria Bridge - The Victoria Bridge is located approximately 700 m downstream of the William Jolly Bridge. The bridge is a solid arch bridge which reduces the waterway area considerably at higher flood levels.

6. Captain Cook Bridge - This bridge is similar to the Victoria Bridge however the reduction in waterway area is less due to the flat arch shape of the deck.

7. Storey Bridge - The deck level of the Storey Bridge is such that weir flow is unlikely for most floods. Any restriction of flow is due to the piers and abutments only, hence major affluxes at this location are not expected.

8. Gateway Bridge - This bridge was not included in the model as the deck is suspended at a very high level. The effect of the piers on afflux was considered to be negligible due to the extent of waterway area at this location.

A list of the modelled structures and how they were represented in MIKE 11 are presented in **Table 6-1 - List of Hydraulic Structures**.

Table 6-1 - List of Hydraulic Structures

No	Structure Location	Chainage (km)	Structure Description	Modelled in MIKE 11 as:
1	Centenary Highway	1028.720	Major Public Bridge	Irregular culvert + weir
2	Indooroopilly Bridges	1037.110	Major Public Bridge	Irregular culvert + weir
3	Merivale Bridge	1052.37	Major Public Bridge	Irregular culvert + weir
4	William Jolly Bridge	1052.625	Major Public Bridge	Irregular culvert + weir
5	Victoria Bridge	1053.355	Major Public Bridge	Irregular culvert + weir
6	Captain Cook Bridge	1054.660	Major Public Bridge	Irregular culvert + weir
7	Story Bridge	1056.920	Major Public Bridge	Irregular culvert + weir

6.5 MIKE 11 Model Calibration

6.5.1 General

Model calibration involves the selection of appropriate model schematisation and model parameters in order to match simulated and recorded water levels and discharges. This involves an iterative process and the careful selection of roughness parameters which reflect channel and floodplain conditions and an accurate description of flow movement.

Channel roughness values (Manning's `n') selected were primarily based on site visits, examination of aerial photographs and past experience from other flood studies. These were modified in some cases to reflect the hydraulic behaviour of the flood, (such as a change in vegetation or the presence of a sharp bend), as it moved downstream in order to achieve a reasonable match between recorded and predicted flood levels.

Four recorded events covering a variable range of floods, with rainfall and water level data were used to calibrate the hydraulic model. These flood events were;

- 24 January 1974
- 01 May 1996
- 23 April 1989
- 20 June 1983

The calibration events can be classified into a large flood event (1974) and small flood events (1983, 1989, and 1996). The peak discharge of the 1974 flood event was approximately 10 000 m^3/s, while the other events discharges range from 1 500 m^3/s to 3 000 m^3/s. Unfortunately no historical records for mid range flood events were available at the time of calibration.

Adopted Manning's 'n' values used in the hydraulic model are shown in **Figure 6-2 - Hydraulic Model Channel Roughness & Relative Resistance Values**. From **Figure 6-2** it can be seen that two sets of Manning's 'n' data were required to achieve a good calibration. The higher set of Manning's 'n' values were required to match the predicted water levels to the recorded water levels for the 1974 flood. Since MIKE 11 does not directly allow for bend losses, Manning's 'n' values had to be increased at bends to account for these losses. Furthermore, the predicted velocities in the 1974 flood were double that of the smaller events, hence increasing bend losses further. To account for the greater bend losses, the Manning's 'n' values had to be increased for the calibration of the 1974 flood event. Further discussion of the adopted Manning's 'n' values is provided later in this report.

Initial roughness estimates were based on site inspection and refined during the calibration process to achieve a best fit across the range of the four calibration events analysed.

Generally, the upper reach of the Brisbane River from MIKE 11 model chainage 1 000 km to 1 040 km consists of mainly open grassed and treed floodplains with severe meanders at various locations. Residential properties are located at various intervals and levels along this reach. These residential properties could be described as being in low density areas.

From chainage 1 040 km to 1 070 km a reach could be described as medium to high density residential areas which include the inner city area. The general shape of the river could be described as severely meandering.

The lower reach of the Brisbane River from 1 070 km to 1 078.66 km is relatively uniform with no major bends. Industry and residential properties line the banks along with mangrove swamps close to the river outlet.

Generally the overall river bed profile could be described as irregular which is probably due to dredging. This form roughness may cause a slight increase to the expected Manning's 'n' values.

The floodplain roughnesses varied significantly along the extent of the Brisbane River. Generally, the Manning's 'n' values varied from 0.025 at the Inner Bar, 0.035 for open grassed floodplains, 0.075 for treed floodplains to 0.47 for complete flow retardation in the inner city area.

Hydrographs exported from the RAFTS model were used as direct inputs into the MIKE 11 model.

Downstream boundary conditions (tailwater) were based on available data for the Brisbane River. Continuous data from the Bureau of Meteorology was used to set tailwater levels. This allowed tidal influences to be included in the modelling however the quality of the data for the late April 1989 and the May 1996 flood events was considered to be poor and water levels had to be derived to complete each of these data sets.

Each of the floods selected for calibration purposes was simulated using the MIKE 11 model. A comparison of recorded and computed flood levels at the gauge and spot level locations is tabulated in **Appendix C - MIKE 11 Model Results - Calibration/Verification (Table C-1 - Predicted & Recorded Flood Levels for Calibration and Verification Events)**. Corresponding discharges are presented in **Table C-2 Predicted Discharges for Calibration/Verification Events.** Longitudinal profiles of peak flood levels for the calibration events are also presented in **Appendix C as Figures C-1a to C1l - Flood Calibration Profiles** and **Drawings W10581 - Sheets 01 to 09.**

6.5.2 January 1974 Flood Event

The January 1974 flood event was the largest flood that has occurred in the Brisbane River in recent times. This event was considered to be the primary calibration event because a large amount of recorded flood level information was available.

At the time of this flood Wivenhoe Dam had not been constructed and this enabled good calibration of the discharge hydrographs to be achieved.

For this calibration the Merivale Bridge was not included in the model as it was not constructed until 1975.

Due to extensive dredging in the river system it was appropriate to compare surveyed cross sections taken directly after the 1974 flood with surveyed cross sections taken in 1995. A number of cross sections were compared at various locations and although each set of the compared sections were not at an exact corresponding location, the general trend suggested that the river system had a lower bed level (up to 1.5 m). This was not expected to cause significant differences in flood levels because the additional volume due to the increase in depth would already be accounted for by the tidal prism.

Previously

The Manning's 'n' values were input at each cross section using preliminary values obtained from the site inspection. At bend locations these values were increased by a factor of 1.3 (Chow, 1973) to model the additional losses not accounted for in MIKE 11. These parameters were adjusted incrementally until a good calibration was obtained. On completion of this calibration event, generally predicted levels were within 0.1 m of continuous recorded levels and within 0.2 m recorded spot levels.

(see Section 6.10 for further discussion)

For continuous records the rise, peak and recession of the hydrographs generally provided a good match to the recorded levels. The recorded spot levels varied significantly depending on whether the level was taken on the outside or inside of a bend. The predicted levels outside the maximum allowable tolerance of 0.2 m were checked and in most cases were deemed to be likely to be due to superelevation at bends or incorrect recorded level information. This was primarily decided by looking at surrounding levels and identifying any outliers in the recorded levels.

A comparison of recorded and predicted hydrographs is given in **Appendix C (Figure C-3a to C-3d - Predicted & Recorded Hydrograph Comparison - January 1974)**.

The Manning's 'n' values adopted for this calibration were considered to be slightly higher than expected. This was considered further during other calibration events.

6.5.3 May 1996 Flood Event

This event was considered to be a small event approximately 10 percent the size of the 1974 flood. Discharge hydrographs calculated by the RAFTS model were used as inflows at each inflow boundary and recorded level information was used as the downstream water level at the downstream boundary. For this event the Merivale Bridge was included in the MIKE 11 model.

Only two continuous recorded water level records and no spot level information were available for the 1996 flood. The continuous recorded water levels were available at Moggill gauging station and the Western Inner Bar. The primary objective of the calibration for this flood was to match the recorded water level at Moggill.

The Manning's 'n' values obtained from 1974 flood calibration were used for the model run where it was found that the predicted water level at Moggill was well above the recorded water levels. The difference in water levels was so great that the Bureau of Meteorology was contacted to check if a datum shift at the Moggill gauge had been overlooked. This was not the case and further investigations revealed the difference was due to lower bend losses caused by lower flow velocities for the smaller floods.

To check that reducing the Manning's 'n' value was a reasonable assumption a MIKE 11 model of one of the Brisbane River bends was set up and a bend loss for three Manning's 'n' values were determined. The three Manning's 'n' values used were;

- 0.07- Value adopted for the 1974 flood at bend.
- 0.05 - Value adopted for the 1996 flood at bend
- 0.035 - Value expected in channel if no bend was present.

The bend loss was considered to be the change in water level from the downstream exit of the bend to the upstream entrance to the bend.

These bend losses were recorded and the following equation was used and a comparison made to check the validity of the adopted roughness values.

Using the bend loss equation:

$$h_b = C_L.V^2/2.g$$

where

$$C_L = 2.b/r$$

and

b = width of flow at bend
r = radius of bend,

the estimated bend losses were calculated for the 1996 flood and the 1974 flood.

The results are presented in **Table 6-2 - Comparison of Bend Losses**.

Table 6-2 - Comparison of Bend Losses

Flood	b (m)	r (m)	C_L	V (m/s)	Calculated h_b (m)	MIKE 11 h_b (m)
1996	250	600	0.8	1.2	0.06	0.07
1974	700	600	2.3	1.8	0.39	0.38

It can be seen from **Table 6-2** that both the coefficient C_L and the velocity increase significantly at the bend for the larger flood. Since MIKE 11 cannot account for bend losses it was therefore necessary to reduce the Manning's 'n' value for the lesser flood to achieve a good calibration.

The rise of the recorded level hydrograph at Moggill matched reasonably well with the predicted rising limb calculated by MIKE 11. The predicted peak water level is however 0.28 m above and approximately 18 hours behind the recorded water level at this location. This was the best calibration that could be obtained within MIKE 11 given the RAFTS model calculated boundaries available.

It was therefore considered that the difference between the recorded and predicted levels was due to the predicted inflows at Moggill by the RAFTS model. As the RAFTS model has matched the recorded hydrograph at Moggill (refer **Table 5-11**), it appears that the rating curve at this site is in error in this flow range.

Appendix C (Figure C4 - Predicted & Recorded Hydrograph Comparison - May 1996) illustrates the match of hydrographs achieved.

6.5.4 Late April 1989 Flood Event

Hydrographs generated by the RAFTS model were used at each inflow location and the adopted Manning's 'n' values used for the 1996 calibration event were used for the calibration of this flood. The Merivale Bridge was also included in the MIKE 11 model for this calibration.

The only available flood level data was located at the Moggill gauge and the Western Inner Bar. As shown in **Table C-1** and **Figure C-5 - Predicted & Recorded Hydrograph Comparison - Late April 1989**, the magnitude of the predicted peak flood level was 0.25 m lower than the peak recorded flood level at Moggill.

This flood event included a large component of Wivenhoe Dam outflows which is evident in **Figure B-3b**. It can be seen from this figure that the tail of the hydrograph remains constant for a period of 8 days and that the variation between the recorded and the RAFTS predicted hydrograph is significant. These variations imply that the direct inflow from Wivenhoe Dam input into the RAFTS model does not represent discharges from the dam. The discrepancy in predicted water level determined in MIKE 11 could probably be explained by the predicted discharge hydrograph calculated by the RAFTS model which is heavily influenced by Wivenhoe Dam flows.

6.5.5 June 1983 Flood Event

The Manning's 'n' values adopted for the smaller flood events was again used to calibrate the 1983 flood. Wivenhoe Dam had been constructed and the Merivale Bridge was also included in the model.

Table C-1 and Figure C-6 - Predicted & Recorded Hydrograph Comparison show a good match between MIKE 11 peak predicted levels and levels recorded by the gauge at Moggill. The only recorded level information for this event was located at Moggill and the Western Inner Bar.

The comparison of predicted and recorded hydrographs illustrates that the rising limb of the water level hydrograph matches well with the MIKE 11 predicted rising limb. The peaks occur at virtually the same time and match to within 0.01 m. The recession of the predicted level hydrograph is however well above the recorded levels and this again questions the sensitivity of the Wivenhoe outflow gauging station to dam water levels and release strategies.

6.6 MIKE 11 Model Verification

6.6.1 General

Verification of the hydraulic model was the next phase in the modelling process after calibration. The model was tested by simulating other recorded flood events which were not used to calibrate the model without adjusting model specific parameters. This was done to determine the overall performance and robustness of the model in simulating a range of flood events.

The Brisbane River hydraulic model was verified using the hydraulic parameters derived from the calibration process to simulate the following events;

- February 1931
- March 1955
- 01 April 1989
- 04 July 1973.

The 1989 and 1973 events were considered to be small events and the Manning's 'n' values adopted for the calibration of the small events were used for the verification.

The model verification for the 1931 and 1955 flood events was carried out using the calibrated parameters used for the 1974 flood event. These parameters were considered to be the most appropriate as flood waters would be well out of the river proper similar to the 1974 event. It was therefore assumed that bend losses and Manning's n roughnesses would also be similar.

All existing structures detailed in **Table 6-1 - List of Hydraulic Structures** were included in the hydraulic model for the 1989 flood verification event however the Merivale Bridge was removed for the 1973 verification event.

The absence of some structures during the 1931 and 1955 flood events required that the MIKE 11 model be modified. The only structure that was constructed for the 1931 event was the William Jolly Bridge and for the 1955 flood event the in place structures were Indooroopilly Bridge, William Jolly Bridge, Victoria Bridge and the Story Bridge. The MIKE 11 model was adjusted accordingly for each event to account for the absence of the relevant structures.

Model boundaries at Brisbane River for the verification events consisted of RAFTS discharge hydrographs for model inflows and recorded water levels for the tailwater level at the Western Inner Bar.

Recorded and predicted verification flood levels at various locations are tabulated in **Appendix C - MIKE 11 Model Results - Calibration/Verification**. Longitudinal flood level profiles are also included as **Sheets C.10 to C.18**. A comparison of recorded and computed flood levels at the gauge and spot level locations is tabulated in **Appendix C - MIKE 11 Model Results - Calibration/Verification (Table C-1 - Predicted & Recorded Flood Levels for Calibration and Verification Events)**. Corresponding discharges are presented in **Table C-2 - Predicted Discharges for Calibration/Verification Events**. Longitudinal profiles for the Verification Events are also presented in **Appendix C as Figures C-2a to C-2l - Flood Verification Profiles** and **Drawings W10581 - Sheets 10 to 18.**

6.6.2 February 1931

The February 1931 flood was the second largest recorded flood event used for any of the verification or calibration events.

Calculated hydrographs for this event from the RAFTS model were input into the MIKE 11 model and predicted water levels were computed. The adopted tailwater level at the Western Inner Bar for this event was 1.5 m AHD which was considered to be reasonable. This tailwater level assumes a 2 year ARI storm surge in Moreton Bay (Mallon TD, 1987). Using this tailwater level the predicted water levels are generally within 150 mm which was considered to be a good result given the age of the basic data.

Predicted water levels above the Indooroopilly Bridge are generally within 300 mm below the recorded flood levels however the reliability of these recorded levels are in question due to annotations on recorded flood level maps. These annotations indicate that some form of extrapolation may have been carried out and hence the reliability of this information is questionable.

Time series level data was not available for this event and therefore a hydrograph comparison could not be conducted however **Table C-1 - Predicted & Recorded Flood Levels for Calibration and Verification Events** presents a comparison between recorded peak flood levels and predicted values.

6.6.3 March 1955

The March 1955 flood was the third largest recorded flood event used for the verification or calibration events in this study.

Calculated hydrographs for this event from the RAFTS model were input into the MIKE 11 model and predicted water levels were computed. The adopted tailwater level at the Western Inner Bar for this event was 1.3 m AHD which was considered to be reasonable as this level was below the 1 year ARI storm surge level for Moreton Bay (Mallon TD, 1987). Using this tailwater level the predicted water levels are generally within 150 mm which was considered to be a good result.

Flood Profiles for the 1955 event are presented in **Appendix C (Figures C-7a to C-7b - Predicted & Recorded Hydrograph comparison - March 1955).**

6.6.4 Early April 1989

The April 1989 flood was the smallest flood used for any of the verification or calibration events.

Calculated hydrographs for this event using the RAFTS model were input to the MIKE 11 model. Computed water levels are summarised in **Table C-1** and indicate a poor level of model performance. Predicted levels were 0.97 m above the recorded level at Moggill. This difference can be attributed to the over estimation of the discharge hydrograph (see **Figure B-8C**) determined by RAFTS at Moggill. This is again probably due to the use of the Wivenhoe Dam recorded outflow as input to the RAFTS model. A comparison between recorded and predicted hydrographs is presented in **Figure C-8 - Predicted and Recorded Hydrograph Comparison - Early April 1989.**

6.6.5 July 1973

The July 1973 event was again classed in the small flood category however a reasonable amount of flood level information was available for the event.

Figure C-9 - Predicted & Recorded Hydrograph Comparison and **Table C-1** illustrates that a level of model performance similar to the calibration process was achieved with this event. Recorded flood levels were matched to within the tolerances specified except for two locations where the maximum difference between recorded and predicted was +0.16 m at Cairncross Dock and 0.2 m at the Port Office Gauge.

6.7 Hydrologic and Hydraulic Model Consistency

Due to the absence of stream gauging data on the Brisbane River, direct comparisons between historical hydrographs and calculated RAFTS and MIKE 11 hydrographs could not be made. To ensure consistency between the hydrologic and hydraulic models direct comparisons of the calculated hydrographs from each model were made at three locations along the creek, these being Moggill, Centenary Bridge and the Port Office.

These comparisons are illustrated in the following figures:

- **Figure 6-3 - Hydrologic and Hydraulic Model Consistency - January 1974**
- **Figure 6-4 - Hydrologic and Hydraulic Model Consistency - June 1983**
- **Figure 6-5 - Hydrologic and Hydraulic Model Consistency - Late April 1989**
- **Figure 6-6 - Hydrologic and Hydraulic Model Consistency - May 1996**

- Figure 6-7 - Hydrologic and Hydraulic Model Consistency - February 1931
- Figure 6-8 - Hydrologic and Hydraulic Model Consistency - March 1955
- Figure 6-9 - Hydrologic and Hydraulic Model Consistency - July 1973
- Figure 6-10 - Hydrologic and Hydraulic Model Consistency - Early April 1989.

Figures 6-3 to **6-10** represent the calculated hydrographs from both models at the three locations along Brisbane River.

Figures 6-3 to **6-10** illustrate that a general consistency between the models has been attained. The variation in peak discharges is generally within ±10% and the timing of the peak is reasonably accurate.

6.8 HEC-RAS Check of Major River Crossings

A total of seven HEC-RAS models were set up for the major structures in the Brisbane River Study area. The location of these structures are listed in **Table 6-1 - List of Hydraulic Structures**.

Each of these HEC-RAS models provide an accurate estimate of headloss through the structure and includes factors such as pier shape and geometry. These models were used to check the MIKE 11 approach to modelling structures, using the following methodology. Each of these HEC-RAS models provide an accurate estimate of headloss through the structure and includes factors such as pier shape and geometry. These models were used to check the MIKE 11 approach to modelling structures, using the following methodology:

- The MIKE 11 model was run for two of the calibration events. Water levels upstream and downstream of the structure and flow discharges were output at the peak of the hydrograph.

- The HEC-RAS model was run using these flow and tailwater conditions. The water levels upstream of the bridge estimated by HEC-RAS were compared against MIKE 11 predictions to check if there was a reasonable match between predicted affluxes.

The results of the HEC-RAS structure afflux check are given in **Table 6-3 - HEC-RAS Check of MIKE 11 on Headloss through Major Structures.** These results illustrates that all of the model comparisons achieved a match to within ±0.12 m.

Table 6-3 - HEC-RAS Check of MIKE 11 on Headloss Through Major Structures

Structure ID	1974 Afflux			1983 Afflux		
Bridge	Mike 11	HEC-RAS	Difference (m)	Mike 11	HEC-RAS	Difference (m)
Centenary	0.15	0.06	-0.07	0.05	0.01	-0.04
Indooroopilly	0.10	0.10	-0.00	0.01	0.02	+0.01
Merivale	-	-	-	0.03	0.01	+0.02
William Jolly	0.54	0.61	+0.07	0.01	0.07	+0.06
Victoria	0.19	0.07	+0.12	0.01	0.02	0.01
Captain Cook	0.08	0.10	+0.02	0.01	0.01	+0.00
Story	0.11	0.04	-0.07	0.03	0.00	-0.03

This match was considered reasonable given the significant differences in the analytical techniques used by MIKE 11 and HEC-RAS. The major model differences that contribute to the variation in headloss through the structures are:

- An irregular waterway shape can be specified in MIKE 11 which is useful in modelling bridges spanning natural creeks. By comparison, HEC-RAS simplifies the waterway shape as a trapezoid which will introduce a water level difference at flows below the bridge deck.

- Both models assume critical conditions over the bridge deck. However there are considerable differences between the methods employed to determine energy head loss in critical flow. HEC-RAS adopts a standard broad crested weir relationship using an effective weir length (ie assumes MIKE 11 rectangular flow area). MIKE 11 uses the critical flow area over the roadway (ie assumes a variable flow area). The MIKE 11 methodology is considered to be a better technique, especially for overtopping of roads that have a complicated longitudinal profile.

The performance of the MIKE 11 model to match recorded flood levels (where available) in the vicinity of structures and the consistency of MIKE 11 and HEC-RAS results indicates that the MIKE 11 model is adequately reproducing structure hydraulics.

6.9 MIKE 11 Model Performance

Performance of the hydraulic model over the range of calibration events is considered to be reasonable. The brief specified acceptable calibration as matching predicted levels to recorded levels to within the following ranges:

- Continuous records, 0.10 m

- MHI records, 0.15 m

- Other flood levels, 0.20 m.

A summary of the performance of the MIKE 11 model is given in **Table 6-4 - Hydraulic Model Performance Summary** as mean absolute water level differences over the selected calibrated and verification floods. Considering the contents of **Table 6-4** the model generally meets accuracy requirements. Some non-conformances are evident and these were discussed in Section 6.5. These results were achieved on the basis of:

- Maintaining realistic channel roughness and variation of roughness along the length of the river. These roughness factors are representative of the current creek configuration, however an adjustment had to be made to reduce the roughness values for smaller flood events, due to reduced bend losses.

- The verification events for the 1931 and 1955 flood events generally showed good correlation with recorded flood levels given the changes to the river system over time (ie. dredging).

- Satisfactory checks were performed on the hydraulics of the major structures as described in Sections 6.8.

#Table 6-5 – Superelevation Calculations# lists the parameters used for the three locations where superelevations were predicted.

#Table 6-5 – Superelevation Calculations#

Location	Cross section No	Mike 11 (Km)	AMTD (Km)	Vmax (m/s)	rc (m)	b (m)	Δh (mm)
Darra Wharf	1280	1031.7	46.96	3.28	410	190	± 270
Indooroopilly Bridge	1140	1037.09	41.57	2.68	400	170	± 170
Newstead Park	320	1063.31	15.35	2.18	580	380	± 170

From #Table 6-5#, it can be seen that the bend situated at Darra Wharf has an estimated Δh of ± 270 mm. This assumes that from the centre of the river to the outside of the bend the water level increases by 270 mm. Similarly from the centre of the river to the inside of the bend the water level reduces by 270 mm. Therefore the total change in water level from the inside of the bend to the outside of the bend at Darra Wharf was estimated to be 540 mm.

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Recorded water levels and superelevations at these locations have been summarised in #Table 6-6 – Superelevation Comparison# and compared to the predicted water levels, estimated by ~~MIKE 11~~ the (superelevations ~~applied)~~ and superelevations calculations.

Table 6-6 – Superelevation Comparison

Location	Cross section No	MIKE 11 (Km)	AMTD (Km)	Recorded Inside (M AHD)	Recorded Outside (M AHD)	Δh total (mm)	Predicted Inside	Predicted Outside Δh	Total (mm)
Darra Wharf	1280	1031.7	46.96	13.36	13.79	~~900~~ 430	~~13.66~~ 13.14	13.68	540
Indooroopilly	1140	1037.09	41.57	11.20	11.84	640	11.09	11.43	340
Newstead Park	320	1063.31	15.35	2.60	3.3	900	2.79	3.13	340

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Table 6-4 - Hydraulic Model Performance Summary

Gauge ID	MIKE 11 Chainage (km)	Water Level Difference (m)								Mean Absolute Difference (m)
		Calibration Events				Verification Events				
		1974	1996	1989b	1983	1931	1955	1989a	1973	
Moggill	1006.30	-0.04	0.28	-0.25	0.01	-	-	0.97	0.02	0.26
Goodna Hos	1014.61	-0.02	-	-	-	-	-	-	-0.03	0.03
Mt Ommaney	1026.68	0.00	-	-	-	-	-	-		0.00
Darra Wharf	1031.70	-0.10	-	-	-	-	-	-	-0.06	0.08
Sherwood	1034.89	-0.12	-	-	-	-	-	-	-	0.12
Clarence Rd	1037.29	-0.09	-	-	-	-	-	-	-	0.09
Oxley Ck	1039.57	0.10	-	-	-	-	-	-	-	0.10
King Arthur Tce	1040.09	-0.01	-	-	-	-	-	-	-	0.01
Tennyson PH	1041.46	-0.04	-	-	-	-	-	-	0.04	0.04
Yeronga St	1042.52	-0.11	-	-	-	-	-	-	-	0.11
Sandy Ck	1044.06	0.05	-	-	-	-	-	-	-	0.05
Dutton Pk Cemetery	1046.34	-0.45	-	-	-	-	-	-	-	0.45
Highgate Hill	1047.92	-0.10	-	-	-	-	-	-	-	0.10
St Lucia Ferry	1048.89	-0.01	-	-	-	-	-	-	0.14	0.08
Montague Rd	1053.90	-0.34	-	-	-	-	-	-	-	0.34
Port Office	1055.96	-0.04	-	-	-	-	-	-	0.23	0.14
Cresent Rd	1063.65	0.06	-	-	-	-	-	-	-0.06	0.06
Cairncross Dock	1065.99	0.03	-	-	-	-	-	-	0.16	0.10
Bulimba PH	1069.54	0.00	-	-	-	-	-	-	-	0.00
Western Inner Bar	1078.66	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00

Section 6.10 Superelevation Calculations.

Super elevation calculations were performed at three (3) locations to provide an indicative estimate of the magnitude of super elevations at bends. These calculations were performed using:

$$\Delta h = \frac{V_{max}^2}{g}\left[\frac{20 r_c}{3b} - \frac{16 r_c^3}{b^3} + \left(\frac{4 r_c^2}{b^2} - 1\right)^2 \ln\left\{\frac{2r_c + b}{2r_c - b}\right\}\right]$$

where Δh = change in water level (m)

V_{max}^2 = Maximum velocity at bend (m/s)

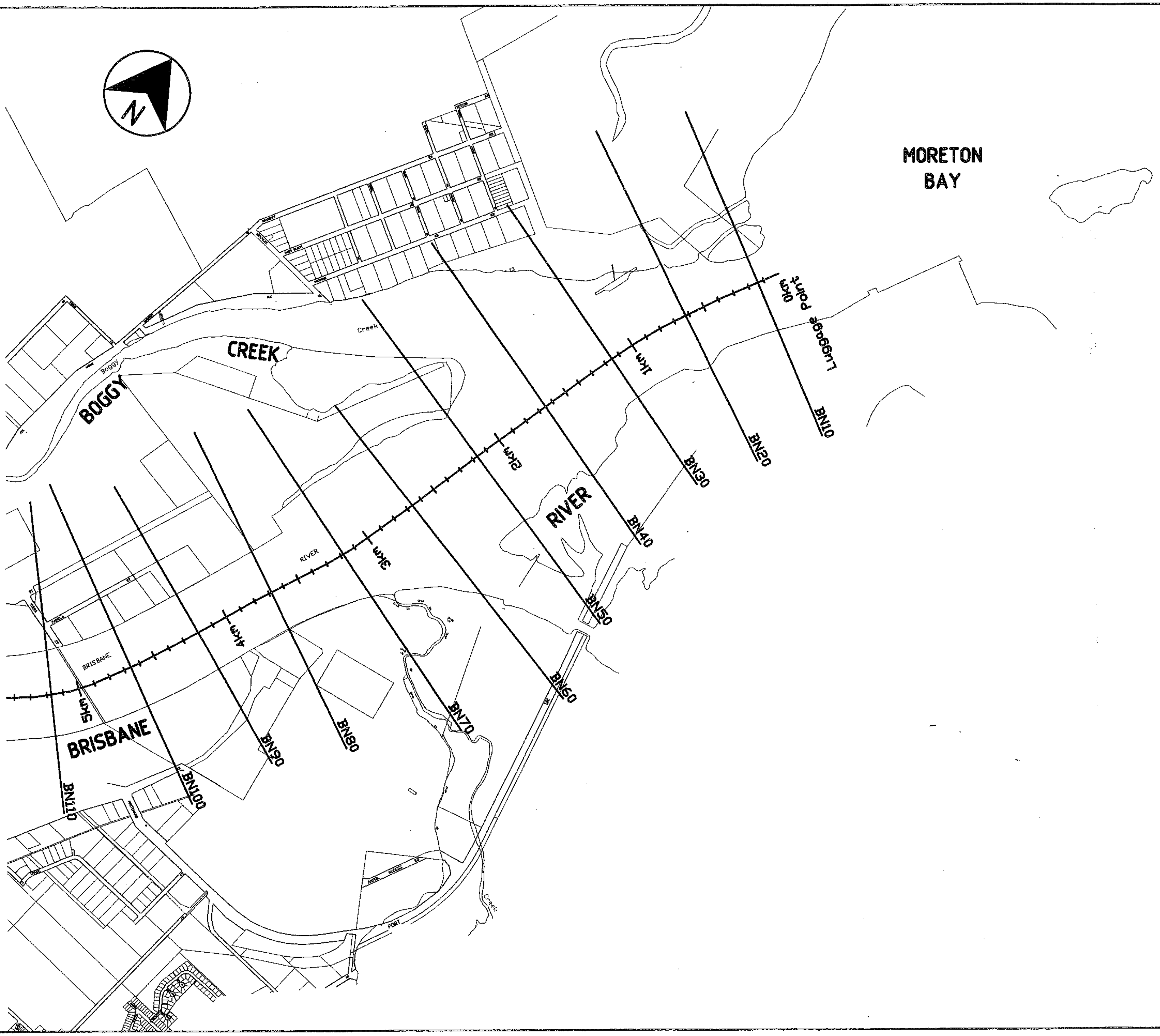
g = gravity (9.81 m/s²)

b = width of river (m) (assumed to be the distance between the cadastral boundaries defined for the river corridor)

From #Table 6-5# it can be seen that at Darra Wharf the superelevation calculations over predict the total change in water level by approxmatley 20%. Upstream of Indooroopilly Bridge the superelevation calculations under predict the total change in water level by 50% and similarly at Newstead Park by 60%.

These calculations indicate that superelevations at bends in the Brisbane River would ~~most~~ ~~likely~~ be significant however the magnitude of these superelevations predicted by the calculations do not show good correlation to recorded levels on the inside and outside of the investigated bends. These descrepencies are most likely due to the assumed ~~rive~~ width of the river (ie b). which could effect the calculated superelevation. Since this exercise was to show that superelevations of significant magnitude could occur along the Brisbane River, it was considered to be unneccessary to conduct furthure analysis. (ie matching super elevations)

FIGURE 6.1a
BRISBANE RIVER FLOOD STUDY
MIKE 11 MODEL STRUCTURE



CROSS SECTION NUMBER	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 10	1078.525	0.135
BN 20	1078.040	0.620
BN 30	1077.510	1.150
BN 40	1077.010	1.650
BN 50	1076.495	2.165
BN 60	1076.000	2.660
BN 70	1075.480	3.180
BN 80	1074.985	3.675
BN 90	1074.460	4.200
BN 100	1074.000	4.660

LEGEND

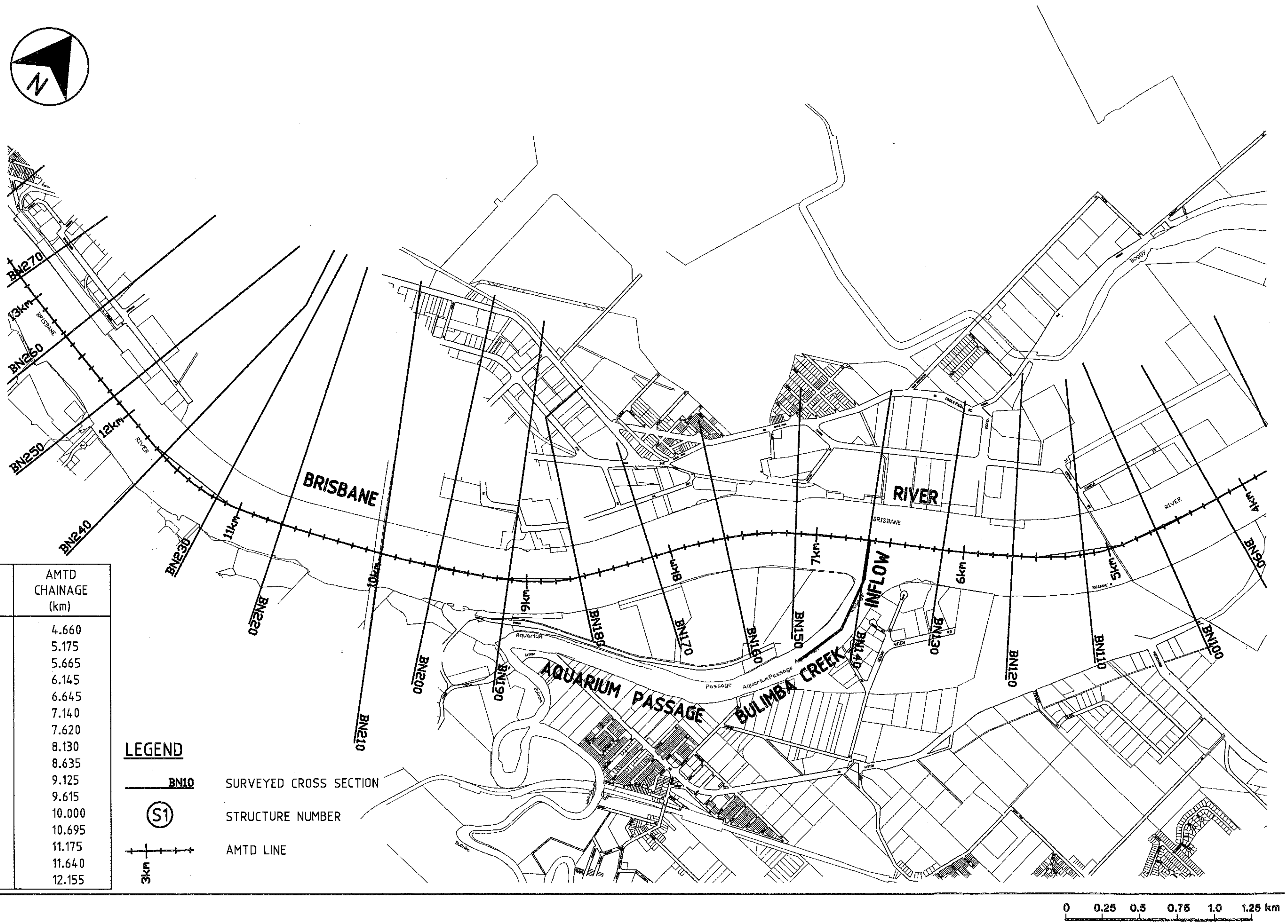
BN10 — SURVEYED CROSS SECTION
(S1) — STRUCTURE NUMBER
3km — AMTD LINE

0 0.25 0.5 0.75 1.0 1.25 km

FILE NAME: MK11SHT1 DISK Nº: D:\DWG\BRISBANE JOB Nº: T004157 DATE: 14/3/97
PLOT SCALE: 1=25

SINCLAIR KNIGHT MERZ

FIGURE 6.1b
BRISBANE RIVER FLOOD STUDY
MIKE 11 MODEL STRUCTURE

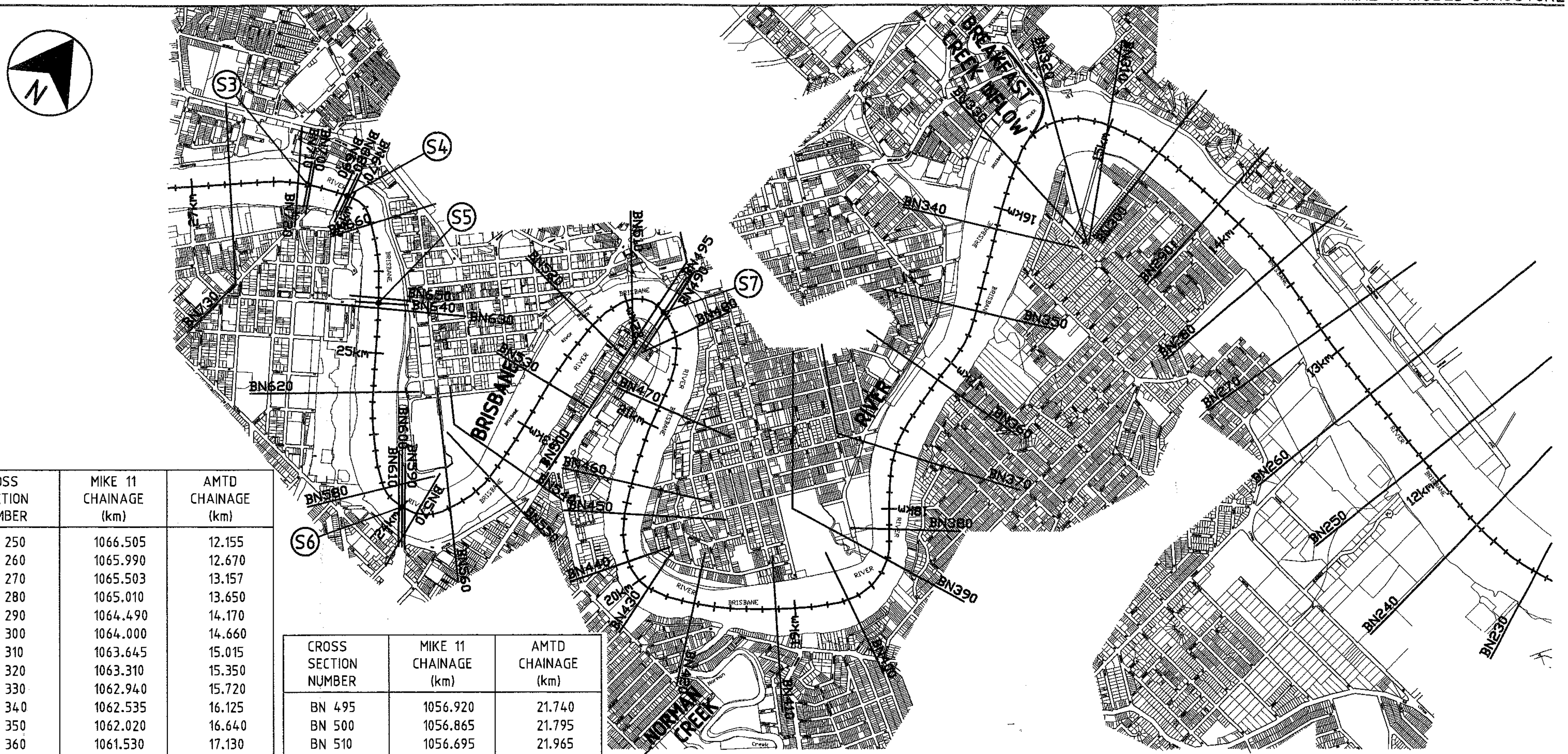


CROSS SECTION NUMBER	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 100	1074.000	4.660
BN 110	1073.485	5.175
BN 120	1072.995	5.665
BN 130	1072.515	6.145
BN 140	1072.015	6.645
BN 150	1071.520	7.140
BN 160	1071.040	7.620
BN 170	1070.530	8.130
BN 180	1070.025	8.635
BN 190	1069.535	9.125
BN 200	1069.045	9.615
BN 210	1068.660	10.000
BN 220	1067.965	10.695
BN 230	1067.485	11.175
BN 240	1067.020	11.640
BN 250	1066.505	12.155

FILE NAME: MK1SHT2 PLOT SCALE: 1=25 DISK N°: D:\DWG\BRISBANE JOB N°: T004157 DATE: 14/3/97

SINCLAIR KNIGHT MERZ

FIGURE 6.1c
BRISBANE RIVER FLOOD STUDY
MIKE 11 MODEL STRUCTURE



CROSS SECTION NUMBER	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 250	1066.505	12.155
BN 260	1065.990	12.670
BN 270	1065.503	13.157
BN 280	1065.010	13.650
BN 290	1064.490	14.170
BN 300	1064.000	14.660
BN 310	1063.645	15.015
BN 320	1063.310	15.350
BN 330	1062.940	15.720
BN 340	1062.535	16.125
BN 350	1062.020	16.640
BN 360	1061.530	17.130
BN 370	1061.015	17.645
BN 380	1060.535	18.125
BN 390	1060.345	18.315
BN 400	1059.990	18.670
BN 410	1059.540	19.120
BN 420	1059.035	19.625
BN 430	1058.735	19.925
BN 440	1058.530	20.130
BN 450	1058.230	20.430
BN 460	1058.040	20.620
BN 470	1057.530	21.130
BN 480	1057.090	21.570
BN 490	1056.950	21.710

CROSS SECTION NUMBER	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 495	1056.920	21.740
BN 500	1056.865	21.795
BN 510	1056.695	21.965
BN 520	1056.400	22.260
BN 530	1055.960	22.700
BN 540	1055.420	23.240
BN 550	1055.280	23.380
BN 560	1054.970	23.690
BN 570	1054.760	23.900
BN 580	1054.490	24.170
BN 590	1054.680	23.980
BN 600	1054.660	24.000
BN 610	1054.640	24.020
BN 620	1053.900	24.760
BN 630	1053.385	25.275
BN 640	1053.355	25.305

CROSS SECTION NUMBER	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 650	1053.320	25.340
BN 660	1052.865	25.795
BN 670	1052.640	26.020
BN 680	1052.625	26.035
BN 690	1052.595	26.065
BN 700	1052.390	26.270
BN 710	1052.370	26.290
BN 720	1052.310	26.350
BN 730	1051.895	26.765

TABLE OF STRUCTURES

STRUCTURE NUMBER	CROSS SECTION NUMBER	STRUCTURE LABEL
S3	BN 710	MERIVALE BRIDGE
S4	BN 680	WILLIAM JOLLY BRIDGE
S5	BN 640	VICTORIA BRIDGE
S6	BN 600	CAPTAIN COOK BRIDGE
S7	BN 495	STOREY BRIDGE

LEGEND

Symbol	Meaning
BN10 (line)	SURVEYED CROSS SECTION
(S1)	STRUCTURE NUMBER
3km (ticked line)	AMTD LINE

0 0.25 0.5 0.75 1.0 1.25 km

PLOT SCALE: 1=25

SINCLAIR KNIGHT MERZ

FIGURE 6.1d
BRISBANE RIVER FLOOD STUDY
MIKE 11 MODEL STRUCTURE

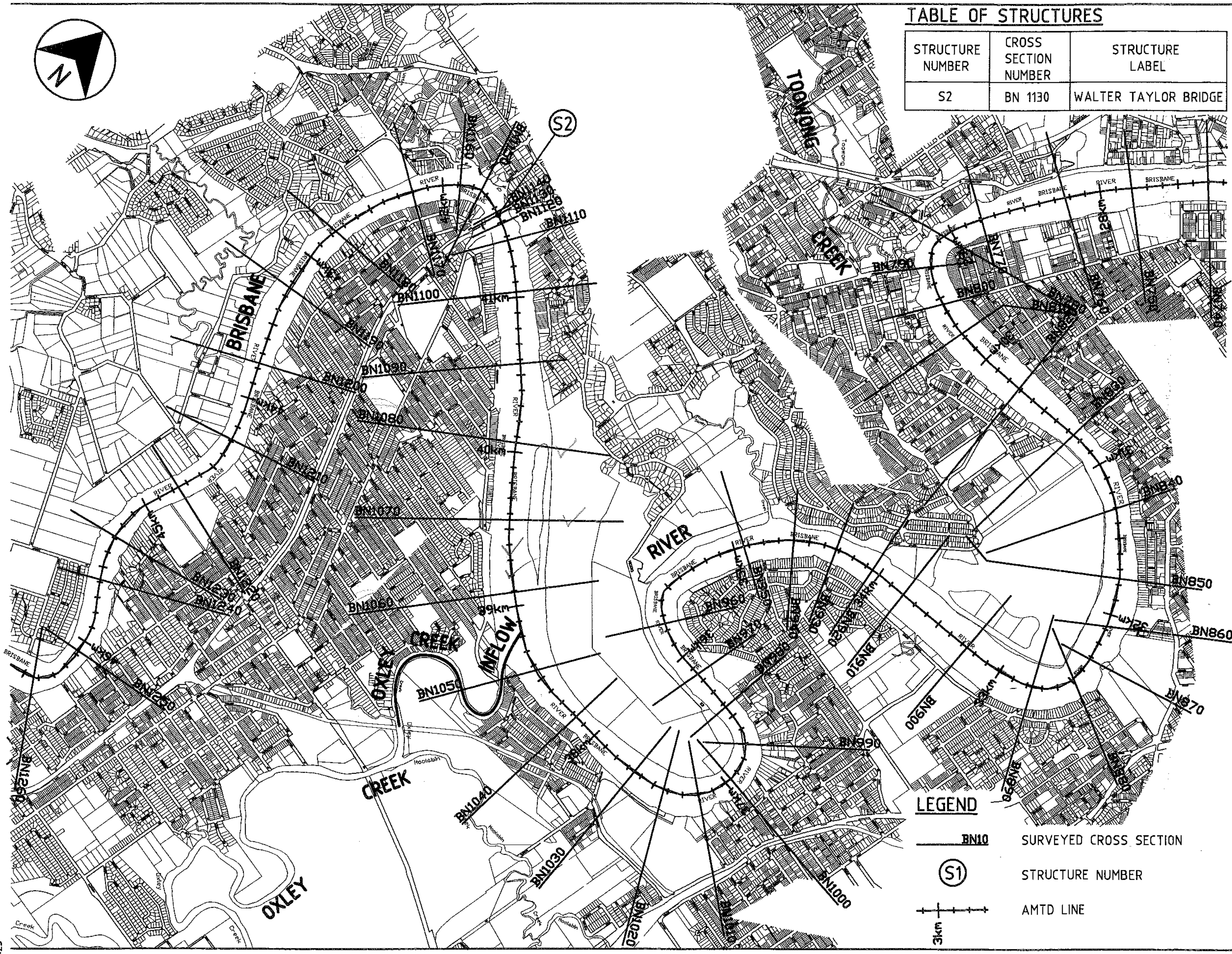


TABLE OF STRUCTURES

STRUCTURE NUMBER	CROSS SECTION NUMBER	STRUCTURE LABEL
S2	BN 1130	WALTER TAYLOR BRIDGE

CROSS SECTION NUMBER	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 740	1051.360	27.300
BN 750	1050.860	27.800
BN 760	1050.430	28.230
BN 770	1049.870	28.790
BN 780	1049.590	29.070
BN 790	1049.370	29.290
BN 800	1049.120	29.540
BN 810	1048.890	29.770
BN 820	1048.375	30.285
BN 830	1047.915	30.745
BN 840	1047.350	31.310
BN 850	1046.900	31.760
BN 860	1046.580	32.080
BN 870	1046.340	32.320
BN 880	1046.180	32.480
BN 890	1045.885	32.775
BN 900	1045.400	33.260
BN 910	1044.860	33.800
BN 920	1044.605	34.055
BN 930	1044.340	34.320
BN 940	1044.060	34.600
BN 950	1043.725	34.935
BN 960	1042.910	35.750
BN 970	1042.515	36.145
BN 980	1042.235	36.425
BN 990	1041.960	36.700
BN 1000	1041.700	36.960
BN 1010	1041.460	37.200
BN 1020	1041.230	37.430
BN 1030	1041.010	37.650
BN 1040	1040.490	38.170
BN 1050	1040.090	38.570
BN 1060	1039.565	39.095
BN 1070	1039.100	39.560
BN 1080	1038.600	40.060
BN 1090	1038.085	40.575
BN 1100	1037.625	41.035
BN 1110	1037.285	41.375
BN 1120	1037.175	41.485
BN 1130	1037.110	41.550
BN 1140	1037.090	41.570
BN 1150	1036.915	41.745
BN 1160	1036.770	41.890
BN 1170	1036.460	42.200
BN 1180	1035.900	42.760
BN 1190	1035.414	43.246
BN 1200	1034.890	43.770
BN 1210	1034.370	44.290
BN 1220	1033.900	44.760
BN 1230	1033.370	45.290
BN 1240	1033.080	45.580
BN 1250	1032.585	46.075
BN 1260	1032.230	46.430

0 0.25 0.5 0.75 1.0 1.25 km

PLOT SCALE: 1=25

FIGURE 6.1e
BRISBANE RIVER FLOOD STUDY
MIKE 11 MODEL STRUCTURE

CROSS SECTION NUMBER	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 1260	1032.230	46.430
BN 1270	1031.995	46.665
BN 1280	1031.700	46.960
BN 1290	1031.260	47.400
BN 1300	1030.870	47.790
BN 1310	1030.220	48.440
BN 1320	1029.680	48.980
BN 1330	1029.200	49.460
BN 1340	1028.760	49.900
BN 1350	1028.720	49.940
BN 1360	1028.680	49.980
BN 1370	1028.180	50.480
BN 1380	1027.680	50.980
BN 1390	1027.160	51.500
BN 1400	1026.900	51.760
BN 1410	1026.680	51.980
BN 1420	1026.170	52.490
BN 1430	1025.590	53.070
BN 1440	1025.360	53.300
BN 1450	1025.070	53.590
BN 1460	1024.563	54.097
BN 1470	1024.080	54.580
BN 1480	1023.570	55.090
BN 1490	1023.040	55.620
BN 1500	1022.575	56.085
BN 1510	1022.105	56.555
BN 1520	1021.895	56.765
BN 1530	1021.715	56.945
BN 1540	1021.539	57.121
BN 1550	1021.095	57.565
BN 1560	1020.830	57.830
BN 1570	1020.525	58.135
BN 1580	1020.115	58.545
BN 1590	1019.865	58.795
BN 1600	1019.490	59.170

TABLE OF STRUCTURES

STRUCTURE NUMBER	CROSS SECTION NUMBER	STRUCTURE LABEL
S1	BN 1350	CENTENARY BRIDGE

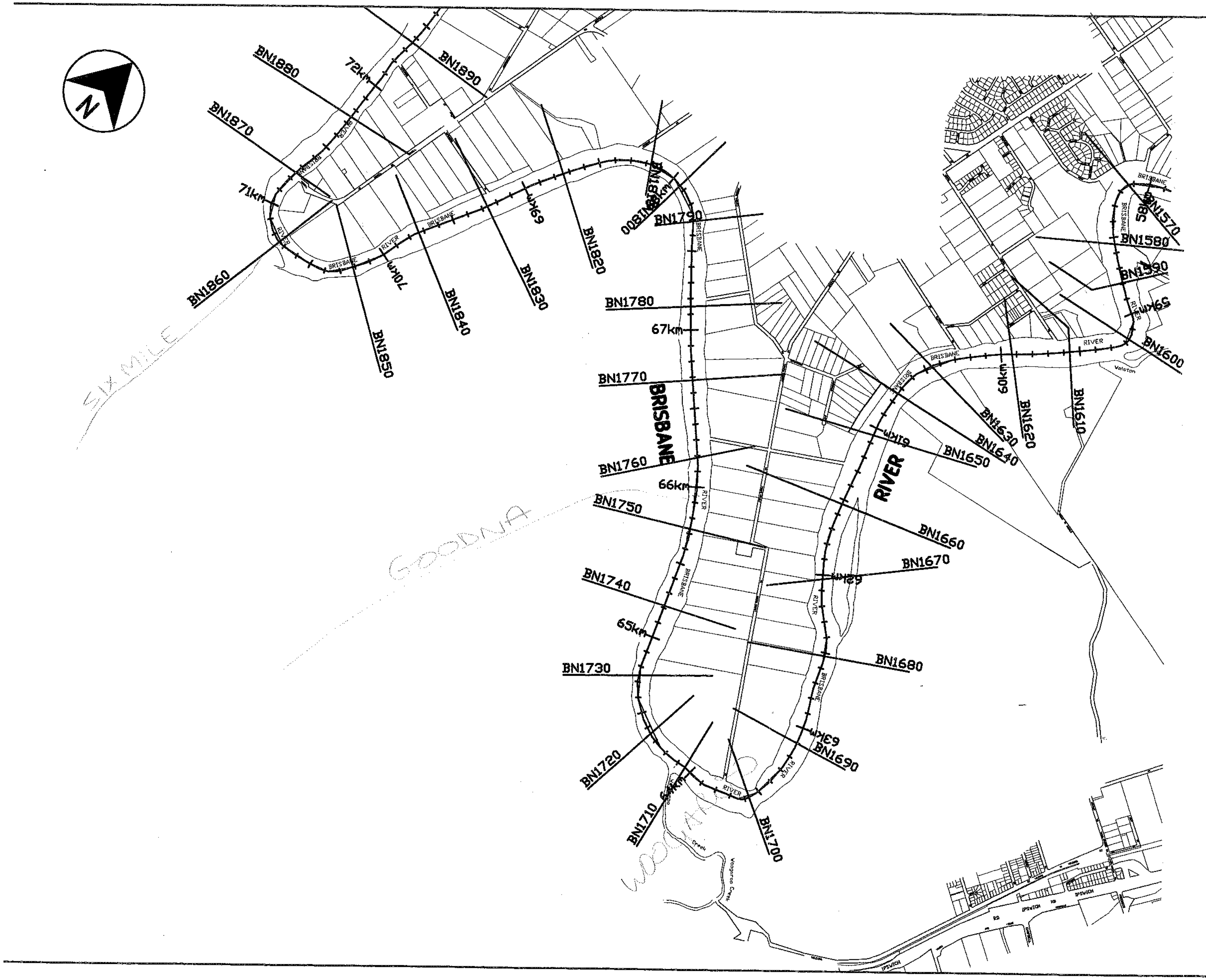
LEGEND

- BN10 — SURVEYED CROSS SECTION
- (S1) — STRUCTURE NUMBER
- 3km — AMTD LINE

0 0.25 0.5 0.75 1.0 1.25 km

FILE NAME: MK1SH15
PLOT SCALE: 1:25
DISK N°: D:\DWG\BRISBANE N°: T004157
DATE: 14/3/97

FIGURE 6.1f
BRISBANE RIVER FLOOD STUDY
MIKE 11 MODEL STRUCTURE



CROSS SECTION NUMBER	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 1600	1019.490	59.170
BN 1610	1019.095	59.565
BN 1620	1018.725	59.935
BN 1630	1018.200	60.460
BN 1640	1017.920	60.740
BN 1650	1017.610	61.050
BN 1660	1017.130	61.530
BN 1670	1016.640	62.020
BN 1680	1016.140	62.520
BN 1690	1015.560	63.100
BN 1700	1015.090	63.570
BN 1710	1014.610	64.050
BN 1720	1014.310	64.350
BN 1730	1013.910	64.750
BN 1740	1013.445	65.215
BN 1750	1012.935	65.725
BN 1760	1012.475	66.185
BN 1770	1011.980	66.680
BN 1780	1011.510	67.150
BN 1790	1010.980	67.680
BN 1800	1010.725	67.935
BN 1810	1010.490	68.170
BN 1820	1009.720	68.940
BN 1830	1009.400	69.260
BN 1840	1008.925	69.735
BN 1850	1008.445	70.215
BN 1860	1007.920	70.740
BN 1870	1007.410	71.250
BN 1880	1006.910	71.750

LEGEND

- BN10 — SURVEYED CROSS SECTION
- (S1) — STRUCTURE NUMBER
- 3km — AMTD LINE

0 0.25 0.5 0.75 1.0 1.25 km

FIL... PLOT SCALE: 1=25

FIGURE 6.2

BRISBANE RIVER FLOOD STUDY
MANNINGS HYDRAULIC MODEL CHANNEL ROUGHNESS
AND RELATIVE RESISTANCE VALUES

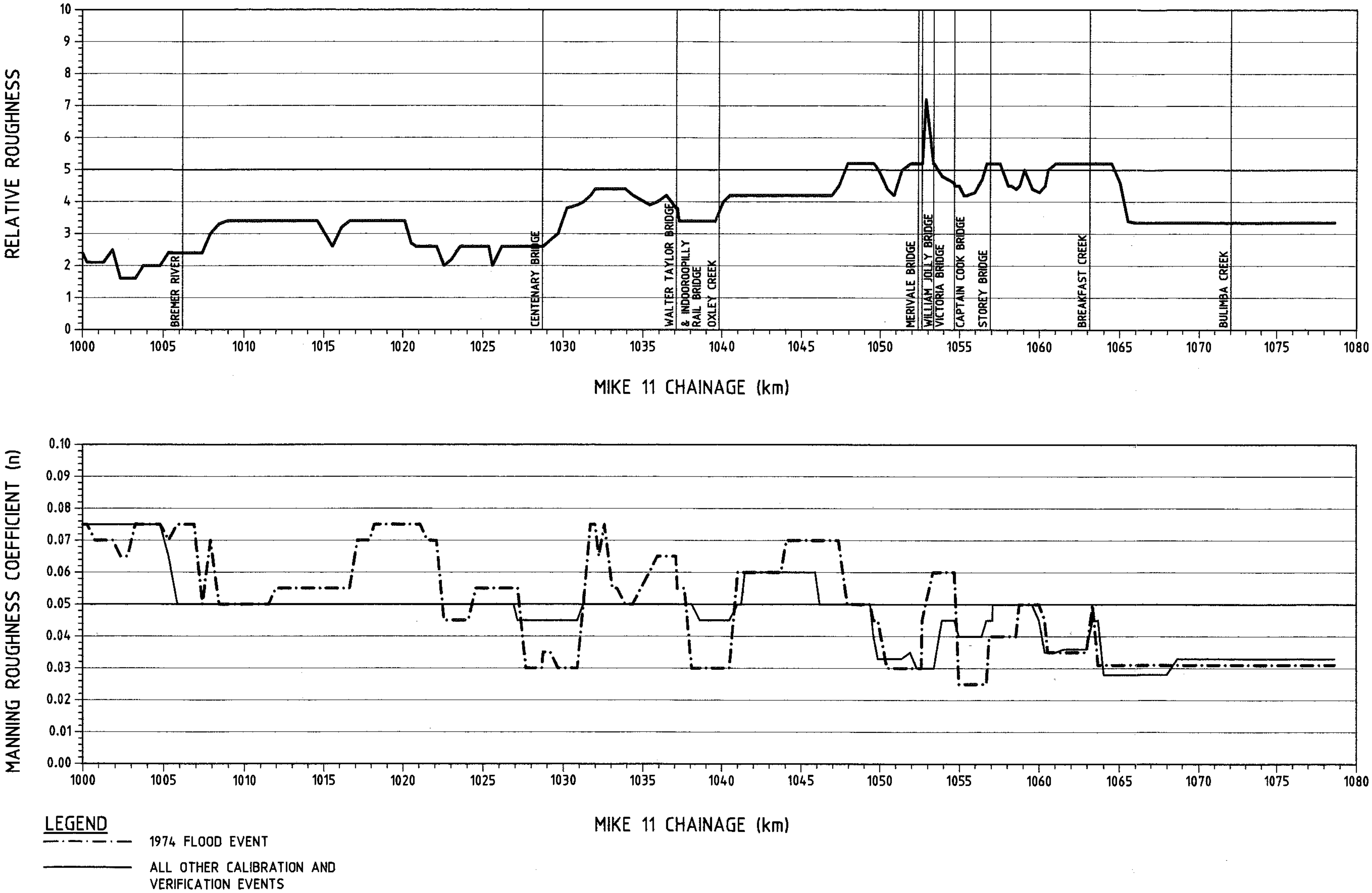
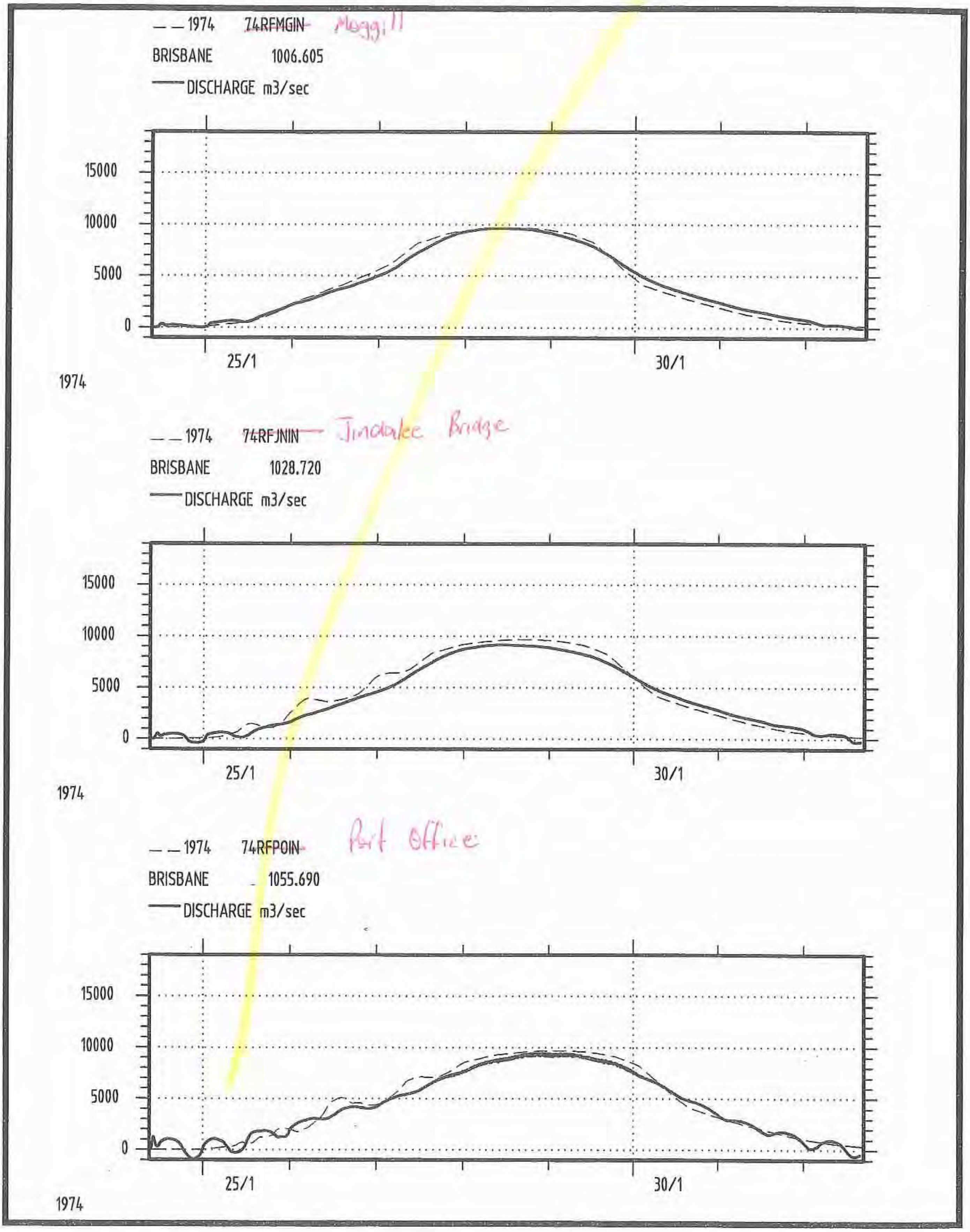


FIGURE 6-3

BRISBANE RIVER FLOOD STUDY
HYDROLOGIC AND HYDRAULIC MODEL CONSISTENCY
- JANUARY 1974

SINCLAIR KNIGHT MERZ



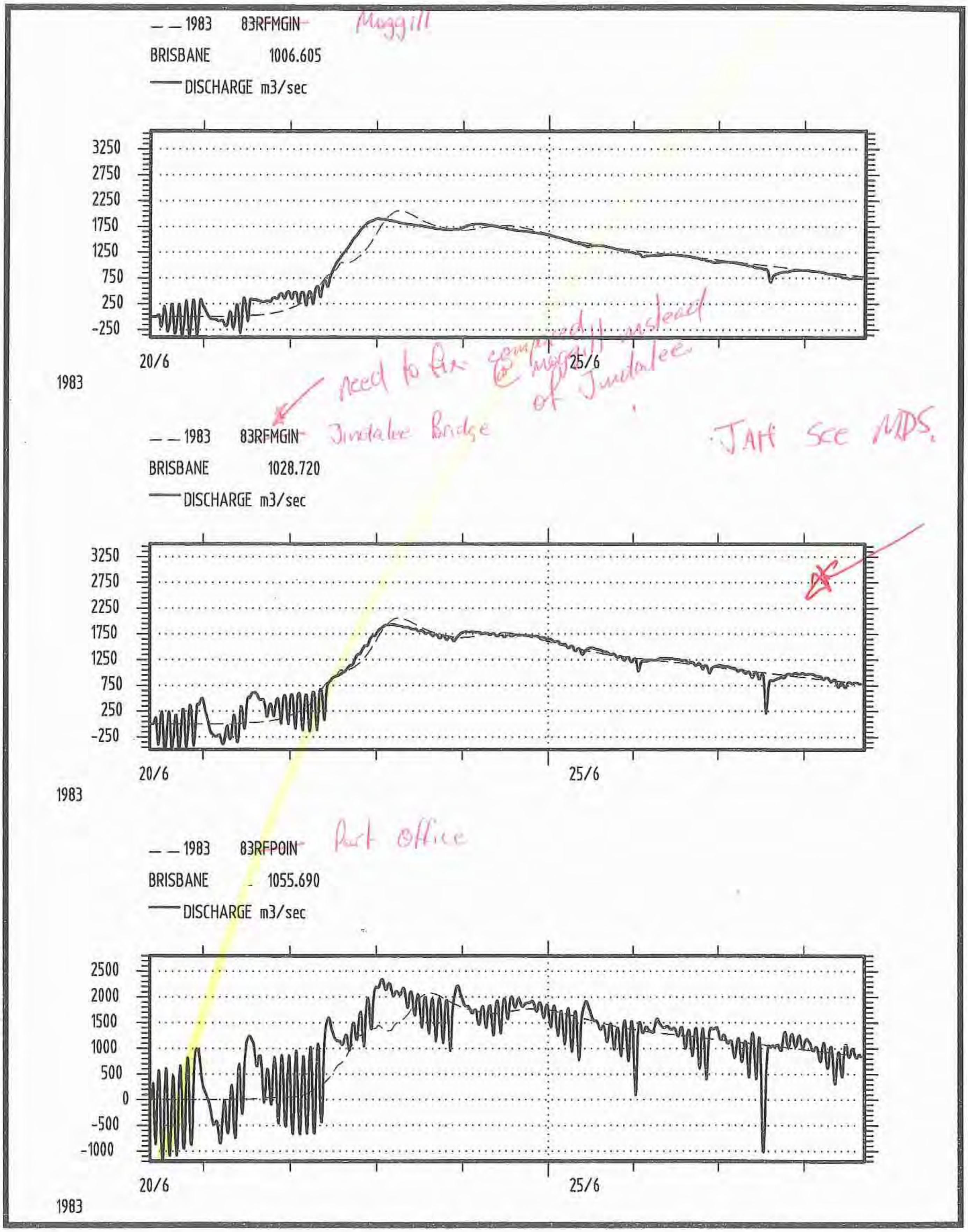
DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

FILE NAME: FIG6-3
PLOT SCALE: 1=1

SINCLAIR KNIGHT MERZ

FIGURE 6-4

BRISBANE RIVER FLOOD STUDY
HYDROLOGIC AND HYDRAULIC MODEL CONSISTENCY
- JUNE 1983



FILE NAME: FIG6-4
PLOT SCALE: 1=1
DISK No. G:\
JOB No. T0041E7
DATE: 17-2-98

FIGURE 6-5

BRISBANE RIVER FLOOD STUDY
HYDROLOGIC AND HYDRAULIC MODEL CONSISTENCY
- LATE APRIL 1989

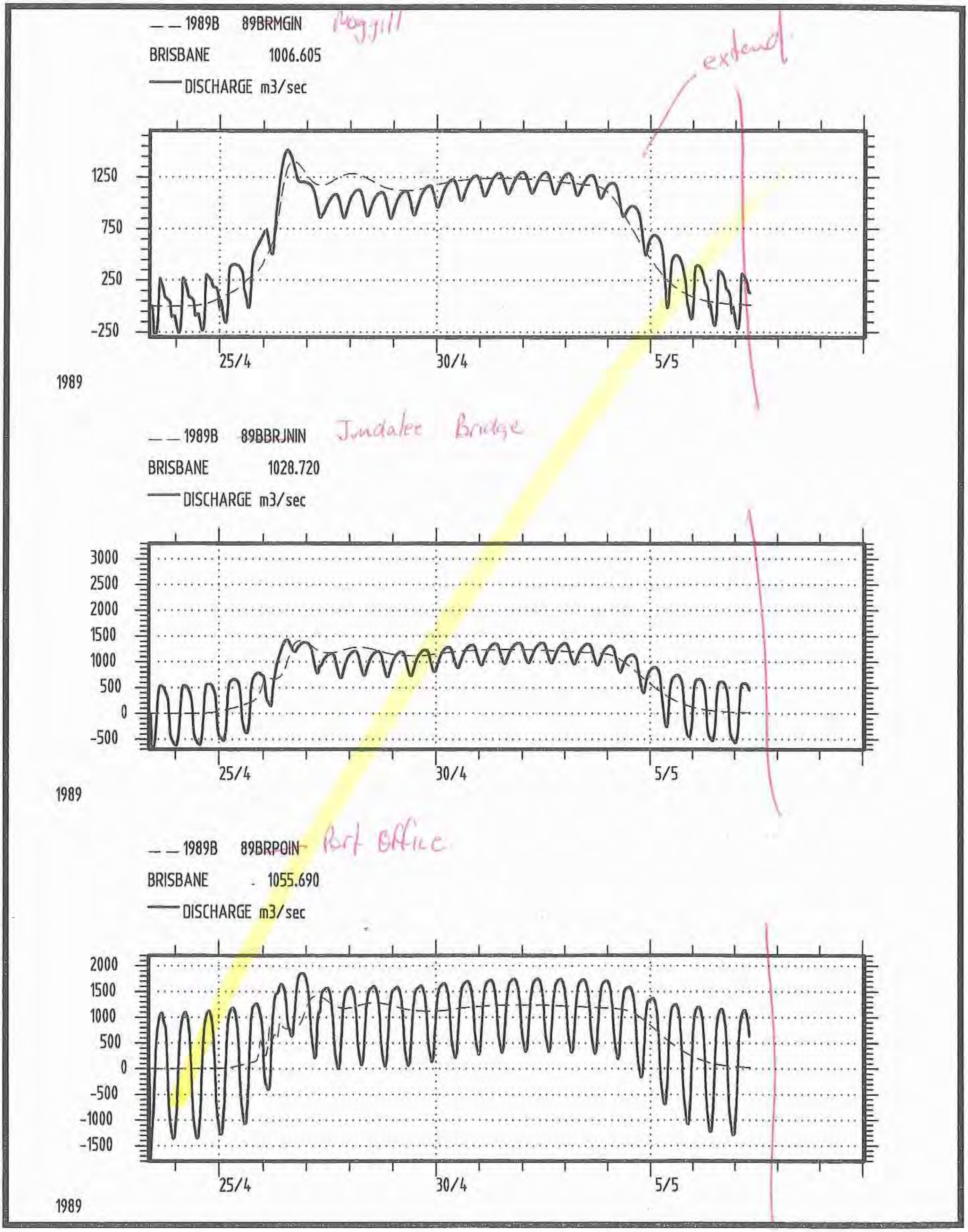
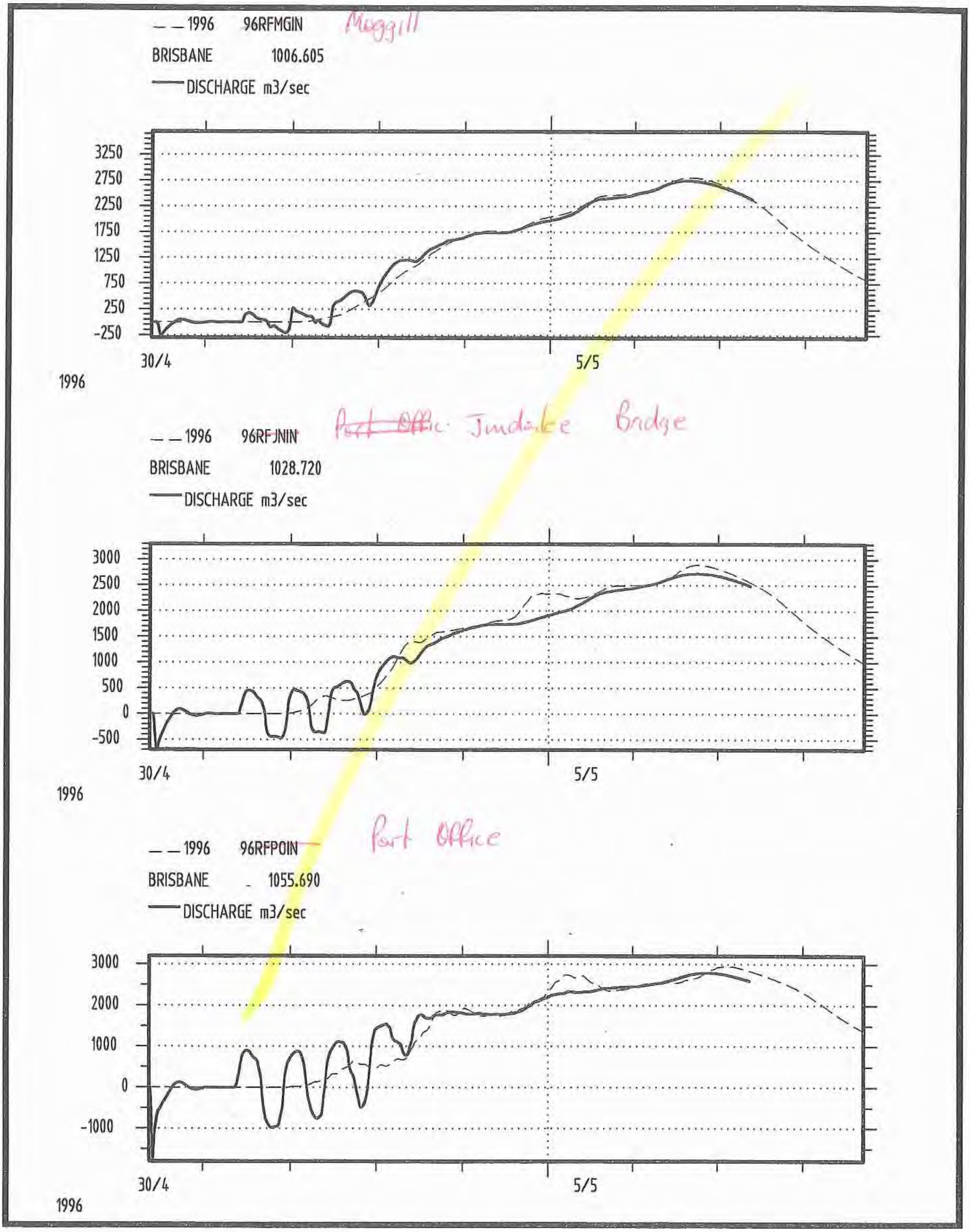


FIGURE 6-6

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
HYDROLOGIC AND HYDRAULIC MODEL CONSISTENCY
- MAY 1996



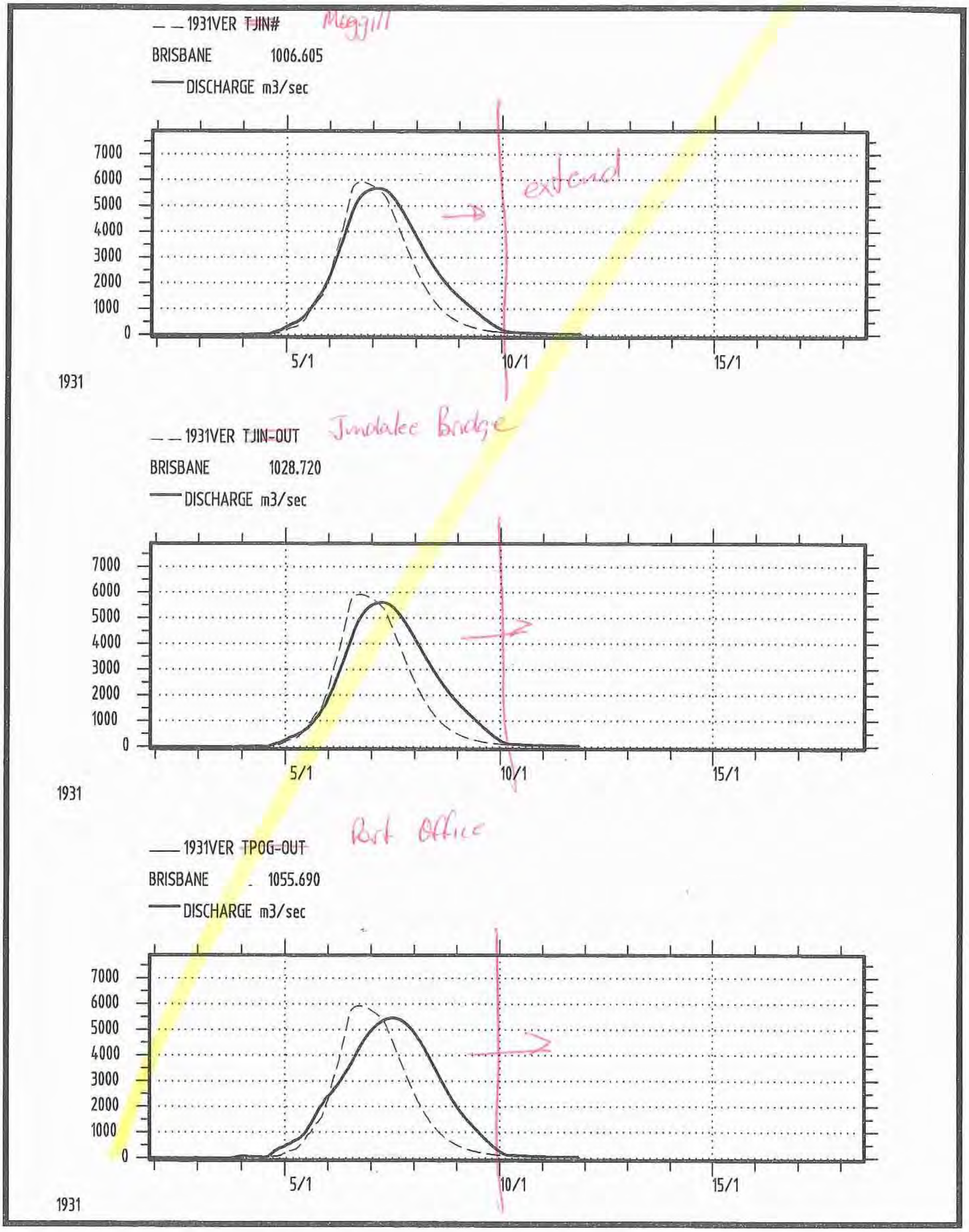
FILE NAME FIG6- DISK No G:\ JOB No T004 DATE 17-2-98
PLOT SCALE: 1=1

226

FIGURE 6-7

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
HYDROLOGIC AND HYDRAULIC MODEL CONSISTENCY
- FEBRUARY 1931



FILE NAME. FIG6-7 PLOT SCALE: 1=1 DISK No. G:\ JOB No. T0041E7 DATE. 17-2-98

FIGURE 6-8

BRISBANE RIVER FLOOD STUDY
HYDROLOGIC AND HYDRAULIC MODEL CONSISTENCY
- MARCH 1955

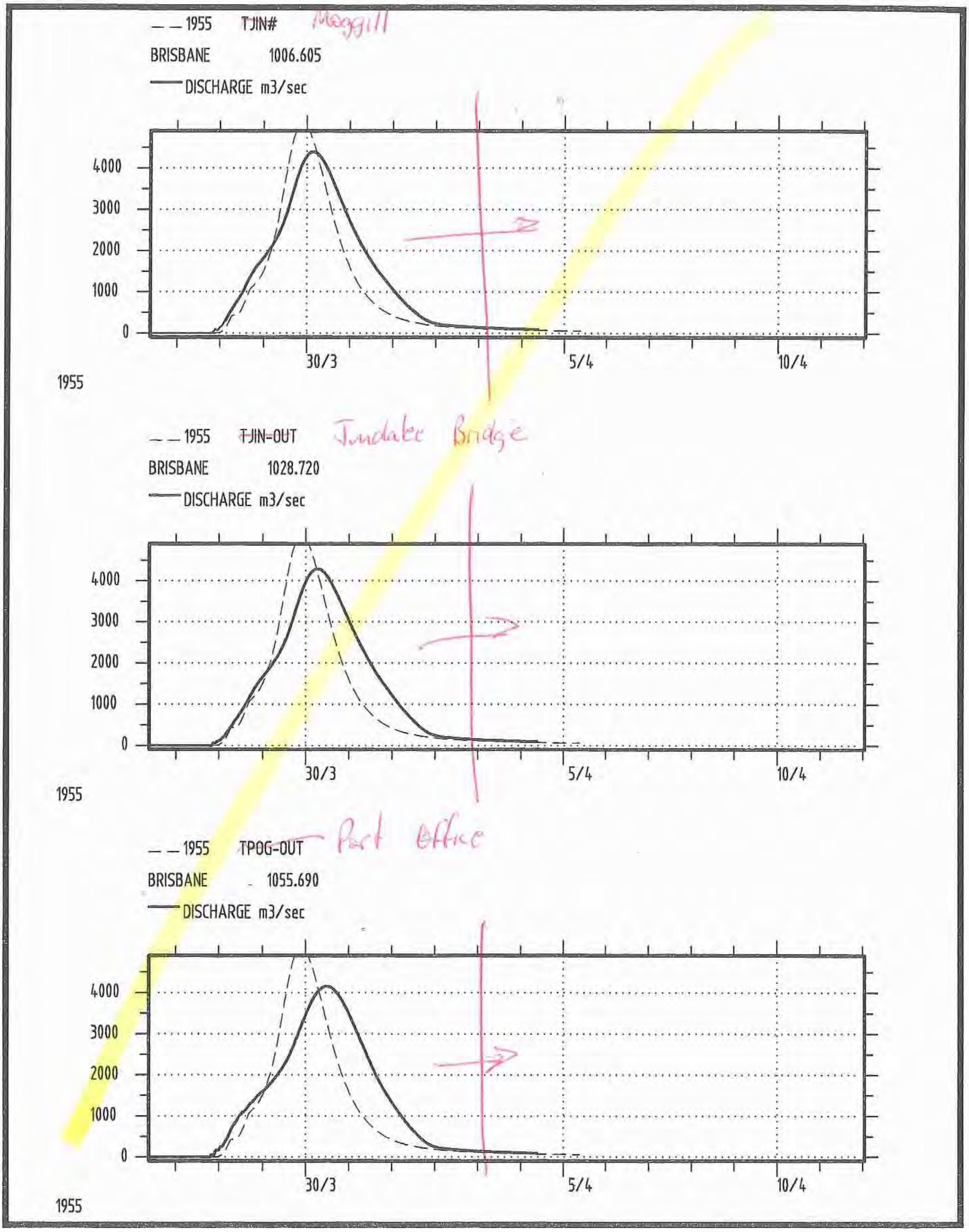


FIGURE 6-9

BRISBANE RIVER FLOOD STUDY
HYDROLOGIC AND HYDRAULIC MODEL CONSISTENCY
- JULY 1973

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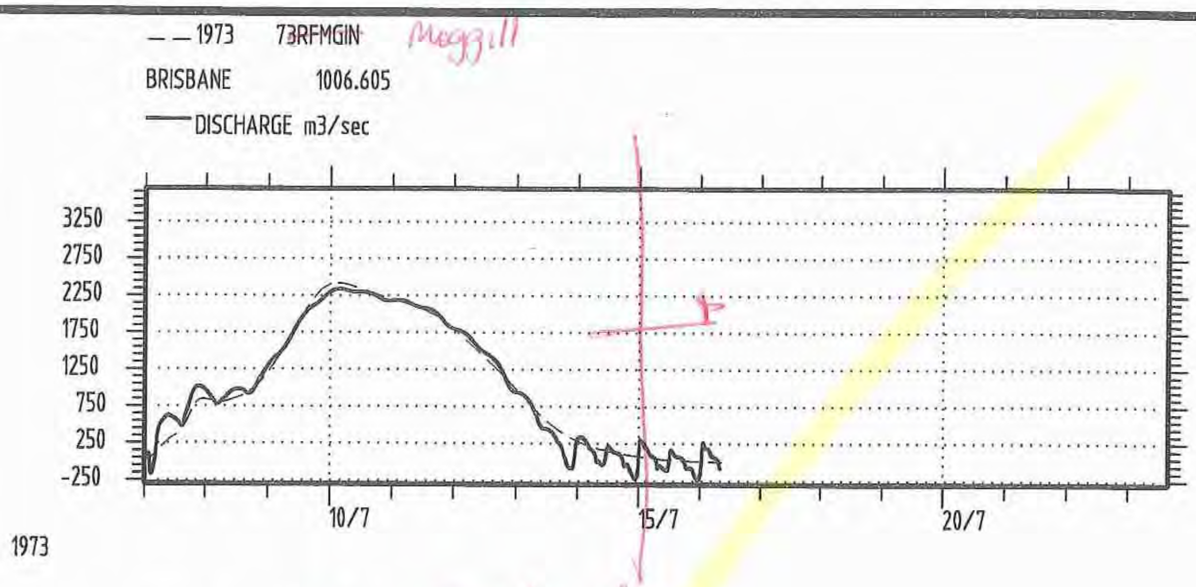
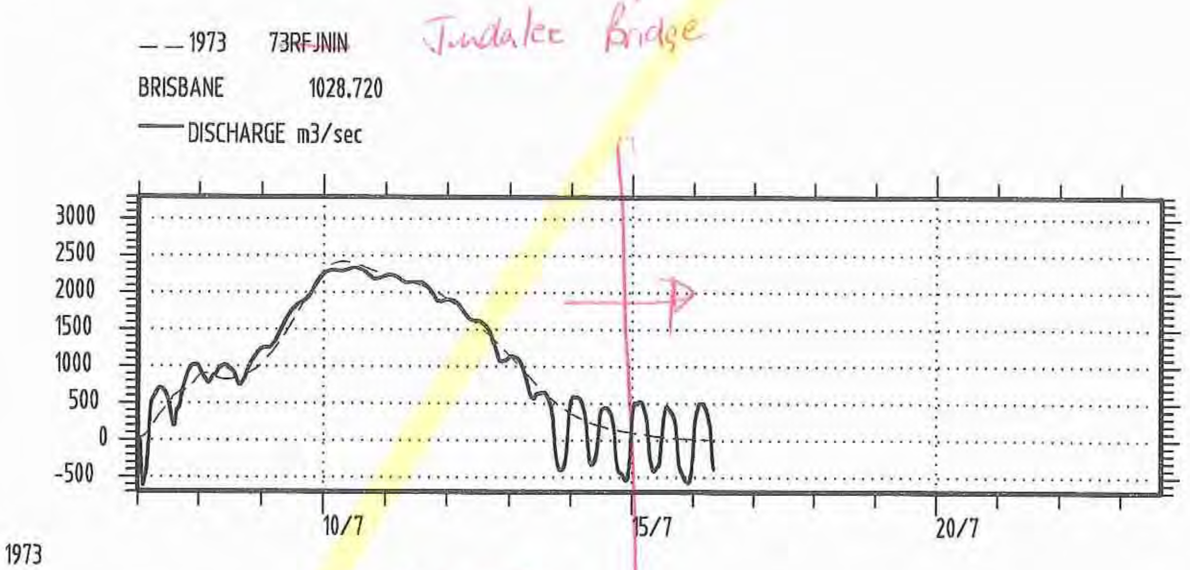
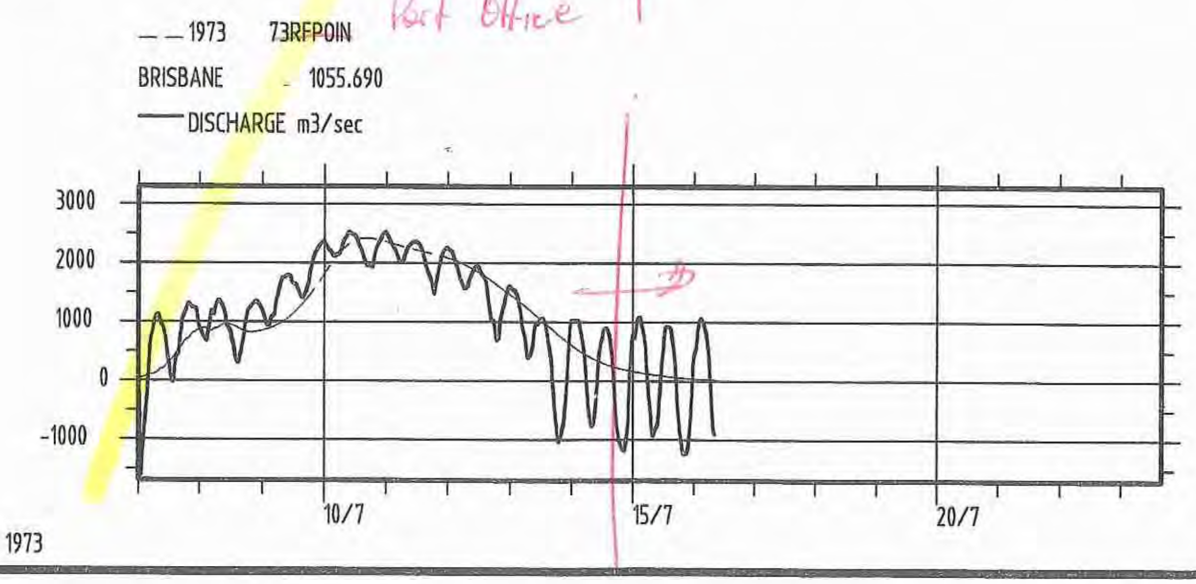




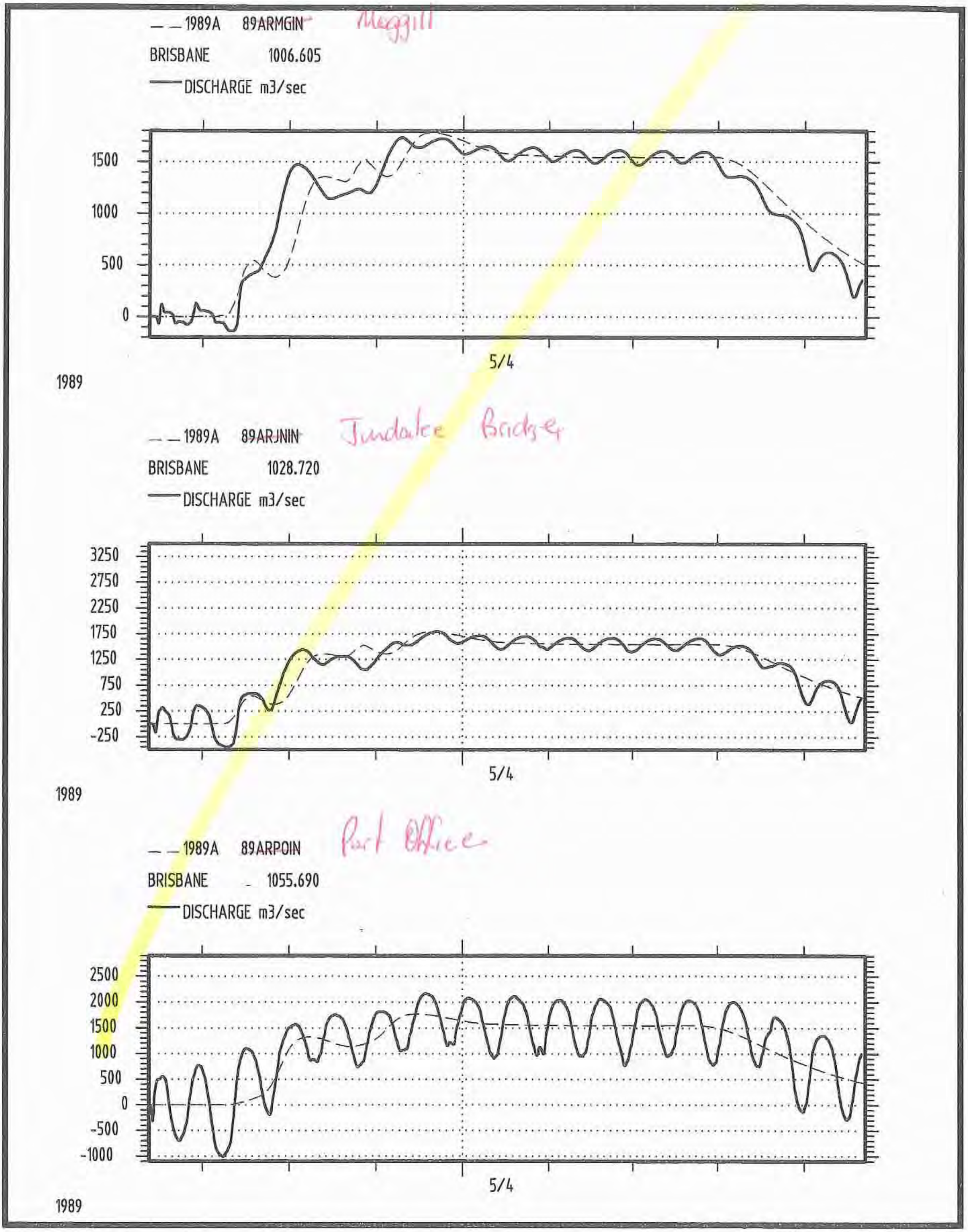


FILE NAME: FIG6-9 PLOT SCALE: 1=1 DISK No: G:\ JOB No: T004 DATE: 17-2-98

FIGURE 6-10

BRISBANE RIVER FLOOD STUDY
HYDROLOGIC AND HYDRAULIC MODEL CONSISTENCY
- EARLY APRIL 1989

SINCLAIR KNIGHT MERZ



The potential effect of urbanisation in the middle and upper reaches of the ~~creek~~ river even in the long term is likely to be negligible. However, there is potential for significant urbanisation in the lower reaches of the river. Future urbanisation in Brisbane and surrounding areas would cause the peak runoff from these areas to ~~increase~~ occur ealier than at present. As the time of concentration of the Brisbane River as a whole is large compared to that of the urban areas of Brisbane, it is slightly conservative to retain the present level of urbanisation rather than the potential ultimate level.

7. Design Events Hydrology

7.1 Design Storm Requirements

An analysis of design storm events was performed to establish design flood characteristics in the Brisbane River. A range of average recurrence intervals (ARI) from 1 in 2 years ARI to the Probable Maximum Precipitation (PMP) were assessed. Temporal patterns and rainfall intensities were based on Australian Rainfall and Runoff (1987) guidelines and hydrologic data supplied by the Department of Natural Resources.

This assessment considers only the existing extent of urbanisation for the Brisbane River Catchment.

7.2 Catchment Urbanisation

The majority of the Brisbane River Catchment was considered to be rural and was therefore allocated a zero percent impervious. In the Brisbane Metropolitan area the assumed percentage impervious varied from 20 to 50% to account for the catchment urbanisation.

Ultimate future urbanisation for the catchment was not considered in this study. Given the large size of the catchment, the effects of likely future urbanisation was considered to be minor.

7.3 Design Event Rainfall

Design Event rainfall data was required to determine inflow hydrographs for the calculation of flood profiles in the Brisbane River. The distribution of rainfall over the catchment for the calibration events identified that significant variations of rainfall occurred over the catchment. This variation in rainfall was attributed to the size and topography of the catchment.

Design rainfall intensities were derived using Intensity-Frequency-Duration (IFD) techniques used in Chapter 2 of Australian Rainfall and Runoff 1987 (AR&R). Design rainfall intensities were derived at 130 rainfall gauge locations throughout the catchment to account for the variation of rainfall. Isoheytal maps for the catchment were derived for recurrence intervals ranging from 2 year ARI to 100 Year ARI using CivilCAD and the calculated design rainfalls.

The following figures present Isoheytal maps and rainfall depths for critical duration storms ranging from 2 year ARI to 100 year ARI.

- **Figure 7-1 - 2 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.**
- **Figure 7-2 - 5 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.**

- Figure 7-3 - 10 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.
- Figure 7-4 - 20 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.
- Figure 7-5 - 50 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.
- Figure 7-6 - 100 Year ARI 30 Hour Duration Rainfall Event - Brisbane River Catchment.

For large catchments it is unlikely that rainfall intensity will remain constant across the catchment. To account for this variation, AR&R suggests use of an areal reduction factor which reduces the depth of rainfall over the catchment.

The problem with this method is that the areal reduction factor method presented in AR&R is based on work conducted in the United States and virtually no work has been conducted for durations greater than 24 hours or catchments with areas greater than 1 000 km^2.

Since the Brisbane River Catchment is approximately 13 500 km^2 and has a critical duration of approximately 24 hours it was considered that spatial variation would have to be accounted for using an alternate method.

As previously stated design rainfalls were calculated at approximately 130 locations over the entire catchment. These rainfalls were then used to calculate rainfall depths at the centroid of each sub-area (ie approximately 250 locations) using interpolation facilities within CIVILCAD. This method ensured that the majority of rainfall variation was accounted for by a blanket coverage of the catchment which in turn minimised the effects of rainfall variation.

Given that the total catchment area of the Brisbane River is approximately 13 500 km^2 and that this area has been broken down into about 250 sub areas, then the average sub area is around 50 km^2. The areal reduction factor for an area of 50 km^2 (24 hour duration) was determined to be 0.98. Since the areal reduction factor was almost equal to one, areal reduction factors were not applied to any of the sub-areas. The rainfall intensities used in this study are therefore considered to be slightly conservative.

Australian Rainfall and Runoff temporal patterns for zone 3 apply to the Brisbane River Catchment.

The Probable Maximum Precipitation (PMP) rainfall depth and corresponding temporal pattern were provided by the Bureau of Meteorology. The adopted PMP rainfall depth for the Brisbane River Catchment is presented in **Table 7-1 - PMP Rainfall Depth, Brisbane River Catchment.**

Table 7-1 - PMP Rainfall Depth - Brisbane River Catchment

Duration	PMP Rainfall Depth
12	370
24	530
48	680
72	830
96	1010
120	1050
144	1070
168	1160

Review of the relevant reports and files suggested that PMP investigations conducted by the Department of Natural Resources used the total PMP rainfall depth over the entire catchment. This method provides a conservative result which may be applicable when considering dam safety. For this study spatial variation was accounted for by use of **Figure D-1 - Generalised Tropical Storm Method (GTSM) Design Isohyetal Pattern for the Distribution of PMP for Areas > 2 000 km^2**. The procedural method for the GTSM is also provided in **Appendix D - Generalised Tropical Storm Method.**

An analysis to determine the critical duration PMP rainfall event was performed. The critical duration storm for the PMP was found to be 168 hours. Peak discharges for the durations ranging from 24 hour to 168 hour storms are presented in **Table 7-2 - Peak Discharges for PMP at Lowood, Moggill & Port Office.** A plot of these results are presented in **Figure 7-7 - Critical Duration Storms at Lowood, Moggill & Port Office.**

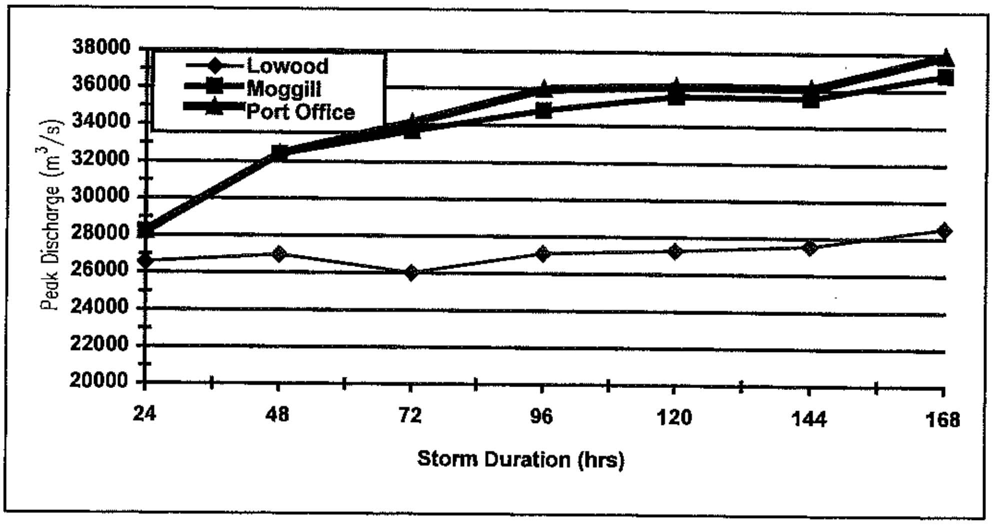
Table 7-2 - Peak Discharges for PMP at Lowood, Moggill & Port Office

Duration (hrs)	Lowood (m^3/s)	Moggill (m^3/s)	Port Office (m^3/s)
24	26580	28230	28230
48	26980	32410	32430
72	26020	33680	34130
96	27100	34830	35960
120a	27290	35620	36160
144a	27580	35570	36110
168c	28560	36860	37910

Note: the subscripts for the 120, 144 and 168 hour duration storms relate to the adopted temporal pattern which produced they peak discharge.

As previously mentioned the critical storm duration for the PMP event was 168 hours with only six percent variation in peak discharges predicted for the range of longer durations from 96 hours to 168 hours. As there was a significant difference between the critical durations found for the 100 year ARI and PMP events, a number of checks were conducted to ensure basic data had been interpreted and applied correctly.

Figure 7-7 - Critical Duration Storms at Lowood, Moggill & Port Office



The average intensities for each PMP duration were examined to ensure that the average rainfall intensity decreased as the storm duration increased.

The maximum rainfall intensity within each duration was checked to make sure that the temporal pattern was reasonably uniform without any uncharacteristic high intensities contained throughout the duration of the rainfall event.

A final check of sensitivity of time increment within the duration was conducted. This made little difference to the peak discharges and therefore it was considered that the effects of time increment were negligible.

The RAFTS model output for these events showed that the larger volumes of water associated with longer duration events caused peak discharges to occur over a longer period of time which resulted in the coincidence of peak discharges at major confluences. Conversely, the coincident peak effects for the shorter duration events are not as pronounced hence resulting in smaller peak discharges for the shorter duration storms.

Previous investigations conducted by the Department of Natural Resources found that the critical duration storm for the PMP was 120 hours and the critical duration storm for the 100 year ARI event was 24 hours. As the DNR found that there was significant differences in duration between the two recurrence intervals, it was considered that this was inherent of the catchment configuration and the rainfall variability in the catchment and the 168 hour was adopted as the critical duration storm for the PMP event for this study. Initial and continuing losses have been applied which is consistent with the parameter set used for the 100 year ARI storm. Investigations carried out by the DNR used a continuing loss rate of 2.5 mm/hr and found that the peak discharge at the Port Office for the PMP was 31950 m^3/s. A continuing loss of 2.5 mm/hr was applied to the Sinclair Knight Merz model (120 hour storm) and the resulting peak discharge for the PMP at the Port Office was estimated to be 29960 m^3/s. This comparison shows that the Sinclair Knight Merz result is within 7% of the DNR result.

The adoption of the 168 hour storm for the PMP presented a problem in the calculation of the intermediate flood events if a rainfall based method was used. Since the critical duration of the PMP differed from the 100 year and 50 year ARI events, an extrapolation to 168 hours would have had to be done for the 100 and 50 year IFD curves. As no recognised methodology was available, the rainfall based calculation of intermediate events was not considered further.

An alternate method was to use peak discharges from the PMP, 100 year and 50 year ARI events using the methodology set down in Australian Rainfall and Runoff (AR&R). This method eliminated the problems associated with varying duration events. The intermediate events were calculated using this method at Lowood, Moggill and Port Office. The following figures illustrate the peak discharges with respect to recurrence interval at Lowood, Moggill and the Port Office.

It should be noted that the stage-storage and stage-discharge curves within RAFTS were extended to account for the larger design flood events. The extension of these curves was done assuming vertical banks and hence the only additional storage was confined to within the creek proper. The stage discharge curves were extended linearly following the general trend of the calibrated curves. These assumptions were considered to be a conservative estimate however given the available information (ie cross sectional and topograpical) these assumptions were considered to be appropriate.

The return period for the PMP was determined to be 100000 years ARI using **Table 13.1 of AR&R**. This calculation was performed using the Generalised Method with a catchment area of approximately 13500 km^2.

- **Figure 7-8 - Design Peak Discharges at Lowood.**
- **Figure 7-9 - Design Peak Discharges at Moggill.**

- Figure 7-10 - Design Peak Discharges at Port Office.

Figure 7-8 - Design Peak Discharges at Lowood

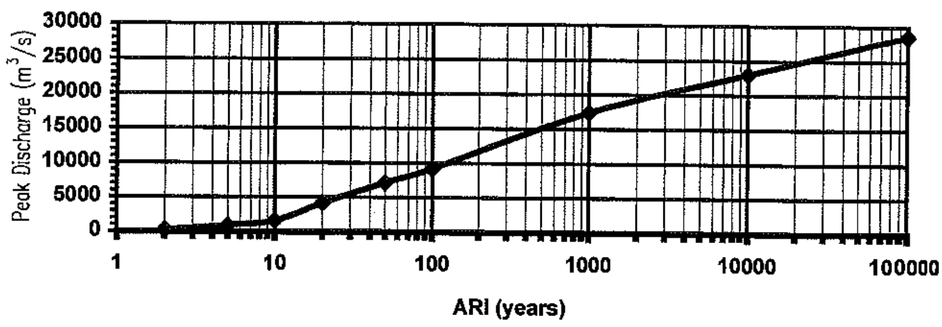


Figure 7-9 - Design Peak Discharges at Moggill

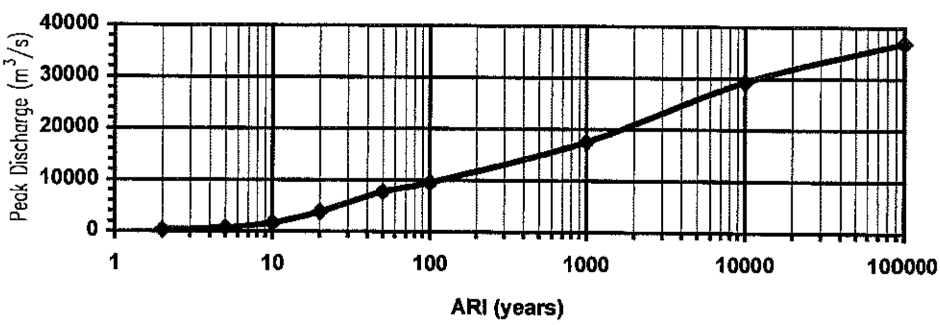
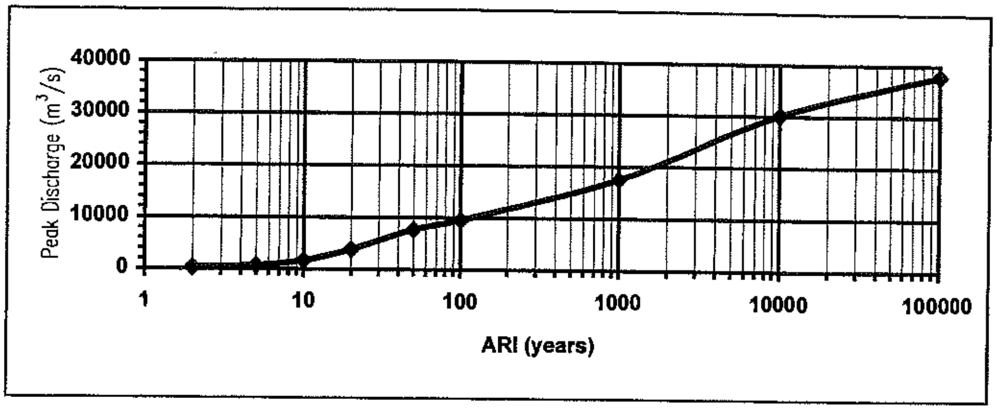


Figure 7-10 - Design Peak Discharges at Port Office



Once the peak discharges for these events were calculated, an average ratio was determined and the PMP rainfall depths were scaled and applied to the catchment. The 168 hour temporal pattern was adopted and the scaled intermediate storms were run through RAFTS. These scaling factors were adjusted for each recurrence interval until a good match between the AR&R peak calculated discharges and the peak RAFTS discharges was achieved. **Table 7-3 - Peak Predicted Discharges for the PMF, 10000, and 2000 Year ARI Events at Lowood, Moggill and Port Office** and **Table 7-4 Peak Predicted Discharges for the 1000, 500 and 200 Year ARI Events at Lowood, Moggill and Port Office** present the outcomes of this analysis.

Table 7-3 - Peak Predicted Discharges for the PMF, 10000 and 2000 Year ARI Events at Lowood, Moggill and Port Office

Location	PMF			10000 Year ARI			2000 Year ARI		
	Calc (m^3/s)	RAFTS (m^3/s)	% error	Calc (m^3/s)	RAFTS (m^3/s)	% error	Calc (m^3/s)	RAFTS (m^3/s)	% error
Lowood	-	28560	-	25090	23020	-8.3	18250	17880	-2.0
Moggill	-	36860	-	28140	29300	+4.1	18660	19490	+4.4
Port Office	-	37910	-	28640	30140	+5.2	18800	19500	+3.7

Table 7-4 - Peak Predicted Discharges for the 1000, 500, 200 Year ARI Events at Lowood, Moggill and Port Office

Location	1000 Year ARI			500 Year ARI			200 Year ARI		
	Calc (m^3/s)	RAFTS (m^3/s)	% error	Calc (m^3/s)	RAFTS (m^3/s)	% error	Calc (m^3/s)	RAFTS (m^3/s)	% error
Lowood	17400	16290	-6.4	12840	11600	-9.7	10100	9420	-6.7
Moggill	17480	17540	+0.4	13080	13910	+6.4	10440	10870	+4.1
Port Office	17580	17550	-0.2	13120	14020	+6.8	10450	10880	+4.1

Table 7-3 and 7-4 show that the calculated discharges are within 10% of the RAFTS predicted discharges at the three locations hence they were considered to be acceptable.

7.4 Flood Frequency Analysis

A flood frequency analysis was performed to ensure a match between the storm events obtained through hydrologic routing of historical information. The analysis also produced appropriate rainfall loss rates to ensure consistency between the two analysis methods.

Flood frequency analyses were conducted at Moggill, Lowood and Brisbane City at the Port Office Gauge. The omission of Jindalee for the analyses was due to limited available historical information at the site.

The locations for the flood frequency analyses are presented in **Figure 7-11 - Flood Frequency Analysis Location Layout.**

7.5 Historical Data

Historical events were derived from streamflow data recorded at Bureau of Meteorology gauging stations for Brisbane City (Port Office gauge) and Moggill. This data was in the form of peak instantaneous water levels which were converted to discharges using rating curves provided by the Bureau of Meteorology. The data for Lowood was obtained from the Department of Natural Resources in the form of peak instantaneous monthly discharges.

The Brisbane City (Port Office) gauge is influenced by tidal fluctuations and hence rating curves at the Port Office gauge vary to account for the changing tidal conditions. To determine peak discharges during flooding, it was therefore necessary to know the corresponding tide level at the time and date for each event. This information was not available. Discharges were determined by using two rating curves supplied by the Bureau of Meteorology. These rating curves used the following tailwater levels:

Historical Data and adjusted

~~The Adjusted~~ discharges are presented in the following Tables:

- ☐ # Table E-1 - Calculation of Adjustment Factor for post Wivenhoe Dam Flows #
- ☐ # Table E-2 - Historical Data at Woodford and Silverton (1920 - 1985) #
- ☐ # Table E-3 - Historical and Adjusted Data at Moggill (1965 - 1983) #
- ☐ # Table E-4 - Historical and Adjusted Data at Port Office (1841 - 1974) #
- ☐ # Table E-5 - Historical and Adjusted Discharge at Lowood. #

(i) -0.15 m AHD, and
(ii) 1.85 m AHD (highest Astronomical Tide +0.15 m).

One of the problems associated with performing the flood frequency analysis for this catchment was the influence that Wivenhoe and Somerset Dams would have on the downstream locations. To minimise these effects the flood frequency analysis was performed using a data series prior to the construction of Wivenhoe Dam (1985).

To account for the effects of Somerset Dam (constructed in 1943), it was necessary to adjust the series of peak discharges. As the adopted data series ended prior to 1985, the effects of Wivenhoe Dam did not need to be considered. However, all data between 1943 and 1985 had to be adjusted to remove the effects of the construction of Somerset Dam.

In order to establish a relationship between the flow upstream of Somerset Dam and flow downstream of the dam site prior to its construction, peak monthly discharges obtained at Woodford (upstream) were plotted against the discharge at the Silverton Gauge (downstream), prior to 1943. A line of best fit was then formulated and a correlation of 91.5% was achieved. The data for Woodford and Silverton used in this study and the resulting adjustment factors due to the construction of Somerset Dam are illustrated in **Appendix E - Adjustment of Historical Streamflows to Account for the Effects of Somerset Dam.**

This correlation is graphically represented in Figure E-1 - Relationship Between Discharges at Woodford and Silverton #

Each of the corresponding adjusted values were applied at Lowood, Moggill and the Port Office and Flood Frequency Curves were constructed for the no dams effective catchment (ie effects of Wivenhoe and Somerset Dams removed).

7.6 Construction of Flood Frequency Curves

In constructing the flood frequency curves, annual series of peak discharges were utilised in all analyses. An annual series was adopted because of the emphasis of the study in regard to design flood estimation involving ARI's of greater than 10 years. This is in accordance with the recommendations of Chapter 10 of Australian Rainfall and Runoff, (1987).

The flood frequency curves for the annual series data were constructed in accordance with the methods outlined in Australian Rainfall and Runoff, 1987. For each location the historical peak discharges were ranked in descending order and the plotting position for each discharge was then calculated. Using the ranked discharges and their associated plotting positions, the values were plotted on Log Normal paper and the flood frequency curves were then fitted by eye.

A Log-Pearson Type III distribution together with 5% and 95% confidence limits was also fitted to all of the annual series data using the procedures outlined in Chapter 10 of Australian Rainfall and Runoff, 1987. The fit by eye curve was adopted at each location however the Log Pearson Distribution and 5% and 95% confidence limits have been plotted for comparison.

The flood frequency curves generated from the historical annual data series at the three nominated locations are presented in the following figures:

- **Figure 7-12 - Flood Frequency Curve at Lowood - No Dams Effective**
- **Figure 7-13 - Flood Frequency Curve at Moggill - No Dams Effective**
- **Figure 7-14 - Flood Frequency Curve at Port Office (-0.15 m AHD) - No Dames Effective** and
- **Figure 7-15 - Flood Frequency Curve at Port Office (1.85m AHD, Highest Astronomical Tide +0.15 m) - No Dams Effective.**

Results for the fit by eye peak discharge estimates are presented in the following tables:

- **Table 7-5 - Flood Frequency Estimates at Lowood - No Dams Effective**
- **Table 7-6 - Flood Frequency Estimates at Moggill - No Dams Effective**
- **Table 7-7 - Flood Frequency Estimates at Port Office (-0.15 m AHD) - No Dams Effective** and
- **Table 7-8 - Flood Frequency Estimates at Port Office (1.85 m AHD, - Highest Astronomical Tide +0.15 m) - No Dams Effective**

Two flood frequency curves were generated at the Port Office Gauge, incorporating the two tide events mentioned previously.

Table 7-5 - Flood Frequency Estimates at Lowood - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s
50	2	800
20	5	2 900
10	10	3 800
5	20	5 100
2	50	6 900
1	100	8 200

Data at the Lowood site was reasonable, with 75 years of data being available and 62 annual floods on record. Again, the annual series had to be adjusted for those years where there was very little or no flow recorded.

Table 7-6 - Flood Frequency Estimates at Moggill - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s)
50	2	1 630
20	5	4 250
10	10	6 500
5	20	8 500
2	50	11 000
1	100	13 700

Data at the Moggill site was poor. A period of 18 years has been analysed, with only 11 annual floods in this time period recorded. The frequency chart thus had to be adjusted for the years of zero data in accordance with Section 10.7.2 of Australian Rainfall and Runoff, 1987.

Table 7-7 - Flood Frequency Estimates at Port Office (-0.15 m AHD) - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s)
50	2	500
20	5	3 300
10	10	5 700
5	20	8 100
2	50	11 200
1	100	13 700

Table 7-8 - Flood Frequency Estimates at Port Office (Highest Astronomical Tide) - No Dams Effective

AEP %	ARI (years)	FFA Fit by Eye Estimate (m^3/s)
50	2	-
20	5	1 000
10	10	3 500
5	20	6 250
2	50	9 750
1	100	12 500

The two flood frequency estimates for the Port Office Gauge are shown in **Tables 7-7** and **7-8**. Data from 1841 was available at this site, with 142 years of data being analysed and adjustments made for the years of zero or low flow.

7.7 Initial and Continuing Losses

To determine appropriate initial and continuing loss values, the RAFTS model was run excluding Wivenhoe and Somerset Dams. The critical storm duration was determined by running each ARI without losses.

Once the critical duration was determined initial and continuing losses were applied uniformly over the catchment until the peak discharges produced by RAFTS matched the peak discharges found in the fit by eye flood frequency curves (Section 2.4.2). The adopted loss parameters are presented in **Table 7-9 - Initial and Continuing Losses for Brisbane River Catchment.**

Table 7-9 - Initial and Continuing Losses for Brisbane River Catchment

AEP (Years)	Initial Loss (mm)	Continuing Loss (mm/hr)
PMP	0.0	0.0
10 000	0.0	0.0
2 000	0.0	0.0
1 000	0.0	0.0
500	0.0	0.0
200	0.0	0.0
100	0.0	0.0
50	0.0	1.0
20	20	2.5
10	60	2.5
5	80	2.5
2	80	2.5

A comparison of RAFTS with loss rates applied and fit by eye peak discharges at Lowood, Moggill and Port Office are presented in **Table 7-10 - Peak Discharge Comparison Between RAFTS and Flood Frequency Curves for Lowood, Moggill and Port Office - No Dams Effective** for events up to and including the 100 year ARI.

Table 7-10 - Peak Discharge Comparison Between RAFTS and Flood Frequency Curves for Lowood, Moggill and Port Office - No Dams Effective

	Lowood			Moggill			Port Office*(1)		
ARI (years)	RAFTS (m^3/s)	FFA (m^3/s)	Diff (%)	RAFTS (m^3/s)	FFA (m^3/s)	Diff (%)	RAFTS (m^3/s)	FFA (m^3/s)	Diff (%)
100	12 280	8 200	+33.2	13 590	13 700	-0.8	13 600	13 700	-0.7
50	10 370	6 900	+33.5	11 280	11 120	-1.4	11 120	11 200	-0.7
20	7 510	5 100	+32.1	8 060	8 500	-5.5	8 060	8 100	-0.5
10	5 830	3 800	+34.8	5 770	6 500	-12.7	5 770	5 700	+1.2
5	3 770	2 900	+23.1	3 150	4 500	-30.2	3 150	3 300	-5.1
2	1 060	800	+24.5	1 020	2 000	-51.0	1 020	500	+49.0

Note:(1) Comparison for Port Office conducted for -0.15 m AHD Rating Curve Case.

From **Table 7-10** it can be seen that for Moggill and Port Office the comparison yields a good result however for low flows the percentage difference varies considerably. This variance would be most likely influenced by tidal fluctuations at these sites. As the studies objectives are generally related to the large flood events greater importance was placed on results consistency for the 10 year ARI flood and above.

At Lowood RAFTS over estimates flows by between about 23 and 41%. Loss rates above Lowood were increased, however this resulted in a reduction in flows at Moggill and the Port Office. Given that the main aim of this study was to produce development design flood levels within the Brisbane City Boundary it was considered that the loss parameters presented in **Table 7-9** were the most appropriate as they produced the best results at Moggill and Port Office.

7.8 Wivenhoe and Somerset Dam Operations

The RAFTS model was used to predict design hydrographs for the MIKE 11 hydraulic model. Prior to the commencement of the design events modelling, dam operational procedures for Wivenhoe and Somerset dams had to be established. These procedures were developed after discussions with Brisbane City Council and South East Queensland Water Board officers.

Given the complex release procedures for Somerset and Wivenhoe Dams, it was decided that the following assumptions be adopted for this study.

- The starting water level for both dams are assumed to be Wivenhoe RL 67.0 m AHD and Somerset RL 100.5 m AHD which is full supply level and spillway level respectively.

- During a flood event all communication between Wivenhoe and Somerset would be cut. When communications are cut during a flood event, the procedure is to employ uncontrolled releases for both dams.

It is evident that the above assumptions are conservative, however these were considered to be the most appropriate when setting development regulation lines. Storage curves and stage-discharge curves used in this study are presented in **Appendix F - Dam Operations**. These curves were input into the RAFTS model and the design events modelling was conducted.

7.9 Design RAFTS Modelling

Wivenhoe and Somerset Dams were included in the RAFTS model and the 24 hour, 30 hour and 36 hour storms for the 100 year ARI event were rerun. Using no losses it was found that the critical storm duration for the dams effective case was 30 hours which is consistent with the no dams effective case.

Floods ranging from 2 year ARI through to PMP were run assuming loss parameters presented in **Table 7-9**. Peak discharges at Lowood, Moggill and the Port Office are presented in **Table 7-11 - Peak Discharges at Lowood, Moggill and the Port Office - Losses and Dams Effective.** Peak discharges presented in the Department of Natural Resources Report are also presented in **Table 7-11** at the Port Office for comparison.

Table 7-11 - Peak Discharges at Lowood, Moggill and the Port Office - Losses and Dams Effective

ARI (Years)	Lowood SKM (m^3/s)	Moggill SKM (m^3/s)	Port Office SKM (m^3/s)	Port Office DNR (m^3/s)	Difference @ PO (m^3/s)
PMP	28 560	36 860	37 910	31950(1)	+5 960
10 000	23 020	29 300	30 140	27560(1)	+2 580
2 000	17 880	19 490	19 500	-	-
1 000	16 290	17 540	17 550	20100(1)	-2 550
500	11 590	13 910	14 010	17 510(1)	-3 500
200	9 420	10 870	10 880	11 840(1)	-960
100	9 190	9 650	9 560	9 120(2)	+440
50	7 140	7 750	7 750	7 990(2)	-240
20	4 190	3 860	3 860	3 950(2)	-90
10	1 610	1 680	1 680	2 840(2)	-1 160
5	920	760	760	-	-
2	280	320	330	-	-

Note (1) - DNR 120a hour duration storm assuming 2.5 mm/hr continuing loss.
(2) - DNR 24 hour duration storm assuming varying loss rates.

The comparison between the Sinclair Knight Merz (SKM) and Department of Natural Resources (DNR) discharges up to and including the 100 year ARI event are generally within 5%, however, the SKM 10 year ARI flood is approximately 42% below that predicted by the DNR. This is most likely due to the loss parameters used. The loss rates used for the 10 year ARI flood by SKM are, IL = 60 mm, CL = 2.5 mm/hr whereas the losses used by DNR are IL = 22.9 mm and CL = 2.5 mm/hr.

As previously mentioned the PMF and intermediate results from the different sources vary considerably. However when loss rates applied by DNR were applied in the SKM model for the PMF flood event, this resulted in the outcomes for both models being within 7% of each other.

Given that the loss parameters for the no dams effective case generally yield discharges within 1% of the flood frequency analysis (**Table 7-10**), the loss parameters adopted by SKM were considered the most appropriate.

7.10 Comparison of DNR and SKM Discharges

It was proposed that a comparison between design flood hydrographs between DNR and SKM be conducted. Upon determination of the critical duration event, it became evident that the DNR critical duration was estimated at 24 hours whereas the SKM analysis resulted in a critical duration of 30 hours.

This meant that it was not appropriate to compare the two hydrographs as the 24 hour duration storm has a different temporal pattern to that of the 30 hour duration storm, hence a comparison was not conducted.

RAFTS hydrographs for the range of ARI storms at the Brisbane City Boundary, Inflow Boundaries and the Port Office gauge are presented in the following figures:

- **Figure G-1 - Hydrographs for the 2 Year ARI Flood Event**
- **Figure G-2 - Hydrographs for the 5 Year ARI Flood Event**
- **Figure G-3 - Hydrographs for the 10 Year ARI Flood Event**
- **Figure G-4 - Hydrographs for the 20 Year ARI Flood Event**
- **Figure G-5 - Hydrographs for the 50 Year ARI Flood Event**
- **Figure G-6 - Hydrographs for the 100 Year ARI Flood Event**
- **Figure G-7 - Hydrographs for the 200 Year ARI Flood Event**
- **Figure G-8 - Hydrographs for the 500 Year ARI Flood Event**
- **Figure G-9 - Hydrographs for the 1 000 Year ARI Flood Event**
- **Figure G-10 - Hydrographs for the 2 000 Year ARI Flood Event**
- **Figure G-11 - Hydrographs for the 10 000 Year ARI Flood Event**
- **Figure G-12 - Hydrographs for the PMF (100 000 Year ARI Flood Event)**

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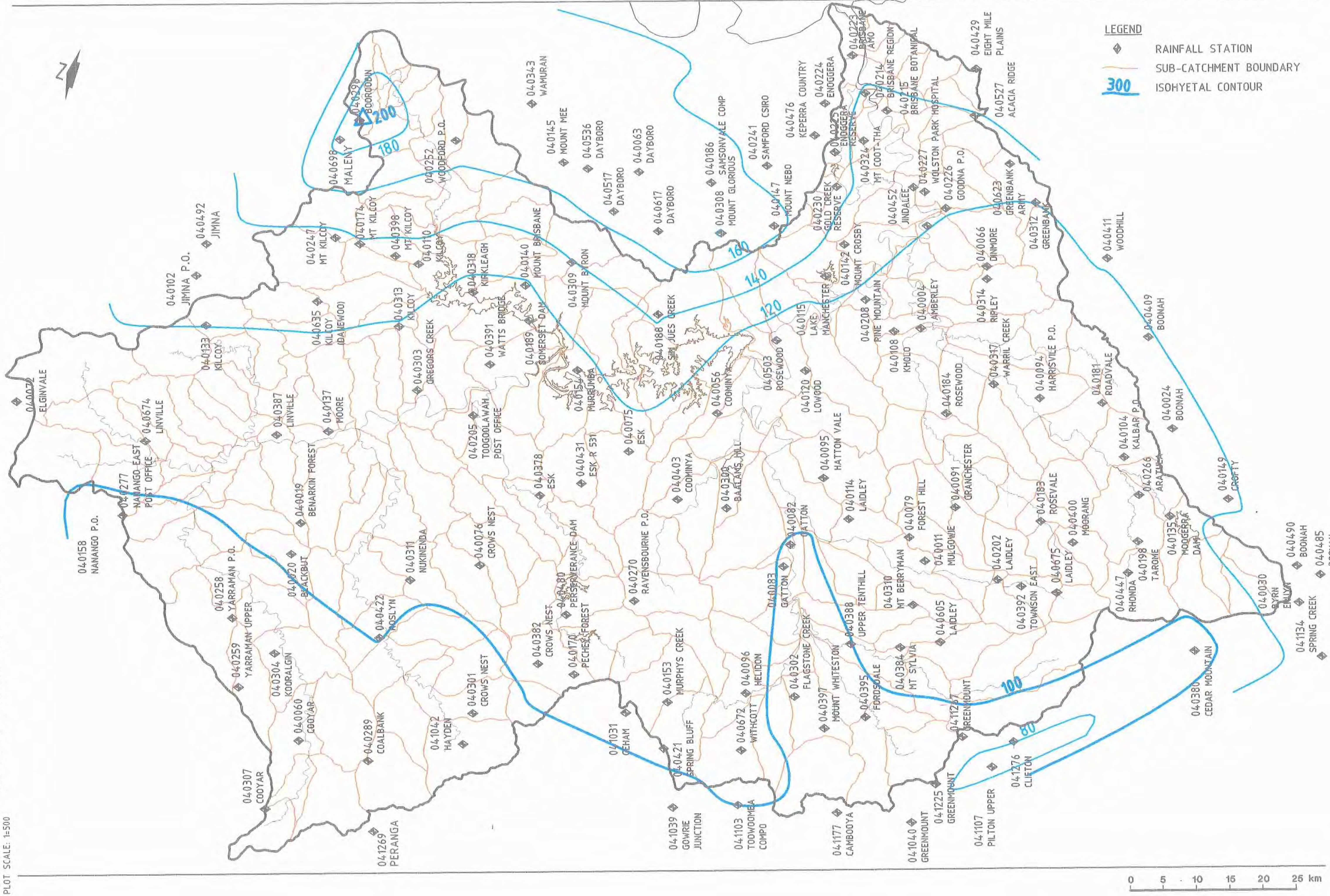
FIGURE 7-1

BRISBANE RIVER FLOOD STUDY

2 YEAR ARI 30 HOUR DURATION RAINFALL EVENT - BRISBANE RIVER CATCHMENT



PLOT SCALE: 1=500

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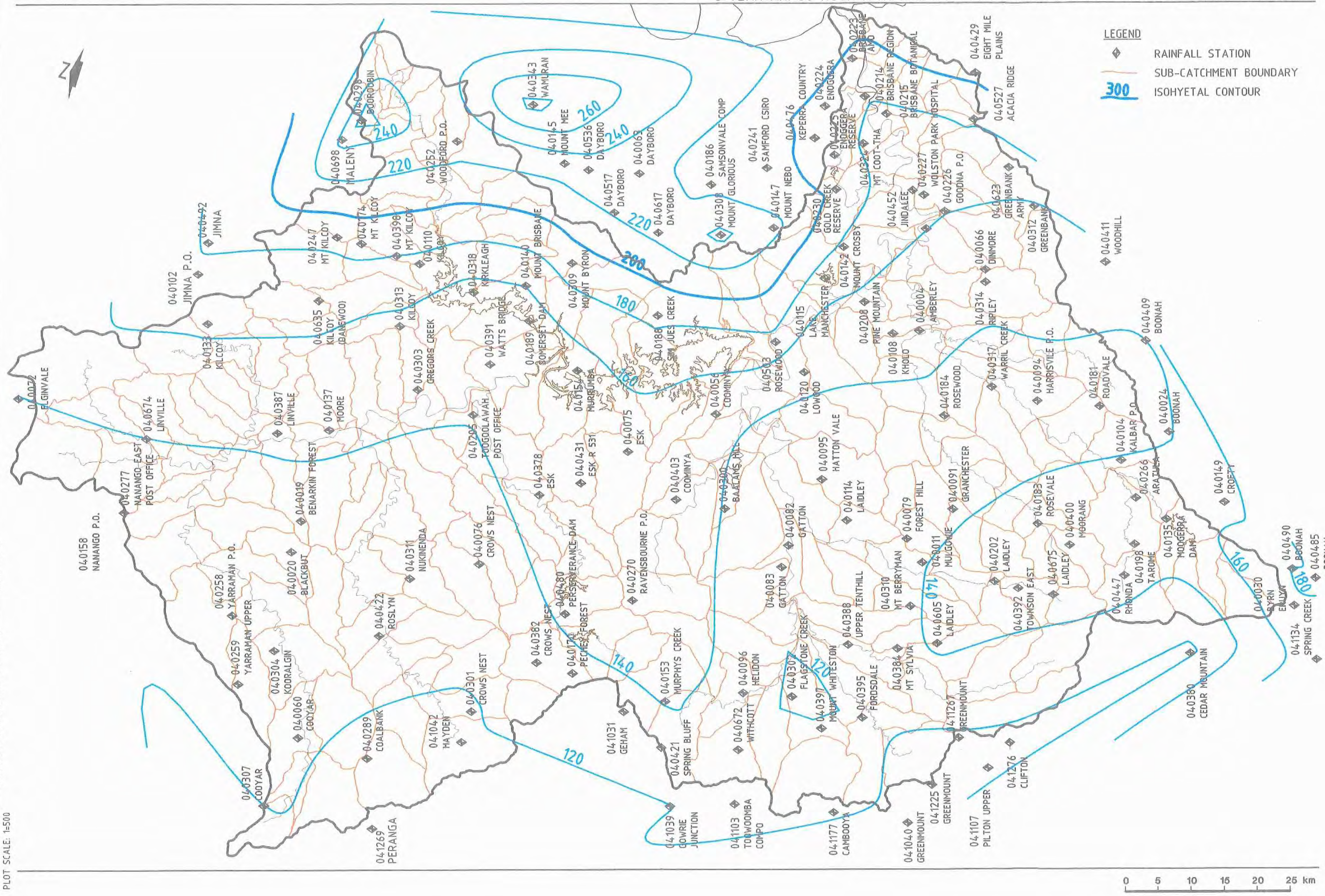
FIGURE 7-2

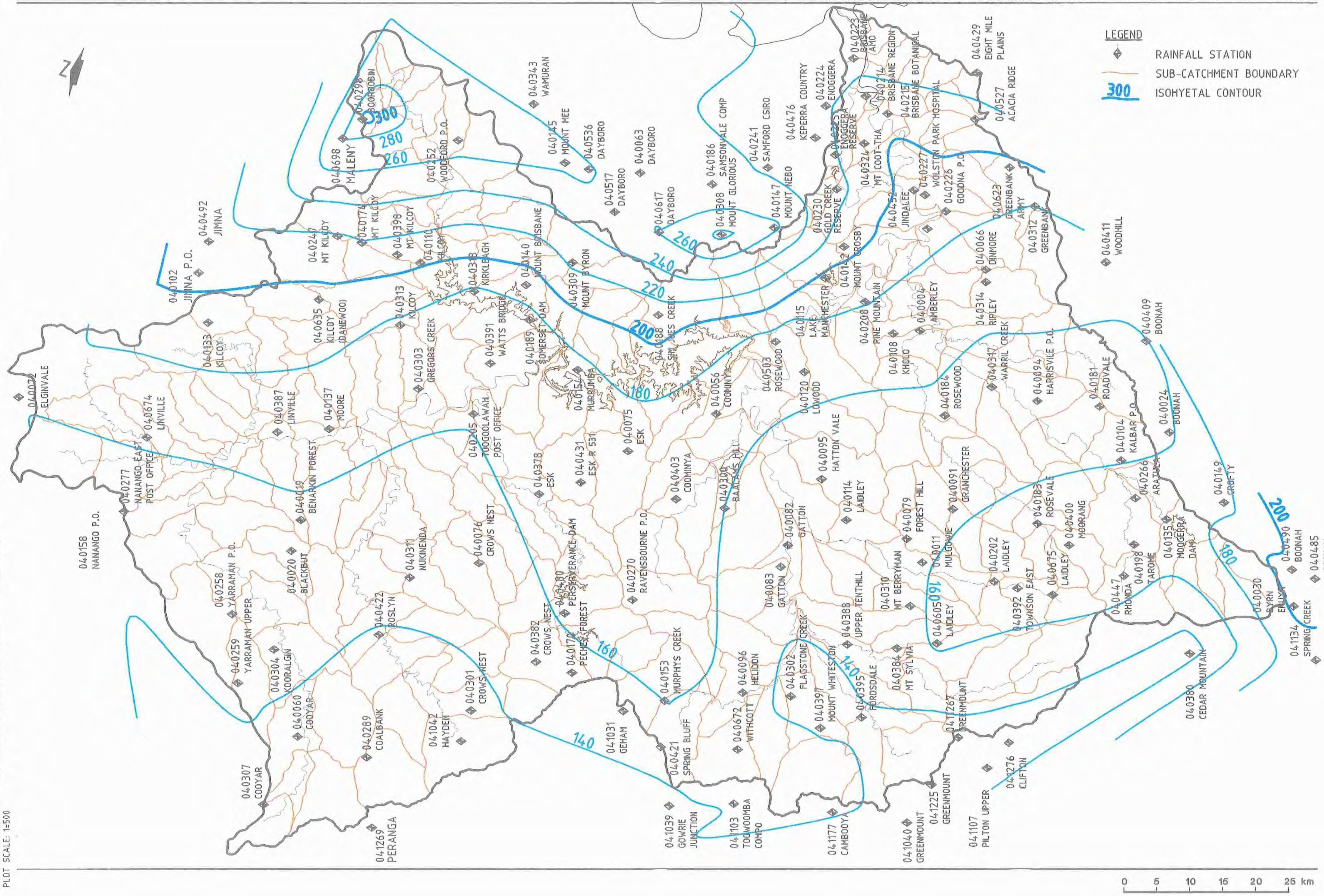
BRISBANE RIVER FLOOD STUDY

5 YEAR ARI 30 HOUR RAINFALL DURATION RAINFALL EVENT - BRISBANE RIVER CATCHMENT



PLOT SCALE: 1:500

FIGURE 7-3
BRISBANE RIVER FLOOD STUDY
10 YEAR ARI 30 HOUR DURATION RAINFALL EVENT - BRISBANE RIVER CATCHMENT



PLOT SCALE: 1=500

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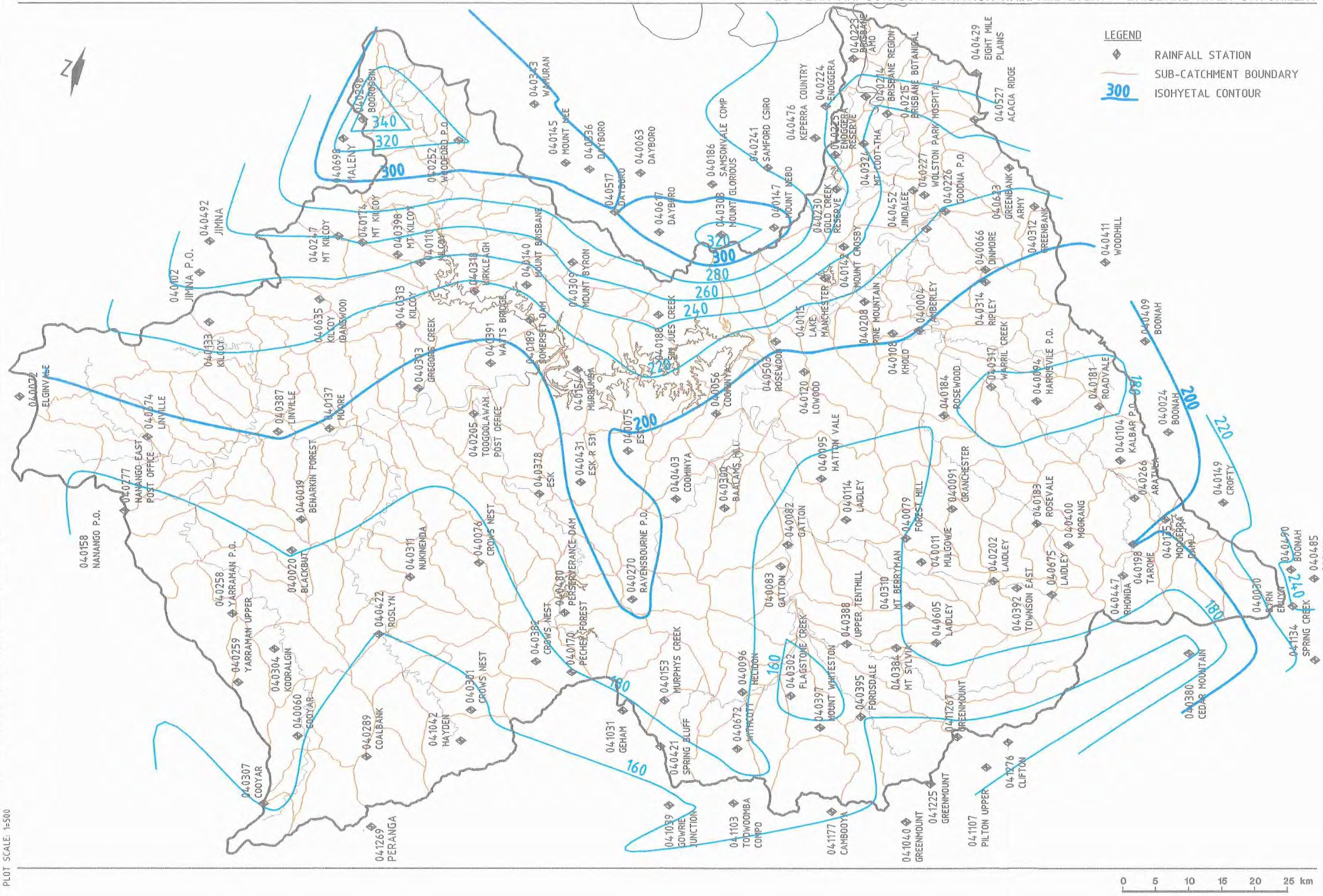
FIGURE 7-4
BRISBANE RIVER FLOOD STUDY
20 YEAR ARI 30 HOUR DURATION RAINFALL EVENT - BRISBANE RIVER CATCHMENT



PLOT SCALE: 1=500

FIGURE 7-5

BRISBANE RIVER FLOOD STUDY

50 YEAR ARI 30 HOUR DURATION RAINFALL EVENT - BRISBANE RIVER CATCHMENT

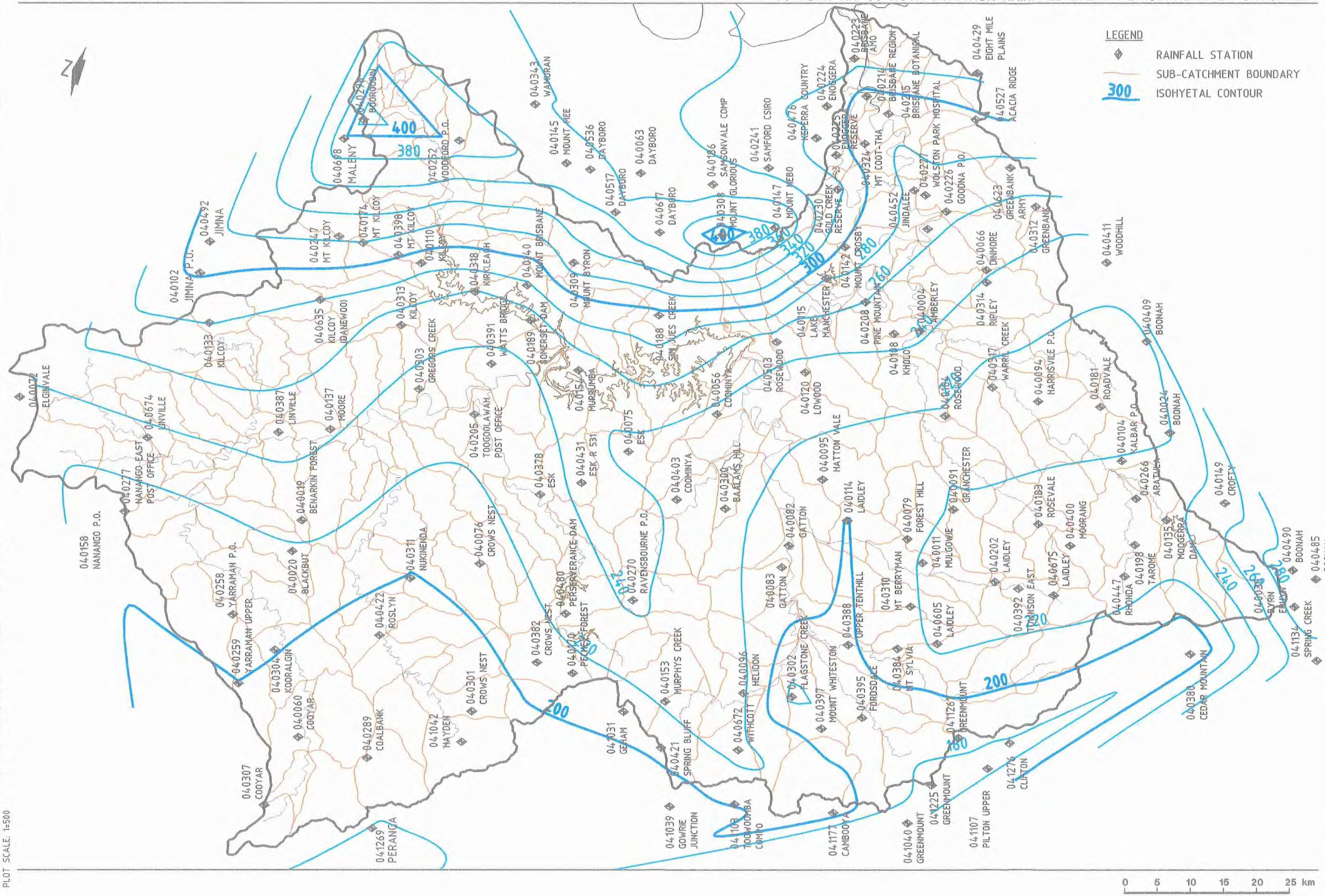


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FIGURE 7-6

BRISBANE RIVER FLOOD STUDY

100 YEAR ARI 30 HOUR DURATION RAINFALL EVENT - BRISBANE RIVER CATCHMENT

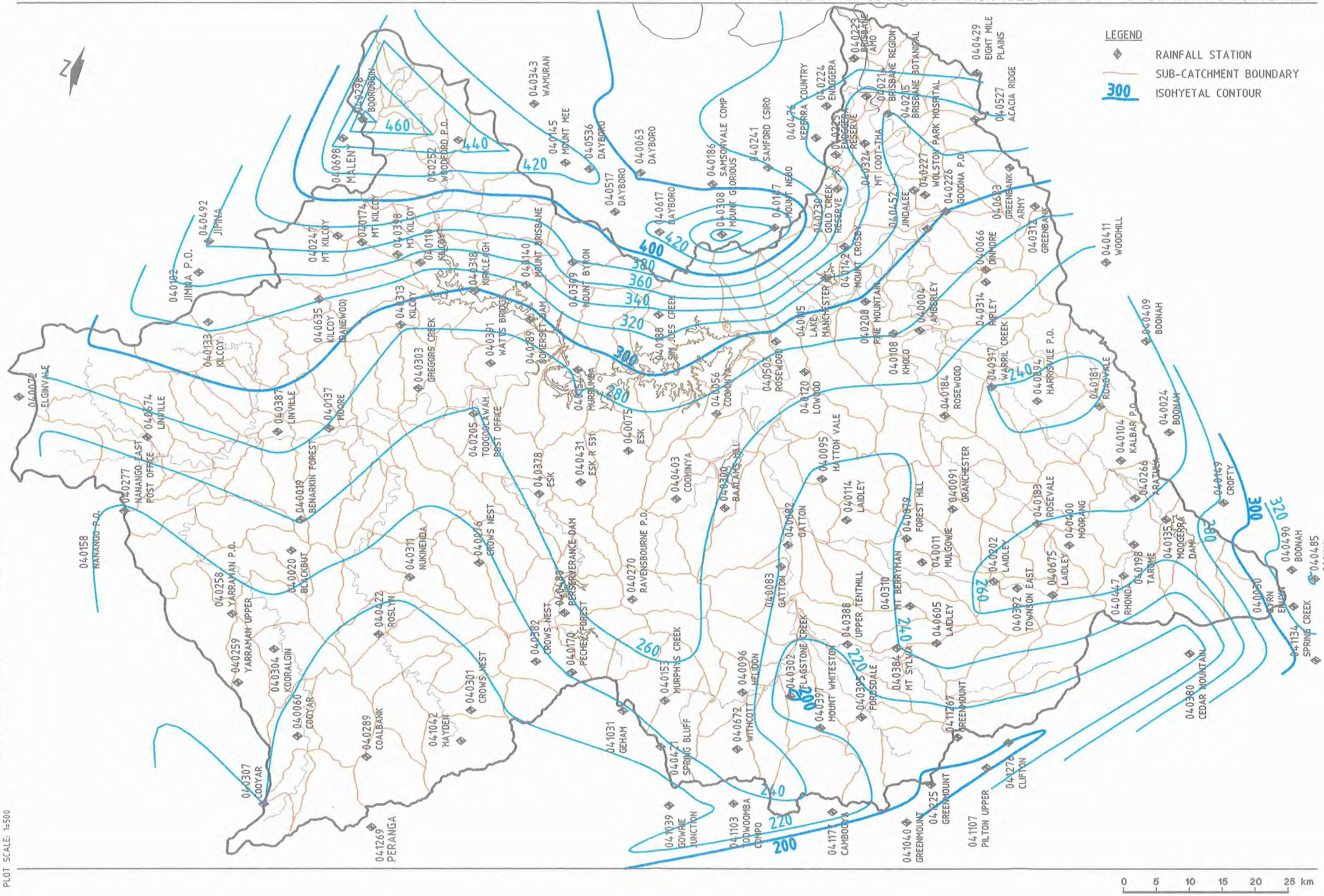

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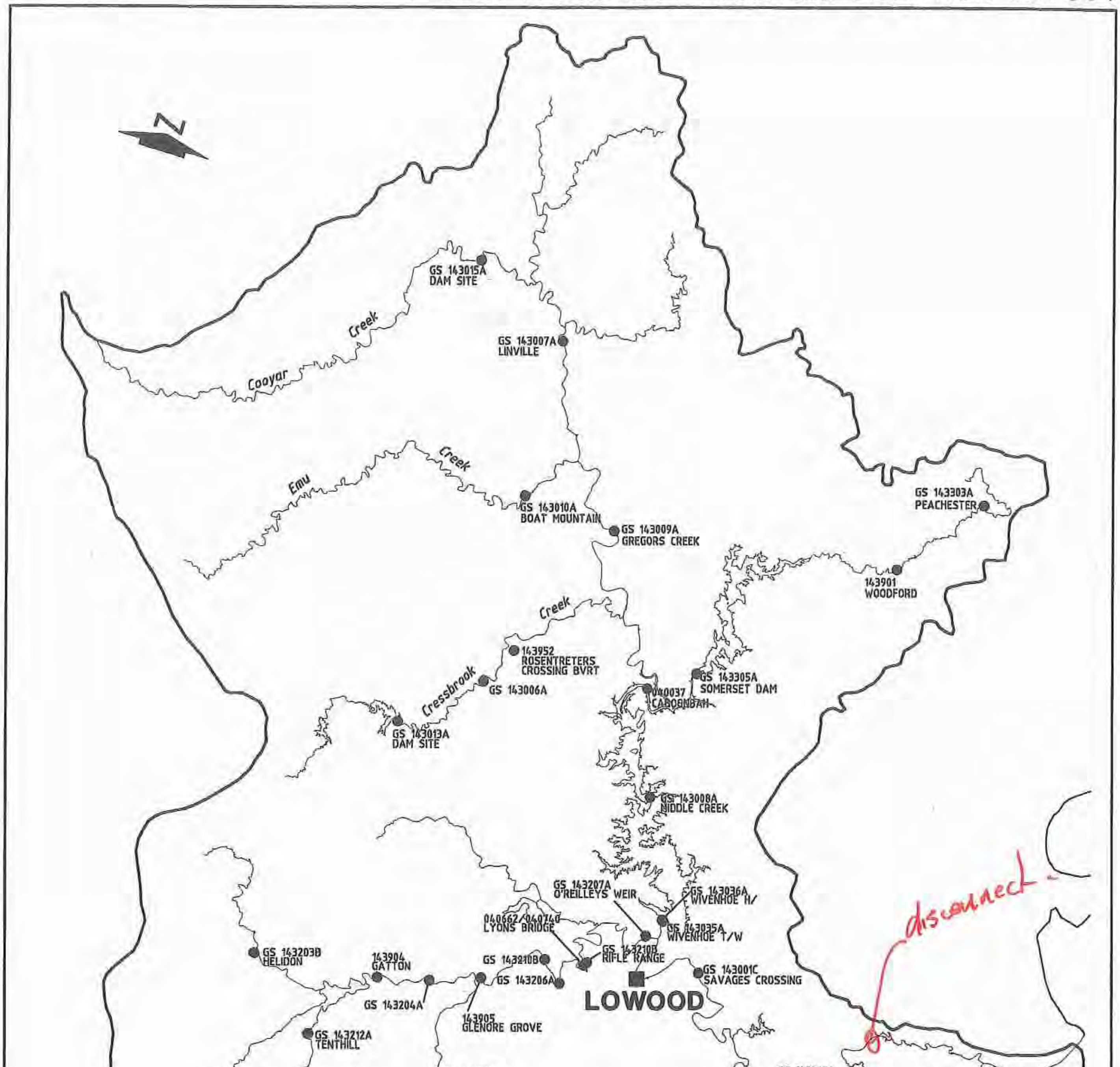
FIGURE 7-11

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY ANALYSIS LOCATION LAYOUT



FILE NAME: 04157-30 DISK N°: D:\DWG\BRISBANE N°: T004157 DATE: 3-7-97
PLOT SCALE: 1:750

FIGURE 7-12
BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT LOWOOD
- NO DAMS EFFECTIVE

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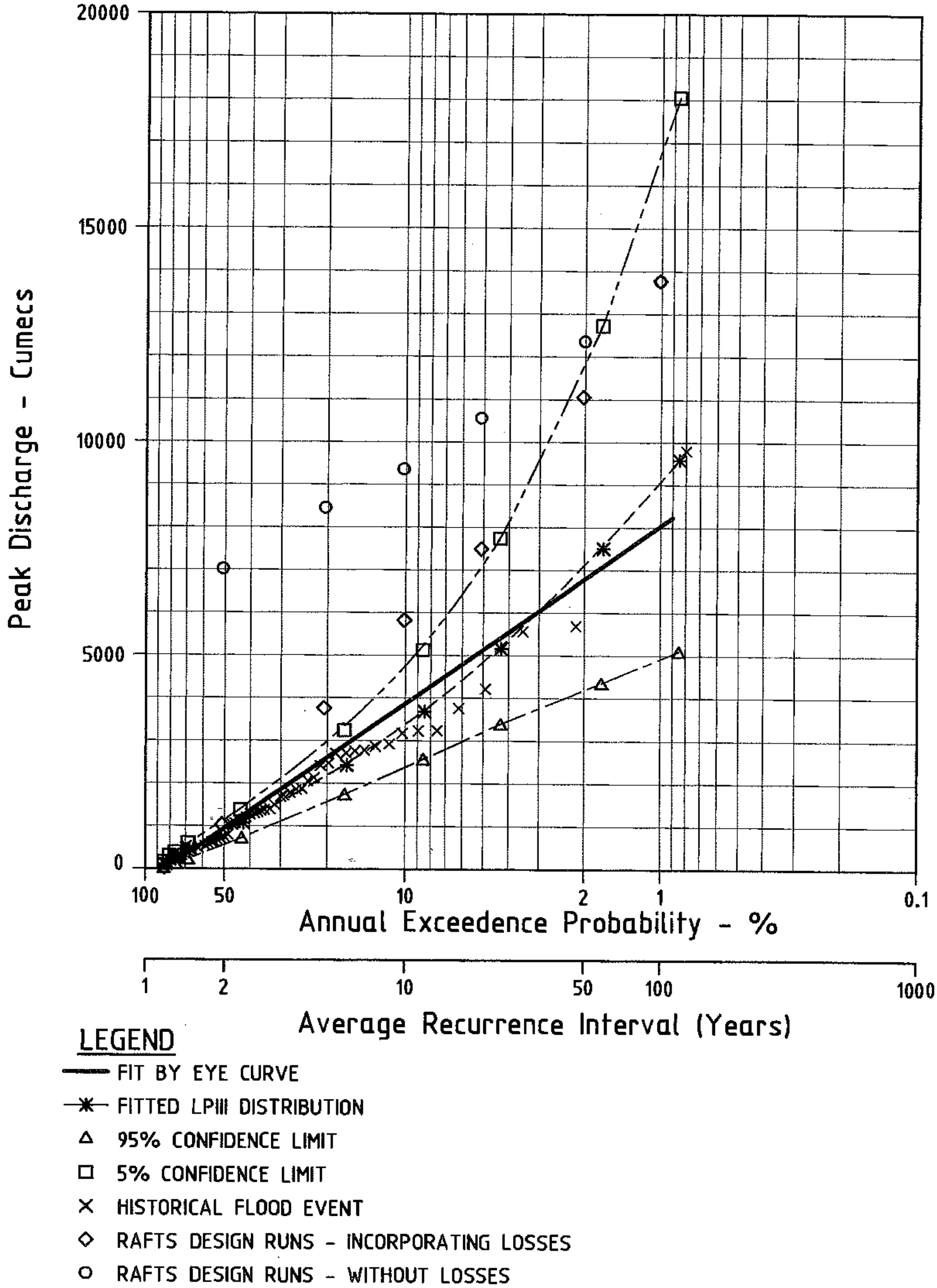
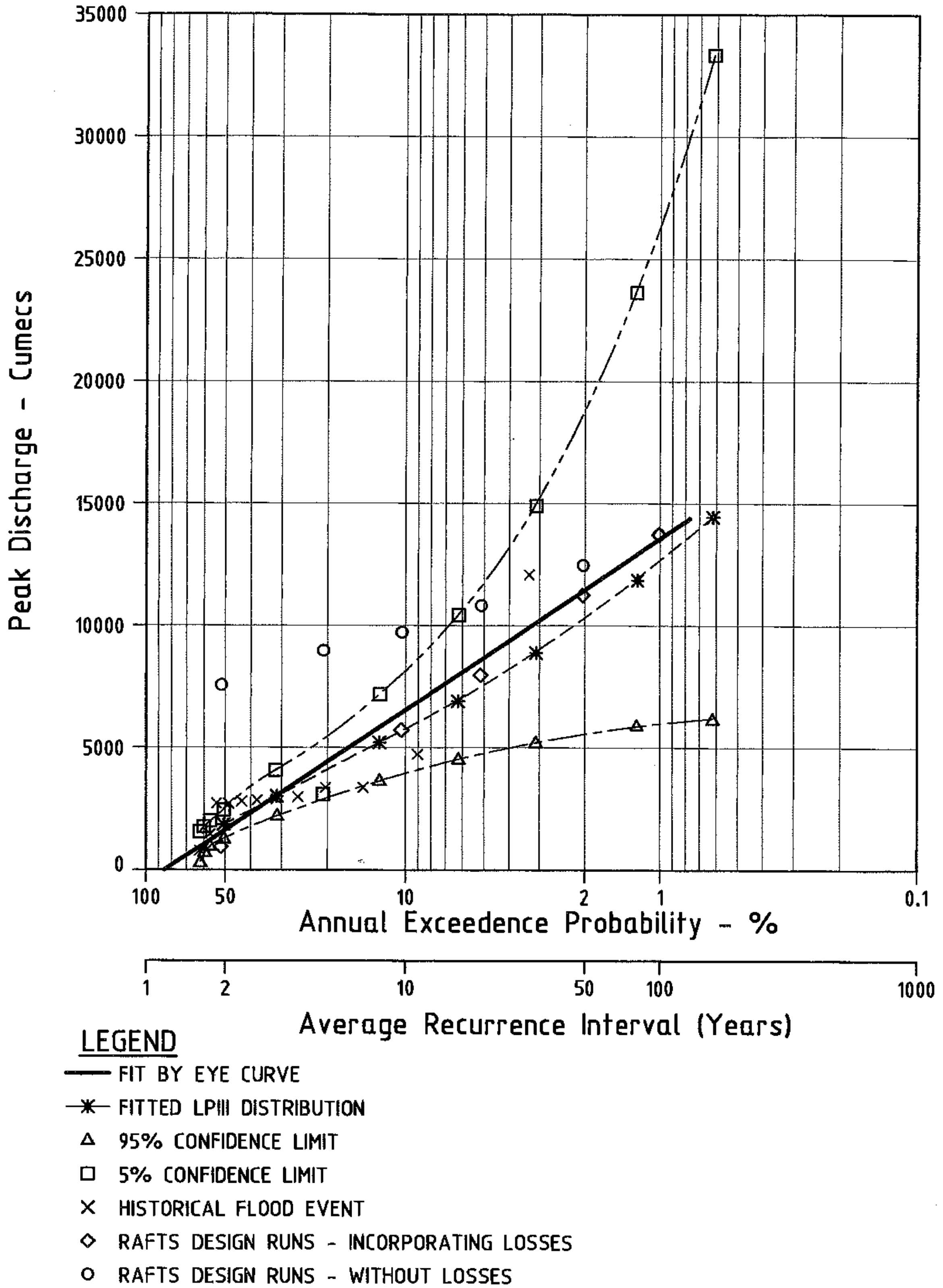


FILE NAME: 04157.21 DISK NO: D:\DWGS BRISBANE; T00157 DATE: 3-7-97
PLOT SCALE: 1=1

FIGURE 7-13

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT MOGGILL
- NO DAMS EFFECTIVE



FILE NAME: 04157-31 DISK N°: D:\DWG\BRISBANE FILE N°: T004157 DATE: 3-7-97
PLOT SCALE: 1=1

FIGURE 7-14

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT PORT OFFICE
(-0.15m AHD) - NO DAMS EFFECTIVE

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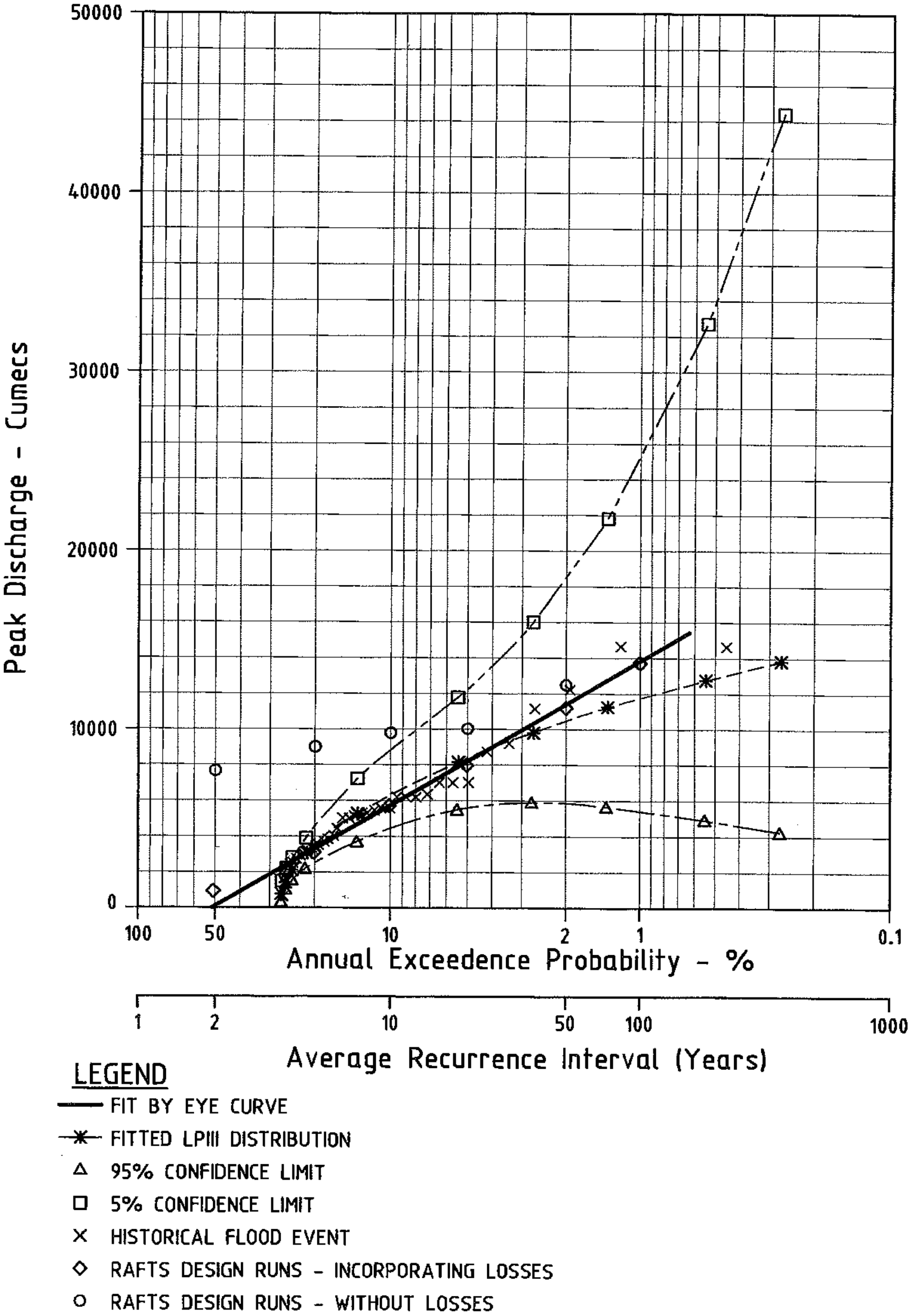

FILE NAME: 04157 31 DISK Nº: D:\DWG\BRISBANE Nº: T00157 DATE: 3-7-97
PLOT SCALE: 1=1

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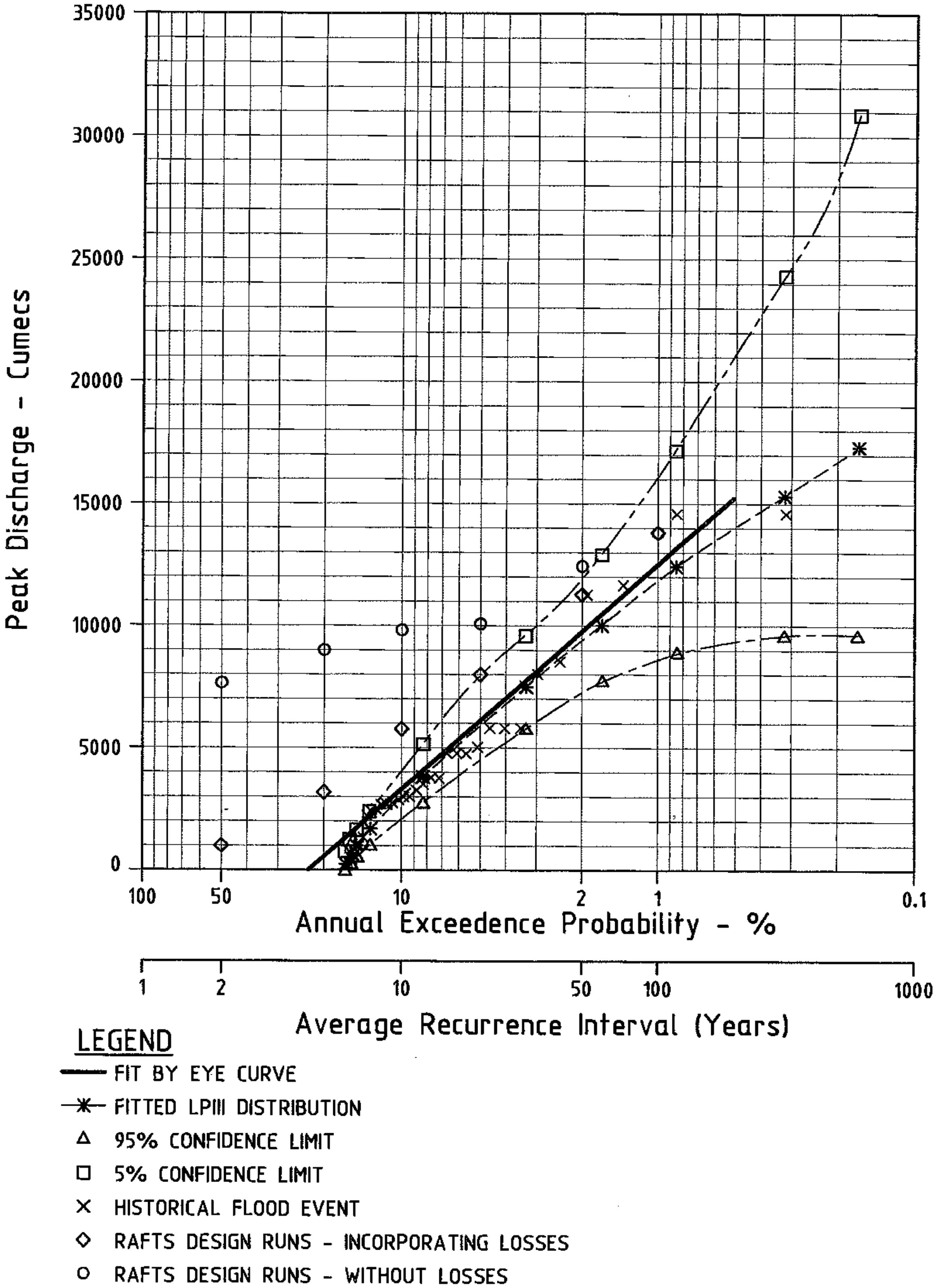
FIGURE 7-15

BRISBANE RIVER FLOOD STUDY
FLOOD FREQUENCY CURVE AT PORT OFFICE
(1.85m AHD, HIGHEST ASTRONOMICAL TIDE +0.15m)
- NO DAMS EFFECTIVE



FILE NAME: 04157-31 DISK N°: D:\DWG\BRISBANE N°: T004157 DATE: 3-7-97
PLC, SCALE: 1-

8. Design Event Hydraulics

8.1 Tailwater Boundary Conditions

Tailwater boundary conditions for design model runs were selected for a number of tidal conditions at the Western Inner Bar. These conditions were:

- Mean High Water Spring Tide (RL 0.92 m AHD) and
- Mean Low Water Spring Tide (RL -0.89 m AHD).

These levels were used at the downstream end of the Brisbane River as boundary conditions for the MIKE 11 hydraulic model.

It was recognised that varying conditions at the mouth of the Brisbane River (Western Inner Bar) may be caused by storm surges in Moreton Bay. These conditions are likely to impact on flood profiles within the lower reaches of the Brisbane River and were therefore investigated. The storm surge conditions analysed in this study were;

(i) 100 year ARI river flood coinciding with a 20 year ARI Moreton Bay storm surge

(ii) 20 year ARI river flood coinciding with a 100 year ARI Moreton Bay storm surge

(iii) 100 year ARI river flood coinciding with a 100 year ARI Moreton Bay storm surge.

Peak storm surge levels for the Western Inner Bar (post Wivenhoe Dam) were supplied by Council and are presented in **Table 8-1 - Western Inner Bar Flood Levels**.

Table 8-1 - Western Inner Bar Flood Levels

Design ARI (years)	Storm Surge Level (m AHD)	Storm Surge Level + Greenhouse Effect Levels (m AHD)
20	1.75	2.10
100	2.14	2.50

Brisbane City Council requires that an allowance of 300 mm be added to storm surge levels to account for Greenhouse effects. Once this level was determined it was rounded up to the nearest 0.1 m as required. Design modelling for this study used the adjusted Greenhouse effect tailwater levels presented in **Table 8-1**.

Following review of the cases assessed, due to the uncertainty of a storm surge occurring coincidentlly with the peak flow in the river, Council advised that the 100 year ARI flood profile be generated as follows:

The predicted flood profiles for the three combined flooding cases are presented in **Figure H-1 - Combined Tailwater and River Flooding Conditions - Moreton Bay Storm Surge**. These results are also tabulated in **Table H-1 - Combined Tailwater and River Flooding Conditions - Moreton Bay Storm Surge** in **Appendix H - MIKE 11 Model Results - Design Events**. The assessment assumed handrails at structures were blocked.

It can be seen that for the first case combining a 100 year ARI river flood with a 20 year ARI Moreton Bay storm surge, the tailwater level at the Western Inner Bar results in a 130 mm increase in flood level at the Walter Taylor Bridge (MIKE 11 model chainage 1037.11 km) when compared to a tailwater level of Mean High Water Spring Tide at the Inner Bar. An increase in water levels was predicted over the entire length of the Brisbane River with an increase at the Brisbane City Boundary of 30 mm.

The second case combined a 20 year ARI river flood with a 100 year ARI Moreton Bay storm surge. This case resulted in a significant increase in water levels throughout the lower Brisbane River reach when compared to the 20 year ARI design flood (MHWS). The increase in flood levels at the Walter Taylor Bridge and the Brisbane City Boundary were estimated to be 790 mm and 150 mm respectively.

The final configuration combined a 100 year ARI river flood with a 100 year Moreton Bay Storm surge. This combination caused an increase in water level of 190 mm at the Walter Taylor Bridge and 40 mm at the Brisbane City Boundary. Again the base case for this comparison was MHWS at the bar. This flooding combination of river flow and storm surge in Moreton Bay resulted in the highest predicted flooding levels throughout the Brisbane City Council Local Government Area of all the flooding cases considered. The joint probability of these events was considered to be in excess of 100 years ARI.

Following review of the cases assessed Council advised that the 100 year ARI flood profile be generated as follows:

- Determine the 100 year ARI river flood profile for a mean high water springs tailwater.
- Establish the flood profile for the 100 year ARI storm surge level with zero river flow.
- Adopt the highest predicted levels from each profile to establish the design flood profile.

8.2 Design Flood Profiles

The inflow hydrographs calculated by the RAFTS model for the full range of design storms were run through the MIKE 11 model for the current extent of urbanisation to generate a series of design flood profiles. The flood profiles for the Brisbane River have been plotted for the range of return periods and are presented in the following figures and drawing sheets:

- **Figure H-2 - Design Profiles for the Brisbane River - Combined** and **Drawing Sheet W10581-55**
- **Figures H-3a to H-3i - MIKE 11 Design Flood Profiles for the 5, 20 & 100 Year ARI Events (MHWS)** and **Drawing Sheets W10581-19 to 27.**
- **Figures H-4a to H-4i - MIKE 11 Design Flood Profiles for the 2, 10 & 50 Year ARI Events (MHWS)** and **Drawing Sheets W10581- 28 to 36.**
- **Figures H-5a to H-5i - MIKE 11 Design Flood Profiles for the PMF & 10 000 Year ARI Events (MHWS)** and **Drawing Sheets W10581-37 to 45.**
- **Figures H-6a to H-6i - MIKE 11 Design Flood Profiles for the 2 000, 1 000, 500 & 200 Year ARI Events (MHWS)** and **Drawing Sheets W10581-74 to 82.**

Design flood discharges and peak water levels are presented in **Table H-2 - MIKE 11 Predicted Design Flood Levels (MHWS)** and **Table H-3 - MIKE 11 Predicted Design Discharges (MHWS).** It has been assumed that the handrails at all structures would be fully blocked by debris during the design events. A sensitivity analysis has been performed to test the sensitivity of this assumption and it was found that the effects of blocked handrails were negligible.

8.3 HEC-RAS Model Construction and Calibration

Final this

During the model calibration phase of this study, it was decided that the HEC-RAS model would only be used to check the performance of the MIKE 11 model at major river crossings. This process is detailed in **Section 6.8 - HEC-RAS Check of Major Creek Crossings** in the ~~Calibration~~ Report ~~(SKM March 1997)~~. ~~The construction and calibration of the HEC-RAS model was deferred until the Design Events stage of the study~~.

The construction of the HEC-RAS model involved linking the structures analysed in the calibration phase of this report to the remaining cross sectional information used in the MIKE 11 model. The HEC-RAS and MIKE 11 models are essentially a duplicate of each other in all aspects.

Following the model setup, the 100 year ARI peak water levels and discharges were taken from the MIKE 11 model. The peak discharges varied along the length of the Brisbane River due to attenuation effects and adjoining river branches. To account for this phenomenon discharges were placed at strategic locations in order to accurately represent the river flow regime throughout the model.

To account for the complex interaction of storage within Oxley Creek and the link branches across Indooroopilly Golf course, the Oxley Creek inflow had to be adjusted in the HEC-RAS model. The MIKE 11 model could model this area in a dynamic process, however, as HEC-RAS is only a steady state model flood levels from BN1060 (AMTD 34.935) to BN950 (AMTD 39.095) were significantly underestimated. The flow at Oxley Creek was reduced significantly in MIKE 11 (approx 900 m^3/s), however this was due to storage and the link branch across the floodplain. HEC-RAS is unable to account for storage and automatic flow distribution into link branches cannot be achieved. The flow predicted by MIKE 11 at BN950 was therefore input into HEC-RAS at BN950 and the Oxley Creek inflow was neglected. This produced results within the required tolerances.

Peak water levels extracted from MIKE 11 were inserted at each cross section in the HEC-RAS model. These levels were used in a comparison role during the calibration of the HEC-RAS model. The calibration of the HEC-RAS model was based on altering Manning's n values used in the MIKE 11 model by a constant scaling factor of 0.85.

Using this scaling factor the water levels determined by the HEC-RAS model were generally within 150 mm of that predicted by MIKE 11 with an absolute average difference of 105 mm for the 100 year ARI event and an absolute average difference of 27 mm for the 10 year ARI event. These results are presented in **Appendix I - HEC-RAS Model Results** in **Table I-1 - HEC-RAS Model Calibration**. The roughness coefficients adopted in the HEC-RAS model are summarised in **Table I-2 - Comparison of MIKE 11 & HEC-RAS Manning's n Roughnesses**

8.4 River Hydraulic Characteristics

The HEC-RAS model was used to determine the bank full channel flood by using a range of flows and identifying the bank full flow at each cross section. Bank full flow was considered to be the first low bank which is located above the 2 year ARI flood level. MIKE 11 results for the 100 year ARI and 20 year ARI floods were inserted at strategic locations in HEC-RAS model to determine the velocities and conveyance at each section.

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Left bank, right bank and main channel velocities for the 100 year ARI and bank full flood were determined using HEC-RAS. Conveyances for the left bank, right bank and channel for the 100 year ARI and 20 year ARI floods were determined. The results for velocities and conveyance are tabulated in **Table I-3 - HEC-RAS Predicted Velocities and Table I-4-HEC-RAS Predicted Conveyances.**

It should be noted that these conveyances and velocities relate to the channel proper being at the extent of the tidal zone. During the calibration phase of the study, the MIKE 11 model was developed by defining the channel proper on the basis of roughness rather than a topographical basis. This was considered to be justified due to the significant differences between the roughness within the tidal zone and the roughness on the river banks and floodplains.

For consistency the calibration of the HEC-RAS model used the same parameters as those adopted by the MIKE 11 model and hence the channel proper is defined by the tidal zone within each cross section. This approach was also considered to be suitable for HEC-RAS as the model defines each cross section into three segments, these being:

- left overbank,
- channel, and
- right overbank.

Each of these segments define the distinct roughness appropriate to each cross section. This became a problem when the hydraulic characteristics had to be assessed. If the left and right overbanks are placed at bank full condition (based on topographical interpretation), then the HEC-RAS model calculates a composite roughness for the main channel using the formula:

$$n=\Sigma((P_i n_i)^{3/2})/P)^{2/3}$$

Due to both high wetted perimeters and relatively high Manning's n values along the Brisbane River banks, the composite channel roughnesses calculated by the HEC-RAS model were considered to be over estimated. This over estimation caused significant increases in water levels and decreases in conveyances for the entire cross section if roughness values consistent with MIKE 11 were used.

This meant that the HEC-RAS model would have to be calibrated as a stand alone model using a different Manning's n parameter set to that used in MIKE 11. After discussions with Brisbane City Council Officers, it was decided that it was most appropriate to use a consistent parameter set for this investigation.

9. Waterway Management

9.1 General Strategy

This component of the study required application of the calibrated hydraulic model for the lower Brisbane River to determine a revegetation strategy and delineate flood regulation lines.

The brief required that the combined effect of revegetation and rehabilitation, encroachment of development on the floodplain outside the regulation line and crossings of the river (upgraded as necessary) does not increase the 100 year ARI flood level by more than approximately 150 mm. After discussions with council it was decided that increases in water level up to 170 mm would be acceptable in selected locations provided private residences were not significantly effected.

9.2 Collation of Environmental Data

Prior to the commencement of the Waterway Management Strategy it was necessary to liaise with the Bikeway, Transport Planning Section and the Environment Management and Planning Sections of the Brisbane City Council.

Through contact with the Environmental Management and Planning Departments a data sheet containing various names and addresses of Environmental Groups throughout Queensland was obtained.

Specific groups were ~~targeted~~ identified according to their proximity to the Brisbane River and questionnaires were prepared and sent to these groups. Approximately 500 questionnaires to members of the specific community groups were sent however the response was considered poor.

Discussions with the Bikeway, Transport Planning Section revealed that no major works have been planned over the next five years with the exception of the construction of a new bikeway along Coronation Drive between the William Jolly Bridge and Victoria Bridge. These works involve the construction of a structure approximately 4.5 metres in width and about 1 metre above high tide level. The structure is to be built outside the existing freeway structure to avoid problems with freeway foundations.

This structure was not included in the hydraulic modelling as the decrease in conveyance due to the decrease in channel area would be negligible. Similarly due to the location and size of this structure it was considered that the resulting impacts would be negligible as the structure would be drowned out during a 100 year ARI event.

The existing bikeway running adjacent to Coronation Drive is also to be upgraded within the next few years however this project is in the preliminary phase and therefore no information was available.

9.3 Revegetation Strategy

It was proposed that the revegetation strategy would be developed primarily from information supplied by each of the surveyed community groups however due to the poor response limited revegetation locations were identified. Other areas had to therefore be located using photographic maps, topographical information and field surveys.

Most of the locations that have been identified for revegetation are currently open space areas. Revegetation of private residential areas has not been investigated as it was considered that these areas would generally be small and therefore have a negligible effect on the floodplain.

The combination of community groups input and the additional investigation resulted in a proposed revegetation strategy. This proposed revegetation strategy is presented in **Drawings W10581 Sheets 84 to 90**.

Drawings W10581 Sheets 84 to 90 also present locations where significant areas of vegetation currently exist. These locations may or may not represent areas of ecological significance. It is recommended that should development occur at any of the above locations some form of environmental investigation be undertaken to assess the possible ecological impacts.

The approach used to investigate the revegetation strategy for the Brisbane River was to increase mannings n roughness parameters within the calibrated hydraulic model (MIKE 11) to reflect changes imposed by the proposed revegetation.

Since the hydraulic model bank roughnesses at most locations exceeded 0.15 (to allow for bend losses), a sensitivity analysis was conducted to assess the impacts that revegetation would have on the 100 year flood level.

The sensitivity analysis was carried out by reducing the roughness values to 0.15 at the proposed revegetation locations. It was found that this reduction in roughness values caused the existing case 100 year ARI flood levels to decrease by 10 to 50 mm at these locations. The roughness values were then increased to their original values and 0.15 was added. This resulted in an increase in flood levels at these locations of between 10 to 50 mm above the existing 100 year ARI case. It was therefore concluded that the river was not sensitive to changes in bank roughness conditions.

The proposed revegetation strategy applies to locations where revegetation is below the 100 year ARI flood inundation level. Tree planting has been tested in all proposed locations as fully uncontrolled revegetation.

Fully unconstrained revegetation for the Brisbane River was defined as uncontrolled planting where manning roughnesses have been applied in the hydraulic model to a value of 0.15 above those values determined during the calibration of the MIKE 11 hydraulic model.

Extent of revegetation will be discussed on an individual reach basis in **Section 9-5 - Hydraulic Testing of Waterway Strategy Options** of this report.

9.4 Regulation Line Assessment

Regulation lines are used by council as a control on development encroaching onto the floodplains of major creeks and rivers. They are set to ensure that works such as placement of fill does not compromise existing flood immunity.

Interim regulation lines can be defined as offsets from real property boundaries. Interim lines have not been supplied by council for this study hence regulation lines have been set using the calibrated MIKE 11 hydraulic model results.

This work was principally based on the worst case design scenario of the occurrence of the 100 year ARI flood under current catchment development superimposed with the regulation lines and revegetation strategy in place. The geometry of river cross sections was adjusted to reflect flood conveyance and storage in the areas outside the regulation lines. The combined effect of this encroachment and the revegetation strategy was considered as described in **Section 9-5 - Hydraulic Testing of Waterway Strategy Options** of this report.

In some reaches, several solutions to the regulation line location and revegetation strategy satisfy the hydraulic constraints. In these locations practical regulation lines were adopted after consideration of planning, environmental and economic criteria.

A final check was made to ensure that regulation lines provided a minimum 15 m buffer to the top of the river bank to manage future erosion and sedimentation problems. After discussions with Council it was decided that the top of bank was considered to be the first bank which was above the 2 year ARI flood level.

Development levels were then set at 300 mm above the 100 year ARI flood with the revegetation and regulation lines in place. Where the Moreton Bay 100 year ARI storm surge levels were higher than the 100 year ARI river levels the surge levels were used.

9.5 Hydraulic Testing of Waterway Strategy Options

The regulation lines were finalised on the above basis to produce a reasonable balance between regulation line requirements and water level increases.

Most emphasis was placed on existing developed areas and any recommended zoning adjustments have been based purely on a hydraulic basis and prior to a change of rezoning other factors should be considered.

A summary of the processes involved and the decisions made in preparing the combined regulation line and revegetation strategy is provided in this section. The assessment is detailed on a reach by reach description.

Placement of the regulation lines are presented in **Drawings W10581 - Sheets 98 to 104** and corresponding flood level information is presented in **Table J-1 - Flood levels for the Regulation Lines and Revegetation Case for Flood Events 100 Year ARI to 2 Year ARI.** Corresponding flows are presented in **Table J-2 - Discharges for the Regulation Lines and Revegetation Case for Flood Events 100 Year ARI to 2 Year ARI.**

The following Tables present affluxes, placement of regulation lines and development levels for the Brisbane River:

- **Table J-3 - Affluxes Due to Regulation Lines, Revegetation Strategy and Combined Effects for the 100 Year ARI Flood.**
- **Table J-4 - Development Levels and Location of Regulation Lines for the Brisbane River.**

Flood profiles for the Regulation Lines and Revegetation Strategy are presented in the following figures and Drawings:

- **Figure J-1a to J1i - MIKE 11 Design Flood Profiles for the 5, 20 and 100 Year ARI Flood Profiles (MHWS) - Regulation Lines and Revegetation Strategy Case** and **Drawings W10581 Sheets 56 to 64.**

- **Figure J-2a to J2i - MIKE 11 Design Flood Profiles for the 2, 10 and 50 Year ARI Flood Profiles (MHWS) - Regulation Lines and Revegetation Strategy Case** and **Drawings W10581 Sheets 65 to 73.**

- **Figure J-3a to J3i - MIKE 11 Design Flood Profiles for the 2, 10 and 50 Year ARI Flood Profiles (MHWS) - Regulation Lines and Revegetation Strategy Case** and **Drawings W10581 Sheets 74 to 82.**

Design Afflux for the 100

During the Regulation line assessment, it was found that the hydraulic model was sensitive to the placement of the regulation lines above the Centenary Bridge.

This sensitivity was most likely due to the regulation lines forming a relatively consistent cross section which in turn increased the peak discharges downstream in the order of 200 to 300 m^3/s.

This increase in discharge had a significant impact in flood levels downstream of the Centenary Bridge and hence the moving of regulation line upstream of Centenary Bridge was very restrictive. Generally the amount of fill required at most locations upstream of Centenary Bridge was significant and hence was considered to be impractical.

Reach 1 - Upper Boundary

Cross Sections: BN2020 to BN1980
Chainages: 1000 km to 1001.865 km
AMTD: 78.66 km to 76.795 km

Potential Flooding

No flooding of residences will occur in this reach. Any flooding which does occur will only inundate open space within the Brisbane City Boundary.

Revegetation

- No revegetation was assessed in this reach.
- As there is considerable natural vegetation throughout this reach, the riverbanks could be considered as areas of ecological importance.

Regulation Lines

- Regulation lines were generally set at the extent of inundation as major encroachments onto the floodplain caused an increase in discharge which increased affluxes to greater than 150 mm at the Merivale Bridge and downstream of the Centenary Bridge.
- BN1990 used a combination of moving the regulation line on the one bank and extent of inundation on the other bank to achieve the maximum allowable afflux.
- The range of affluxes in this reach with revegetation and regulation lines in place was from 0 to 30 mm.

Zoning Adjustments

- Current zoning through this reach is predominantly Open Space and Non-Urban. As no private residences are affected by the inundation lines, no rezoning for this reach has been recommended.

Reach 2 - Barellan Point

Cross Sections: BN1970 to BN1910
Chainages: 1002.35 km to 1005.325 km
AMTD: 76.310 km to 73.335 km

Potential Flooding

From BN1970 to BN1930, flooding will affect those properties along Hawkesbury Road. From BN1920 to BN1910, several properties in Hawkesbury Road, and one in Matfield Street will be affected by flooding during a 100 year ARI flood event.

Revegetation

- No revegetation was assessed in this reach.
- As there is considerable natural vegetation throughout this reach, the riverbanks could be considered as areas of ecological importance.

Regulation Lines

- Regulation lines were generally set at the extent of inundation as major encroachments onto the floodplain caused an increase in discharge which increased affluxes to greater than 150 mm at the Merivale Bridge and downstream of the Centenary Bridge.
- BN1970 used a combination of moving the regulation line on the one bank and extent of inundation on the other bank to achieve the maximum allowable afflux.
- The range of affluxes in this reach with revegetation and regulation lines in place was from 0 to 20 mm.

Zoning Adjustments

- Current zoning throughout this reach is Open Space and Non-Urban. As no private dwellings are affected by the inundation lines, no rezoning for this reach has been recommended.

Reach 3 - Riverview

Cross Sections: BN1900 to BN1870
Chainages: 1005.87 km to 1007.41 km
AMTD: 72.79 km to 71.25 km

Potential Flooding

Properties along Hawkesbury Road, Myora Street, Aitcheson Street and Moggill Road will be partially affected by flooding during a 100 year ARI flood event.

Revegetation

- At BN1870 (reserve at Moggill Ferry), full tree planting was tested with flood level increases of 20 mm.
- All revegetation is to a standard of roughness, n = 0.15
- As there is considerable existing vegetation throughout this reach, the riverbanks could be considered as areas of ecological significance.

Regulation Lines

- Regulation lines were generally set at the extent of inundation as major encroachments onto the floodplain caused an increase in discharge which increased affluxes to greater than 150 mm at the Merivale Bridge and downstream of the Centenary Bridge.
- BN1900, BN1880 and BN1870 used a combination of moving the regulation line on the one bank and extent of inundation on the other bank to achieve the maximum allowable afflux.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -60 to 0 mm.

Zoning Adjustments

- Zoning in this reach is predominantly Open Space along the riverbank and Future Urban.
- No rezoning has been recommended for this reach.

Reach 4 - Redbank

Cross-Sections: BN1860 to BN1770
Chainages: 1007.920 km to 1011.980 km
AMTD: 70.740 km to 66.680 km

Potential Flooding

The majority of flooding in this reach occurs onto open space.

At BN1860, flooding occurs back onto the start of Moggill Road, however the extent of flooding appears to occur over open space.

From BN1840 to BN1820, a localised area of flooding spreads back into Moggill Road inundating any properties in Aitcheson Street.

Flooding from BN1820 to BN1810 reaches Moggill / Malfield Road, but there does not appear to be any dwellings affected.

Properties along the river side of Prior's Pocket Road will be affected by flooding to some extent.

Revegetation

- No revegetation was assessed in this reach.
- There is considerable existing vegetation along the riverbanks, and also a large patch from BN1770 to BN1820, therefore the riverbanks could be considered zones of ecological significance.

Regulation Lines

- Regulation lines were generally set at the extent of inundation as major encroachments onto the floodplain caused an increase in discharge which increased affluxes to greater than 150 mm at the Merivale Bridge and downstream of the Centenary Bridge.
- BN1860, BN1830, BN1820, BN1780 and BN1770 used a combination of moving the regulation line on the one bank and extent of inundation on the other bank to achieve the maximum allowable afflux.
- From BN1840 to BN1830, regulation lines extend into some rural residential properties and non urban properties to a minor extent.
- From BN1860 to BN1850, regulation lines significantly affect several rural residential properties.
- The range of affluxes in this reach with revegetation and regulation lines in place was from -120 to -60 mm.

Zoning Adjustments

- From BN1860 to BN1850, sections of those Rural Residential zoned properties significantly affected by the regulation lines should be rezoned to Open Space (OS).
- Non Urban properties within this reach should be assessed on an individual basis and rezoned to Open Space if appropriate.

Reach 5 - Goodna

Cross Section: BN1760 to BN 1720
Chainage: 1012.475 km to 1014.110 km
AMTD: 66.185 km to 64.550 km

Potential Flooding

Considerable flooding will occur during a 100 year ARI event on Prior's pocket.

From BN1750 to BN1710, flooding extends right back to the kink in Priors Pocket Road, covering the entire point, except for two patches of higher ground.

Revegetation

- No revegetation was assessed in this reach.
- Considerable vegetation exists right along the riverbanks in this reach. The riverbanks could be considered as areas of ecological significance.

Regulation Lines

- Regulation lines were generally set at the extent of inundation as major encroachments onto the floodplain caused an increase in discharge which increased affluxes to greater than 150 mm at the Merivale Bridge and downstream of the Centenary Bridge.
- BN1750 used a combination of moving the regulation line on the one bank and extent of inundation on the other bank to achieve the maximum allowable afflux.
- The point at the end of Priors Pocket Road is almost completely inundated from BN1730 to BN1670.
- The range of affluxes in this reach with revegetation and regulation lines in place was from -40 to -20 mm.

Zoning Adjustments

Particular

- Properties throughout this reach are generally zoned Open Space.
- Non Urban and ~~Private~~ Development properties within this reach should be assessed on an individual basis and rezoned to Open Space if appropriate.

Reach 6 - Wacol

Cross Section: BN1710 to BN 1610
Chainages: 1014.610 km to 1019.095 km
AMTD: 64.050 km to 59.565 km

Potential Flooding

From BN1710 to BN1670, Priors Pocket is flooded back until the kink in Priors Pocket Road.

From BN1660 to BN1650, properties in Priors Pocket Road and part of Avonmore Street will be affected by flooding in a 100 year ARI flood event.

From BN1640 to BN1630, flooding follows an ~~unknown~~ unnamed creek (adjacent Stratford Street), and inundates the rear of several properties west of Livesay Road, inundation spreads north to Ellerby Street.

From BN1620 to BN1610, properties along Vanwall and Zelita Road will suffer inundation to some extent, as will the Department of Primary Industry Land.

Revegetation

- No revegetation was assessed in the Wacol reach.
- From BN1610 to BN1700 there is considerable existing vegetation. The riverbanks in these areas could be considered as areas of considerable ecological significance.

Regulation Lines

- Regulation lines were generally set at extent of inundation as encroachment onto the floodplain caused an increase in flood levels at the Merivale Bridge and downstream of the Centenary Bridge.
- BN 1690, BN1680, BN 1670 and BN 1660 used a combination of moving the regulation line on the one bank and extent of inundation on the other bank to achieve the maximum allowable afflux.
- BN 1650, BN1640 and BN 1630 used a combination of moving the regulation line on both banks to achieve the maximum allowable afflux.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -60 to 70 mm.

Zoning Adjustments

- Non Urban and Special Use properties within this reach should be assessed on an individual basis and rezoned to Open Space if appropriate.

Reach 7 - Riverhills

Cross Section: BN1600 to BN1530
Chainage: 1019.49 km to 1021.715 km
AMTD: 59.170 km to 59.945 km

Potential Flooding

At BN1530, a localised area of flooding inundates those properties adjacent to the park bounded by Juba and Zambesi Streets, with flooding extending up into Horizon Drive.

From BN1540 to BN1550, flooding extends over the largely undeveloped areas bounded by Pauluna, Loddon Streets and Westlake Drive. Numerous residences will also be inundated during a 100 year ARI flood event. On the western side of the river properties in Lather Road will suffer some extent of flooding.

From BN1570 to BN1600, an extensive area of flooding occurs in the Moggill Country Club, Booker Place and the swimming pool. However flooding does extend into a significant number of residential areas in Sugarwood Street, Ghost Gum Street up to Moggill Road, Birkin Road and across into Banyan Street.

At BN1600, flooding follows Wolston Creek, however the majority of this flooded area appears to be undeveloped.

Revegetation

- From BN1530 to BN1540 (Juba Street Park), full tree planting was tested with flood level increases of 20 mm.
- All revegetation is to a standard of roughness, n = 0.15
- From BN1560 to BN1600, there is considerable existing vegetation, therefore the riverbanks in this area could be considered zones of ecological significance.

Regulation Lines

- Regulation lines were generally set at the extent of inundation as major encroachments onto the floodplain caused an increase in discharge which increased affluxes to greater than 150 mm at the Merivale Bridge and downstream of the Centenary Bridge.
- BN1600, BN1590, BN1580, BN1570 and BN1540 used a combination of moving the regulation line on the one bank and extent of inundation on the other bank to achieve the maximum allowable afflux.
- BN1560, BN1550 and BN1530 used a combination of the 15 m buffer rule and extent of inundation to achieve the maximum allowable afflux.
- From BN1550 to BN1530, a block of property zoned as Future Urban will be affected considerably by the regulation lines.
- From BN1580 to BN1530, numerous residential properties will be affected by the regulation lines.

- The range of affluxes in this reach with revegetation and regulation lines in place ranges from 40 to 60 mm.

Zoning Adjustments

- The block of Future Urban property from BN1600 to BN1590 should be rezoned to Open Space
- From BN1580 to BN1530, those waterfront Residential A properties in Lather Street and Sumner Road should be rezoned to Open Space (OS).
- From BN1560 to BN1530, sections of those Rural Residential zoned properties significantly affected by the regulation lines should be rezoned to Open Space (OS).

Reach 8 - Westlake

Cross Section: BN1520 to BN1410
Chainages: 1021.895 km to 1026.680 km
AMTD: 56.765 km to 51.980 km

Potential Flooding

From BN1510 to BN1500, flooding generally follows Pullen Pullen Creek, with those properties bordering the creek suffering inundation during a 100 year ARI flood event. This area appears to be largely open space.

From BN1470 to BN1480, those properties in Westlake Drive will experience varying degrees of flooding.

Significant flooding occurs from BN1470 to BN1460, with floodwaters extending into Westlake and the properties surrounding it. Properties as far south as Raeside Street, east to Pending Street and west to the end of Westlake Drive will suffer flooding.

Another very large area of flooding occurs between BN1450 and BN1440 due to Mt Omaney Creek. The McLeod Country Golf Course, park, treatment works and the Jamboree Heights Primary school will all be inundated during a 100 year ARI flood event. Properties into Horizon Drive, Westlake Drive and Arrabri Avenue will also all suffer flooding.

At BN1400 flooding will occur along an ~~unknown~~ unnamed creek (adjacent to Moggill Creek), with floodwaters extending into largely undeveloped land. Properties on the northern side of Moggill Creek will also suffer problems with inundation as will the University of Queensland Veterinary Farm.

Revegetation

- At BN1410 (Jindalee Park), full tree planting was tested with flood level increases of 10 mm.
- All revegetation is to a standard of roughness n = 0.15.
- There is considerable existing vegetation along the riverbanks throughout this reach. Therefore, the banks in this reach could be classified as zones of ecological significance.

Regulation Lines

- The regulation lines at BN1470, BN1430 and BN1420 have been set using the 15 m buffer rule as this is the governing criteria.
- BN1520, BN1510, BN1490, BN1460 and BN1440 used a combination of the 15 m buffer rule and extent of inundation to achieve the maximum allowable afflux.
- BN1500 and BN1450 used a combination of moving the regulation line on the one bank and extent of inundation on the other bank to achieve the maximum allowable afflux.

- BN1500, BN1480 and BN1410 used a combination of the buffer rule on one bank and the moving of regulation line on the other bank until the maximum allowable afflux was obtained
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -40 to 70 mm.

Zoning Adjustments

- From BN1520 to BN1410, those riverside properties zoned Residential A should be rezoned to Open Space. Those properties in Callabonah Street, Barcoorah Street, Westlake Drive, Carnegie Street, Mt Omaney Drive and Coolaroo Drive will be most effected should rezoning occur.
- From BN1520 to BN1500 those properties zoned rural residential should be rezoned to Open Space.
- From BN1490 to BN1410 those properties zoned Special Use should be rezoned to Open Space

Reach 9 - Mermaid Reach

Cross Section: BN1400 to BN1270
Chainages: 1026.900 km to 1031.995 km
AMTD: 51.76 km to 44.665 km

Potential Flooding

Extensive flooding of properties occurs throughout the whole of this reach. Between BN1270 and BN1280, a localised area of flooding inundates properties as far south as Cliveden Avenue with flooding occurring in parts of Teesdale Street, Richmond Street and Oxley Terrace and west to properties in Blackheath Road.

From BN1290 to BN1340, the largely undeveloped area bounded by Seventeen Mile Rocks Road will be inundated during a 100 year ARI flood event. Also in this region, properties in Newland Street and the Fig Tree Pocket Pony Club will also suffer flooding.

From BN1340 to BN1360 flooding occurs through the watercourse (located near Jindalee Bridge) and extends past Oldfield Road. Properties in Yallambee Road, Capitol Drive, Sinnamon Road and parts of Oldfield Road will all be inundated during a 100 year ARI flood event.

From BN1370 to BN1400, a large area of flooding occurs through a highly developed residential area. Flooding will extend as far South as Curragundi Road and into a section of Arabri Avenue between sections BN1380 and BN1390. From BN 1390 to BN1400, this flooding is limited to properties along Mt Omaney Drive and Bareena Avenue. On the northern side of the river, flooding occurs through mostly undeveloped land north into Scenic Road.

Revegetation

- At BN1400 (Jindalee Park), full tree planting was tested with flood level increases 0.01 m. All revegetation is to a standard of roughness, n = 0.15.
- There is considerable existing vegetation throughout this reach and the riverbanks may therefore be considered areas of ecological significance.

Regulation Lines

- The 15 meter buffer rule was generally used for cross sections in this reach.
- BN1400, BN1370 and BN1330 on one bank regulation line used the 15 m buffer rule and the other bank regulation line has been moved until the maximum allowable afflux has been achieved.
- At BN1360 one bank regulation line has been set at inundation and the other bank has been set using the 15 m buffer rule.
- From BN1270 through to BN1300, regulation lines are set along the riverbank affect residential A and Future Urban areas.

- Regulation lines extend significantly into areas zoned as residential A and non urban between sections BN1330 and BN1320.
- Between BN1300 and BN1310 a significant amount of general industry land is affected by the regulation lines.
- Between BN1330 and BN1400 significant amounts of Residential A, Future Urban, Rural Residential, ~~Private~~ Particular Development and CN land is affected by the regulation lines.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -40 to 120 mm.

Zoning Adjustments

- The property zoned General Industry and Future Industry between sections BN1290 and BN1310, should be rezoned to Open Space, extending back to Sinnamon Road.
- Residential A properties within this reach should be assessed as to the extent to which regulation lines affect the properties and zoned Open Space as appropriate.
- Properties zoned Future Urban should be rezoned to open space.
- ~~Private~~ Particular development and CN properties should be assessed on an individual basis and rezoned to open space as appropriate.

Reach 10 - Sherwood Reach

Cross Section: BN1260 to BN1200
Chainage: 1032.230 km to 1034.890 km
AMTD: 46.430 km to 43.770 km

Potential Flooding

From BN1200 to BN1210, properties bounding Cubberla Creek will all suffer flooding during a 100 year ARI flood event, especially those properties in Jesmond Drive, Needham Street, Ningana Street, Aminga Street and Sprenga, Karella and Thiesfield Streets. On the Eastern side of the River, some properties in Molonga Terrace, Long Street and Kianga Streets will all experience flooding.

From BN1220 to BN1230, Sherwood Forest Park and those streets bounding it, will suffer inundation, especially Turner, Jolimont, Ferry and Joseph Streets. On the Western side, some properties in Jesmond road will experience a degree of flooding.

In the 100 year ARI event, extensive flooding into residential areas will occur between BN1240 and BN1260, with only the higher properties in the Cylene Court and Michelangelo / Botticelli Street vicinity being unaffected.

Revegetation

- From BN1250 to BN1260 (Mandalay Park) and at BN1220 (Sherwood Forest Park), full tree planting was tested with no increase in flood levels.
- All revegetation is to standard of roughness of n = 0.15
- From BN1240 to BN1260, there is considerable existing vegetation and therefore, the riverbanks may be considered as areas of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- Between BN1200 and BN1210, regulation lines will extend into existing private residences and also into an area of land zoned as Non Urban.
- From BN1210 to BN1260, numerous private residences will be affected by the regulation lines to a certain extent.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 90 to 150 mm.

Zoning Adjustments

- The property designated as future urban should be partially rezoned to incorporate an open space corridor to the extent of the regulation lines between BN1210 and BN1220.
- From BN1200 to BN1260, properties zoned Residential A should be assessed to determine the extent to which regulation lines affect properties. Those properties significantly affected by the regulation lines should be rezoned to Open Space.
- Special Use, Private Development and Non Urban properties should be assessed on an individual basis and rezoned as appropriate.

Particular

Reach 11 - Chelmer Reach

Cross Section: BN1190 to BN1150
Chainage: 1035.474 km to 1036.915 km
AMTD: 43.246 km to 41.745 km

Potential Flooding

In this reach, flooding is limited to a localised pocket between sections BN1160 and BN1170, with some flooding on the Eastern side.

The localised flooding between sections BN1160 and BN1170 extends as far inwards as Moggill Road and is bounded on the southern side by Boundary Road, with some flooding into Market and Minkara Streets. Flooding on the Northern side generally follows Witton Creek, with flooding extending into Kate Street, Vera Street and Aaron Place. On the eastern side, properties in Longman Terrace, Sutton and Morley Streets will all suffer inundation during a 100 year ARI flood.

Between sections BN1170 and BN1180, another localised area of flooding occurs causing inundation in properties located in Brinkworth Place, Jainba and Jerrang Streets.

From BN1180 to BN1190, properties bounding Cubberla Creek will experience flooding problems, especially those properties in Dobell Street and parts of Clandon and Forlong Streets.

Revegetation

- No revegetation was assessed in this reach.
- As there is considerable existing vegetation throughout this whole reach, the riverbanks and the areas bounding Cubberla Creek, could be considered an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- Throughout this reach, regulation lines will extend significantly into private residential properties. Some properties will be affected by the regulation lines to a greater extent than others.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 110 to 140 mm.

Zoning Adjustments

- Rezone those Residential A and Residential B properties, significantly affected by the regulation lines, to Open Space (OS), especially those properties in Sutton Street and Morley Street.

Reach 12 - Indooroopilly Reach

Cross Section: BN1140 to BN1070
Chainage: 1037.090 km to 1039.100 km
AMTD: 41.570 km to 39.560 km

Potential Flooding

There is an extensive area of flooding of this whole reach, especially on the Chelmer side of the river. From BN1110 to BN1070, flooding occurs as far back as Kitchener / Appel Street with this corridor narrowing at BN1080 to Chanter Street. Chelmer Oval, Faulkner park, Graceville Memorial Park, the Graceville Primary School and a very large number of residences will all be inundated during a 100 year ARI flood event.

On the Eastern side of the river, flooding is limited to Thomas and Sir John Chandler Park, with some properties in Ivy Street, Clarence Road and Glencairn Avenue suffering some flooding.

Revegetation

- No revegetation was assessed in this reach.
- There is considerable existing vegetation throughout this reach, thus the riverbanks could be considered an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has generally been applied to regulation lines throughout this reach.
- BN1140 regulation lines were set using the 15 m buffer rule on one side and adjusted on the other side until the maximum allowable afflux was achieved.
- BN1120 regulation lines were adjusted on both sides until the maximum allowable afflux was achieved.
- Regulation lines at BN1070 used the 15m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at this location.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 60 to 150 mm.

Zoning Adjustments

- Rezone Residential A properties in Leybourne Street and Queenscroft Avenue between BN1070 and BN1080 to Open Space (OS).
- Properties in Ivy and Roseberry Streets should be rezoned from Residential A to Open Space.
- ~~Private~~ Development and Special Use properties should be assessed on an individual basis and rezoned as appropriate.

Particular

<u>Reach 13 - Canoe Reach</u>

Cross Section: BN1060 to BN990
Chainage: 1039.565 km to 1041.960 km
AMTD: 39.095 km to 36.700 km

Potential Flooding

The majority of flooding in this reach is confined to the Oxley Creek / Moolabin Creek areas, with some localised pockets of inundation.

From BN1060 to BN1040, properties bounding Oxley Creek will all suffer inundation with the limits being Tweedale/Blackwood Street to the west and David Street to the east with those higher properties in King Arthur Terrace, Merlin and Camelot Streets being immune to flooding. Sir John Chandler Park and the Indooroopilly Golf Course will be completely inundated during a 100 year ARI flood event.

From BN1020 to BN1010, flooding occurs through the Yeerongpilly Animal Research Institute and floods some properties in Paragon and Ortive Streets. Flooding along Moolabin Creek is also a problem in this area, with the Brisbane Golf Course and properties back to Tennyson Memorial Avenue and Station Road being affected.

From BN1000 to BN990, the main problem areas in a 100 year ARI flood event will be Stevens Street and Nelson Street back to Fairfield Road. Some properties in Yeronga, Feez and Astolat Streets will also be affected by flooding to some extent.

Revegetation

- From BN1020 to BN1030 (adjacent Yeerongpilly Animal Research Institute), full tree planting was tested with flood level increases of the order of 0.01 m.
- All revegetation is to a standard of roughness of n = 0.15.
- There is considerable existing vegetation throughout this reach, thus the riverbanks could be considered an area of ecological significance.

Regulation Lines

- Regulation lines at BN1060 to BN 990 used the 15 m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at these locations.
- From BN990 to BN1010 and from BN1030 to BN1050, regulation lines will extend into the rear of numerous private dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 80 to 130 mm.

Zoning Adjustments

- Rezoning of Residential B dwellings in Rome Street south, Astolat Street, Feez, Yeronga and Steven Streets to Open Space (OS) is recommended between BN990 and BN1010.
- It is also recommended that from sections BN1040 and BN1060, those Residential A properties in King Arthur Terrace, Verney Road East, Jarda Street and White Street should be rezoned to Open Space (OS).

Reach 13 - Canoe Reach

Cross Section:	BN1060 to BN990
Chainage:	1039.565 km to 1041.960 km
AMTD:	39.095 km to 36.700 km

Potential Flooding

The majority of flooding in this reach is confined to the Oxley Creek / Moolabin Creek areas, with some localised pockets of inundation.

From BN1060 to BN1040, properties bounding Oxley Creek will all suffer inundation with the limits being Tweedale/Blackwood Street to the west and David Street to the east with those higher properties in King Arthur Terrace, Merlin and Camelot Streets being immune to flooding. Sir John Chandler Park and the Indooroopilly Golf Course will be completely inundated during a 100 year ARI flood event.

From BN1020 to BN1010, flooding occurs through the Yeerongpilly Animal Research Institute and floods some properties in Paragon and Ortive Streets. Flooding along Moolabin Creek is also a problem in this area, with the Brisbane Golf Course and properties back to Tennyson Memorial Avenue and Station Road being affected.

From BN1000 to BN990, the main problem areas in a 100 year ARI flood event will be Stevens Street and Nelson Street back to Fairfield Road. Some properties in Yeronga, Feez and Astolat Streets will also be affected by flooding to some extent.

Revegetation

- From BN1020 to BN1030 (adjacent Yeerongpilly Animal Research Institute), full tree planting was tested with flood level increases of the order of 0.01 m.
- All revegetation is to a standard of roughness of n = 0.15.
- There is considerable existing vegetation throughout this reach, thus the riverbanks could be considered an area of ecological significance.

Regulation Lines

- Regulation lines at BN1060 to BN 990 used the 15 m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at these locations.
- From BN990 to BN1010 and from BN1030 to BN1050, regulation lines will extend into the rear of numerous private dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 80 to 130 mm.

Zoning Adjustments

- Rezoning of Residential B dwellings in Rome Street south, Astolat Street, Feez, Yeronga and Steven Streets to Open Space (OS) is recommended between BN990 and BN1010.
- It is also recommended that from sections BN1040 and BN1060, those Residential A properties in King Arthur Terrace, Verney Road East, Jarda Street and White Street should be rezoned to Open Space (OS).

Reach 14 - Long Pocket Reach

Cross Section: BN980 to BN910
Chainage: 1042.235 km to 1044.860 km
AMTD: 36.425 km to 33.800 km

Potential Flooding

The majority of flooding in this reach is confined to the Indooroopilly Golf Course, with some local flooding in the Yeronga area.

From BN980 to BN970, some minor flooding will occur to properties located in Instow Street and the Yeronga Animal Hospital will also be affected.

From BN960 to BN950, the flooding becomes more widespread with properties along the Esplanade, Diane Street, Ormadale Street, Oriana Crescent and Aranui Street all being affected. Flooding on the eastern side of the river will affect the CSIRO to some extent.

From BN940 to BN930, flooding is limited to Brisbane Corso and Orlando Road with some properties in Otaki and Ormuz Roads also being affected.

In a 100 year ARI flood event, flooding will extend to Hyde Road from BN920 to BN910, affecting properties as far south as Utzon, Grounds and Siedler Streets. Goodwin Park will also be inundated.

Revegetation

- From BN940 to BN960 (Sandy Creek), full tree planting was tested with flood level increases of the order of 10 mm.
- Community Groups suggest that existing vegetation on the banks around the confluence of Sandy Creek should be revegetated using native flora. This has therefore been included in the modelling to the n = 0.15 standard.
- There is considerable existing vegetation throughout the whole reach, and the riverbanks could therefore be considered an area of ecological significance.

Regulation Lines

- Regulation lines at BN980 to BN960 used the 15 m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at these locations.
- From BN950 to BN910, regulation lines have been set using the 15 m buffer rule.
- Regulation lines will pass through numerous private residences throughout the reach.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 10 to 120 mm.

Zoning Adjustments

- Rezoning of waterfront existing Residential A properties in Brisbane Corso, Ormadale Road and Kadumba Street to Open Space (OS) is recommended throughout this reach.
- Special Use and Private Development properties should be assessed on an individual basis and rezoned as appropriate.

Particular

Reach 13 - Canoe Reach

Cross Section: BN1060 to BN990
Chainage: 1039.565 km to 1041.960 km
AMTD: 39.095 km to 36.700 km

Potential Flooding

The majority of flooding in this reach is confined to the Oxley Creek / Moolabin Creek areas, with some localised pockets of inundation.

From BN1060 to BN1040, properties bounding Oxley Creek will all suffer inundation with the limits being Tweedale/Blackwood Street to the west and David Street to the east with those higher properties in King Arthur Terrace, Merlin and Camelot Streets being immune to flooding. Sir John Chandler Park and the Indooroopilly Golf Course will be completely inundated during a 100 year ARI flood event.

From BN1020 to BN1010, flooding occurs through the Yeerongpilly Animal Research Institute and floods some properties in Paragon and Ortive Streets. Flooding along Moolabin Creek is also a problem in this area, with the Brisbane Golf Course and properties back to Tennyson Memorial Avenue and Station Road being affected.

From BN1000 to BN990, the main problem areas in a 100 year ARI flood event will be Stevens Street and Nelson Street back to Fairfield Road. Some properties in Yeronga, Feez and Astolat Streets will also be affected by flooding to some extent.

Revegetation

- From BN1020 to BN1030 (adjacent Yeerongpilly Animal Research Institute), full tree planting was tested with flood level increases of the order of 0.01 m.
- All revegetation is to a standard of roughness of n = 0.15.
- There is considerable existing vegetation throughout this reach, thus the riverbanks could be considered an area of ecological significance.

Regulation Lines

- Regulation lines at BN1060 to BN 990 used the 15 m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at these locations.
- From BN990 to BN1010 and from BN1030 to BN1050, regulation lines will extend into the rear of numerous private dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 80 to 130 mm.

Zoning Adjustments

- Rezoning of Residential B dwellings in Rome Street south, Astolat Street, Feez, Yeronga and Steven Streets to Open Space (OS) is recommended between BN990 and BN1010.
- It is also recommended that from sections BN1040 and BN1060, those Residential A properties in King Arthur Terrace, Verney Road East, Jarda Street and White Street should be rezoned to Open Space (OS).

Reach 14 - Long Pocket Reach

Cross Section: BN980 to BN910
Chainage: 1042.235 km to 1044.860 km
AMTD: 36.425 km to 33.800 km

Potential Flooding

The majority of flooding in this reach is confined to the Indooroopilly Golf Course, with some local flooding in the Yeronga area.

From BN980 to BN970, some minor flooding will occur to properties located in Instow Street and the Yeronga Animal Hospital will also be affected.

From BN960 to BN950, the flooding becomes more widespread with properties along the Esplanade, Diane Street, Ormadale Street, Oriana Crescent and Aranui Street all being affected. Flooding on the eastern side of the river will affect the CSIRO to some extent.

From BN940 to BN930, flooding is limited to Brisbane Corso and Orlando Road with some properties in Otaki and Ormuz Roads also being affected.

In a 100 year ARI flood event, flooding will extend to Hyde Road from BN920 to BN910, affecting properties as far south as Utzon, Grounds and Siedler Streets. Goodwin Park will also be inundated.

Revegetation

- From BN940 to BN960 (Sandy Creek), full tree planting was tested with flood level increases of the order of 10 mm.
- Community Groups suggest that existing vegetation on the banks around the confluence of Sandy Creek should be revegetated using native flora. This has therefore been included in the modelling to the n = 0.15 standard.
- There is considerable existing vegetation throughout the whole reach, and the riverbanks could therefore be considered an area of ecological significance.

Regulation Lines

- Regulation lines at BN980 to BN960 used the 15 m buffer rule on the left bank and extent of cross section on the right bank due to lack of topographical and cadastral information at these locations.
- From BN950 to BN910, regulation lines have been set using the 15 m buffer rule.
- Regulation lines will pass through numerous private residences throughout the reach.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 10 to 120 mm.

Zoning Adjustments

- Rezoning of waterfront existing Residential A properties in Brisbane Corso, Ormadale Road and Kadumba Street to Open Space (OS) is recommended throughout this reach.
- Special Use and Private Development properties should be assessed on an individual basis and rezoned as appropriate.

Particular

Reach 15 - Cemetery Reach

Cross Section: BN900 to BN830
Chainage: 1045.400 km to 1047.915 km
AMTD: 33.260 km to 30.745 km

Potential flooding

There is considerable flooding in this reach from BN870 through to BN900.

At BN900, flooding mainly affects the Downs Oval, Leyshan Park and Fehlberg Oval. In a 100 year ARI flood event, properties as far back as the Railway line, Kadumba Street and a small area as far back as Cowper Street will all be affected by flooding. Properties in William Parade, Turner Avenue and Brougham Street will also suffer inundation.

From BN890 to BN880, a large area of flooding extends as far east as the railway line, south to Fairfield Road / Sydney Street/Cruthley Street and north into the cemetery.

Flooding is limited to the riverbank areas with some properties in Rosecliff and Borva Streets being affected by flooding from BN870 to BN840. It is anticipated that the University of Queensland will be affected by flooding as well. However, additional topographical and cadastral information is required before this can be finalised.

At BN830, a small area of localised flooding occurs during a 100 year flood event. Properties in Athens Street, Dudley Street and Glenfield will all be affected by flooding. On the southern side of the river, flooding extends as far back as to affect properties in Underhill Street.

Revegetation

- At BN900 (Brisbane Corso Reserve), full tree planting was tested with flood level increases of the order of 0 mm.
- All revegetation is to a standard of roughness of n = 0.15.
- There is considerable existing vegetation throughout this reach, and thus the riverbanks may be considered an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- BN860 regulation lines have been set using the 15 m buffer rule on one bank and adjusted on the other bank until the maximum allowable afflux was achieved.
- From BN830 to BN860, regulation lines will extend past the Open Space buffer zone and into the rear of numerous Residential B dwellings. The University of Queensland will also be significantly affected by the regulation lines.

- From BN880 to BN890, the 15 m buffer rule causes regulation lines to extend into private residences.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 60 to 110 mm.

Zoning Adjustments

- Rezone waterfront Residential B dwellings in Dudley Street, Fraser Terrace, Rosecliff and Borva Streets to Open Space (OS).
- From BN880 to BN890, rezone waterfront residences in Brisbane Corso to Open Space (OS).
- Special Use properties within this reach should be assessed on an individual basis and rezoned as appropriate.

Reach 16 - St Lucia Reach

Cross Section: BN820 to BN810
Chainage: 1048.375 km to 1048.890 km
AMTD: 30.285 km to 29.770 km

Potential Flooding

There is a considerable flooding of residential areas in this reach.

On the St Lucia side, properties as far back as Sixth Avenue at BN820 and Sir Fred Schonell Drive at BN810 are inundated during a 100 year ARI flood event. Parts of Mitre, Durham and Warren Streets are also affected.

On the northern side, flooding extends as far as Jumna Street at BN820 and Cordaeux Street at BN810.

Revegetation

- At BN810 (Orliegh Park), full tree planting was tested with increases in flood levels of 10 mm.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- From BN810 to BN820, due to the 15 m buffer rule, regulation lines will extend into numerous residential dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 60 to 80 mm.

Zoning Adjustments

- Although a zone of Open Space along Orliegh, Avebury and Glenfield Streets has already been defined, this should be extended to include those existing waterfront Residential B properties in these streets.
- On the St Lucia side, those waterfront residential B properties in Hiron, Laurence and Macquarie Streets should be rezoned to Open Space (OS).

Reach 17 - Toowong Reach

Cross Section: BN800 to BN750
Chainage: 1049.120 km to 1050.860 km
AMTD: 29.540 km to 27.800 km

Potential Flooding

Flooding in this reach is concentrated around Toowong Creek and a few small areas of localised flooding. The Hill End / West End side of the River is consistently flooded.

At BN800, a small pocket of flooding occurs as far south as Armadale Street, east to Austral Street and west to Glen Olive Lane. On the northern side of the river, properties back to Drury Street/ Cordeaux Street will suffer inundation.

At BN 790, flooding in a 100 year ARI flood event is concentrated around Toowong Creek. Flooding occurs as far South in places as Whitmore Street and west to Josling Street with some properties in Mayne, Holmes and Herbert Streets being affected.

From BN780 to BN770, the main problems with flooding during a 100 year ARI flood event occurs through Hillend Terrace, Forbes, Drury Streets and Ferry Road. Some properties in Brisbane Street and Glen Road in Toowong will also suffer flooding problems.

From BN760 to BN750 there are large areas of flooding. On the West End side of the river, flooding extends as far back as Montague Road. On the Toowong side, there are two localised flooding areas, one extending along Landsborough Street up to Osyth / Cadell Street and back down to the railway line. The other pocket of flooding extends along Park Avenue to Milton Road and again back to the railway line. Higher properties in the area bounded by Dunmore Terrace, Lang Parade and Chasely Street are immune to flooding.

Revegetation

- From BN790 to BN800 (Orliegh Park) and at BN750 (Scott Street open Space), full tree planting was tested with no increase in flood levels.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- The 15 rn buffer rule has been applied to regulation lines throughout this reach.
- BN 770 regulation lines were set using the 15 m buffer rule on one bank and adjusted on the other bank until the maximum allowable afflux was achieved.
- BN760 regulation lines have been set adjusting both banks until the maximum allowable afflux was achieved.

Reach 18 - Milton Reach

Cross Section: BN740 to BN700
Chainage: 1051.360 km to 1052.390 km
AMTD: 27.300 km to 26.270 km

Potential Flooding

Flooding in this reach is mainly concentrated on the West End side of the river, but a lack of contour information limits the determination of the extent of actual flooding.

At BN730, there is a localised area of flooding in Milton, extending back to Milton Road with several properties in Baroona Road being affected. This flooding extends out to Park Street at its worst.

From BN720 to BN700, problems with inundation during a 100 year ARI flood event occur as far back as Oxford Street on the eastern side of the river.

Revegetation

- No revegetation was assessed through this reach.

Regulation Lines

- The 15 m buffer rule has been applied to regulation lines throughout this reach.
- At BN730 the regulation lines were adjusted on both sides until the maximum allowable afflux was achieved.
- From BN720 through to BN740, the regulation lines extend into properties zoned as special development.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 80 to 110 mm.

Zoning Adjustments

- The majority of this reach is zoned Special development, therefore no rezoning of this reach has been recommended.

Reach 19 - South Brisbane Reach

Cross Section: BN690 to BN600
Chainage: 1052.595 km to
AMTD: 26.065 km to

Potential Flooding

Properties along Garden's Point Road and Wharf Road will experience problems with flooding during a 100 year ARI flood event. Southbank will be inundated as will Stanley Street, Grey Street and parts of Melbourne Street.

Revegetation

- No revegetation was assessed throughout this reach.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- At BN660 the regulation lines were adjusted on both sides until the maximum allowable afflux was achieved.
- From BN600 through to BN690, regulation lines are generally located at the riverbank.
- Affluxes in this reach with revegetation and regulation lines in place range from 50 to 160 mm.

Zoning Adjustments

- As no intrusion into private residences occurs in this reach, no rezoning adjustments are recommended.
- Special Use and ~~Private~~ Development properties should be assessed on an individual basis and rezoned as appropriate.

Particular

Reach 20 - Town Reach

Cross Section: BN590 to BN500
Chainage: 1054.680 km to 1056.865 km
AMTD: 23.980 km to 21.965 km

Potential Flooding

The major areas of concern with respect to inundation during a 100 year ARI flood in this reach are sections of the city and Kangaroo Point.

From BN590 to BN550, properties along River Terrace, Lower River Terrace and Garden's Point Road will all experience problems with flood inundation.

From BN540 to BN530, the Botanic Gardens will be inundated as will the City back to Charlotte Street, with parts of Mary, Margaret, Albert and Edward Streets experiencing flooding. Properties in Felix and Eagle Streets will experience flooding as will parts of Bright, Thornton and Hamilton Streets.

From BN520 to BN500, properties on Kangaroo Point back to the end of Anderson Street will experience problems with flooding during a 100 year ARI flood. On the City side, properties in Howard Street up to Queen Street will suffer inundation. At BN500, some properties in Bowen Street will experience problems with flooding.

Revegetation

- From BN540 to BN560, full tree planting was tested with flood level increases in the order of 10 mm. All revegetation is to a standard of roughness of n = 0.15.
- At section BN520, there is considerable existing vegetation and may be classified as an area of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN500 to BN530, regulation lines will pass through existing properties zoned Special Development.
- From BN540 to BN590, regulation lines extend into property already zoned Open Space.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 30 to 70 mm.

Zoning Adjustments

- As the regulation lines do not affect any private residences, no rezoning for this reach has been recommended.
- Special Development, ~~Private~~ Development and Central Business should be assessed on an individual basis and rezoned as appropriate.

Particular

Reach 22 - Humbug Reach

Cross Section: BN430 to BN400
Chainage: 1058.735 km to 1059.990 km
AMTD: 19.925 km to 18.670 km

Potential Flooding

This reach has localised flooding problems associated with Norman Creek.

From BN420 to BN410, there is extensive flooding associated with properties adjacent to Norman Creek. Properties as far northeast as Overend and Wordsworth Streets will experience inundation, as will properties to the west in Barker, Ashfield and Clarendon Streets to Mowbray Terrace.

At BN420, a localised area of flooding occurs in Moray and Sargent Streets to Mountford Road with Oxlade Drive and parts of Hazelwood Street being inundated.

Revegetation

- No revegetation was assessed through this reach.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN400 to BN410, the 15m buffer rule has resulted in regulation lines being situated through private dwellings.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from 10 to 20 mm.

Zoning Adjustments

- Properties zoned Residential A along Wynnum Road and Wendell Street should be rezoned Open Space.
- Properties currently zoned Special Development should be assessed on an individual basis and rezoned as appropriate.

Reach 23 - Bulimba Reach

Cross Section: BN390 to BN330
Chainage: 1060.345 km to 1062.940 km
AMTD: 18.315 km to 15.720 km

Potential Flooding

From BN370 to BN350, there is a very large area of flooding primarily covering residential dwellings. The large industrial area bounded by Stuart and Barramul Streets will be flooded and the flooding will extend inwards as far as Riding Road in places, south to Orchard Street and north to Oxford Road.

At BN370, there will be some flooding associated with properties in Gordon, Scott and parts of Malcolm Streets.

From BN350 to BN330, another localised area of flooding extends through a primarily industrial area back to Commercial road, generally following Breakfast Creek Road north to Breakfast Creek. The higher properties in Newstead Avenue and Halford Streets are the exception to the flooding.

Revegetation

- At BN340 (Newstead Terrace Reserve), full tree planting was tested with no increases in flood level.
- All revegetation is a standard of roughness of n = 0.15.
- Sections of BN390 can be considered an area of ecological significance due to the existing vegetation.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- From BN320 through to BN390, regulation lines are situated through numerous private dwellings and properties zoned service trades.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 10 mm.

Zoning Adjustments

- Blocks of residential A dwellings along Quay Street, Leura Terrace, Barton Road, Gordon Street, Scott Street, Uhlman Street and Aaron Avenue should be rezoned to open space.
- Consideration to rezoning all waterfront service industries to open space should also be given consideration.

Reach 24 - Hamilton Reach
Cross Section: BN320 to BN260
Chainage: 1068.310 km to 1065.990 km
AMTD: 15.30 km to 12.670 km

Potential Flooding

At BN270, properties in Taylor Street and lower ends of Carbeen, Karthena and Michael Streets will experience flooding during a 100 year ARI flood event.

McConnell Street, Merry Street, Melrose, Cowper, River end of Kenbury, Bulimba, Banya, Johnston, Harrison, Tennyson and Shakespeare Streets will all suffer from flooding.

Revegetation

- No revegetation has been assessed for this reach.
- At BN290 there is existing vegetation and, as such, the riverbank in this area could be considered as a zone of ecological significance.

Regulation Lines

- The 15 m buffer rule has been applied throughout this reach.
- BN270 and BN 260 include a maximum allowance of allowance of 30 m for wharfs in lieu of the 15 m buffer rule.
- From BN290 to BN310, the 15m buffer rule has resulted in the regulation lines being situated through private residences along McConnell Street.
- At BN320, regulation lines are situated along the riverbank edge.
- The affluxes in this reach with revegetation and regulation lines in place are -20 mm.

Zoning Adjustments

- Properties zoned residential in McConnell Street between BN290 and BN300 should be rezoned to open space.
- Properties zoned ~~Private~~ Development, Special Use and General Industry should be assessed on an individual basis and rezoned as appropriate.

Particular

Reach 25 - Quarries Reach

Cross Section: BN250 - BN220

Chainage: 1066.505 km to 1067.965 km

AMTD: 12.155 km to 10.695 km

Potential Flooding

At BN250, properties in Riverside Place back to Lytton Street will all suffer from inundation in a 1 in 100 year storm event.

From BN230 to BN220, flooding will occur onto the Royal Queensland Golf Course.

Revegetation

- From BN220 to BN230 (Royal Queensland Golf Course), full tree planting was tested with no increase in flood levels.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- Regulation lines in this reach include a maximum allowance of 30m for wharves and associated waterfront development. This is in lieu of the 15 m buffer rule.
- At BN250, regulation lines extend into existing properties. However, the flooding extends into properties zoned waterfront activities and an allowance has been made for wharves in lieu of the 15 m buffer zone.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -30 to 0 mm.

Zoning Adjustments

- Zoning through this reach is predominantly Waterfront Activities and industrial. As such, no recommendations for rezoning have been made.

Reach 26 - Lytton Reach

Cross Section: BN210 - BN110
Chainage: 1068.660 km to 1073.485 km
AMTD: 10.00 km to 5.175 km

Potential Flooding

At BN190, flooding during a 100 year ARI flood event will affect those properties along Macarthur Avenue.

From BN170 to BN160, flooding occurs into Unwin Road, Randle Street, parts of Macarthur Avenue and back into the airport.

From BN130 to BN120, flooding only appears to occur in open space areas.

Revegetation

- No revegetation was assessed in this reach.

Regulation Lines

- Regulation lines in this reach include an maximum allowance of 30 m for wharves and associated waterfront development. This is in lieu of the 15 m buffer rule.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -20 to 60 mm.

Zoning Adjustments

- Properties in this reach are predominantly zoned Industrial or Waterfront Industry. No modifications to the zonings is required.

Reach 27 - Lytton Rocks Reach

Cross Section: BN100 to BN70
Chainage: 1074 km to 1075.480 km
AMTD: 4.660 km to 3.180 km

Potential Flooding

This reach experiences extensive flooding, especially from BN110 to BN90, where floodwaters inundate properties in Pritchard Street, South Street, Lytton Road, Trade Street and Export Street. Flooding also affects properties in Pamela and Tingara Streets all the way through to Boggy Creek.

Revegetation

- At BN70 and BN90, full tree planting was tested with no increase in flood levels.
- All revegetation is a standard of roughness of n = 0.15.
- The occurrence of existing vegetation at section BN80 indicates that the riverbanks in this section could be considered a zone of ecological significance.

Regulation Lines

- Regulation lines in this reach include an maximum allowance of 30 m for wharves and associated waterfront development. This is in lieu of the 15 m buffer rule.
- Regulation lines in this reach generally follow the bank profile. From BN70 to BN80, some intrusion into the bank does occur, however in this instance an allowance has been made for wharves and associated waterfront development.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 0 mm.

Zoning Adjustments

- As this reach is predominantly zoned Industrial and Waterfront Development, no rezoning recommendations have been made.

Reach 28 - Pelican Banks Reach

Cross Section: BN60 to BN40
Chainage: 1076 km to 1077.010 km
AMTD: 2.66 km to 1.650 km

Potential Flooding

No developed properties appear to be affected by flooding through this reach, although there will be some flooding throughout existing low lying areas.

Revegetation

- From BN40 to BN60, full tree planting was tested with no increase in flood levels.
- All revegetation is to a standard of roughness of n = 0.15.
- Due to the existing natural vegetation, the riverbanks at section BN40 could be considered a zone of ecological significance.

Regulation Lines

- Regulation lines in this reach include a maximum allowance of 30m for wharves and associated waterfront development from BN60. This is in lieu of the 15 m buffer rule.
- Regulation lines in this reach generally follow the riverbank. Some intrusion into the bank occurs at section BN50, however this is into undeveloped swampy land.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 0 mm.

Zoning Adjustments

- This reach is predominantly zoned Industrial and Waterfront Development. As such, no recommendations for rezoning have been made for this reach.

Reach 29 - Lower Reach

Cross Section: BN30 to BN0
Chainage: 1077.510 km to 1078.66 km
AMTD: 1.150 km to 0 km

Potential Flooding

During a 100 year ARI flood event, flooding will affect existing grain and container terminals on Fisherman Island to some extent.

Revegetation

- From BN10 to BN30, full tree planting was tested with no increase in flood levels.
- All revegetation is to a standard of roughness of n = 0.15.

Regulation Lines

- Regulation lines in this reach are generally located in low lying areas.
- The range of affluxes in this reach with revegetation and regulation lines in place varies from -10 to 0 mm.

Zoning Adjustments

- This reach is mainly zoned industrial or waterfront industry. No rezoning through this reach is recommended.

10. Hydraulic Assessment of Structures

10.1 Hydraulic Capacity of Crossings

The performance of seven major bridges were individually assessed under design flood conditions. These structures are listed in **Table 10-1 - List of Assessed Hydraulic Structures for Brisbane River**.

Table 10-1 - List of Assessed Hydraulic Structures for Brisbane River

No.	Structure Name	Cross Section Number	MIKE 11 Chainage (km)	AMTD (km)	Structure Description
1	Centenary	BN 1350	1 028.72	49.94	Major Public Bridge
2	Indooroopilly	BN 1130	1 037.11	41.55	Major Public Bridge
3	Merivale	BN 710	1 052.37	26.29	Major Public Bridge
4	William Jolly	BN 680	1 052.63	26.03	Major Public Bridge
5	Victoria	BN 640	1 053.36	25.83	Major Public Bridge
6	Captain Cook	BN 600	1 054.66	24.00	Major Public Bridge
7	Story	BN 495	1 056.92	21.74	Major Public Bridge

Note: All structures were modelled in MIKE 11 as irregular culverts and weirs.

A series of reference sheets were prepared and are compiled in **Appendix K - Hydraulic Structure Reference Sheets**. These are consistent with Council's standard hydraulic structure reference sheets and include:

- Location of Structure
- Structure description and geometry including dimensions and key levels
- Reference to survey data
- Construction date and upgrade information
- General comments

Additional information has been included on the sheets regarding the hydraulic performance of the structure for design flows ranging from 2 year ARI to 100 year ARI. In this assessment the afflux was determined as the difference between water levels upstream and downstream of the structure. Handrails and guardrails were assumed to be blocked.

Rating curves for the seven major structures were developed using the MIKE 11 hydraulic model for the Brisbane River. These rating curves were determined by taking the peak discharge and peak level for a range of design events directly upstream of each structure. Structure handrails and guardrails were assumed to be fully blocked by debris.

A rating curve for the Gateway Bridge was not generated as it was considered that the afflux caused would be negligible because of the width of the section and deck level of the structure.

Rating curves were extracted from the reference sheets for incorporation into the Brisbane River Flood forecasting model which is ~~to be completed during the Flood Mapping phase of this study.~~ discussed in "Section 11".

The rating curves provide an indication of the design flood capacity of the structure (ie design flood that just overtops the roadway) and these are summarised in **Table 10-2 - Design Flood Capacities of Major Structures.** The structure capacity was taken as being the design flow having a peak flood level coincident with the lowest point of the structure weir (assuming unblocked handrails).

Appendix L - Rating Curves at Structures tabulates and plots the rating curves that have been generated. The curves also illustrate the recorded historical flood levels and calibrated discharge at the relevant locations. These curves show that some of the smaller historical events data points do not coincide with the generated rating curves. This is most likely due to tailwater conditions at the time of the events. The design events were run using a constant tailwater level of mean high water springs whereas the historical events were subject to varying tailwater levels which occurred at the time of the events. As expected, these effects are more pronounced for the smaller flood events and the structures closer to the river mouth.

Table 10-2 - Design Flood Capacities of Major Structures

No	Structure Name	Design Capacity (Years ARI)
1	Centenary Bridge	41
2	Indooroopilly Bridge	greater than 100
3	Merivale Bridge	greater than 100
4	William Jolly Bridge	greater than 100
5	Victoria Bridge	greater than 100
6	Captain Cook Bridge	greater than 100
7	Story Bridge	greater than 100

10.2 Upgrading of River Crossings

The upgrading of major river crossings was assessed using the following approach:

- Identify structures which have a 100 year ARI afflux exceeding 150 mm. In all cases, blocked handrails have been assumed.
- Based on available ground survey data, determine if these selected structures cause flooding of upstream property or houses for events up to the 100 year ARI flood.
- Discussions with council to determine the practical upgrade potential of some structures.
- Test and recommend upgrades of structures that have high affluxes and contribute to upstream flooding impacts.

The hydraulic structure reference sheets compiled in **Appendix K** were reviewed to identify high afflux structures. Affluxes at each structure are listed in **Table 10-3 - High Afflux Public Structures**.

Table 10-3 - High Afflux Public Structures

No.	Structure	100 Year ARI Afflux (mm)
1	Centenary Bridge	150
2	Indooroopilly Bridge	90
3	Merivale Bridge	170
4	William Jolly Bridge	510
5	Victoria Bridge	180
6	Captain Cook Bridge	80
7	Story Bridge	100

Note: Assumes blocked handrails and guardrails.

Table 10-3 demonstrates that the William Jolly Bridge~~s~~ ~~have~~ has an afflux significantly greater than 150 mm for the 100 year ARI flood whilst the Merivale and Victoria Bridges just exceed the 150 mm maximum allowable afflux.

Review of the structure reference sheets indicates that the William Jolly Bridge creates a significant afflux for floods greater than 50 years ARI. This flood coincides with the commencement of inundation of the floodplain on the right bank in the vicinity of the structure. Several properties in this area will be affected by the flooding and the affluxes generated by the ~~two structures~~ William Jolly Bridge and the Merivale Bridge. The exact number of properties affected can not be determined as floor survey data was not available.

Options for upgrading the structures in an efficient manner are limited.

For the Merivale Bridge possible options include improving the hydraulic efficiency of the right overbank area adjacent to the approach or raising the bridge structure. Improving the hydraulic efficiency of the right overbank is not practical due to the large number of buildings that would have to be removed and the associated high costs involved. Raising the bridge is also not practical due to design constraints associated with railway operations and the associated high costs of upgrading. Given that the bridge creates an afflux of 170 mm it is considered that the costs associated with upgrading the structure far exceed the benefits.

The William Jolly Bridge also has limited opportunities for upgrading. Improvement of the right floodplains conveyance is not practical due the large number of properties on the floodplain. Major modifications to the bridge structure such as abutment works or raising the deck are unlikely to be accepted due to the heritage value of the structure.

The Victoria bridge also has limited opportunities for upgrading as the costs involved far out weigh the benefits given that the maximum afflux is 180 mm.

Affluxes associated with the other structures were considered to be acceptable as the cost of upgrading these structures would be high.

11. Flood Forecasting Model

11.1 Overview

The proposed flood forecasting model was to originally consist of a single RAFTS model which included rating curves derived by the MIKE 11 hydraulic model at structures and stream gauges to predict flood levels at these locations. Since RAFTS cannot account for tidal effects it was assumed that a number of rating curves (dependent on tailwater levels at Brisbane River mouth) would be developed at each structure and stream gauge location. Although RAFTS does not have the facility to link rating curves it was initially envisaged that Council would contract WP Software to develop such a facility. This would enable users to select a tailwater level and RAFTS would then select the appropriate rating curve at each location. Due to time restrictions and the availability of WP Software staff, Council decided that this was not an appropriate option and another methodology was developed.

After discussions with Council it was decided that the most appropriate method was to use both the calibrated RAFTS and calibrated MIKE 11 models. The RAFTS model was used to forecast flood discharge hydrographs at inflow locations and these hydrographs were input into the MIKE 11 model along with an appropriate tailwater level. MIKE 11 was then used to predict flood levels at the required locations.

11.2 RAFTS Model Development

The RAFTS flood forecasting model for the Brisbane River was based on the calibrated RAFTS model developed in the calibration/verification phase of the study.

Radio telemetry gauges within the Brisbane City Boundary were used as rainfall input into the hydrologic model. Each of the gauges were assigned a corresponding RAFTS node dependent on the area of influence of the catchment. The area of influence for each of the radio telemetry stations was determined by the application of a Thiessen polygon. **Table 11-1 - Radio Telemetry Rainfall Stations** presents each of the selected radio telemetry rainfall stations along with the assigned RAFTS node. Each RAFTS node has been assigned a primary gauge and a secondary gauge. The secondary rainfall station has been assigned so that in the event of the primary station failing, the secondary gauge can be used. RAFTS does not automatically select the secondary rainfall station if the primary station fails and therefore the secondary station should be selected manually. The RAFTS nodes assigned to the secondary rainfall station are also presented in **Table 11-1**. **Figure 11-1 - Thiessen Polygons For Radio Telemetry Rainfall Stations** illustrate the areas of influence for each rainfall station.

Radio telemetry rainfall stations in the Bremer and Upper catchments ~~were~~ are not accessible and hence inflow hydrographs will have to be used for inflows into the RAFTS model. During flood events it is proposed that the DNR will provide these hydrographs as they have a flood forecasting model for these catchments. The locations of these inflow locations are illustrated on **Figure 11-1**. The main advantage of inputting inflow hydrographs at these locations is that the DNR model accounts for Wivenhoe and Somerset Dam operations.

Previous RAFTS modelling has shown that discharges in the lower reach of the Brisbane River (ie downstream of Mt Crosby) are significantly influenced by the operational procedures used for Wivenhoe and Somerset Dams. The primary effect that dam operations have on the lower Brisbane river is that dam discharges influence water levels at the Brisbane and Bremer Rivers confluence. The water level at this location has a profound impact on the discharge below this confluence due to superimposition of flood hydrographs and the storage effects and therefore an accurate assessment of the release discharge from Wivenhoe Dam was required.

The operational procedures for Wivenhoe and Somerset Dams are quite complex and they cannot be accurately modelled in RAFTS (see **Section 7.8**). The Department of Natural Resources ~~have~~ has developed a dam operations model that accurately models dam operations and produces discharge hydrographs at the required locations. It was therefore decided that these inflows be used to complete the input to the MIKE 11 flood forecasting model.

The calibrated RAFTS model was truncated upstream of the Brisbane and Bremer River confluence and each of the nodes were assigned their respective primary rainfall station. Discharge hydrographs predicted by the RAFTS model were then extracted at the following locations:

- JIN1 - Upstream boundary of Brisbane City
- JIN 2 - Bremer River inflow
- POG1 - Oxley Creek inflow
- ENO-OUT - Enoggera Creek inflow
- BUL-OUT - Bulimba Creek inflow

These inflow hydrographs were then used to forecast flood levels using the MIKE 11 hydraulic model.

Table 11-1 - Radio Telemetry Rainfall Stations

	Primary Gauge		Secondary Gauge	
RAFTS Node	Rainfall Station Name	Station Number	Rainfall Station Name	Station Number
JIN1	NA	NA	NA	NA
JIN2	NA	NA	NA	NA
JIN3	Wacol	WSR518	Camira	WGR150
JIN4	Camira	WGR150	Wacol	WSR518
JIN5	Kenmore	GBR017	Kenmore Hills	MVR515
JIN6	Wacol	WSR518	Richlands	BLR116
JIN7	Kenmore Hills	MVR515	Kenmore	GBR017
JIN#	Wacol	WSR518	Camira	WGR150
JIN##	Pullenvale	PLR742	Wacol	WSR518
JIN-OUT	Kenmore	GBR017	Kenmore Hills	MVR515
POG1	Indooroopilly	SIR505	Taringa	TWR027
POG2	Greenbank	OXR104	Forestdale	OXR108
POG3	Forestdale	OXR108	Greenbank	OXR104
POG4	Acacia Ridge	OXR126	Inala	BLR736
POG5	Inala	BLR736	Acacia Ridge	OXR126
POG6	Inala	BLR736	Acacia Ridge	OXR126
POG7	Coopers Plains	SSR130	Calamvale	OXR114
POG8	Corinda	OXR020	Coopers Plains	SSR130
POG9	BAC	BCR015	Taringa	TWR027
POG#	Corinda	OXR020	Coopers Plains	SSR130
POG-OUT	BAC	BCR015	East Brisbane	NMR554
ENO1	Brookfield	GVR718	The Gap	EVR533
ENO2	Brookfield	GVR718	The Gap	EVR533
ENO3	The Gap	EVR533	Brookfield	GVR718
ENO4	The Gap	EVR533	Brookfield	GVR718
ENO5	Mt Coot-tha	IVR512	The Gap	EVR533
ENO6	Alderley	BVR578	Stafford	KVR542
ENO7	Mt Coot-tha	IVR512	The Gap	EVR533
ENO8	Mt Coot-tha	IVR512	Ithana	IVR536
ENO9	Ithana	IVR536	Alderley	BVR578
ENO#	Ithana	IVR536	Alderley	BVR578
ENO##	The Gap	EVR533	Brookfield	GVR718
ENO-OUT	Bowen Hills	BVR524	Toombul	KVR557

Table 11-1 - Radio Telemetry Rainfall Stations (cont)

	Primary Gauge		Secondary Gauge	
RAFTS Node	Rainfall Station Name	Station Number	Rainfall Station Name	Station Number
BUL1	Mt Gravatt	BMR138	Wishart	BMR803
BUL2	Rochedale	BMR709	Wishart	BMR803
BUL3	Carindale	BMR830	Wishart	BMR803
BUL4	Carindale	BMR706	Carindale	BMR830
BUL5	Carindale	BMR706	Morningside	PVR029
BUL6	Hemmant	BMR527	Wynnum	WVR521
BUL7	Hemmant	BMR527	Wynnum	WVR521
BUL#	Wishart	BMR803	Rochedale	BMR709
BUL-OUT	Hemmant	BMR527	Wynnum	WVR521
NRM1	Morningside	PVR029	Bowen Hills	BVR524
NRM2	Hemmant	BMR527	Toombul	KVR557
NRM3	Lytton	BNR739	Hemmant	BMR527

11.3 Conversion of RAFTS Hydrographs to MIKE 11 TXT Format

X The Brisbane City Council ~~have~~ has supplied the software program RTOM11 which generates a TXT file from the hydrographs exported from the RAFTS model. This RTOM11 program allows users to enter a start date, end date and base flow component and generates a file that can be directly imported into MIKE 11. This file is used to compile boundary series data in MIKE 11.

11.4 Development of the MIKE 11 Flood Forecasting Model

Initially it was conceived that the hydraulic portion of the flood forecasting model would be carried out using HEC-RAS. Preliminary work found that HEC-RAS was unsuitable in this instance due to the dynamic nature of the Brisbane River and hence an alternative approach was sought.

The MIKE 11 hydrodynamic hydraulic model was considered to be the most appropriate model for use as the flood forecasting model for the Brisbane River. The hydraulic flood forecasting model was based on the existing case model developed in the calibration phase of this study. During calibration of this model it was found that two sets of channel roughness parameters had to be adopted, one set for the smaller events and one set for the larger events (**Section 6.5.3**). Basically, two sets of roughness parameters had to be adopted to account for the additional losses at bends during larger flood events.

The requirement to validate the flood forecasting model was to replicate results of two flood events to within 150 mm. This demonstration was to use the largest calibration event since installation of the radio telemetry gauges and one large synthetic event. The two events used for this demonstration were:

- 100 year ARI design event, and
- the May 1996 calibration event.

100 Year ARI Event

The inflow hydrographs predicted by the hydrological flood forecasting model were converted and input into the MIKE 11 model at the five locations specified in **Section 2.2** of this report.

The 100 year flood was considered to be a large event and hence the large set of roughness parameters were used. The flood forecasting model predicted flood levels within 10 mm at all locations of those predicted during the design events phase of the study. A comparison of flood levels is presented in **Table M-1 - Flood Forecasting Model Results.**

1996 Calibration Event

The inflow hydrographs predicted by the hydrological flood forecasting model were converted and input into the MIKE 11 model at the five locations specified in **Section 2.2** of this report.

The 1996 flood was considered to be a small flood and hence the small set of roughness parameters were used. This resulted in predicted flood levels to within 80 mm of those predicted during the calibration phase of the study. A comparison of flood levels is presented in **Table M-1 - Flood Forecasting Model Results**. A comparison between peak flood levels and corresponding time of peak time between the recorded and predicted value is presented in **Table 11-2 - Summary of Recorded and Predicted Results for the May 1996 Event.**

Table 11-2 - Summary of Recorded and Predicted Results for the May 1996 Event

	Small Roughness Parameters		Large Roughness Parameters			
Gauge Location	Predicted Peak (m AHD)	Predicted Time of Peak (day)	Predicted Peak (m AHD)	Predicted Time of Peak (day)	Recorded Peak (m AHD)	Recorded Time of Peak (day)
Moggill	7.37	6/5/96 17:30	8.15	6/5/96 16:10	7.09	6/5/96 0:00
Western Inner Bar	1.51	2/5/96 21:00	1.51	2/5/96 212:00	1.51	2/5/96 21:00

From **Table 11-2** it can be seen that if the small roughness parameter set case is compared to the recorded levels that the flood forecasting model over predicts flood levels by 280 mm and is approximately 18 hours behind the recorded flood level at this location. This was also found to be the case during calibration and the problem was attributed to the poor performance of the rating curve at Moggill within this flow range. **Section 6.5.3** discusses this problem in more detail.

This can be justified by the performance of the RAFTS and MIKE 11 models for larger and smaller flows. **Table 11-3 - Summary of Recorded and Predicted Results for the January 1974 and June 1983 Events** shows that for these two events peak flood levels are within 70 mm and the peak flood levels occur within 2 hours.

The large roughness parameter set has been in **Table 11-2** for completeness

Since the main influence is on inflows from the Bremer River and the Upper Boundary during long events, the RAFTS inflows produce the peak flood levels rather than the runoff calculated by the RAFTS flood forecasting model from the radio telemetry gauges. The smaller tributaries located within Brisbane City (ie. Oxley Creek) have a much smaller time of concentration than the Upper Brisbane River and therefore floods in the lower catchments are finished prior to the Upper Brisbane River flood arriving. Therefore the inflows from the Bremer River and Upper Brisbane River are generally the driving factor as far as peak flood levels and timing are concerned and this enables a comparison between flood forecasting results and calibration/verification results.

Table 11-3 - Summary of Recorded and Predicted Results for the January 1974 and June 1983 Events

Flood Event	Gauge Location	Predicted Peak (m AHD)	Predicted Time of Peak (day)	Recorded Peak (m AHD)	Recorded Time of Peak (day)
1974	Moggill	19.89	28/1/74 13:40	19.93	28/1/74 11:45
1974	Port Office	5.40	29/1/74 2:00	5.44	29/1/74 2:00
1974	Western Inner Bar	1.55	25/1/74 10:40	1.56	25/1/74 10:45
1983	Moggill	5.27	23/6/83 1:30	5.20	23/6/83 3:00
1983	Western Inner Bar	1.14	21/6/83 8:00	1.14	21/6/83 8:00

Note:
1. 1974 event presents flood levels for large roughness parameters.
2. 1983 event presents flood levels for small roughness parameter set.

A sensitivity check was also conducted to identify the impacts on flood levels if the set of large roughness parameters were used to analysis the small floods. For the 1996 event it was found that flood levels were over estimated by up to 850 mm.

Given the limited extent of flooding experienced within the lower Brisbane River in May 1996, most emphasis was placed on the 100 year ARI event as this size event would cause significant flooding throughout the reach.

The problem with the adoption of two sets of roughness parameters is the uncertainty as to what size flood constitutes the use of the large or small roughness parameter set. It was therefore recommended that one set of roughness parameters be adopted for the flood forecasting model and it was considered that it was most appropriate to adopt the large set of roughness parameters as this would ensure a conservative estimate of flood levels for smaller events.

11.5 Isolated Areas and Escape Routes

The effectiveness of the flood forecasting system for the Brisbane River is dependent upon the assessment of when river crossings are cut by flood waters and the duration of closure.

The majority of Brisbane City is urbanised to some extent and is well serviced by access roads from within and outside the City boundary. The major access/escape routes for all areas within the City boundary and the river crossings which are responsible for servicing these routes are shown on **Figure 11-2a** to **Figure 11-2b - Major Access/Escape Routes - Brisbane City.**

A detailed hydraulic analysis has been conducted for the major public bridges/crossings which are located on the access/escape routes.
Flood immunities , lowest weir level and time of inundation for each structure is listed in **Table 11-4 - Design Flood Capacities of Major Structures.** The structure capacity was taken as being the design flow having a peak flood level coincident with the lowest point of the weir structure. (assuming unblocked handrails). The crossing was assumed to be cut once a depth of flow of 300 mm occurred over the road.

Table 11-4 - Design Flood Capacities of Major Structures

Structure ID	Structure Name	Flood Immunity (years)	Lowest Weir Level (m AHD)	Duration of Closure 50 year ARI (hours)	Duration of Closure 100 year ARI (hours)
1	Centenary	41	10.0	29.5	59.5
2	Indooroopilly	>100	15.0	-	-
3	Merivale	>100	15.1	-	-
4	William Jolly	>100	14.3	-	-
5	Victoria	>100	9.2	-	-
6	Captain Cook	>100	8.8	-	-
7	Story	>100	29.8	-	-
8	Gateway	>PMF	>PMF	-	-

Within the Brisbane City Boundary many escape routes are available to the public. From **Table 11-4** it can be seen that all river crossings have a flood immunity of greater than 100 years except for the Centenary Bridge. The following discussion will relate to the 100 year ARI flood event unless otherwise specified.

Should the Centenary Bridge become inundated, escape routes are available in both directions along the Centenary Freeway. Depending on flood levels (ie 41 to 100 years ARI) the Centenary Freeway may become cut at the Cubberla Creek Crossing isolating the stretch of road between the Centenary Bridge and the Cubberla Creek Crossing. For these cases people may have to be evacuated.

The Merivale, William Jolly and Victoria Bridges have a flood immunity of greater than 100 years ARI however due to the detail of level information the immunity of the South Brisbane approaches for these structures is questionable.

Priors Pocket is another location were the public may become isolated during the 100 year ARI flood. Available topographical information shows that Priors Pocket Road is cut at approximately RL 17.0 m AHD. For the 100 year ARI flood this flood level is reached approximately 85 hours after the commencement of the event. Early warning should therefore provide residents with the opportunity to evacuate along Priors Pocket Road.

Another potential area of isolation is Fig Tree Pocket. Again, topographical information shows that Fig Tree Pocket Road is cut at RL 10.0 m AHD. The flood level is reached approximately 72 hours after the beginning of the 100 year ARI flood event. Residents will be able to escape along Fig Tree Pocket Road if given sufficient warning.

Areas between the River mouth and the Gateway Bridge become significantly inundated during the 100 Year ARI Moreton Bay Storm Surge plus Greenhouse Effects Case (Tailwater Level RL 2.5 m AHD). Should these conditions occur major evacuations would be required as possible escape routes are limited.

Backwater flooding for tributaries may cause the flooding of some escape routes in low lying areas. Although road crossing levels at these locations are unknown and beyond the scope of this study, a list of possible locations where this type of flooding may occur are listed below.

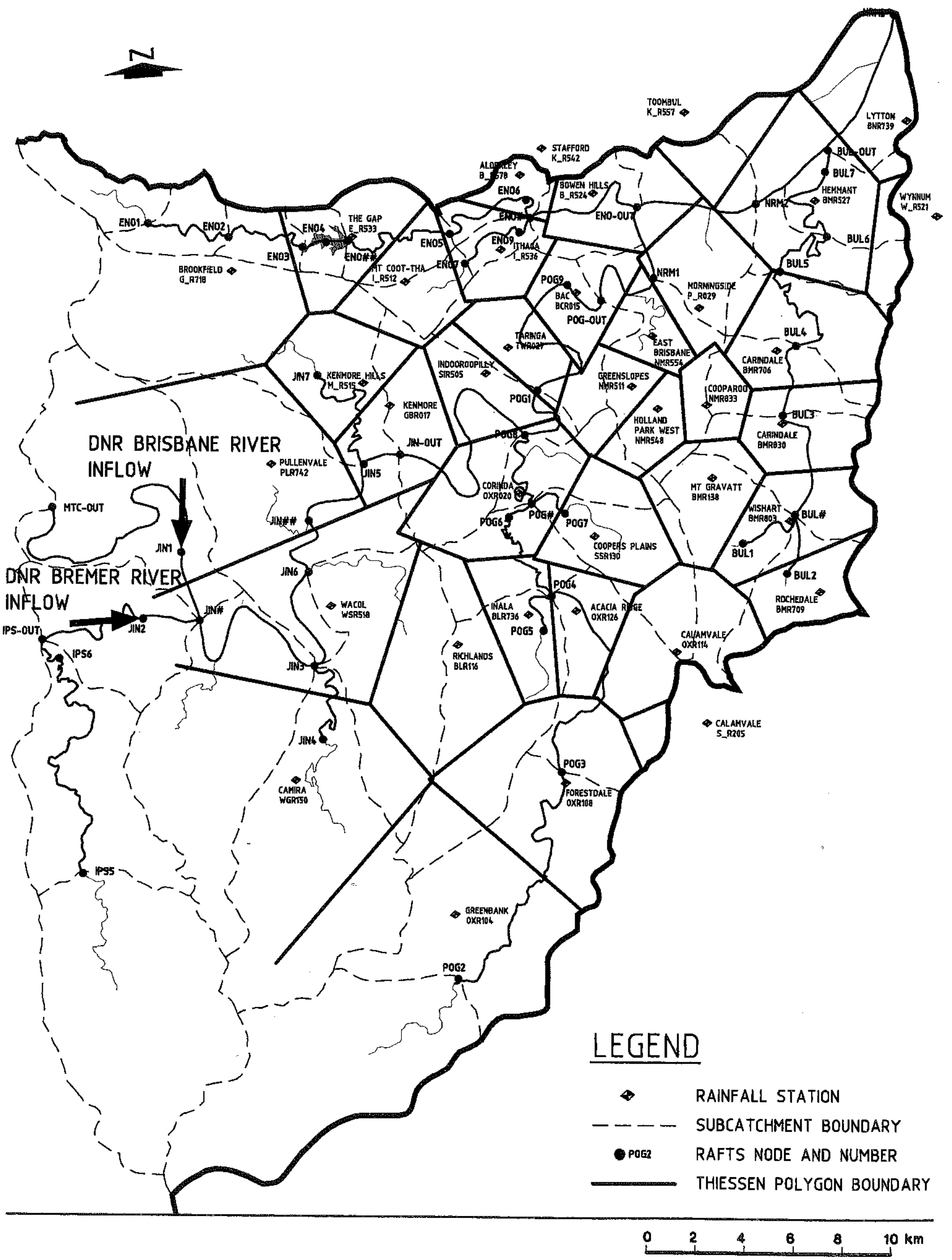
- Breakfast Creek - Kingsford Smith Drive and Breakfast Creek Road.
- Norman Creek - Stanley Street at East Brisbane.
- Hawthorne Road - at Hawthorne.
- South Brisbane - Boundary Road and Grey Street.
- Sandy Creek - Indooroopilly Road at Indooroopilly.
- Oxley Creek - Cunningham Arterial Highway at Rocklea.
- Cubberla Creek - Centenary Highway at Fig Tree Pocket.
- Moggill Creek - Moggill Road at Kenmore.
- Pullen Creek - Moggill Road at Bellbowrie.

These crossings should be monitored during periods of significant flooding to ensure that alternate routes are available should the roads listed above should become flooded.

SINCLAIR KNIGHT MERZ

FIGURE 11-1

BRISBANE RIVER FLOOD STUDY
THIESSEN POLYGONS FOR
RADIO TELEMETRY RAINFALL STATIONS



FILE NAME: 4157THES DISK N°: G:\T004157 JOB N°: T004157 DATE: 4-2-98

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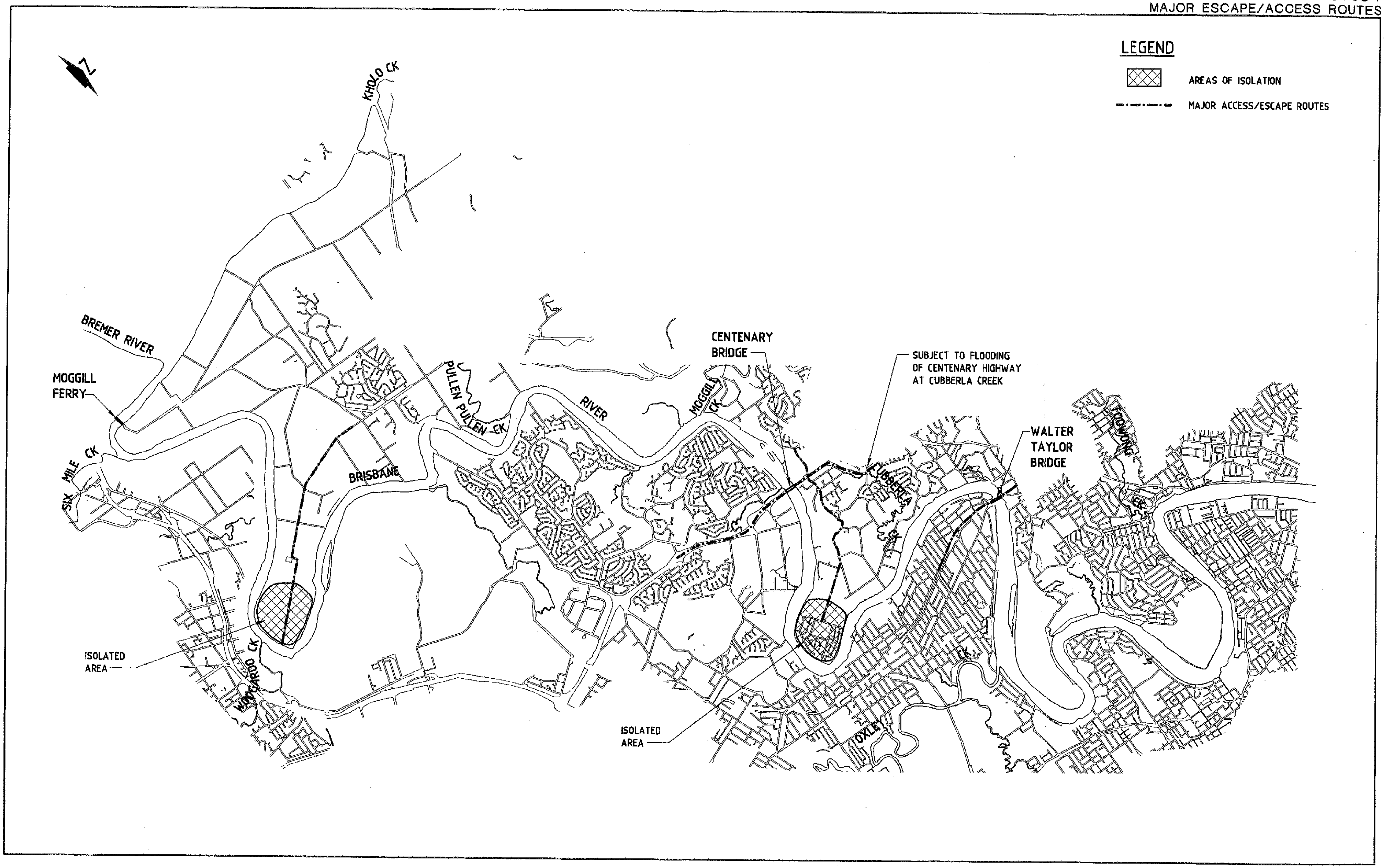
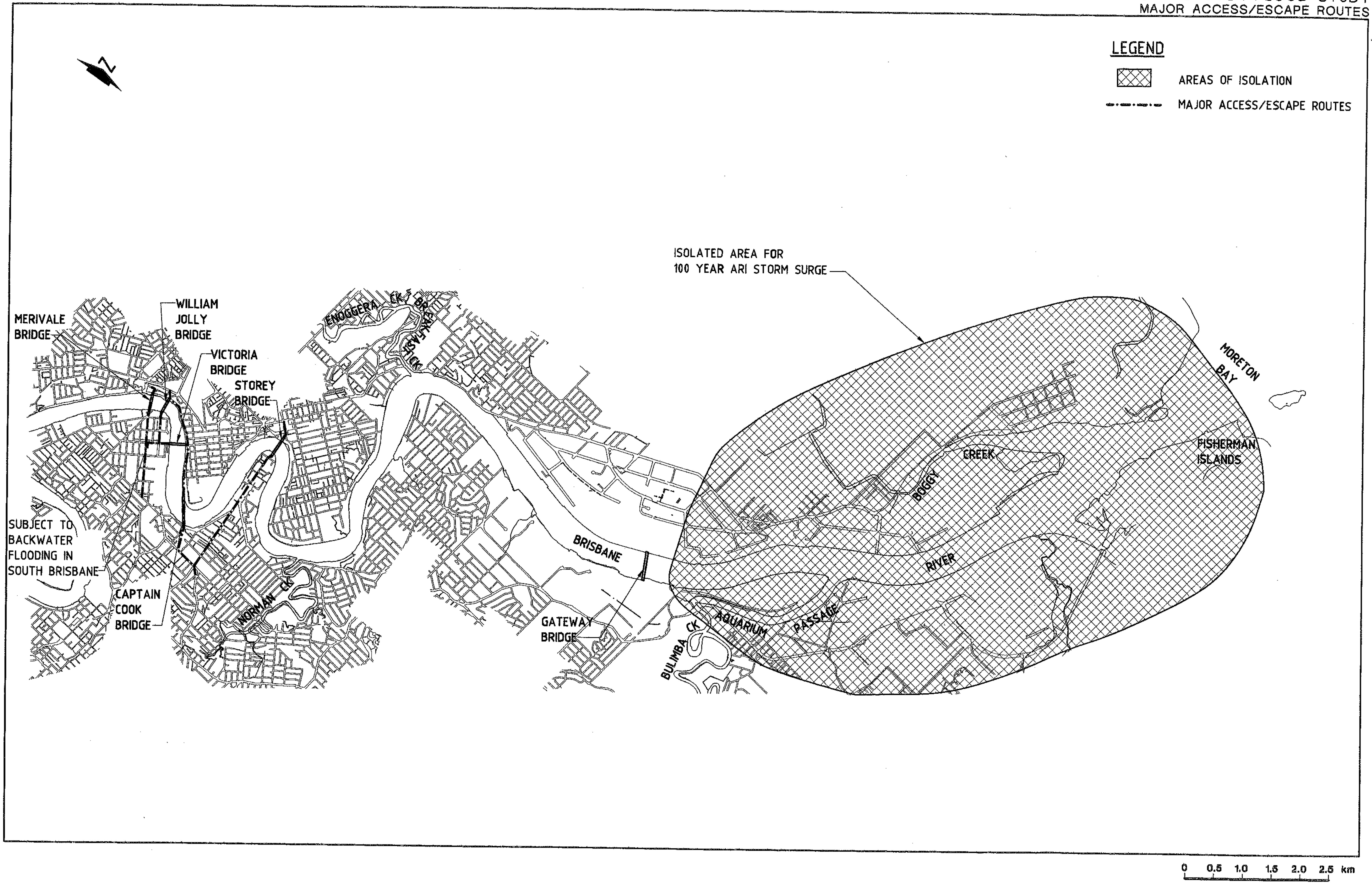
FIGURE 11-2a
BRISBANE RIVER FLOOD STUDY
MAJOR ESCAPE/ACCESS ROUTES



FILE NAME: 415?1501 PLOT SCALE: 1=60 DISK N: G:\T004157 JOB N: T004157 DATE: 4-2-98

FIGURE 11-2b
BRISBANE RIVER FLOOD STUDY
MAJOR ACCESS/ESCAPE ROUTES



PLOT SCALE: 1=60

12. Flood Mapping

12.1 Overview

Topographical information provided by BIMAP was used for the flood mapping phase of the Brisbane River Flood Study. Inundation lines, flood contours and high/low hazard maps were generated with the aid of this information.

12.2 Design Flood Inundation Mapping

Following completion of the development level, regulation line and revegetation strategy, a series of 1:10000 scale maps were prepared illustrating the extent of inundation for the 100 year ARI and 20 year ARI flood events.

The maps appear as **Drawings W10581 Sheets 105 to 111** accompanying this report.

12.3 Flood Hazard Maps

Following the preparation of the HEC-RAS modelling and the inundation maps, the flood hazard mapping was prepared in accordance with the New South Wales Floodplain Development Manual. This manual specifies a depth and velocity criteria which defines whether a water depth and velocity combination is considered high or low flood hazard. **Figure 12-1 - New South Wales Floodplain Hazard Criteria** shows the relationship between depth and velocity when assessing high or low floodplain hazard.

The results from the HEC-RAS model for the 100 year ARI flood show that the overbank velocities are generally below 0.5 m/s with a maximum overbank velocity of 1.1 m/s. At the site where the velocity is 1.1 m/s the maximum allowable depth before the floodplain becomes high hazard according to **Figure 12-1** is approximately 0.75 m. Similarly for velocities below 0.5 m/s the maximum allowable depth before the floodplain becomes high hazard is 0.9 m.

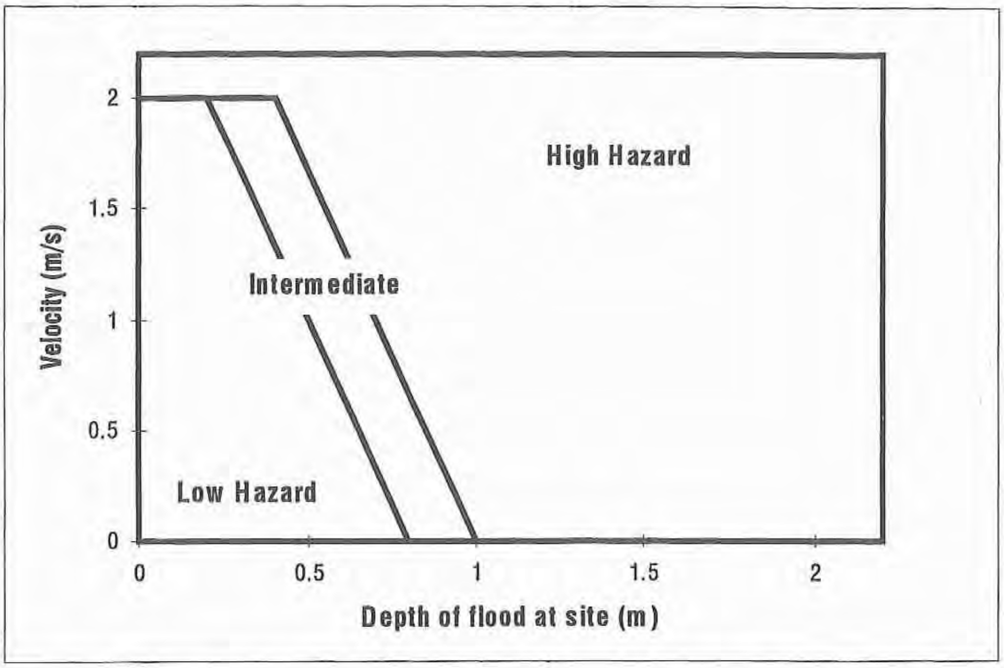
Given these results and the fact that the minimum contour interval on the topographical maps is 1 m, it was considered that depth was the governing factor for high hazard areas on the floodplain. It was therefore assumed that at any site, if the depth of water was 1 m or greater the area was high hazard. This assumption was considered to be slightly conservative.

generate a two dimensional water surface which can then be output as a DXF file and translated into a flood contour map.

The contour information held in BIMAP was provided in the form of a ~~reg~~ rectangular mesh over the Brisbane River. As this mesh was based on photogrammetry, no information was available for the river bathymetry. In order to form a complete digital terrain model, the BIMAP data was merged with the bathymetric data obtained from the survey of the river.

The ~~complete~~ merged digital terrain model consisted of approximately 20,000,000 data points which ~~far~~ exceeded the number of data points that can be used in the FastTABS model (1,000,000 points). The large amount of data points required for the two dimensional modelling of the Brisbane River, ~~made~~ meant that the use of FastTABS would be an inefficient means of predicting two dimensional flow effects and an alternative methodology was developed.

Figure 12-1 - New South Wales Floodplain Hazard Criteria



The flood hazard maps for the Brisbane River are presented in **Drawings W10581 Sheets 91 to 97** accompanying this report.

12.4 Flood Contouring

Initially the flood contouring phase of the study was to be conducted using the two dimensional hydrodynamic model FasTABS. This model uses digital terrain data (mesh) to calculate super-elevations at river bends and produces a DXF file which is translated into a flood contour map. When the digital terrain data was supplied it was found that the information did not include any bathometry and hence surveyed cross sectional information had to be merged with the mesh. This presented a minor problem however due to the size of the files of the digital terrain data provided, manipulation of the data was a slow process. This task was not made easier by the fact that the data was broken up into 15 files each containing a section of mesh. No key map was provided to locate the areas that each of these file contained and as FastTABS was only able to open one file at a time (due to size of file) it was difficult and arduous task to merge the survey information with the digital terrain data.

After spending a significant amount of time trying to manipulate the data with little progress, a meeting with council was set up to discuss whether BIMAP would be able to merge the file and reduce the amount of extraneous data to enable the files to be input directly into FasTABS. The outcome of this meeting was basically that due to the size of the Brisbane River FasTABS could not be efficiently utilised and an alternative methodology should be sought. The resulting methodology was to use levels predicted by the MIKE 11 hydraulic model and apply super-elevations at bends to account for the two dimensional flow effects.

Using the flood levels for the 100 year ARI flood event (regulation lines and revegetation in place) flood contours were calculated at 0.1 m flood level intervals along the Lower Brisbane River reach (upper city boundary to the river mouth) using linear interpolation methods between flood levels at model cross sections. These levels were assumed to be located at the AMTD line on the cross section.

Super-elevations at bends were then calculated using the formula (Chow 1959) :

$$\Delta h = V^2_{max}/g[20r_c/3b - 16r_c^3/b^3 + (4r_c^2/b^2 - 1)^2 \ln\{(2r_c + b)/(2r_c - b)\}]$$

where

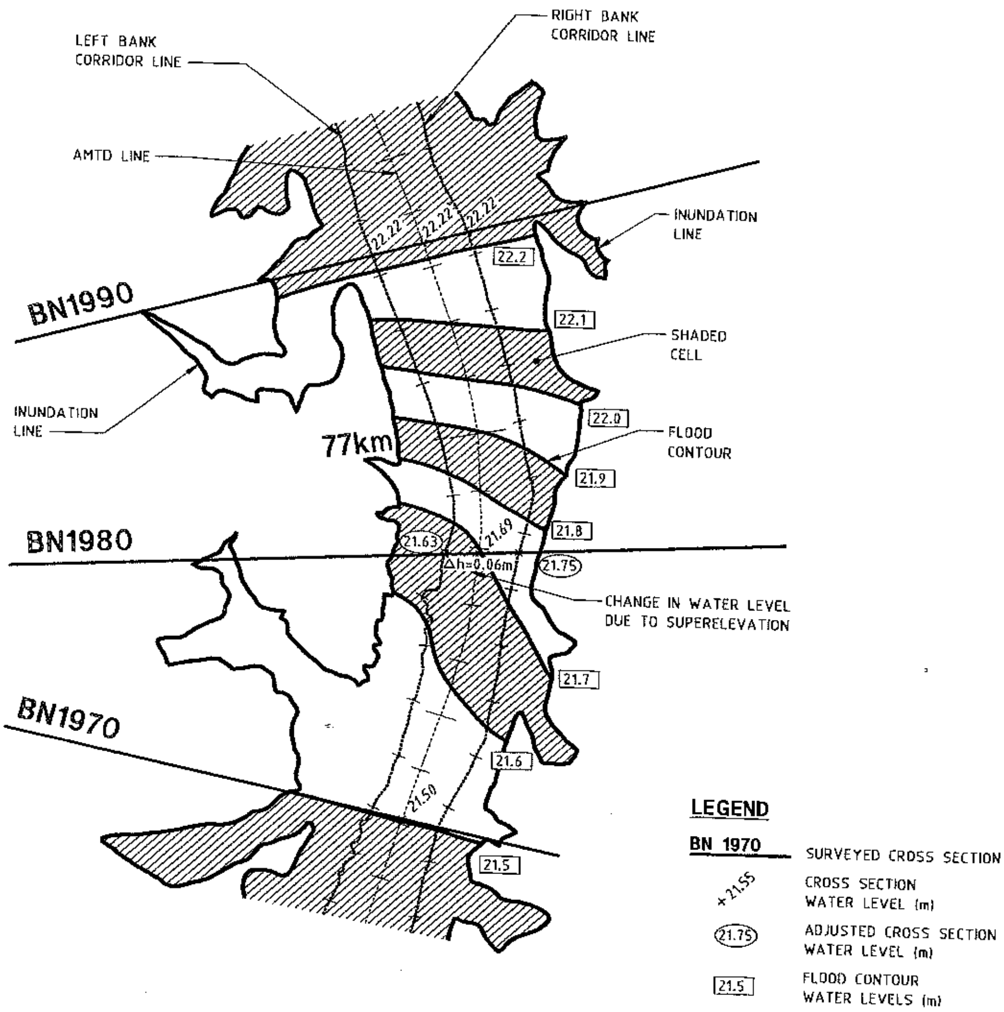
Δh = change in water level (m)
V^2_{max} = maximum velocity at bend (m/s)
g = gravity (9.81 m/s^2)
r_c = radius of bend at center of river (m) (ie AMTD line)
b = width of river (m) (assumed to be the distance between the cadastral boundaries defined for the river corridor)

Once Δh had been calculated this value was added or subtracted to the level at the AMTD line depending on whether the inside or the outside of the bend was being determined.

For example, in **Figure 12-2 - Flood Contouring Example** the MIKE 11 predicted water level at the AMTD line at the mid point of the bend (BN1980) was 21.69 m AHD. At this location a Δh of 0.06 m was calculated and therefore the water level at the inside of the bend was calculated to be 21.63 m AHD and the water level at the outside of the bend was calculated to be 21.75 m AHD. The MIKE 11 predicted water level at BN1990 was calculated to be 22.22 m AHD and this was assumed to be a constant level across the cross section. Water levels at 0.1 m increments were then calculated via linear interpolation between cross sections BN1990 and BN1980 along the left bank creek corridor line, the right bank creek corridor line and the AMTD line. This interpolation was then repeated between cross sections BN1980 and BN1970. Flood contours were then plotted by drawing a line through each point with the same water level along the AMTD, left bank creek corridor line, the right bank creek corridor line. The flood contours were then extended to the inundation lines. This extension of the flood contour lines was based on general trends of the flood contour between the left bank creek corridor line and the right bank creek corridor line.

The above procedure was repeated for each bend from the Brisbane River mouth to the upstream city boundary (BN2020). Flood cells were then formed by shading alternate cells between flood contours to form a database of local flood information.

Figure 12-2 - Flood Contouring Example



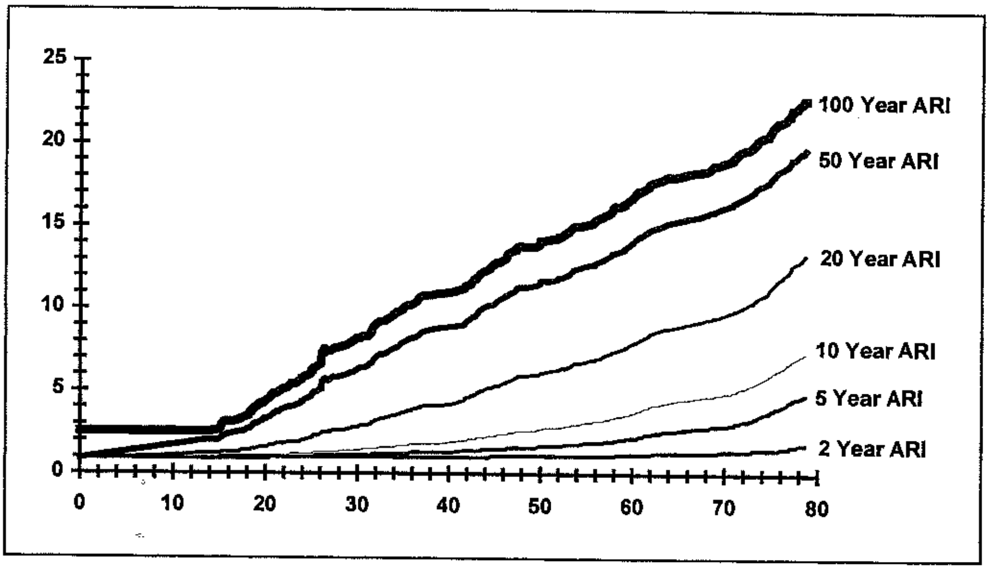
The flood contour maps are presented as **Drawings W10581 Sheets 112 to 121** accompanying this report.

12.5 Applicability of Flood Contours to Smaller Flood Events

The flood contours have been prepared based on the 100 year ARI flood with the regulation lines and revegetation strategy in place. The appropriateness of these contours to the smaller floods (2 year ARI to 50 year ARI) has been determined by comparing each of the respective profiles. **Figure 12-3 - Flood Contour Profile Comparison** illustrates the similarities and differences for the varying ARI flood events.

Below AMTD chainage 14 km (0 to 14 km AMTD) the 100 year ARI profile shows a flood contour level of 2.5 m AHD. This flood contour level reflects the 100 year ARI Moreton Bay storm surge flood level (0.21 m AHD) plus an allowance of 0.3 m for future greenhouse effects. From **Figure 12-3** it can be seen that between 0 - 14 km AMTD the adopted flood contours would not be applicable for floods other than the 100 year ARI event.

Figure 12-3 - Flood Contour Profile Comparison



Between AMTD chainage 14 - 78.6 km it can be seen from **Figure 12-3** that the 100 year and 50 year ARI flood levels are similar in characteristics and the adopted flood contours would generally be applicable with the use of an appropriate correction factor.

For the floods with an ARI less than 50 years the predicted profiles illustrate a high degree of derivation from the 100 year profile and therefore the adopted flood contours would not be applicable.

13. Community Consultation

13.1 Information Bulletin

The community consultation activities programmed for the Brisbane River Flood Study were conducted through means of an Information Bulletin/Questionnaire. These bulletins were sent to various community groups along the Brisbane River. A set of plans was provided to each of the groups coordinators to enabled individuals to mark up areas where they believed riverbank rehabilitation or other works were required.

Approximately 500 selected Bulletins were sent to 13 community groups ~~with these~~. These groups were ~~targeted~~ based on proximity to the Brisbane River. The idea of targeting local community groups was due to the following factors:

- The shear number of residents situated close to Brisbane River would require in excess of 100 000 bulletins to be distributed. This would be a study within itself and was beyond the scope of this study.

- Community Groups have generally already discussed environmental issues within their local area and show a genuine interest in helping their environment. It was therefore considered that these groups would provide the Consultant with a good response to the issues being addressed.

From the five hundred Information Bulletins/Questionnaires sent only five were returned to the Consultant. This was considered to be a poor response however given that a total of thirteen groups were ~~targeted~~ approached and if these bulletins were completed at a group meeting (with all members having an input) four responses could be considered good.

A list of the 11 community groups targeted in this study are presented in **Table 13-1 - Community Groups Bulletin List**. The names and addresses of these groups were supplied by the Brisbane City Council.

Table 13-1 - Community Groups Bulletin List

Community Group Name	No of Responses
BCC - Bushland Care Program	0
Brisbane River Management Group	0
Chelmer Bushcare Group	0
Corinda Bushcare	0
St Lucia Bushland Regeneration Group	2
Norman Creek Flood Action Group	0
Allen Creek Action Group	1
Oxley Creek Environment Group	0
Perrin Creek Bushland Group	1
River Mouth Action Group	1
Tenneriffe Bushland Park Group	0
Toowong Creek Working Group	0
Centenary Riverfront Advisory Committee	0

Note: BCC - Bushland Care Program Bulletin was returned as not address not correct. Contact was attempted however messages weren't returned.

A copy of the information Bulletin/Questionnaire is presented in **Appendix N - Community Consultation Information Bulletin/Questionnaire.**

13.2 Issues Raised by Community Groups

The following discussion summarises the responses to the Information Bulletin/Questionnaire for the individual community groups.

River Mouth Action Group - BN 340 to River Mouth

The River Mouth Action Group could not identify any damage that has occurred to the river banks after major storms however had strong opinions that revegetation and rehabilitation was required on both sides of the river bank from the Bulimba-Hamilton Area to the Mouth of River.

A number other of issues concerning the water quality of industrial drainage, stormwater drainage and sewerage outlets that is currently being discharged into the river. The number of wharfs along the river mouth area was also of some concern.

Some additional uses for the river corridor along this section of the river were identified as fishing and access to the river. The response indicated that access to the river has been lost and that the edibility of the fish in this section of river is questionable.

St Lucia Bushland Regeneration Group - BN 960 to BN 920
The St Lucia Bushland Regeneration Group could not identify any damage that has occurred to the river banks after major storms however had strong opinions regarding revegetation and rehabilitation. Currently the native vegetation is being over run by undesirable creepers such as: glycine, ballonn and cats claw creeper around the Sandy Creek area. The group is concerned that Celtis Sihensis is becoming a mono-culture and these species should be removed and replaced with additional native species. The group suggests that by replanting native species in this area will enhance soil stability and increase the fauna habitat.

Additional uses for the corridor were identified by the development of walking and cycling tracks. More of these tracks are required with a fair bit of emphasis placed on a footpath at St Lucia along a section of the Esplanade. Group members identify the need for separate cycling and walking tracks for safety of pedestrians.

A number of flora and fauna habitats around the Sandy Creek area were identified, these being:

- Native Bee Hives
- Well Established Mangroves
- Old Growth Eucalypts for nesting and roosting.

Currently tour busses use this stretch of the river however no parking is available. Busses park on the edge of the road making it difficult for other traffic to get past. The non-indigenous bush growth in this area needs removing to allow river views to be unobscured.

Perrin Creek Bushland Rehabilitation Group
Unfortunately this groups response related to Perrin Perrin Creek rather than the Brisbane River. This information does not relate to this study and hence will be forwarded to Council Officers for further examination.

Allen Street Bushcare Group
Unfortunately this groups response related to Oxley Creek rather than the Brisbane River. This information does not relate to this study and hence will be forwarded to Council Officers for further examination.

13.3 Use of Bulletin Information

All information resulting from the Bulletin was used where practical and the proposed revegetation tested in the MIKE 11 hydraulic model is presented in **Drawings W10581 Sheets 84 to 90**.

This proposed revegetation resulted in a maximum predicted flood level increase for the 100 year ARI flood event of 20 mm.

14. References

1. South East Queensland Water Board, `Brisbane River Flood Hydrology - Runoff Routing Model Calibration', Volumes I and II, Qld DPI-Water Resources, September 1991.

2. Hausler G and Porter N, `Report on the Hydrology of Wivenhoe Dam' Qld DPI-Water Resources, 1977.

3. Weeks W D, `Wivenhoe Dam Design Flood Study', Qld DPI-Water Resources, 1983.

4. Deen A R, Craig R W and Sable I C, `Hawkesbury River Flood Model', Hydrology and Water Resources Symposium, Canberra 1988.

5. Australian Rainfall and Runoff, Institution of Engineers, Australia 1987.

6. South East Queensland Water Board `Brisbane River Flood Hydrology - Interim Report on Design Flood Estimation', by Qld DPI-Water Resources, March 1993.

7. South East Queensland Water Board `Brisbane River Flood Hydrology - Final Report on Downstream Flooding Estimation', by Qld DPI-Water Resources, August 1993.

8. SEQWB `Wivenhoe Dam - Moreton Bay Hydraulic Models. Model Calibration Volume III, Appendix II Derivation of Wivenhoe Dam Releases' by Qld DPI-Water Resources, October 1994.

9. Bureau of Meteorology `Severe Weather and Flooding South East Queensland May 1996' July 1996.

SINCLAIR KNIGHT MERZ

Brisbane City Council

February 1998

Brisbane River Flood Study

FINAL DRAFT REPORT

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Figures

Acknowledgments

Sinclair Knight Merz would like to thank the following organisations for their assistance throughout this study.

Department of Natural Resources (DNR)
Bureau of Meteorology (BOM)
South East Queensland Water Board (SEQWB)

In particular, we would like to thank Terry Malone (BOM), John Ruffini (DNR) and Garry Grant (SEQWB) for without their help and supply of information our task would have been much more difficult.

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Name of Organisation:	Brisbane City Council
Document Version:	Draft 1
Job Number:	20/2/97 TO04157

Appendix A - Rainfall and Pluviometer Stations

Table A-1 - Daily Rainfall Stations

Number	Station	Period
040004	Amberley AMO	1941 - Date
040007	Bald Knob	1927 - Date
040019	Benarkin Forestry	1925 - Date
040020	Blackbutt	1900 - Date
040214	Brisbane RO	1840 - Date
040223	Brisbane AMO	1949 - Date
040030	Bryn Euryn	1917 - 1972
040289	Coalbank	1961 - Date
040056	Coominya	1916 - Date
040060	Cooyar	1895 - Date
040382	Crows Nest	1894 - Date
041028	Emu Vale Railway	1893 - Date
040225	Enoggera Reservoir	1870 - Date
040075	Esk	1886 - Date
040083	Gatton PO	1894 - Date
040082	Gatton - Lawes (CSIRO)	1897 - Date
040091	Grandchester	1894 - Date
041042	Haden	1926 - Date
040094	Harrisville	1896 - Date
040096	Helidon	1870 - Date
040101	Ipswich (Composite)	1870 - Date
040102	Jimna	1927 - Date
040104	Kalbar	1897 - Date
040110	Kilcoy	1890 - Date
040318	Kirkleagh	1953 - Date
040114	Laidley	1889 - Date
040115	Lake Manchester	1917 - Date
040120	Lowood	1887 - Date
040121	Maleny PO	1915 - Date
040133	Monsildale	1913 - 1977
040135	Moongerah Dam	1917 - Date
040136	Mooloolah	1926 - Date
040137	Moore	1913 - 1977
040139	Mt Alford	1912 - Date
040140	Mt Brisbane	1890 - Date
040142	Mt Crosby	1894 - Date
040308	Mt Glorious	1962 - Date
040247	Mt Kilcoy (Lindfield)	1923 - Date
040145	Mt Mee	1909 - Date
040147	Mt Nebo	1947 - Date
040153	Murphy's Creek	1895 - Date

040158	Nanango	1882 - Date
040311	Nukinenda	1961 - Date
040169	Peachester	1915 - Date
040270	Ravensbourne PO	1954 - Date
040183	Rosevale	1915 - Date
040184	Rosewood	1894 - Date
040421	Spring Bluff	1895 - Date
040198	Tarome	1912 - Date
041046	The Head (Riverdale)	1913 - Date
041165	The Head (Bonnie Brae)	1913 - Date
040202	Thornton	1915 - Date
040205	Toogoolawah	1909 - Date
041103	Toowoomba (Fire Stn)	1869 - Date
040227	Wacol (Wolston Pk)	1893 - Date
040424	West Haldon	1915 - Date
040252	Woodford	1887 - Date
040258	Yarraman Ck	1913 - Date

Table A-2 - Pluviometers

Number	Station	Agency	Period of Record
040004	Amberley AMO	BM	1961 - Date
040062	Crohamhurst	BM	1960 - Date
040019	Benarkin Forestry	BM	1961 - Date
040020	Blackbutt	BM	Unknown
040214	Brisbane RO	BM	1911 - Date
040223	Brisbane AMO	BM	1950 - Date
541032	Bryn Euryn	DNR	1985 - Date
040382	Crows Nest	TCC	1965 - Date
040531	Deagon	BCC	1973 - Date
040225	Enoggera Reservoir	BCC	1961 - Date
040075	Esk	BCC	1964 - Date
040082	Gatton - Lawes CSIRO	BM	1963 - Date
040094	Harrisville PO	BM	1971 - Date
040101	Ipswich (Composite)	BM	1975 - Date
040102	Jimna PO	BM	1972 - Date
040104	Kalbar	BM	1978 - Date
040318	Kirkleagh	BM	1959 - Date
040115	Lake Manchester	BCC	1961 - Date
040133	Monsildale	BCC	1963 - 1977
040135	Moongerah Dam	BM	1958 - Date
040308	Mt Glorious	BM	1969 - Date
040526	Mt Nebo	BCC	1966 - Date
040674	Mt Stanley	BM	1977 - Date
040480	Perseverance Dam	TCC	1971 - Date
040270	Ravensbourne	TCC	1965 - Date
040076	Robyn Dale	BM	1972 - Date
040503	Rosewood	BM	1977 - Date
040241	Samford (CSIRO)	CSIRO	1967 - Date
040202	Thornton	BM	1970 - Date
040528	Three Way Catchment	BCC	1970 - Date
041467	Toowoomba	TCC	1954 - Date
040675	Townson	BM	1977 - Date
040628	Woodford (BCC)	BCC	1964 - Date
040079	Forest Hill	DNR	1894 - Date
040095	Hatton Vale	DNR	1908- Date
040107	Beaudesert	DNR	1917 - Date
040124	Marburg	DNR	1887 - Date

Table A-2 - Pluviometers (Continued)

Number	Station	Agency	Period of Record
040149	Boonah	DNR	1924 - 1990
040150	Mundoolun	DNR	1881 - Date
040154	Murrumba (Fairview)	DNR	1926 - 1974
040155	Mudtapilly	DNR	1917 - 1957
040156	Innisplain	DNR	1913 - Date
040159	Narangbar	DNR	1920 - 1987
040163	Rathdowney	DNR	1925 - 1972
040170	Crows Nest (Peachy SF)	DNR	1927 - Date
040171	Petrie (Australian Paper Mills)	DNR	1886 - Date
040179	Redbank	DNR	1888 - 1978
040180	Margate	DNR	1886 - Date
040181	Roadvale	DNR	1907 - 1983
040186	Samsonvale Composite	DNR	1919 - Date
040197	Mount Tamborine	DNR	1888 - Date
040208	Pine Mountain	DNR	1925 - Date
040212	Ascot Racecourse	DNR	1920 - Date
040213	Bald Hills	DNR	1895 - 1993
040215	Brisbane Botanic Gardens	DNR	1890 - 1984
040216	Brisbane Show Grounds	DNR	1889 - Date
040226	Goodna	DNR	1870 Date
040224	Enoggera	DNR	1899 - Date

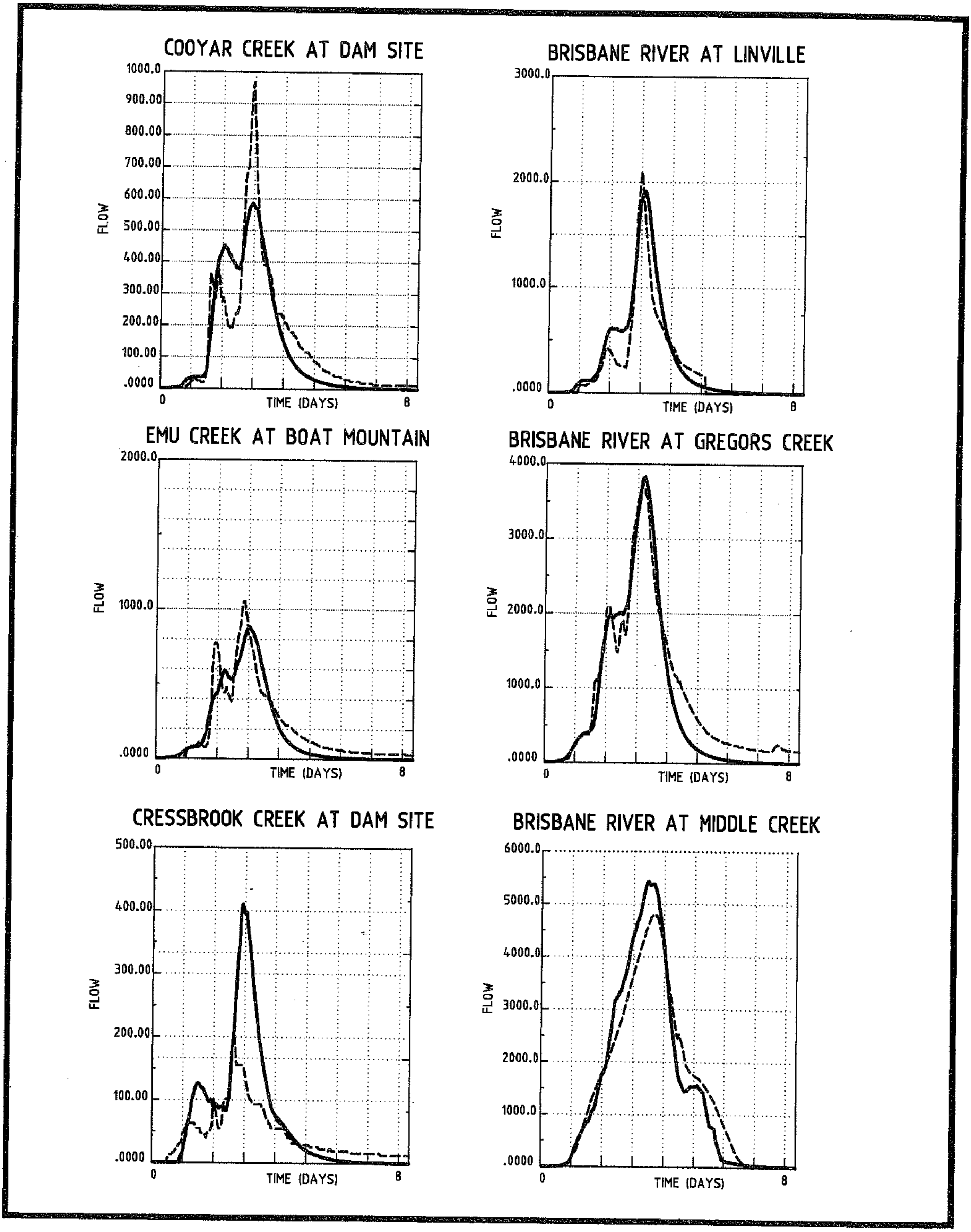
Note: BM = Bureau of Meteorology
NDR = Department of Natural Resources
TCC = Toowoomba City Council
BCC = Brisbane City Council

Appendix B - Recorded and RAFTS Predicted Hydrographs

FIGURE B-1a

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
JANUARY 1974 FLOOD HYDROGRAPHS



LEGEND

--------- RECORDED DISCHARGE

——— PREDICTED DISCHARGE

DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

FILE NAME: FIG-B1 PL ALE:

130

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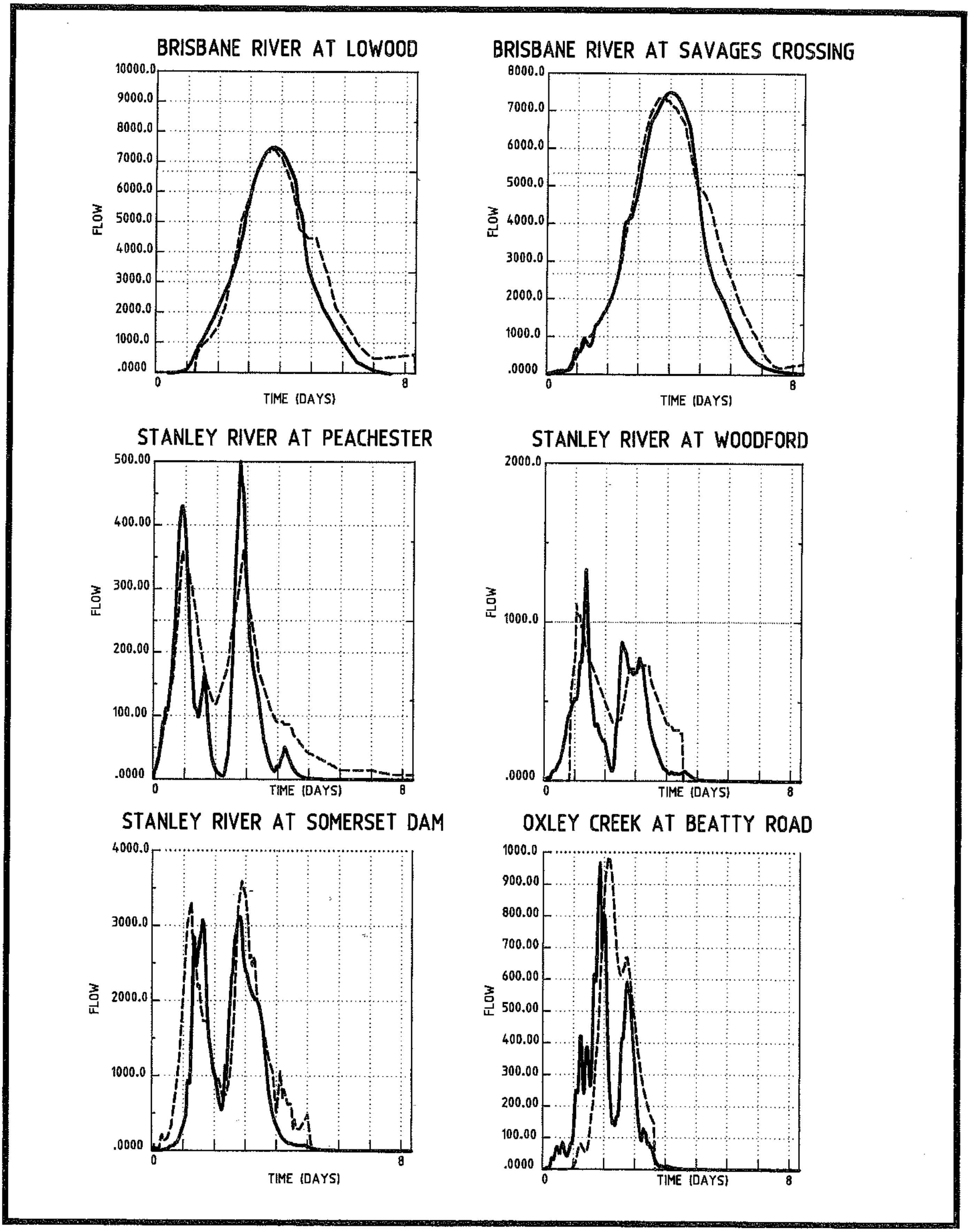
FIGURE B-1b
BRISBANE RIVER FLOOD STUDY
JANUARY 1974 FLOOD HYDROGRAPHS



LEGEND

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———— PREDICTED DISCHARGE

DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

FILE NAME: FIG-B1

PL… LE: 1

232

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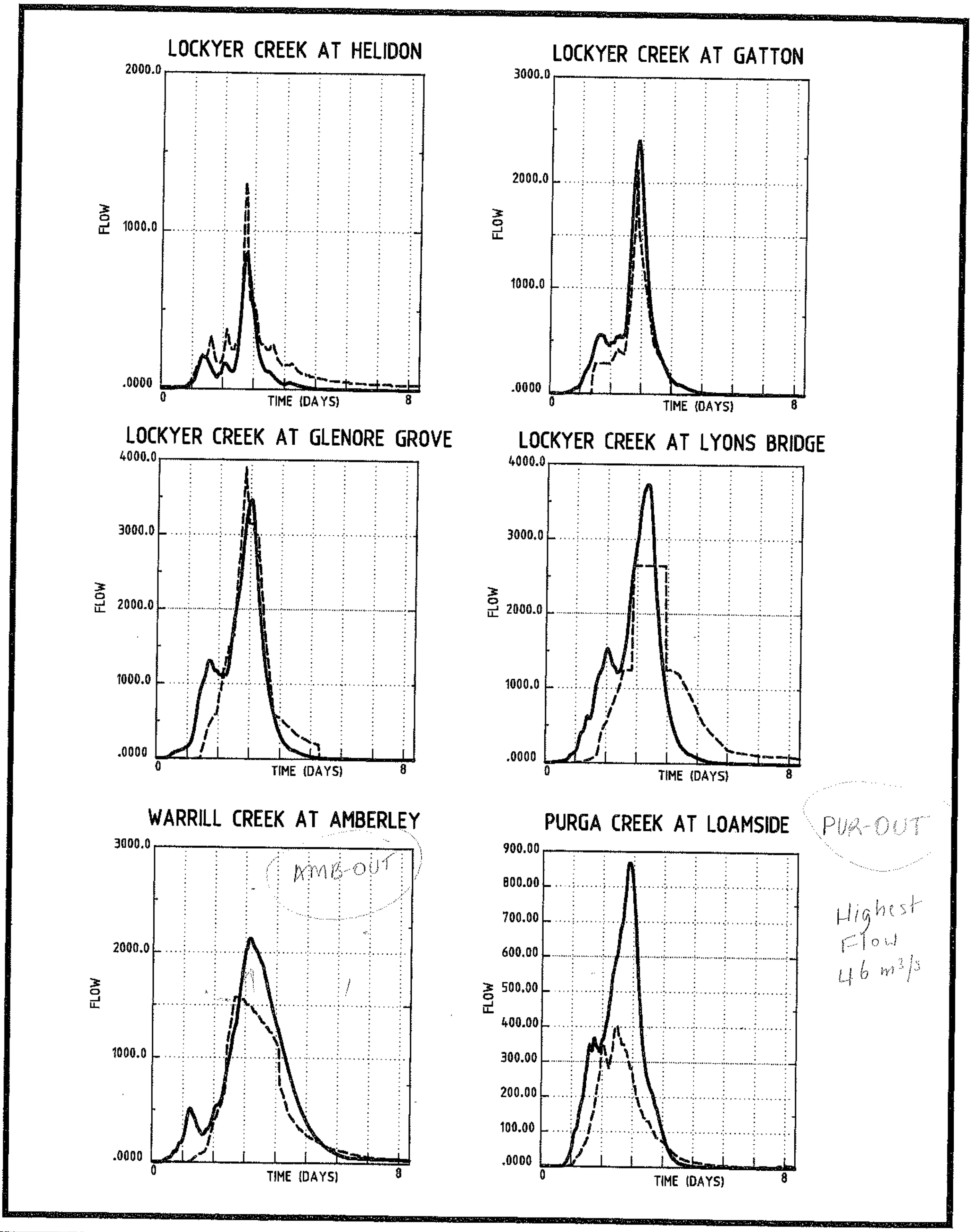
FIGURE B-1c

BRISBANE RIVER FLOOD STUDY
JANUARY 1974 FLOOD HYDROGRAPHS



LEGEND

-------- RECORDED DISCHARGE

———— PREDICTED DISCHARGE

FILE NAME: FIG-B1 DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

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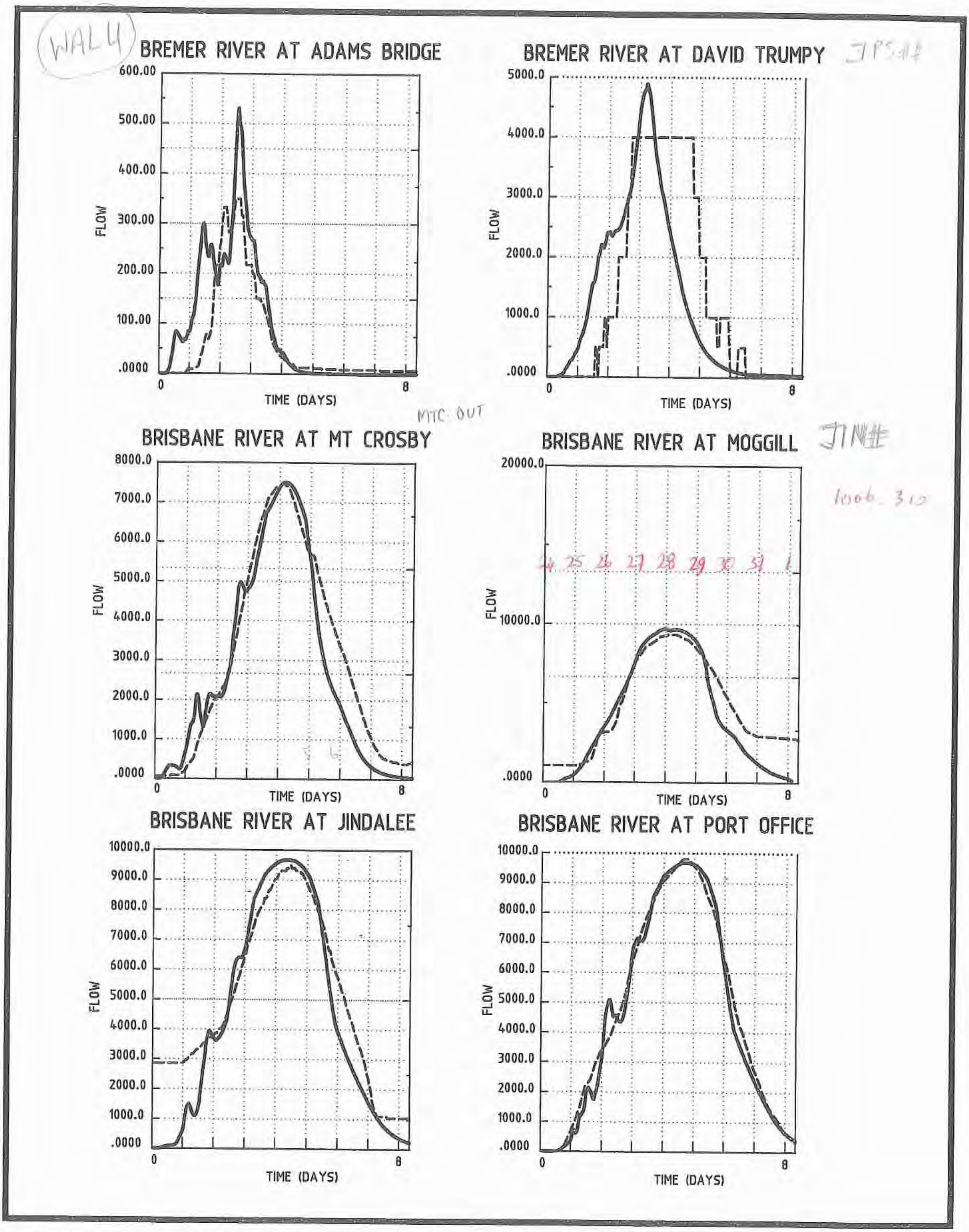
FIGURE B-1d
BRISBANE RIVER FLOOD STUDY
JANUARY 1974 FLOOD HYDROGRAPHS



LEGEND

- - - - - - - - RECORDED DISCHARGE

———————— PREDICTED DISCHARGE

234

FIGURE B-2a

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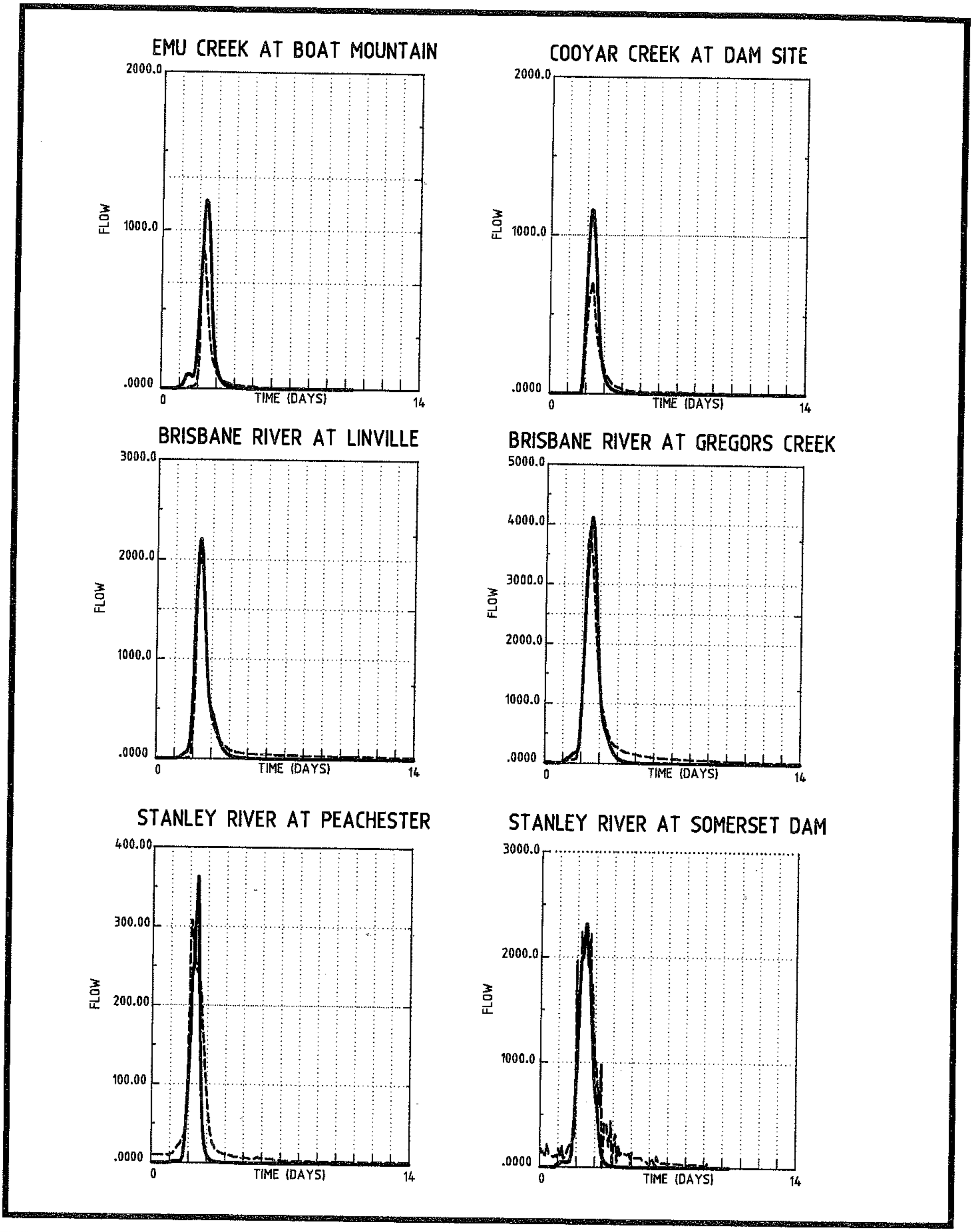
BRISBANE RIVER FLOOD STUDY
JUNE 1983 FLOOD HYDROGRAPHS

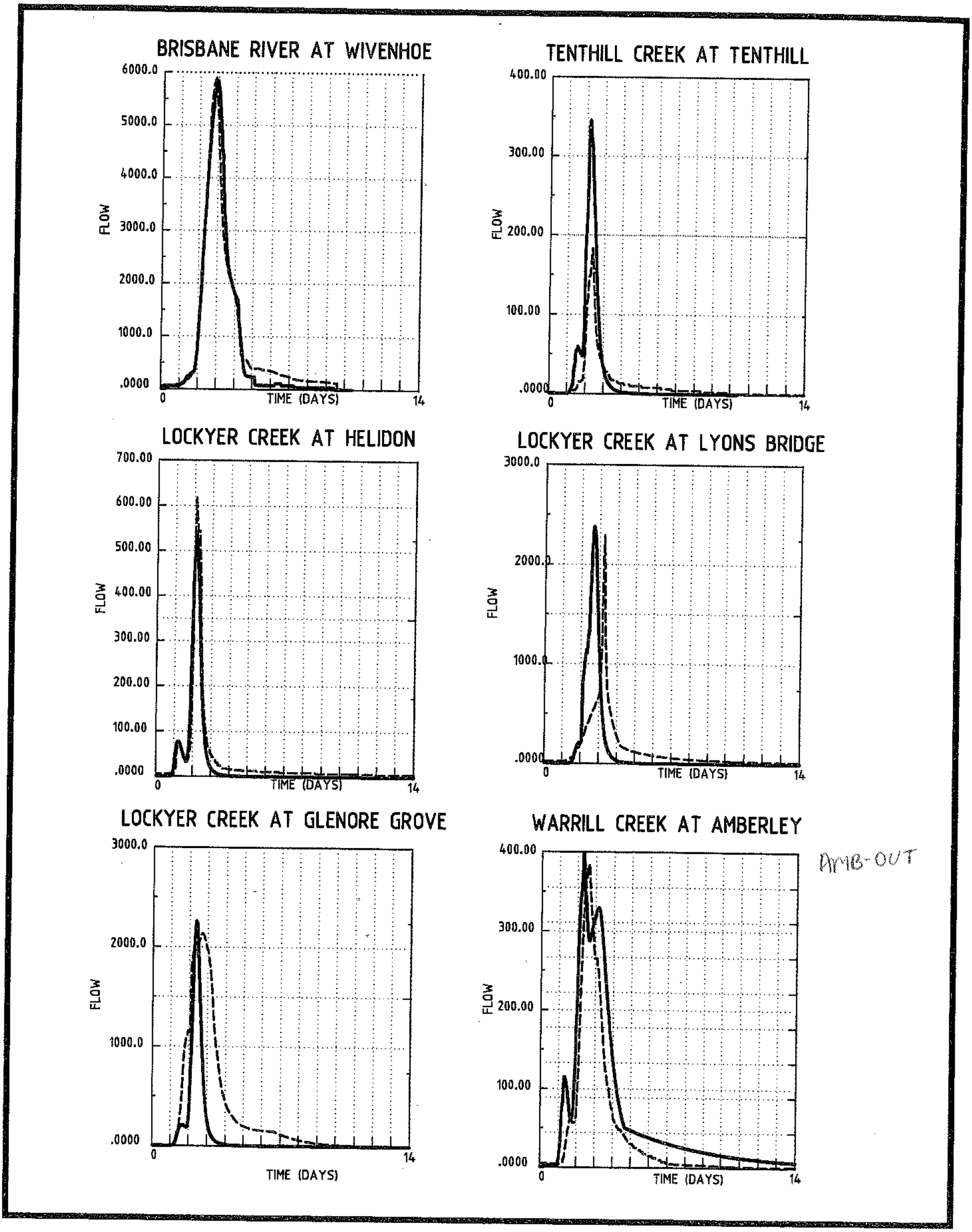


LEGEND
- - - - - - - RECORDED DISCHARGE
——————— PREDICTED DISCHARGE

FILE NAME: FIG-B2 PL ALE: DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
JUNE 1983 FLOOD HYDROGRAPHS



AMB-OUT

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———————— PREDICTED DISCHARGE

DATE: 17-2-98 JOB N°: T004157 DISK N°: G:\

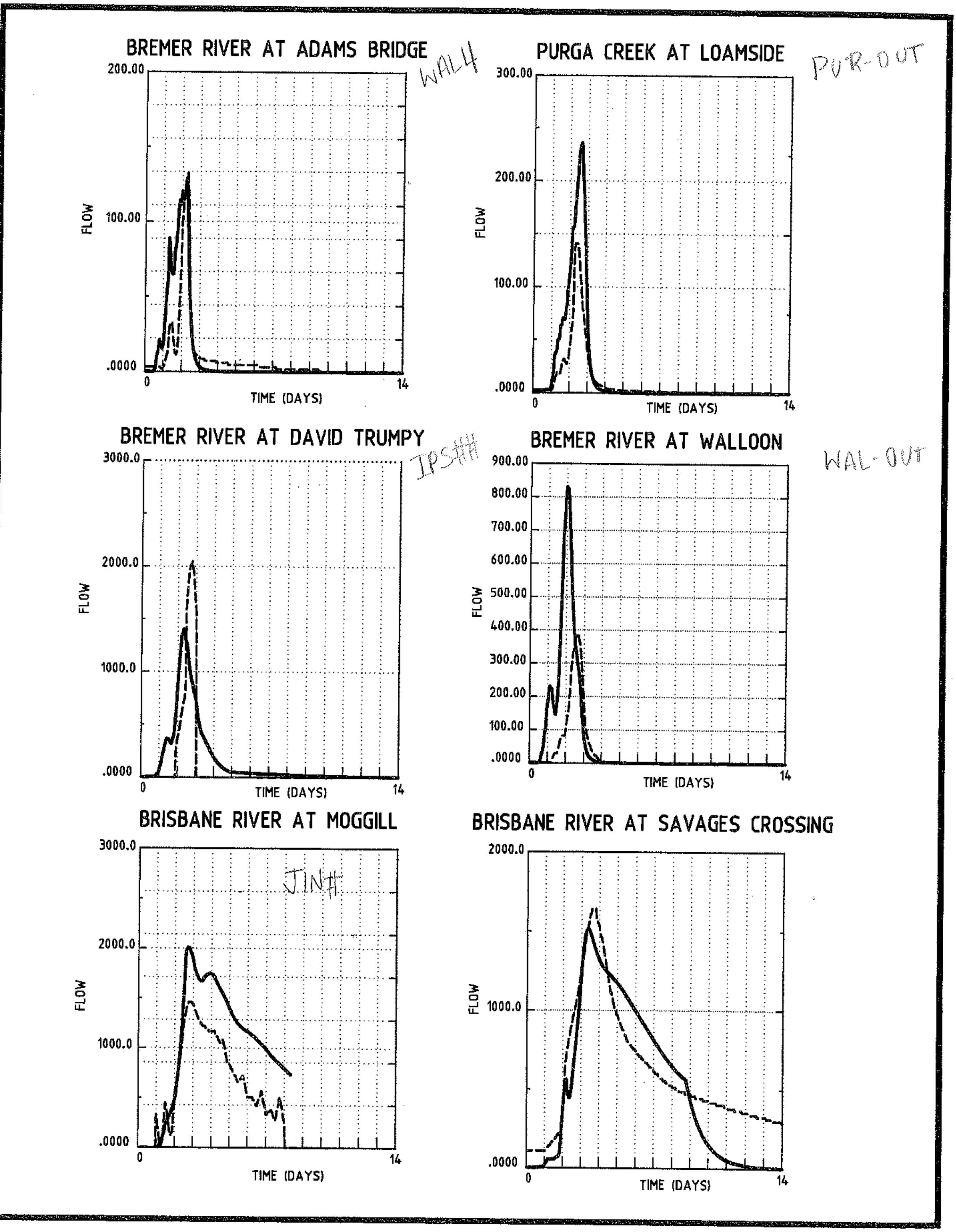
FILE NAME: FIG-B2

PL-- --ALE:

FIGURE B-2c

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
JUNE 1983 FLOOD HYDROGRAPHS



LEGEND

------------ RECORDED DISCHARGE

———————— PREDICTED DISCHARGE

DATE: 17-2-98

JOB N°: T004157

DISK N°: G:\

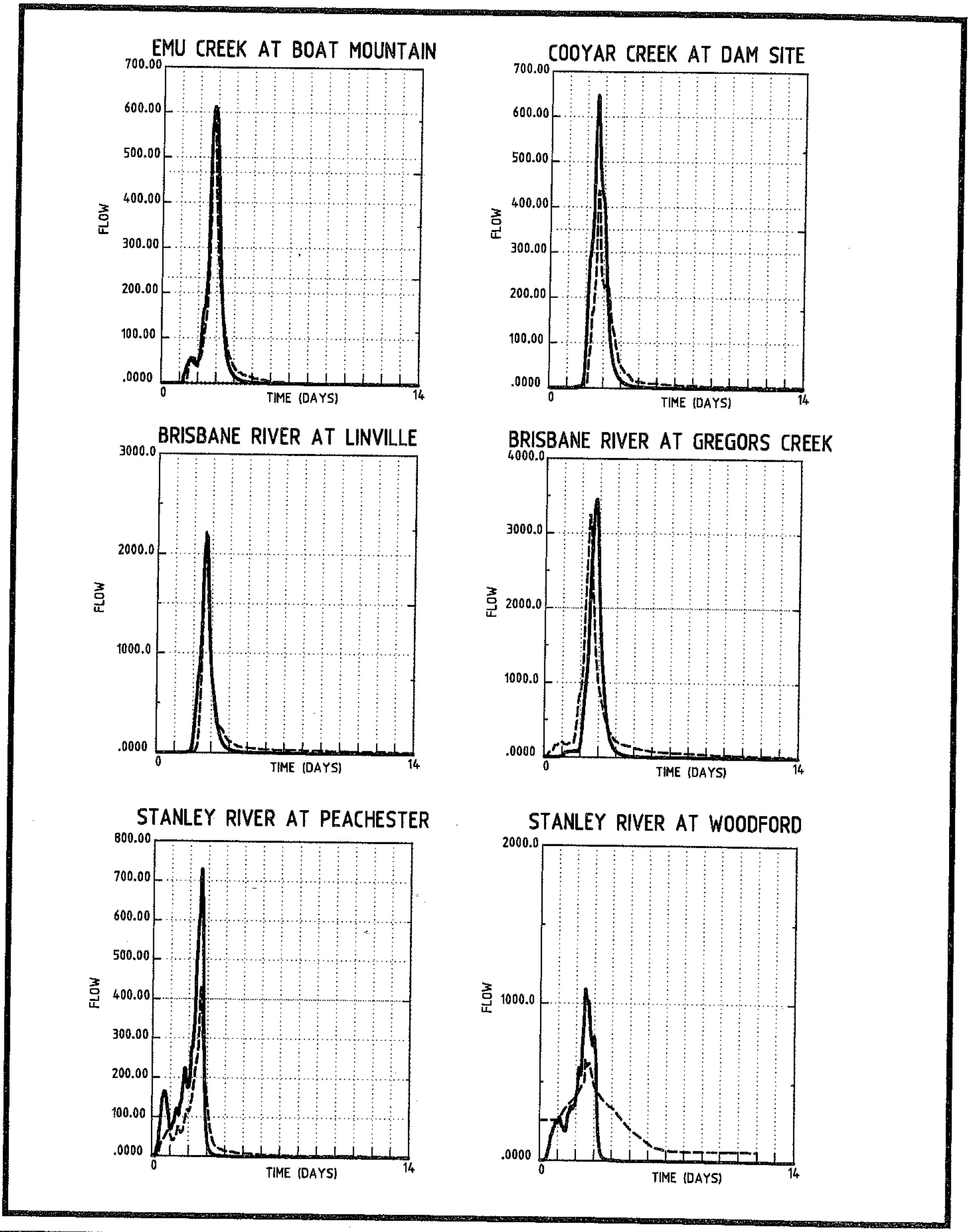
FILE NAME: FIG-B2

PL ALE:

SINCLAIR KNIGHT MERZ

FIGURE B-3a

BRISBANE RIVER FLOOD STUDY
LATE APRIL 1989 FLOOD HYDROGRAPHS



LEGEND

- - - - - - - - RECORDED DISCHARGE

———————— PREDICTED DISCHARGE

FILE NAME: FIG-B3 PL ALE:

DISK N°: G:\

JOB N°: T004157

DATE: 17-2-98

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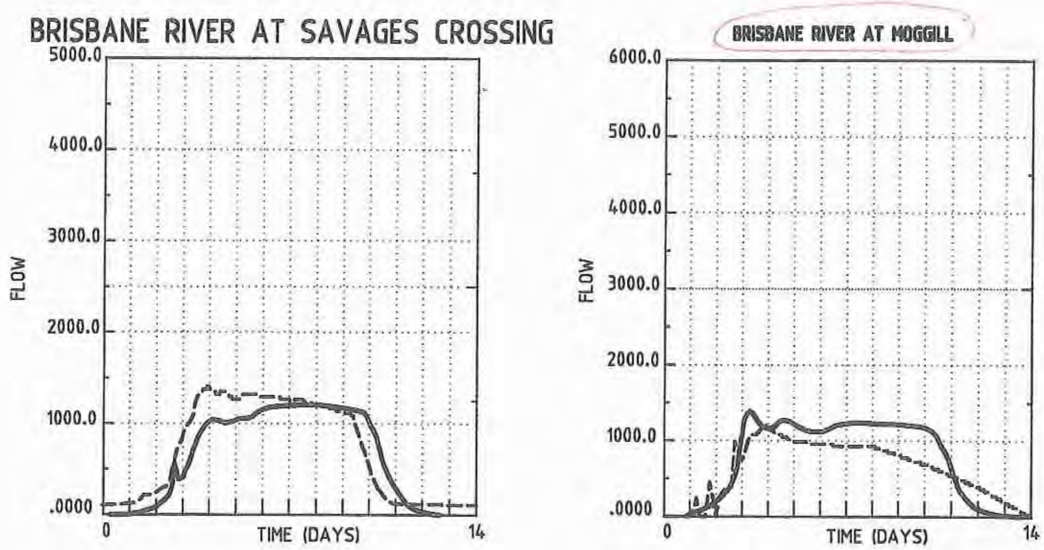
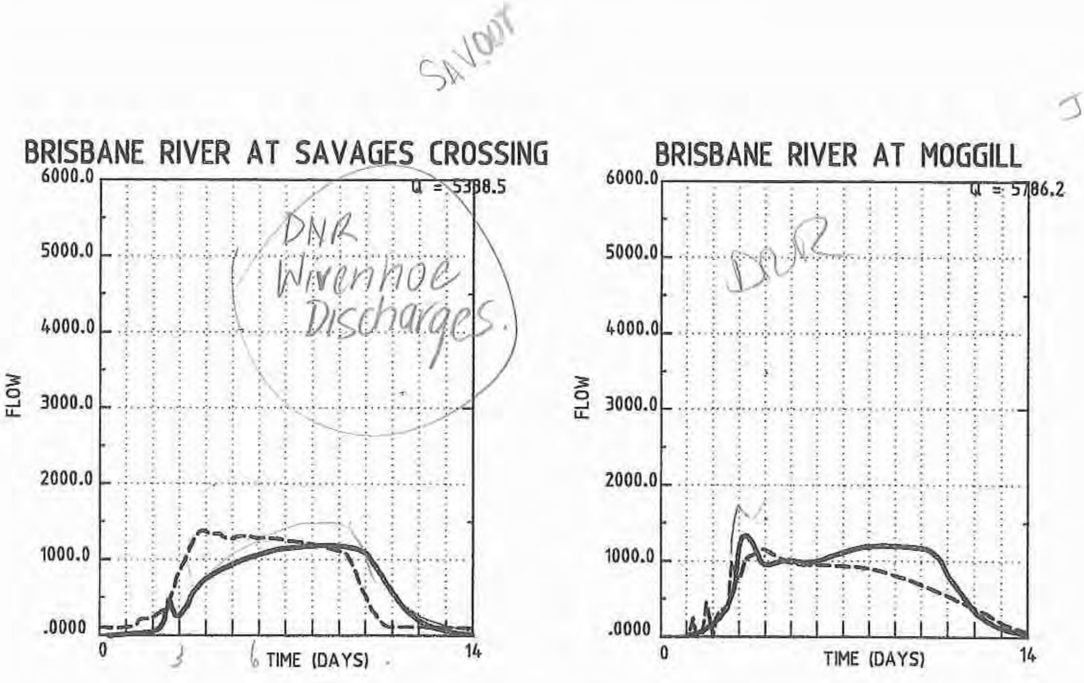
FIGURE B-3b

BRISBANE RIVER FLOOD STUDY
LATE APRIL 1989 FLOOD HYDROGRAPHS



STORAGE CURVE A



STORAGE CURVE B

LEGEND

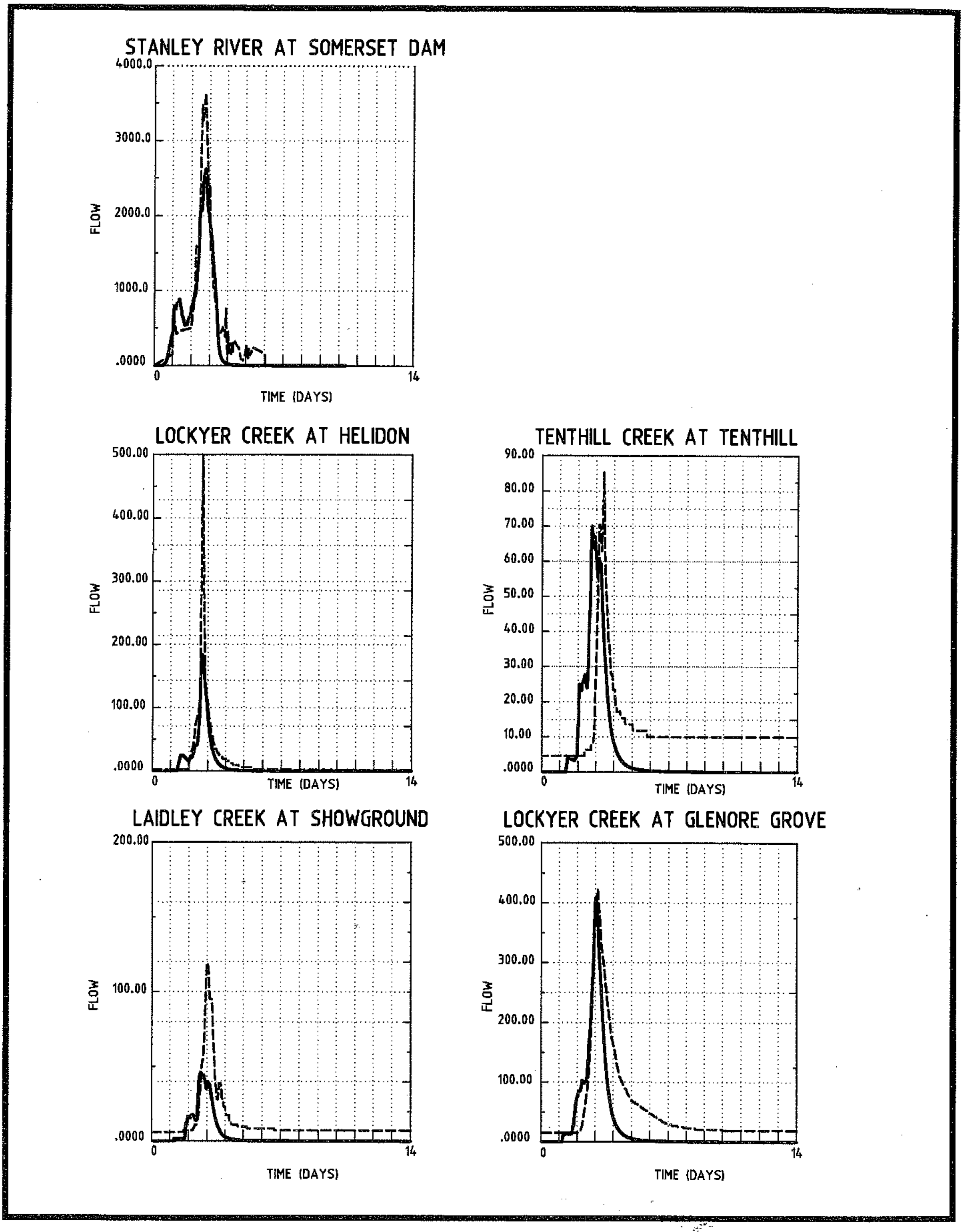
- - - - - - - - RECORDED DISCHARGE
———————— PREDICTED DISCHARGE

FILE NAME: FIG-B3 DISK N°: G:\ JOB N°: T00457 DATE: 17-2-98

FIGURE B-3c

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
LATE APRIL 1989 FLOOD HYDROGRAPHS



LEGEND

- - - - - - RECORDED DISCHARGE

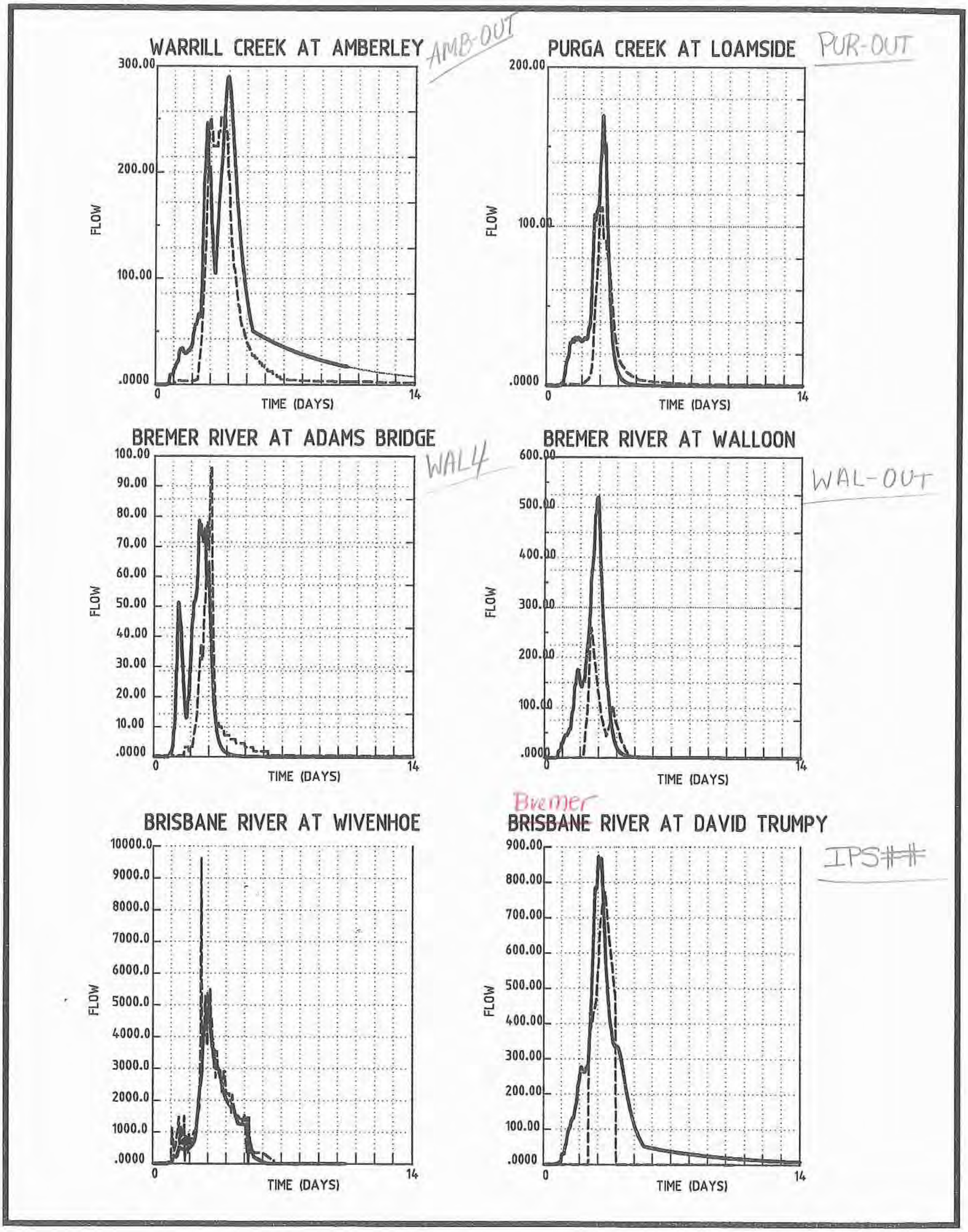
———— PREDICTED DISCHARGE

FILE NAME: FIG-B3 PLOT SCALE: 1=1 DISK No: G:\ JOB No: T00/157 DATE 17-2-98

SINCLAIR KNIGHT MERZ

FIGURE B-3d

BRISBANE RIVER FLOOD STUDY
LATE APRIL 1989 FLOOD HYDROGRAPHS



LEGEND

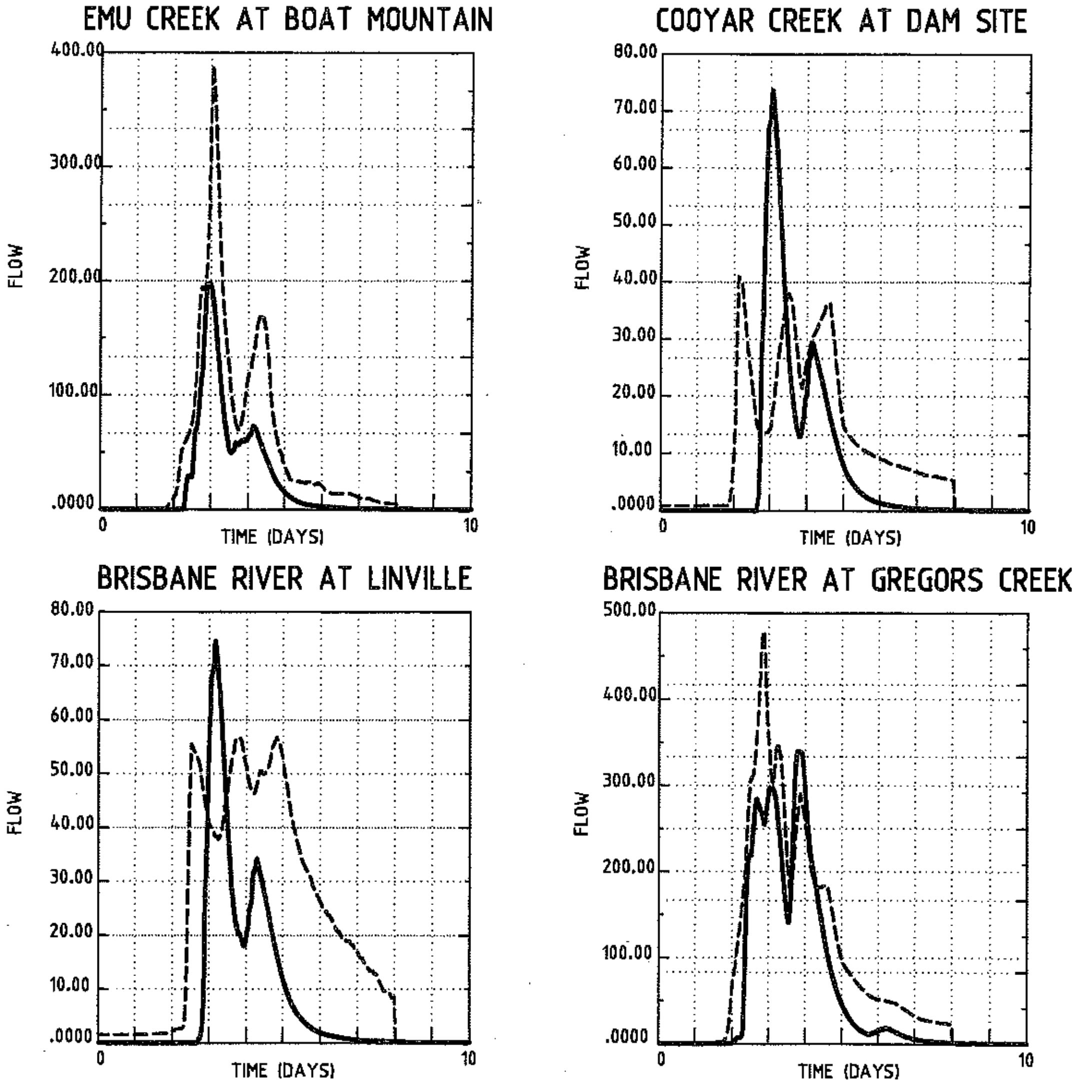
-------- RECORDED DISCHARGE

———— PREDICTED DISCHARGE

FILE NAME: FIG-R3 PLO, SCALE: 1=1 DISK N°: G:\ JOB N°: T00A157 DATE: 17-2-98

SINCLAIR KNIGHT MERZ

FIGURE B-4a
BRISBANE RIVER FLOOD STUDY
MAY 1996 FLOOD HYDROGRAPHS



LEGEND

--------- RECORDED DISCHARGE

———— PREDICTED DISCHARGE

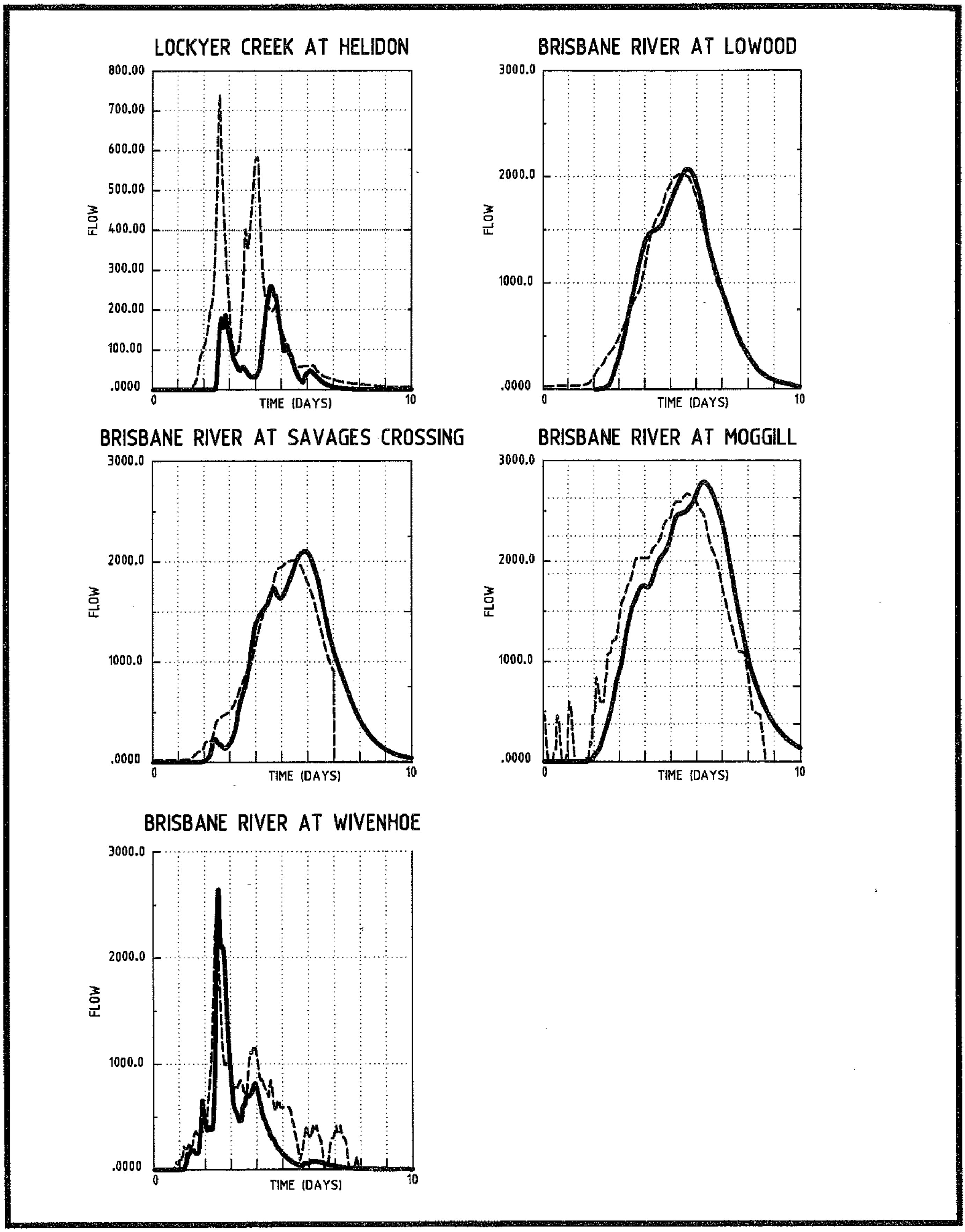
FILE NAME: FIG-B4 DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

PLC. SCALE: 1:...

SINCLAIR KNIGHT MERZ

FIGURE B-4b

BRISBANE RIVER FLOOD STUDY
MAY 1996 FLOOD HYDROGRAPHS



LEGEND

-------- RECORDED DISCHARGE

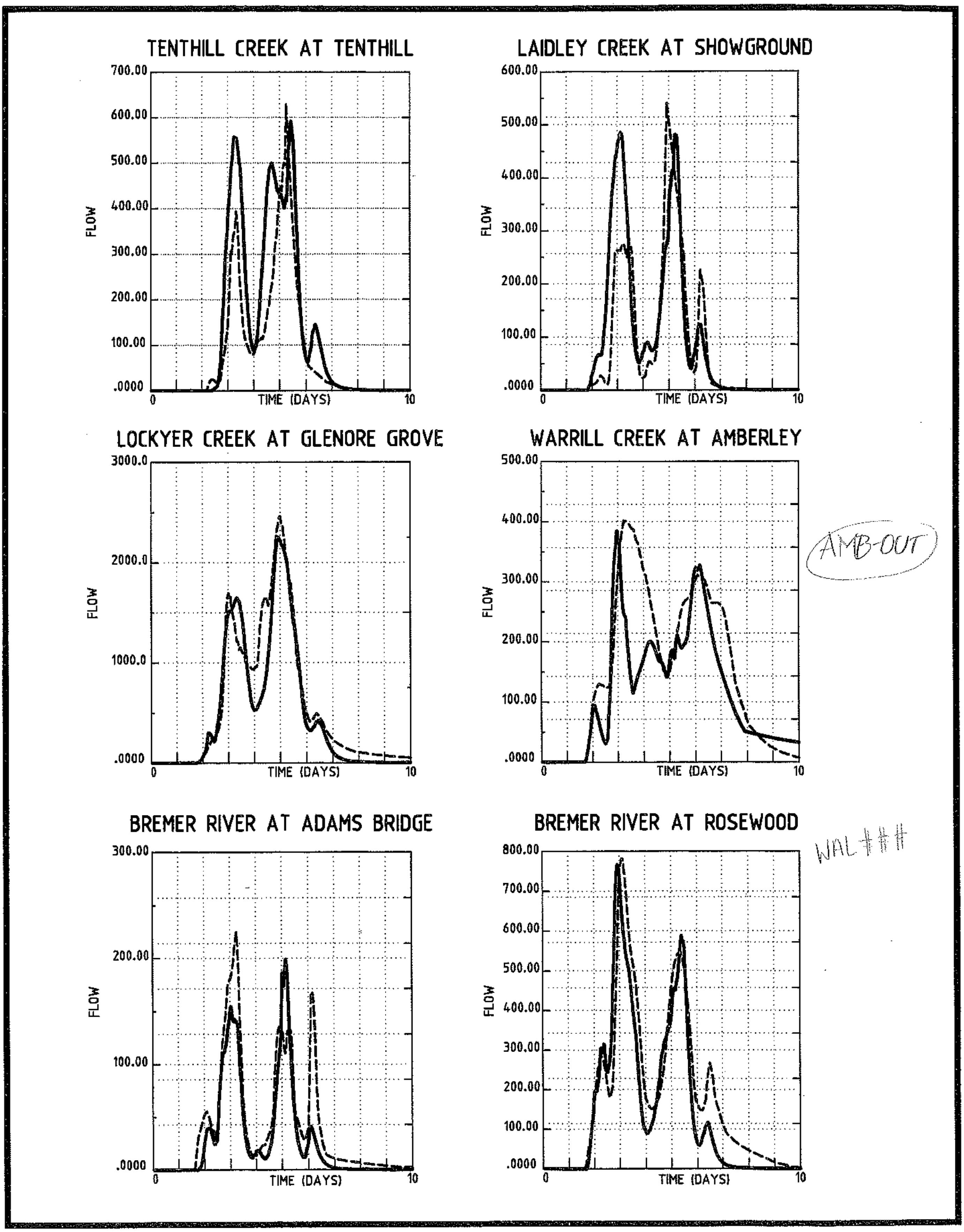
———— PREDICTED DISCHARGE

DATE: 17-2-98 JOB N°: T004157 DISK N°: G:\ FILE NAME: FIG-B4

SINCLAIR KNIGHT MERZ

FIGURE B-4c

BRISBANE RIVER FLOOD STUDY
MAY 1996 FLOOD HYDROGRAPHS



LEGEND

- - - - - - - - RECORDED DISCHARGE

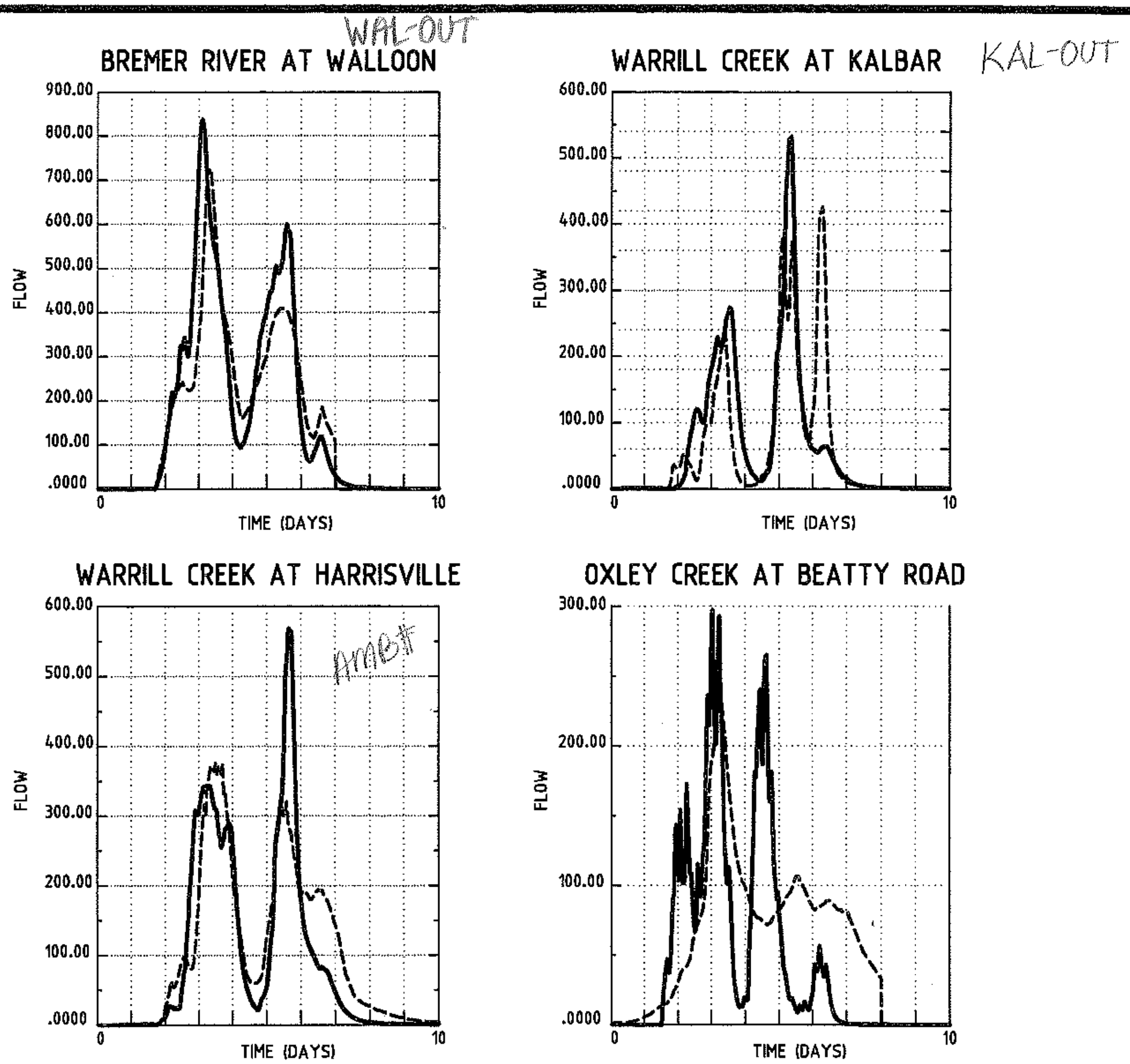
———————— PREDICTED DISCHARGE

FILE NAME: FIG-B4
PLOT SCALE: 1=100
DISK Nº: G:\
JOB Nº. T00/457
DATE 17-2-98

SINCLAIR KNIGHT MERZ

FIGURE B-4d

BRISBANE RIVER FLOOD STUDY
MAY 1996 FLOOD HYDROGRAPHS



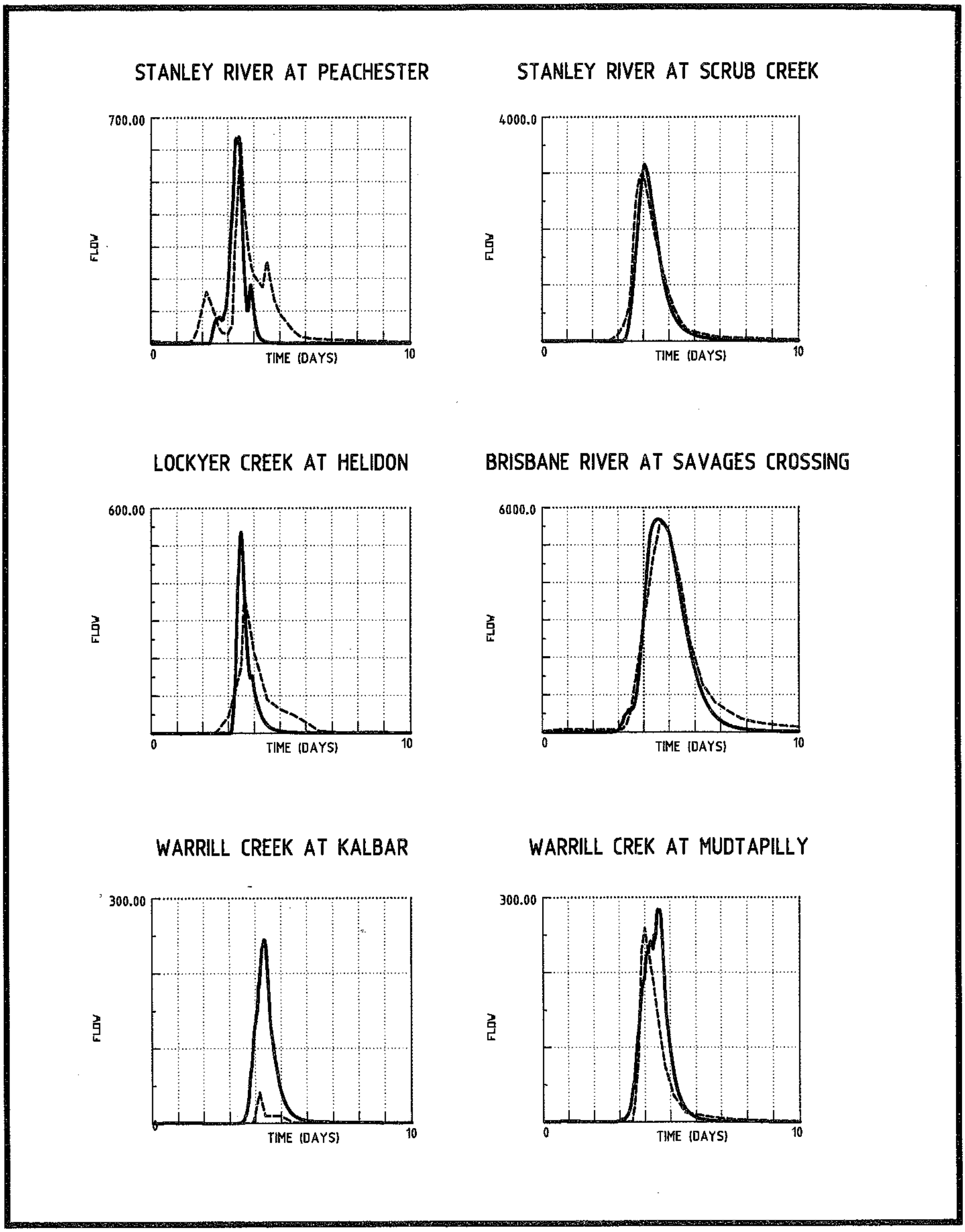
LEGEND
- - - - - - - RECORDED DISCHARGE
——————— PREDICTED DISCHARGE

FILE NAME: FIG B/. PLOT SCALE: 1=100 DISK No: G:\ JOB No: T00/157 DATE: 17-2 98

FIGURE B-5

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
FEBRUARY 1931 FLOOD HYDROGRAPHS



LEGEND

- - - - - - RECORDED DISCHARGE

———— PREDICTED DISCHARGE

FILE NAME: 04157-57 DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

PLO. SCALE: 1:100

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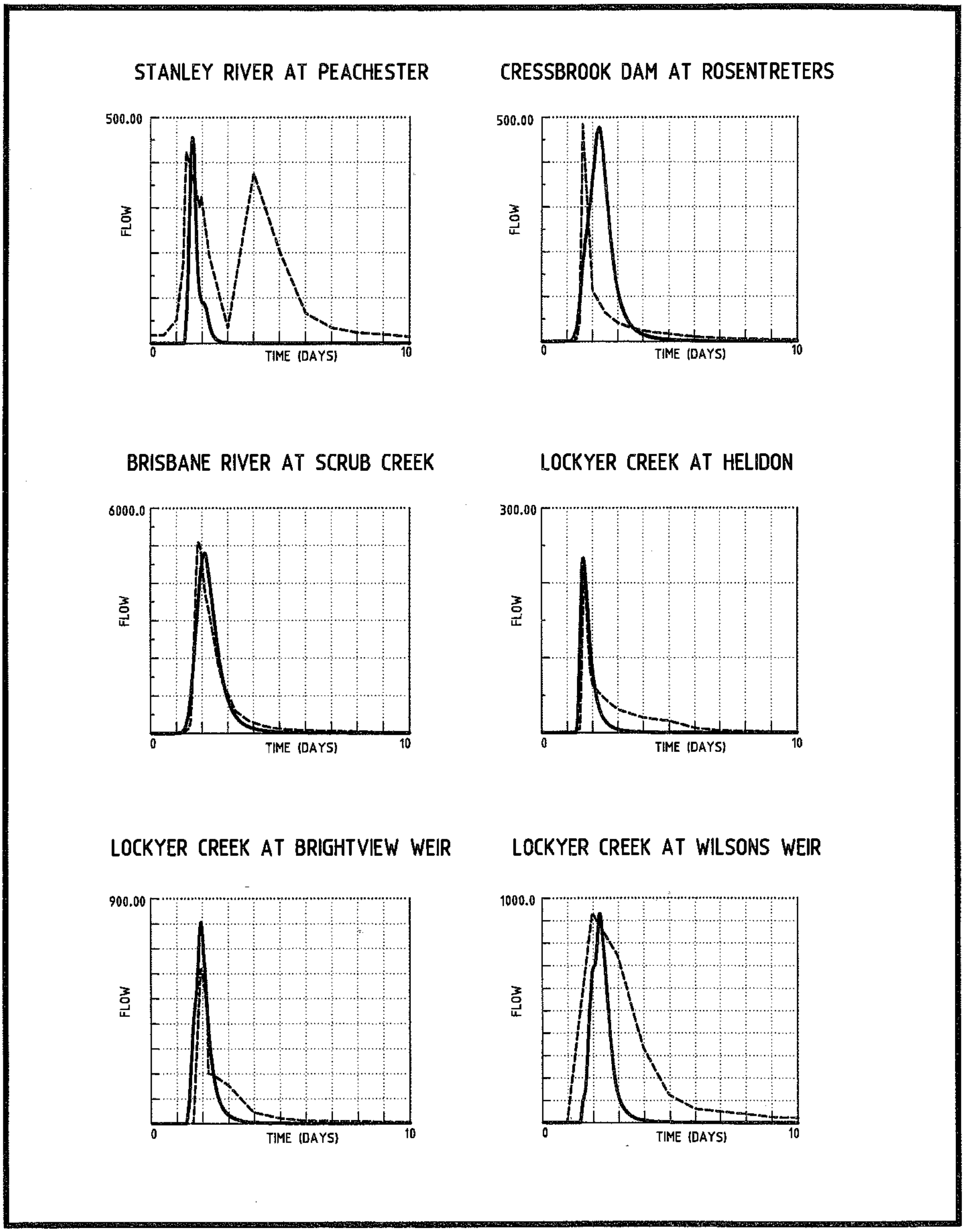
FIGURE B-6a

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
MARCH 1955 FLOOD HYDROGRAPHS



LEGEND
- - - - - - RECORDED DISCHARGE
———— PREDICTED DISCHARGE

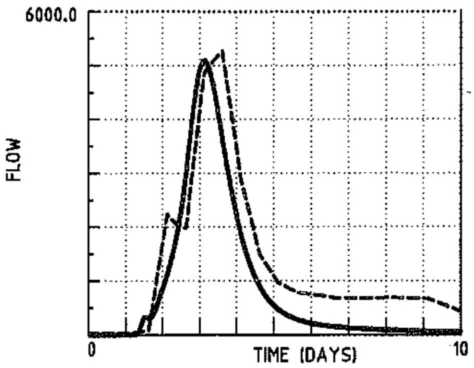
FILE NAME: 04157-57 PLG. SCALE: 1=100 DISK N°: G:\ JOB N°: T00457 DATE: 17-2-98

SINCLAIR KNIGHT MERZ

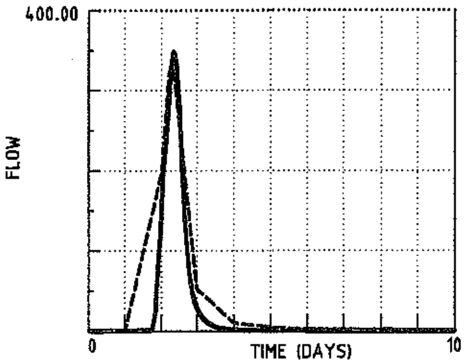
FIGURE B-6b

BRISBANE RIVER FLOOD STUDY
MARCH 1955 FLOOD HYDROGRAPHS

BRISBANE RIVER AT SAVAGES CROSSING



WARRILL CREEK AT KALBAR



LEGEND

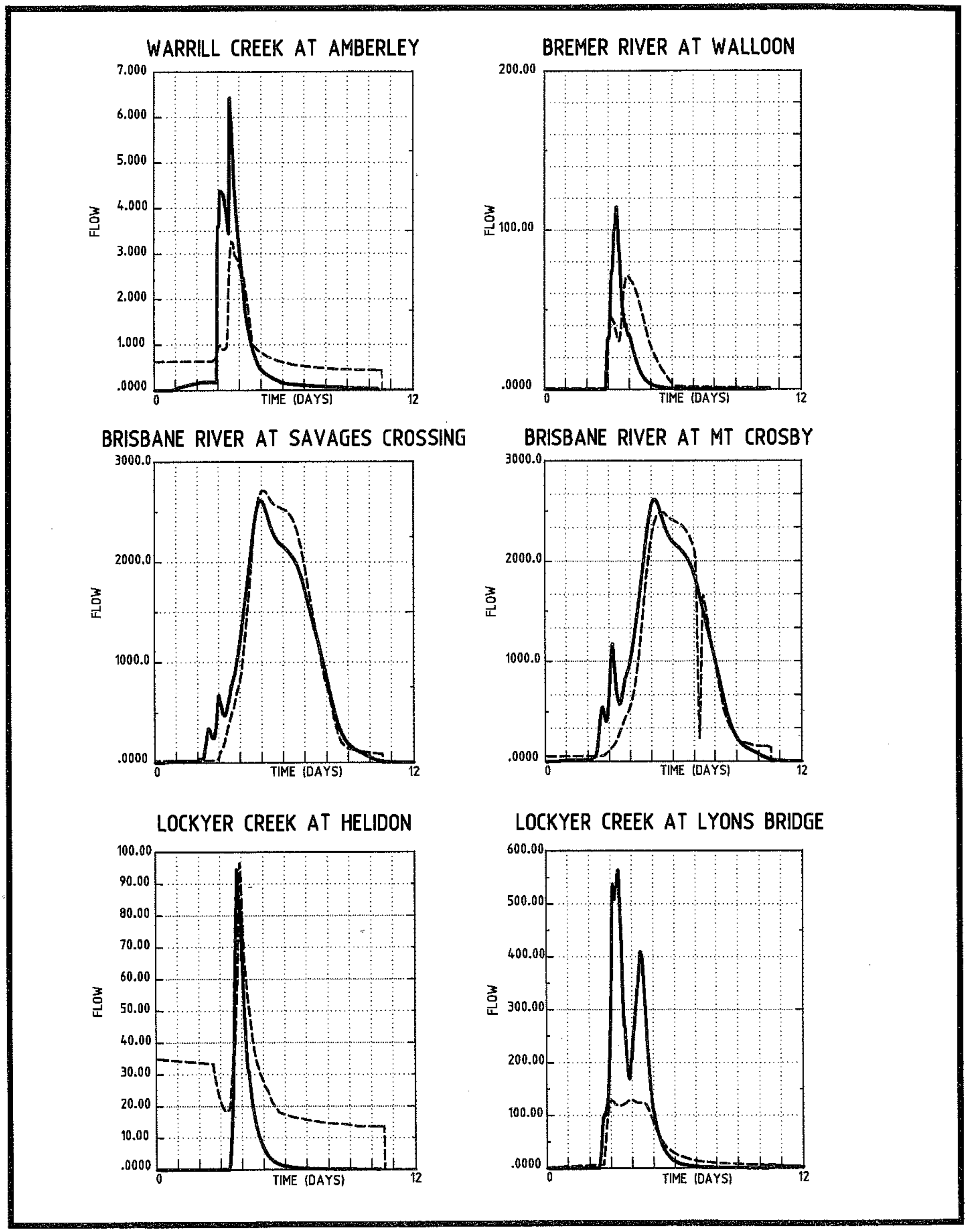
- - - - - - RECORDED DISCHARGE

———— PREDICTED DISCHARGE

FILE NAME: 04157_57 DISK No: G:\ JOB No: T004157 DATE: 17-2-98
PLOT SCALE: 1=100

SINCLAIR KNIGHT MERZ

FIGURE B-7a
BRISBANE RIVER FLOOD STUDY
JULY 1973 FLOOD HYDROGRAPHS



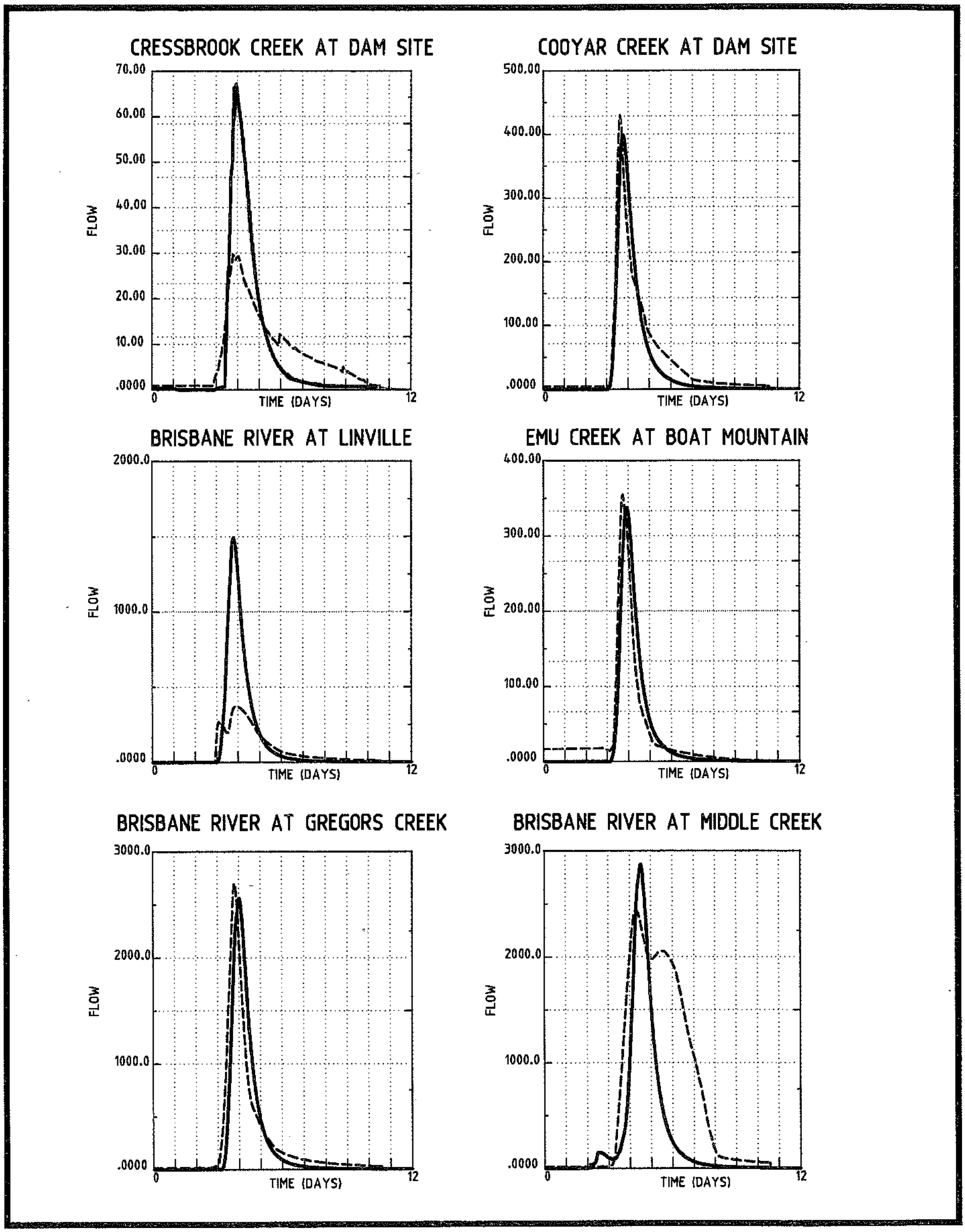
LEGEND
---------- RECORDED DISCHARGE
———— PREDICTED DISCHARGE

FILE NAME: FIG 87A PLOT SCALE: 1=1 DISK No: G:\ JOB No: T00/457 DATE: 17-2 98

FIGURE B-7b

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
JULY 1973 FLOOD HYDROGRAPHS



LEGEND

- - - - - - - - RECORDED DISCHARGE

———————— PREDICTED DISCHARGE

FILE NAME: FIG-B7A PLOT SCALE: 1=1 DISK No: G:\ JOB No: T004157 DATE: 17-2-98

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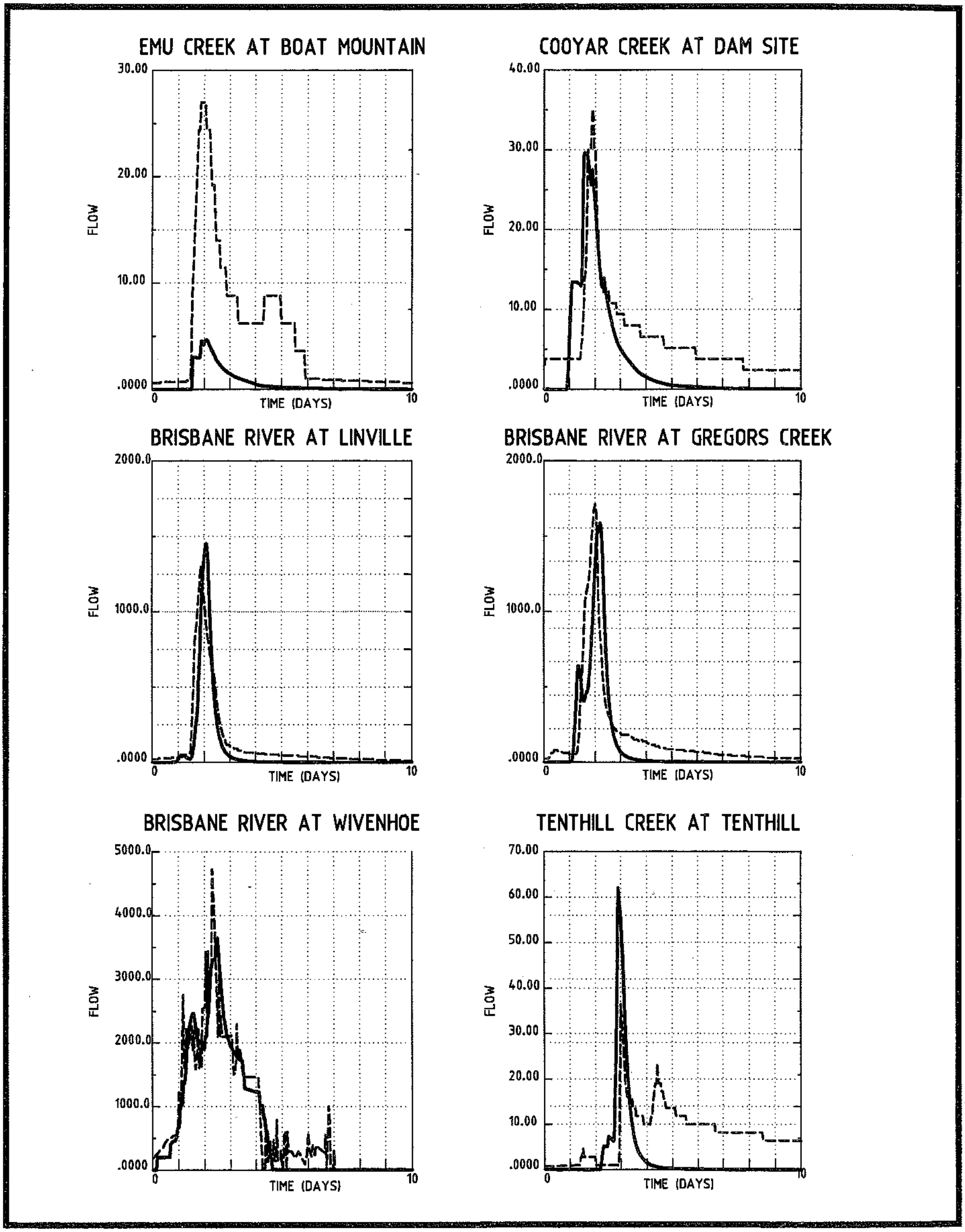
FIGURE B-8a

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
EARLY APRIL 1989 FLOOD HYDROGRAPHS



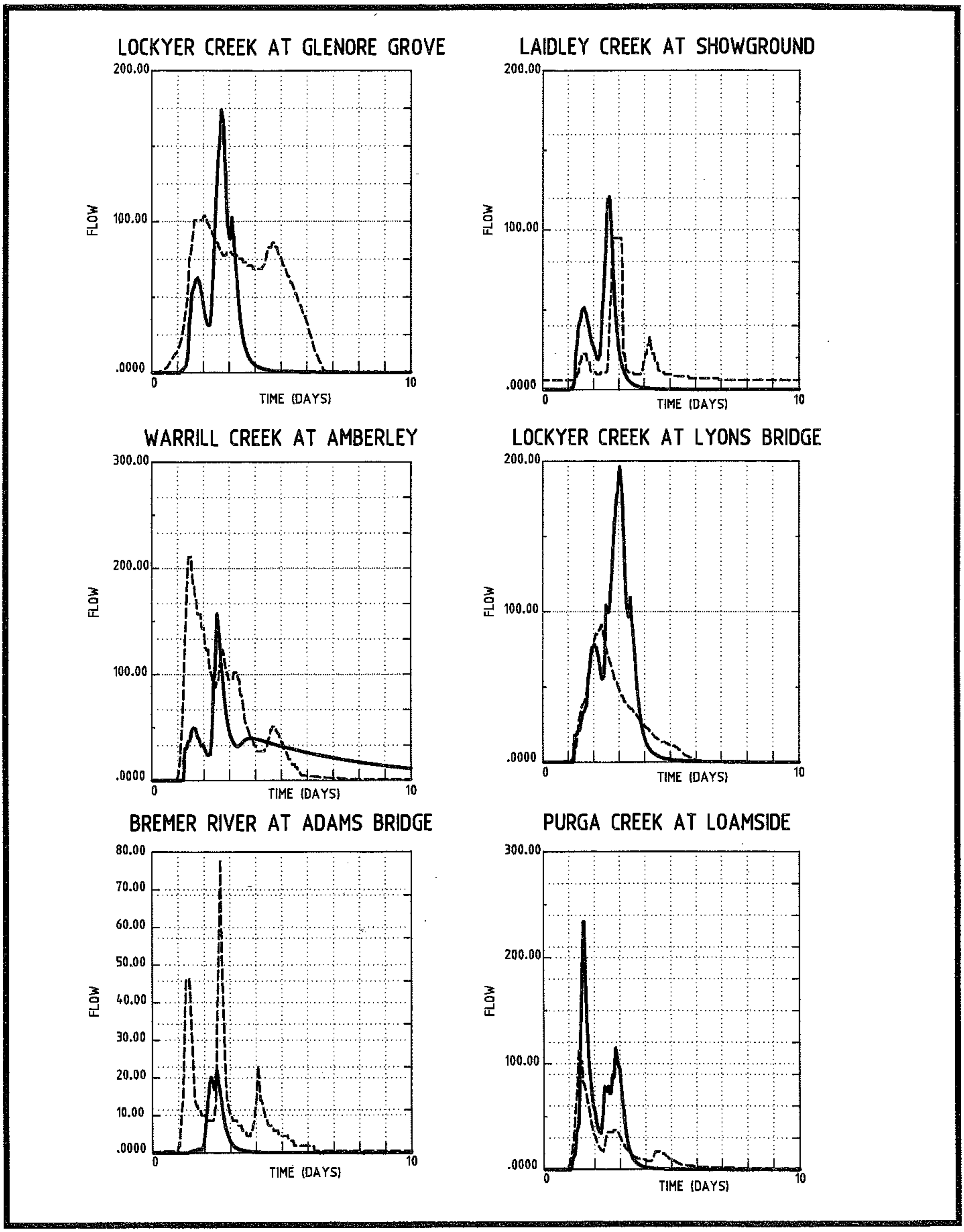
LEGEND
- - - - - - RECORDED DISCHARGE
———— PREDICTED DISCHARGE

FILE NAME: FIG-B7A DISK No: G:\ JOB No: T00457 DATE: 17-2-98
PLOT SCALE: 1=1

FIGURE B-8b

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
EARLY APRIL 1989 FLOOD HYDROGRAPHS



LEGEND

- - - - - - - - RECORDED DISCHARGE

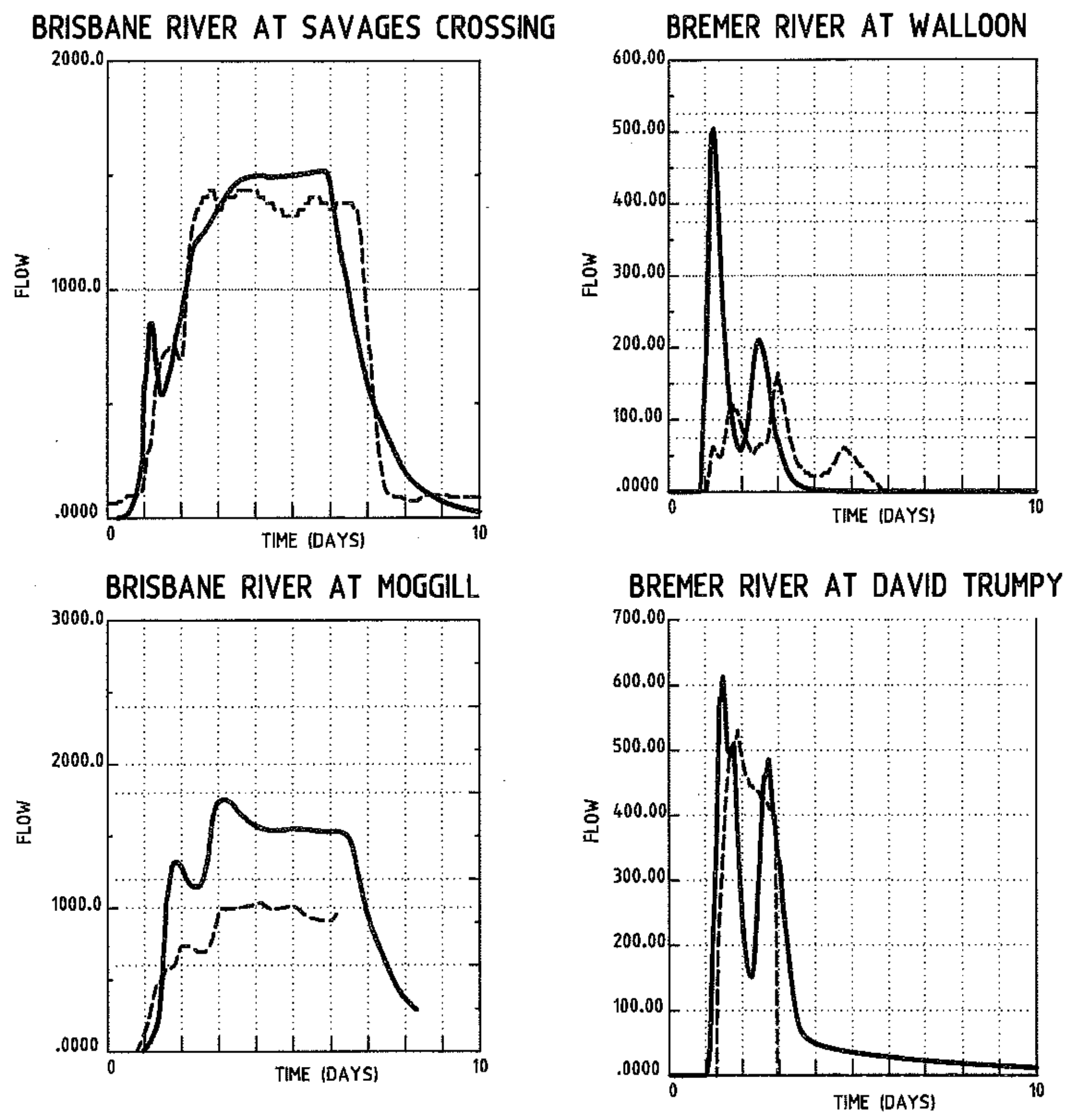
———————— PREDICTED DISCHARGE

DATE: 17-2-98 JOB N°: T004157 DISK N°: G:\ FILE NAME: FIG-B7A PLOT SCALE: 1=1

SINCLAIR KNIGHT MERZ

FIGURE B-8c

BRISBANE RIVER FLOOD STUDY
EARLY APRIL 1989 FLOOD HYDROGRAPHS



LEGEND

- - - - - - RECORDED DISCHARGE

———— PREDICTED DISCHARGE

FILE NAME: FIG-B7A PLOT SCALE: 1=1 DISK No. G:\ JOB No. T004157 DATE: 17-2-98

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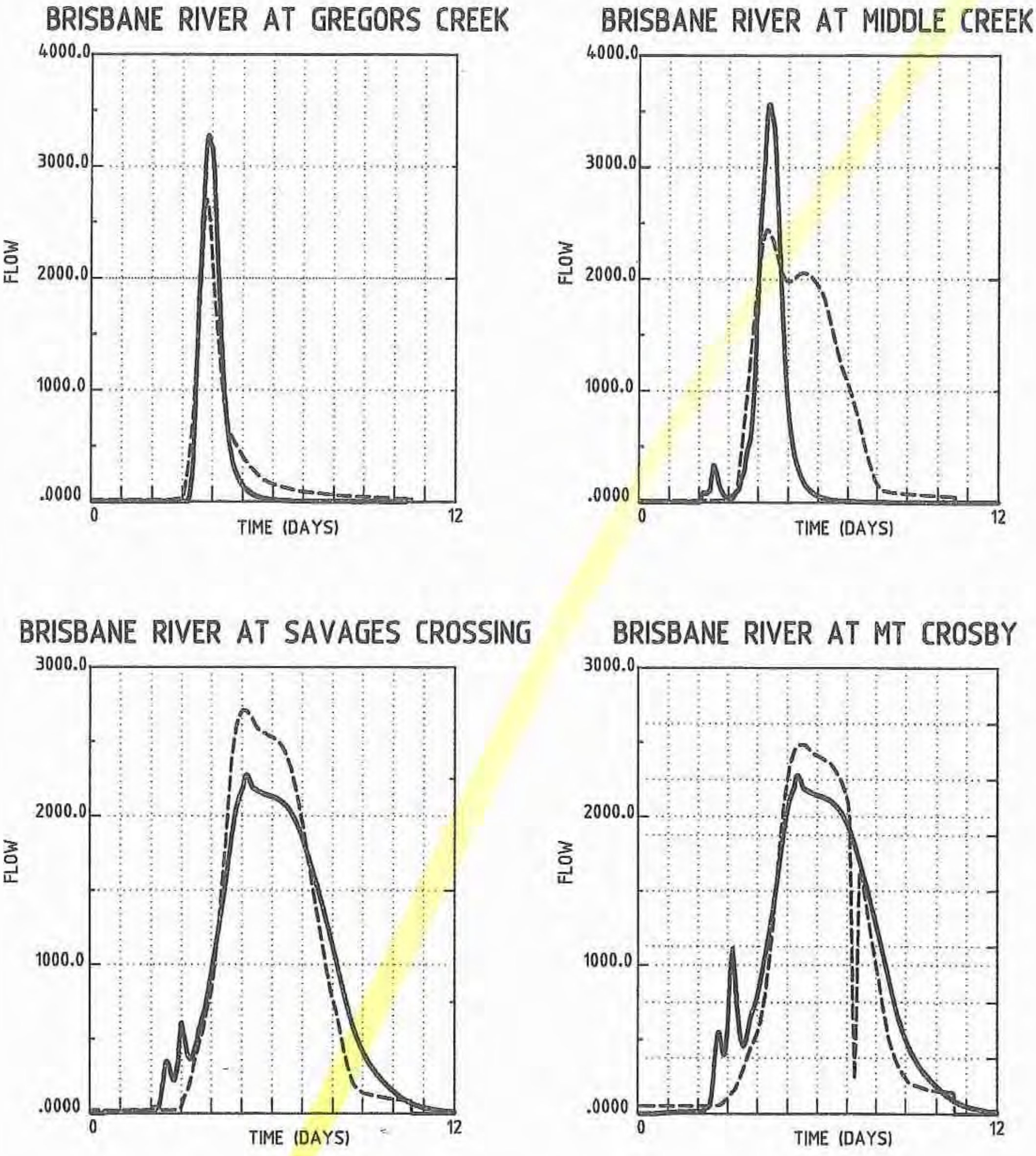
FIGURE B-9

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
JULY 1973 - POST WIVENHOE

FLOOD SENSITIVITY ANALYSIS



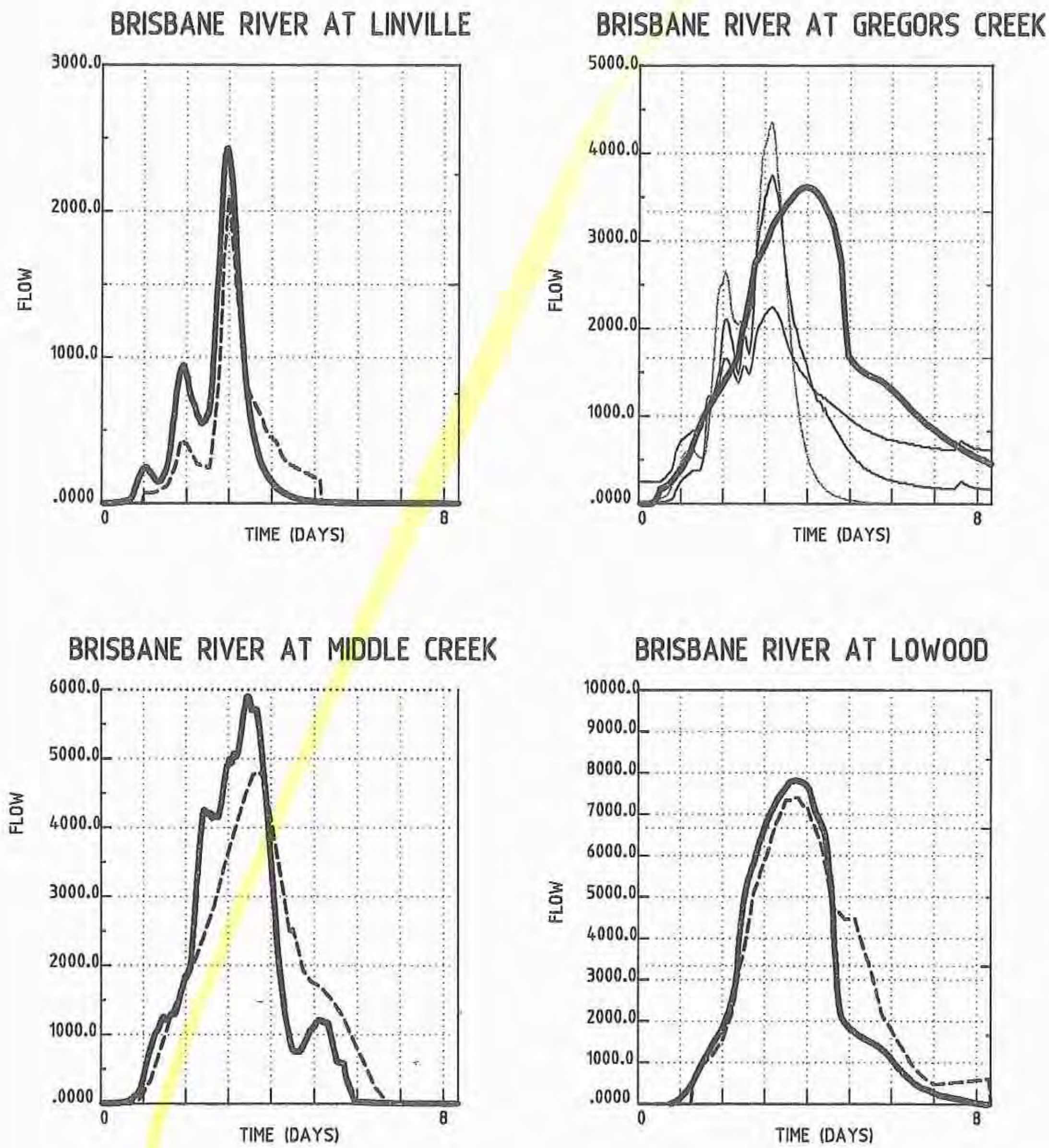
WLV STORAGE HAS NOT BEEN MODELLED.

FILE NAME: FIG-B9 PLOT SCALE: 1=1 DISK N°. G:\ JOB N°. T004157 DATE 17-2-98

FIGURE B-10a

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
JANUARY 1974 - POST WIVENHOE



LEGEND

-------- RECORDED DISCHARGE

——— PREDICTED DISCHARGE

FILE NAME. FIG-B10 PLOT SCALE: 1=1 DISK No. G:\ JOB No. T0041E7 DATE. 17-2-98

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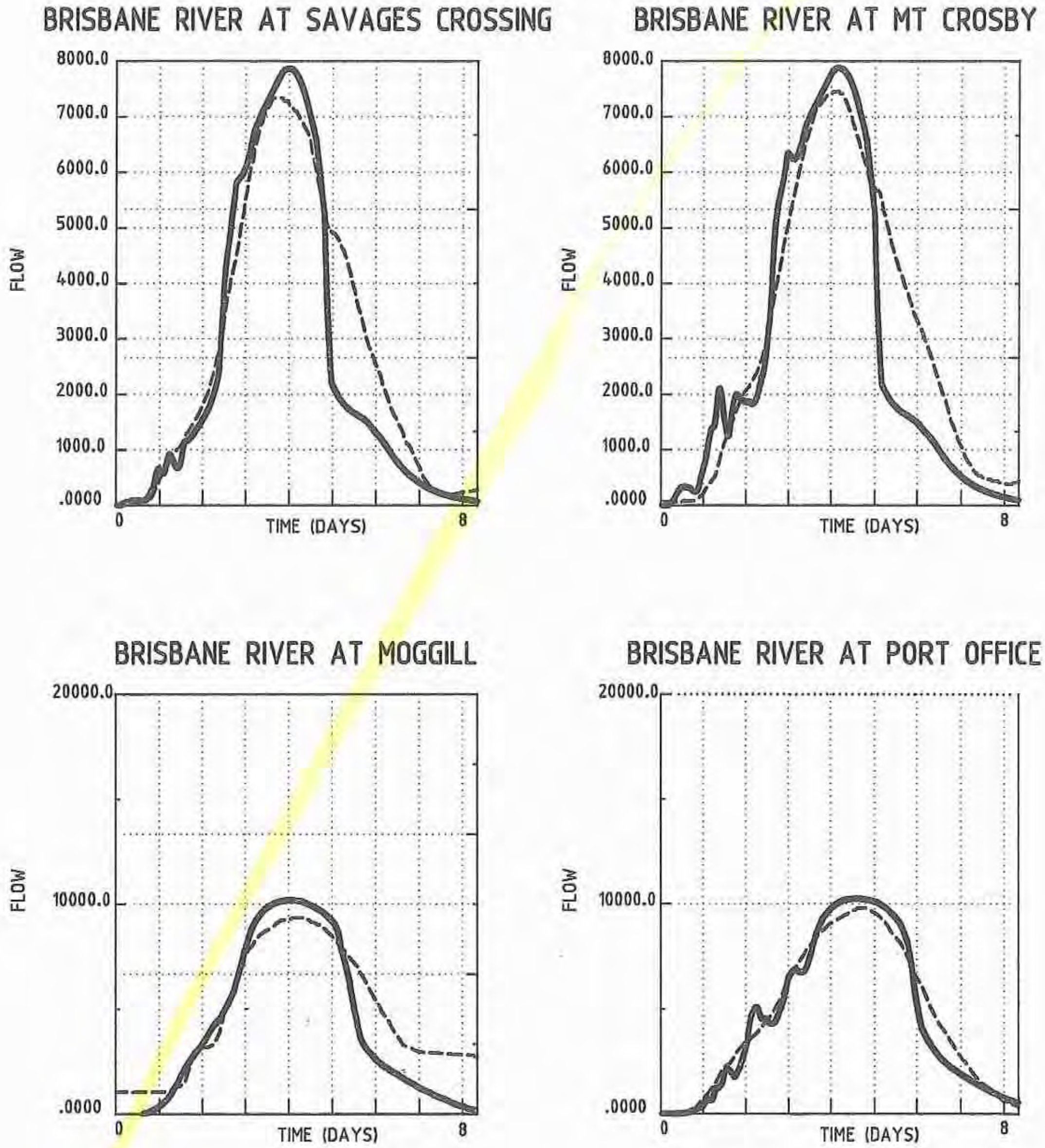
FIGURE B-10b

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
JANUARY 1974 - POST WIVENHOE



LEGEND

- - - - - - - - RECORDED DISCHARGE

———— PREDICTED DISCHARGE

FILE NAME: FIG-B10 PLOT SCALE: 1=1 DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

Appendix C - MIKE 11 Model Results - Calibration/Verification

TABLE C-2 - Predicted Discharges for Calibration\Verification Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CALIBRATION EVENTS				VERIFICATION EVENTS			
			1974 Q (m^3/s)	1996 Q (m^3/s)	1983 Q (m^3/s)	1989B Q (m^3/s)	1931 Q (m^3/s)	1955 Q (m^3/s)	1973 Q (m^3/s)	1989A Q (m^3/s)
BRISBANE	1075.23	3.43	9911	2938	3735	3141	5458	4154	3152	3176
BRISBANE	1075.74	2.92	9949	2938	3816	3185	5458	4154	3184	3232
BRISBANE	1076.25	2.41	9999	2937	3932	3245	5458	4154	3228	3311
BRISBANE	1076.75	1.91	10042	2938	4026	3293	5458	4154	3264	3374
BRISBANE	1077.26	1.40	10107	2938	4166	3365	5458	4154	3317	3469
BRISBANE	1077.78	0.88	10151	2938	4261	3413	5458	4154	3353	3533
BRISBANE	1078.28	0.38	10192	2953	4353	3460	5458	4154	3388	3596
BRISBANE	1078.59	0.07	10207	2963	4386	3476	5458	4154	3400	3617
BREMER	599.70	-	3743	1326	1212	941	1297	1073	367	584
OXLEY	599.70	-	1077	475	382	288	831	297	246	264
BREAKFAST	599.70	-	131	390	221	407	433	211	426	141
BULIMBA	599.70	-	1433	495	554	758	713	337	785	279
CENTWEIR	0.04	-	439	0	0	0	-	-	0	0
INDOORWEIR	0.04	-	0	0	0	0	-	0	0	0
WILLIAMWEIR	0.02	-	0	0	0	0	0	0	0	0
VICTORIAWEIR	0.03	-	0	0	0	0	-	-	0	0
CAPTAINWEIR	0.02	-	0	0	0	0	-	-	0	0
STORYWEIR	0.04	-	0	0	0	0	-	0	0	0
MERIVALEWEIR	0.04	-	-	0	0	0	-	-	-	0
GOODNALINK1	0.50	-	59	0	0	0	0	0	0	0
GOODNALINK2	0.54	-	23	0	0	0	0	0	0	0
STLUCIALINK1	0.53	-	91	0	0	0	0	0	0	0
STLUCIALINK2	0.53	-	79	0	0	0	0	0	0	0
STLUCIALINK3	0.43	-	62	0	0	0	0	0	0	0

TABLE C-1 - Predicted & Recorded Flood Levels for Calibration\Verification Events

					CALIBRATION EVENTS													VERIFICATION EVENTS											
LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	1974 PREDICTED WL (m AHD)	1974 RECORDED WL (m AHD)	1974 RECORDED WL (m AHD)	1974 DIFFERENCE (m)	1996 PREDICTED WL (m AHD)	1996 RECORDED WL (m AHD)	1996 DIFFERENCE (m)	1983 PREDICTED WL (m AHD)	1983 RECORDED WL (m AHD)	1983 DIFFERENCE (m)	1989B PREDICTED WL (m AHD)	1989B RECORDED WL (m AHD)	1989B DIFFERENCE (m)	1931 PREDICTED WL (m AHD)	1931 RECORDED WL (m AHD)	1931 DIFFERENCE (m)	1955 PREDICTED WL (m AHD)	1955 RECORDED WL (m AHD)	1955 DIFFERENCE (m)	1973 PREDICTED WL (m AHD)	1973 RECORDED WL (m AHD)	1973 DIFFERENCE (m)	1989A PREDICTED WL (m AHD)	1989A RECORDED WL (m AHD)	1989A DIFFERENCE (m)
BRISBANE	1000	78.66	BN 2020		22.05	22.17		-0.12	9.49			7.02			5.59			17.08			14.91			9.58			6.91		
BRISBANE	1000.285	78.375	BN 2010		21.91	21.92		-0.01	9.4			6.94			5.52			16.91			14.73			9.46			6.82		
BRISBANE	1000.775	77.885	BN 2000		21.70	21.68		0.02	9.23			6.78			5.38			16.67			14.46			9.22			6.64		
BRISBANE	1001.315	77.345	BN 1990		21.63	21.5		0.13	9.09			6.61			5.18			16.55			14.31			9.01			6.45		
BRISBANE	1001.865	76.795	BN 1980		21.25	21.1		0.15	8.84			6.37			4.94			16.11			13.86			8.64			6.18		
BRISBANE	1002.35	76.310	BN 1970		21.12				8.57			6.11			4.70			15.88			13.57			8.23			5.90		
BRISBANE	1002.785	75.875	BN 1960		21.10				8.47			5.98			4.55			15.84			13.51			8.07			5.74		
BRISBANE	1003.275	75.385	BN 1950		20.87				8.25			5.76			4.33			15.53			13.18			7.73			5.54		
BRISBANE	1003.775	74.885	BN 1940		20.68	20.83		-0.15	8.06			5.55			4.15			15.29			12.91			7.43			5.36		
BRISBANE	1004.3	74.360	BN 1930		20.37	20.25		0.12	7.8			5.42			4.00			14.87			12.44			7.04			5.15		
BRISBANE	1004.81	73.850	BN 1920		20.35	20.25	20.25	0.10	7.68			5.37			3.92			14.80			12.34			6.84			5.03		
BRISBANE	1005.325	73.335	BN 1910		20.23				7.53			5.32			3.84			14.63			12.16			6.59			4.86		
BRISBANE	1005.87	72.790	BN 1900		20.02	19.97	19.93	0.05	7.38			5.27			3.78			14.35			11.86			6.35			4.71		
BRISBANE	1006.3	72.360	BN 1890	Moggill Gauge	19.89	20.04	19.93	-0.04	7.37	7.09	0.28	5.27	5.26	0.01	3.77	4.02	-0.25	14.23			11.75			6.34	6.32	0.02	4.70	3.73	0.97
BRISBANE	1006.91	71.750	BN 1880		19.70				7.27			5.18			3.70			14.02			11.56			6.24			4.62		
BRISBANE	1007.41	71.250	BN 1870		19.67	19.33		0.34	7.21			5.11			3.61			13.97			11.50			6.17			4.55		
BRISBANE	1007.92	70.740	BN 1860		19.38	19.33	19.6	0.05	7.04			4.98			3.51			13.74			11.28			6.02			4.43		
BRISBANE	1008.445	70.215	BN 1850		19.20	19.21	19.46	-0.01	6.99			4.93			3.48			13.62			11.18			5.97			4.39		
BRISBANE	1008.925	69.735	BN 1840		19.14				6.93			4.88			3.44			13.57			11.13			5.92			4.35		
BRISBANE	1009.4	69.260	BN 1830		19.05				6.85			4.82			3.40			13.48			11.04			5.84			4.29		
BRISBANE	1009.72	68.940	BN 1820		19.04	18.88		0.16	6.81			4.79			3.38			13.45			11.01			5.81			4.26		
BRISBANE	1010.49	68.170	BN 1810		18.69	18.69		0.00	6.65			4.67			3.31			13.21			10.81			5.66			4.18		
BRISBANE	1010.725	67.935	BN 1800		18.71				6.65			4.66			3.31			13.22			10.81			5.66			4.15		
BRISBANE	1010.98	67.680	BN 1790		18.63				6.6			4.63			3.29			13.16			10.76			5.62			4.12		
BRISBANE	1011.51	67.150	BN 1780		18.62	18.3	18.63	-0.01	6.54			4.58			3.25			13.13			10.72			5.56			4.08		
BRISBANE	1011.98	66.680	BN 1770		18.62	18.8		-0.18	6.47			4.52			3.22			13.08			10.68			5.50			4.03		
BRISBANE	1012.475	66.185	BN 1760		18.52	18.6	18.63	-0.08	6.39			4.46			3.18			12.99			10.58			5.43			3.97		
BRISBANE	1012.935	65.725	BN 1750		18.42	18.6		-0.18	6.32			4.40			3.14			12.90			10.50			5.37			3.93		
BRISBANE	1013.445	65.215	BN 1740		18.33	18.63		-0.30	6.26			4.35			3.11			12.81			10.41			5.30			3.88		
BRISBANE	1013.91	64.750	BN 1730		18.28	18.43		-0.15	6.19			4.28			3.06			12.75			10.35			5.23			3.82		
BRISBANE	1014.31	64.350	BN 1720		18.25	18.3		-0.05	6.11			4.22			3.02			12.68			10.28			5.16			3.76		
BRISBANE	1014.61	64.050	BN 1710	Goodna Hospital Gauge	18.28	18.3		-0.02	6.06			4.17			2.99			12.64			10.23			5.11	5.11	0.00	3.72		
BRISBANE	1015.09	63.570	BN 1700		18.14	17.96		0.18	6.05			4.17			2.99			12.58			10.19			5.11			3.72		
BRISBANE	1015.56	63.100	BN 1690		18.00	18.33	18.15	-0.15	5.97			4.11			2.98			12.48			10.10			5.04			3.67		
BRISBANE	1016.14	62.520	BN 1680		17.90	17.78	17.54	0.12	5.91			4.07			2.93			12.40			10.03			4.99			3.63		
BRISBANE	1016.64	62.020	BN 1670		17.80	17.63		0.17	5.8			3.97			2.87			12.28			9.91			4.88			3.55		
BRISBANE	1017.13	61.530	BN 1660		17.57	17.81		-0.24	5.66			3.84			2.78			12.09			9.73			4.75			3.44		
BRISBANE	1017.61	61.050	BN 1650		17.45	17.66	17.6	-0.15	5.56			3.77			2.74			11.90			9.54			4.68			3.38		
BRISBANE	1017.92	60.740	BN 1640		17.29				5.48			3.71			2.71			11.75			9.40			4.59			3.33		
BRISBANE	1018.2	60.460	BN 1630		17.21	17.26		-0.05	5.49			3.71			2.71			11.71			9.36			4.59			3.33		
BRISBANE	1018.725	59.935	BN 1620		16.89				5.42			3.67			2.69			11.48			9.18			4.54			3.30		
BRISBANE	1019.095	59.565	BN 1610		16.75	16.83		-0.08	5.37			3.63			2.66			11.33			9.05			4.49			3.26		
BRISBANE	1019.49	59.170	BN 1600		16.64	16.65		-0.01	5.33			3.60			2.65			11.24			8.98			4.46			3.24		
BRISBANE	1019.865	58.795	BN 1590		16.34	16.47		-0.13	5.28			3.57			2.63			11.04			8.80			4.41			3.21		
BRISBANE	1020.115	58.545	BN 1580		16.44	16.71	16.56	-0.12	5.28			3.55			2.62			11.07			8.80			4.40			3.20		
BRISBANE	1020.525	58.135	BN 1570		16.42				5.27			3.54			2.61			11.03			8.76			4.39			3.19		
BRISBANE	1020.83	57.830	BN 1560		16.27	17.02		-0.75	5.23			3.51			2.60			10.92			8.67			4.36			3.16		
BRISBANE	1021.095	57.565	BN 1550		16.06	16.26		-0.20	5.16			3.47			2.57			10.77			8.55			4.30			3.13		
BRISBANE	1021.539	57.121	BN 1540		15.89	16.04		-0.15	5.1			3.42			2.55			10.62			8.40			4.25			3.09		
BRISBANE	1021.715	56.945	BN 1530		15.92	15.98		-0.06	5.1			3.42			2.54			10.62			8.39			4.24			3.08		
BRISBANE	1021.895	56.765	BN 1520		15.85	16.74		-0.89	5.09			3.41			2.54			10.57			8.35			4.23			3.08		
BRISBANE	1022.105	56.555	BN 1510		15.73	15.86		-0.13	5.09			3.41			2.54			10.52			8.31			4.23			3.08		
BRISBANE	1022.575	56.085	BN 1500		15.65	15.52		0.13	5.02			3.36			2.51			10.42			8.22			4.17			3.04		
BRISBANE	1023.04	55.620	BN 1490		15.41	15.31		0.10	4.92			3.30			2.48			10.24			8.07			4.10			2.99		
BRISBANE	1023.57	55.090	BN 1480		15.32	15.31		0.01	4.88			3.27			2.46			10.20			8.05			4.06			2.97		
BRISBANE	1024.08	54.580	BN 1470		15.27	15.13		0.14	4.81			3.22			2.44			10.13			7.98			4.00			2.93		
BRISBANE	1024.563	54.097	BN 1460		15.21	15.4		-0.19	4.72			3.15			2.40			10.06			7.90			3.92			2.87		
BRISBANE	1025.07	53.590	BN 1450		15.12	15.19		-0.07	4.67			3.11			2.37			9.97			7.82			3.87			2.84		
BRISBANE	1025.36	53.300	BN 1440		14.97				4.6			3.06			2.35			9.86			7.73			3.81			2.80		
BRISBANE	1025.59	53.070	BN 1430		14.81	14.94		-0.13	4.54			3.02			2.33			9.74			7.63			3.76			2.77		
BRISBANE	1026.17	52.490	BN 1420		14.69	14.64		0.05	4.51			3.00			2.32			9.67	10.74	-1.07	7.57			3.73			2.75		
BRISBANE	1026.68	51.980	BN 1410	Mt Ommaney Gauge	14.58	14.58	14.55	0.00	4.43			2.94			2.29			9.55			7.46			3.66			2.70		
BRISBANE	1026.9	51.760	BN 1400		14.46	14.55	14.24	-0.09	4.38			2.91			2.27			9.46			7.39			3.62			2.68		
BRISBANE	1027.16	51.500	BN 1390		14.32	14.46	14.24	0.08	4.35			2.89			2.26			9.38			7.33			3.60			2.66		
BRISBANE	1027.88	50.980	BN 1380		14.38	14.32		0.06	4.32			2.86			2.24			9.38			7.31			3.56			2.64		
BRISBANE	1028.18	50.480	BN 1370		14.40	14.3	14.12	0.10	4.27			2.83			2.22			9.38			7.30			3.52			2.61		
BRISBANE	1028.68	49.980	BN 1360		14.27				4.17			2.78			2.19			9.27			7.22			3.44			2.55		
BRISBANE	1028.72	49.940	BN1350	Centenary Bridge																									
BRISBANE	1028.76	49.900	BN 1340		14.12				4.08			2.70			2.16			9.27			7.22			3.37			2.51		
BRISBANE	1029.2	49.460	BN 1330		14.01	14.09		-0.08	3.98			2.64			2.13			9.17			7.13			3.30			2.46		
BRISBANE	1029.68	48.980	BN 1320		14.03	13.97		0.06	3.95			2.61			2.11			9.17			7.13			3.27			2.44		
BRISBANE	1030.22	48.440	BN 1310		14.03	13.63		0.40	3.89			2.58			2.10			9.18			7.13			3.22			2.41		
BRISBANE	1030.87	47.790	BN 1300		13.96				3.79			2.51			2.08			9.12	9.40	-0.28	7.08	7.17	-0.09	3.15			2.36		
BRISBANE	1031.26	47.400	BN 1290		13.80	13.7		0.10	3.71			2.46			2.03			9.02			7.00			3.08			2.32		
BRISBANE	1031.7	46.960	BN 1280	Darra Wharf Gauge	13.41	13.73	13.51	-0.10	3.59			2.40			2.00			8.78			6.80			3.00	3.15	-0.15	2.27		
BRISBANE	1031.995	46.665	BN 1270		13.52				3.6			2.39			2.00			8.75			6.76			3.00			2.26		
BRISBANE	1032.23	46.430	BN 1260		13.39	13.18		0.21	3.57			2.38			1.99			8.68	8.99	-0.31	6.70	6.70	0.00	2.98			2.25		
BRISBANE	1032.585	46.075	BN 1250		13.15	13.33	12.9	-0.18	3.52			2.35			1.97			8.52			6.57			2.94			2.23		
BRISBANE	1033.08	45.580	BN 1240		13.00	12.99		0.01	3.48			2.33			1.97			8.39			6.48			2.92			2.21		
BRISBANE	1033.37	45.290	BN 1230		12.89	13.02	12.9	-0.13	3.43			2.30			1.95			8.31	8.67	-0.36	6.40	6.41	-0.01	2.88			2.19		
BRISBANE	1033.9	44.760	BN 1220		12.65	12.96	12.57	0.08	3.35			2.26			1.93			8.16			6.27			2.82			2.15		
BRISBANE	1034.37	44.290	BN 1210		12.49	12.26		0.23	3.29			2.23			1.91			8.05	8.13		6.19	6.23	-0.04	2.78			2.13		
BRISBANE	1034.89	43.770	BN 1200	Sherwood Gauge	12.40	12.52		-0.12	3.23			2.20			1.89			7.95			6.10			2.73			2.10		
BRISBANE	1035.414	43.246	BN 1190		12.14	12.14		0.00	3.15			2.15			1.87			7.78			5.95			2.67			2.08		
BRISBANE	1035.9	42.760	BN 1180		11.86	11.87		-0.01	3.06			2.10			1.84			7.55			5.77			2.60			2.02		
BRISBANE	1036.46	42.200	BN 1170		11.55	11.77	11.74	-0.19	2.98			2.07			1.82			7.33			5.59			2.55			1.99		
BRISBANE	1036.77	41.890	BN 1160		11.47	11.59	11.24	-0.12	2.95			2.05			1.81			7.26	7.69	-0.43	5.52	5.47	0.05	2.53			1.97		
BRISBANE	1036.915	41.745	BN 1150		11.31	11.65	11.32	-0.01	2.92			2.04			1.81			7.16			5.45			2.51			1.96		

TABLE C-1 - Predicted & Recorded Flood Levels for Calibration\Verification Events

					CALIBRATION EVENTS														VERIFICATION EVENTS												
LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	1974 PREDICTED WL (m AHD)	1974 RECORDED WL (m AHD)	1974 RECORDED WL (m AHD)	1974 DIFFERENCE (m)	1996 PREDICTED WL (m AHD)	1996 RECORDED WL (m AHD)	1996 DIFFERENCE (m)	1983 PREDICTED WL (m AHD)	1983 RECORDED WL (m AHD)	1983 DIFFERENCE (m)	1989B PREDICTED WL (m AHD)	1989B RECORDED WL (m AHD)	1989B DIFFERENCE (m)	1931 PREDICTED WL (m AHD)	1931 RECORDED WL (m AHD)	1931 DIFFERENCE (m)	1955 PREDICTED WL (m AHD)	1955 RECORDED WL (m AHD)	1955 DIFFERENCE (m)	1973 PREDICTED WL (m AHD)	1973 RECORDED WL (m AHD)	1973 DIFFERENCE (m)	1989A PREDICTED WL (m AHD)	1989A RECORDED WL (m AHD)	1989A DIFFERENCE (m)
BRISBANE	1037.09	41.570	BN 1140		11.26	11.84	11.2	0.06	2.93			2.04			1.81			7.14			5.44			2.51			1.96		
BRISBANE	1037.11	41.550	BN 1130	Indooroopilly Bridge																									
BRISBANE	1037.175	41.485	BN 1120		11.18	11.47		-0.31	2.79			2.03			1.80			7.13			5.40			2.49			1.95		
BRISBANE	1037.285	41.375	BN 1110	Clarence Road Gauge	11.11	11.2		-0.09	2.77			2.01			1.79			7.09	7.46	-0.37	5.36	5.56	-0.20	2.47			1.94		
BRISBANE	1037.625	41.035	BN 1100		11.10	11.1	11.07	0.00	2.73			1.99			1.78			7.05			5.32			2.44			1.92		
BRISBANE	1038.085	40.575	BN 1090		11.12	11.1		0.02	2.72			1.99			1.78			7.02			5.30			2.43			1.92		
BRISBANE	1038.6	40.060	BN 1080		11.10	11.04		0.06	2.63			1.94			1.75			6.99			5.25			2.37			1.88		
BRISBANE	1039.1	39.560	BN 1070		11.10	11.07		0.03	2.54			1.90			1.73			6.95	6.97	-0.02	5.22	5.16	0.06	2.31			1.84		
BRISBANE	1039.565	39.095	BN 1060	Oxley Creek Gauge	11.11	11.01		0.10	2.49			1.87			1.71			6.94			5.21			2.27			1.82		
BRISBANE	1040.09	38.570	BN 1050	King Authur Terrace Gauge	11.03	11.04		-0.01	2.46			1.86			1.71			6.92	6.78	0.14	5.20	5.10	0.10	2.25			1.81		
BRISBANE	1040.49	38.170	BN 1040		10.88	11.01		-0.13	2.4			1.83			1.69			6.83			5.13			2.21			1.79		
BRISBANE	1041.01	37.650	BN 1030		10.92	10.89		0.03	2.38			1.82			1.69			6.84	6.62	0.22	5.14	5.02	0.12	2.20			1.78		
BRISBANE	1041.23	37.430	BN 1020		10.88	10.83		0.05	2.36			1.80			1.68			6.80			5.10			2.19			1.77		
BRISBANE	1041.46	37.200	BN 1010	Tennyson Power House Gauge	10.79	10.83		-0.04	2.32			1.78			1.68			6.75			5.06			2.17	2.17	0.00	1.75		
BRISBANE	1041.7	36.980	BN 1000		10.75	10.83		-0.08	2.32			1.78			1.68			6.73			5.04			2.17			1.76		
BRISBANE	1041.96	36.700	BN 990		10.60	10.83		-0.23	2.27			1.76			1.66			6.62	6.40	0.22	4.98	4.95	0.01	2.13			1.74		
BRISBANE	1042.235	36.425	BN 980		10.43	10.42		0.01	2.21			1.74			1.65			6.52			4.89			2.10			1.72		
BRISBANE	1042.515	36.145	BN 970	Yeronga Street Gauge	10.42	10.53		-0.11	2.2			1.73			1.65			6.50			4.87			2.09			1.71		
BRISBANE	1042.91	35.750	BN 960		10.35	10.43	10.25	-0.08	2.12			1.69			1.63			6.41	6.17	0.24	4.78	4.80	-0.02	2.04			1.68		
BRISBANE	1043.725	34.935	BN 950		10.03	9.95		0.08	1.94			1.62			1.59			6.17			4.59			1.93			1.62		
BRISBANE	1044.06	34.600	BN 940	Sandy Creek Gauge	9.86	9.81		0.05	1.91			1.61			1.59			6.10	6.01	0.09	4.54	4.64	-0.10	1.91			1.61		
BRISBANE	1044.34	34.320	BN 930		9.69	9.61		0.08	1.88			1.59			1.58			5.99			4.45			1.88			1.60		
BRISBANE	1044.605	34.055	BN 920		9.64	9.49		0.15	1.84			1.58			1.57			5.94			4.41			1.87			1.59		
BRISBANE	1044.86	33.800	BN 910		9.60	9.55		0.05	1.81			1.57			1.57			5.89	5.80	0.09	4.37	4.49	-0.12	1.86			1.58		
BRISBANE	1045.4	33.260	BN 900		9.41	9.31		0.10	1.73			1.55			1.55			5.74			4.24			1.81			1.55		
BRISBANE	1045.885	32.775	BN 890		9.28	9.46		-0.18	1.71			1.52			1.54			5.57			4.10			1.77			1.53		
BRISBANE	1046.18	32.480	BN 880		9.19	9.49		-0.30	1.71			1.52			1.53			5.54			4.08			1.77			1.53		
BRISBANE	1046.34	32.320	BN 870	Dutton Park Cemetery Gauge	9.12	9.57		-0.45	1.71			1.52			1.53			5.51	5.48	0.03	4.07	4.12	-0.05	1.76			1.53		
BRISBANE	1046.58	32.080	BN 860		9.07				1.7			1.51			1.53			5.47			4.03			1.75			1.52		
BRISBANE	1046.9	31.760	BN 850		8.88	9.03		-0.15	1.7			1.49			1.52			5.34			3.93			1.72			1.50		
BRISBANE	1047.35	31.310	BN 840		8.49	8.61	8.36	-0.12	1.7			1.47			1.51			5.09			3.75			1.69			1.48		
BRISBANE	1047.915	30.745	BN 830	Highgate Hill Gauge	8.26	8.36		-0.10	1.7			1.46			1.50			4.94	5.10	-0.16	3.63	3.82	-0.19	1.67			1.47		
BRISBANE	1048.375	30.285	BN 820		8.32	8.3	8.36	0.02	1.69			1.45			1.50			4.96			3.64			1.66			1.47		
BRISBANE	1048.89	29.770	BN 810	St Lucia Ferry Gauge	8.08	8.09		-0.01	1.69			1.42			1.48			4.79			3.50			1.61	1.53	0.08	1.44		
BRISBANE	1049.12	29.540	BN 800		8.02	8.24	8.27	-0.22	1.69			1.41			1.48			4.75			3.48	3.55	-0.07	1.60			1.43		
BRISBANE	1049.37	29.290	BN 790		7.83				1.69			1.39			1.47			4.64	4.76	-0.12	3.40	3.51	-0.11	1.57			1.42		
BRISBANE	1049.59	29.070	BN 780		7.82				1.68			1.39			1.47			4.63	4.73	-0.10	3.39	3.50	-0.11	1.57			1.42		
BRISBANE	1049.87	28.790	BN 770		7.70	7.9	8.27	-0.20	1.68			1.38			1.46			4.56			3.34			1.55			1.41		
BRISBANE	1050.43	28.230	BN 760		7.69	7.75		-0.06	1.68			1.37			1.46			4.49			3.28			1.54			1.40		
BRISBANE	1050.86	27.800	BN 750		7.55	7.48	7.57	-0.02	1.67			1.35			1.45			4.42	4.41	0.01	3.23	3.19	0.04	1.52			1.39		
BRISBANE	1051.36	27.300	BN 740		7.55				1.67			1.35			1.45			4.42			3.23			1.51			1.39		
BRISBANE	1051.895	26.765	BN 730		7.37	7.29	7.14	0.08	1.67			1.33			1.43			4.28			3.12			1.47			1.37		
BRISBANE	1052.31	26.350	BN 720		7.47	7.17	7.08	0.30	1.66			1.33			1.43						3.16			1.48			1.37		
BRISBANE	1052.37	26.290	BN 710	Merivale Bridge														4.34											
BRISBANE	1052.39	26.270	BN 700		7.36	7.23		0.13	1.66			1.32			1.43			4.28			3.11			1.46			1.36		
BRISBANE	1052.595	26.065	BN 690		7.26				1.68			1.31			1.42			4.23			3.09			1.46			1.36		
BRISBANE	1052.607	26.053	BN 680	William Jolly Bridge																									
BRISBANE	1052.64	26.020	BN 670		6.72	7.05		-0.33	1.65			1.30			1.42			4.02	4.03	-0.01	3.05	2.81	0.24	1.43			1.35		
BRISBANE	1052.865	25.795	BN 660		6.58	6.44		0.14	1.65			1.30			1.41			3.96			3.01			1.43			1.35		
BRISBANE	1053.32	25.340	BN 650		6.50	6.44		0.06	1.65			1.29			1.41			3.91			2.97			1.42			1.35		
BRISBANE	1053.356	25.304	BN 640	Victoria Bridge																									
BRISBANE	1053.385	25.275	BN630		6.31	6.04		0.27	1.65			1.28			1.40			3.84	3.88	-0.04	2.91	2.66	0.25	1.39			1.33		
BRISBANE	1053.9	24.760	BN 620	Montague Road Gauge	5.92	6.26		-0.34	1.64			1.26			1.39			3.59			2.72			1.37			1.32		
BRISBANE	1054.64	24.020	BN 610		5.84				1.64			1.26			1.39			3.52			2.68			1.37			1.32		
BRISBANE	1054.66	24.000	BN 600	Captain Cook Bridge																									
BRISBANE	1054.88	23.980	BN 590		5.76	5.59		0.17	1.64			1.25			1.38			3.52	3.65	-0.13	2.68	2.43	0.25	1.36			1.31		
BRISBANE	1054.97	23.690	BN 560		5.50	5.62	5.56	-0.06	1.64			1.23			1.38			3.40			2.59			1.33			1.30		
BRISBANE	1055.28	23.380	BN 550		5.45				1.64			1.22			1.38			3.37			2.57			1.32			1.30		
BRISBANE	1055.42	23.240	BN 540		5.46	5.44		0.02	1.64			1.22			1.37			3.37			2.57			1.32			1.30		
BRISBANE	1055.98	22.700	BN 530	Port Office Gauge	5.40	5.44	4.95	-0.04	1.63			1.21			1.37			3.33	3.42	-0.09	2.54	2.28	0.26	1.31	1.11	0.20	1.29		
BRISBANE	1056.4	22.260	BN 520		5.14	5.44	4.76	-0.30	1.63			1.19			1.36			3.20			2.46			1.28			1.28		
BRISBANE	1056.695	21.985	BN 510		5.07				1.63			1.19			1.36			3.16			2.43			1.27			1.28		
BRISBANE	1056.865	21.795	BN 500		5.28				1.63			1.19			1.36			3.26			2.49			1.28			1.28		
BRISBANE	1056.92	21.740	BN 495	Story Bridge																									
BRISBANE	1056.95	21.710	BN 490		5.17	5.28	4.8	-0.11	1.63			1.19			1.36			3.26			2.48	2.15	0.31	1.27			1.28		
BRISBANE	1057.09	21.570	BN 480		5.01	4.89		0.12	1.63			1.18			1.35			3.19			2.41			1.26			1.27		
BRISBANE	1057.53	21.130	BN 470		4.87	4.73	4.58	0.14	1.63			1.18			1.35			3.13			2.37			1.25			1.26		
BRISBANE	1058.04	20.620	BN 460		4.61	4.4	4.21	0.21	1.62			1.18			1.34			2.99			2.28			1.22			1.25		
BRISBANE	1058.23	20.430	BN 450		4.53				1.62			1.18			1.34			2.95			2.25			1.21			1.25		
BRISBANE	1058.53	20.130	BN 440		4.39	4.79	4.49	-0.10	1.62			1.18			1.33			2.89			2.21			1.21			1.24		
BRISBANE	1058.735	19.925	BN 430		4.43	4.58	4.22	-0.15	1.62			1.18			1.33			2.90			2.22			1.21			1.24		
BRISBANE	1059.035	19.625	BN 420		4.14	4.03	3.85	0.11	1.62			1.18			1.33			2.78	2.74	0.04	2.14	1.98	0.16	1.21			1.23		
BRISBANE	1059.54	19.120	BN 410		4.09	4.09	3.91	0.00	1.61			1.18			1.33			2.75			2.11			1.21			1.22		
BRISBANE	1059.99	18.670	BN 400		3.88	4	3.48	-0.12	1.61			1.19			1.32			2.65			2.04			1.21			1.22		
BRISBANE	1060.345	18.315	BN 390		3.64	3.27		0.37	1.61			1.19			1.32			2.55	2.59	-0.04	1.98	1.98	0.00	1.21			1.21		
BRISBANE	1060.535	18.125	BN 380		3.48	3.33	3.21	0.15	1.61			1.19			1.32			2.48			1.94			1.21			1.21		
BRISBANE	1061.015	17.645	BN 370		3.44	3.18		0.26	1.61			1.19			1.31			2.45			1.92			1.21			1.20		
BRISBANE	1061.53	17.130	BN 360		3.21				1.6			1.19			1.31			2.38			1.86			1.21			1.20		
BRISBANE	1062.02	16.640	BN 350		3.13	3.15	3.06	-0.02	1.6			1.19			1.30			2.33			1.83			1.21			1.19		
BRISBANE	1062.535	16.125	BN 340		3.08	3.15	2.6	-0.07	1.6			1.19			1.30			2.30	2.36	-0.06	1.81	1.82	-0.01	1.21			1.19		
BRISBANE	1062.94	15.720	BN 330		3.08				1.59			1.19			1.30			2.30			1.81			1.22			1.18		
BRISBANE	1063.31	15.350	BN 320	Newstead Park Gauge	2.96	3.3		-0.34	1.59			1.19			1.29			2.25	2.28	-0.03	1.78	1.75	0.03	1.22	1.28	-0.06	1.18		
BRISBANE	1063.645	15.015	BN 310	Cresent Road Gauge	2.69	2.63	2.63	0.06	1.59			1.19			1.29			2.13			1.70			1.21			1.17		
BRISBANE	1064	14.860	BN 300		2.65	2.78		-0.13	1.59			1.18			1.29			2.12			1.69			1.21			1.17		
BRISBANE	1064.49	14.170	BN 290		2.53	2.42	2.39	0.11	1.58			1.18			1.28			2.06			1.66			1.21			1.16		
BRISBANE	1065.01	13.650	BN 280		2.55	2.48		0.07	1.58			1.18			1.28			2.07			1.66			1.21			1.16		
BRISBANE	1065.503	13.157	BN 270		2.51	2.51		0.00	1.58			1.17			1.28			2.06			1.65			1.21			1.16		
BRISBANE	1065.99	12.870	BN 260	Cairncross Dock Gauge	2.52	2.49		0.03	1.58			1.17			1.27			2.06			1.65			1.21	1.05	0.16	1.16		

TABLE C-1 - Predicted & Recorded Flood Levels for Calibration\Verification Events

					CALIBRATION EVENTS													VERIFICATION EVENTS											
LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	1974 PREDICTED WL (m AHD)	1974 RECORDED WL (m AHD)	1974 RECORDED WL (m AHD)	1974 DIFFERENCE (m)	1996 PREDICTED WL (m AHD)	1996 RECORDED WL (m AHD)	1996 DIFFERENCE (m)	1983 PREDICTED WL (m AHD)	1983 RECORDED WL (m AHD)	1983 DIFFERENCE (m)	1989B PREDICTED WL (m AHD)	1989B RECORDED WL (m AHD)	1989B DIFFERENCE (m)	1931 PREDICTED WL (m AHD)	1931 RECORDED WL (m AHD)	1931 DIFFERENCE (m)	1955 PREDICTED WL (m AHD)	1955 RECORDED WL (m AHD)	1955 DIFFERENCE (m)	1973 PREDICTED WL (m AHD)	1973 RECORDED WL (m AHD)	1973 DIFFERENCE (m)	1989A PREDICTED WL (m AHD)	1989A RECORDED WL (m AHD)	1989A DIFFERENCE (m)
BRISBANE	1066.505	12.155	BN 250		2.45	2.51		-0.06	1.57			1.17			1.27			2.03			1.64			1.21			1.15		
BRISBANE	1067.02	11.640	BN 240		2.41	2.36	2.42	0.05	1.57			1.16			1.27			2.02			1.63			1.20			1.15		
BRISBANE	1067.485	11.175	BN 230		2.31	2.36	2.42	-0.05	1.57			1.16			1.26			1.97			1.60			1.20			1.15		
BRISBANE	1067.965	10.695	BN 220		2.19	2.02		0.17	1.57			1.16			1.26			1.92			1.57			1.20			1.14		
BRISBANE	1068.66	10.000	BN 210		2.03	2.02		0.01	1.56			1.16			1.25			1.86			1.52			1.20			1.14		
BRISBANE	1069.045	9.615	BN 200		1.96	1.9		0.06	1.56			1.16			1.25			1.83			1.51			1.20			1.14		
BRISBANE	1069.535	9.125	BN 190	Bulimba Power House Gauge	1.90	1.9		0.00	1.56			1.15			1.25			1.81			1.49			1.20			1.13		
BRISBANE	1070.025	8.635	BN 180		1.84	1.85		-0.01	1.55			1.15			1.24			1.79			1.48			1.20			1.13		
BRISBANE	1070.53	8.130	BN 170		1.75				1.55			1.15			1.24			1.75			1.46			1.20			1.13		
BRISBANE	1071.04	7.620	BN 160		1.67				1.55			1.14			1.23			1.72			1.44			1.20			1.12		
BRISBANE	1071.52	7.140	BN 150		1.70				1.54			1.14			1.23			1.74			1.45			1.20			1.12		
BRISBANE	1072.015	6.645	BN 140		1.61				1.54			1.13			1.23			1.70			1.42			1.19			1.12		
BRISBANE	1072.515	6.145	BN 130		1.60				1.54			1.13			1.22			1.68			1.41			1.19			1.12		
BRISBANE	1072.995	5.665	BN 120		1.60				1.53			1.13			1.22			1.66			1.40			1.19			1.12		
BRISBANE	1073.485	5.175	BN 110		1.59				1.53			1.13			1.22			1.63			1.38			1.19			1.11		
BRISBANE	1074	4.660	BN 100		1.59				1.53			1.13			1.21			1.61			1.37			1.19			1.11		
BRISBANE	1074.46	4.200	BN 90		1.58				1.52			1.13			1.21			1.59			1.35			1.19			1.10		
BRISBANE	1074.985	3.675	BN 80		1.58				1.52			1.12			1.21			1.54			1.33			1.18			1.10		
BRISBANE	1075.48	3.160	BN 70		1.58				1.51			1.12			1.21			1.54			1.33			1.18			1.10		
BRISBANE	1076	2.660	BN 60		1.57				1.51			1.13			1.20			1.54			1.33			1.18			1.10		
BRISBANE	1076.495	2.165	BN 50		1.57				1.51			1.13			1.20			1.51			1.31			1.18			1.10		
BRISBANE	1077.01	1.650	BN 40		1.56				1.51			1.14			1.20			1.51			1.31			1.19			1.10		
BRISBANE	1077.51	1.150	BN 30		1.56				1.51			1.14			1.20			1.52			1.31			1.19			1.10		
BRISBANE	1078.04	0.620	BN 20		1.56				1.51			1.14			1.20			1.51			1.31			1.19			1.10		
BRISBANE	1078.525	0.135	BN 10		1.56				1.51			1.14			1.20			1.50			1.30			1.19			1.10		
BRISBANE	1078.86	0.000	-	Western Inner Bar Gauge	1.55	1.55		0.00	1.51	2.75	0.00	1.14	1.14	0.00	1.20	1.2	0.00	1.50			1.30	1.30	0.00	1.19	1.19	0.00	1.10	1.10	0.00
BREMER	599.4	-	-		19.94				7.37			5.24			3.75			14.25			11.77			6.34			4.70		
BREMER	600	-	-		19.94				7.38			5.27			3.78			14.25			11.77			6.34			4.71		
OXLEY	599.4	-	-		11.07				2.47			1.87			1.71			8.93			5.20			2.26			1.81		
OXLEY	600	-	-		11.07				2.47			1.87			1.71			8.93			5.20			2.26			1.81		
BREAKFAST	599.4	-	-		3.05				1.59			1.19			1.29			2.29			1.80			1.22			1.18		
BREAKFAST	600	-	-		3.05				1.59			1.19			1.29			2.29			1.80			1.22			1.18		
BULIMBA	599.4	-	-		1.61				1.55			1.15			1.23			1.70			1.42			1.20			1.12		
BULIMBA	600	-	-		1.61				1.54			1.13			1.23			1.70			1.42			1.19			1.12		
CENTWEIR	0	-	-		14.27				4.17			2.76			2.19			-			-			3.44			2.55		
CENTWEIR	0.08	-	-		14.12				4.08			2.70			2.16			-			-			3.37			2.51		
INDOORWEIR	0	-	-		11.28				2.93			2.04			1.81			-			5.44			2.51			1.96		
INDOORWEIR	0.085	-	-		11.16				2.79			2.03			1.60			-			5.40			2.49			1.95		
WILLIAMWEIR	0	-	-		7.26				1.66			1.31			1.42			4.23			3.09			1.46			1.36		
WILLIAMWEIR	0.045	-	-		6.72				1.65			1.30			1.42			4.02			3.05			1.43			1.35		
VICTORIAWEIR	0	-	-		6.50				1.65			1.29			1.41			-			-			1.42			1.35		
VICTORIAWEIR	0.065	-	-		6.31				1.65			1.28			1.40			-			-			1.39			1.33		
CAPTAINWEIR	0	-	-		5.84				1.64			1.26			1.39			-			-			1.37			1.32		
CAPTAINWEIR	0.04	-	-		5.76				1.64			1.25			1.38			-			-			1.36			1.31		
STORYWEIR	0	-	-		5.28				1.63			1.19			1.36			-			2.49			1.28			1.28		
STORYWEIR	0.085	-	-		5.17				1.63			1.19			1.35			-			2.46			1.27			1.28		
MERIVALEWEIR	0	-	-		-				1.66			1.33			1.43			-			-			-			1.37		
MERIVALEWEIR	0.08	-	-		-				1.66			1.32			1.43			-			-			-			1.36		
GOODNALINK1	0	-	-		18.38				6.29			4.38			3.13			12.86			10.45			5.34			3.90		
GOODNALINK1	1	-	-		17.71				5.72			3.90			2.82			12.19			9.63			4.80			3.48		
GOODNALINK2	0	-	-		18.31				6.22			4.31			3.08			12.78			10.38			5.26			3.85		
GOODNALINK2	1.07	-	-		17.95				5.95			4.09			2.94			12.44			10.07			5.01			3.65		
STLUCIALINK1	0	-	-		11.10				2.53			1.89			1.73			8.95			5.22			2.30			1.84		
STLUCIALINK1	1.05	-	-		10.27				2.06			1.67			1.62			8.35			4.72			2.00			1.68		
STLUCIALINK2	0	-	-		11.09				2.48			1.87			1.71			8.94			5.21			2.27			1.82		
STLUCIALINK2	1.05	-	-		10.31				2.09			1.68			1.62			8.37			4.75			2.02			1.67		
STLUCIALINK3	0	-	-		10.97				2.44			1.85			1.70			8.89			5.18			2.24			1.80		
STLUCIALINK3	0.85	-	-		10.43				2.2			1.73			1.65			8.50			4.87			2.09			1.71		

TABLE C-2 - Predicted Discharges for Calibration\Verification Events

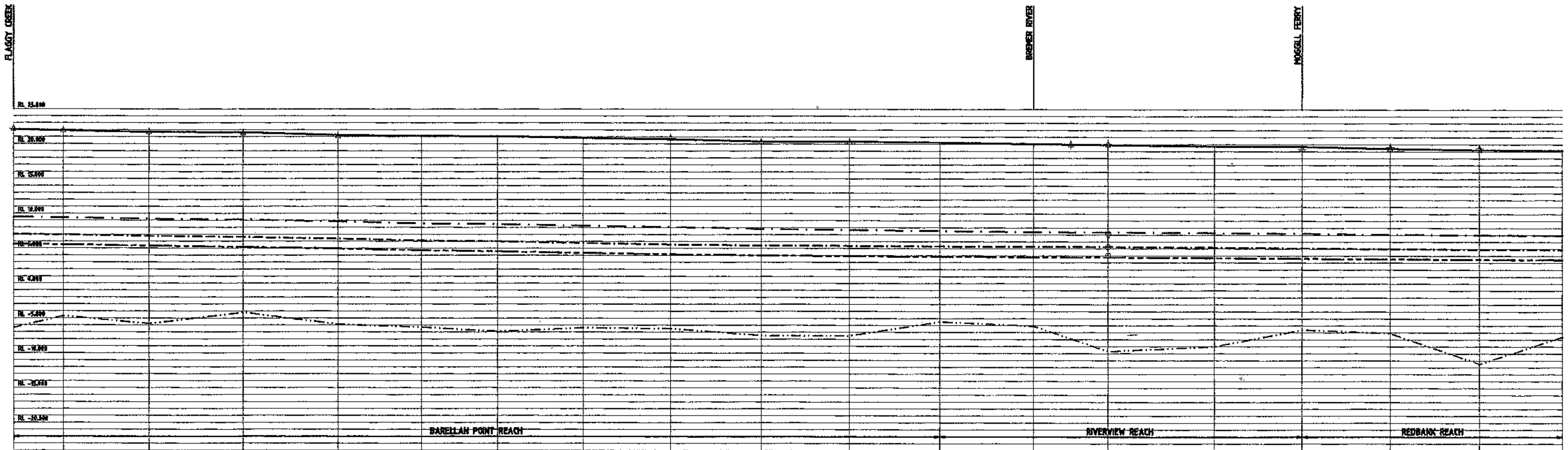
LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CALIBRATION EVENTS				VERIFICATION EVENTS			
			1974 Q (m^3/s)	1996 Q (m^3/s)	1983 Q (m^3/s)	1989B Q (m^3/s)	1931 Q (m^3/s)	1955 Q (m^3/s)	1973 Q (m^3/s)	1989A Q (m^3/s)
BRISBANE	1000.14	78.52	7504	2159	1518	1190	5919	5104	2613	1606
BRISBANE	1000.53	78.13	7504	2157	1518	1190	5917	5102	2613	1605
BRISBANE	1001.05	77.62	7505	2156	1517	1190	5913	5098	2612	1603
BRISBANE	1001.59	77.07	7506	2153	1517	1191	5908	5094	2610	1599
BRISBANE	1002.11	76.55	7507	2152	1517	1191	5905	5091	2609	1598
BRISBANE	1002.57	76.09	7508	2151	1517	1191	5901	5087	2608	1597
BRISBANE	1003.03	75.63	7508	2150	1517	1192	5897	5083	2607	1595
BRISBANE	1003.53	75.14	7509	2150	1517	1192	5893	5079	2605	1593
BRISBANE	1004.04	74.62	7510	2150	1516	1192	5889	5075	2603	1591
BRISBANE	1004.56	74.11	7511	2150	1516	1193	5884	5070	2602	1589
BRISBANE	1005.07	73.59	7513	2150	1516	1193	5877	5062	2600	1586
BRISBANE	1005.60	73.06	7514	2151	1516	1194	5869	5054	2596	1582
BRISBANE	1006.04	72.63	7516	2151	1516	1195	5863	5047	2594	1579
BRISBANE	1006.25	72.41	9626	2749	1903	1514	5679	4396	2339	1738
BRISBANE	1006.61	72.06	9625	2748	1902	1513	5678	4394	2339	1737
BRISBANE	1007.16	71.50	9623	2748	1899	1512	5676	4391	2339	1734
BRISBANE	1007.67	71.00	9621	2747	1896	1511	5674	4387	2338	1732
BRISBANE	1008.18	70.48	9618	2746	1893	1509	5672	4384	2337	1730
BRISBANE	1008.69	69.98	9617	2746	1892	1508	5671	4382	2337	1730
BRISBANE	1009.16	69.50	9616	2745	1891	1506	5669	4380	2336	1731
BRISBANE	1009.56	69.10	9615	2745	1890	1505	5668	4378	2336	1731
BRISBANE	1010.11	68.56	9612	2744	1890	1504	5666	4374	2336	1732
BRISBANE	1010.61	68.05	9611	2744	1889	1503	5665	4372	2335	1733
BRISBANE	1010.85	67.81	9610	2744	1889	1503	5664	4371	2335	1733
BRISBANE	1011.25	67.42	9609	2744	1889	1502	5663	4370	2335	1734
BRISBANE	1011.75	66.92	9607	2743	1888	1500	5661	4367	2334	1735
BRISBANE	1012.23	66.43	9605	2742	1888	1499	5659	4363	2333	1736
BRISBANE	1012.71	65.96	9602	2742	1888	1497	5657	4360	2333	1737
BRISBANE	1013.06	65.60	9600	2741	1889	1496	5656	4357	2332	1738
BRISBANE	1013.32	65.34	9546	2741	1889	1495	5654	4356	2332	1738
BRISBANE	1013.56	65.10	9544	2741	1889	1494	5653	4354	2332	1739
BRISBANE	1013.80	64.87	9522	2740	1890	1494	5652	4352	2331	1739
BRISBANE	1014.11	64.55	9520	2739	1891	1491	5650	4349	2330	1741
BRISBANE	1014.46	64.20	9517	2739	1892	1489	5648	4346	2330	1743
BRISBANE	1014.85	63.81	9514	2738	1893	1487	5645	4341	2329	1744
BRISBANE	1015.33	63.34	9512	2737	1894	1486	5644	4340	2328	1745
BRISBANE	1015.71	62.96	9511	2737	1895	1485	5643	4338	2328	1746
BRISBANE	1016.00	62.67	9531	2736	1895	1484	5642	4337	2327	1747
BRISBANE	1016.39	62.27	9530	2736	1896	1483	5641	4336	2327	1748
BRISBANE	1016.77	61.90	9528	2735	1897	1481	5640	4334	2326	1749
BRISBANE	1017.01	61.65	9582	2735	1898	1480	5639	4332	2326	1750
BRISBANE	1017.37	61.29	9580	2734	1899	1479	5637	4330	2325	1751
BRISBANE	1017.77	60.90	9578	2734	1899	1478	5636	4328	2324	1752
BRISBANE	1018.06	60.60	9576	2734	1900	1477	5634	4327	2324	1753
BRISBANE	1018.46	60.20	9575	2733	1901	1475	5633	4325	2324	1754
BRISBANE	1018.91	59.75	9573	2733	1902	1474	5632	4324	2323	1755
BRISBANE	1019.29	59.37	9572	2733	1902	1473	5631	4322	2323	1756
BRISBANE	1019.68	58.98	9571	2732	1904	1471	5630	4321	2322	1757
BRISBANE	1019.99	58.67	9570	2732	1904	1470	5629	4320	2321	1758
BRISBANE	1020.32	58.34	9568	2731	1906	1468	5628	4317	2320	1760
BRISBANE	1020.68	57.98	9567	2730	1907	1465	5626	4315	2319	1762
BRISBANE	1020.96	57.70	9566	2730	1908	1464	5626	4314	2319	1763
BRISBANE	1021.32	57.34	9565	2730	1909	1463	5625	4313	2320	1764
BRISBANE	1021.63	57.03	9564	2730	1910	1461	5624	4312	2320	1765
BRISBANE	1021.81	56.86	9564	2729	1910	1460	5624	4311	2321	1766
BRISBANE	1022.00	56.66	9563	2729	1911	1459	5623	4310	2321	1767
BRISBANE	1022.34	56.32	9562	2729	1912	1458	5622	4309	2322	1768
BRISBANE	1022.81	55.85	9561	2729	1913	1456	5621	4307	2323	1770
BRISBANE	1023.31	55.36	9559	2728	1914	1454	5620	4306	2323	1771
BRISBANE	1023.83	54.84	9558	2728	1915	1453	5619	4305	2324	1773
BRISBANE	1024.32	54.34	9557	2728	1916	1451	5618	4303	2325	1774
BRISBANE	1024.82	53.84	9556	2728	1918	1448	5617	4302	2326	1776
BRISBANE	1025.22	53.45	9554	2727	1919	1446	5616	4300	2327	1778
BRISBANE	1025.48	53.19	9553	2727	1920	1445	5615	4299	2327	1779
BRISBANE	1025.88	52.78	9552	2727	1922	1444	5614	4298	2328	1780
BRISBANE	1026.43	52.24	9551	2727	1923	1442	5613	4297	2329	1782
BRISBANE	1026.79	51.87	9550	2727	1925	1441	5612	4296	2329	1784

TABLE C-2 - Predicted Discharges for Calibration\Verification Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CALIBRATION EVENTS 1974 Q (m^3/s)	1996 Q (m^3/s)	1983 Q (m^3/s)	1989B Q (m^3/s)	VERIFICATION EVENTS 1931 Q (m^3/s)	1955 Q (m^3/s)	1973 Q (m^3/s)	1989A Q (m^3/s)
BRISBANE	1027.03	51.63	9549	2727	1926	1440	5612	4295	2330	1785
BRISBANE	1027.42	51.24	9548	2727	1927	1438	5611	4294	2330	1786
BRISBANE	1027.93	50.73	9546	2727	1930	1435	5610	4292	2332	1789
BRISBANE	1028.43	50.23	9544	2726	1933	1432	5608	4290	2333	1793
BRISBANE	1028.72	49.94	9147	2726	1934	1431	5607	4289	2334	1794
BRISBANE	1028.98	49.68	9542	2726	1935	1430	5607	4288	2334	1795
BRISBANE	1029.44	49.22	9539	2726	1937	1428	5605	4286	2335	1798
BRISBANE	1029.95	48.71	9535	2726	1939	1426	5604	4285	2337	1800
BRISBANE	1030.55	48.11	9531	2726	1942	1424	5600	4280	2338	1804
BRISBANE	1031.07	47.59	9528	2725	1945	1421	5599	4279	2339	1807
BRISBANE	1031.48	47.18	9527	2725	1947	1420	5598	4278	2340	1809
BRISBANE	1031.85	46.81	9526	2725	1948	1419	5597	4277	2341	1811
BRISBANE	1032.11	46.55	9525	2725	1950	1418	5596	4276	2342	1813
BRISBANE	1032.41	46.25	9523	2725	1951	1422	5595	4275	2343	1815
BRISBANE	1032.83	45.83	9522	2725	1953	1426	5594	4274	2344	1818
BRISBANE	1033.23	45.44	9521	2725	1955	1430	5593	4272	2345	1820
BRISBANE	1033.64	45.03	9519	2725	1957	1435	5592	4271	2346	1822
BRISBANE	1034.14	44.53	9518	2724	1959	1439	5591	4270	2347	1825
BRISBANE	1034.63	44.03	9517	2724	1961	1445	5590	4269	2348	1828
BRISBANE	1035.15	43.51	9514	2724	1964	1450	5588	4267	2350	1832
BRISBANE	1035.66	43.00	9513	2724	1966	1457	5587	4265	2351	1835
BRISBANE	1036.18	42.48	9511	2724	1969	1462	5586	4264	2352	1839
BRISBANE	1036.62	42.05	9510	2724	1971	1467	5585	4263	2353	1842
BRISBANE	1036.84	41.82	9509	2723	1973	1470	5584	4262	2354	1844
BRISBANE	1037.00	41.66	9509	2723	1973	1472	5584	4261	2355	1845
BRISBANE	1037.11	41.55	9508	2723	1974	1473	5583	4261	2355	1846
BRISBANE	1037.23	41.43	9508	2723	1974	1474	5583	4261	2355	1846
BRISBANE	1037.46	41.21	9508	2723	1976	1477	5583	4260	2356	1848
BRISBANE	1037.86	40.81	9506	2723	1978	1483	5582	4259	2357	1852
BRISBANE	1038.34	40.32	9500	2723	1982	1490	5580	4257	2359	1856
BRISBANE	1038.85	39.81	9495	2722	1986	1498	5575	4253	2362	1862
BRISBANE	1039.15	39.51	9492	2723	1989	1504	5572	4250	2364	1866
BRISBANE	1039.38	39.28	9400	2723	1991	1509	5570	4248	2366	1869
BRISBANE	1039.62	39.04	9398	2723	1994	1513	5568	4246	2367	1873
BRISBANE	1039.75	38.91	9324	2723	1996	1516	5567	4245	2368	1875
BRISBANE	1039.96	38.70	9202	2785	2160	1552	5463	4158	2421	1915
BRISBANE	1040.17	38.49	9202	2785	2162	1556	5462	4157	2423	1918
BRISBANE	1040.37	38.29	9139	2785	2164	1560	5462	4157	2424	1921
BRISBANE	1040.75	37.91	9139	2785	2167	1565	5462	4157	2425	1925
BRISBANE	1041.12	37.54	9138	2785	2170	1571	5461	4156	2427	1930
BRISBANE	1041.35	37.32	9137	2785	2173	1576	5461	4156	2429	1934
BRISBANE	1041.58	37.08	9136	2785	2175	1580	5461	4156	2430	1937
BRISBANE	1041.83	36.83	9136	2785	2177	1584	5461	4156	2431	1940
BRISBANE	1042.10	36.56	9135	2785	2179	1588	5461	4156	2433	1943
BRISBANE	1042.37	36.29	9135	2785	2180	1591	5461	4156	2434	1945
BRISBANE	1042.51	36.15	9196	2785	2181	1593	5461	4156	2434	1947
BRISBANE	1042.71	35.95	9196	2785	2183	1596	5460	4156	2435	1949
BRISBANE	1042.96	35.70	9196	2785	2185	1600	5460	4155	2436	1952
BRISBANE	1043.05	35.61	9274	2785	2186	1601	5460	4155	2437	1954
BRISBANE	1043.10	35.57	9274	2785	2186	1602	5460	4155	2437	1954
BRISBANE	1043.42	35.24	9365	2784	2189	1607	5460	4155	2439	1958
BRISBANE	1043.89	34.77	9364	2784	2193	1615	5460	4155	2441	1965
BRISBANE	1044.20	34.46	9364	2784	2195	1621	5460	4155	2443	1969
BRISBANE	1044.47	34.19	9364	2784	2198	1625	5460	4155	2444	1972
BRISBANE	1044.73	33.93	9363	2784	2200	1629	5460	4155	2445	1976
BRISBANE	1045.13	33.53	9364	2784	2205	1637	5459	4155	2448	1983
BRISBANE	1045.64	33.02	9368	2784	2211	1649	5459	4154	2452	1992
BRISBANE	1046.03	32.63	9371	2784	2216	1657	5459	4154	2455	1999
BRISBANE	1046.26	32.40	9372	2784	2219	1662	5459	4154	2456	2003
BRISBANE	1046.46	32.20	9372	2784	2221	1665	5458	4154	2457	2005
BRISBANE	1046.74	31.92	9374	2784	2224	1671	5458	4154	2459	2010
BRISBANE	1047.13	31.54	9374	2784	2228	1679	5458	4154	2462	2017
BRISBANE	1047.63	31.03	9372	2784	2232	1686	5458	4154	2464	2022
BRISBANE	1048.15	30.52	9373	2784	2236	1692	5458	4154	2467	2028
BRISBANE	1048.63	30.03	9376	2784	2241	1702	5458	4154	2470	2036
BRISBANE	1049.01	29.65	9387	2784	2246	1711	5458	4154	2473	2044
BRISBANE	1049.25	29.42	9394	2784	2249	1716	5458	4154	2475	2048

TABLE C-2 - Predicted Discharges for Calibration\Verification Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CALIBRATION EVENTS				VERIFICATION EVENTS			
			1974 Q (m^3/s)	1996 Q (m^3/s)	1983 Q (m^3/s)	1989B Q (m^3/s)	1931 Q (m^3/s)	1955 Q (m^3/s)	1973 Q (m^3/s)	1989A Q (m^3/s)
BRISBANE	1049.48	29.18	9399	2784	2252	1720	5457	4154	2476	2051
BRISBANE	1049.73	28.93	9408	2785	2255	1724	5457	4154	2478	2055
BRISBANE	1050.15	28.51	9418	2785	2260	1731	5457	4153	2481	2061
BRISBANE	1050.65	28.02	9435	2785	2267	1742	5457	4153	2485	2070
BRISBANE	1051.11	27.55	9447	2785	2272	1751	5457	4153	2488	2077
BRISBANE	1051.63	27.03	9471	2786	2278	1760	5457	4153	2492	2085
BRISBANE	1052.10	26.56	9539	2786	2284	1768	5457	4153	2495	2092
BRISBANE	1052.35	26.31	9554	2786	2287	1775	5457	4153	2497	2098
BRISBANE	1052.49	26.17	9566	2786	2289	1777	5457	4153	2498	2100
BRISBANE	1052.63	26.04	9580	2786	2290	1779	5457	4153	2499	2101
BRISBANE	1052.75	25.91	9566	2786	2291	1781	5457	4153	2500	2103
BRISBANE	1053.09	25.57	9559	2787	2294	1786	5457	4153	2502	2107
BRISBANE	1053.36	25.31	9540	2787	2299	1794	5457	4153	2505	2114
BRISBANE	1053.64	25.02	9522	2787	2304	1801	5457	4153	2508	2121
BRISBANE	1054.27	24.39	9474	2788	2315	1815	5457	4153	2515	2133
BRISBANE	1054.66	24.00	9455	2789	2326	1830	5457	4153	2521	2146
BRISBANE	1054.83	23.84	9448	2789	2330	1835	5457	4153	2523	2151
BRISBANE	1055.13	23.54	9442	2789	2335	1842	5457	4153	2526	2157
BRISBANE	1055.35	23.31	9437	2790	2339	1847	5457	4153	2529	2161
BRISBANE	1055.69	22.97	9430	2790	2344	1854	5457	4153	2532	2168
BRISBANE	1056.18	22.48	9427	2791	2354	1868	5457	4153	2538	2180
BRISBANE	1056.55	22.11	9428	2791	2361	1877	5457	4153	2543	2188
BRISBANE	1056.78	21.88	9427	2791	2364	1882	5457	4153	2545	2192
BRISBANE	1056.92	21.74	9424	2791	2370	1889	5457	4153	2549	2199
BRISBANE	1057.02	21.64	9422	2792	2373	1894	5457	4153	2551	2204
BRISBANE	1057.31	21.35	9419	2792	2378	1901	5457	4153	2555	2210
BRISBANE	1057.79	20.87	9413	2793	2386	1912	5457	4153	2560	2220
BRISBANE	1058.14	20.53	9407	2793	2393	1919	5457	4153	2564	2227
BRISBANE	1058.38	20.28	9403	2793	2398	1925	5457	4153	2567	2233
BRISBANE	1058.63	20.03	9399	2793	2403	1930	5457	4153	2570	2237
BRISBANE	1058.89	19.78	9393	2794	2408	1936	5457	4153	2573	2243
BRISBANE	1059.29	19.37	9387	2794	2414	1943	5457	4153	2576	2249
BRISBANE	1059.77	18.89	9372	2795	2427	1957	5457	4153	2583	2262
BRISBANE	1060.17	18.49	9382	2795	2439	1971	5457	4153	2591	2275
BRISBANE	1060.44	18.22	9387	2796	2444	1976	5457	4153	2594	2280
BRISBANE	1060.78	17.88	9393	2796	2449	1983	5457	4153	2598	2287
BRISBANE	1061.27	17.39	9405	2797	2461	1997	5457	4153	2606	2300
BRISBANE	1061.78	16.88	9413	2797	2472	2009	5457	4153	2614	2312
BRISBANE	1062.28	16.38	9422	2798	2484	2025	5457	4153	2623	2328
BRISBANE	1062.74	15.92	9431	2799	2503	2045	5457	4153	2636	2347
BRISBANE	1063.03	15.63	9436	2800	2517	2058	5457	4153	2645	2361
BRISBANE	1063.22	15.44	9453	2858	2561	2081	5457	4153	2661	2385
BRISBANE	1063.48	15.18	9456	2859	2572	2092	5457	4153	2668	2395
BRISBANE	1063.82	14.84	9460	2859	2583	2103	5457	4153	2675	2406
BRISBANE	1064.25	14.42	9467	2859	2596	2116	5457	4153	2684	2419
BRISBANE	1064.75	13.91	9475	2859	2618	2131	5457	4153	2694	2434
BRISBANE	1065.26	13.40	9486	2859	2648	2149	5457	4153	2706	2453
BRISBANE	1065.75	12.91	9498	2859	2680	2170	5457	4154	2719	2474
BRISBANE	1066.25	12.41	9509	2860	2713	2191	5457	4154	2734	2496
BRISBANE	1066.76	11.90	9520	2860	2745	2212	5457	4154	2749	2517
BRISBANE	1067.25	11.41	9534	2860	2781	2235	5457	4154	2765	2540
BRISBANE	1067.73	10.94	9549	2861	2822	2258	5457	4154	2782	2564
BRISBANE	1068.31	10.35	9563	2861	2862	2282	5457	4154	2798	2587
BRISBANE	1068.85	9.81	9574	2861	2903	2305	5457	4154	2815	2612
BRISBANE	1069.29	9.37	9583	2861	2934	2324	5457	4154	2828	2633
BRISBANE	1069.78	8.88	9594	2861	2971	2346	5457	4154	2843	2658
BRISBANE	1070.28	8.38	9605	2862	3009	2368	5457	4154	2859	2684
BRISBANE	1070.79	7.87	9620	2862	3050	2392	5457	4154	2875	2713
BRISBANE	1071.28	7.38	9636	2862	3091	2416	5457	4154	2892	2741
BRISBANE	1071.77	6.89	9650	2862	3132	2441	5457	4154	2911	2771
BRISBANE	1072.02	6.64	9658	2863	3155	2455	5457	4154	2921	2787
BRISBANE	1072.27	6.39	9794	2937	3426	2971	5458	4154	3034	2973
BRISBANE	1072.76	5.90	9810	2938	3472	2998	5458	4154	3052	3003
BRISBANE	1073.24	5.42	9828	2938	3521	3026	5458	4154	3071	3035
BRISBANE	1073.74	4.92	9848	2938	3574	3056	5458	4154	3091	3069
BRISBANE	1074.23	4.43	9868	2938	3627	3084	5458	4154	3111	3103
BRISBANE	1074.72	3.94	9889	2938	3681	3113	5458	4154	3132	3140



DATUM RL. -25.000

1996 PREDICTED FLOOD LEVEL	9.490	9.400	9.230	9.090	8.940	8.570	8.470	8.250	8.060	7.890	7.680	7.530	7.380	7.370	7.270	7.210	7.040	6.990	6.930
1989b PREDICTED FLOOD LEVEL	5.590	5.520	5.360	5.180	4.940	4.700	4.550	4.330	4.150	4.000	3.920	3.840	3.760	3.770	3.700	3.610	3.510	3.480	3.440
1983 PREDICTED FLOOD LEVEL	7.020	6.940	6.780	6.650	6.370	6.110	5.980	5.760	5.550	5.420	5.370	5.320	5.270	5.270	5.180	5.110	4.980	4.930	4.880
1974 PREDICTED FLOOD LEVEL	22.050	21.910	21.780	21.630	21.250	21.120	21.100	20.870	20.600	20.370	20.350	20.330	20.020	19.890	19.700	19.670	19.380	19.280	19.140
BED LEVEL (m AHD)	-6.400	-4.700	-5.600	-4.200	-5.900	-6.300	-6.300	-6.400	-6.500	-7.500	-7.500	-5.500	-6.100	-9.700	-9.000	-6.600	-7.100	-11.500	-7.600
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1000.000	1000.285	1000.775	1001.315	1001.845	1002.350	1002.785	1003.275	1003.775	1004.300	1004.810	1005.325	1005.870	1006.300	1006.910	1007.410	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	78.660	78.375	77.885	77.345	76.795	76.310	75.875	75.385	74.885	74.360	73.850	73.335	72.790	72.360	71.750	71.250	70.740	70.215	69.735

BRISBANE RIVER - BN 2020 TO BN 1840

LEGEND

- (SS) LOCATION AND IDENTIFICATION OF STRUCTURE
- 1974 RECORDED FLOOD LEVEL
- 1983 RECORDED FLOOD LEVEL
- 1989 RECORDED FLOOD LEVEL
- 1996 RECORDED FLOOD LEVEL
- BRISBANE RIVER FLOOD LEVEL - 1974
- COMPUTED WATER LEVEL - JUNE 1983
- COMPUTED WATER LEVEL - LATE APRIL 1989 (1989b)
- COMPUTED WATER LEVEL - MAY 1996
- EXISTING BED LEVEL

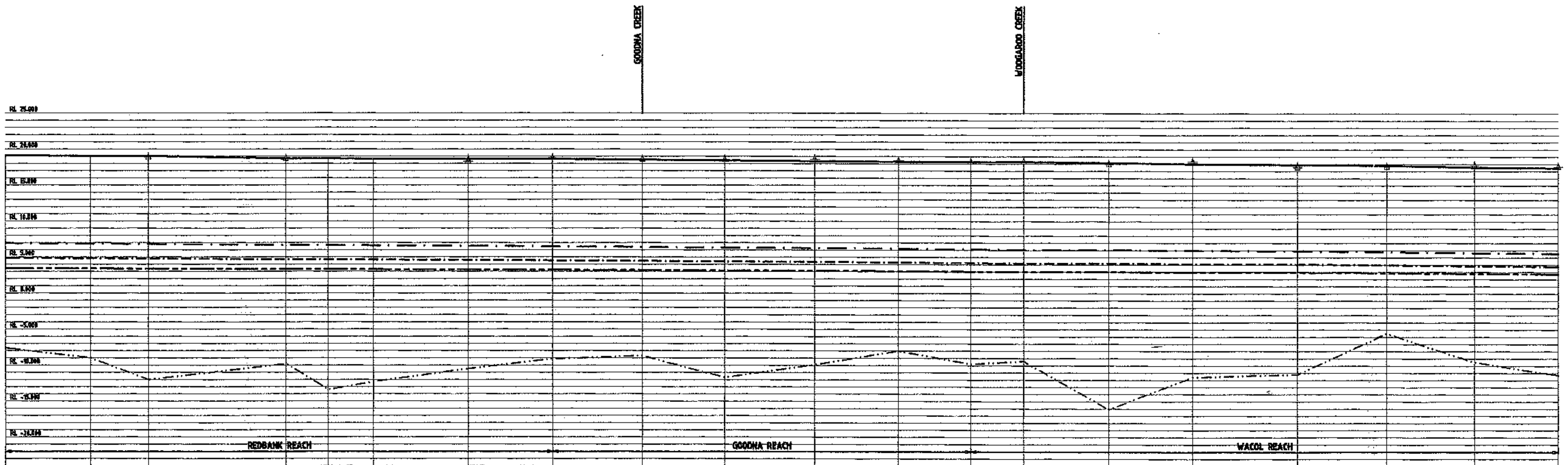
VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

FILE NAME: 4157-101
PLOT SCALE: 1:30
DATE: 23/3/??

FIGURE C-1b

BRISBANE RIVER FLOOD STUDY
MIKE 11 CALIBRATION PROFILE



DATUM RL. -25.000

1996 PREDICTED FLOOD LEVEL	6.930	6.850	6.810	6.650	6.650	6.600	6.540	6.470	6.330	6.320
1989b PREDICTED FLOOD LEVEL	3.440	3.400	3.380	3.310	3.310	3.290	3.250	3.220	3.160	3.140
1983 PREDICTED FLOOD LEVEL	4.880	4.820	4.790	4.670	4.660	4.630	4.580	4.520	4.460	4.400
1974 PREDICTED FLOOD LEVEL	19.160	19.050	19.040	18.690	18.710	18.630	18.620	18.620	18.520	18.420
BED LEVEL (m AHD)	-7.600	-9.000	-12.000	-9.800	-13.400	-12.300	-10.500	-9.100	-8.700	-11.700
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750
MIKE 11 CHAINAGE (km)	1008.925	1009.490	1009.720	1010.490	1010.725	1010.980	1011.530	1011.980	1012.475	1012.935
AMTD CHAINAGE (km)	69.735	69.260	68.940	68.170	67.935	67.680	67.150	66.680	66.185	65.725

1996 PREDICTED FLOOD LEVEL	6.260	6.190	6.110	6.060	6.050	5.970	5.910	5.800	5.660	5.560
1989b PREDICTED FLOOD LEVEL	3.110	3.060	3.020	2.990	2.990	2.960	2.930	2.870	2.780	2.740
1983 PREDICTED FLOOD LEVEL	4.350	4.280	4.220	4.170	4.170	4.110	4.070	3.910	3.840	3.770
1974 PREDICTED FLOOD LEVEL	18.370	18.280	18.250	18.260	18.140	18.000	17.930	17.800	17.570	17.450
BED LEVEL (m AHD)	-9.900	-8.000	-9.800	-9.400	-16.100	-11.600	-11.200	-5.580	-9.500	-11.300
CROSS SECTION NUMBER	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1013.445	1013.910	1014.310	1014.610	1015.090	1015.560	1016.140	1016.640	1017.130	1017.610
AMTD CHAINAGE (km)	65.215	64.750	64.350	64.050	63.570	63.100	62.520	62.020	61.530	61.050

LEGEND

- (SS) LOCATION AND IDENTIFICATION OF STRUCTURE
- 1974 RECORDED FLOOD LEVEL
- 1983 RECORDED FLOOD LEVEL
- 1989 RECORDED FLOOD LEVEL
- 1996 RECORDED FLOOD LEVEL
- BRISBANE RIVER FLOOD LEVEL - 1974
- COMPUTED WATER LEVEL - JUNE 1983
- COMPUTED WATER LEVEL - LATE APRIL 1989 (1989b)
- COMPUTED WATER LEVEL - MAY 1996
- EXISTING BED LEVEL

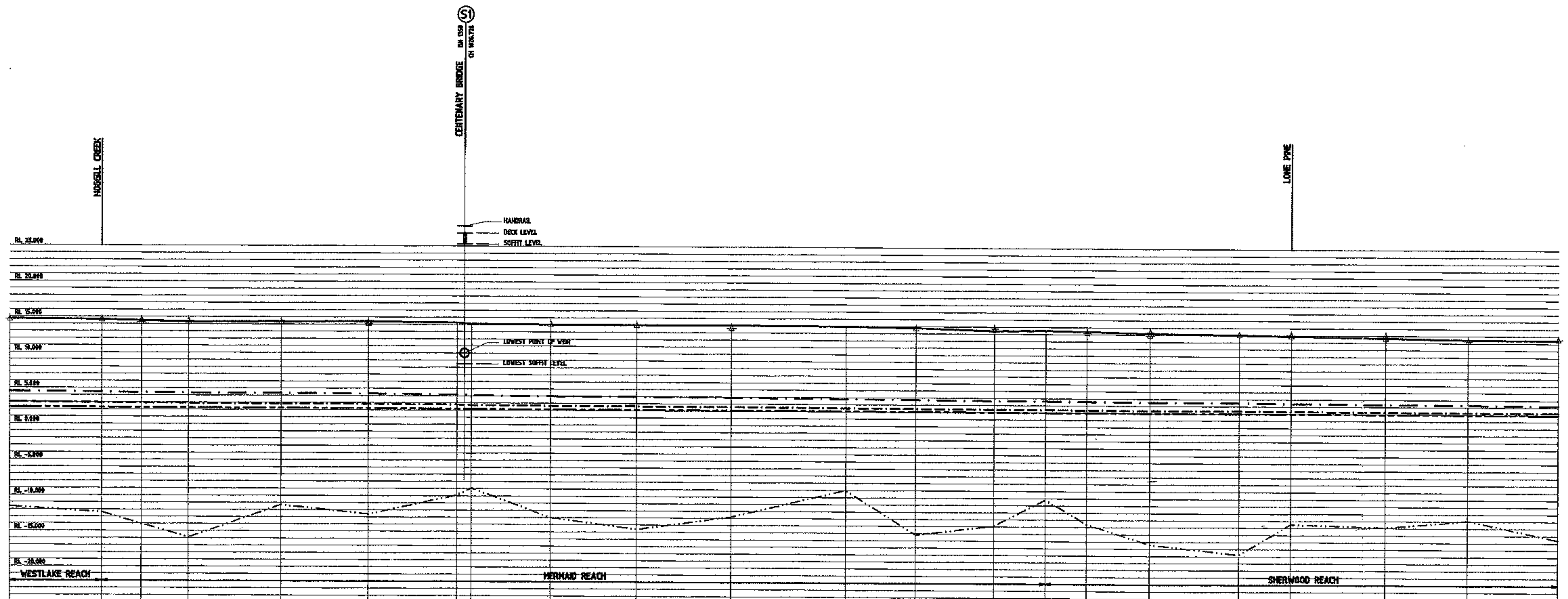
VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

FILE NAME: 4157-102 DWG N: C:\DWG JOB N: T00437 DATE: 23/3/97
PLOT SCALE: 1=30

FIGURE C-1d

BRISBANE RIVER FLOOD STUDY
MIKE 11 CALIBRATION PROFILE

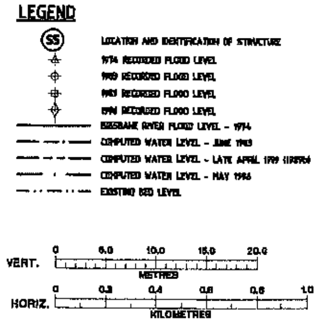


1996 PREDICTED FLOOD LEVEL	4.510	4.430	4.380	4.350	4.320	4.270	4.170	4.080	3.980	3.950	3.890
1989b PREDICTED FLOOD LEVEL	2.320	2.290	2.270	2.250	2.240	2.220	2.190	2.160	2.130	2.110	2.100
1983 PREDICTED FLOOD LEVEL	3.000	2.940	2.910	2.890	2.860	2.830	2.760	2.700	2.640	2.610	2.580
1974 PREDICTED FLOOD LEVEL	14.690	14.580	14.460	14.320	14.380	14.480	14.270	14.120	14.010	14.030	14.030
BED LEVEL (m AHD)	-11.680	-12.400	-16.000	-15.900	-11.300	-12.600	-9.900	-8.900	-13.030	-14.600	-12.800
CROSS SECTION NUMBER	BN 1420	BN 1410	BN 1400	BN 1390	BN 1380	BN 1370	BN 1360	BN 1340	BN 1330	BN 1320	BN 1310
MIKE 11 CHAINAGE (km)	1026.170	1026.680	1026.900	1027.160	1027.680	1028.180	1028.680	1028.760	1029.200	1029.680	1030.220
AMTD CHAINAGE (km)	52.490	51.980	51.760	51.500	50.980	50.480	49.980	49.900	49.460	48.980	48.440

1996 PREDICTED FLOOD LEVEL	3.790	3.710	3.590	3.600	3.570	3.520	3.480	3.430	3.350	3.290	3.250
1989b PREDICTED FLOOD LEVEL	2.060	2.030	2.000	2.000	1.990	1.970	1.970	1.950	1.930	1.910	1.890
1983 PREDICTED FLOOD LEVEL	2.510	2.460	2.400	2.390	2.380	2.350	2.330	2.300	2.260	2.230	2.200
1974 PREDICTED FLOOD LEVEL	13.960	13.890	13.610	13.520	13.390	13.150	13.000	12.890	12.650	12.490	12.400
BED LEVEL (m AHD)	-9.000	-15.200	-13.900	-10.200	-13.600	-16.400	-17.800	-13.550	-13.900	-12.900	-15.600
CROSS SECTION NUMBER	BN 1300	BN 1290	BN 1280	BN 1270	BN 1260	BN 1250	BN 1240	BN 1230	BN 1220	BN 1210	BN 1200
MIKE 11 CHAINAGE (km)	1030.870	1031.260	1031.700	1031.995	1032.230	1032.585	1033.080	1033.370	1033.900	1034.370	1034.890
AMTD CHAINAGE (km)	47.790	47.400	46.960	46.665	46.430	46.075	45.580	45.290	44.760	44.290	43.770

BRISBANE RIVER - BN 1420 TO BN 1200

LEGEND

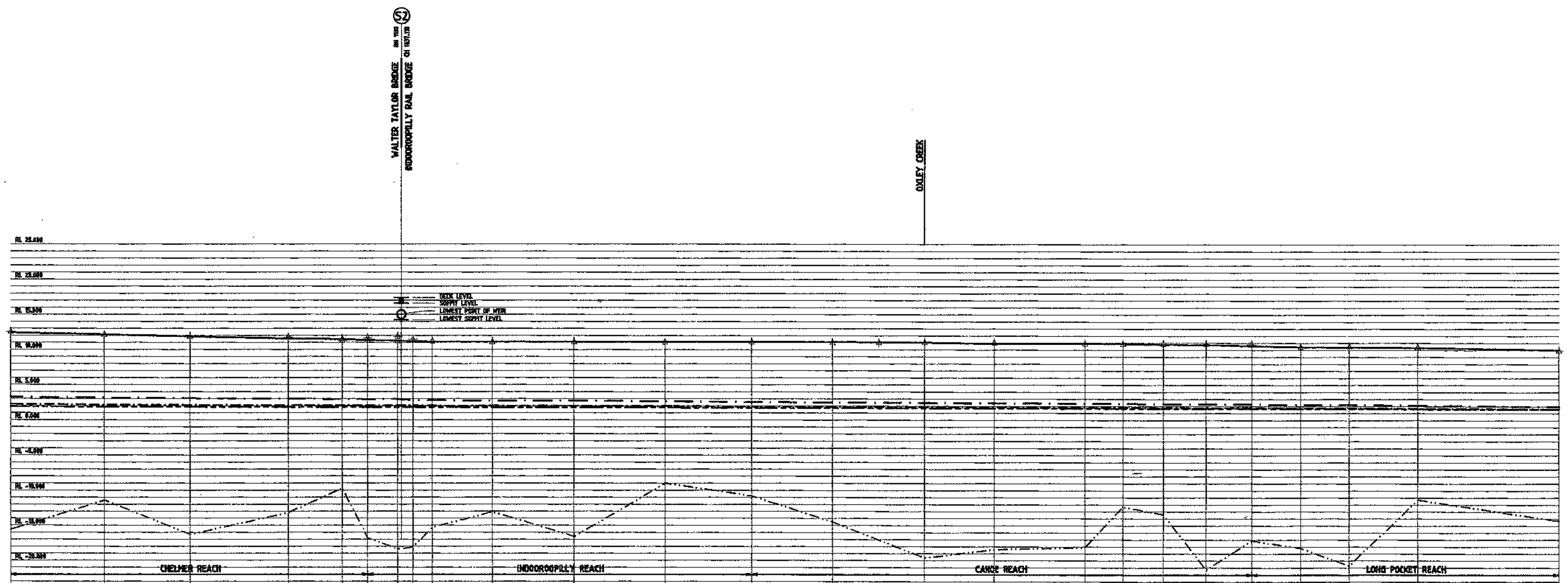


FILE NAME: 4157-104 DISK N°: C:\DWG JOB N°: T004157 DATE: 23/3/97
PLOT SCALE: 1=30

FIGURE C-1e

BRISBANE RIVER FLOOD STUDY

MIKE 11 CALIBRATION PROFILE



DATUM RL. -25.000

CROSS SECTION NUMBER	BN 1200	BN 1190	BN 1180	BN 1170	BN 1160	BN 1150	BN 1140	BN 1120	BN 1110	BN 1100	BN 1090	BN 1080	BN 1070
1996 PREDICTED FLOOD LEVEL	3.230	3.150	3.060	2.980	2.950	2.920	2.930	2.790	2.770	2.730	2.720	2.630	2.540
1989b PREDICTED FLOOD LEVEL	1.890	1.870	1.860	1.820	1.810	1.810	1.810	1.800	1.790	1.780	1.780	1.750	1.730
1983 PREDICTED FLOOD LEVEL	2.280	2.150	2.100	2.070	2.050	2.040	2.040	2.030	2.010	1.990	1.990	1.940	1.900
1974 PREDICTED FLOOD LEVEL	12.460	12.140	11.860	11.550	11.430	11.310	11.260	11.160	11.110	11.100	11.120	11.100	11.100
BED LEVEL (m AHD)	-15.600	-11.400	-16.300	-13.200	-9.700	-16.800	-18.400	-18.100	-15.300	-13.100	-16.400	-9.000	-10.800
MIKE 11 CHAINAGE (km)	1034.890	1035.414	1035.900	1036.460	1036.770	1036.915	1037.09	1037.175	1037.285	1037.625	1038.085	1038.6	1039.100
AMTD CHAINAGE (km)	43.774	43.266	42.760	42.200	41.890	41.745	41.570	41.485	41.375	41.035	40.575	40.06	39.560

CROSS SECTION NUMBER	BN 1060	BN 1050	BN 1040	BN 1030	BN 1020	BN 1010	BN 1000	BN 990	BN 980	BN 970	BN 960	BN 950
1996 PREDICTED FLOOD LEVEL	2.490	2.460	2.400	2.380	2.360	2.320	2.320	2.270	2.210	2.210	2.120	1.940
1989b PREDICTED FLOOD LEVEL	1.710	1.710	1.690	1.690	1.680	1.680	1.460	1.660	1.650	1.650	1.630	1.590
1983 PREDICTED FLOOD LEVEL	1.870	1.860	1.830	1.820	1.800	1.780	1.780	1.760	1.740	1.730	1.690	1.620
1974 PREDICTED FLOOD LEVEL	11.110	11.030	10.880	10.920	10.880	10.790	10.750	10.600	10.430	10.420	10.350	10.030
BED LEVEL (m AHD)	-14.500	-19.600	-18.400	-18.100	-12.300	-13.400	-21.300	-17.100	-18.200	-20.700	-11.300	-14.300
MIKE 11 CHAINAGE (km)	1039.565	1040.090	1040.490	1041.01	1041.25	1041.46	1041.7	1041.96	1042.255	1042.515	1042.91	1043.725
AMTD CHAINAGE (km)	39.050	38.570	38.170	37.560	37.450	37.200	36.960	36.700	36.425	36.165	35.750	34.935

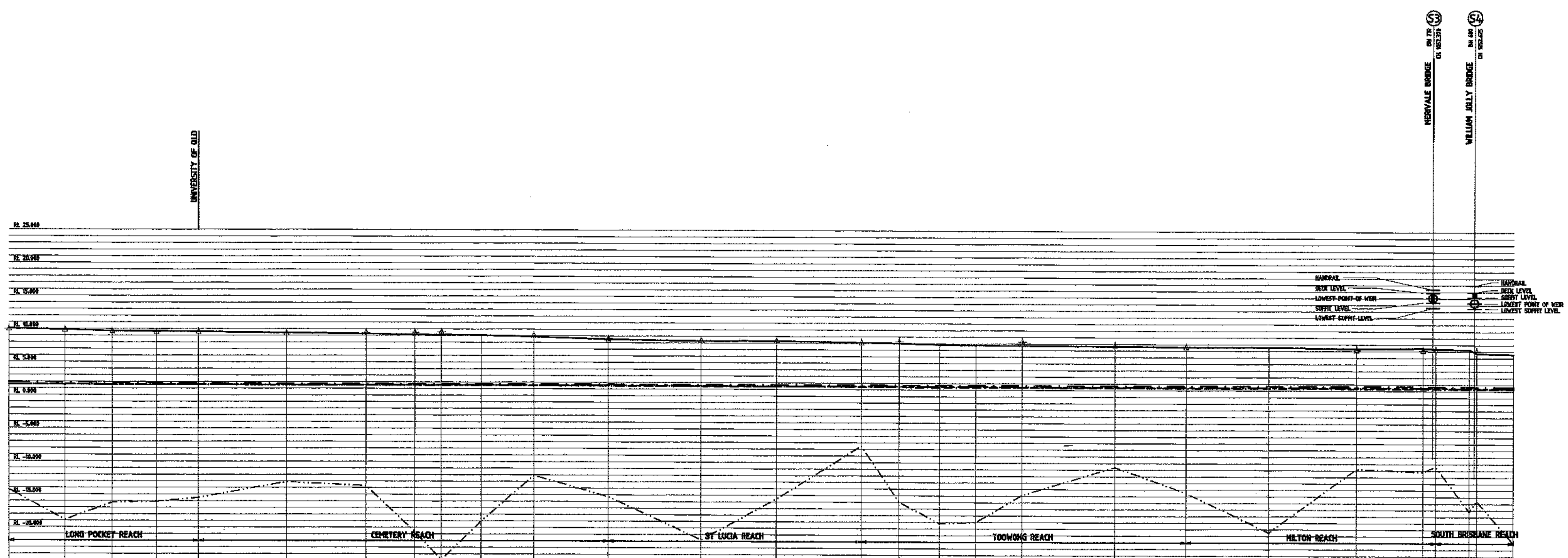
BRISBANE RIVER - BN 1200 TO BN 950

LEGEND

- (S5) LOCATION AND IDENTIFICATION OF STRUCTURE
- [illegible] RECORDED FLOOD LEVEL
- [illegible] RECORDED FLOOD LEVEL
- [illegible] RECORDED FLOOD LEVEL
- [illegible] RECORDED FLOOD LEVEL
- BRISBANE RIVER FLOOD LEVEL - 1974
- COMPUTED WATER LEVEL - JUNE [illegible]
- COMPUTED WATER LEVEL - LATE APRIL [illegible]
- COMPUTED WATER LEVEL - MAY [illegible]
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES



DATUM RL. -25.000

1996 PREDICTED FLOOD LEVEL	1.960	1.910	1.860	1.840	1.810	1.730	1.710	1.710	1.710	1.700	1.700
1989b PREDICTED FLOOD LEVEL	1.590	1.590	1.580	1.570	1.570	1.550	1.540	1.530	1.530	1.530	1.520
1983 PREDICTED FLOOD LEVEL	1.620	1.610	1.590	1.580	1.570	1.550	1.520	1.520	1.520	1.510	1.490
1974 PREDICTED FLOOD LEVEL	10.030	9.860	9.690	9.640	9.600	9.410	9.280	9.190	9.120	9.070	8.880
BED LEVEL (m AHD)	-14.300	-18.900	-16.200	-16.100	-15.500	-13.100	-13.700	-20.600	-24.900	-19.000	-12.100
CROSS SECTION NUMBER	BN 950	BN 940	BN 930	BN 920	BN 910	BN 900	BN 890	BN 880	BN 870	BN 860	BN 850
MIKE 11 CHAINAGE (km)	1043.725	1044.06	1044.36	1044.605	1044.86	1045.4	1045.885	1046.18	1046.34	1046.58	1046.9
AMTD CHAINAGE (km)	34.935	34.600	34.320	34.055	33.800	33.260	32.775	32.480	32.320	32.080	31.760

1996 PREDICTED FLOOD LEVEL	1.700	1.700	1.690	1.690	1.690	1.690	1.680	1.680	1.680	1.670
1989b PREDICTED FLOOD LEVEL	1.510	1.500	1.500	1.480	1.480	1.470	1.470	1.460	1.460	1.450
1983 PREDICTED FLOOD LEVEL	1.470	1.460	1.450	1.420	1.410	1.390	1.390	1.380	1.370	1.350
1974 PREDICTED FLOOD LEVEL	8.490	8.260	8.320	8.080	8.020	7.830	7.820	7.700	7.690	7.550
BED LEVEL (m AHD)	-15.300	-21.800	-15.600	-7.580	-16.000	-19.200	-19.000	-14.900	-10.400	-14.500
CROSS SECTION NUMBER	BN 840	BN 830	BN 820	BN 810	BN 800	BN 790	BN 784	BN 770	BN 760	BN 750
MIKE 11 CHAINAGE (km)	1047.35	1047.915	1048.375	1048.87	1049.12	1049.37	1049.59	1049.87	1050.43	1050.86
AMTD CHAINAGE (km)	31.310	30.745	30.285	29.770	29.540	29.290	29.070	28.790	28.230	27.800

1996 PREDICTED FLOOD LEVEL	1.670	1.670	1.660	1.660	1.660	1.650	1.650
1989b PREDICTED FLOOD LEVEL	1.450	1.430	1.430	1.430	1.420	1.420	1.410
1983 PREDICTED FLOOD LEVEL	1.350	1.330	1.330	1.320	1.310	1.300	1.300
1974 PREDICTED FLOOD LEVEL	7.550	7.370	7.470	7.360	7.260	6.720	4.580
BED LEVEL (m AHD)	-20.500	-10.800	-11.200	-10.400	-17.300	-15.560	-22.000
CROSS SECTION NUMBER	BN 740	BN 730	BN 720	BN 700	BN 698	BN 678	BN 660
MIKE 11 CHAINAGE (km)	1051.36	1051.895	1052.31	1052.39	1052.595	1052.64	1052.865
AMTD CHAINAGE (km)	27.300	26.765	26.350	26.270	26.065	26.020	25.795

LEGEND

- (55) LOCATION AND IDENTIFICATION OF STRUCTURE
- 1974 RECORDED FLOOD LEVEL
- 1983 RECORDED FLOOD LEVEL
- 1989 RECORDED FLOOD LEVEL
- 1996 RECORDED FLOOD LEVEL
- BRISBANE RIVER FLOOD LEVEL - 1974
- COMPUTED WATER LEVEL - JUNE 1983
- COMPUTED WATER LEVEL - LATE APRIL 1989 (1989b)
- COMPUTED WATER LEVEL - MAY 1996
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

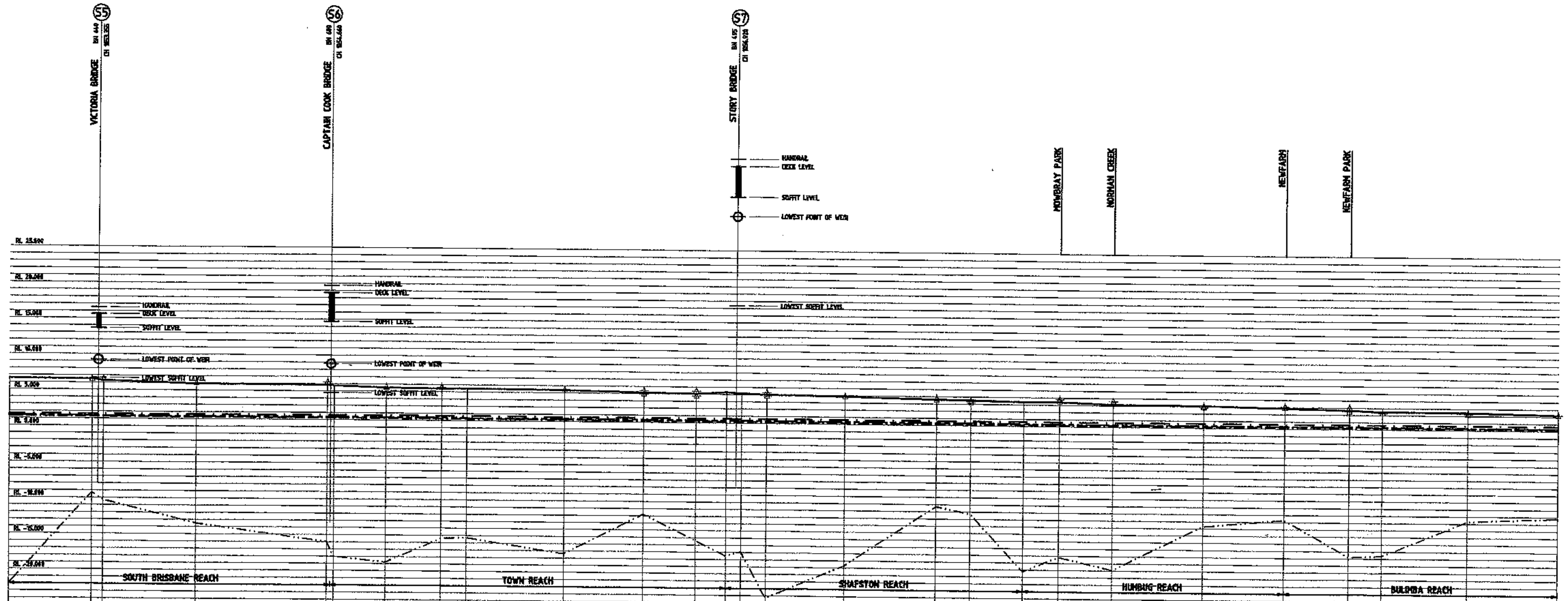
BRISBANE RIVER - BN 950 TO BN 660

SINCLAIR KNIGHT MERZ

FIGURE C-1g

BRISBANE RIVER FLOOD STUDY

MIKE 11 CALIBRATION PROFILE

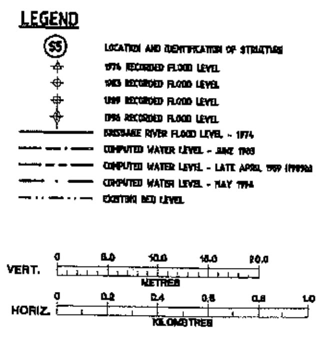


1996 PREDICTED FLOOD LEVEL	1.650	1.650	1.650	1.640	1.640	1.640	1.640	1.640	1.640
1989b PREDICTED FLOOD LEVEL	1.410	1.430	1.400	1.390	1.390	1.380	1.380	1.380	1.370
1983 PREDICTED FLOOD LEVEL	1.300	1.290	1.280	1.260	1.260	1.250	1.230	1.220	1.220
1974 PREDICTED FLOOD LEVEL	6.580	6.560	6.310	5.920	5.840	5.760	5.500	5.450	5.460
BED LEVEL (m AHD)	-22.090	-9.300	-10.300	-13.500	-16.000	-18.000	-18.800	-15.400	-15.300
CROSS SECTION NUMBER	BN 660	BN 650	BN 630	BN 620	BN 610	BN 590	BN 560	BN 550	BN 540
MIKE 11 CHAINAGE (km)	1052.865	1053.32	1053.385	1053.9	1054.44	1054.80	1054.97	1055.28	1055.42
AMTD CHAINAGE (km)	25.795	25.340	25.295	24.760	24.620	23.980	23.690	23.380	23.240

1996 PREDICTED FLOOD LEVEL	1.630	1.630	1.630	1.630	1.630	1.630	1.630	1.620	1.620
1989b PREDICTED FLOOD LEVEL	1.370	1.360	1.360	1.360	1.350	1.350	1.350	1.340	1.340
1983 PREDICTED FLOOD LEVEL	1.210	1.190	1.190	1.190	1.190	1.180	1.180	1.180	1.180
1974 PREDICTED FLOOD LEVEL	5.400	5.140	5.070	5.260	5.170	5.010	4.870	4.610	4.530
BED LEVEL (m AHD)	-17.400	-11.800	-15.400	-17.500	-16.900	-23.300	-18.300	-10.300	-11.300
CROSS SECTION NUMBER	BN 530	BN 520	BN 510	BN 500	BN 490	BN 480	BN 470	BN 460	BN 450
MIKE 11 CHAINAGE (km)	1055.96	1056.4	1056.695	1056.865	1056.95	1057.09	1057.53	1058.04	1058.23
AMTD CHAINAGE (km)	22.700	22.260	21.965	21.795	21.710	21.57	21.130	20.620	20.430

1996 PREDICTED FLOOD LEVEL	1.620	1.620	1.620	1.610	1.610	1.610	1.610	1.610	1.600
1989b PREDICTED FLOOD LEVEL	1.330	1.330	1.330	1.330	1.320	1.320	1.320	1.310	1.310
1983 PREDICTED FLOOD LEVEL	1.160	1.180	1.180	1.180	1.170	1.190	1.190	1.190	1.190
1974 PREDICTED FLOOD LEVEL	4.390	4.430	4.140	4.090	3.880	3.640	3.460	3.440	3.270
BED LEVEL (m AHD)	-19.200	-17.200	-18.900	-12.700	-11.700	-16.880	-16.680	-12.700	-11.300
CROSS SECTION NUMBER	BN 440	BN 430	BN 420	BN 410	BN 400	BN 390	BN 380	BN 370	BN 360
MIKE 11 CHAINAGE (km)	1058.53	1058.735	1059.035	1059.54	1059.99	1060.345	1060.535	1061.015	1061.53
AMTD CHAINAGE (km)	20.130	19.925	19.625	19.120	18.670	18.315	18.125	17.645	17.130

BRISBANE RIVER - BN 660 TO BN 360

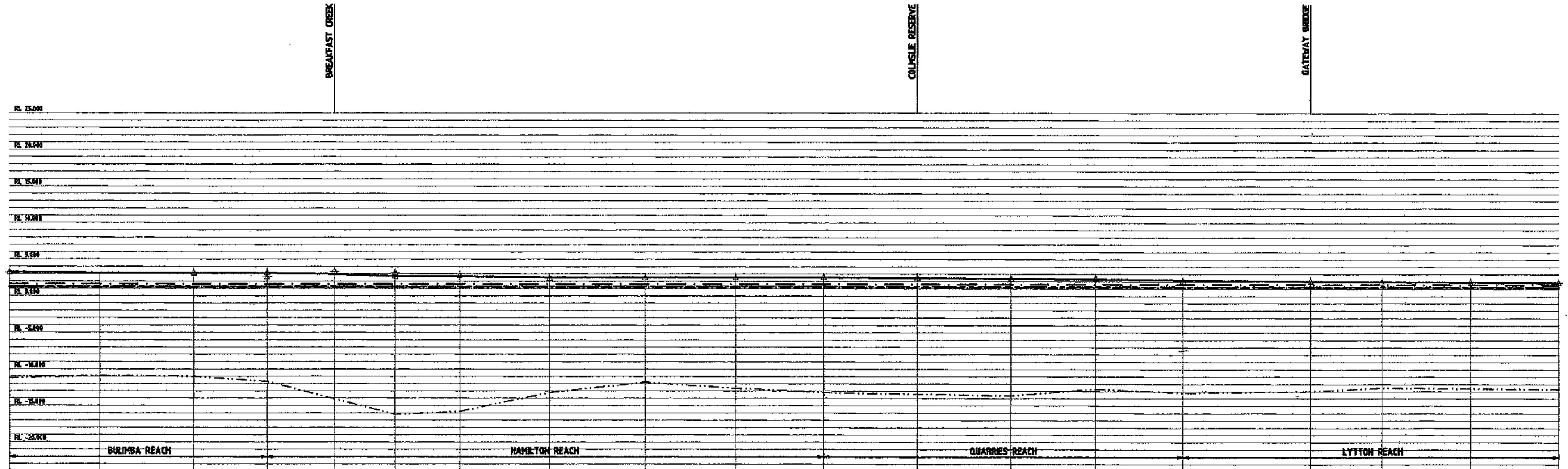


FILE NAME: 4157-107 PLOT SCALE: 1=30 DISK N°: C:\DWG JOB N°: T004157 DATE: 23/3/97

FIGURE C-1h

BRISBANE RIVER FLOOD STUDY

MIKE 11 CALIBRATION PROFILE



DATUM RL. -25.000

1996 PREDICTED FLOOD LEVEL	1.600	1.600	1.600	1.590	1.590	1.590	1.590	1.580	1.580	1.580	1.580	1.570	1.570	1.570	1.570	1.560	1.560	1.560	1.550
1989b PREDICTED FLOOD LEVEL	1.310	1.300	1.300	1.300	1.290	1.290	1.290	1.280	1.280	1.280	1.270	1.270	1.270	1.260	1.260	1.250	1.250	1.250	1.240
1983 PREDICTED FLOOD LEVEL	1.190	1.190	1.190	1.190	1.190	1.190	1.180	1.180	1.180	1.170	1.170	1.170	1.160	1.160	1.160	1.160	1.160	1.150	1.150
1974 PREDICTED FLOOD LEVEL	3.210	3.130	3.080	3.050	2.960	2.690	2.650	2.530	2.550	2.530	2.520	2.450	2.410	2.310	2.190	2.030	1.960	1.900	1.840
BED LEVEL (m AHD)	-11.200	-10.900	-11.000	-11.750	-14.100	-16.200	-15.800	-13.200	-11.800	-12.600	-13.200	-13.400	-13.600	-12.700	-13.300	-13.000	-12.500	-12.600	-12.700
CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
MIKE 11 CHAINAGE (km)	1061.53	1062.02	1062.535	1062.94	1063.31	1063.645	1064	1064.49	1065.01	1065.503	1065.99	1066.505	1067.02	1067.485	1067.965	1068.66	1069.045	1069.535	1070.025
AMTD CHAINAGE (km)	17.130	16.640	16.125	15.720	15.350	15.015	14.660	14.170	13.650	13.157	12.670	12.155	11.640	11.175	10.695	10.000	9.615	9.125	8.635

BRISBANE RIVER - BN 360 TO BN 180

LEGEND

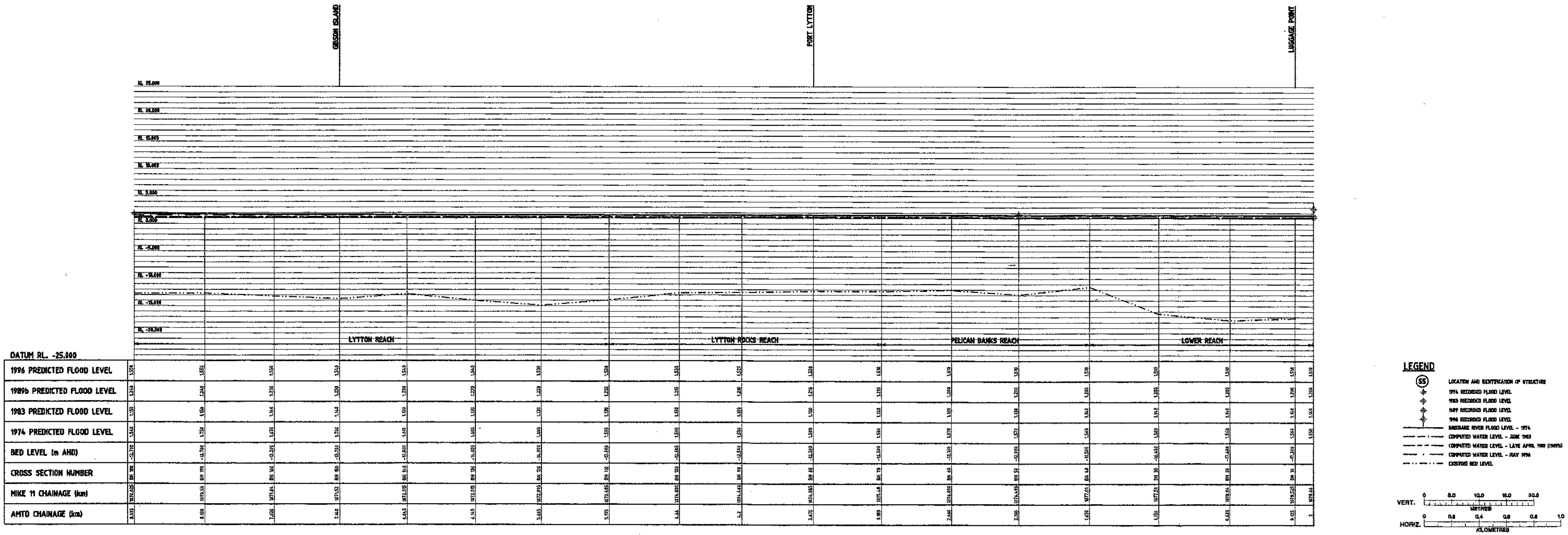
- LOCATION AND IDENTIFICATION OF STRUCTURE
- 1974 RECORDED FLOOD LEVEL
- 1983 RECORDED FLOOD LEVEL
- 1989 RECORDED FLOOD LEVEL
- 1996 RECORDED FLOOD LEVEL
- BRISBANE RIVER FLOOD LEVEL - 1974
- COMPUTED WATER LEVEL - 23RD 1983
- COMPUTED WATER LEVEL - LATE APRIL 1989 (FFMO)
- COMPUTED WATER LEVEL - MAY 1996
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

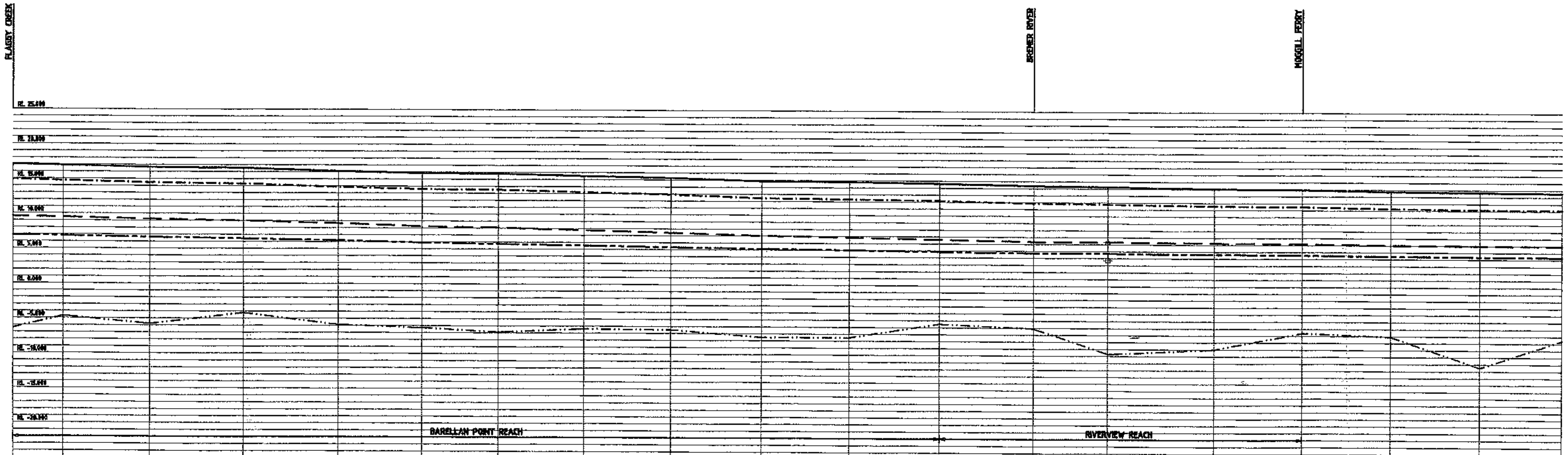
PLOT SCALE: 1=30

FIGURE C-1i
BRISBANE RIVER FLOOD STUDY
MIKE 11 CALIBRATION PROFILE



BRISBANE RIVER - BN 180 TO BN 10

FILE NAME: 4157-107 PLOT SCALE: 1=30

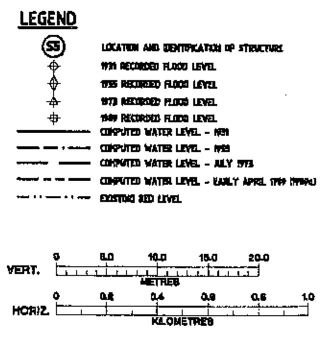


DATUM RL. -25.000

1989a PREDICTED FLOOD LEVEL	6.970(?)	6.820	6.640(?)	6.450	6.180(?)	5.900	5.740	5.540	5.360	5.150
1973 PREDICTED FLOOD LEVEL	9.560	9.460	9.220	9.010	8.660	8.230	8.070	7.730	7.430	7.040
1955 PREDICTED FLOOD LEVEL	14.910	14.730	14.460	14.310	13.860	13.570	13.510	13.180	12.990	12.440
1931 PREDICTED FLOOD LEVEL	17.080	16.910	16.670	16.550	16.110	15.680	15.640	15.530	15.290	14.870
BED LEVEL (m AHD)	-6.400	-4.700	-5.800	-4.300	-5.900	-6.300	-6.900	-6.400	-6.500	-7.500
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930
MIKE 11 CHAINAGE (km)	1000.000	1000.285	1000.775	1001.315	1001.865	1002.350	1002.785	1003.275	1003.775	1004.300
AMTD CHAINAGE (km)	78.660	78.375	77.885	77.345	76.795	76.310	75.875	75.385	74.885	74.360

1989a PREDICTED FLOOD LEVEL	5.030	4.860	4.710	4.700	4.620	4.550	4.430	4.390	4.350
1973 PREDICTED FLOOD LEVEL	6.840	6.590	6.350	6.340	6.240	6.170	6.020	5.970	5.920
1955 PREDICTED FLOOD LEVEL	12.340	12.160	11.860	11.750	11.560	11.500	11.280	11.180	11.130
1931 PREDICTED FLOOD LEVEL	14.800	14.650	14.350	14.230	14.020	13.970	13.740	13.620	13.570
BED LEVEL (m AHD)	-7.500	-5.500	-6.900	-9.700	-9.000	-6.600	-7.100	-11.500	-7.600
CROSS SECTION NUMBER	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1004.810	1005.305	1005.870	1006.300	1006.910	1007.410	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	73.850	73.335	72.790	72.360	71.750	71.250	70.740	70.215	69.735

BRISBANE RIVER - BN 2020 TO BN 1840

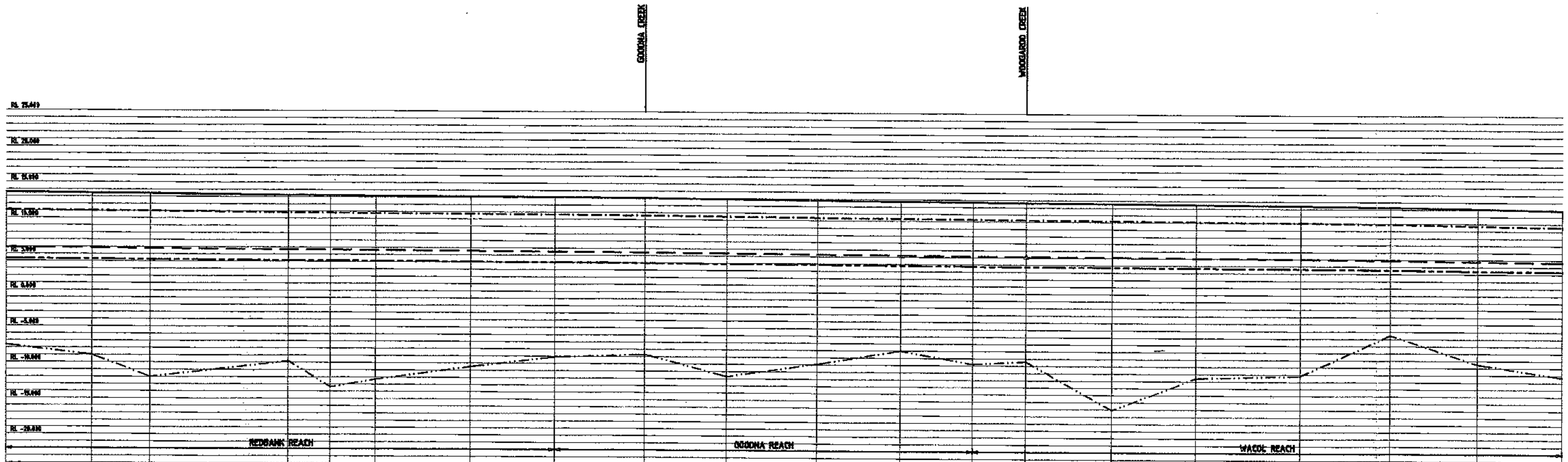


SINCLAIR KNIGHT MERZ

FIGURE C-2b

BRISBANE RIVER FLOOD STUDY

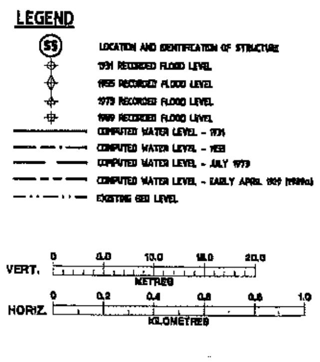
MIKE 11 VERIFICATION PROFILE



DATUM RL. -25.000

1989a PREDICTED FLOOD LEVEL	4.350	4.290	4.260	4.160	4.150	4.120	4.080	4.030	3.970	3.930	3.880	3.820	3.760	3.720	3.720	3.670	3.630	3.550	3.440	3.380
1973 PREDICTED FLOOD LEVEL	5.920	5.840	5.810	5.660	5.660	5.620	5.560	5.500	5.430	5.370	5.300	5.230	5.160	5.110	5.110	5.040	4.990	4.880	4.750	4.660
1955 PREDICTED FLOOD LEVEL	11.130	11.040	11.010	10.870	10.810	10.740	10.720	10.660	10.580	10.500	10.410	10.350	10.280	10.230	10.190	10.100	10.030	9.910	9.730	9.560
1931 PREDICTED FLOOD LEVEL	13.570	13.480	13.450	13.310	13.220	13.160	13.130	13.080	12.990	12.900	12.810	12.750	12.680	12.610	12.580	12.460	12.400	12.280	12.090	11.900
BED LEVEL (m AHD)	-7.460	-9.000	-12.400	-9.090	-13.400	-12.300	-10.500	-9.100	-8.700	-11.700	-9.900	-8.000	-9.800	-9.400	-16.100	-11.400	-11.200	-5.500	-9.500	-11.300
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1008.925	1009.400	1009.720	1010.490	1010.725	1010.980	1011.510	1011.980	1012.475	1012.935	1013.445	1013.910	1014.110	1014.610	1015.090	1015.540	1016.140	1016.640	1017.130	1017.610
AMTD CHAINAGE (km)	69.735	69.260	68.940	68.170	67.935	67.680	67.150	66.680	66.185	65.725	65.215	64.740	64.550	64.050	63.570	63.100	62.520	62.020	61.530	61.050

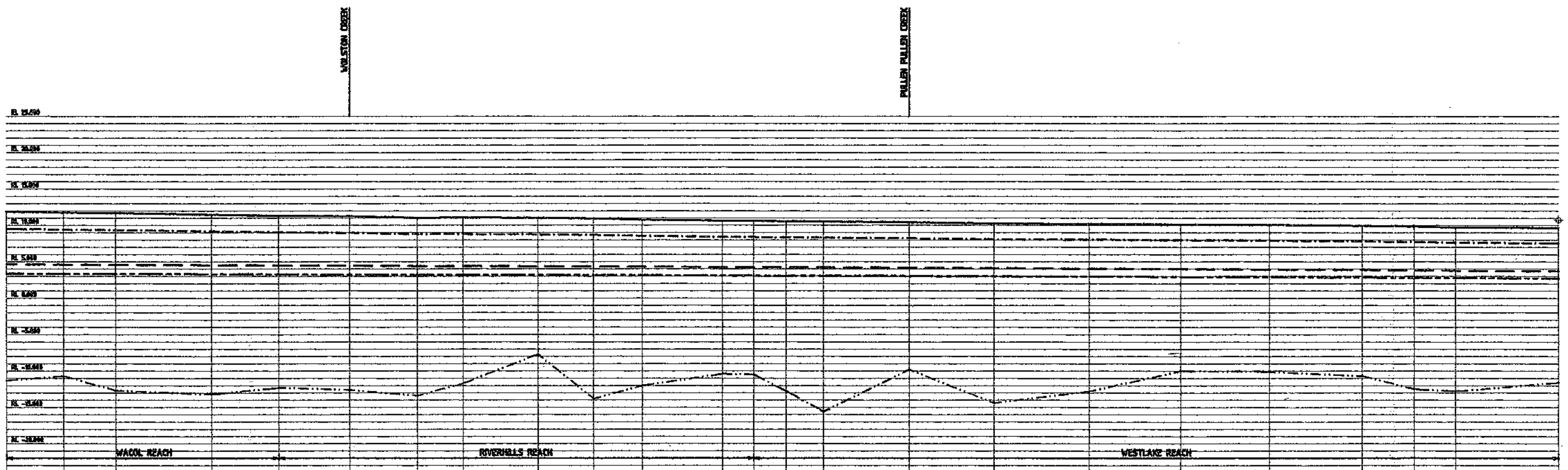
BRISBANE RIVER - BN 1840 TO BN 1650



PLOT SCALE: 1-30

FIGURE C-2c

BRISBANE RIVER FLOOD STUDY
MIKE 11 VERIFICATION PROFILE

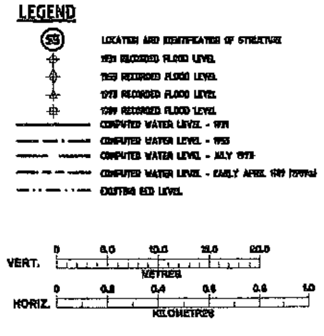


DATUM RL. -25.000

CROSS SECTION NUMBER	1980s PREDICTED FLOOD LEVEL	1973 PREDICTED FLOOD LEVEL	1955 PREDICTED FLOOD LEVEL	1931 PREDICTED FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 1650	3.380	4.660	9.540	11.980	-11.300	1017.410	61.050
BN 1640	3.330	4.590	9.400	11.750	-10.700	1017.920	60.740
BN 1630	3.330	4.590	9.360	11.710	-12.700	1018.200	60.460
BN 1620	3.300	4.540	9.300	11.480	-13.200	1018.725	59.935
BN 1610	3.260	4.490	9.050	11.330	-12.300	1019.095	59.565
BN 1600	3.240	4.440	8.960	11.260	-12.400	1019.490	59.170
BN 1590	3.230	4.410	8.880	11.040	-13.400	1019.865	58.795
BN 1580	3.280	4.400	8.800	11.070	-11.700	1020.115	58.545
BN 1570	3.190	4.390	8.760	11.030	-7.700	1020.525	58.135
BN 1560	3.160	4.360	8.670	10.930	-13.800	1020.830	57.830
BN 1550	3.130	4.340	8.550	10.770	-12.000	1021.095	57.565
BN 1540	3.090	4.250	8.440	10.620	-10.580	1021.539	57.121
BN 1530	3.080	4.240	8.390	10.620	-10.500	1021.715	56.945
BN 1520	3.060	4.210	8.350	10.570	-12.800	1021.895	56.765
BN 1510	3.055	4.210	8.320	10.520	-15.400	1022.105	56.555
BN 1500	3.050	4.170	8.220	10.420	-9.800	1022.575	56.085
BN 1490	2.990	4.100	8.070	10.240	-14.400	1023.040	55.620
BN 1480	2.970	4.460	8.050	10.200	-12.800	1023.576	55.094
BN 1470	2.930	4.000	7.900	10.130	-10.000	1024.080	54.580
BN 1460	2.870	3.920	7.900	10.080	-10.100	1024.563	54.097
BN 1450	2.860	3.870	7.820	9.970	-10.700	1025.070	53.590
BN 1440	2.800	3.810	7.730	9.860	-12.500	1025.360	53.300
BN 1430	2.770	3.760	7.630	9.740	-12.800	1025.590	53.070
BN 1420	2.750	3.730	7.570	9.670	-11.600	1026.170	52.490

BRISBANE RIVER - BN 1650 TO BN 1420

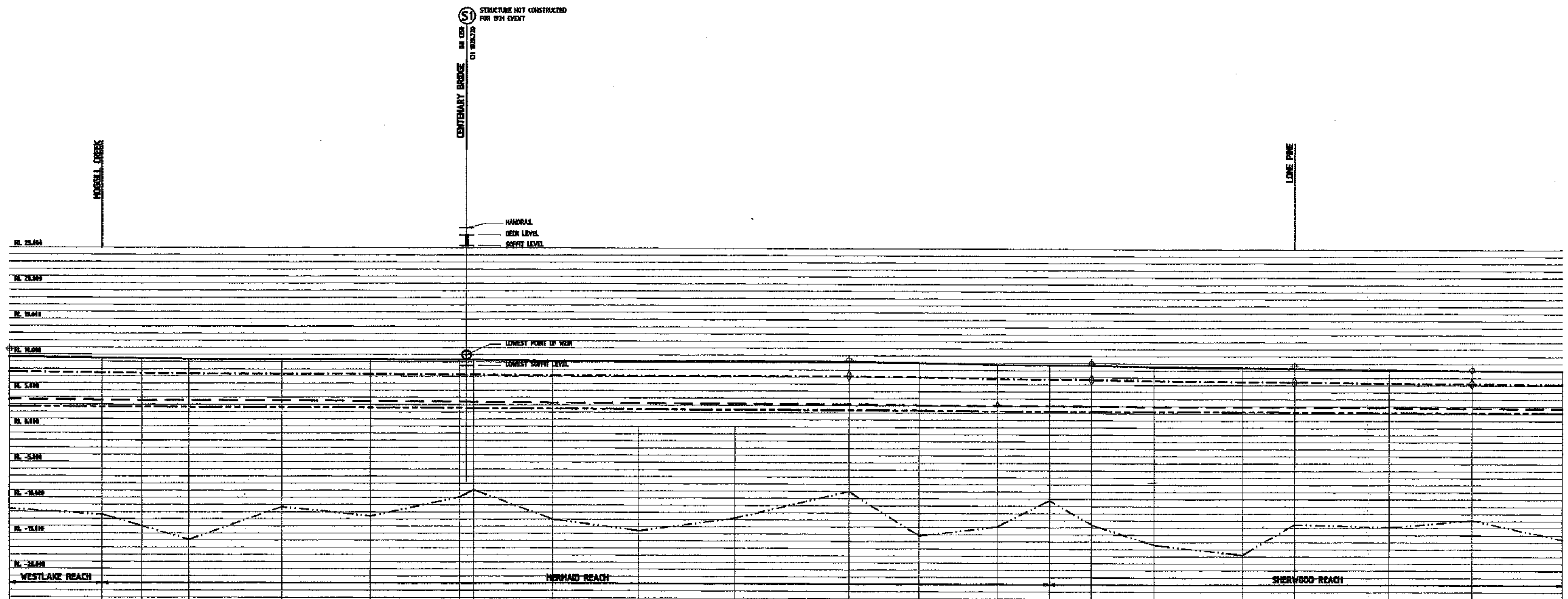
LEGEND



FILE NAME: 4157-112 DISK N: C:\DWG JOB N: T00415? DATE: 23/3/??
PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

FIGURE C-2d
BRISBANE RIVER FLOOD STUDY
MIKE 11 VERIFICATION PROFILE



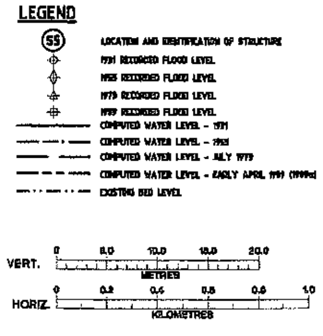
DATUM RL. -25.000

1989a PREDICTED FLOOD LEVEL	2.750	2.700	2.680	2.660	2.640	2.610	2.550	2.510	2.460	2.440	2.410
1973 PREDICTED FLOOD LEVEL	3.730	3.660	3.620	3.600	3.560	3.520	3.440	3.370	3.300	3.270	3.220
1955 PREDICTED FLOOD LEVEL	7.570	7.440	7.390	7.330	7.310	7.300	7.220	7.220	7.130	7.130	7.150
1931 PREDICTED FLOOD LEVEL	9.670	9.550	9.460	9.380	9.380	9.380	9.270	9.270	9.170	9.170	9.120
BED LEVEL (m AHD)	-15.600	-12.410	-14.800	-15.390	-11.330	-12.600	-9.900	-8.900	-13.900	-16.600	-12.800
CROSS SECTION NUMBER	BN 1420	BN 1410	BN 1400	BN 1390	BN 1380	BN 1370	BN 1360	BN 1340	BN 1330	BN 1320	BN 1310
MIKE 11 CHAINAGE (km)	1026.170	1026.680	1026.900	1027.160	1027.680	1028.180	1028.680	1028.760	1029.200	1029.680	1030.220
AMTD CHAINAGE (km)	52.490	51.980	51.760	51.500	50.980	50.480	49.980	49.900	49.460	48.980	48.440

1989a PREDICTED FLOOD LEVEL	2.340	2.320	2.270	2.260	2.250	2.230	2.210	2.190	2.150	2.130	2.100
1973 PREDICTED FLOOD LEVEL	3.150	3.080	3.000	3.000	2.980	2.940	2.920	2.880	2.820	2.780	2.730
1955 PREDICTED FLOOD LEVEL	7.080	7.000	6.800	6.740	6.700	6.570	6.440	6.400	6.270	6.190	6.100
1931 PREDICTED FLOOD LEVEL	9.120	9.020	8.780	8.750	8.680	8.520	8.390	8.310	8.160	8.050	7.950
BED LEVEL (m AHD)	-9.000	-15.200	-13.900	-10.200	-13.600	-16.400	-17.800	-13.500	-13.900	-12.900	-15.600
CROSS SECTION NUMBER	BN 1300	BN 1290	BN 1280	BN 1270	BN 1260	BN 1250	BN 1240	BN 1230	BN 1220	BN 1210	BN 1200
MIKE 11 CHAINAGE (km)	1030.870	1031.260	1031.700	1031.995	1032.230	1032.585	1033.080	1033.370	1033.900	1034.370	1034.830
AMTD CHAINAGE (km)	47.790	47.400	46.960	46.665	46.430	46.075	45.580	45.290	44.760	44.290	43.770

BRISBANE RIVER - BN 1420 TO BN 1200

LEGEND

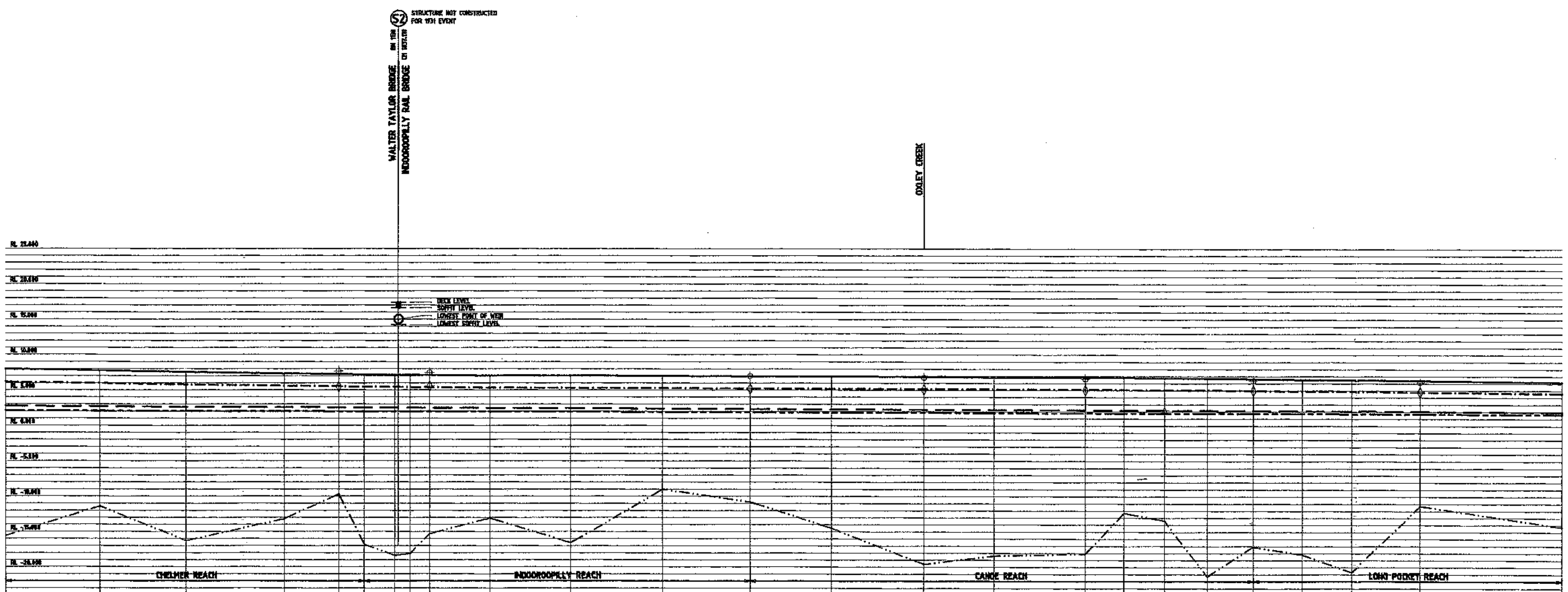


FILE NAME: 4157-115 PLOT SCALE: 1=30 DISK N: C:\DWG JOB N: T00415? DATE: 23/3/97

FIGURE C-2e

BRISBANE RIVER FLOOD STUDY

MIKE 11 VERIFICATION PROFILE



CROSS SECTION NUMBER	AMTD CHAINAGE (km)	MIKE 11 CHAINAGE (km)	BED LEVEL (m AHD)	1931 PREDICTED FLOOD LEVEL	1955 PREDICTED FLOOD LEVEL	1973 PREDICTED FLOOD LEVEL	1989a PREDICTED FLOOD LEVEL
BN 1200	43.770	1034.890	-15.600	7.950	6.180	2.730	2.100
BN 1190	43.246	1035.414	-11.400	7.380	5.950	2.670	2.040
BN 1180	42.760	1035.900	-16.300	7.550	5.770	2.600	2.020
BN 1170	42.280	1036.440	-13.200	7.330	5.590	2.550	1.990
BN 1160	41.890	1036.770	-9.700	7.260	5.520	2.530	1.970
BN 1150	41.765	1036.915	-16.800	7.160	5.450	2.510	1.960
BN 1140	41.570	1037.090	-18.400	7.160	5.440	2.510	1.960
BN 1120	41.485	1037.175	-18.100	7.130	5.440	2.490	1.950
BN 1110	41.375	1037.285	-15.300	7.090	5.360	2.470	1.940
BN 1100	41.035	1037.625	-13.100	7.050	5.320	2.440	1.920
BN 1090	40.575	1038.085	-16.660	7.020	5.300	2.430	1.920
BN 1080	40.060	1038.600	-9.000	6.990	5.250	2.370	1.880
BN 1070	39.560	1039.100	-10.800	6.950	5.220	2.310	1.840
BN 1060	39.050	1039.565	-14.500	6.940	5.210	2.270	1.820
BN 1050	38.570	1040.080	-19.600	6.920	5.200	2.250	1.810
BN 1040	38.170	1040.490	-18.400	6.830	5.130	2.210	1.790
BN 1030	37.560	1041.010	-18.150	6.840	5.140	2.200	1.780
BN 1020	37.430	1041.230	-12.300	6.800	5.100	2.190	1.770
BN 1010	37.200	1041.460	-13.400	6.750	5.060	2.170	1.750
BN 1000	36.960	1041.700	-21.900	6.730	5.040	2.170	1.760
BN 990	36.700	1041.960	-17.100	6.620	4.960	2.130	1.740
BN 980	36.425	1042.235	-18.200	6.520	4.890	2.100	1.720
BN 970	36.145	1042.515	-20.700	6.500	4.870	2.090	1.710
BN 960	35.750	1042.910	-11.300	6.610	4.780	2.040	1.680
BN 950	34.935	1043.725	-14.300	6.170	4.590	1.930	1.620

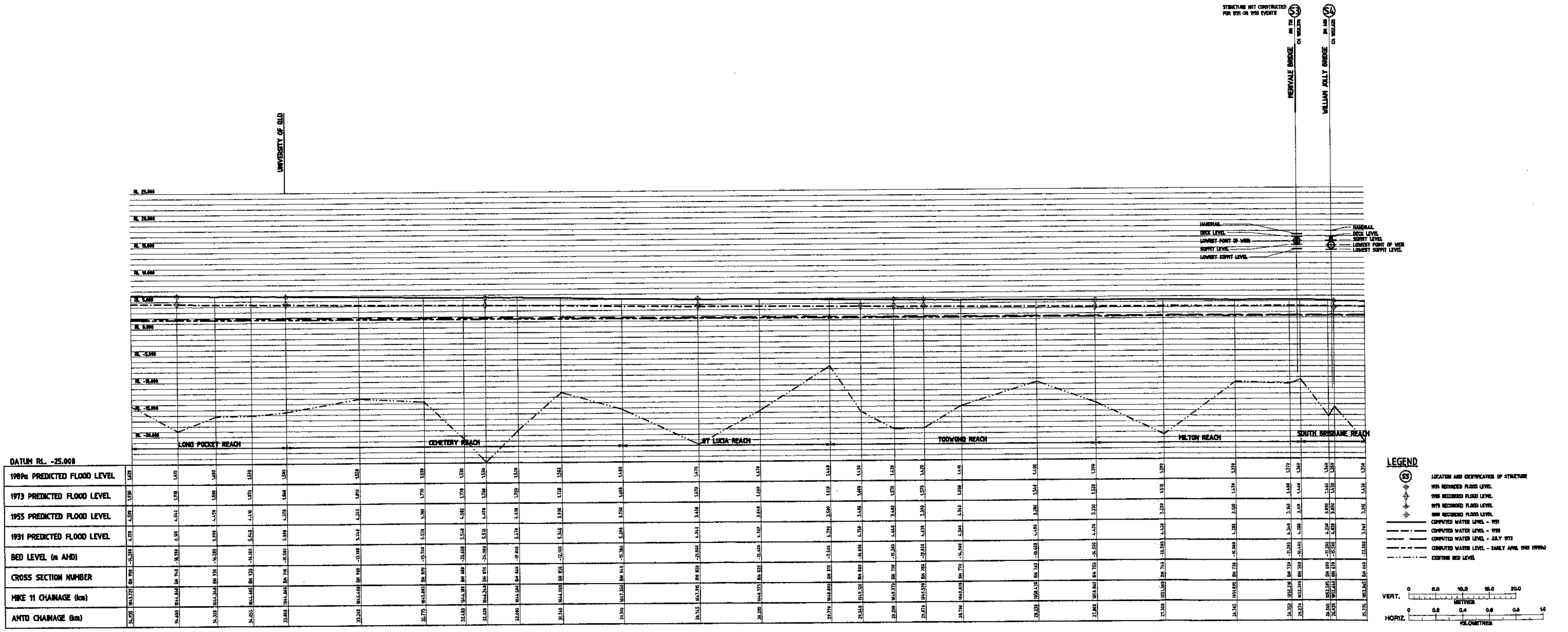
BRISBANE RIVER - BN 1200 TO BN 950

LEGEND

- LOCATION AND IDENTIFICATION OF STRUCTURE
- 1931 RECORDED FLOOD LEVEL
- 1955 RECORDED FLOOD LEVEL
- 1974 RECORDED FLOOD LEVEL
- 1989 RECORDED FLOOD LEVEL
- COMPUTED WATER LEVEL - 1931
- COMPUTED WATER LEVEL - 1955
- COMPUTED WATER LEVEL - JULY 1973
- COMPUTED WATER LEVEL - EARLY APRIL 1989
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

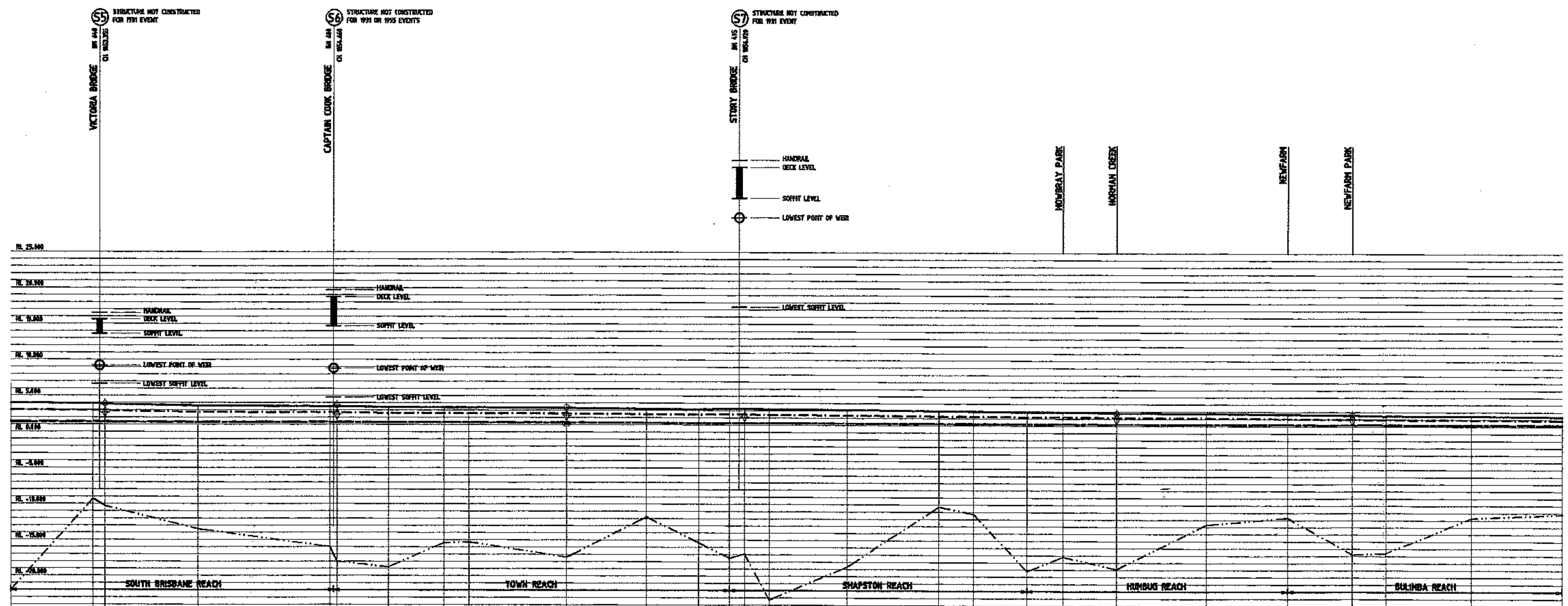


BRISBANE RIVER - BN 950 TO BN 660

FIGURE C-2g

BRISBANE RIVER FLOOD STUDY

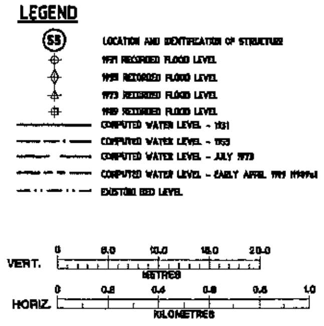
MIKE 11 VERIFICATION PROFILE



CROSS SECTION NUMBER	1989a PREDICTED FLOOD LEVEL	1973 PREDICTED FLOOD LEVEL	1955 PREDICTED FLOOD LEVEL	1931 PREDICTED FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 660	1.350	1.430	3.010	3.980	-22.000	1052.885	25.795
BN 650	1.350	1.420	2.970	3.910	-9.300	1053.320	25.360
BN 630	1.330	1.390	2.910	3.840	-10.300	1053.385	25.295
BN 620	1.320	1.370	2.720	3.570	-13.500	1053.900	24.760
BN 610	1.320	1.370	2.680	3.520	-16.000	1054.440	24.320
BN 590	1.310	1.360	2.480	3.520	-18.000	1054.460	23.980
BN 560	1.300	1.330	2.590	3.400	-18.800	1054.970	23.690
BN 550	1.300	1.320	2.570	3.370	-15.400	1055.280	23.380
BN 540	1.300	1.320	2.570	3.370	-15.300	1055.420	23.240
BN 530	1.290	1.310	2.540	3.330	-17.400	1055.960	22.700
BN 520	1.280	1.280	2.460	3.200	-11.000	1056.400	22.260
BN 510	1.280	1.270	2.430	3.160	-15.400	1056.695	21.965
BN 500	1.280	1.280	2.490	3.260	-17.500	1056.865	21.795
BN 490	1.280	1.270	2.460	3.260	-16.960	1056.950	21.710
BN 480	1.270	1.260	2.410	3.190	-23.300	1057.090	21.570
BN 470	1.260	1.250	2.370	3.180	-18.700	1057.530	21.130
BN 460	1.250	1.220	2.280	2.990	-10.300	1058.040	20.620
BN 450	1.250	1.210	2.250	2.950	-11.300	1058.230	20.430
BN 440	1.240	1.210	2.210	2.890	-17.200	1058.530	20.130
BN 430	1.240	1.210	2.220	2.500	-17.200	1058.735	19.925
BN 420	1.230	1.210	2.140	2.780	-18.900	1059.035	19.625
BN 410	1.220	1.210	2.110	2.750	-12.700	1059.540	19.120
BN 400	1.220	1.210	2.040	2.650	-11.700	1059.990	18.670
BN 390	1.210	1.210	1.980	2.550	-16.800	1060.345	18.315
BN 380	1.210	1.210	1.940	2.480	-16.400	1060.535	18.125
BN 370	1.200	1.210	1.920	2.450	-11.700	1061.035	17.645
BN 360	1.200	1.210	1.560	2.360	-11.200	1061.530	17.130

BRISBANE RIVER - BN 660 TO BN 360

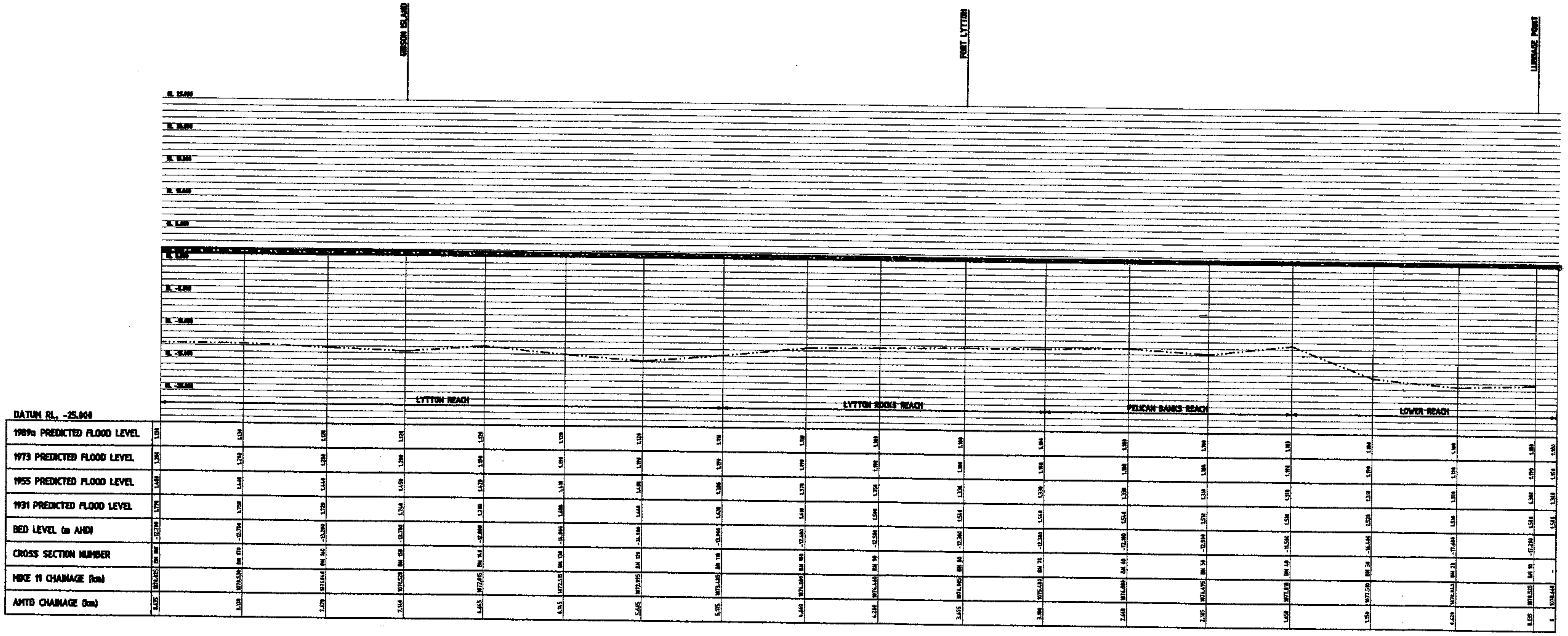
LEGEND



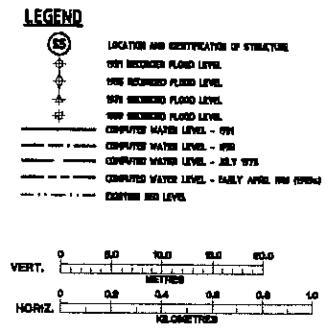
FILE NAME: 4157-10 PLOT SCALE: 1:30 DRWN: C.NDWG JOB No: T004 DATE: 23/3/

FIGURE C-2i

BRISBANE RIVER FLOOD STUDY
MIKE 11 VERIFICATION PROFILE



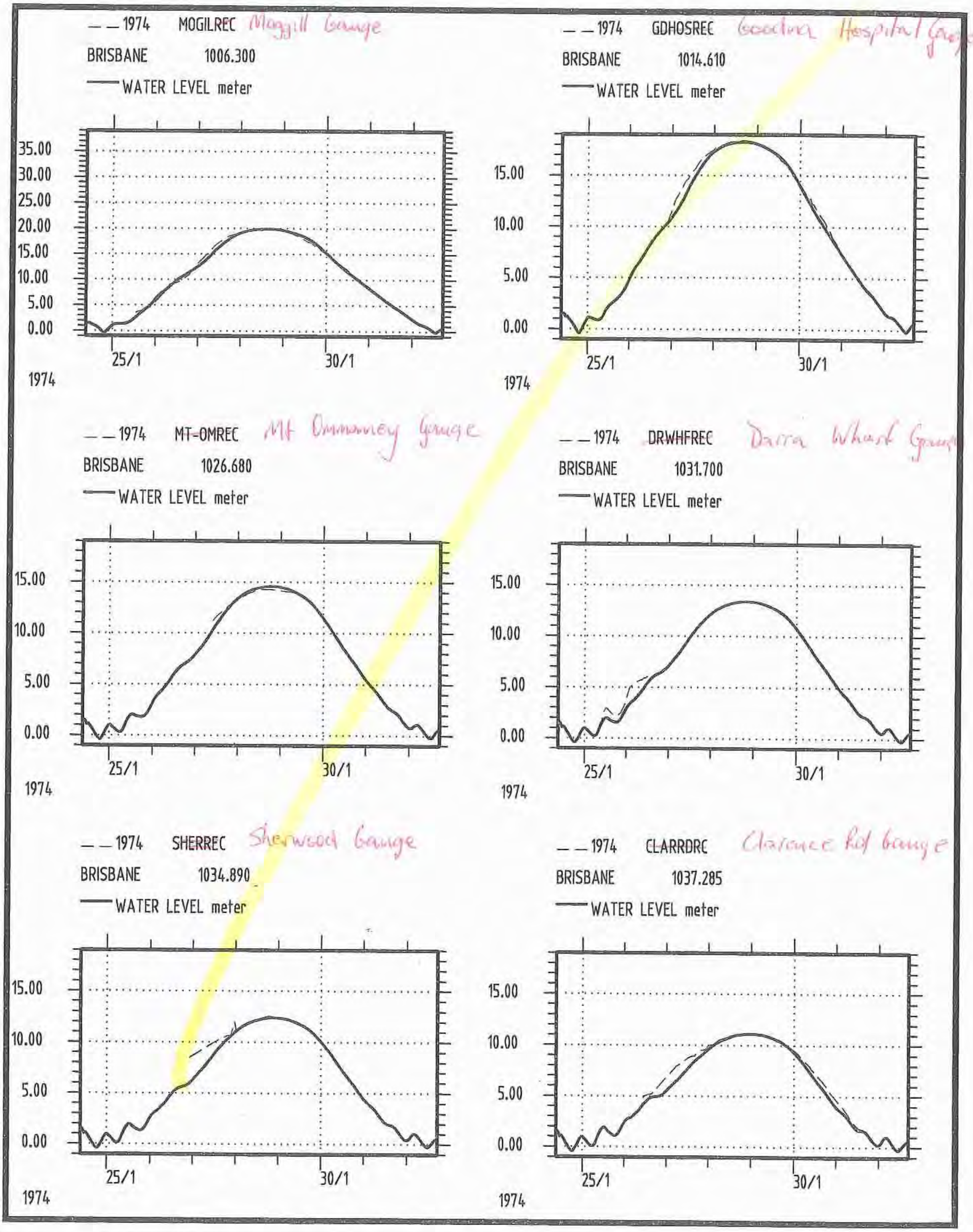
BRISBANE RIVER - BN 180 TO BN 10



FILE : 415'
PLOT SCALE: 1-30

FIGURE C-3a

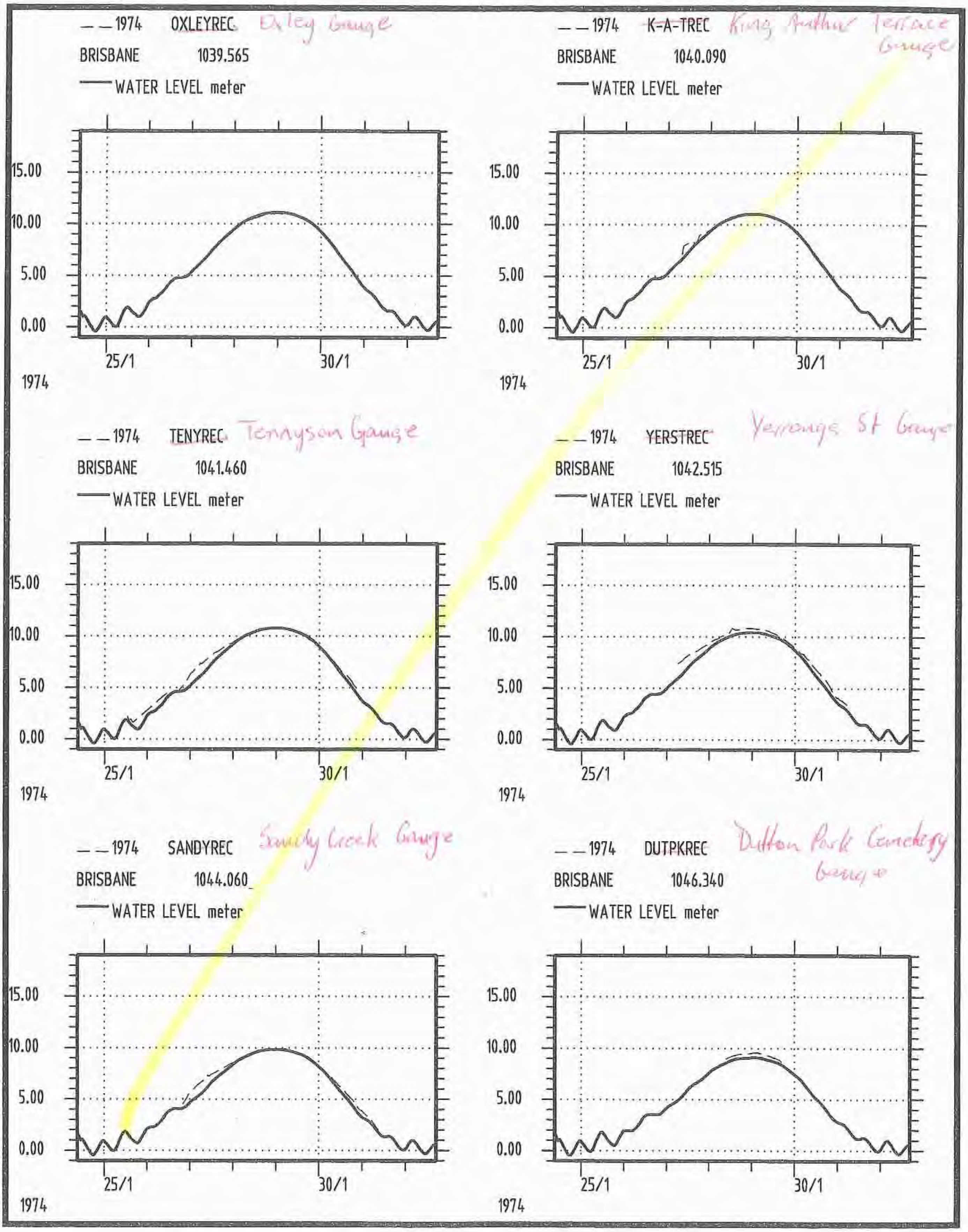
BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - JANUARY 1974



SINCLAIR KNIGHT MERZ

FIGURE C-3b

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - JANUARY 1974

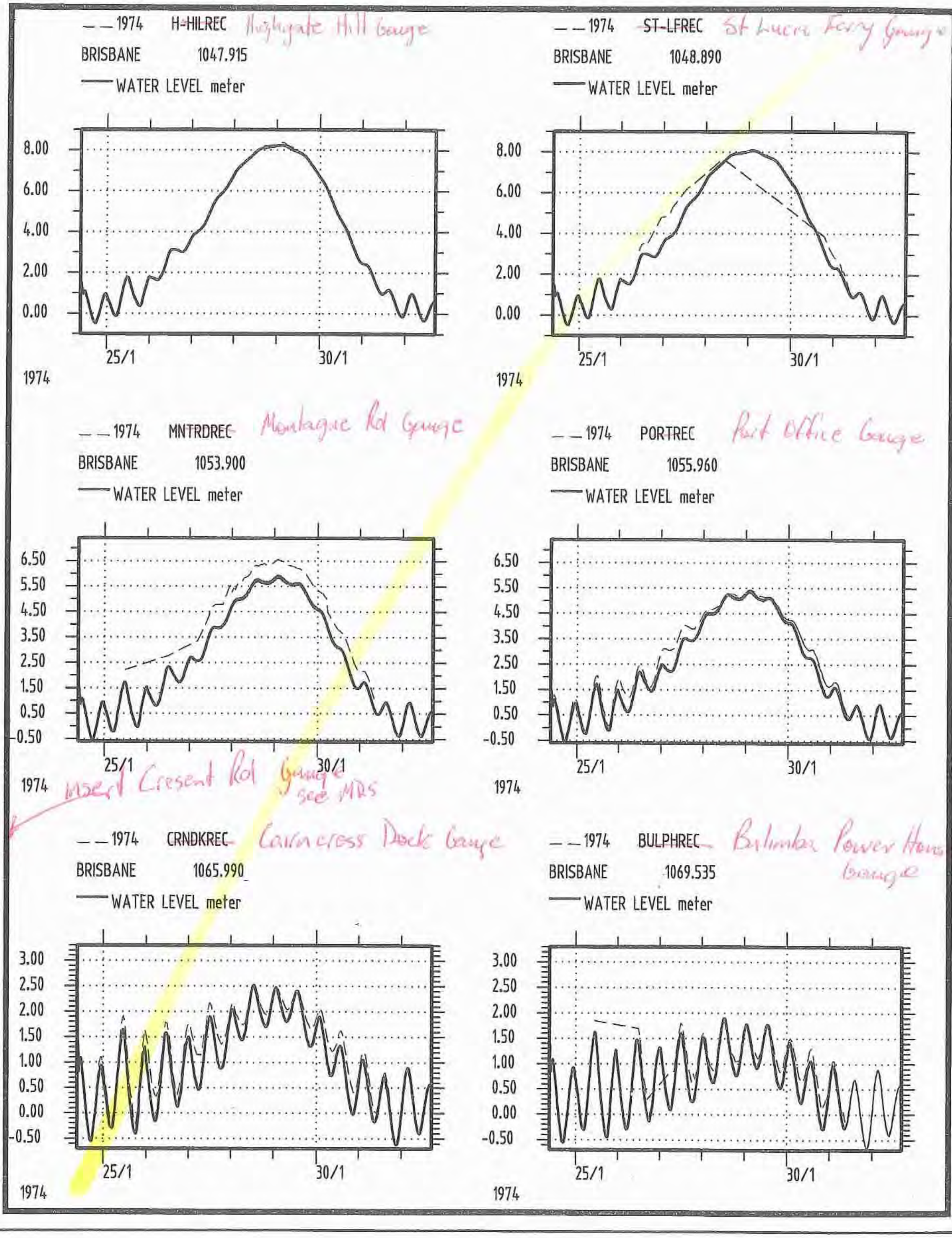


FILE NAME: FIGC3-B DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98
PLOT E: 1=.

SINCLAIR KNIGHT MERZ

FIGURE C-3c

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - JANUARY 1974

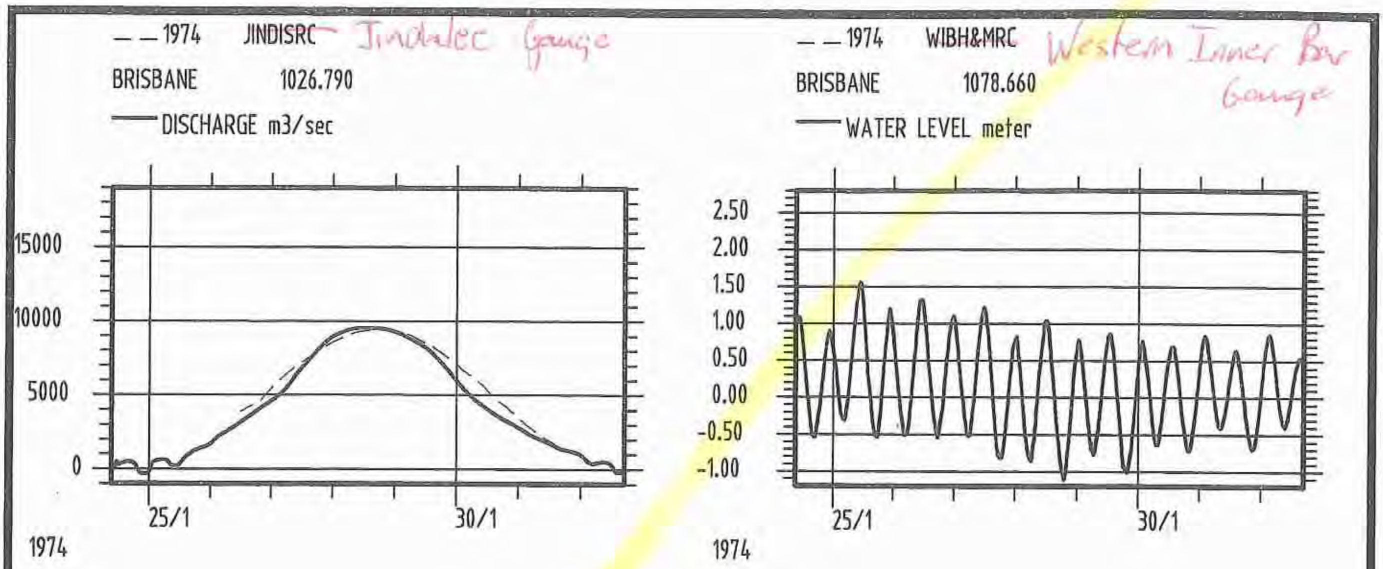


FILE NAME: FIGC-3C PLOT SCALE: 1=1 DISK Nº: G:\ JOB Nº: T00457 DATE: 17-2-98

FIGURE C-3d

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - JANUARY 1974

SINCLAIR KNIGHT MERZ

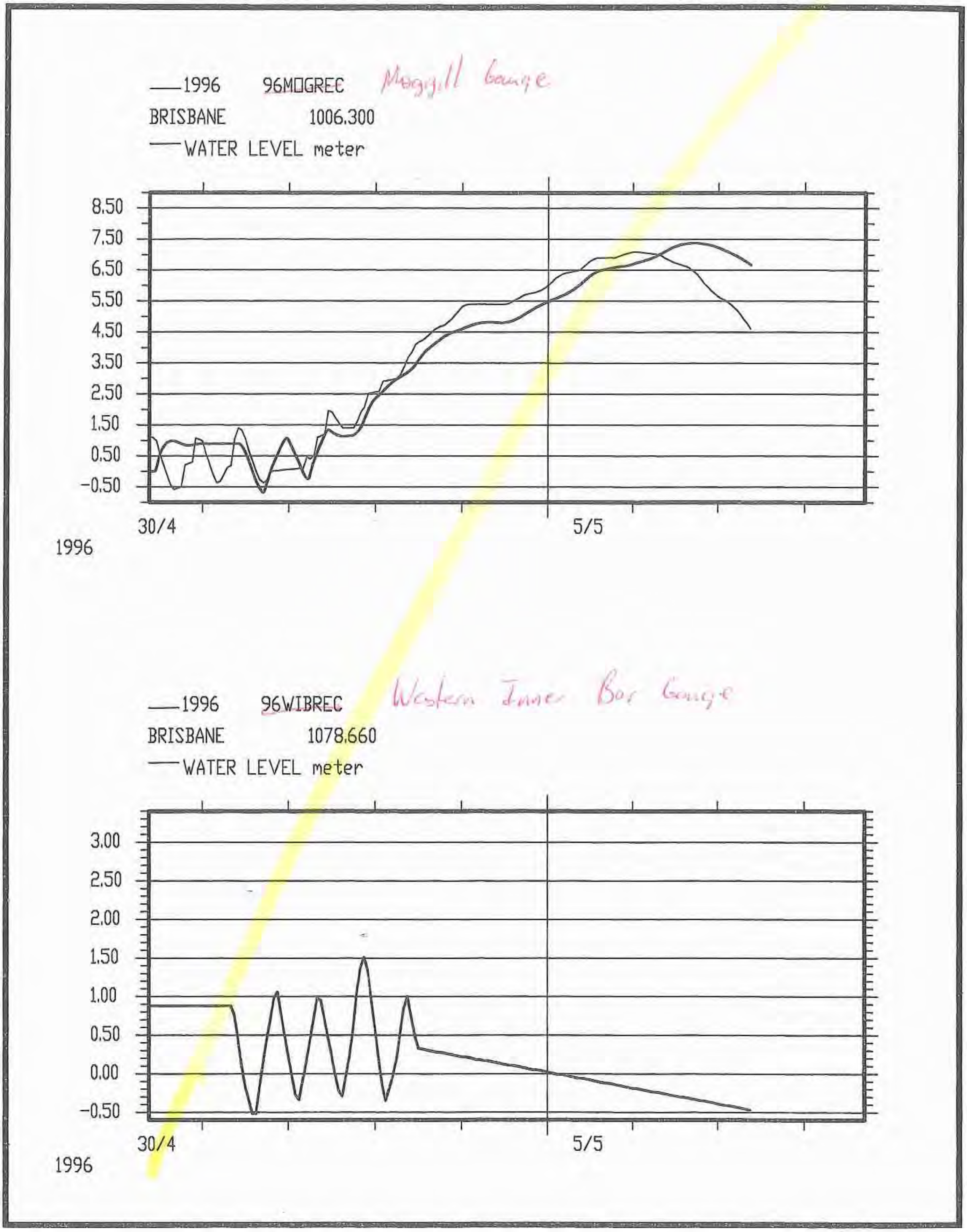


FILE NAME: FIGC-3D DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98
PLOT ..E: 1=

FIGURE C-4

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - MAY 1996

SINCLAIR KNIGHT MERZ



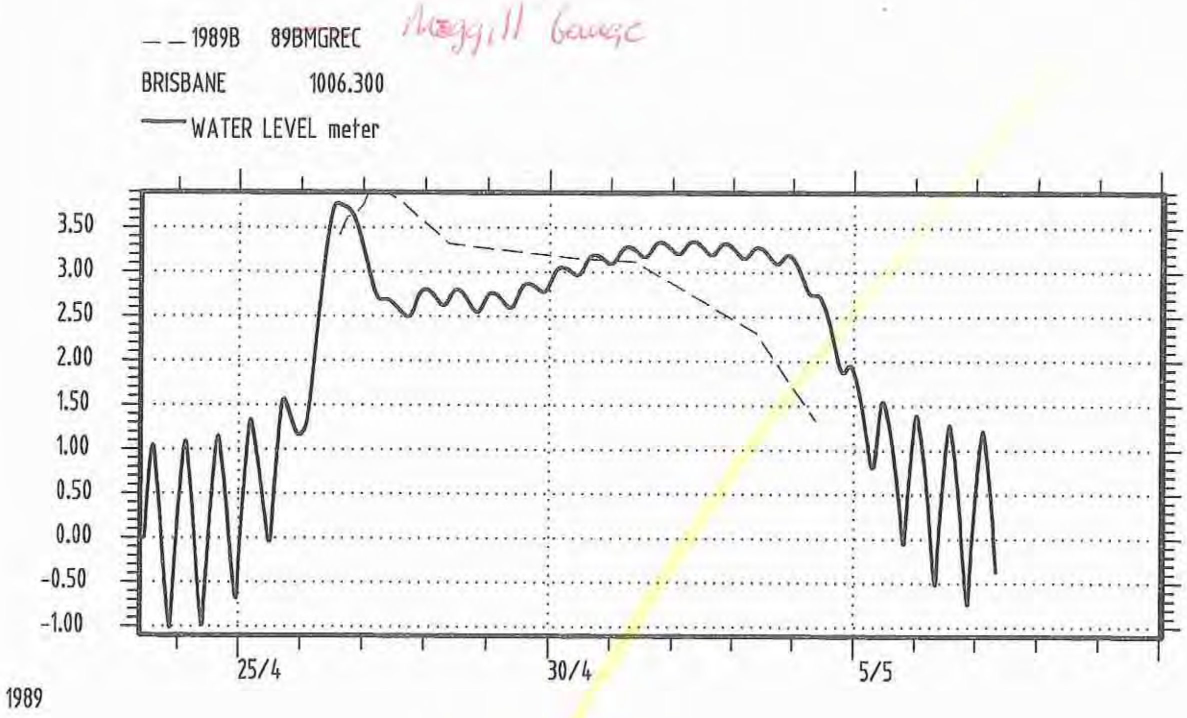
FILE NAME: FIGC-4 DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98
PLOT SCALE: 1=

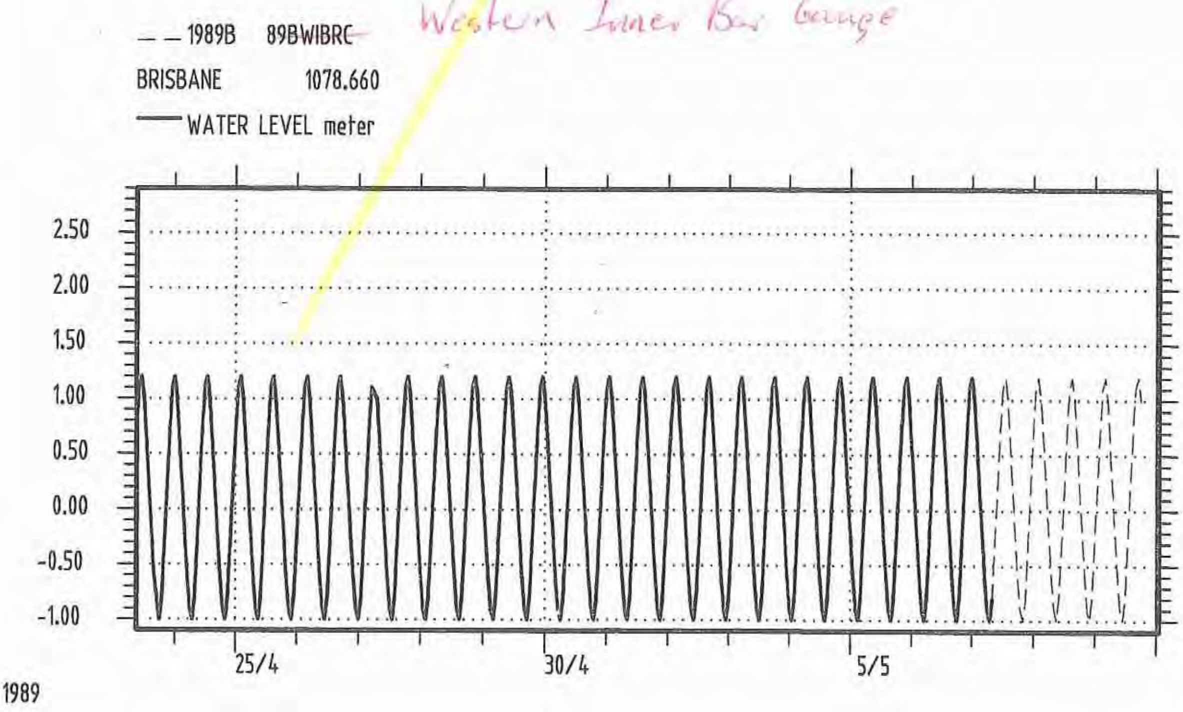
245

FIGURE C-5

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - LATE APRIL 1989

SINCLAIR KNIGHT MERZ





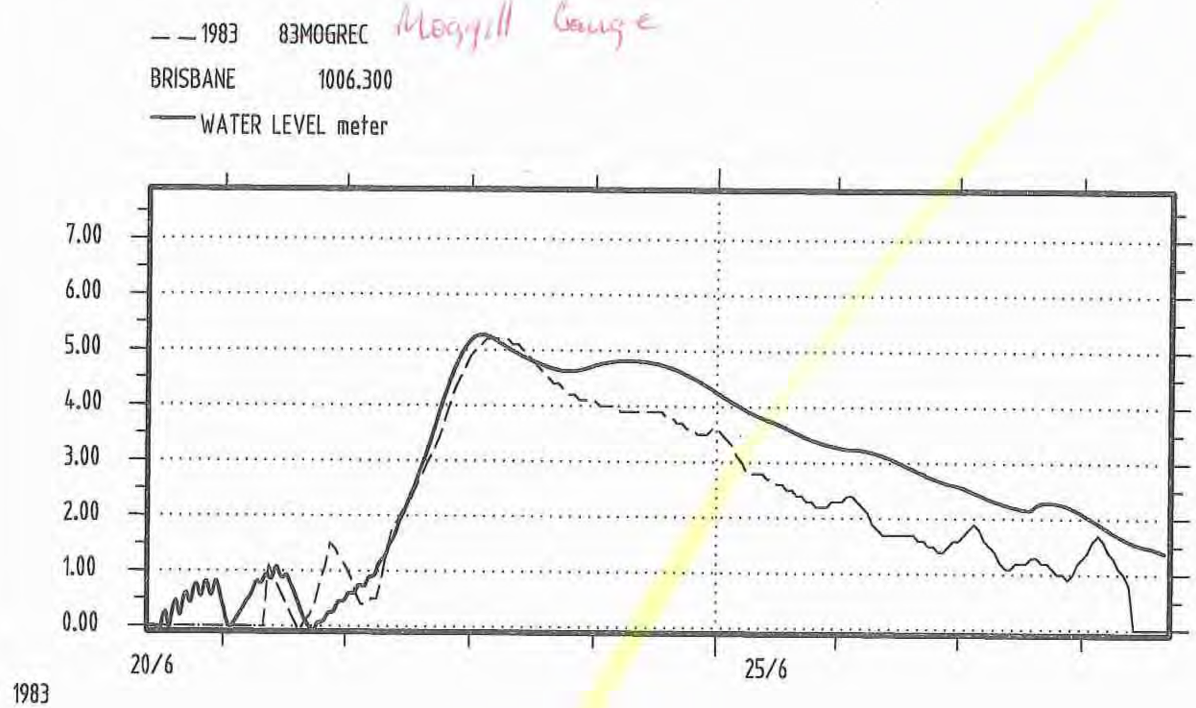
FILE NAME: FIGC-5 PLO LE: 1= DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

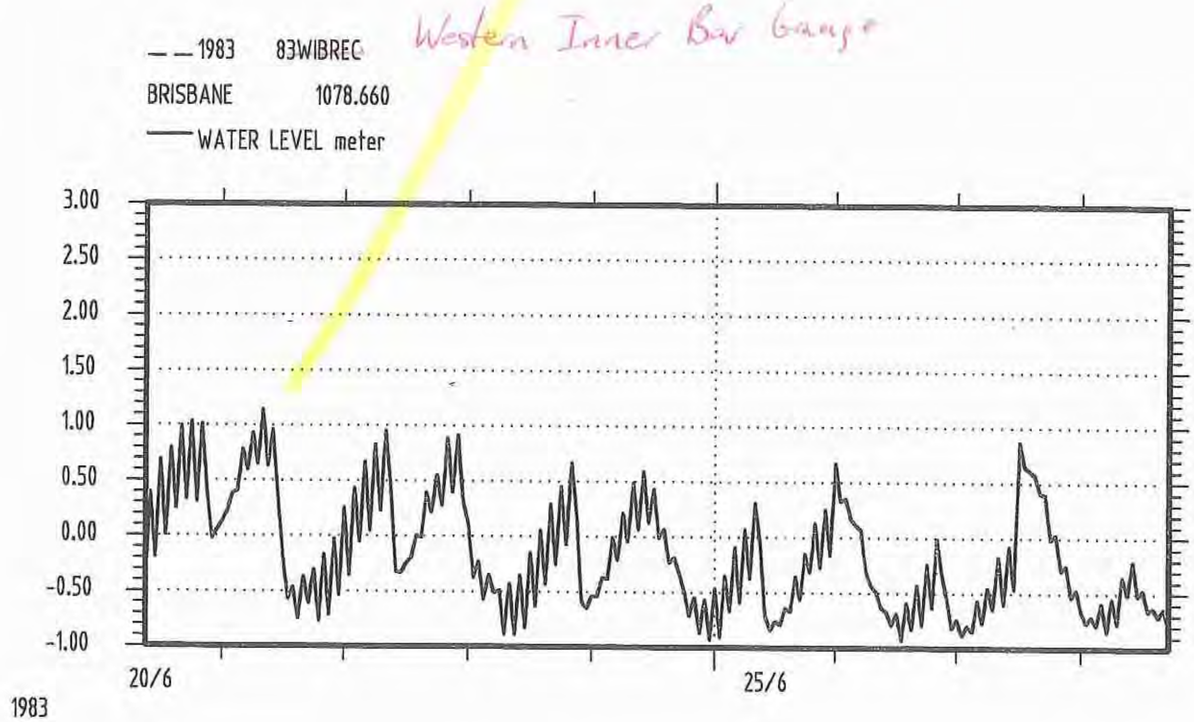
246

FIGURE C-6

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - JUNE 1983

SINCLAIR KNIGHT MERZ





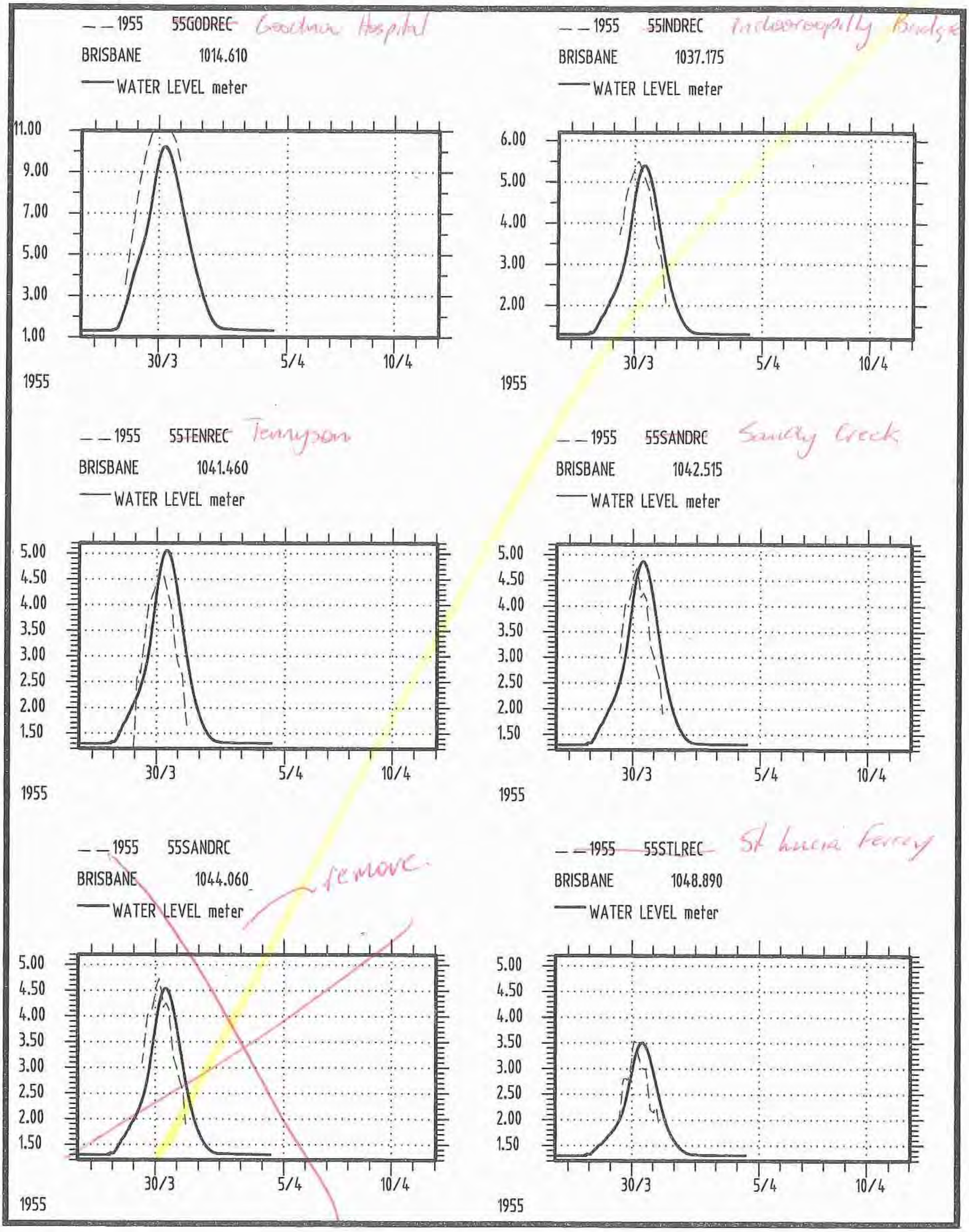
DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

FILE NAME: FIGC-6
PLC. ...LE: 1-,

SINCLAIR KNIGHT MERZ

FIGURE C-7a

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - MARCH 1955

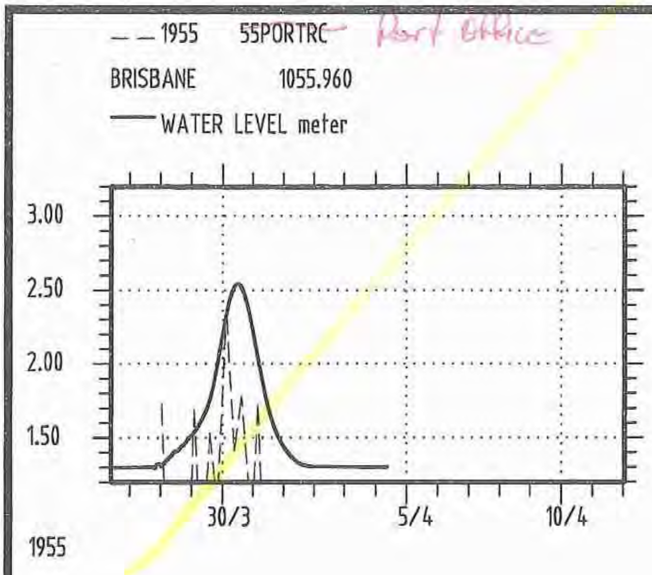


FILE NAME: FIGC-7A DISK Nº: G:\ JOB Nº: T004157 DATE: 17-2-98
PLOT SCALE: 1=

SINCLAIR KNIGHT MERZ

FIGURE C-7b

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - MARCH 1955



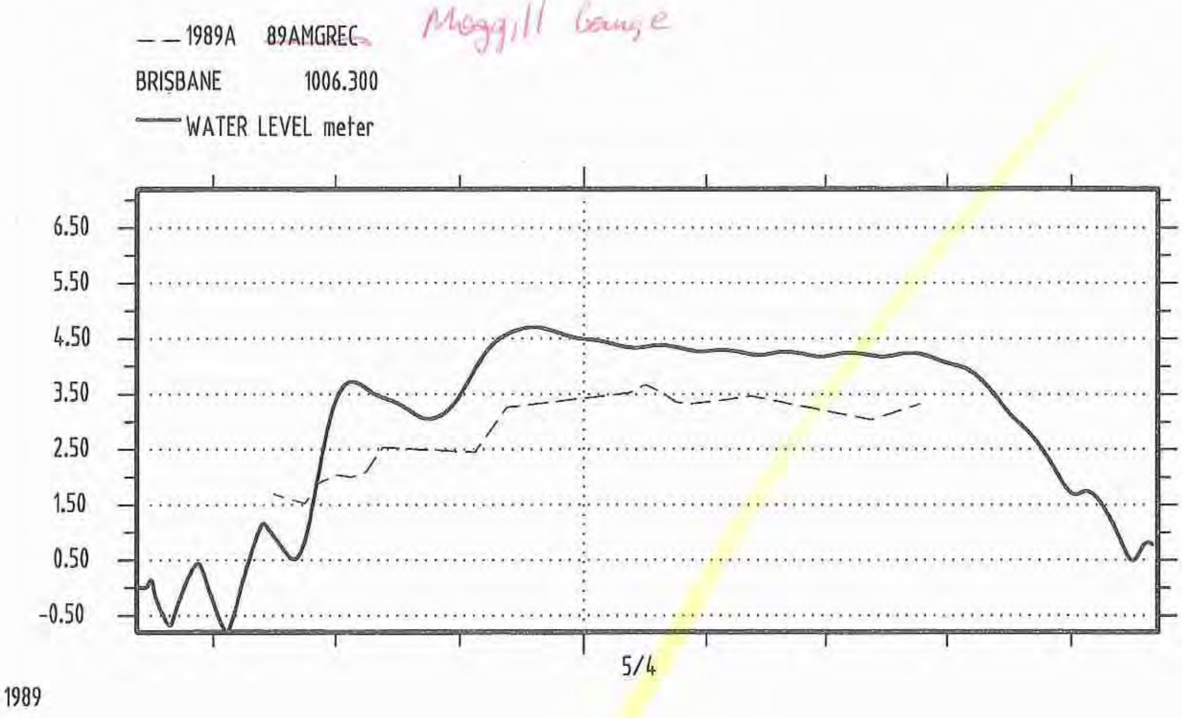
Moved to Figure C-7.

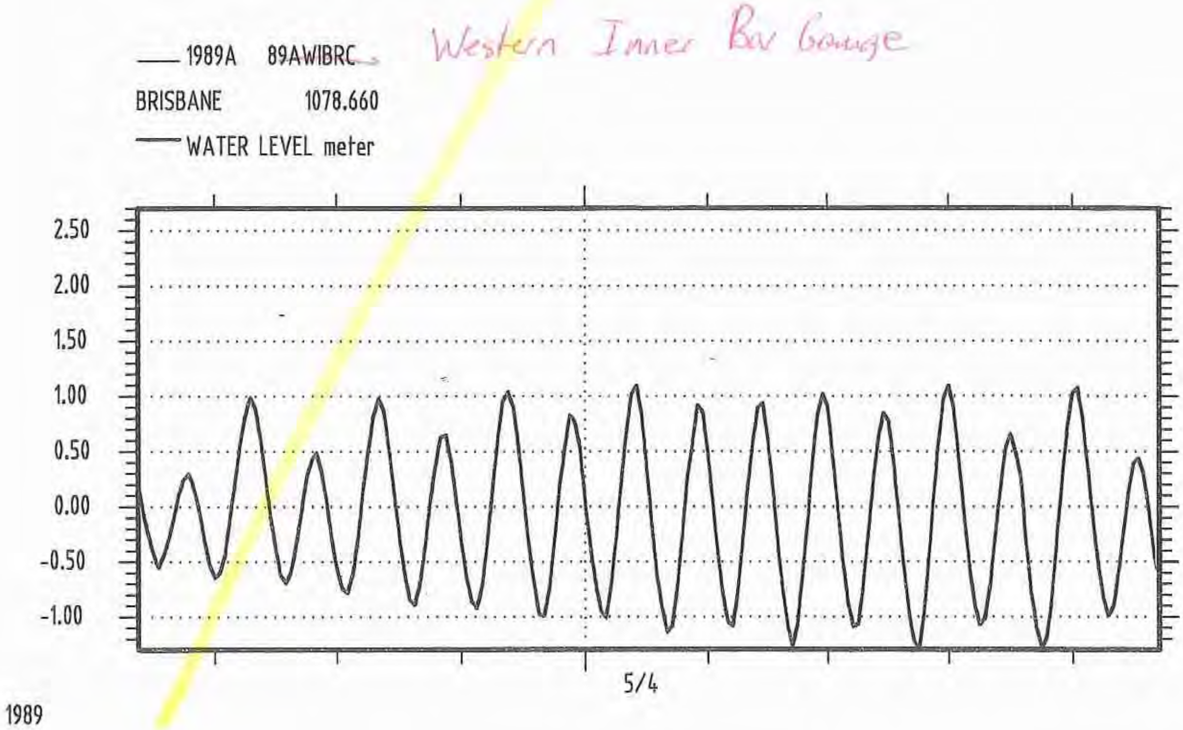
FILE NAME: FIGC-7B DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98
PLOT SCALE: 1=1

FIGURE C-8

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - EARLY APRIL 1989





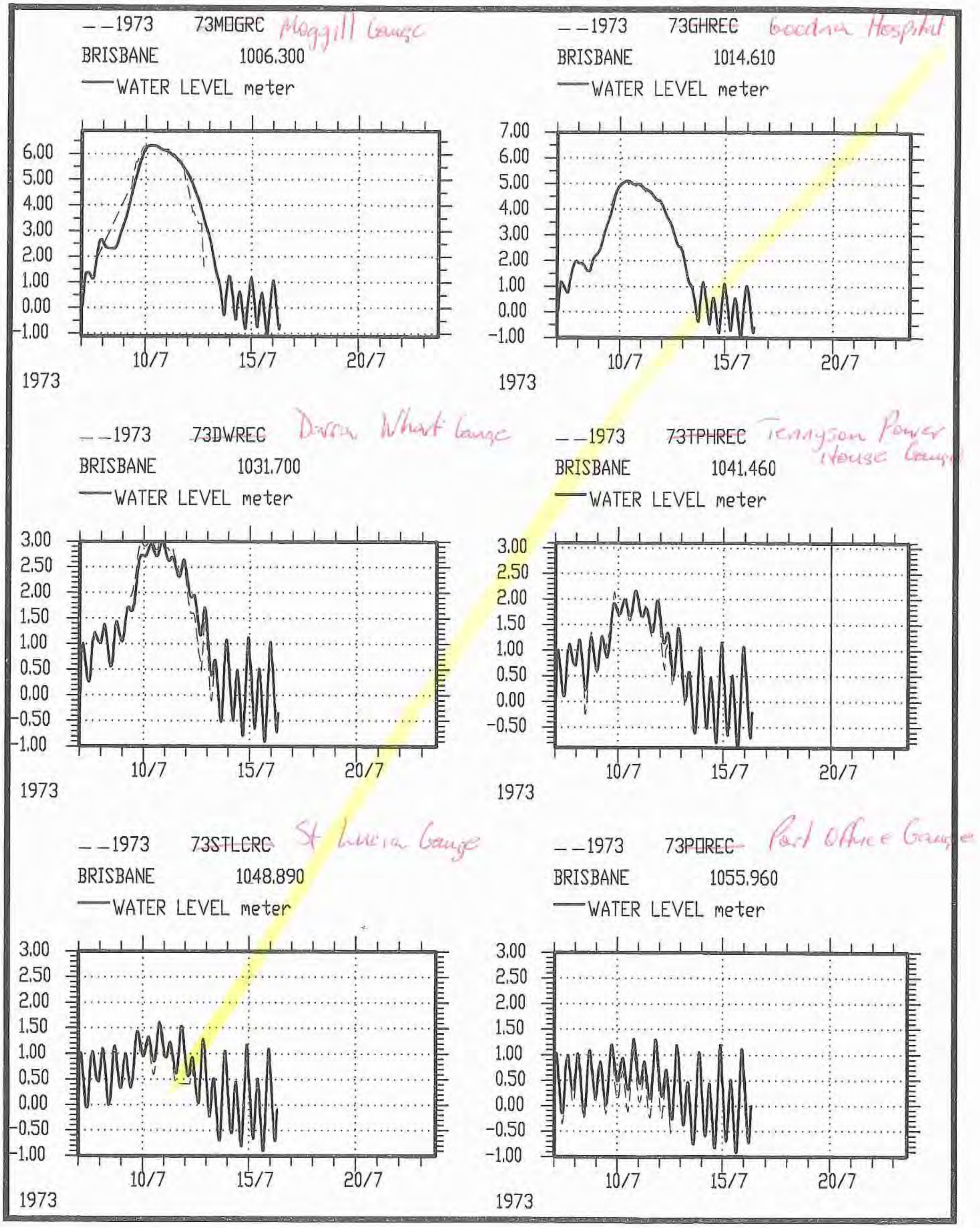
DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

FILE NAME: FIGC-8
PLOT SCALE: 1=1

FIGURE C-9a

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - JULY 1973

SINCLAIR KNIGHT MERZ

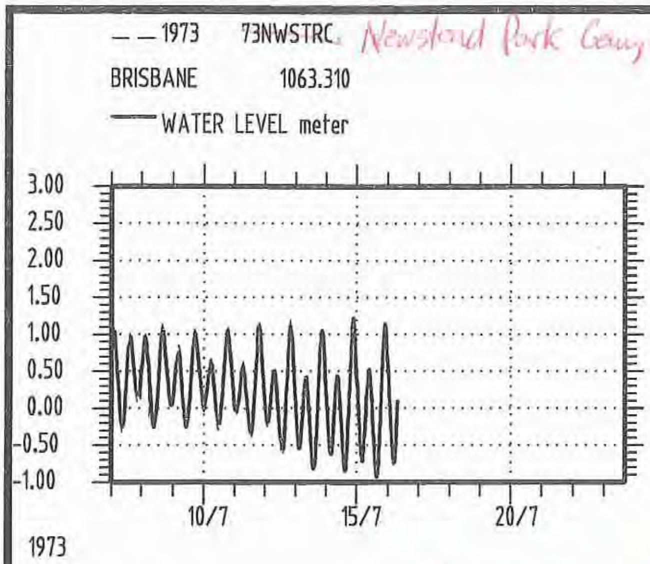


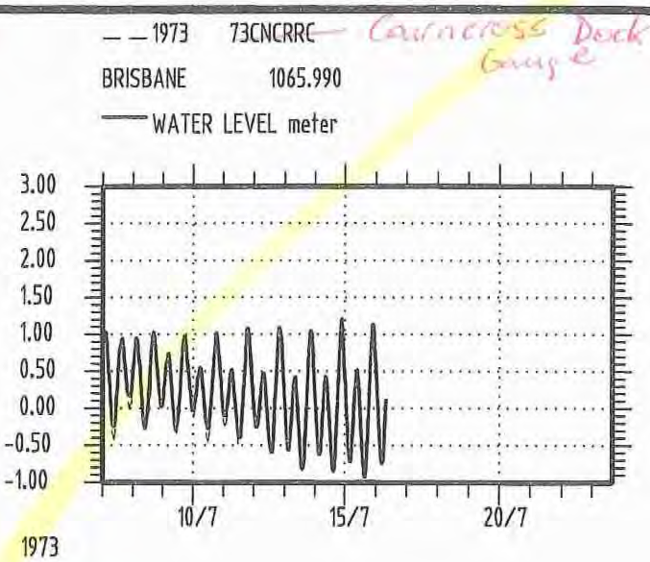
FILE NAME: FIGC-9A PLOT .E: 1=. DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

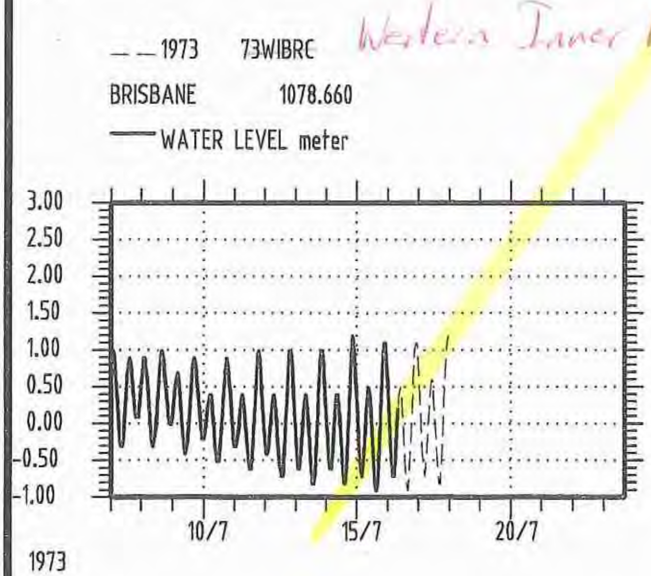
FIGURE C-9b

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
PREDICTED AND RECORDED HYDROGRAPH
COMPARISON - JULY 1973







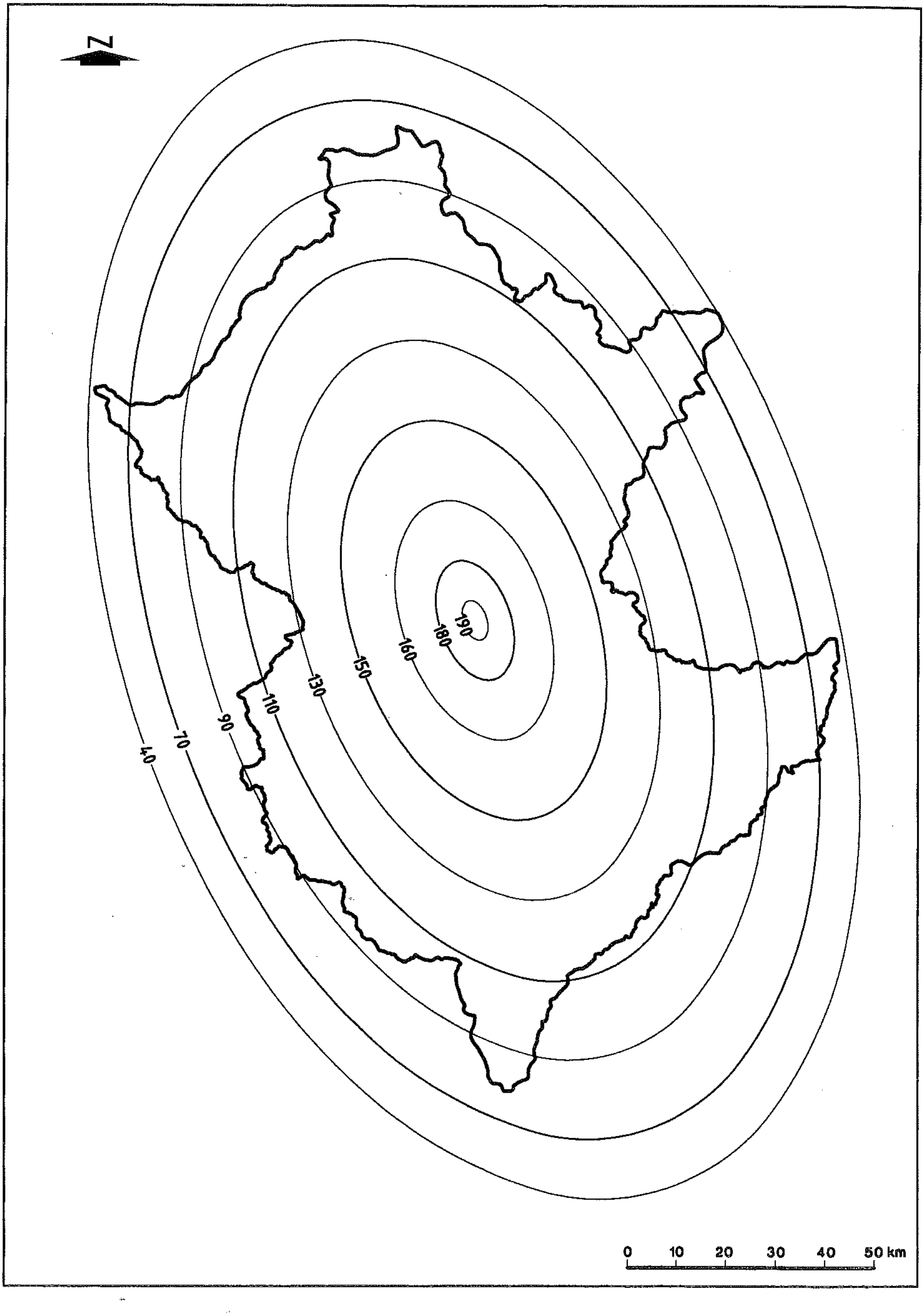
FILE NAME: FIGC-9B DISK Nº. G:\ JOB Nº. T00457 DATE: 17-2-98
PLOT SCALE: 1=1

Appendix D - Generalised Tropical Storm Method

SINCLAIR KNIGHT MERZ

FIGURE D-1

BRISBANE RIVER FLOOD STUDY
GENERALISED TROPICAL STORM METHOD (GTSM)
DESIGN ISOHYETAL PATTERN FOR THE
DISTRIBUTION OF PMP FOR AREAS > 2000 km^2



FILE NAME: 04157-64 DISK N°: C:\DWG JOB N°: T004157 DATE:
PL... ..ALE: ...

Appendix E - Adjustment of Historical Streamflows to Account for the Effects of Somerset

Figure E-1 - Relationship Between Discharges at Woodford and Silverton

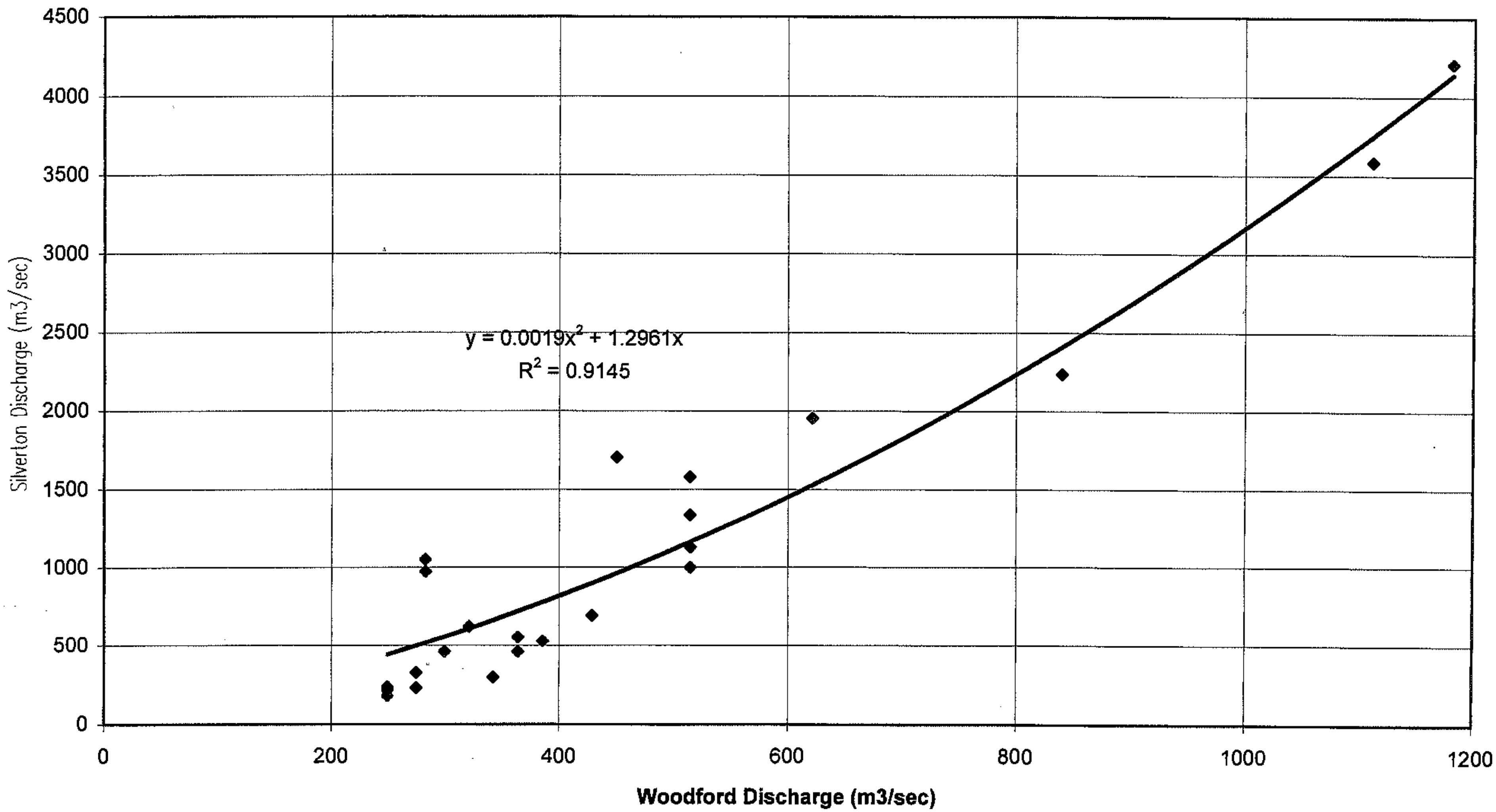


Table E-1 - Calculation of Adjustment Factor for Post Somerset Dam Flows

Date	Recorded Discharge at Woodford (Cumecs)	Calculated Discharge at Somerset Dam (Cumecs)	Recorded Discharge at Somerset Dam (Peak Monthly) (Cumecs)	Adjustment Factor (Calculated - Actual Discharge) (Cumecs)
9/03/72	149	3621	1781	1840
3/04/72	664	2270	1175	1095
30/10/72				
8/07/73	879	2605	2070	535
14/01/74	191	4109		
25/01/74	1111	3495	1081	2414
17/02/74	250	442		
12/03/74	579	132	194	0
9/01/75	132	204	0	204
24/12/75	149	235	3	0
20/01/76	514	1200	1098	102
23/02/76	258	461	8	0
3/03/76	224	387	176	0
14/03/76	266	480		
26/03/78	72	103	0	103
2/04/78	60	85	0	85
25/01/79	111	167		
10/02/79	54	76	0	76
8/05/80	195	325	4	0
9/05/80	233	405		
9/02/81			0	0
16/02/81	360	713	0	713
17/02/81	250	442	0	442
8/04/81	54	76	0	76
23/05/81	60	85	6	0
21/01/82	707	1867	0	1867
21/01/82	660	1683	0	1683
4/03/82	90	132	0	132
16/03/82	54	76	0	76
3/05/83	72	103	0	103
24/05/83	224	387	0	387
24/05/83	216	369	0	369
29/05/83				
19/06/83	237	414	0	414
20/06/83	300	560	7	0
22/06/83	729	1953		1953
22/06/83	840	2236	1475	761
7/07/83	36	49	0	49
22/11/83	72	103		103
30/11/83	216	369		369
2/12/83	42	58	0	58
9/04/84	72	103		103
28/07/84	195	325		325
8/11/84	42	58		58
11/03/85	300	560		560
9/07/85	300	560		560

Note: - Calculated discharge at Somerset is based on the flows at Woodford, as illustrated in Figure E-1 - Relationship Between Discharges at Woodford and Silverton

Table E-2 - Historical Data at Woodford and Silverton (1920-1985)

Date	Time	Level (m)	Discharge at Woodford (m^3/s)	Corresponding Discharge at Silverton (DNR) (m^3/s)
8/01/20	1700	4.88	249.60	236.60
7/04/21	600	5.79	364.29	553.70
30/12/21	1600	5.49	300.00	459.70
20/06/25	800	5.94	385.71	528.70
17/12/26	900	5.72	342.86	294.10
24/01/27	1600	6.48	514.29	1127.00
18/02/28	800	6.50	514.29	1000.00
19/04/28	1200	7.01	621.43	1955.00
21/01/29	1000	5.26	283.20	974.70
10/05/30	1930	5.79	364.29	459.70
5/02/31	1500	8.94	1322.22	2022.00
5/04/33	800	5.18	274.80	231.70
16/03/37	2000	5.18	274.80	324.70
20/01/38	730	5.64	321.43	623.20
26/05/38	900	6.10	428.57	694.30
16/03/39	900	4.88	249.60	216.20
19/03/40	900	4.88	249.60	214.90
1/06/41	800	4.88	249.60	181.20
9/02/42	1515	5.79	364.29	
31/01/44	1500	5.46	300.00	
25/03/46	1200	7.16	664.29	
13/02/47	1130	6.25	471.43	
1/03/47	1900	6.48	514.29	
1/05/48		6.10	428.57	
19/01/50		3.91	165.60	
15/02/50	1600	4.72	232.80	
18/02/50		4.72	232.80	
28/02/50	900	7.09	642.86	
29/07/50	900	4.88	249.60	
31/01/51	1230	7.62	750.00	
21/02/53	800	8.23	878.57	
14/07/54	700	6.71	557.14	
28/03/55	330	8.53	1040.74	
11/03/56	1800	6.55	535.71	
10/06/58	900	4.27	199.20	
20/12/61	900	4.88	249.60	
2/01/63	800	5.03	258.00	
10/01/63	1800	5.49	300.00	
17/03/63	900	7.77	792.86	
28/03/64	630	6.10	428.57	
23/04/64	1500	3.35	123.60	
30/01/67	2100	5.33	283.20	
18/03/67	1500	5.33	283.20	1051.00
8/05/67	500	4.22	190.80	
10/06/67	1800	6.50	514.29	1578.00
24/06/67	0	4.57	224.40	
27/06/67	800	5.64	321.43	
12/01/68	1900	6.20	450.00	1708.00
8/12/70	300	6.71	557.14	

Table E-2 - Historical Data at Woodford and Silverton (1920-1985)

Date	Time	Level (m)	Discharge at Woodford (m³/s)	Corresponding Discharge at Silverton (DNR) (m³/s)
8/01/20	1700	4.88	249.60	236.60
27/01/71	1500	5.18	274.80	
20/02/71	900	5.33	283.20	
29/12/71	900	4.17	190.80	3587.00
12/02/72	900	9.14	1462.96	
9/03/72	1200	3.68	148.80	
3/04/72	300	7.16	664.29	
8/07/73	300	8.23	878.57	
14/01/74	900	4.20	190.80	
25/01/74	1200	8.60	1111.11	
17/02/74	1500	4.90	249.60	
12/03/74	2100	6.80	578.57	
9/01/75	900	3.50	132.00	
24/12/75	1500	3.70	148.80	
20/01/76	1500	6.50	514.29	
23/02/76	1500	5.00	258.00	
3/03/76	1500	4.60	224.40	
14/03/76	1500	5.10	266.40	
26/03/78	2225	4.68	72.00	
2/04/78	1205	4.50	60.00	
25/01/79	820	5.06	111.00	
10/02/79	1340	4.44	54.00	
8/05/80	2300	5.52	195.00	
9/05/80	900	4.65	232.80	
16/02/81	2115	6.09	360.00	
17/02/81	900	4.90	249.60	
8/04/81	1610	4.36	54.00	
23/05/81	430	4.54	60.00	
21/01/82	1600	7.35	707.14	
21/01/82	1445	6.58	660.00	
4/03/82	955	4.98	90.00	
16/03/82	335	4.40	54.00	
3/05/83	1615	4.73	72.00	
24/05/83	800	4.60	224.40	
24/05/83	0	5.56	216.00	
19/06/83	2100	5.73	237.00	2236.00
20/06/83	1100	5.50	300.00	
22/06/83		7.50	728.57	
22/06/83	1700	6.89	840.00	
7/07/83	300	4.07	36.00	
22/11/83	1245	4.68	72.00	
30/11/83	1355	5.61	216.00	
2/12/83	2005	4.21	42.00	
9/04/84	1415	4.70	72.00	
28/07/84	1055	5.45	195.00	
8/11/84	2245	4.23	42.00	
11/03/85	530	6.03	300.00	
9/07/85	1515	5.97	300.00	

Table E-3 - Historical and Adjusted Data at Moggill (1965-1983)

Date	Time	Level m AHD	Discharge Cumecs	Adjusted Discharge Cumecs
21/07/65	600	5.76	2175.33	3418.33
20/03/67		4.66	1787.00	
12/06/67	1800	7.98	3054.62	3409.60
14/01/68	1100	10.72	4356.11	4759.00
11/12/70	1000	3.82	1485.57	2756.60
4/02/71	1600	6.39	2389.43	
11/02/71	900	3.29	1317.00	
20/02/71	1500	7.50	2846.00	2846.00
24/02/71	1400	3.34	1317.00	
14/02/72	2100	5.14	1919.00	
5/04/72	900	4.84	1820.00	2915.00
10/07/73	730	6.32	2355.57	2891.00
28/01/74	1430	19.93	9745.00	12159.00
9/02/81	1545	2.05	905.52	905.52
22/01/82	1115	3.43	1350.71	3034.00
29/05/83	120	2.24	948.64	
23/06/83	500	5.26	1985.00	2746.00
5/04/89	100	3.73	1451.86	
27/04/89	1200	4.02	1553.00	
18/05/89	0	2.70	1137.75	
13/12/91	300	5.22	1952.00	
17/03/92	1230	2.44	1034.88	
6/05/96	300	7.10	2681.40	

Table E-4 - Historical and Adjusted Data at Port Office (1841-1974)

Date	Level (m)	Discharge AHD-0.15m Cumecs	Adjusted AHD -0.15m Cumecs	Discharge HAT+0.15m Cumecs	Adjusted HAT+0.15m Cumecs
14/01/1841	8.43	14655.2	14655.2	14583.3	14583.3
09/06/1843	2.76	4800.0	5428.6	3500.0	3500.0
10/01/1844	7.03	12241.4	12241.4	11666.7	11666.7
16/04/1852	2.91	4800.0	5571.4	3750.0	3750.0
19/05/1857	3.27	6166.7	6166.7	4750.0	4750.0
16/02/1863	3.32	6166.7	6166.7	4750.0	4750.0
20/03/1864	3.78	7000.0	7000.0	5800.0	5800.0
02/04/1867	2.46	4800.0	5000.0	2666.7	2666.7
10/03/1870	2.89	4800.0	5571.4	3750.0	3750.0
18/06/1873	2.69	4800.0	5285.7	3250.0	3250.0
01/03/1875	2.61	4800.0	5142.9	3000.0	3000.0
16/08/1879	2.46	4800.0	5000.0	2666.7	2666.7
23/01/1887	3.78	7000.0	7000.0	5800.0	5800.0
20/05/1889	3.75	7000.0	7000.0	5800.0	5800.0
13/03/1890	5.33	9200.0	9200.0	8500.0	8500.0
05/02/1893	8.35	14655.2	14655.2	14583.3	14583.3
12/02/1893	2.15	4400.0	4400.0	1000.0	1000.0
19/02/1893	8.09	14137.9	14137.9	13958.3	13958.3
12/06/1893	3.63	6666.7	6666.7	5400.0	5400.0
15/02/1896	2	4000.0	4000.0	0.0	0.0
22/02/1896	0.86	2166.7	2166.7	0.0	0.0
29/02/1896	1.85	3833.3	3833.3	0.0	0.0
13/01/1898	5.02	8714.3	8714.3	6833.3	8000.0
09/03/1898	3.27	6166.7	6166.7	4750.0	4750.0
15/03/08	3.35	6333.3	6333.3	5000.0	5000.0
28/01/27	1.7	3500.0	3500.0	0.0	0.0
22/02/28	1.67	3500.0	3500.0	0.0	0.0
21/04/28	2.15	4400.0	4400.0	1000.0	1000.0
24/01/29	1.85	3833.3	3833.3	0.0	0.0
7/02/31	3.32	6166.7	6166.7	4750.0	4750.0
30/03/55	2.36	4800.0	5129.0	2333.3	2662.3
13/01/56	1.75	3666.7	3666.7	0.0	0.0
15/01/56	1.75	3666.7	3666.7	0.0	0.0
11/02/56	1.39	3000.0	3000.0	0.0	0.0
12/02/56	1.31	2833.3	2833.3	0.0	0.0
12/03/56	1.42	3000.0	3000.0	0.0	0.0
13/03/56	1.34	2833.3	2833.3	0.0	0.0
14/03/56	1.29	2833.3	2833.3	0.0	0.0
12/06/67	1.87	3833.3	4188.3	0.0	355.0
15/01/68	1.97	4000.0	4403.0	0.0	403.0
6/02/71	1.47	3166.7	3166.7	0.0	0.0
29/01/74	5.45	8750.0	11164.0	8833.3	11247.3

Table E-5 - Historical and Adjusted Discharge at Lowood

Date	Lowood Discharge Cumecs	Adjusted Lowood Discharge Cumecs
Jan-10	706.3	
Jan-11	1316	
Mar-12	460.7	
Jun-13	416.4	
Feb-14	234.4	
Feb-15	1035	
Dec-16	375.2	
Dec-17	522.2	
Feb-18	379.4	
Dec-21	1280	
Jan-22	1154	
Feb-24	173.2	
Mar-25	673.9	
Jun-25	778.4	
Dec-26	259.5	
Jan-27	2715	
Apr-28	4225	
Jan-29	2064	
Jun-30	749.2	
Feb-31	5574	
Dec-33	446.4	
Feb-34	614.2	
Feb-35	119.9	
Mar-36	138.6	
Mar-37	1102	
May-38	1052	
Mar-39	459.8	
Mar-40	697.3	
Jan-41	425.2	
Feb-42	1360	
Dec-43	1207	
31/01/44	1043	1362
25/03/46	1052	1377
13/02/47	421	1137
1/03/47	803	1302
11/12/47	613	613
1/05/48	544	732
19/01/50	295	448
28/02/50	2451	2930
1/03/50	2298	2298
24/06/50	1043	1043
29/07/50	784	874
31/01/51	2534	3228
1/02/51	2704	2704
21/02/53	764	1863
24/03/53	743	743
13/02/54	2111	2111
14/07/54	1922	3188
28/03/55	5363	5692
10/02/56	1365	1365
11/03/56	2141	2141

Table E-5 - Historical and Adjusted Discharge at Lowood

Date	Lowood Discharge Cumecs	Adjusted Lowood Discharge Cumecs
10/06/58	1520	1770
20/12/61	152	152
10/01/63	230	458
17/03/63	115	1700
8/05/63	502	502
28/03/64	258	258
23/04/64	12	12
21/07/65	1238	2481
30/01/67	254	254
18/03/67	1272	1304
8/05/67	215	215
10/06/67	2351	2706
12/01/68	3363	3766
8/12/70	582	1853
27/01/71	482	577
5/02/71	1071	1071
20/02/71	2779	2779
29/12/71	578	578
12/02/72	1842	1995
9/03/72	266	2106
3/04/72	1665	2760
30/10/72	531	531
8/07/73	2709	3244
25/01/74	7393	9807
17/02/74	835	835
12/03/74	874	874
9/01/75	203	407
24/12/75	520	520
20/01/76	1610	1712
23/02/76	1047	1047
14/03/76	1059	1059
26/03/78	59	162
2/04/78	351	436
25/01/79	298	298
10/02/79	35	110
9/05/80	44	44
16/02/81	765	1478
8/04/81	49	124
23/05/81	10	10
21/01/82	1006	2873
4/03/82	422	554
24/05/83	525	911
22/06/83	1659	2420
7/07/83	409	458
30/11/83	13	381
2/12/83		58
9/04/84	134	237
28/07/84		325
8/11/84	108	166
11/03/85	22	582
9/07/85	63	623

Appendix F - Dam Operations

Figure F-1 - Somerset Dam - Height vs Discharge Curve

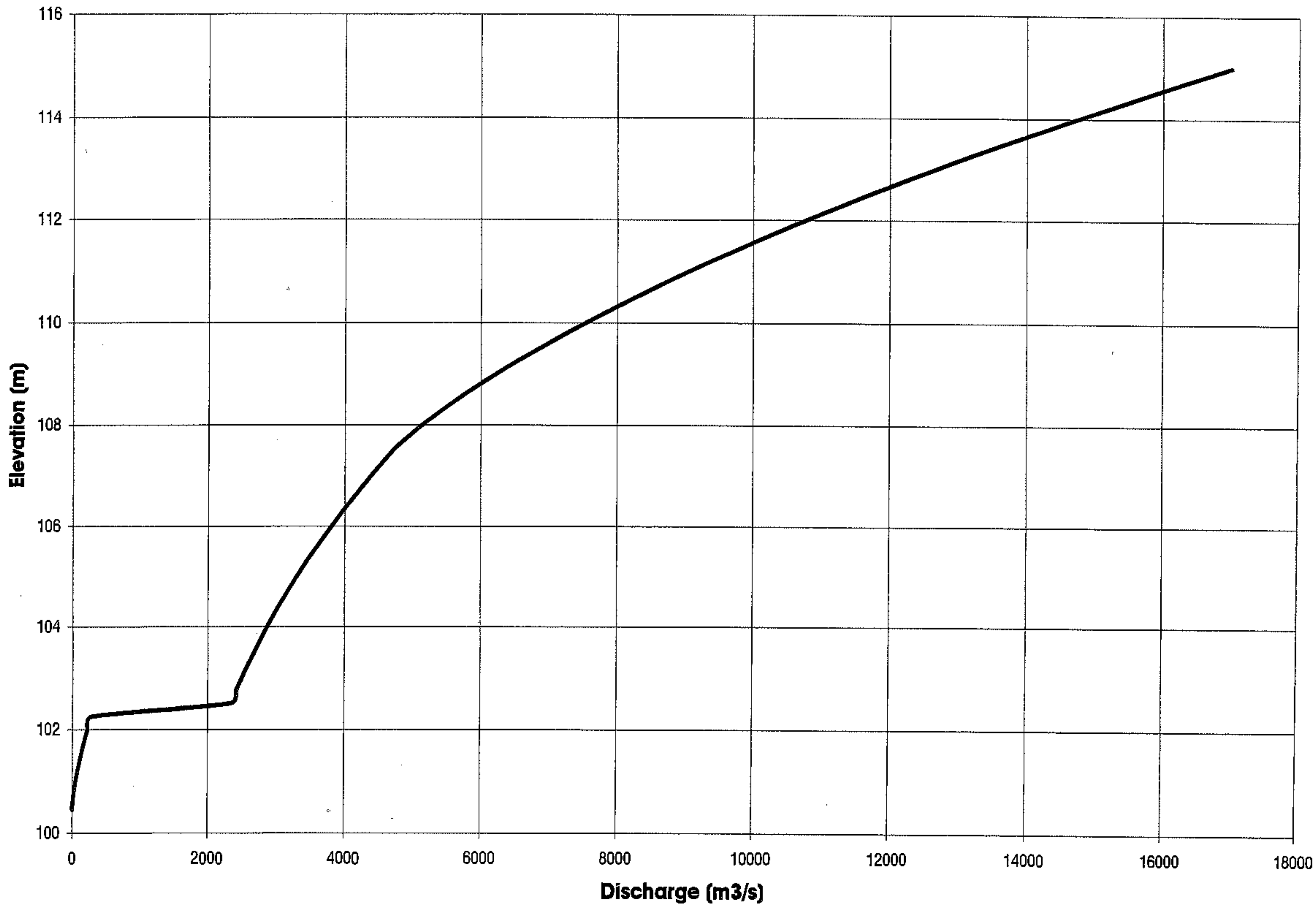
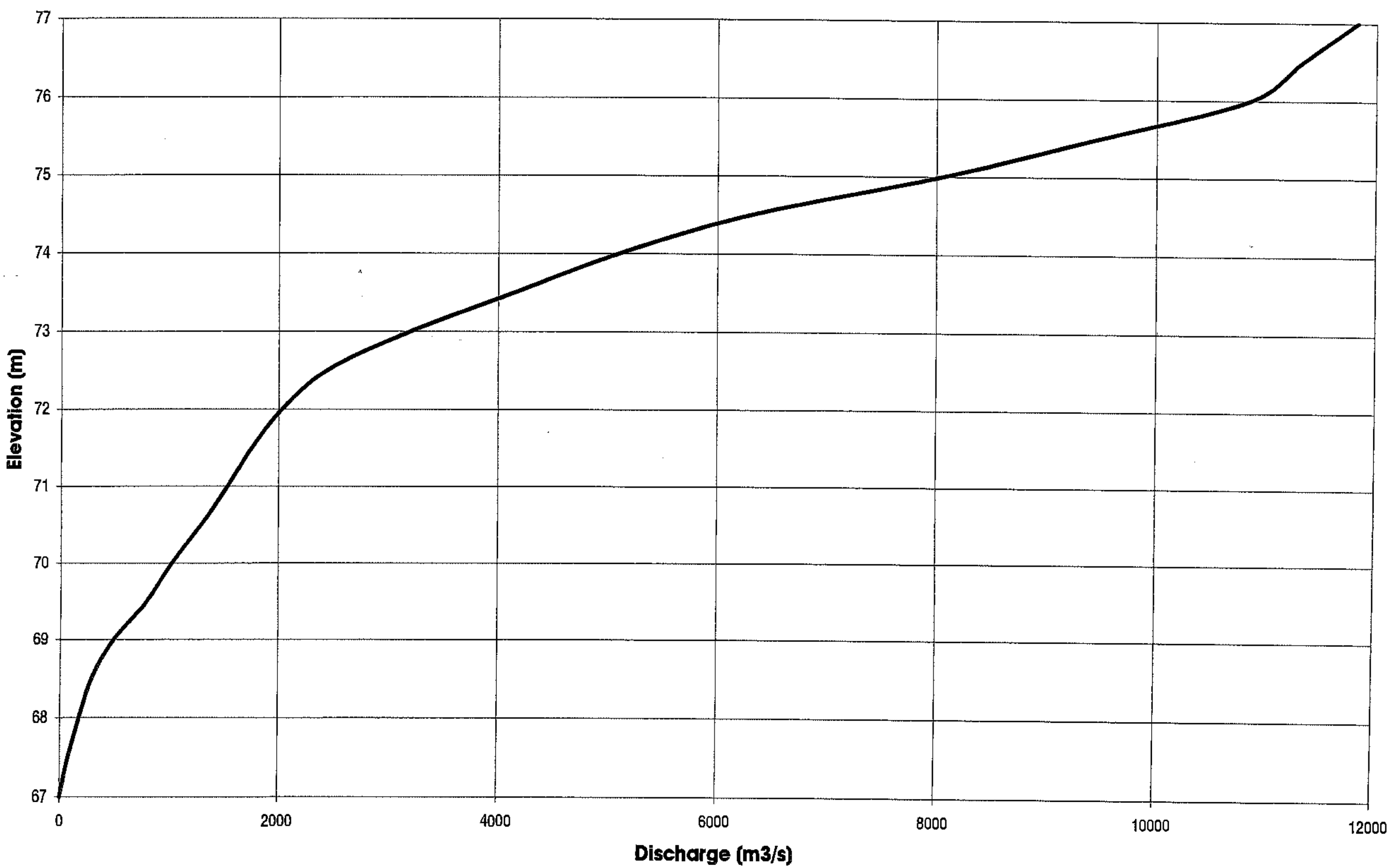


Figure F-2 - Wivenhoe Dam - Height vs Discharge Curve



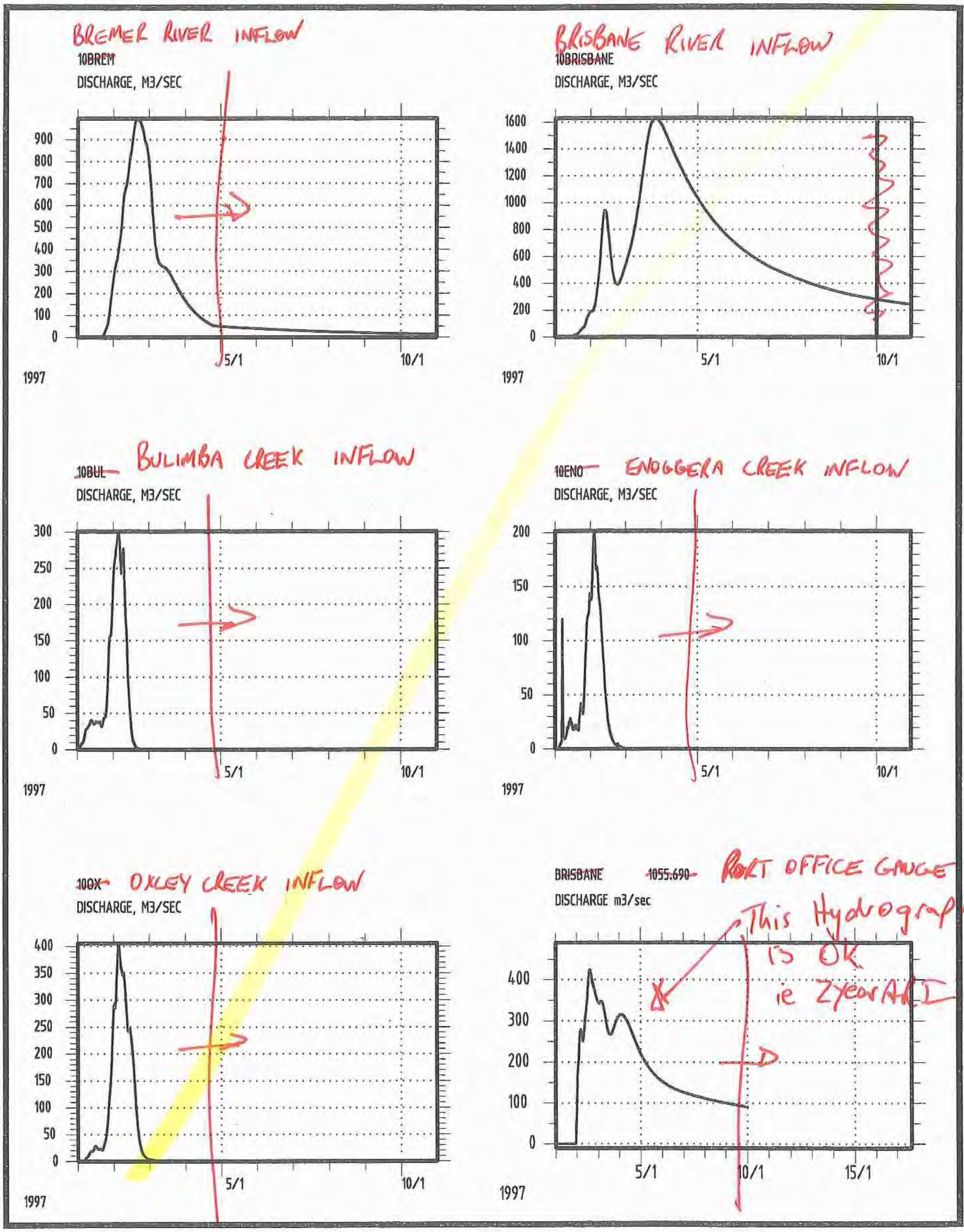
Appendix G - Design Discharge Hydrographs

SINCLAIR KNIGHT MERZ

2 MHWS - WMA

FIGURE G-1

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 2 YEAR ARI
FLOOD EVENT

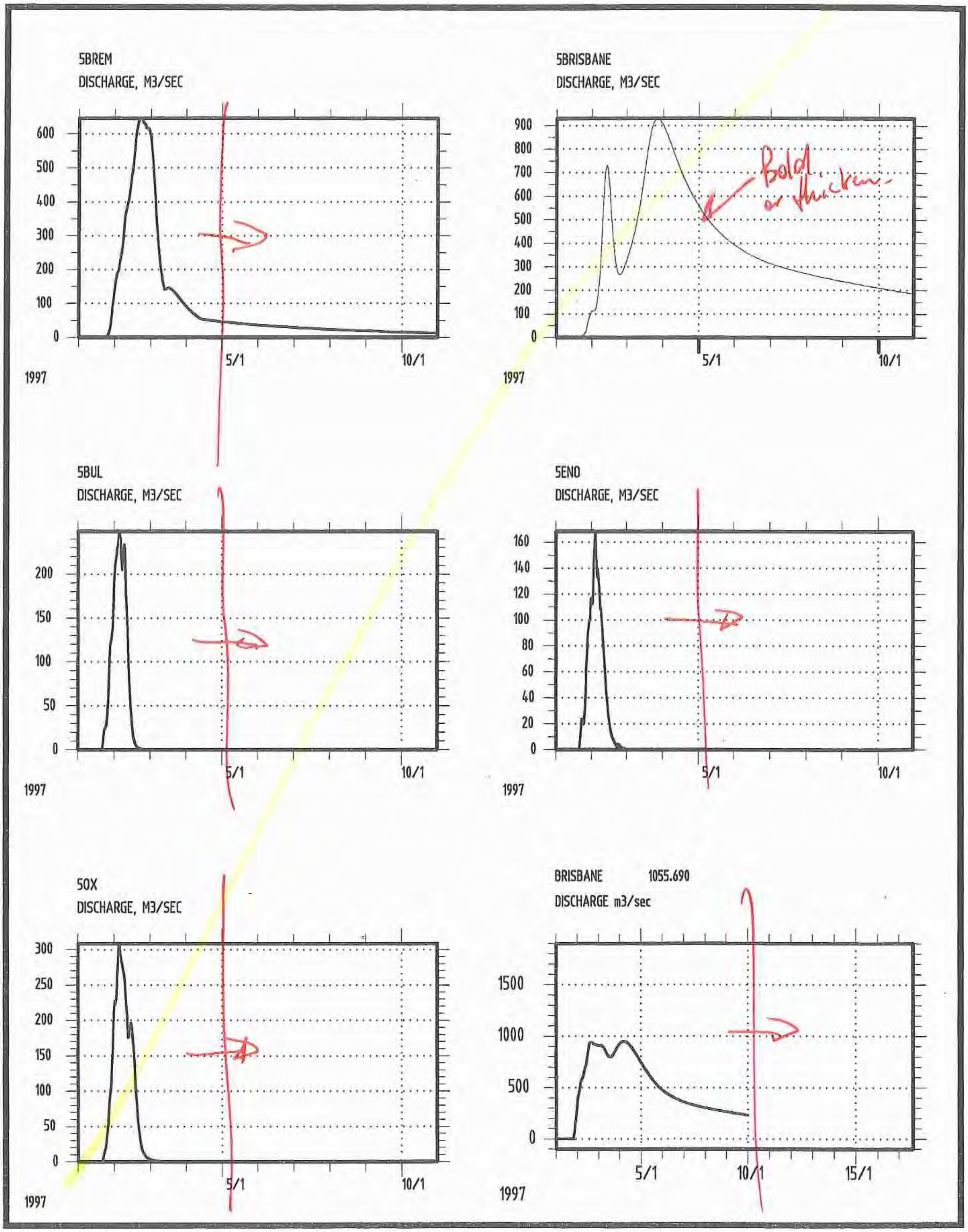


SINCLAIR KNIGHT MERZ

As per 2Year

FIGURE G-2

BRISBANE RIVER FLOOD STUDY HYDROGRAPHS FOR THE 5 YEAR AIR FLOOD EVENT

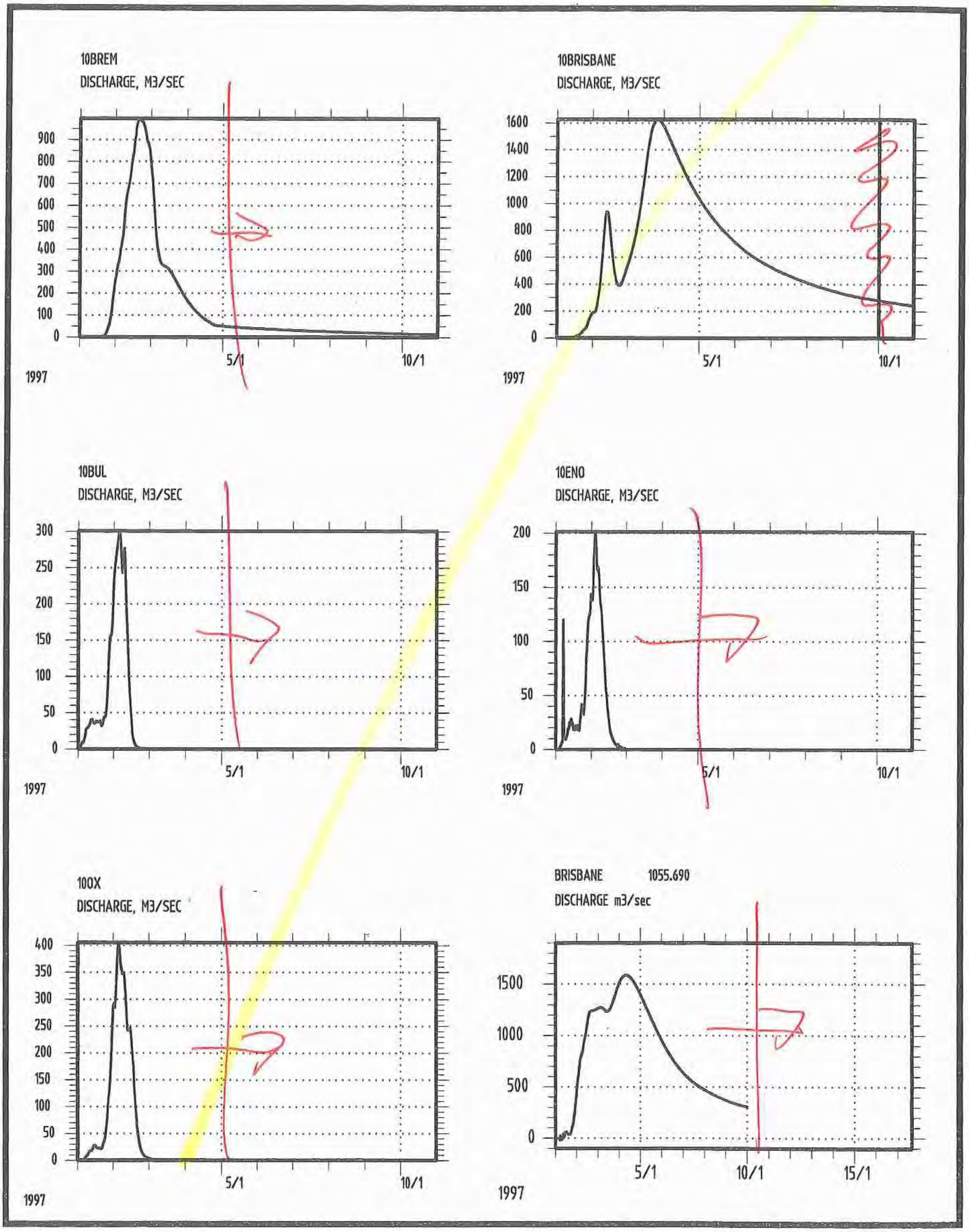


FILE NAME: FIG-G2 PLOT SCALE: 1=1 DISK N°: G:\ JOB N°: TQ04157 DATE: 17-2-98

SINCLAIR KNIGHT MERZ

As per 2 Year

FIGURE G-3
BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 2 YEAR ARI
FLOOD EVENT



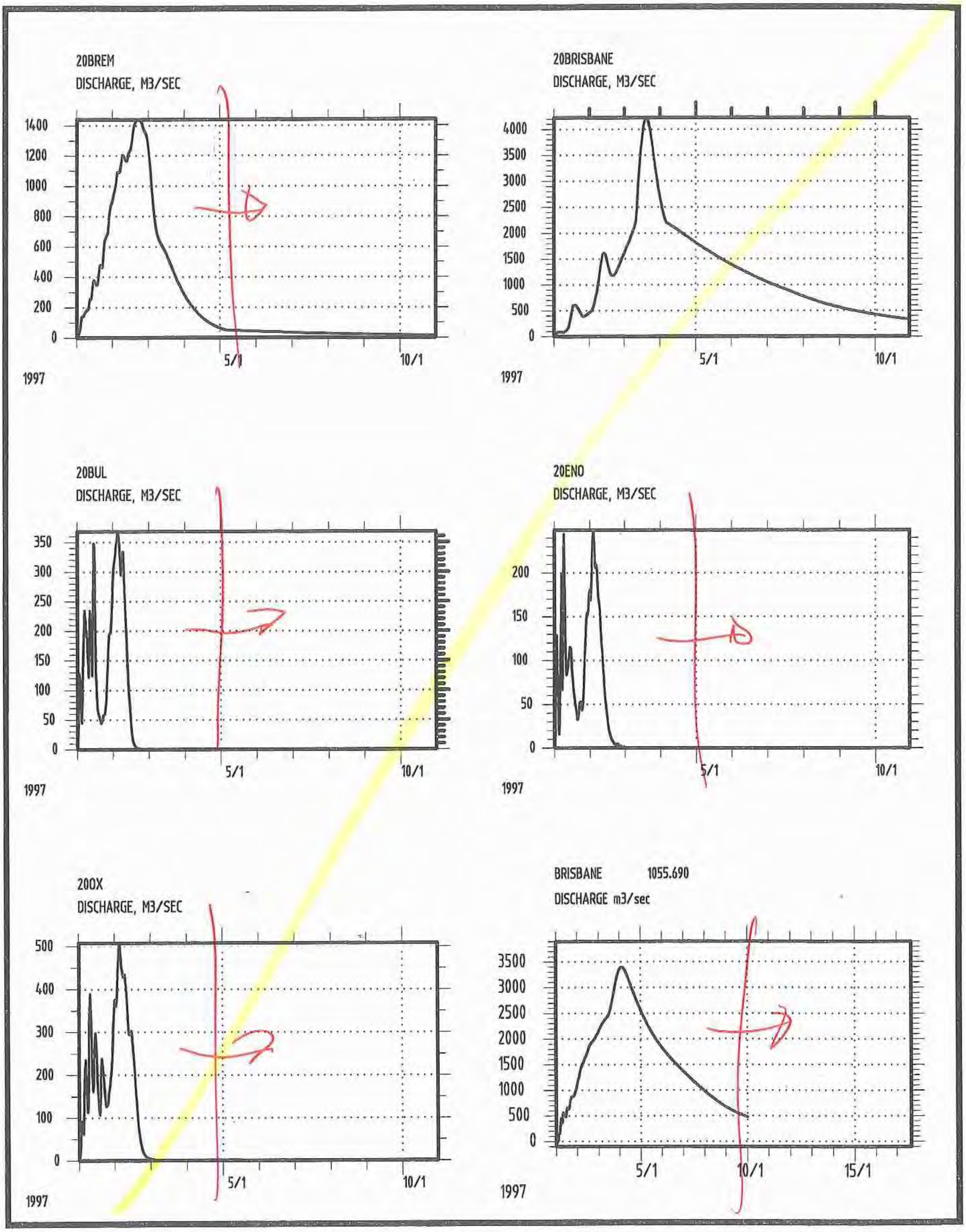
FILE NAME: FIG-G3 PL(ALE: 1 DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

As per 2 year

SINCLAIR KNIGHT MERZ

FIGURE G-4

BRISBANE RIVER FLOOD STUDY HYDROGRAPHS FOR THE 20 YEAR AIR FLOOD EVENT



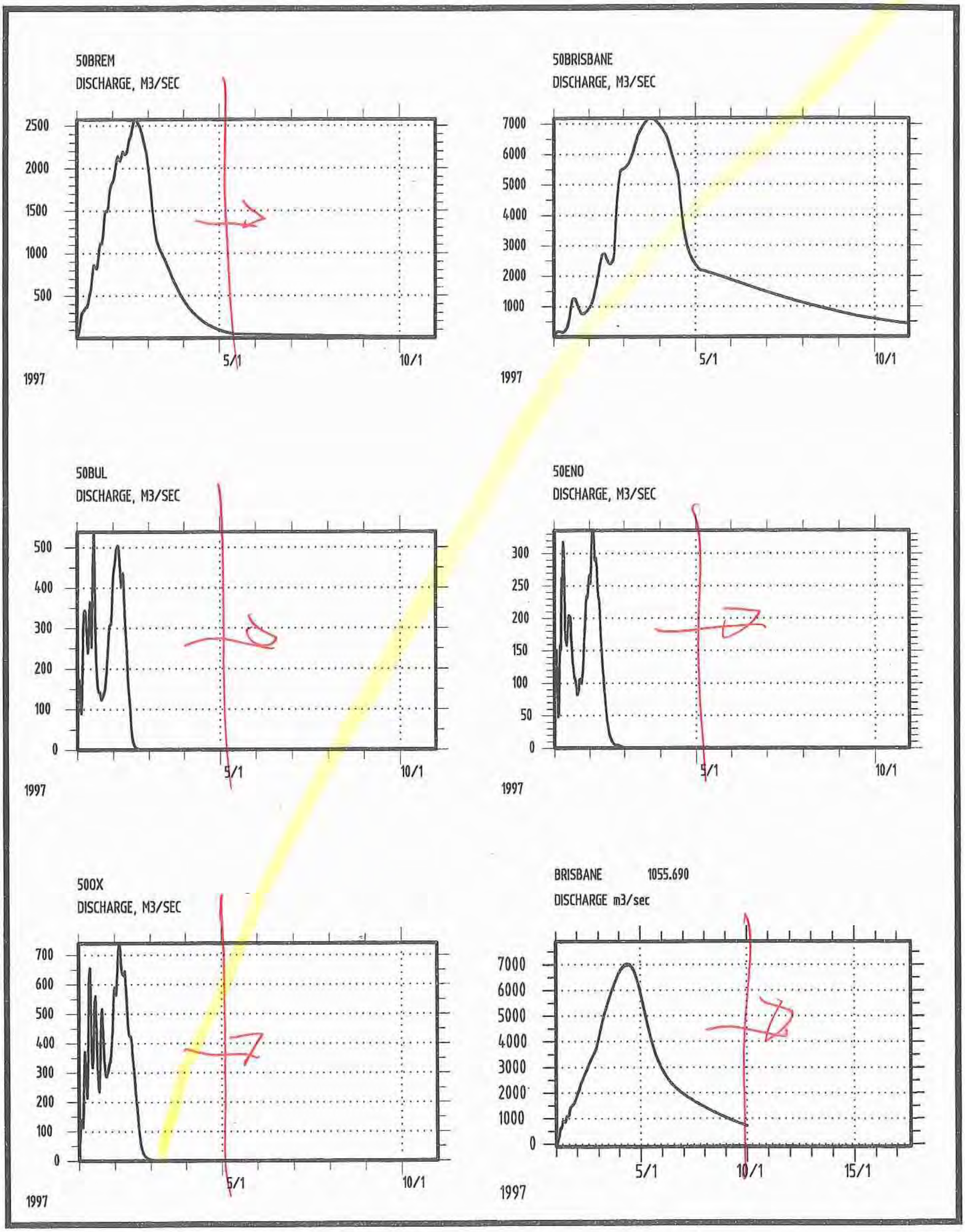
DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98
FILE NAME: FIG-G4 PLOT SCALE: 1-1

As per 2 year

FIGURE G-5

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 50 YEAR ARI
FLOOD EVENT

SINCLAIR KNIGHT MERZ



FILE NAME: FIG-G5
PL[illegible] [illegible]ALE: 1=[illegible]
DISK N°: G:\
JOB N°: T00[illegible]157
DATE: 17-2-98

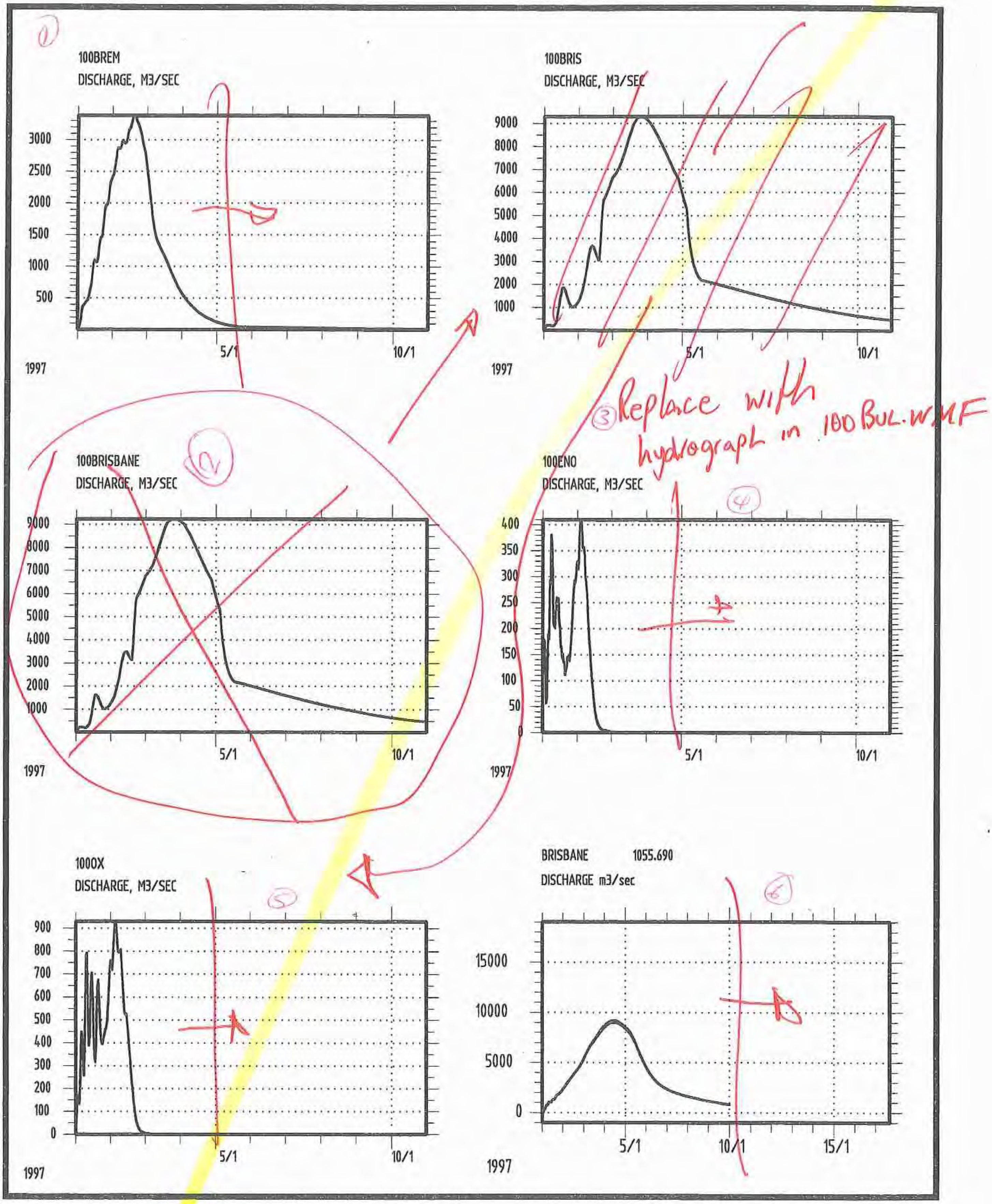
256

As per 2 Year

SINCLAIR KNIGHT MERZ

FIGURE G-6

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 100 YEAR ARI
FLOOD EVENT



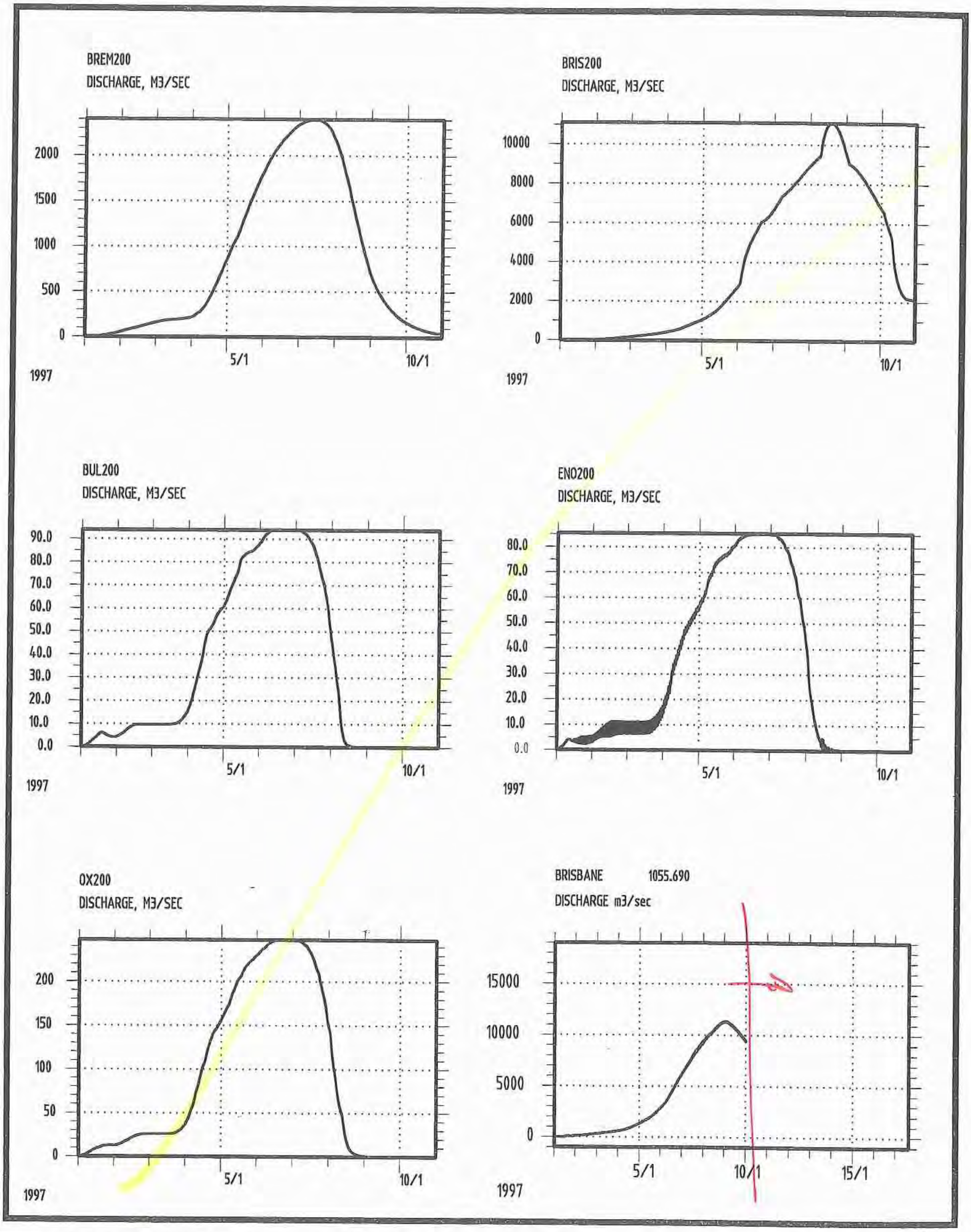
DATE: 17-2-98 JOB N°: T004157 DISK N°: G:\ FILE NAME: FIG-G6 PLC. SCALE: 1-1

As per 2 year

SINCLAIR KNIGHT MERZ

FIGURE G-7

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 200 YEAR AIR FLOOD EVENT

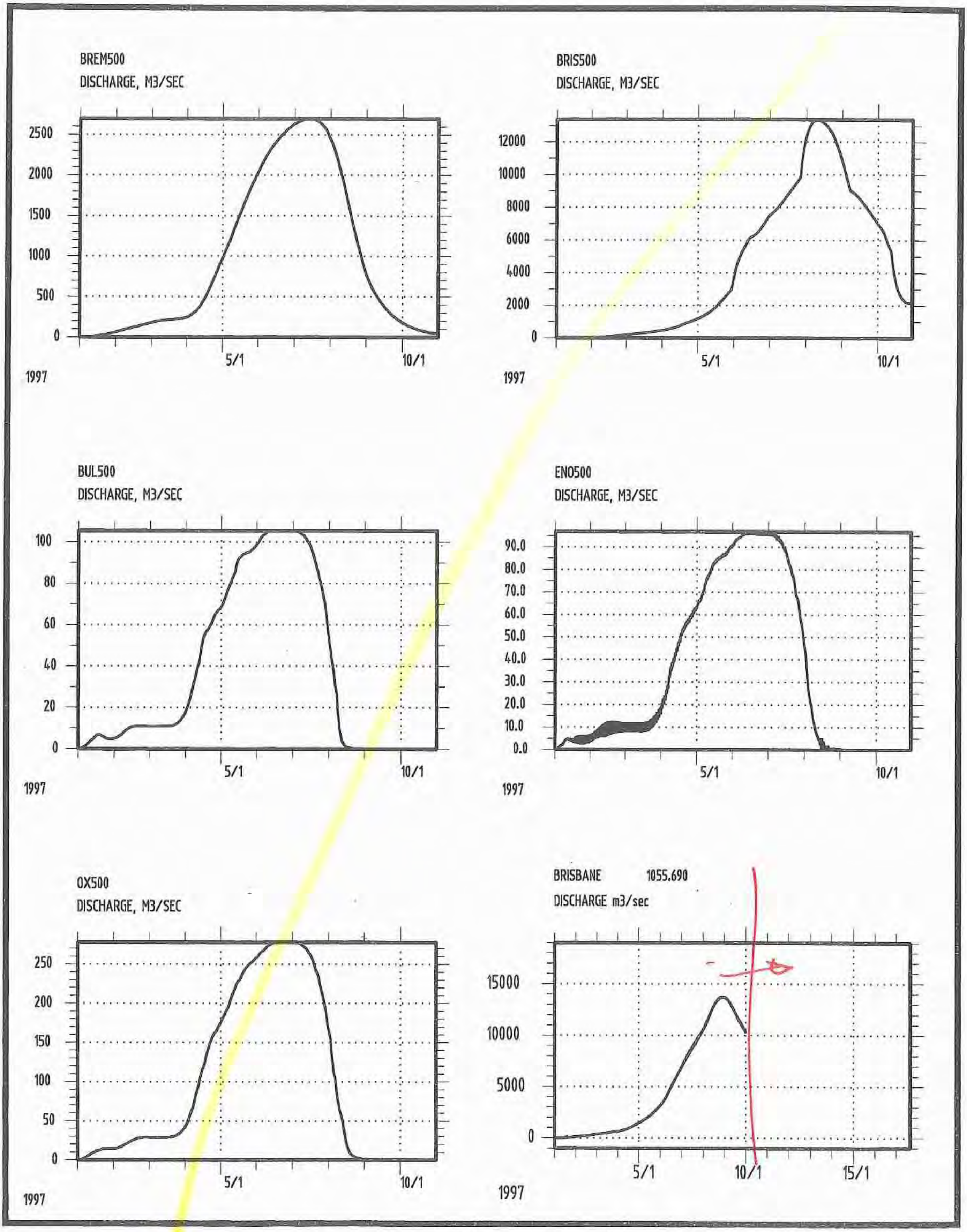


FILE NAME: FIG-G7
PL[illegible] ALE: 1
DISK N°: G:\
JOB N°: T004157
DATE: 17-2-98

As per 2 years

SINCLAIR KNIGHT MERZ

FIGURE G-8
BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 500 YEAR AIR
FLOOD EVENT



FILE NAME: FIG-G8 DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98
PL ALE:

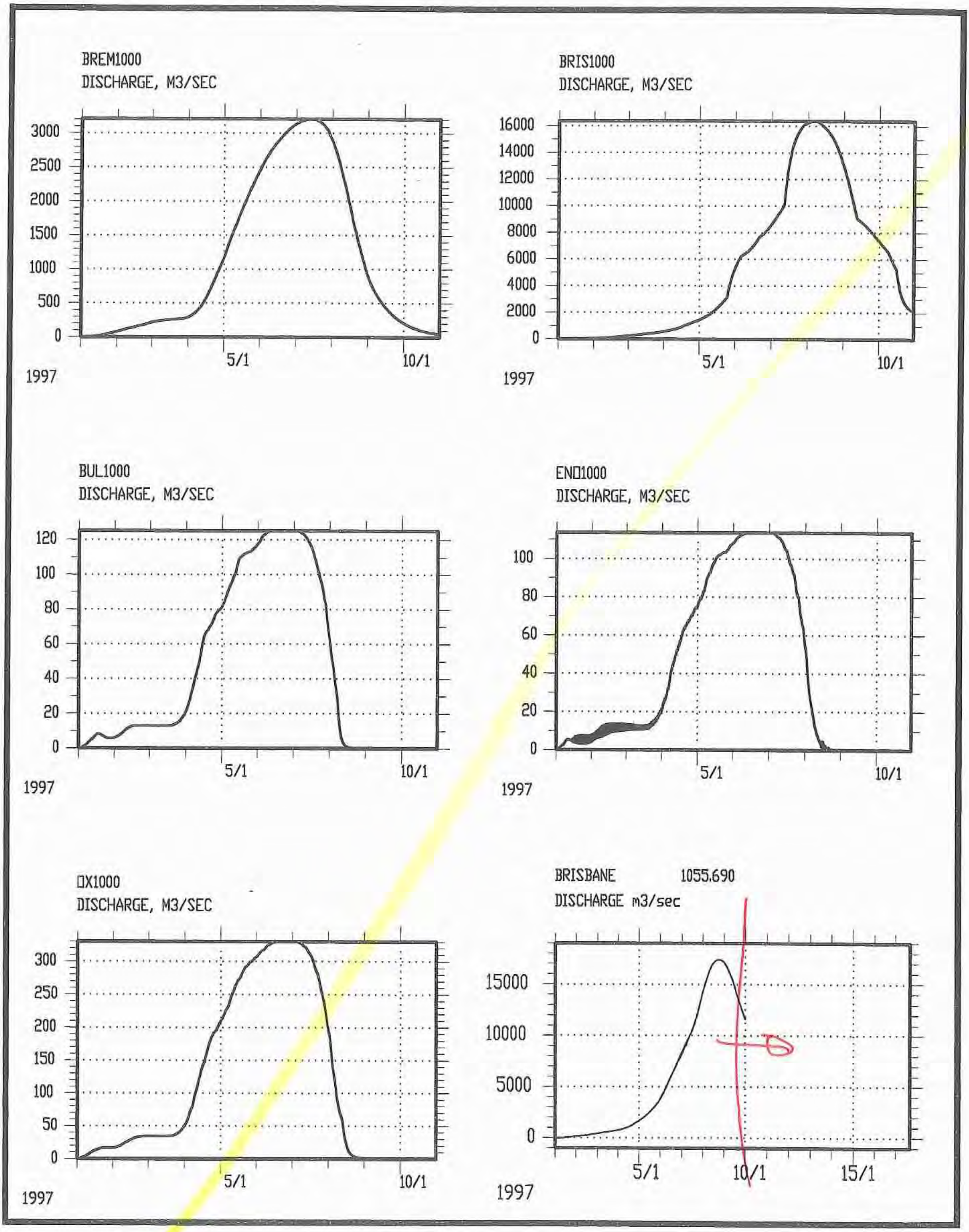
SINCLAIR KNIGHT MERZ

As per 2 year

259

FIGURE G-9

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 1000 YEAR ARI
FLOOD EVENT



FILE NAME: FIG-G9 DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98
PL ALE:

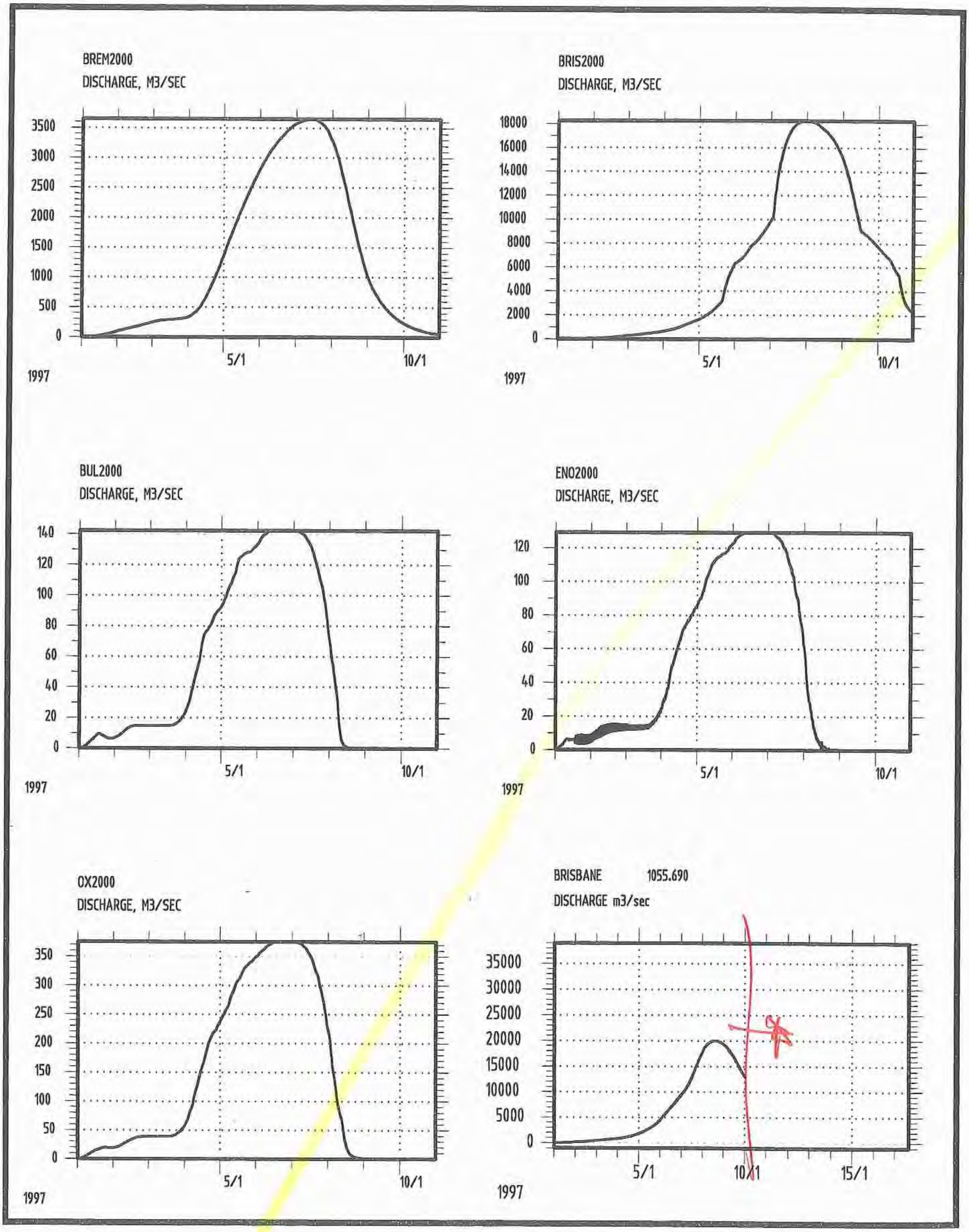
As per 2 year

260

FIGURE G-10

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 2000 YEAR ARI
FLOOD EVENT

SINCLAIR KNIGHT MERZ



FILE NAME: FIG-G10 DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

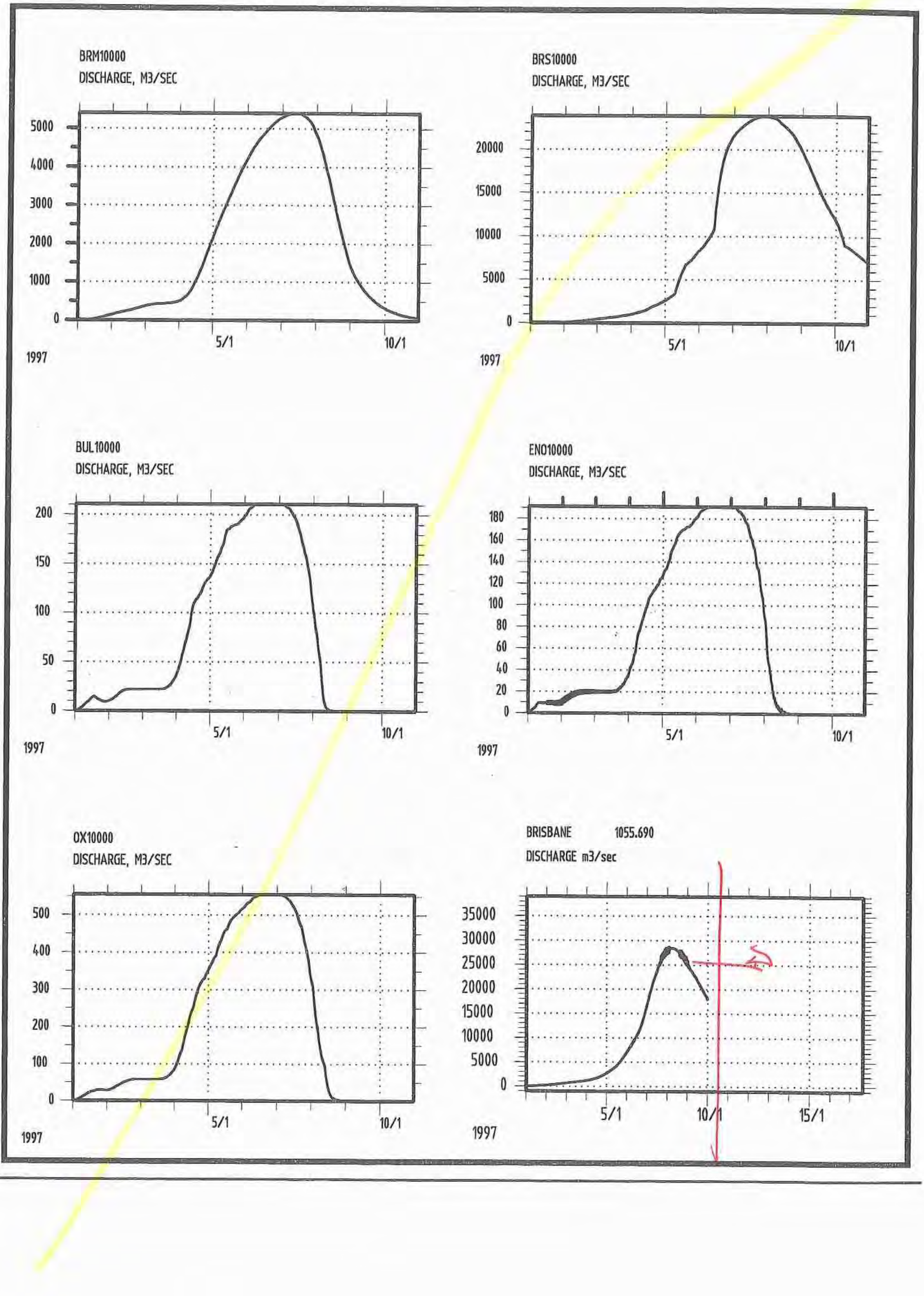
As per 2-year

261

FIGURE G-11

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE 10 000 YEAR ARI FLOOD EVENT

SINCLAIR KNIGHT MERZ



FILE NAME: FIG-G11 DISK N°: G:\ JOB N°: T0(4)57 DATE: 17-2-98
PLOT SCALE: 1:1

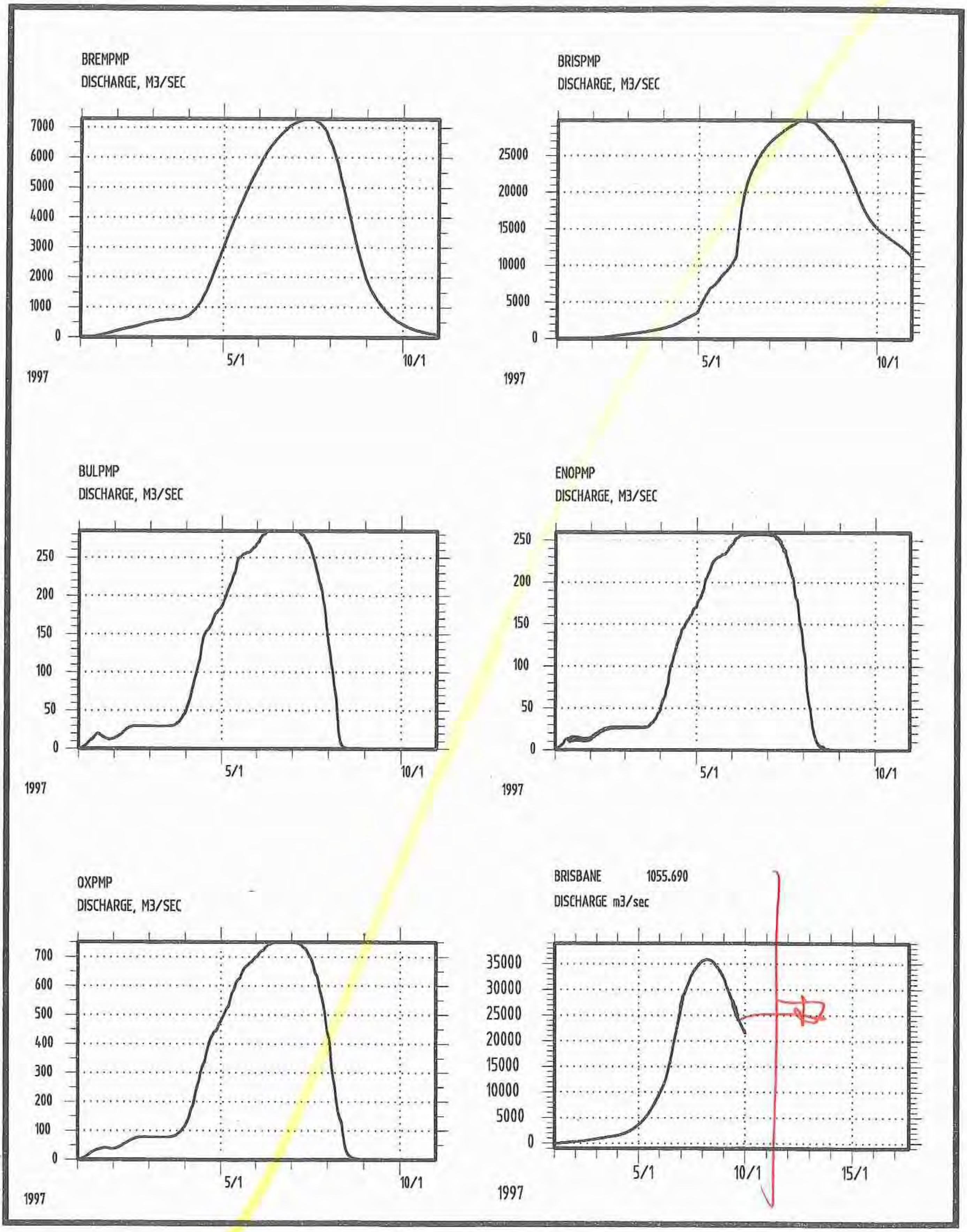
As per 2 year

262

FIGURE G-12

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
HYDROGRAPHS FOR THE PMF
(100 000 YEAR ARI) FLOOD EVENT



DISK N°: G:\ JOB N°: T004157 DATE: 17-2-98

FILE NAME: FIG-G12
PLL. ...ALE: 1-.

Appendix H - Design Hydraulic Modelling Results - Existing Conditions

TABLE H-1 - Combined Tailwater and River Flooding Conditions - Moreton Bay Storm Surge

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	Design Events - Existing Case		
					100 Year ARI Flood 100 Year Moreton Bay Storm Surge (m AHD)	100 Year ARI Flood 20 Year Moreton Bay Storm Surge (m AHD)	20 Year ARI Flood 100 Year Moreton Bay Storm Surge (m AHD)
BRISBANE	1000	78.66	BN 2020		22.80	22.79	13.39
BRISBANE	1000.285	78.375	BN 2010		22.61	22.59	13.23
BRISBANE	1000.775	77.885	BN 2000		22.33	22.32	12.98
BRISBANE	1001.315	77.345	BN 1990		22.24	22.23	12.82
BRISBANE	1001.865	76.795	BN 1980		21.72	21.71	12.42
BRISBANE	1002.35	76.310	BN 1970		21.53	21.51	12.12
BRISBANE	1002.785	75.875	BN 1960		21.51	21.49	12.07
BRISBANE	1003.275	75.385	BN 1950		21.18	21.17	11.76
BRISBANE	1003.775	74.885	BN 1940		20.91	20.90	11.50
BRISBANE	1004.3	74.360	BN 1930		20.46	20.44	11.09
BRISBANE	1004.81	73.850	BN 1920		20.43	20.41	10.98
BRISBANE	1005.325	73.335	BN 1910		20.25	20.24	10.81
BRISBANE	1005.87	72.790	BN 1900		19.95	19.93	10.56
BRISBANE	1006.3	72.360	BN 1890	Moggill Gauge	19.77	19.76	10.48
BRISBANE	1006.91	71.750	BN 1880		19.57	19.56	10.30
BRISBANE	1007.41	71.250	BN 1870		19.54	19.53	10.24
BRISBANE	1007.92	70.740	BN 1860		19.26	19.24	10.05
BRISBANE	1008.445	70.215	BN 1850		19.08	19.06	9.96
BRISBANE	1008.925	69.735	BN 1840		19.02	19.00	9.92
BRISBANE	1009.4	69.260	BN 1830		18.93	18.91	9.84
BRISBANE	1009.72	68.940	BN 1820		18.92	18.90	9.81
BRISBANE	1010.49	68.170	BN 1810		18.56	18.54	9.64
BRISBANE	1010.725	67.935	BN 1800		18.58	18.56	9.65
BRISBANE	1010.98	67.680	BN 1790		18.51	18.49	9.60
BRISBANE	1011.51	67.150	BN 1780		18.50	18.48	9.56
BRISBANE	1011.98	66.680	BN 1770		18.50	18.48	9.51
BRISBANE	1012.475	66.185	BN 1760		18.40	18.38	9.43
BRISBANE	1012.935	65.725	BN 1750		18.29	18.27	9.36
BRISBANE	1013.445	65.215	BN 1740		18.21	18.19	9.29
BRISBANE	1013.91	64.750	BN 1730		18.15	18.13	9.23
BRISBANE	1014.31	64.350	BN 1720		18.12	18.10	9.17
BRISBANE	1014.61	64.050	BN 1710	Goodna Hospital Gauge	18.16	18.14	9.12
BRISBANE	1015.09	63.570	BN 1700		18.02	18.00	9.09
BRISBANE	1015.56	63.100	BN 1690		17.89	17.87	9.01
BRISBANE	1016.14	62.520	BN 1680		17.79	17.77	8.95
BRISBANE	1016.64	62.020	BN 1670		17.70	17.68	8.85
BRISBANE	1017.13	61.530	BN 1660		17.47	17.45	8.69
BRISBANE	1017.61	61.050	BN 1650		17.35	17.32	8.52
BRISBANE	1017.92	60.740	BN 1640		17.19	17.16	8.40
BRISBANE	1018.2	60.460	BN 1630		17.11	17.09	8.37
BRISBANE	1018.725	59.935	BN 1620		16.79	16.76	8.23
BRISBANE	1019.095	59.565	BN 1610		16.65	16.62	8.12
BRISBANE	1019.49	59.170	BN 1600		16.54	16.52	8.04
BRISBANE	1019.865	58.795	BN 1590		16.25	16.22	7.92
BRISBANE	1020.115	58.545	BN 1580		16.35	16.32	7.91
BRISBANE	1020.525	58.135	BN 1570		16.32	16.29	7.87
BRISBANE	1020.83	57.830	BN 1560		16.17	16.14	7.80
BRISBANE	1021.095	57.565	BN 1550		15.96	15.93	7.70
BRISBANE	1021.539	57.121	BN 1540		15.80	15.76	7.58
BRISBANE	1021.715	56.945	BN 1530		15.82	15.79	7.57
BRISBANE	1021.895	56.765	BN 1520		15.76	15.73	7.54
BRISBANE	1022.105	56.555	BN 1510		15.63	15.60	7.51
BRISBANE	1022.575	56.085	BN 1500		15.56	15.53	7.44
BRISBANE	1023.04	55.620	BN 1490		15.32	15.29	7.33
BRISBANE	1023.57	55.090	BN 1480		15.23	15.19	7.31
BRISBANE	1024.08	54.580	BN 1470		15.18	15.14	7.25
BRISBANE	1024.563	54.097	BN 1460		15.12	15.08	7.18
BRISBANE	1025.07	53.590	BN 1450		15.03	14.99	7.12
BRISBANE	1025.36	53.300	BN 1440		14.88	14.85	7.05
BRISBANE	1025.59	53.070	BN 1430		14.72	14.69	6.97
BRISBANE	1026.17	52.490	BN 1420		14.60	14.57	6.93
BRISBANE	1026.68	51.980	BN 1410	Mt Ommaney Gauge	14.50	14.46	6.84
BRISBANE	1026.9	51.760	BN 1400		14.37	14.34	6.78
BRISBANE	1027.16	51.500	BN 1390		14.23	14.20	6.74
BRISBANE	1027.68	50.980	BN 1380		14.29	14.26	6.72
BRISBANE	1028.18	50.480	BN 1370		14.32	14.28	6.72
BRISBANE	1028.68	49.980	BN 1360		14.19	14.15	6.65
BRISBANE	1028.72	49.940	BN1350	Centenary Bridge			
BRISBANE	1028.76	49.900	BN 1340		14.04	14.00	6.59
BRISBANE	1029.2	49.460	BN 1330		13.93	13.89	6.52
BRISBANE	1029.68	48.980	BN 1320		13.95	13.91	6.52
BRISBANE	1030.22	48.440	BN 1310		13.95	13.91	6.51
BRISBANE	1030.87	47.790	BN 1300		13.88	13.84	6.47
BRISBANE	1031.26	47.400	BN 1290		13.72	13.68	6.41
BRISBANE	1031.7	46.960	BN 1280	Darra Wharf Gauge	13.34	13.30	6.27
BRISBANE	1031.995	46.665	BN 1270		13.45	13.41	6.23
BRISBANE	1032.23	46.430	BN 1260		13.32	13.28	6.18
BRISBANE	1032.585	46.075	BN 1250		13.09	13.04	6.09
BRISBANE	1033.08	45.580	BN 1240		12.94	12.89	6.01
BRISBANE	1033.37	45.290	BN 1230		12.83	12.78	5.96
BRISBANE	1033.9	44.760	BN 1220		12.60	12.56	5.86

TABLE H-1 - Combined Tailwater and River Flooding Conditions - Moreton Bay Storm Surge

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	Design Events - Existing Case: 100 Year ARI Flood 100 Year Moreton Bay Storm Surge (m AHD)	100 Year ARI Flood 20 Year Moreton Bay Storm Surge (m AHD)	20 Year ARI Flood 100 Year Moreton Bay Storm Surge (m AHD)
BRISBANE	1034.37	44.290	BN 1210		12.45	12.40	5.81
BRISBANE	1034.89	43.770	BN 1200	Sherwood Gauge	12.35	12.30	5.74
BRISBANE	1035.414	43.246	BN 1190		12.11	12.06	5.63
BRISBANE	1035.9	42.760	BN 1180		11.83	11.78	5.50
BRISBANE	1036.46	42.200	BN 1170		11.53	11.48	5.37
BRISBANE	1036.77	41.890	BN 1160		11.46	11.40	5.32
BRISBANE	1036.915	41.745	BN 1150		11.30	11.25	5.27
BRISBANE	1037.09	41.570	BN 1140		11.26	11.20	5.26
BRISBANE	1037.11	41.550	BN 1130	Indooroopilly Bridge			
BRISBANE	1037.175	41.485	BN 1120		11.17	11.11	5.12
BRISBANE	1037.285	41.375	BN 1110	Clarence Road Gauge	11.12	11.06	5.09
BRISBANE	1037.625	41.035	BN 1100		11.10	11.05	5.06
BRISBANE	1038.085	40.575	BN 1090		11.13	11.07	5.05
BRISBANE	1038.6	40.060	BN 1080		11.11	11.05	5.01
BRISBANE	1039.1	39.560	BN 1070		11.10	11.04	4.99
BRISBANE	1039.565	39.095	BN 1060	Oxley Creek Gauge	11.12	11.06	4.98
BRISBANE	1040.09	38.570	BN 1050	King Authur Terrace Gauge	11.04	10.98	4.98
BRISBANE	1040.49	38.170	BN 1040		10.91	10.85	4.93
BRISBANE	1041.01	37.650	BN 1030		10.95	10.89	4.93
BRISBANE	1041.23	37.430	BN 1020		10.92	10.85	4.90
BRISBANE	1041.46	37.200	BN 1010	Tennyson Power House Gauge	10.83	10.77	4.87
BRISBANE	1041.7	36.960	BN 1000		10.80	10.74	4.87
BRISBANE	1041.96	36.700	BN 990		10.67	10.60	4.81
BRISBANE	1042.235	36.425	BN 980		10.52	10.45	4.76
BRISBANE	1042.515	36.145	BN 970	Yeronga Street Gauge	10.52	10.45	4.74
BRISBANE	1042.91	35.750	BN 960		10.46	10.39	4.68
BRISBANE	1043.725	34.935	BN 950		10.15	10.08	4.55
BRISBANE	1044.06	34.600	BN 940	Sandy Creek Gauge	10.00	9.92	4.51
BRISBANE	1044.34	34.320	BN 930		9.84	9.76	4.46
BRISBANE	1044.605	34.055	BN 920		9.79	9.71	4.42
BRISBANE	1044.86	33.800	BN 910		9.75	9.67	4.40
BRISBANE	1045.4	33.260	BN 900		9.58	9.49	4.31
BRISBANE	1045.885	32.775	BN 890		9.46	9.37	4.22
BRISBANE	1046.18	32.480	BN 880		9.38	9.29	4.21
BRISBANE	1046.34	32.320	BN 870	Dutton Park Cemetery Gauge	9.31	9.22	4.19
BRISBANE	1046.58	32.080	BN 860		9.26	9.17	4.17
BRISBANE	1046.9	31.760	BN 850		9.08	8.99	4.10
BRISBANE	1047.35	31.310	BN 840		8.72	8.62	3.98
BRISBANE	1047.915	30.745	BN 830	Highgate Hill Gauge	8.50	8.40	3.91
BRISBANE	1048.375	30.285	BN 820		8.56	8.46	3.91
BRISBANE	1048.89	29.770	BN 810	St Lucia Ferry Gauge	8.34	8.23	3.83
BRISBANE	1049.12	29.540	BN 800		8.29	8.18	3.81
BRISBANE	1049.37	29.290	BN 790		8.12	8.00	3.76
BRISBANE	1049.59	29.070	BN 780		8.12	8.00	3.76
BRISBANE	1049.87	28.790	BN 770		7.99	7.88	3.72
BRISBANE	1050.43	28.230	BN 760		7.99	7.87	3.69
BRISBANE	1050.86	27.800	BN 750		7.85	7.72	3.66
BRISBANE	1051.36	27.300	BN 740		7.85	7.72	3.66
BRISBANE	1051.895	26.765	BN 730		7.69	7.56	3.59
BRISBANE	1052.31	26.350	BN 720		7.79	7.67	3.62
BRISBANE	1052.37	26.290	BN 710	Merivale Bridge			
BRISBANE	1052.39	26.270	BN 700		7.64	7.50	3.58
BRISBANE	1052.595	26.065	BN 690		7.54	7.41	3.56
BRISBANE	1052.607	26.053	BN 680	William Jolly Bridge			
BRISBANE	1052.64	26.020	BN 670		7.05	6.93	3.49
BRISBANE	1052.865	25.795	BN 660		6.93	6.80	3.47
BRISBANE	1053.32	25.340	BN 650		6.86	6.73	3.44
BRISBANE	1053.356	25.304	BN 640	Victoria Bridge			
BRISBANE	1053.385	25.275	BN630		6.70	6.57	3.39
BRISBANE	1053.9	24.760	BN 620	Montague Road Gauge	6.35	6.21	3.28
BRISBANE	1054.64	24.020	BN 610		6.29	6.14	3.26
BRISBANE	1054.66	24.000	BN 600	Captain Cook Bridge			
BRISBANE	1054.68	23.980	BN 590		6.22	6.07	3.24
BRISBANE	1054.97	23.690	BN 560		5.99	5.84	3.19
BRISBANE	1055.28	23.380	BN 550		5.94	5.79	3.18
BRISBANE	1055.42	23.240	BN 540		5.95	5.79	3.18
BRISBANE	1055.96	22.700	BN 530	Port Office Gauge	5.90	5.74	3.16
BRISBANE	1056.4	22.260	BN 520		5.67	5.51	3.11
BRISBANE	1056.695	21.965	BN 510		5.62	5.45	3.09
BRISBANE	1056.865	21.795	BN 500		5.80	5.64	3.13
BRISBANE	1056.92	21.740	BN 495	Story Bridge			
BRISBANE	1056.95	21.710	BN 490		5.71	5.54	3.11
BRISBANE	1057.09	21.570	BN 480		5.57	5.40	3.08
BRISBANE	1057.53	21.130	BN 470		5.45	5.27	3.06
BRISBANE	1058.04	20.620	BN 460		5.23	5.04	3.00
BRISBANE	1058.23	20.430	BN 450		5.16	4.97	2.99
BRISBANE	1058.53	20.130	BN 440		5.04	4.85	2.97
BRISBANE	1058.735	19.925	BN 430		5.08	4.89	2.97
BRISBANE	1059.035	19.625	BN 420		4.82	4.63	2.92
BRISBANE	1059.54	19.120	BN 410		4.80	4.60	2.91
BRISBANE	1059.99	18.670	BN 400		4.64	4.43	2.87

TABLE H-1 - Combined Tailwater and River Flooding Conditions - Moreton Bay Storm Surge

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	Design Events - Existing Case		
					100 Year ARI Flood 100 Year Moreton Bay Storm Surge (m AHD)	100 Year ARI Flood 20 Year Moreton Bay Storm Surge (m AHD)	20 Year ARI Flood 100 Year Moreton Bay Storm Surge (m AHD)
BRISBANE	1060.345	18.315	BN 390		4.42	4.20	2.84
BRISBANE	1060.535	18.125	BN 380		4.29	4.06	2.81
BRISBANE	1061.015	17.645	BN 370		4.27	4.04	2.80
BRISBANE	1061.53	17.130	BN 360		4.09	3.85	2.77
BRISBANE	1062.02	16.640	BN 350		4.04	3.80	2.76
BRISBANE	1062.535	16.125	BN 340		4.02	3.77	2.75
BRISBANE	1062.94	15.720	BN 330		4.02	3.77	2.75
BRISBANE	1063.31	15.350	BN 320		3.92	3.67	2.73
BRISBANE	1063.645	15.015	BN 310	Cresent Road Gauge	3.70	3.43	2.69
BRISBANE	1064	14.660	BN 300		3.67	3.40	2.69
BRISBANE	1064.49	14.170	BN 290		3.57	3.29	2.67
BRISBANE	1065.01	13.650	BN 280		3.61	3.33	2.68
BRISBANE	1065.503	13.157	BN 270		3.57	3.29	2.67
BRISBANE	1065.99	12.670	BN 260	Cairncross Dock Gauge	3.58	3.30	2.67
BRISBANE	1066.505	12.155	BN 250		3.53	3.24	2.66
BRISBANE	1067.02	11.640	BN 240		3.50	3.21	2.66
BRISBANE	1067.485	11.175	BN 230		3.43	3.13	2.65
BRISBANE	1067.965	10.695	BN 220		3.33	3.03	2.65
BRISBANE	1068.66	10.000	BN 210		3.20	2.88	2.64
BRISBANE	1069.045	9.615	BN 200		3.15	2.83	2.64
BRISBANE	1069.535	9.125	BN 190	Bulimba Power House Gauge	3.11	2.79	2.63
BRISBANE	1070.025	8.635	BN 180		3.06	2.73	2.62
BRISBANE	1070.53	8.130	BN 170		3.00	2.66	2.62
BRISBANE	1071.04	7.620	BN 160		2.95	2.60	2.62
BRISBANE	1071.52	7.140	BN 150		2.97	2.63	2.62
BRISBANE	1072.015	6.645	BN 140		2.89	2.54	2.61
BRISBANE	1072.515	6.145	BN 130		2.85	2.49	2.61
BRISBANE	1072.995	5.665	BN 120		2.82	2.46	2.61
BRISBANE	1073.485	5.175	BN 110		2.75	2.39	2.61
BRISBANE	1074	4.660	BN 100		2.70	2.34	2.62
BRISBANE	1074.46	4.200	BN 90		2.67	2.29	2.62
BRISBANE	1074.985	3.675	BN 80		2.60	2.20	2.59
BRISBANE	1075.48	3.180	BN 70		2.60	2.19	2.60
BRISBANE	1076	2.660	BN 60		2.63	2.20	2.63
BRISBANE	1076.495	2.165	BN 50		2.64	2.19	2.64
BRISBANE	1077.01	1.650	BN 40		2.69	2.21	2.69
BRISBANE	1077.51	1.150	BN 30		2.67	2.20	2.67
BRISBANE	1078.04	0.620	BN 20		2.61	2.16	2.61
BRISBANE	1078.525	0.135	BN 10		2.50	2.10	2.50
BRISBANE	1078.66	0.000	-	Western Inner Bar Gauge	2.50	2.10	2.50
BREMER	599.4	-	-		19.82	19.80	10.50
BREMER	600	-	-		19.82	19.80	10.50
OXLEY	599.4	-	-		11.08	11.02	4.98
OXLEY	600	-	-		11.08	11.02	4.98
BREAKFAST	599.4	-	-		4.00	3.75	2.75
BREAKFAST	600	-	-		4.00	3.74	2.75
BULIMBA	599.4	-	-		2.89	2.54	2.61
BULIMBA	600	-	-		2.89	2.54	2.61
CENTWEIR	0	-	-		14.19	14.15	6.65
CENTWEIR	0.08	-	-		14.04	14.00	6.59
INDOORWEIR	0	-	-		11.26	11.20	5.26
INDOORWEIR	0.085	-	-		11.17	11.11	5.12
WILLIAMWEIR	0	-	-		7.54	7.41	3.56
WILLIAMWEIR	0.045	-	-		7.05	6.93	3.49
VICTORIAWEI	0	-	-		6.86	6.73	3.44
VICTORIAWEI	0.065	-	-		6.70	6.57	3.39
CAPTAINWEIR	0	-	-		6.29	6.14	3.26
CAPTAINWEIR	0.04	-	-		6.22	6.07	3.24
STORYWEIR	0	-	-		5.80	5.64	3.13
STORYWEIR	0.085	-	-		5.71	5.54	3.11
MERIVALEWE	0	-	-		7.79	7.67	3.62
MERIVALEWE	0.08	-	-		7.64	7.50	3.58
GOODNALINK1	0	-	-		18.25	18.23	9.32
GOODNALINK1	1	-	-		17.61	17.58	8.77
GOODNALINK2	0	-	-		18.18	18.16	9.26
GOODNALINK2	1.07	-	-		17.85	17.82	8.98
STLUCIALINK1	0	-	-		11.11	11.05	4.99
STLUCIALINK1	1.05	-	-		10.39	10.31	4.64
STLUCIALINK2	0	-	-		11.10	11.04	4.98
STLUCIALINK2	1.05	-	-		10.42	10.35	4.66
STLUCIALINK3	0	-	-		10.99	10.93	4.96
STLUCIALINK3	0.85	-	-		10.52	10.45	4.74

TABLE H -2 - Predicted Flood Levels for Design Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	DESIGN EVENTS											
					PMF WL (m AHD)	10000 YEAR ARI WL (m AHD)	2000 YEAR ARI WL (m AHD)	1000 YEAR ARI WL (m AHD)	500 YEAR ARI WL (m AHD)	200 YEAR ARI WL (m AHD)	100 YEAR ARI WL (m AHD)	50 YEAR ARI WL (m AHD)	20 YEAR ARI WL (m AHD)	10 YEAR ARI WL (m AHD)	5 YEAR ARI WL (m AHD)	2 YEAR ARI WL (m AHD)
BRISBANE	1000	78.66	BN 2020		40.26	36.04	31.82	30.29	27.56	25.25	22.76	19.70	13.24	7.25	4.72	1.77
BRISBANE	1000.285	78.375	BN 2010		40.31	36.03	31.73	30.17	27.36	25.04	22.57	19.53	13.07	7.16	4.66	1.75
BRISBANE	1000.775	77.885	BN 2000		39.47	35.32	31.19	29.68	26.99	24.73	22.29	19.28	12.81	7.00	4.54	1.71
BRISBANE	1001.315	77.345	BN 1990		39.73	35.49	31.26	29.72	26.98	24.68	22.20	19.17	12.65	6.86	4.40	1.65
BRISBANE	1001.865	76.795	BN 1980		39.00	34.79	30.62	29.10	26.40	24.14	21.68	18.70	12.23	6.64	4.24	1.59
BRISBANE	1002.35	76.310	BN 1970		38.81	34.60	30.44	28.92	26.23	23.95	21.48	18.48	11.92	6.42	4.09	1.56
BRISBANE	1002.785	75.875	BN 1960		39.08	34.76	30.53	28.98	26.24	23.93	21.46	18.46	11.86	6.34	4.01	1.53
BRISBANE	1003.275	75.385	BN 1950		38.72	34.42	30.17	28.61	25.89	23.60	21.13	18.15	11.54	6.16	3.88	1.50
BRISBANE	1003.775	74.885	BN 1940		38.28	34.03	29.85	28.31	25.62	23.34	20.86	17.91	11.26	5.97	3.73	1.48
BRISBANE	1004.3	74.360	BN 1930		38.19	33.79	29.42	27.79	25.13	22.86	20.41	17.49	10.83	5.75	3.59	1.46
BRISBANE	1004.81	73.850	BN 1920		38.06	33.71	29.41	27.82	25.14	22.85	20.37	17.44	10.70	5.63	3.49	1.45
BRISBANE	1005.325	73.335	BN 1910		37.97	33.58	29.23	27.62	24.93	22.67	20.20	17.28	10.53	5.47	3.36	1.44
BRISBANE	1005.87	72.790	BN 1900		37.61	33.21	28.85	27.21	24.59	22.35	19.89	16.98	10.26	5.25	3.18	1.42
BRISBANE	1006.3	72.360	BN 1890	Moggill Gauge	37.63	33.17	28.74	27.07	24.41	22.18	19.72	16.85	10.18	5.18	3.14	1.42
BRISBANE	1006.91	71.750	BN 1880		37.43	32.94	28.49	26.79	24.17	21.96	19.51	16.64	9.99	5.06	3.06	1.40
BRISBANE	1007.41	71.250	BN 1870		37.41	32.84	28.43	26.76	24.14	21.94	19.48	16.60	9.92	4.97	3.00	1.38
BRISBANE	1007.92	70.740	BN 1860		37.23	32.69	28.24	26.54	23.88	21.62	19.19	16.34	9.73	4.85	2.92	1.36
BRISBANE	1008.445	70.215	BN 1850		37.01	32.42	27.92	26.17	23.60	21.41	19.02	16.20	9.63	4.78	2.87	1.34
BRISBANE	1008.925	69.735	BN 1840		37.16	32.54	27.95	26.14	23.48	21.33	18.96	16.15	9.59	4.74	2.84	1.34
BRISBANE	1009.4	69.260	BN 1830		36.87	32.31	27.84	26.11	23.48	21.27	18.86	16.05	9.50	4.70	2.81	1.33
BRISBANE	1009.72	68.940	BN 1820		37.04	32.44	27.91	26.15	23.48	21.25	18.85	16.03	9.47	4.67	2.80	1.33
BRISBANE	1010.49	68.170	BN 1810		36.41	31.84	27.40	25.65	23.03	20.82	18.50	15.74	9.30	4.59	2.75	1.31
BRISBANE	1010.725	67.935	BN 1800		36.08	31.62	27.28	25.58	23.02	20.86	18.52	15.75	9.30	4.58	2.75	1.31
BRISBANE	1010.98	67.680	BN 1790		35.65	31.27	27.04	25.37	22.88	20.75	18.44	15.69	9.26	4.56	2.73	1.31
BRISBANE	1011.51	67.150	BN 1780		36.34	31.78	27.36	25.62	23.02	20.81	18.43	15.67	9.21	4.52	2.71	1.30
BRISBANE	1011.98	66.680	BN 1770		36.43	31.85	27.40	25.66	23.04	20.83	18.43	15.62	9.15	4.48	2.68	1.30
BRISBANE	1012.475	66.185	BN 1760		36.47	31.85	27.34	25.57	22.90	20.71	18.33	15.53	9.07	4.42	2.65	1.29
BRISBANE	1012.935	65.725	BN 1750		36.46	31.84	27.33	25.57	22.90	20.65	18.22	15.44	8.99	4.38	2.62	1.28
BRISBANE	1013.445	65.215	BN 1740		36.39	31.73	27.16	25.40	22.75	20.54	18.14	15.34	8.92	4.33	2.59	1.28
BRISBANE	1013.91	64.750	BN 1730		36.42	31.78	27.24	25.45	22.76	20.53	18.08	15.29	8.85	4.27	2.55	1.26
BRISBANE	1014.31	64.350	BN 1720		36.41	31.77	27.23	25.44	22.75	20.52	18.05	15.22	8.79	4.22	2.51	1.25
BRISBANE	1014.61	64.050	BN 1710	Goodna Hospital Gauge	36.42	31.77	27.23	25.45	22.76	20.53	18.08	15.25	8.73	4.18	2.49	1.25
BRISBANE	1015.09	63.570	BN 1700		36.34	31.69	27.13	25.34	22.64	20.41	17.94	15.13	8.71	4.17	2.48	1.25
BRISBANE	1015.56	63.100	BN 1690		36.09	31.50	27.01	25.22	22.53	20.29	17.81	15.02	8.62	4.13	2.46	1.24
BRISBANE	1016.14	62.520	BN 1680		36.30	31.66	27.10	25.28	22.54	20.25	17.71	14.93	8.56	4.09	2.44	1.24
BRISBANE	1016.64	62.020	BN 1670		36.38	31.71	27.10	25.27	22.50	20.17	17.62	14.82	8.45	4.01	2.38	1.22
BRISBANE	1017.13	61.530	BN 1660		36.37	31.66	27.01	25.14	22.27	19.94	17.39	14.61	8.27	3.87	2.29	1.20
BRISBANE	1017.61	61.050	BN 1650		36.23	31.40	26.82	24.97	22.17	19.84	17.26	14.44	8.09	3.77	2.23	1.19
BRISBANE	1017.92	60.740	BN 1640		36.11	31.25	26.58	24.75	21.98	19.67	17.10	14.28	7.96	3.69	2.19	1.18
BRISBANE	1018.2	60.460	BN 1630		36.16	31.35	26.68	24.81	21.95	19.59	17.02	14.22	7.93	3.67	2.18	1.18
BRISBANE	1018.725	59.935	BN 1620		35.93	31.09	26.37	24.44	21.53	19.21	16.69	13.94	7.78	3.60	2.14	1.17
BRISBANE	1019.095	59.565	BN 1610		35.87	31.03	26.31	24.37	21.42	19.07	16.56	13.80	7.66	3.54	2.11	1.16
BRISBANE	1019.49	59.170	BN 1600		35.69	30.85	26.16	24.24	21.31	18.95	16.45	13.70	7.58	3.48	2.08	1.16
BRISBANE	1019.865	58.795	BN 1590		35.32	30.47	25.79	23.84	20.88	18.60	16.15	13.46	7.45	3.43	2.05	1.15
BRISBANE	1020.115	58.545	BN 1580		35.65	30.77	26.04	24.09	21.12	18.75	16.25	13.51	7.43	3.40	2.03	1.15
BRISBANE	1020.525	58.135	BN 1570		35.63	30.75	26.00	24.04	21.08	18.73	16.22	13.48	7.39	3.36	2.01	1.14
BRISBANE	1020.83	57.830	BN 1560		35.32	30.45	25.75	23.79	20.86	18.54	16.07	13.36	7.32	3.32	1.99	1.14
BRISBANE	1021.095	57.565	BN 1550		34.89	30.05	25.42	23.47	20.58	18.30	15.86	13.19	7.21	3.27	1.96	1.13
BRISBANE	1021.539	57.121	BN 1540		34.79	29.93	25.28	23.32	20.40	18.12	15.69	13.03	7.08	3.19	1.92	1.13
BRISBANE	1021.715	56.945	BN 1530		34.98	30.08	25.38	23.40	20.46	18.16	15.72	13.03	7.06	3.17	1.91	1.12
BRISBANE	1021.895	56.765	BN 1520		34.82	29.88	25.23	23.27	20.36	18.08	15.65	12.98	7.03	3.15	1.90	1.12
BRISBANE	1022.105	56.555	BN 1510		34.39	29.53	24.96	23.03	20.17	17.92	15.53	12.90	7.00	3.15	1.89	1.12
BRISBANE	1022.575	56.085	BN 1500		34.65	29.69	24.97	23.02	20.14	17.87	15.45	12.80	6.92	3.10	1.87	1.12
BRISBANE	1023.04	55.620	BN 1490		34.60	29.62	24.86	22.82	19.84	17.59	15.21	12.59	6.81	3.07	1.86	1.12
BRISBANE	1023.57	55.090	BN 1480		33.87	29.00	24.46	22.51	19.68	17.48	15.12	12.52	6.78	3.05	1.85	1.11
BRISBANE	1024.08	54.580	BN 1470		34.19	29.08	24.48	22.51	19.65	17.43	15.07	12.46	6.72	3.02	1.83	1.11
BRISBANE	1024.563	54.097	BN 1460		34.15	29.12	24.43	22.42	19.58	17.37	15.01	12.40	6.64	2.97	1.80	1.11
BRISBANE	1025.07	53.590	BN 1450		34.39	29.32	24.54	22.49	19.53	17.29	14.91	12.30	6.58	2.93	1.78	1.10
BRISBANE	1025.36	53.300	BN 1440		33.96	28.85	24.19	22.18	19.31	17.12	14.77	12.19	6.49	2.89	1.76	1.10
BRISBANE	1025.59	53.070	BN 1430		33.59	28.61	24.00	21.99	19.14	16.95	14.61	12.04	6.41	2.85	1.75	1.10

TABLE H -2 - Predicted Flood Levels for Design Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	DESIGN EVENTS PMF WL (m AHD)	10000 YEAR ARI WL (m AHD)	2000 YEAR ARI WL (m AHD)	1000 YEAR ARI WL (m AHD)	500 YEAR ARI WL (m AHD)	200 YEAR ARI WL (m AHD)	100 YEAR ARI WL (m AHD)	50 YEAR ARI WL (m AHD)	20 YEAR ARI WL (m AHD)	10 YEAR ARI WL (m AHD)	5 YEAR ARI WL (m AHD)	2 YEAR ARI WL (m AHD)
BRISBANE	1026.17	52.490	BN 1420		33.61	28.41	23.77	21.75	18.92	16.78	14.48	11.96	6.36	2.83	1.73	1.09
BRISBANE	1026.68	51.980	BN 1410	Mt Ommaney Gauge	33.69	28.56	23.87	21.82	18.92	16.70	14.38	11.84	6.26	2.78	1.71	1.09
BRISBANE	1026.9	51.760	BN 1400		33.62	28.47	23.77	21.70	18.78	16.54	14.25	11.73	6.20	2.75	1.70	1.09
BRISBANE	1027.16	51.500	BN 1390		33.40	28.23	23.53	21.45	18.53	16.38	14.11	11.62	6.15	2.73	1.69	1.09
BRISBANE	1027.68	50.980	BN 1380		33.33	28.22	23.58	21.54	18.66	16.47	14.17	11.64	6.13	2.71	1.68	1.08
BRISBANE	1028.18	50.480	BN 1370		33.51	28.37	23.68	21.62	18.71	16.51	14.19	11.65	6.12	2.70	1.67	1.08
BRISBANE	1028.68	49.980	BN 1360		33.23	28.11	23.48	21.43	18.55	16.36	14.06	11.54	6.05	2.67	1.66	1.08
BRISBANE	1028.72	49.940	BN1350	Centenary Bridge												
BRISBANE	1028.76	49.900	BN 1340		32.66	27.50	22.92	21.18	18.32	16.14	13.91	11.45	5.97	2.63	1.64	1.07
BRISBANE	1029.2	49.460	BN 1330		32.32	27.22	22.76	21.04	18.18	16.00	13.80	11.35	5.90	2.60	1.62	1.07
BRISBANE	1029.68	48.980	BN 1320		32.60	27.44	22.90	21.16	18.26	16.05	13.82	11.34	5.90	2.60	1.62	1.07
BRISBANE	1030.22	48.440	BN 1310		32.70	27.38	22.84	21.11	18.23	16.04	13.82	11.36	5.89	2.58	1.62	1.07
BRISBANE	1030.87	47.790	BN 1300		32.37	27.19	22.72	21.01	18.14	15.96	13.75	11.29	5.84	2.56	1.60	1.07
BRISBANE	1031.26	47.400	BN 1290		31.83	26.75	22.41	20.72	17.92	15.77	13.59	11.17	5.78	2.54	1.59	1.07
BRISBANE	1031.7	46.960	BN 1280	Darra Wharf Gauge	30.69	25.72	21.65	20.04	17.36	15.30	13.21	10.87	5.62	2.47	1.56	1.06
BRISBANE	1031.995	46.665	BN 1270		31.74	26.57	22.20	20.50	17.67	15.51	13.31	10.87	5.57	2.44	1.55	1.06
BRISBANE	1032.23	46.430	BN 1260		31.26	26.12	21.89	20.23	17.46	15.34	13.18	10.79	5.51	2.41	1.53	1.06
BRISBANE	1032.585	46.075	BN 1250		30.52	25.48	21.43	19.81	17.11	15.05	12.94	10.59	5.41	2.37	1.52	1.05
BRISBANE	1033.08	45.580	BN 1240		30.88	25.32	21.27	19.65	16.95	14.89	12.79	10.45	5.32	2.34	1.50	1.05
BRISBANE	1033.37	45.290	BN 1230		30.91	25.52	21.26	19.54	16.81	14.76	12.68	10.36	5.27	2.31	1.49	1.05
BRISBANE	1033.9	44.760	BN 1220		30.67	25.23	20.97	19.22	16.48	14.47	12.45	10.17	5.16	2.28	1.48	1.05
BRISBANE	1034.37	44.290	BN 1210		30.78	25.21	20.66	18.95	16.27	14.29	12.29	10.03	5.10	2.25	1.46	1.05
BRISBANE	1034.89	43.770	BN 1200	Sherwood Gauge	30.85	25.32	20.87	19.06	16.19	14.20	12.19	9.93	5.02	2.22	1.45	1.04
BRISBANE	1035.414	43.246	BN 1190		30.01	24.53	20.30	18.58	15.85	13.90	11.94	9.72	4.90	2.16	1.43	1.04
BRISBANE	1035.9	42.760	BN 1180		29.50	23.98	19.90	18.20	15.50	13.58	11.65	9.47	4.74	2.10	1.40	1.04
BRISBANE	1036.46	42.200	BN 1170		29.54	23.82	19.61	17.84	15.11	13.22	11.35	9.21	4.60	2.05	1.38	1.03
BRISBANE	1036.77	41.890	BN 1160		29.29	23.60	19.50	17.77	15.06	13.16	11.28	9.13	4.54	2.02	1.36	1.03
BRISBANE	1036.915	41.745	BN 1150		28.74	23.04	19.15	17.46	14.81	12.97	11.12	9.01	4.48	2.00	1.36	1.03
BRISBANE	1037.09	41.570	BN 1140		28.88	23.12	19.10	17.35	14.73	12.92	11.07	8.98	4.47	2.00	1.35	1.03
BRISBANE	1037.11	41.550	BN 1130	Indooroopilly Bridge												
BRISBANE	1037.175	41.485	BN 1120		26.33	22.93	18.72	17.10	14.54	12.77	10.98	8.90	4.32	1.94	1.33	1.02
BRISBANE	1037.285	41.375	BN 1110	Clarence Road Gauge	25.67	22.51	18.58	17.01	14.47	12.71	10.93	8.86	4.29	1.93	1.32	1.02
BRISBANE	1037.625	41.035	BN 1100		25.99	22.72	18.66	17.06	14.48	12.71	10.91	8.83	4.25	1.91	1.31	1.02
BRISBANE	1038.085	40.575	BN 1090		26.56	23.13	18.86	17.22	14.60	12.78	10.93	8.81	4.23	1.90	1.31	1.02
BRISBANE	1038.6	40.060	BN 1080		26.51	23.09	18.83	17.19	14.57	12.75	10.91	8.79	4.18	1.88	1.30	1.02
BRISBANE	1039.1	39.560	BN 1070		26.73	23.26	18.94	17.29	14.64	12.79	10.90	8.76	4.15	1.86	1.29	1.02
BRISBANE	1039.565	39.095	BN 1060	Oxley Creek Gauge	26.72	23.25	18.93	17.28	14.63	12.79	10.92	8.75	4.14	1.85	1.29	1.02
BRISBANE	1040.09	38.570	BN 1050	King Authur Terrace Gauge	26.67	23.20	18.88	17.22	14.56	12.72	10.84	8.72	4.14	1.86	1.29	1.02
BRISBANE	1040.49	38.170	BN 1040		26.63	23.16	18.81	17.13	14.43	12.57	10.71	8.60	4.08	1.84	1.29	1.02
BRISBANE	1041.01	37.650	BN 1030		26.66	23.19	18.86	17.19	14.50	12.62	10.74	8.62	4.09	1.84	1.29	1.02
BRISBANE	1041.23	37.430	BN 1020		26.66	23.19	18.86	17.19	14.50	12.62	10.71	8.58	4.05	1.83	1.28	1.01
BRISBANE	1041.46	37.200	BN 1010	Tennyson Power House Gauge	26.63	23.16	18.82	17.15	14.44	12.53	10.62	8.51	4.01	1.81	1.27	1.01
BRISBANE	1041.7	36.960	BN 1000		26.62	23.15	18.81	17.13	14.41	12.50	10.59	8.48	4.01	1.81	1.27	1.01
BRISBANE	1041.96	36.700	BN 990		26.58	23.09	18.74	17.05	14.30	12.37	10.45	8.36	3.94	1.79	1.27	1.01
BRISBANE	1042.235	36.425	BN 980		26.52	23.04	18.68	16.98	14.21	12.24	10.30	8.23	3.89	1.77	1.26	1.01
BRISBANE	1042.515	36.145	BN 970	Yeronga Street Gauge	26.59	23.11	18.72	16.99	14.20	12.24	10.29	8.21	3.87	1.77	1.26	1.01
BRISBANE	1042.91	35.750	BN 960		26.58	23.10	18.74	17.03	14.21	12.21	10.22	8.13	3.79	1.74	1.24	1.01
BRISBANE	1043.725	34.935	BN 950		26.14	22.71	18.41	16.69	13.85	11.86	9.91	7.85	3.63	1.67	1.22	1.00
BRISBANE	1044.06	34.600	BN 940	Sandy Creek Gauge	25.47	22.18	18.04	16.37	13.59	11.64	9.75	7.75	3.59	1.66	1.21	1.00
BRISBANE	1044.34	34.320	BN 930		25.08	21.85	17.77	16.12	13.37	11.45	9.58	7.61	3.52	1.64	1.21	1.00
BRISBANE	1044.605	34.055	BN 920		25.43	22.01	17.77	16.11	13.34	11.41	9.53	7.55	3.49	1.63	1.20	1.00
BRISBANE	1044.86	33.800	BN 910		25.52	22.00	17.78	16.10	13.31	11.38	9.49	7.51	3.45	1.61	1.20	1.00
BRISBANE	1045.4	33.260	BN 900		25.51	22.01	17.72	16.01	13.12	11.18	9.31	7.34	3.34	1.58	1.18	0.99
BRISBANE	1045.885	32.775	BN 890		25.50	22.00	17.70	15.98	13.09	11.10	9.17	7.15	3.23	1.54	1.17	0.99
BRISBANE	1046.18	32.480	BN 880		25.42	21.93	17.64	15.91	13.01	11.02	9.09	7.10	3.22	1.54	1.16	0.99
BRISBANE	1046.34	32.320	BN 870	Dutton Park Cemetery Gauge	24.93	21.55	17.36	15.68	12.84	10.90	9.02	7.06	3.20	1.53	1.16	0.99
BRISBANE	1046.58	32.080	BN 860		24.88	21.50	17.33	15.64	12.80	10.85	8.97	7.02	3.18	1.53	1.16	0.99
BRISBANE	1046.9	31.760	BN 850		24.58	21.22	17.07	15.40	12.57	10.64	8.78	6.85	3.09	1.50	1.15	0.99
BRISBANE	1047.35	31.310	BN 840		23.77	20.50	16.48	14.85	12.07	10.20	8.41	6.54	2.95	1.46	1.13	0.98
BRISBANE	1047.915	30.745	BN 830	Highgate Hill Gauge	23.48	20.28	16.26	14.61	11.81	9.94	8.17	6.35	2.87	1.43	1.13	0.98

TABLE H-2 - Predicted Flood Levels for Design Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	DESIGN EVENTS											
					PMF WL (m AHD)	10000 YEAR ARI WL (m AHD)	2000 YEAR ARI WL (m AHD)	1000 YEAR ARI WL (m AHD)	500 YEAR ARI WL (m AHD)	200 YEAR ARI WL (m AHD)	100 YEAR ARI WL (m AHD)	50 YEAR ARI WL (m AHD)	20 YEAR ARI WL (m AHD)	10 YEAR ARI WL (m AHD)	5 YEAR ARI WL (m AHD)	2 YEAR ARI WL (m AHD)
BRISBANE	1048.375	30.285	BN 820		23.77	20.50	16.41	14.75	11.92	10.03	8.23	6.38	2.87	1.43	1.12	0.98
BRISBANE	1048.89	29.770	BN 810	St Lucia Ferry Gauge	23.43	20.19	16.12	14.46	11.64	9.77	8.00	6.18	2.76	1.40	1.11	0.98
BRISBANE	1049.12	29.540	BN 800		23.39	20.07	15.98	14.35	11.55	9.70	7.94	6.14	2.74	1.39	1.11	0.98
BRISBANE	1049.37	29.290	BN 790		23.23	20.01	15.94	14.28	11.44	9.54	7.75	5.99	2.68	1.37	1.10	0.98
BRISBANE	1049.59	29.070	BN 780		23.39	20.13	16.02	14.35	11.48	9.56	7.74	5.97	2.67	1.37	1.10	0.98
BRISBANE	1049.87	28.790	BN 770		23.03	19.79	15.65	14.00	11.21	9.37	7.63	5.88	2.63	1.36	1.10	0.98
BRISBANE	1050.43	28.230	BN 760		23.29	20.02	15.89	14.22	11.34	9.42	7.61	5.82	2.59	1.35	1.09	0.97
BRISBANE	1050.86	27.800	BN 750		22.68	19.55	15.55	13.91	11.09	9.22	7.46	5.73	2.54	1.34	1.09	0.97
BRISBANE	1051.36	27.300	BN 740		22.80	19.53	15.53	13.89	11.08	9.21	7.46	5.72	2.55	1.34	1.09	0.97
BRISBANE	1051.895	26.765	BN 730		22.88	19.53	15.30	13.68	10.87	9.02	7.30	5.57	2.46	1.31	1.08	0.97
BRISBANE	1052.31	26.350	BN 720		22.98	19.72	15.59	13.92	11.06	9.16	7.40	5.65	2.49	1.32	1.08	0.97
BRISBANE	1052.37	26.290	BN 710	Merivale Bridge												
BRISBANE	1052.39	26.270	BN 700		21.93	19.09	15.18	13.60	10.82	8.96	7.23	5.51	2.44	1.30	1.07	0.97
BRISBANE	1052.595	26.065	BN 690		21.33	18.63	14.81	13.29	10.59	8.79	7.14	5.45	2.42	1.30	1.07	0.97
BRISBANE	1052.607	26.053	BN 680	William Jolly Bridge												
BRISBANE	1052.64	26.020	BN 670		20.14	16.83	12.85	11.69	9.61	8.14	6.63	5.08	2.34	1.28	1.06	0.96
BRISBANE	1052.865	25.795	BN 660		20.03	16.44	12.55	11.44	9.41	7.96	6.49	4.98	2.32	1.28	1.06	0.96
BRISBANE	1053.32	25.340	BN 650		20.07	16.61	12.55	11.42	9.36	7.88	6.42	4.92	2.28	1.26	1.06	0.96
BRISBANE	1053.356	25.304	BN 640	Victoria Bridge												
BRISBANE	1053.385	25.275	BN630		18.15	15.50	12.25	11.04	9.09	7.67	6.24	4.77	2.20	1.24	1.05	0.95
BRISBANE	1053.9	24.760	BN 620	Montague Road Gauge	18.08	15.31	11.76	10.55	8.63	7.22	5.85	4.43	2.05	1.20	1.03	0.95
BRISBANE	1054.64	24.020	BN 610		17.86	15.15	11.69	10.48	8.54	7.14	5.78	4.36	2.01	1.19	1.03	0.95
BRISBANE	1054.66	24.000	BN 600	Captain Cook Bridge												
BRISBANE	1054.68	23.980	BN 590		17.36	14.89	11.54	10.35	8.44	7.05	5.70	4.30	1.98	1.18	1.02	0.95
BRISBANE	1054.97	23.690	BN 560		16.41	14.14	11.01	9.89	8.07	6.74	5.45	4.11	1.92	1.16	1.01	0.95
BRISBANE	1055.28	23.380	BN 550		16.23	14.00	10.91	9.80	8.00	6.68	5.40	4.08	1.90	1.16	1.01	0.95
BRISBANE	1055.42	23.240	BN 540		16.35	14.08	10.95	9.83	8.02	6.69	5.40	4.08	1.90	1.16	1.01	0.95
BRISBANE	1055.96	22.700	BN 530	Port Office Gauge	16.51	14.16	10.96	9.82	7.98	6.64	5.34	4.02	1.88	1.15	1.01	0.95
BRISBANE	1056.4	22.260	BN 520		16.23	13.86	10.64	9.49	7.64	6.35	5.09	3.84	1.81	1.13	1.00	0.95
BRISBANE	1056.695	21.965	BN 510		15.70	13.49	10.43	9.33	7.56	6.27	5.03	3.79	1.79	1.13	1.00	0.95
BRISBANE	1056.865	21.795	BN 500		16.59	14.19	10.90	9.74	7.88	6.53	5.22	3.93	1.84	1.14	1.00	0.95
BRISBANE	1056.92	21.740	BN 495	Story Bridge												
BRISBANE	1056.95	21.710	BN 490		16.32	13.95	10.72	9.57	7.73	6.41	5.12	3.85	1.81	1.13	1.00	0.94
BRISBANE	1057.09	21.570	BN 480		15.55	13.35	10.32	9.23	7.47	6.21	4.97	3.75	1.78	1.12	1.00	0.94
BRISBANE	1057.53	21.130	BN 470		15.13	13.00	10.05	8.99	7.28	6.04	4.83	3.65	1.75	1.12	0.99	0.94
BRISBANE	1058.04	20.620	BN 460		14.53	12.49	9.64	8.61	6.94	5.74	4.58	3.45	1.68	1.10	0.99	0.94
BRISBANE	1058.23	20.430	BN 450		14.49	12.40	9.53	8.51	6.85	5.65	4.50	3.39	1.66	1.09	0.98	0.94
BRISBANE	1058.53	20.130	BN 440		13.73	11.77	9.15	8.19	6.61	5.47	4.37	3.30	1.63	1.09	0.98	0.94
BRISBANE	1058.735	19.925	BN 430		14.03	12.01	9.28	8.30	6.69	5.53	4.41	3.32	1.63	1.09	0.98	0.94
BRISBANE	1059.035	19.625	BN 420		12.87	11.00	8.60	7.71	6.23	5.16	4.13	3.12	1.57	1.07	0.98	0.94
BRISBANE	1059.54	19.120	BN 410		13.50	11.43	8.68	7.76	6.23	5.13	4.09	3.08	1.55	1.07	0.97	0.94
BRISBANE	1059.99	18.670	BN 400		12.91	10.97	8.38	7.47	5.97	4.90	3.88	2.92	1.49	1.05	0.97	0.94
BRISBANE	1060.345	18.315	BN 390		11.54	9.91	7.68	6.88	5.53	4.57	3.65	2.76	1.45	1.04	0.97	0.94
BRISBANE	1060.535	18.125	BN 380		10.97	9.46	7.36	6.60	5.30	4.37	3.50	2.66	1.42	1.03	0.96	0.94
BRISBANE	1061.015	17.645	BN 370		11.40	9.72	7.43	6.61	5.29	4.34	3.45	2.62	1.40	1.03	0.96	0.94
BRISBANE	1061.53	17.130	BN 360		10.43	8.95	6.91	6.18	4.94	4.06	3.24	2.47	1.35	1.02	0.96	0.94
BRISBANE	1062.02	16.640	BN 350		10.51	8.97	6.87	6.12	4.87	3.99	3.16	2.41	1.33	1.01	0.96	0.94
BRISBANE	1062.535	16.125	BN 340		10.68	9.06	6.90	6.13	4.85	3.95	3.12	2.37	1.31	1.01	0.95	0.94
BRISBANE	1062.94	15.720	BN 330		10.86	9.12	6.92	6.14	4.85	3.95	3.11	2.36	1.31	1.01	0.95	0.94
BRISBANE	1063.31	15.350	BN 320		10.24	8.70	6.63	5.89	4.65	3.79	2.99	2.28	1.28	1.00	0.95	0.94
BRISBANE	1063.645	15.015	BN 310	Cresent Road Gauge	9.08	7.77	5.98	5.32	4.21	3.43	2.72	2.09	1.23	0.99	0.95	0.94
BRISBANE	1064	14.660	BN 300		9.17	7.79	5.95	5.29	4.16	3.38	2.68	2.06	1.22	0.99	0.95	0.94
BRISBANE	1064.49	14.170	BN 290		8.59	7.33	5.63	5.01	3.94	3.21	2.55	1.97	1.19	0.98	0.94	0.94
BRISBANE	1065.01	13.650	BN 280		9.01	7.65	5.81	5.15	4.03	3.26	2.57	1.98	1.20	0.98	0.94	0.94
BRISBANE	1065.503	13.157	BN 270		9.22	7.73	5.76	5.05	3.94	3.19	2.53	1.95	1.19	0.98	0.94	0.94
BRISBANE	1065.99	12.670	BN 260	Cairncross Dock Gauge	8.90	7.54	5.72	5.05	3.95	3.21	2.54	1.96	1.19	0.98	0.94	0.94
BRISBANE	1066.505	12.155	BN 250		9.13	7.64	5.64	4.94	3.85	3.11	2.46	1.91	1.18	0.98	0.94	0.94
BRISBANE	1067.02	11.640	BN 240		8.78	7.39	5.53	4.86	3.79	3.07	2.43	1.88	1.17	0.98	0.94	0.94
BRISBANE	1067.485	11.175	BN 230		8.49	7.14	5.33	4.68	3.63	2.93	2.32	1.81	1.15	0.97	0.94	0.94
BRISBANE	1067.965	10.695	BN 220		7.95	6.69	5.01	4.40	3.41	2.76	2.20	1.73	1.12	0.97	0.94	0.94

TABLE H - 2 - Predicted Flood Levels for Design Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	DESIGN EVENTS											
					PMF WL (m AHD)	10000 YEAR ARI WL (m AHD)	2000 YEAR ARI WL (m AHD)	1000 YEAR ARI WL (m AHD)	500 YEAR ARI WL (m AHD)	200 YEAR ARI WL (m AHD)	100 YEAR ARI WL (m AHD)	50 YEAR ARI WL (m AHD)	20 YEAR ARI WL (m AHD)	10 YEAR ARI WL (m AHD)	5 YEAR ARI WL (m AHD)	2 YEAR ARI WL (m AHD)
BRISBANE	1068.66	10.000	BN 210		7.06	6.00	4.54	4.00	3.10	2.52	2.02	1.61	1.09	0.96	0.93	0.94
BRISBANE	1069.045	9.615	BN 200		7.48	6.21	4.50	3.86	2.97	2.42	1.95	1.56	1.08	0.96	0.93	0.93
BRISBANE	1069.535	9.125	BN 190	Bulimba Power House Gauge	7.21	5.93	4.28	3.72	2.88	2.34	1.89	1.52	1.07	0.95	0.93	0.93
BRISBANE	1070.025	8.635	BN 180		7.02	5.76	4.07	3.54	2.75	2.25	1.82	1.48	1.06	0.95	0.93	0.93
BRISBANE	1070.53	8.130	BN 170		7.06	5.76	3.99	3.38	2.57	2.11	1.72	1.41	1.04	0.95	0.93	0.93
BRISBANE	1071.04	7.620	BN 160		6.92	5.55	3.72	3.17	2.43	1.99	1.64	1.36	1.03	0.94	0.93	0.93
BRISBANE	1071.52	7.140	BN 150		6.67	5.41	3.74	3.21	2.48	2.04	1.67	1.38	1.03	0.94	0.93	0.93
BRISBANE	1072.015	6.645	BN 140		6.36	5.11	3.44	2.94	2.27	1.88	1.56	1.31	1.01	0.94	0.93	0.93
BRISBANE	1072.515	6.145	BN 130		6.07	4.80	3.24	2.77	2.15	1.79	1.50	1.28	1.01	0.94	0.93	0.93
BRISBANE	1072.995	5.665	BN 120		5.66	4.55	3.09	2.66	2.07	1.73	1.46	1.25	1.00	0.94	0.93	0.93
BRISBANE	1073.485	5.175	BN 110		5.06	4.07	2.77	2.38	1.88	1.59	1.36	1.19	0.98	0.93	0.93	0.93
BRISBANE	1074	4.660	BN 100		4.54	3.68	2.51	2.17	1.73	1.48	1.29	1.14	0.97	0.93	0.93	0.93
BRISBANE	1074.46	4.200	BN 90		4.30	3.33	2.26	1.97	1.59	1.38	1.22	1.10	0.96	0.93	0.93	0.93
BRISBANE	1074.985	3.675	BN 80		3.25	2.50	1.73	1.54	1.31	1.18	1.09	1.02	0.94	0.93	0.92	0.93
BRISBANE	1075.48	3.180	BN 70		2.94	2.29	1.62	1.45	1.25	1.14	1.06	1.00	0.94	0.92	0.92	0.92
BRISBANE	1076	2.660	BN 60		2.84	2.24	1.62	1.46	1.26	1.15	1.07	1.01	0.94	0.92	0.92	0.92
BRISBANE	1076.495	2.165	BN 50		1.89	1.48	1.15	1.08	1.01	0.98	0.96	0.94	0.92	0.92	0.92	0.92
BRISBANE	1077.01	1.650	BN 40		1.65	1.38	1.14	1.08	1.02	0.99	0.96	0.95	0.93	0.92	0.92	0.92
BRISBANE	1077.51	1.150	BN 30		1.57	1.36	1.15	1.10	1.03	1.00	0.97	0.95	0.93	0.92	0.92	0.92
BRISBANE	1078.04	0.620	BN 20		1.31	1.20	1.07	1.04	0.99	0.97	0.95	0.94	0.92	0.92	0.92	0.92
BRISBANE	1078.525	0.135	BN 10		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
BRISBANE	1078.66	0.000	-	Western Inner Bar Gauge	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
BREMER	599.4	-	-		37.65	33.20	28.77	27.11	24.46	22.23	19.76	16.88	10.20	5.20	3.14	1.42
BREMER	600	-	-		37.63	33.18	28.77	27.11	24.46	22.23	19.76	16.87	10.20	5.20	3.14	1.42
OXLEY	599.4	-	-		26.70	23.23	18.91	17.25	14.59	12.76	10.87	8.73	4.14	1.86	1.29	1.01
OXLEY	600	-	-		26.70	23.23	18.91	17.25	14.60	12.76	10.87	8.73	4.14	1.86	1.29	1.02
BREAKFAST	599.4	-	-		10.72	9.05	6.84	6.06	4.79	3.90	3.09	2.34	1.30	1.01	0.95	0.94
BREAKFAST	600	-	-		10.72	9.05	6.84	6.06	4.79	3.90	3.08	2.34	1.30	1.01	0.95	0.94
BULIMBA	599.4	-	-		6.36	5.11	3.43	2.93	2.27	1.88	1.56	1.31	1.01	0.94	0.93	0.93
BULIMBA	600	-	-		6.36	5.11	3.43	2.93	2.27	1.88	1.56	1.31	1.01	0.94	0.93	0.93
CENTWEIR	0	-	-		33.23	28.11	23.48	21.43	18.55	16.36	14.06	11.54	6.05	2.67	1.66	1.08
CENTWEIR	0.08	-	-		32.66	27.50	22.92	21.18	18.32	16.14	13.91	11.45	5.97	2.63	1.64	1.07
INDOORWEIR	0	-	-		28.88	23.12	19.10	17.35	14.73	12.92	11.07	8.98	4.47	2.00	1.35	1.03
INDOORWEIR	0.085	-	-		26.33	22.93	18.72	17.10	14.54	12.77	10.98	8.90	4.32	1.94	1.33	1.02
WILLIAMWEIR	0	-	-		21.33	18.63	14.81	13.29	10.59	8.79	7.14	5.45	2.42	1.30	1.07	0.97
WILLIAMWEIR	0.045	-	-		20.14	16.83	12.85	11.69	9.61	8.14	6.63	5.08	2.34	1.28	1.06	0.96
VICTORIAWEIR	0	-	-		20.07	16.61	12.55	11.42	9.36	7.88	6.42	4.92	2.28	1.26	1.06	0.96
VICTORIAWEIR	0.065	-	-		18.15	15.50	12.25	11.04	9.09	7.67	6.24	4.77	2.20	1.24	1.05	0.95
CAPTAINWEIR	0	-	-		17.86	15.15	11.69	10.48	8.54	7.14	5.78	4.36	2.01	1.19	1.03	0.95
CAPTAINWEIR	0.04	-	-		17.36	14.89	11.54	10.35	8.44	7.05	5.70	4.30	1.98	1.18	1.02	0.95
STORYWEIR	0	-	-		16.59	14.19	10.90	9.74	7.88	6.53	5.22	3.93	1.84	1.14	1.00	0.95
STORYWEIR	0.085	-	-		16.32	13.95	10.72	9.57	7.73	6.41	5.12	3.85	1.81	1.13	1.00	0.94
MERIVALEWEIR	0	-	-		22.98	19.72	15.59	13.92	11.06	9.16	7.40	5.65	2.49	1.32	1.08	0.97
MERIVALEWEIR	0.08	-	-		21.93	19.09	15.18	13.60	10.82	8.96	7.23	5.51	2.44	1.30	1.07	0.97
GOODNALINK1	0	-	-		36.43	31.79	27.26	25.47	22.78	20.57	18.18	15.40	8.95	4.35	2.61	1.28
GOODNALINK1	1	-	-		36.38	31.70	27.08	25.23	22.43	20.07	17.53	14.72	8.36	3.94	2.34	1.21
GOODNALINK2	0	-	-		36.42	31.77	27.22	25.43	22.72	20.52	18.11	15.32	8.88	4.30	2.57	1.27
GOODNALINK2	1.07	-	-		36.18	31.51	26.98	25.19	22.50	20.25	17.77	14.98	8.59	4.11	2.45	1.24
STLUCIALINK1	0	-	-		26.73	23.26	18.94	17.28	14.63	12.79	10.91	8.76	4.15	1.86	1.29	1.02
STLUCIALINK1	1.05	-	-		26.56	23.08	18.71	16.99	14.16	12.14	10.15	8.05	3.74	1.72	1.24	1.00
STLUCIALINK2	0	-	-		26.71	23.24	18.92	17.26	14.62	12.78	10.90	8.73	4.14	1.86	1.29	1.02
STLUCIALINK2	1.05	-	-		26.57	23.09	18.73	17.02	14.19	12.18	10.18	8.09	3.76	1.73	1.24	1.01
STLUCIALINK3	0	-	-		26.65	23.18	18.85	17.18	14.51	12.65	10.79	8.67	4.12	1.85	1.29	1.02
STLUCIALINK3	0.85	-	-		26.58	23.10	18.70	16.98	14.20	12.24	10.29	8.22	3.87	1.77	1.26	1.01

TABLE H-3 - Predicted Discharges for Design Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	DESIGN EVENTS										
			PMF Q (m^3/s)	10000 YEAR ARI Q (m^3/s)	2000 YEAR ARI Q (m^3/s)	1000 YEAR ARI Q (m^3/s)	500 YEAR ARI Q (m^3/s)	200 YEAR ARI Q (m^3/s)	100 YEAR ARI Q (m^3/s)	50 YEAR ARI Q (m^3/s)	20 YEAR ARI Q (m^3/s)	10 YEAR ARI Q (m^3/s)	5 YEAR ARI Q (m^3/s)	2 YEAR ARI Q (m^3/s)
BRISBANE	1000.14	78.52	29818	23872	18246	16373	13372	11115	9235	7185	4225	1627	930	284
BRISBANE	1000.53	78.13	29816	23870	18242	16371	13367	11113	9233	7183	4222	1627	930	284
BRISBANE	1001.05	77.62	29814	23869	18240	16369	13364	11111	9231	7181	4219	1626	929	283
BRISBANE	1001.59	77.07	29812	23867	18237	16367	13360	11108	9229	7179	4214	1624	928	283
BRISBANE	1002.11	76.55	29809	23865	18232	16364	13355	11105	9226	7177	4211	1623	928	283
BRISBANE	1002.57	76.09	29807	23863	18229	16362	13351	11102	9224	7174	4207	1623	927	283
BRISBANE	1003.03	75.63	29801	23859	18223	16358	13345	11099	9222	7172	4202	1622	927	283
BRISBANE	1003.53	75.14	29798	23857	18219	16355	13339	11095	9219	7169	4198	1621	926	283
BRISBANE	1004.04	74.62	29796	23856	18216	16353	13335	11092	9217	7167	4193	1620	926	283
BRISBANE	1004.56	74.11	29793	23853	18210	16350	13329	11089	9214	7164	4189	1619	925	283
BRISBANE	1005.07	73.59	29791	23851	18206	16347	13324	11085	9211	7161	4181	1617	925	283
BRISBANE	1005.60	73.06	29787	23848	18200	16343	13316	11081	9206	7156	4172	1615	923	283
BRISBANE	1006.04	72.63	29785	23846	18196	16341	13311	11077	9203	7153	4165	1614	923	283
BRISBANE	1006.25	72.41	36224	28595	20940	18475	14589	11882	9542	7339	3646	1602	955	367
BRISBANE	1006.61	72.06	36221	28594	20938	18473	14587	11880	9541	7338	3644	1602	955	367
BRISBANE	1007.16	71.50	36217	28590	20933	18469	14584	11877	9538	7335	3640	1601	955	367
BRISBANE	1007.67	71.00	36210	28586	20928	18465	14579	11873	9535	7332	3634	1601	955	367
BRISBANE	1008.18	70.48	36206	28583	20924	18461	14575	11870	9532	7330	3630	1600	954	367
BRISBANE	1008.69	69.98	36202	28579	20920	18456	14571	11866	9531	7329	3628	1600	954	367
BRISBANE	1009.16	69.50	36196	28575	20914	18450	14567	11864	9529	7327	3625	1600	954	368
BRISBANE	1009.56	69.10	36194	28573	20912	18448	14564	11862	9528	7325	3623	1599	954	368
BRISBANE	1010.11	68.56	36189	28569	20906	18443	14559	11858	9525	7322	3618	1599	953	368
BRISBANE	1010.61	68.05	36187	28567	20904	18440	14557	11856	9523	7321	3616	1598	953	368
BRISBANE	1010.85	67.81	36185	28566	20902	18438	14555	11855	9522	7320	3615	1598	953	368
BRISBANE	1011.25	67.42	36183	28564	20900	18437	14554	11853	9521	7319	3613	1598	953	368
BRISBANE	1011.75	66.92	36179	28562	20896	18434	14551	11850	9519	7317	3609	1598	953	368
BRISBANE	1012.23	66.43	36176	28559	20893	18430	14547	11847	9516	7314	3604	1597	953	368
BRISBANE	1012.71	65.96	36170	28555	20887	18424	14542	11843	9513	7311	3599	1597	952	368
BRISBANE	1013.06	65.60	36166	28552	20885	18420	14537	11839	9510	7309	3596	1597	952	368
BRISBANE	1013.32	65.34	31487	24031	17094	15169	12405	10744	9325	7307	3594	1596	952	368
BRISBANE	1013.56	65.10	31484	24028	17090	15165	12401	10740	9322	7305	3593	1596	952	368
BRISBANE	1013.80	64.87	20721	16276	12695	11899	10741	10051	9254	7304	3590	1596	952	368
BRISBANE	1014.11	64.55	20717	16273	12676	11889	10730	10042	9250	7301	3586	1595	952	368
BRISBANE	1014.46	64.20	20712	16269	12658	11880	10718	10033	9245	7298	3582	1595	952	368
BRISBANE	1014.85	63.81	20708	16265	12648	11869	10705	10023	9240	7295	3577	1595	951	368
BRISBANE	1015.33	63.34	20704	16261	12639	11861	10699	10018	9237	7293	3575	1594	951	368
BRISBANE	1015.71	62.96	20702	16260	12636	11858	10696	10015	9236	7292	3573	1594	951	369
BRISBANE	1016.00	62.67	31463	24011	17072	15138	12373	10713	9302	7292	3572	1594	951	369
BRISBANE	1016.39	62.27	31461	24009	17071	15136	12370	10711	9300	7291	3570	1594	951	369
BRISBANE	1016.77	61.90	31458	24007	17069	15132	12366	10706	9297	7289	3568	1593	951	369
BRISBANE	1017.01	61.65	36125	28522	20863	18382	14502	11810	9486	7288	3566	1593	951	369
BRISBANE	1017.37	61.29	36121	28519	20861	18378	14498	11807	9484	7286	3563	1593	951	369
BRISBANE	1017.77	60.90	36114	28515	20857	18372	14493	11803	9480	7284	3561	1593	951	369
BRISBANE	1018.06	60.60	36111	28512	20854	18368	14490	11800	9478	7282	3559	1593	951	369
BRISBANE	1018.46	60.20	36107	28509	20851	18363	14485	11797	9476	7280	3557	1593	951	369
BRISBANE	1018.91	59.75	36103	28506	20848	18359	14481	11795	9474	7279	3556	1592	950	369
BRISBANE	1019.29	59.37	36099	28504	20845	18356	14478	11793	9472	7277	3554	1592	950	369
BRISBANE	1019.68	58.98	36097	28502	20843	18353	14475	11791	9471	7276	3552	1592	950	369
BRISBANE	1019.99	58.67	36095	28501	20843	18352	14473	11790	9470	7275	3551	1592	950	369
BRISBANE	1020.32	58.34	36092	28498	20841	18348	14469	11787	9468	7274	3548	1592	950	369
BRISBANE	1020.68	57.98	36088	28495	20838	18343	14465	11784	9465	7272	3545	1591	950	369
BRISBANE	1020.96	57.70	36086	28494	20837	18342	14463	11783	9464	7271	3544	1591	950	369
BRISBANE	1021.32	57.34	36085	28493	20837	18340	14462	11782	9463	7271	3543	1591	950	369
BRISBANE	1021.63	57.03	36084	28492	20836	18339	14460	11781	9462	7270	3541	1591	950	370
BRISBANE	1021.81	56.86	36082	28491	20835	18338	14459	11781	9461	7269	3540	1591	950	370
BRISBANE	1022.00	56.66	36079	28490	20835	18336	14458	11780	9461	7269	3539	1591	950	370
BRISBANE	1022.34	56.32	36076	28488	20834	18334	14456	11779	9460	7268	3538	1591	950	370
BRISBANE	1022.81	55.85	36073	28486	20832	18331	14453	11777	9458	7267	3536	1590	950	370
BRISBANE	1023.31	55.36	36069	28483	20829	18326	14449	11775	9456	7265	3535	1590	950	370
BRISBANE	1023.83	54.84	36066	28482	20828	18324	14446	11773	9455	7266	3533	1590	950	370

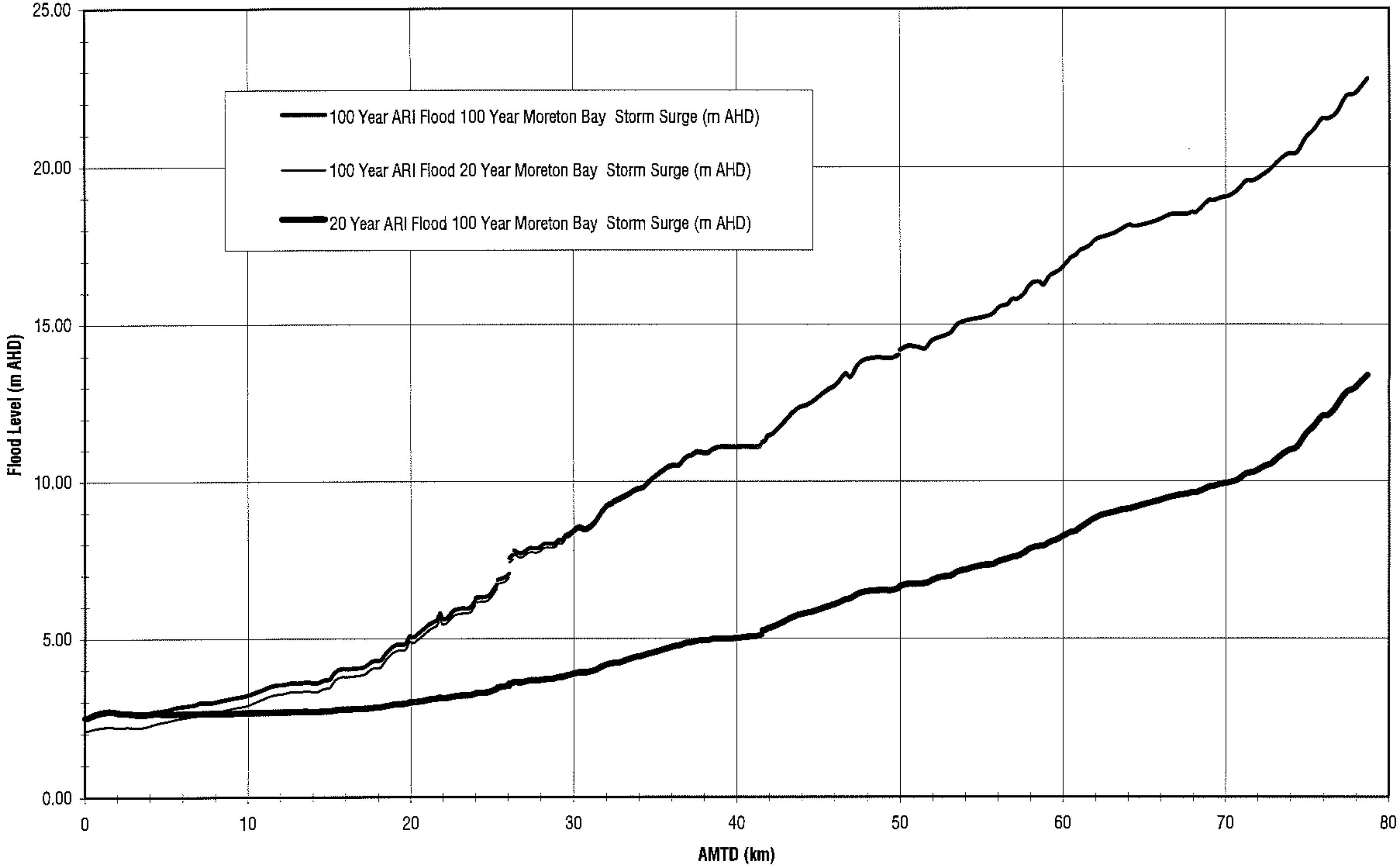
TABLE H-3 - Predicted Discharges for Design Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	DESIGN EVENTS PMF Q (m³/s)	10000 YEAR ARI Q (m³/s)	2000 YEAR ARI Q (m³/s)	1000 YEAR ARI Q (m³/s)	500 YEAR ARI Q (m³/s)	200 YEAR ARI Q (m³/s)	100 YEAR ARI Q (m³/s)	50 YEAR ARI Q (m³/s)	20 YEAR ARI Q (m³/s)	10 YEAR ARI Q (m³/s)	5 YEAR ARI Q (m³/s)	2 YEAR ARI Q (m³/s)
BRISBANE	1024.32	54.34	36062	28479	20825	18320	14443	11771	9453	7267	3532	1590	950	370
BRISBANE	1024.82	53.84	36059	28477	20823	18318	14441	11770	9451	7268	3530	1590	950	370
BRISBANE	1025.22	53.45	36054	28474	20822	18316	14436	11767	9449	7269	3528	1590	950	370
BRISBANE	1025.48	53.19	36053	28473	20822	18315	14434	11766	9448	7270	3527	1590	950	370
BRISBANE	1025.88	52.78	36050	28471	20822	18313	14432	11764	9447	7272	3526	1590	950	370
BRISBANE	1026.43	52.24	36045	28468	20822	18310	14429	11763	9446	7274	3525	1590	949	370
BRISBANE	1026.79	51.87	36043	28466	20822	18308	14426	11761	9444	7276	3523	1589	949	370
BRISBANE	1027.03	51.63	36042	28465	20822	18307	14424	11760	9443	7278	3522	1589	949	370
BRISBANE	1027.42	51.24	36040	28463	20822	18304	14422	11758	9442	7280	3521	1589	949	370
BRISBANE	1027.93	50.73	36036	28461	20821	18301	14418	11756	9440	7285	3519	1589	949	370
BRISBANE	1028.43	50.23	36031	28457	20821	18299	14414	11753	9437	7293	3517	1589	949	371
BRISBANE	1028.72	49.94	14317	14090	13424	12881	11483	10400	9085	7294	3516	1589	949	371
BRISBANE	1028.98	49.68	36027	28454	20820	18294	14409	11750	9434	7293	3515	1589	949	371
BRISBANE	1029.44	49.22	36023	28451	20818	18287	14405	11747	9431	7287	3513	1589	949	371
BRISBANE	1029.95	48.71	36014	28445	20814	18278	14395	11741	9426	7279	3511	1589	949	371
BRISBANE	1030.55	48.11	36003	28438	20807	18263	14386	11736	9421	7266	3507	1588	949	371
BRISBANE	1031.07	47.59	35999	28435	20801	18257	14386	11732	9417	7257	3505	1588	949	371
BRISBANE	1031.48	47.18	35996	28433	20801	18253	14386	11731	9416	7254	3504	1588	949	371
BRISBANE	1031.85	46.81	35995	28432	20802	18251	14386	11730	9415	7252	3503	1588	949	371
BRISBANE	1032.11	46.55	35993	28431	20802	18259	14385	11728	9413	7250	3502	1588	949	371
BRISBANE	1032.41	46.25	35991	28430	20803	18267	14384	11727	9412	7248	3501	1588	949	371
BRISBANE	1032.83	45.83	35989	28428	20805	18272	14383	11725	9410	7246	3500	1588	949	371
BRISBANE	1033.23	45.44	35985	28425	20807	18289	14388	11723	9408	7242	3498	1588	949	371
BRISBANE	1033.64	45.03	35982	28422	20809	18303	14392	11721	9406	7240	3497	1588	949	371
BRISBANE	1034.14	44.53	35979	28420	20814	18314	14397	11720	9405	7237	3496	1588	949	371
BRISBANE	1034.63	44.03	35973	28415	20824	18333	14402	11718	9403	7235	3494	1588	949	371
BRISBANE	1035.15	43.51	35967	28410	20826	18379	14414	11715	9400	7233	3493	1588	949	371
BRISBANE	1035.66	43.00	35964	28407	20831	18387	14423	11713	9398	7232	3491	1588	949	372
BRISBANE	1036.18	42.48	35960	28404	20835	18395	14435	11710	9396	7230	3490	1588	949	372
BRISBANE	1036.62	42.05	35957	28402	20840	18390	14448	11708	9394	7229	3488	1587	949	372
BRISBANE	1036.84	41.82	35955	28401	20847	18401	14455	11707	9393	7228	3487	1587	949	372
BRISBANE	1037.00	41.66	35954	28400	20849	18396	14459	11706	9392	7227	3487	1587	949	372
BRISBANE	1037.11	41.55	29071	26236	20782	18392	14461	11706	9392	7227	3487	1587	949	372
BRISBANE	1037.23	41.43	35953	28400	20856	18375	14464	11705	9391	7226	3486	1587	949	372
BRISBANE	1037.46	41.21	35952	28399	20868	18379	14467	11705	9390	7226	3486	1587	949	372
BRISBANE	1037.86	40.81	35950	28398	20885	18414	14469	11703	9389	7224	3484	1587	949	372
BRISBANE	1038.34	40.32	35940	28391	20843	18427	14446	11694	9379	7218	3482	1587	949	372
BRISBANE	1038.85	39.81	35930	28384	20846	18435	14431	11686	9372	7211	3479	1587	949	372
BRISBANE	1039.15	39.51	35925	28380	20835	18416	14423	11681	9366	7206	3476	1587	949	372
BRISBANE	1039.38	39.28	21512	18356	15682	14411	12305	10725	9205	7153	3474	1587	949	372
BRISBANE	1039.62	39.04	21506	18333	15673	14409	12296	10721	9201	7149	3473	1587	949	372
BRISBANE	1039.75	38.91	17895	16464	14175	13113	11444	10161	9013	7122	3472	1587	949	372
BRISBANE	1039.96	38.70	17424	15016	12345	11489	10377	9658	8673	6928	3402	1586	949	419
BRISBANE	1040.17	38.49	17422	15015	12342	11486	10376	9657	8673	6927	3401	1586	949	419
BRISBANE	1040.37	38.29	11296	10011	9620	9555	9433	9211	8549	6927	3401	1586	949	419
BRISBANE	1040.75	37.91	11293	10011	9605	9543	9425	9208	8549	6926	3401	1586	949	419
BRISBANE	1041.12	37.54	11288	10010	9571	9515	9408	9202	8547	6925	3401	1586	949	420
BRISBANE	1041.35	37.32	11285	10009	9553	9499	9399	9199	8546	6925	3400	1586	949	420
BRISBANE	1041.58	37.08	11284	10008	9542	9490	9393	9197	8546	6924	3400	1586	949	420
BRISBANE	1041.83	36.83	11282	10008	9531	9480	9387	9195	8545	6924	3400	1586	949	420
BRISBANE	1042.10	36.56	11280	10008	9519	9470	9381	9193	8545	6923	3400	1586	949	420
BRISBANE	1042.37	36.29	11278	10007	9508	9462	9375	9191	8544	6923	3400	1586	949	420
BRISBANE	1042.51	36.15	17407	15007	12340	11448	10334	9645	8667	6923	3400	1586	949	420
BRISBANE	1042.71	35.95	17407	15006	12343	11446	10336	9644	8667	6922	3400	1586	949	420
BRISBANE	1042.96	35.70	17407	15005	12345	11445	10340	9643	8667	6922	3400	1586	949	420
BRISBANE	1043.05	35.61	21327	18031	14262	13031	11341	10258	8905	6951	3400	1586	949	420
BRISBANE	1043.10	35.57	21327	18030	14263	13031	11341	10258	8905	6951	3399	1586	949	420
BRISBANE	1043.42	35.24	35879	28548	20038	17464	13776	11332	9099	7009	3399	1586	949	420
BRISBANE	1043.89	34.77	35878	28546	20035	17461	13772	11332	9099	7010	3399	1586	949	421
BRISBANE	1044.20	34.46	35878	28543	20034	17461	13771	11331	9099	7010	3399	1586	949	421

TABLE H-3 - Predicted Discharges for Design Events

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	DESIGN EVENTS PMF Q (m^3/s)	10000 YEAR ARI Q (m^3/s)	2000 YEAR ARI Q (m^3/s)	1000 YEAR ARI Q (m^3/s)	500 YEAR ARI Q (m^3/s)	200 YEAR ARI Q (m^3/s)	100 YEAR ARI Q (m^3/s)	50 YEAR ARI Q (m^3/s)	20 YEAR ARI Q (m^3/s)	10 YEAR ARI Q (m^3/s)	5 YEAR ARI Q (m^3/s)	2 YEAR ARI Q (m^3/s)
BRISBANE	1065.26	13.40	35891	28462	19979	17403	13724	11308	9095	7009	3398	1586	951	434
BRISBANE	1065.75	12.91	35891	28462	19978	17402	13724	11308	9094	7009	3398	1586	952	434
BRISBANE	1066.25	12.41	35891	28461	19978	17402	13724	11308	9094	7009	3398	1586	952	434
BRISBANE	1066.76	11.90	35891	28460	19977	17401	13723	11308	9093	7009	3398	1586	952	434
BRISBANE	1067.25	11.41	35891	28460	19977	17401	13723	11308	9093	7009	3398	1587	952	435
BRISBANE	1067.73	10.94	35891	28459	19977	17401	13723	11308	9093	7009	3398	1587	952	435
BRISBANE	1068.31	10.35	35891	28459	19976	17400	13723	11308	9093	7009	3398	1587	952	435
BRISBANE	1068.85	9.81	35890	28459	19976	17400	13723	11308	9094	7008	3398	1587	952	435
BRISBANE	1069.29	9.37	35890	28459	19976	17400	13722	11308	9094	7008	3398	1587	952	435
BRISBANE	1069.78	8.88	35890	28458	19976	17400	13722	11308	9094	7008	3398	1587	952	435
BRISBANE	1070.28	8.38	35891	28458	19975	17399	13722	11308	9094	7008	3398	1587	952	435
BRISBANE	1070.79	7.87	35891	28457	19975	17399	13722	11308	9095	7008	3398	1587	953	435
BRISBANE	1071.28	7.38	35891	28456	19974	17398	13722	11307	9095	7008	3398	1587	953	435
BRISBANE	1071.77	6.89	35891	28455	19974	17398	13722	11307	9095	7008	3398	1587	953	436
BRISBANE	1072.02	6.64	35891	28455	19974	17398	13722	11307	9095	7008	3398	1587	953	436
BRISBANE	1072.27	6.39	35933	28467	19967	17393	13720	11307	9088	7003	3398	1587	959	503
BRISBANE	1072.76	5.90	35933	28467	19967	17393	13720	11307	9088	7004	3398	1587	959	503
BRISBANE	1073.24	5.42	35933	28467	19967	17393	13720	11307	9088	7004	3398	1587	959	503
BRISBANE	1073.74	4.92	35933	28467	19967	17393	13720	11307	9088	7004	3398	1587	960	504
BRISBANE	1074.23	4.43	35933	28467	19967	17393	13720	11307	9088	7004	3399	1587	960	504
BRISBANE	1074.72	3.94	35933	28467	19967	17393	13720	11307	9088	7004	3399	1587	960	504
BRISBANE	1075.23	3.43	35933	28467	19967	17393	13720	11307	9088	7004	3399	1587	960	504
BRISBANE	1075.74	2.92	35933	28467	19967	17393	13720	11307	9088	7004	3399	1587	960	504
BRISBANE	1076.25	2.41	35933	28467	19967	17393	13720	11307	9088	7005	3399	1587	960	504
BRISBANE	1076.75	1.91	35933	28467	19967	17393	13720	11307	9088	7005	3399	1587	961	505
BRISBANE	1077.26	1.40	35933	28467	19967	17393	13720	11307	9088	7005	3399	1587	961	505
BRISBANE	1077.78	0.88	35933	28467	19967	17393	13720	11307	9088	7005	3399	1587	961	505
BRISBANE	1078.28	0.38	35933	28467	19967	17393	13720	11307	9088	7005	3399	1587	961	505
BRISBANE	1078.59	0.07	35933	28467	19967	17393	13720	11307	9088	7005	3399	1587	961	505
BREMER	599.70	-	6461	4753	2982	2632	2104	1622	2191	1869	960	874	636	230
OXLEY	599.70	-	2263	2440	2476	2080	1279	729	1167	828	474	400	307	164
BREAKFAST	599.70	-	656	570	167	137	103	92	408	335	249	201	168	100
BULIMBA	599.70	-	603	426	222	158	99	90	651	538	368	301	248	162
CENTWEIR	0.04	-	26640	18626	10963	5690	3054	1380	377	9	0	0	0	0
INDOORWEIR	0.04	-	7478	2211	725	10	0	0	0	0	0	0	0	0
WILLIAMWEIR	0.02	-	3790	1057	0	0	0	0	0	0	0	0	0	0
VICTORIAWEIR	0.03	-	3523	961	95	60	0	0	0	0	0	0	0	0
CAPTAINWEIR	0.02	-	2921	1085	124	15	0	0	0	0	0	0	0	0
STORYWEIR	0.04	-	0	0	0	0	0	0	0	0	0	0	0	0
MERIVALEWEIR	0.04	-	2909	1555	8	0	0	0	0	0	0	0	0	0
GOODNALINK1	0.50	-	4922	4522	3795	3255	2151	1122	204	0	0	0	0	0
GOODNALINK2	0.54	-	10763	7755	4493	3333	1732	750	77	0	0	0	0	0
STLUCIALINK1	0.53	-	14552	10519	5869	4462	2459	1077	195	59	0	0	0	0
STLUCIALINK2	0.53	-	3921	3026	1923	1588	1017	618	241	29	0	0	0	0
STLUCIALINK3	0.43	-	6139	5039	3401	2584	1175	474	123	0	0	0	0	0

Figure H-1 - Combined Tailwater & River Flooding Conditions - Moreton Bay Storm Surge

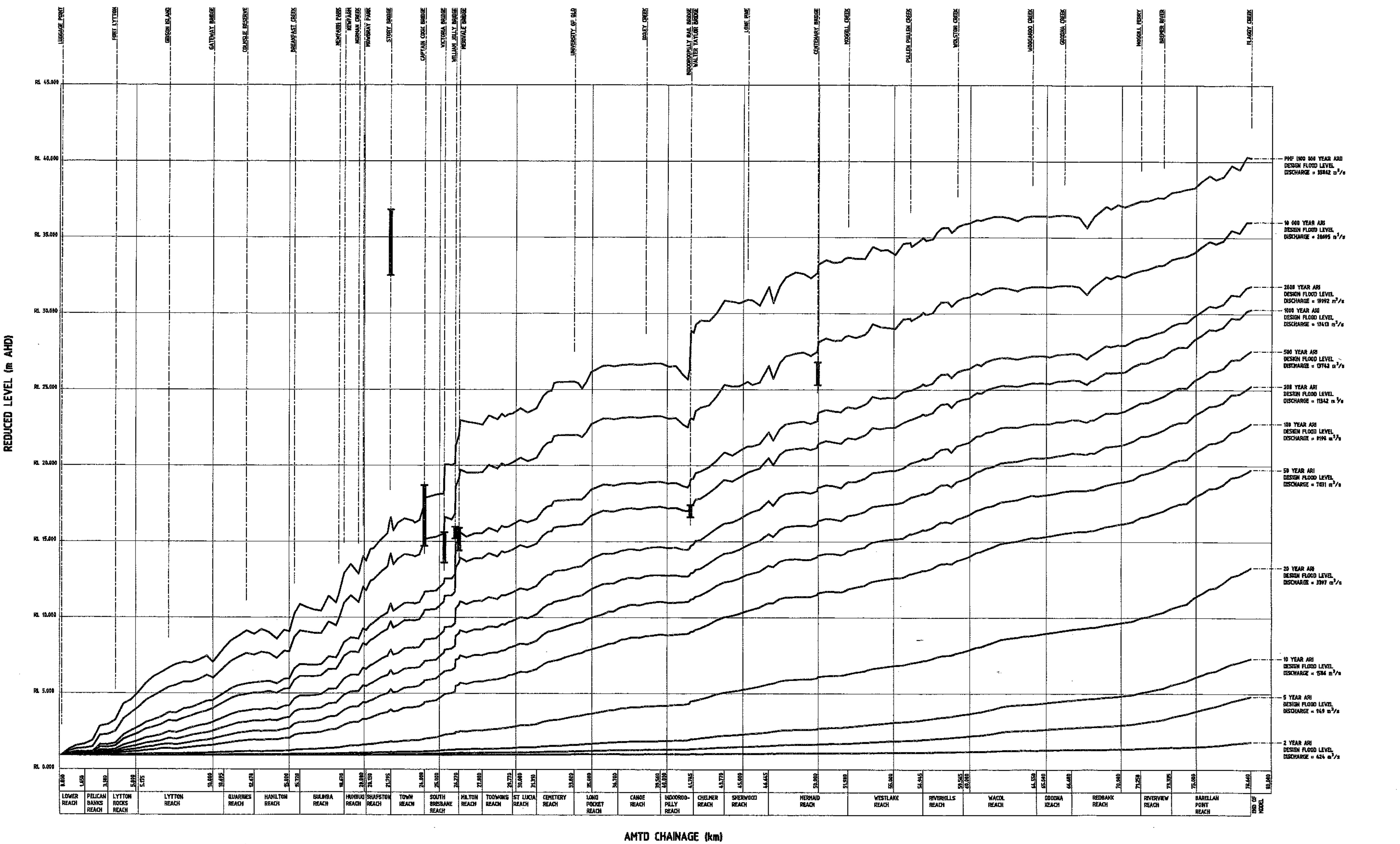


SINCLAIR KNIGHT MERZ

FIGURE H-2

BRISBANE RIVER FLOOD STUDY

DESIGN PROFILES FOR THE BRISBANE RIVER - COMBINED



NOTE:
DISCHARGES GIVEN AT PORT OFFICE

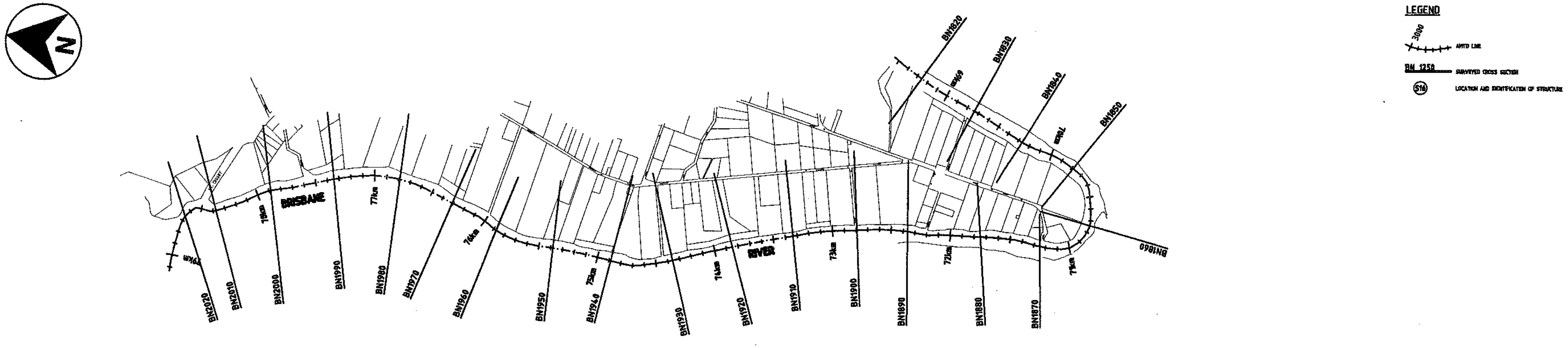
VERTICAL 0 2.0 4.0 6.0 8.0 10.0 METRES

HORIZONTAL 0 2.0 4.0 6.0 8.0 10.0 KILOMETRES

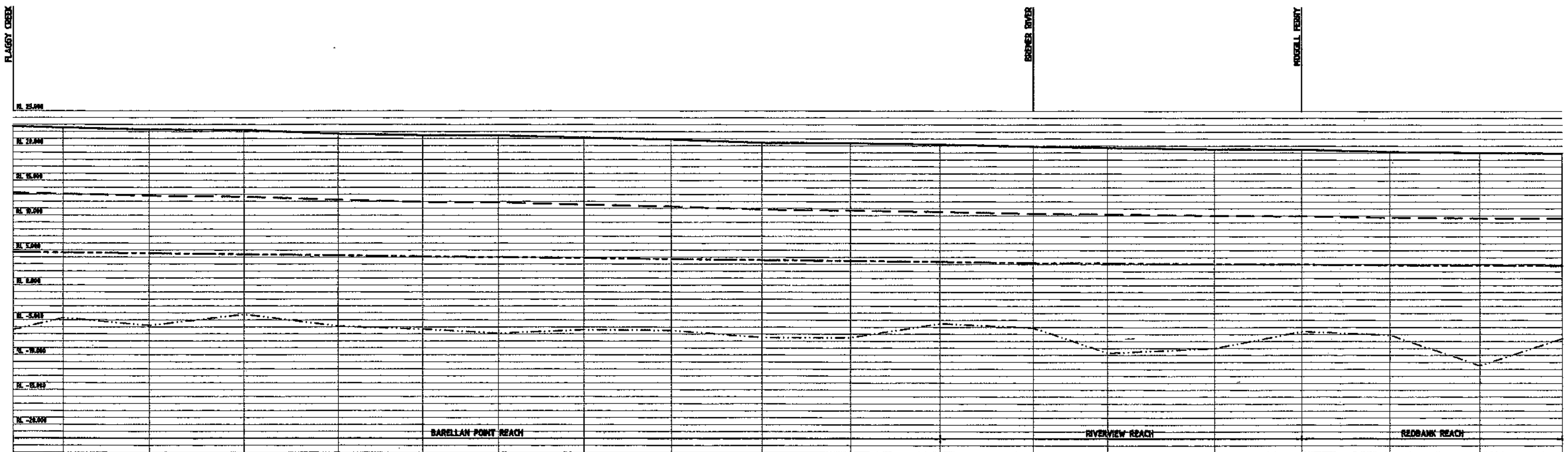
FILE
PLOT SCALE: 1=250

FIGURE H-3a

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



PLAN VIEW



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	4.720	4.660	4.540	4.400	4.240	4.090	4.010	3.880	3.730	3.590	3.490	3.340	3.180	3.140	3.060	3.000	2.920	2.870	2.840
20 YEAR ARI DESIGN FLOOD LEVEL	13.240	13.070	12.810	12.650	12.230	11.920	11.860	11.540	11.260	10.830	10.700	10.530	10.260	10.180	9.990	9.920	9.730	9.630	9.590
100 YEAR ARI DESIGN FLOOD LEVEL	22.760	22.570	22.390	22.200	21.680	21.480	21.460	21.130	20.860	20.410	20.370	20.200	19.890	19.720	19.580	19.480	19.190	19.020	18.960
BED LEVEL (m AHD)	-6.400	-4.700	-5.400	-4.200	-5.900	-6.300	-6.980	-6.400	-6.500	-7.500	-7.500	-5.500	-6.100	-9.700	-9.000	-6.600	-7.100	-11.500	-7.400
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1000.000	1000.285	1000.775	1001.315	1001.865	1002.350	1002.785	1003.275	1003.775	1004.320	1004.810	1005.325	1005.870	1006.300	1006.910	1007.410	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	78.660	78.375	77.885	77.345	76.795	76.310	75.875	75.385	74.885	74.340	73.850	73.335	72.790	72.360	71.750	71.250	70.740	70.215	69.735

LEGEND
- LOCATION AND IDENTIFICATION OF STRUCTURE
- 5 YEAR ARI DESIGN FLOOD
- 20 YEAR ARI DESIGN FLOOD
- 100 YEAR ARI DESIGN FLOOD
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

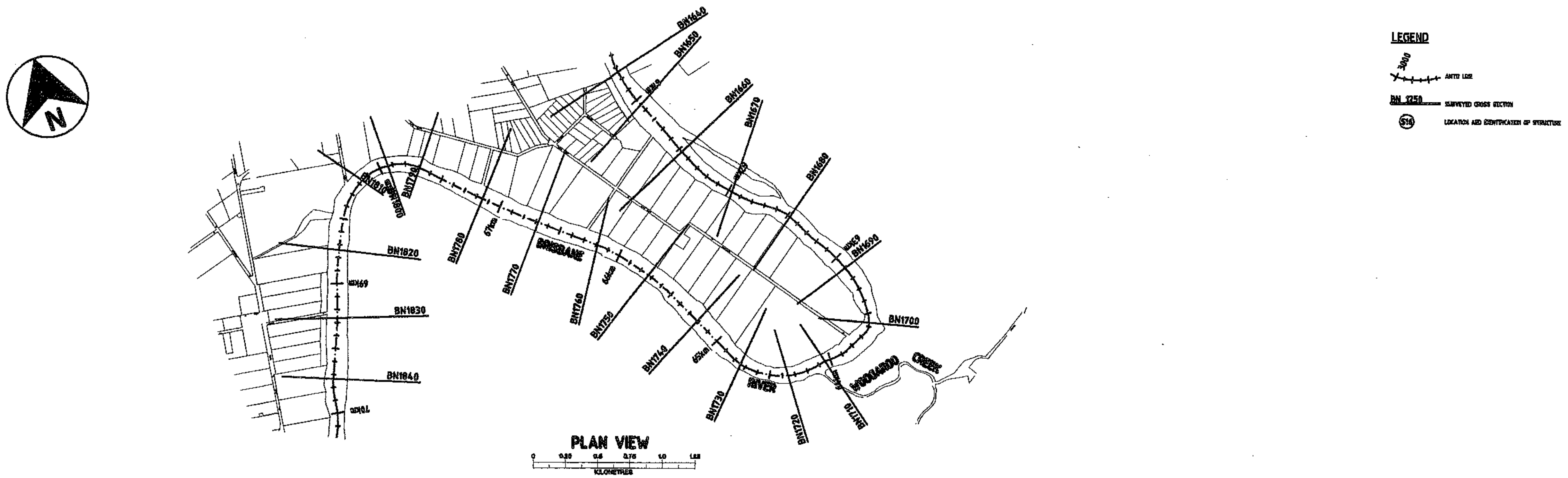
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

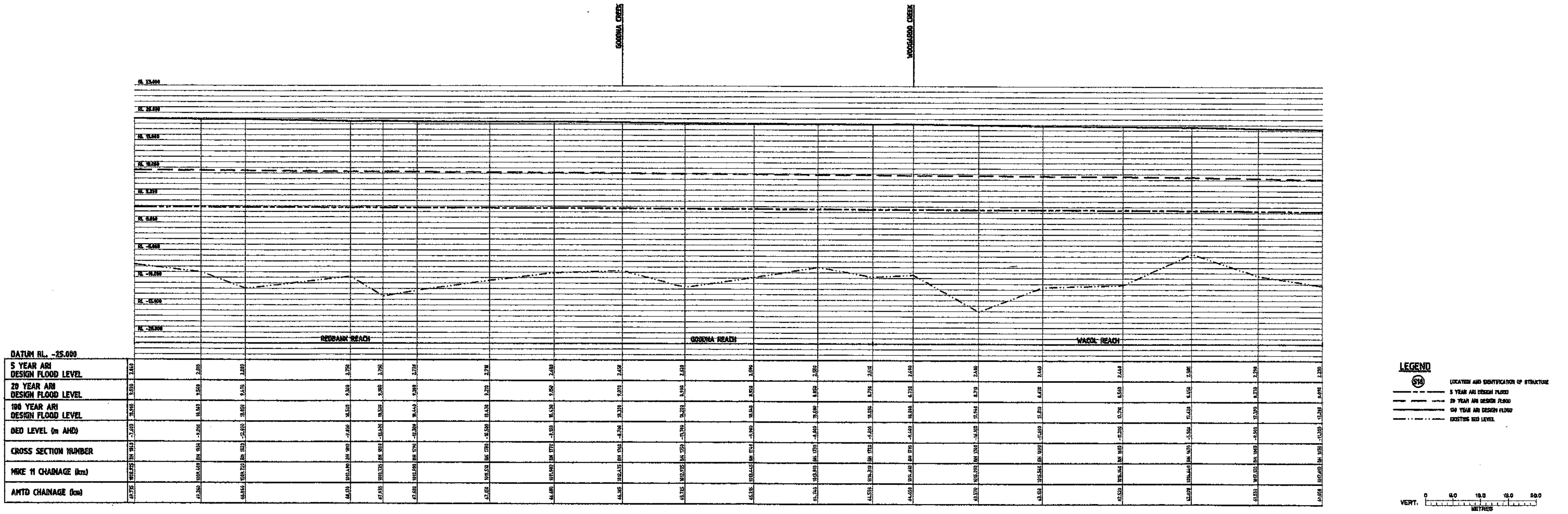
BRISBANE RIVER - BN 2020 TO BN 1840

SINCLAIR KNIGHT MERZ

FIGURE H-3b

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS





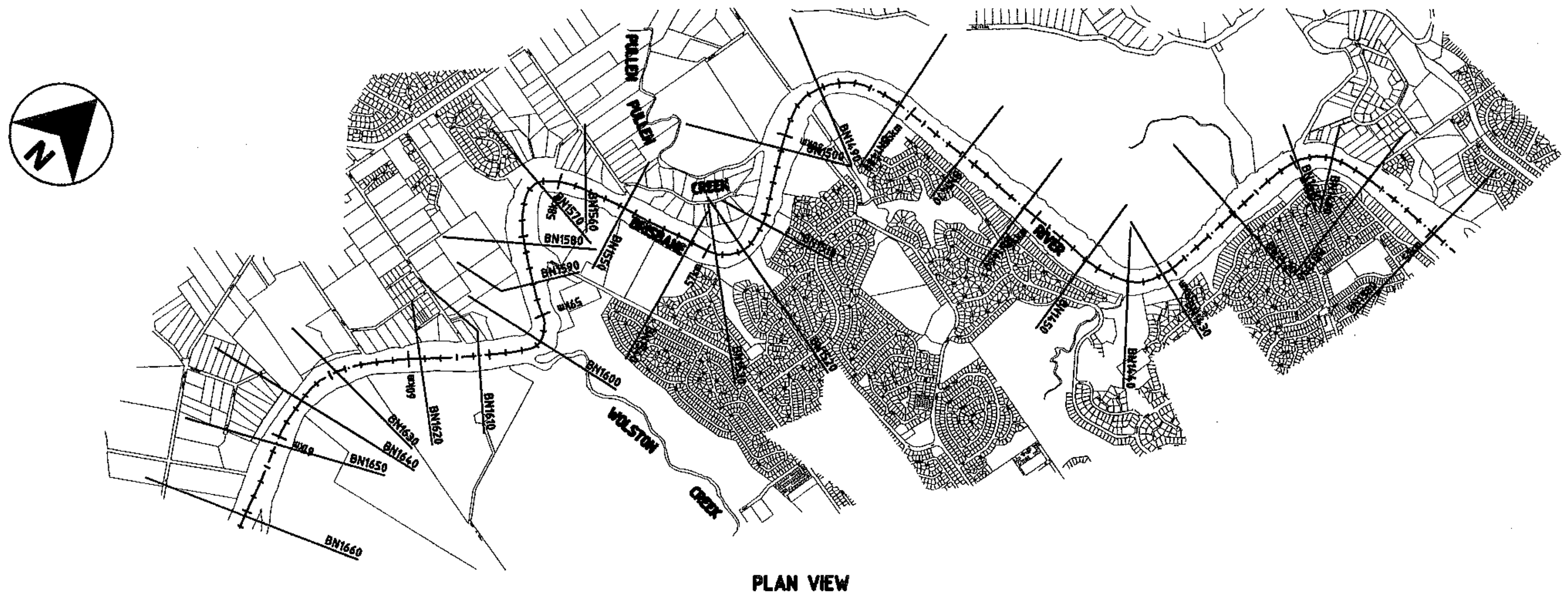
BRISBANE RIVER - BN 1840 TO BN 1650

FILE NAME: 4157-120 PLOT SCALE: 1=30 DISK N: C:\DWG JOB N: T00457 DATE: 23/3/97

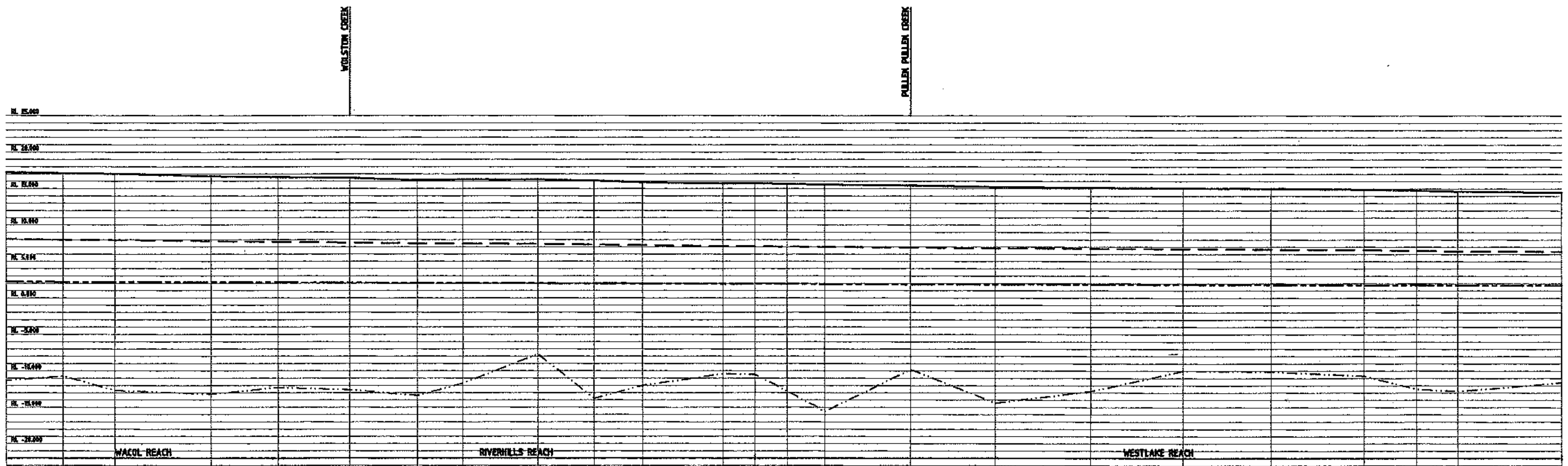
SINCLAIR KNIGHT MERZ

FIGURE H-3c

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



PLAN VIEW



DATUM RL. -25.000

CROSS SECTION NUMBER	5 YEAR ARI DESIGN FLOOD LEVEL	20 YEAR ARI DESIGN FLOOD LEVEL	100 YEAR ARI DESIGN FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 1650	2.230	6.099	17.260	-11.300	1017.610	61.050
BN 1640	2.190	7.960	17.100	-10.700	1017.920	60.740
BN 1630	2.180	7.930	17.020	-12.700	1018.200	60.460
BN 1620	2.140	7.780	16.690	-13.200	1018.725	59.935
BN 1610	2.110	7.460	16.560	-12.300	1019.095	59.565
BN 1600	2.080	7.580	16.450	-12.600	1019.490	59.170
BN 1590	2.050	7.450	16.150	-13.400	1019.865	58.795
BN 1580	2.030	7.430	16.250	-11.700	1020.115	58.545
BN 1570	2.010	7.390	16.220	-7.700	1020.525	58.135
BN 1560	1.990	7.320	16.070	-13.800	1020.830	57.830
BN 1550	1.960	7.210	15.860	-12.000	1021.095	57.565
BN 1540	1.920	7.080	15.490	-10.400	1021.539	57.121
BN 1530	1.910	7.060	15.720	-10.500	1021.715	56.945
BN 1520	1.900	7.030	15.450	-12.800	1021.895	56.745
BN 1510	1.890	7.000	15.530	-15.600	1022.105	56.555
BN 1500	1.870	6.920	15.450	-9.800	1022.575	56.085
BN 1490	1.860	6.850	15.210	-14.400	1023.040	55.620
BN 1480	1.850	6.780	15.120	-12.800	1023.570	55.090
BN 1470	1.830	6.720	15.070	-10.500	1024.080	54.580
BN 1460	1.800	6.640	15.010	-10.300	1024.563	54.097
BN 1450	1.780	6.580	14.910	-10.700	1025.070	53.590
BN 1440	1.760	6.490	14.770	-12.500	1025.360	53.300
BN 1430	1.750	6.410	14.610	-12.400	1025.590	53.070
BN 1420	1.730	6.360	14.480	-11.600	1026.170	52.490

LEGEND
- LOCATION AND IDENTIFICATION OF STRUCTURE
- 5 YEAR ARI DESIGN FLOOD
- 20 YEAR ARI DESIGN FLOOD
- 100 YEAR ARI DESIGN FLOOD
- EXISTING BED LEVEL

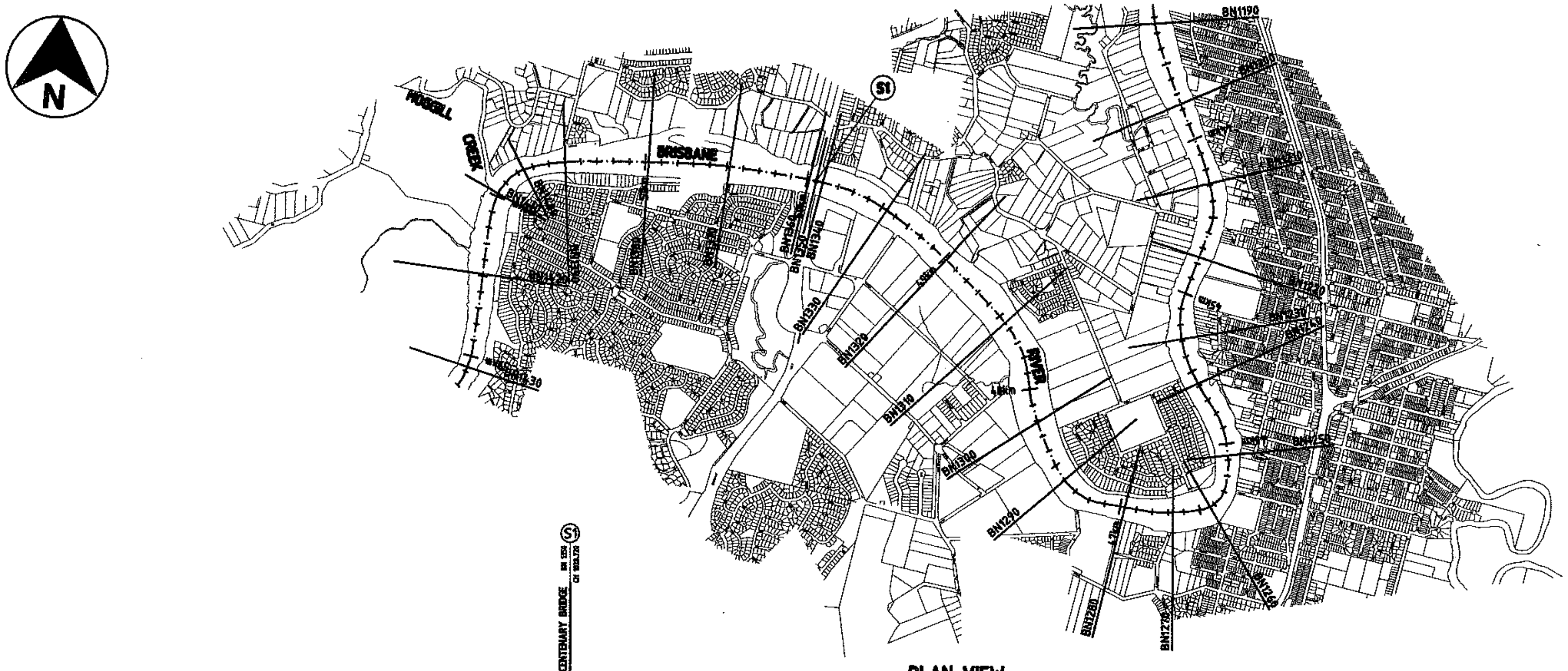
VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 1650 TO BN 1420

FILE NAME: 4157-121 PLOT SCALE: 1=30 DISK N°: C:\DWG JOB N°: T004157 DATE: 23/3/97

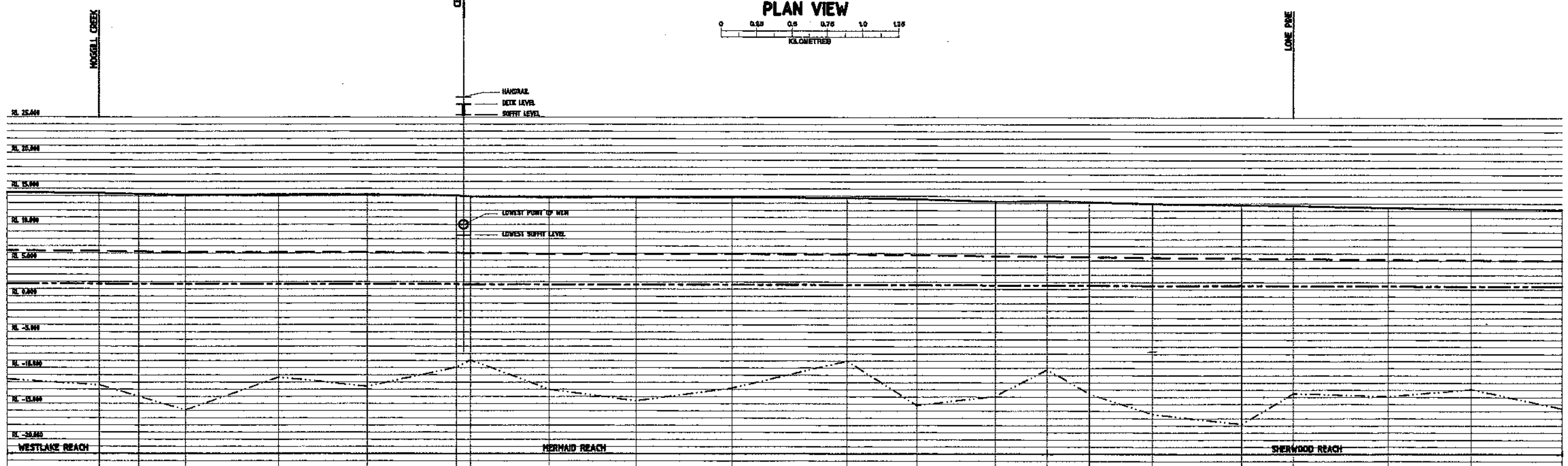
FIGURE H-3d

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



LEGEND

- AMTD LINE
- BN 1250 — SURVEYED CROSS SECTION
- (S1) — LOCATION AND IDENTIFICATION OF STRUCTURE



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	1.730	1.710	1.780	1.690	1.680	1.670	1.640	1.640	1.620	1.630	1.620	1.660	1.590	1.540	1.550	1.530	1.520	1.500	1.490	1.480	1.460	1.450
20 YEAR ARI DESIGN FLOOD LEVEL	6.360	6.260	6.200	6.150	6.130	6.120	6.050	5.970	5.980	5.900	5.690	5.860	5.780	5.620	5.570	5.510	5.410	5.320	5.270	5.160	5.100	5.020
100 YEAR ARI DESIGN FLOOD LEVEL	14.480	14.380	14.250	14.110	14.170	14.190	14.060	13.910	13.880	13.820	13.810	13.750	13.590	13.210	13.310	13.180	12.940	12.790	12.680	12.650	12.290	12.190
BED LEVEL (m AHD)	-11.600	-12.400	-14.000	-15.900	-11.300	-12.600	-9.900	-8.900	-13.000	-14.600	-12.800	-9.000	-15.200	-13.900	-10.200	-10.600	-16.400	-17.800	-13.500	-13.900	-12.900	-15.600
CROSS SECTION NUMBER	BN 1420	BN 1410	BN 1400	BN 1390	BN 1380	BN 1370	BN 1360	BN 1340	BN 1330	BN 1320	BN 1310	BN 1300	BN 1290	BN 1280	BN 1270	BN 1260	BN 1250	BN 1240	BN 1230	BN 1220	BN 1210	BN 1200
MIKE 11 CHAINAGE (km)	1026.170	1026.680	1026.900	1027.160	1027.680	1028.180	1028.680	1028.760	1029.280	1029.680	1030.220	1030.870	1031.260	1031.700	1031.995	1032.230	1032.585	1033.080	1033.370	1033.900	1034.370	1034.890
AMTD CHAINAGE (km)	52.490	51.980	51.760	51.500	50.980	50.480	49.980	49.900	49.440	48.980	48.440	47.790	47.400	46.960	46.665	46.430	46.075	45.580	45.290	44.740	44.290	43.770

LEGEND

- (S1) — LOCATION AND IDENTIFICATION OF STRUCTURE
- 5 YEAR ARI DESIGN FLOOD
- 20 YEAR ARI DESIGN FLOOD
- 100 YEAR ARI DESIGN FLOOD
- EXISTING BED LEVEL

VERT. METRES
HORIZ. KILOMETRES

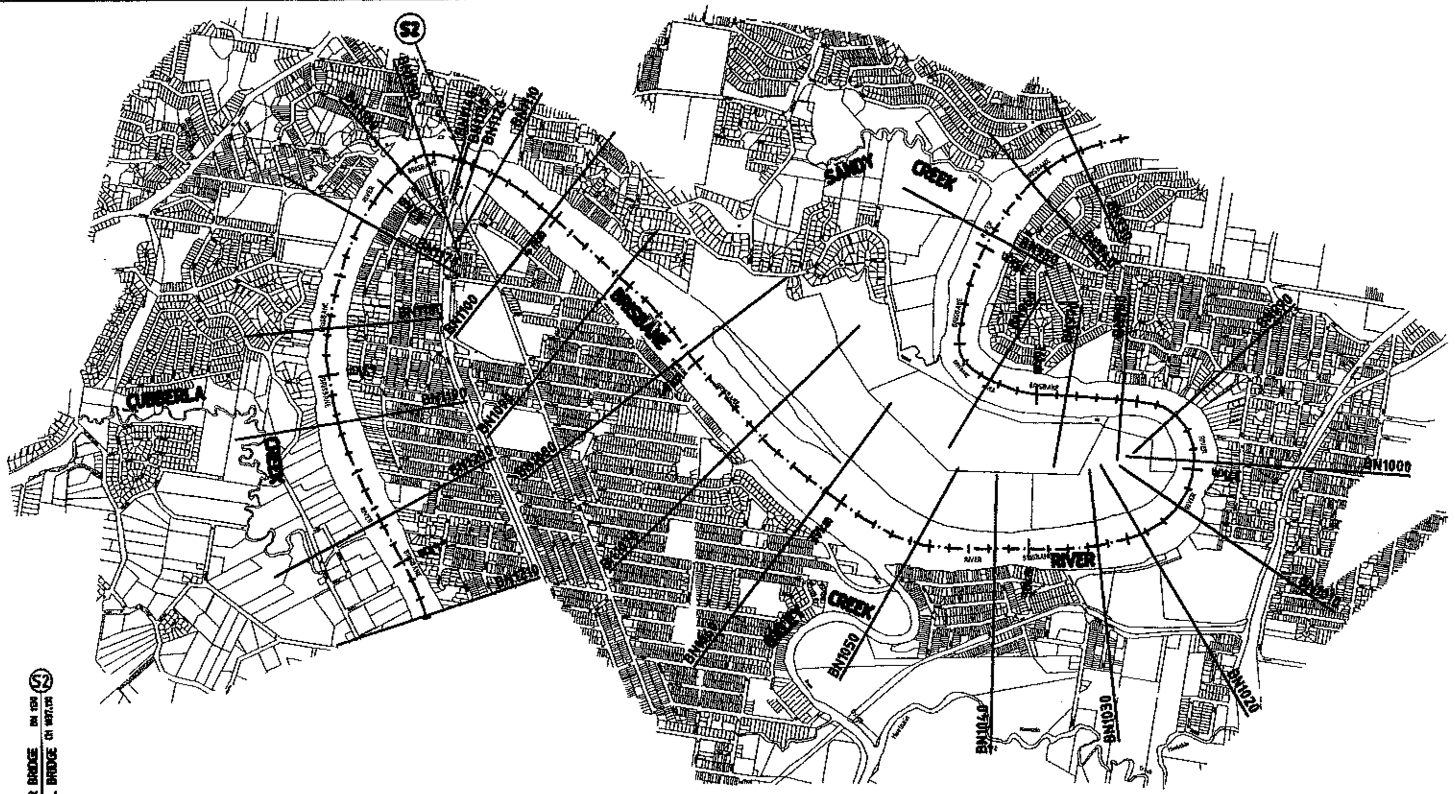
BRISBANE RIVER - BN 1420 TO BN 1200

SINCLAIR KNIGHT MERZ

FIGURE H-3e

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



PLAN VIEW

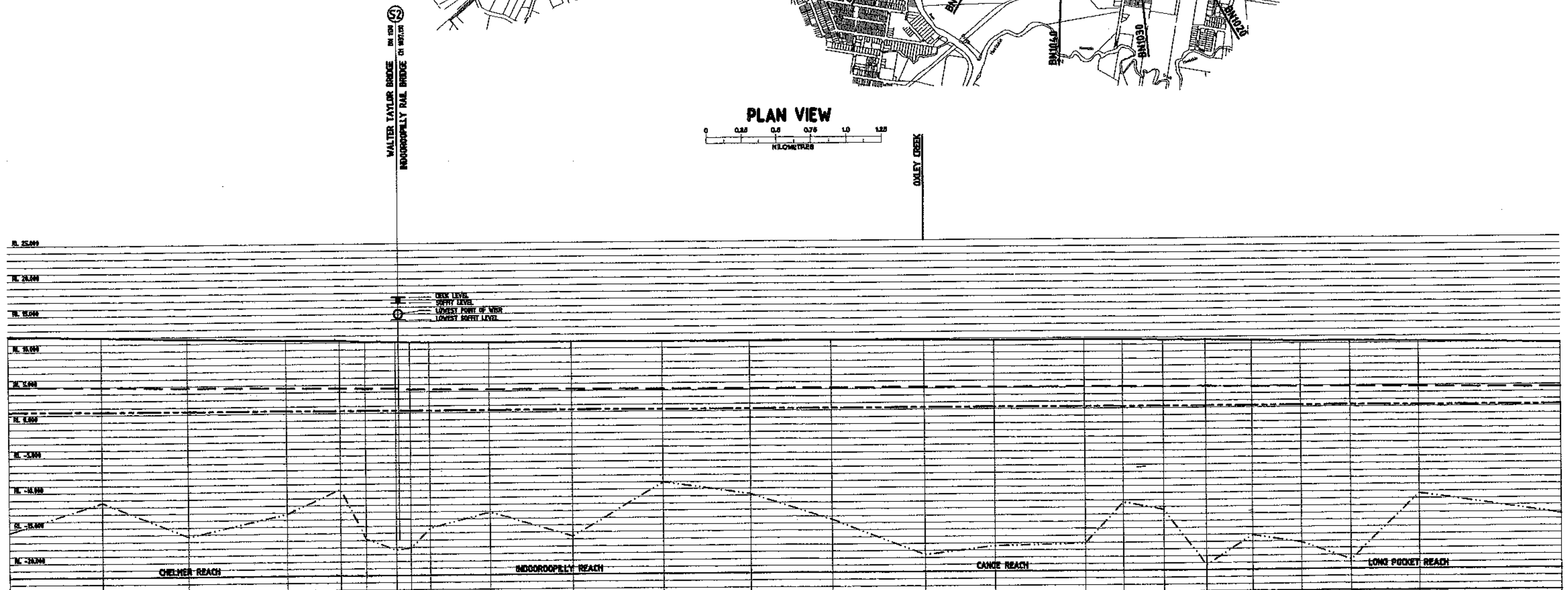
KILOMETRES

LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION

(S14) LOCATION AND IDENTIFICATION OF STRUCTURE



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	1.450	1.430	1.400	1.380	1.360	1.340	1.350	1.330	1.320	1.310	1.310	1.300	1.290
20 YEAR ARI DESIGN FLOOD LEVEL	5.020	4.900	4.740	4.600	4.540	4.480	4.470	4.320	4.290	4.250	4.230	4.180	4.150
100 YEAR ARI DESIGN FLOOD LEVEL	12.190	11.940	11.650	11.350	11.280	11.120	11.070	10.980	10.930	10.910	10.930	10.910	10.900
BED LEVEL (m AHD)	-15.600	-11.400	-16.300	-13.200	-9.700	-16.000	-18.400	-18.100	-15.300	-13.100	-16.600	-9.000	-10.800
CROSS SECTION NUMBER	BN 1200	BN 1190	BN 1180	BN 1170	BN 1160	BN 1150	BN 1140	BN 1120	BN 1110	BN 1100	BN 1090	BN 1080	BN 1070
MIKE 11 CHAINAGE (km)	1034.890	1035.414	1035.900	1036.460	1036.770	1036.915	1037.090	1037.175	1037.285	1037.625	1038.085	1038.600	1039.100
AMTD CHAINAGE (km)	43.770	43.246	42.760	42.200	41.890	41.745	41.570	41.485	41.375	41.035	40.575	40.060	39.560

5 YEAR ARI DESIGN FLOOD LEVEL	1.290	1.290	1.290	1.290	1.280	1.270	1.270	1.270	1.260	1.240	1.240	1.220
20 YEAR ARI DESIGN FLOOD LEVEL	4.140	4.140	4.080	4.090	4.050	4.010	4.010	3.940	3.890	3.870	3.790	3.630
100 YEAR ARI DESIGN FLOOD LEVEL	10.920	10.840	10.710	10.740	10.710	10.620	10.590	10.450	10.300	10.240	10.220	9.910
BED LEVEL (m AHD)	-14.500	-19.600	-18.400	-18.100	-12.300	-13.400	-21.300	-17.100	-18.200	-20.700	-11.300	-14.900
CROSS SECTION NUMBER	BN 1060	BN 1050	BN 1040	BN 1030	BN 1020	BN 1010	BN 1000	BN 990	BN 980	BN 970	BN 960	BN 950
MIKE 11 CHAINAGE (km)	1039.565	1040.090	1040.490	1041.010	1041.230	1041.460	1041.700	1041.960	1042.235	1042.505	1042.910	1043.725
AMTD CHAINAGE (km)	39.050	38.570	38.170	37.560	37.430	37.200	36.960	36.700	36.425	36.145	35.750	34.935

LEGEND

(S14) LOCATION AND IDENTIFICATION OF STRUCTURE

5 YEAR ARI DESIGN FLOOD

20 YEAR ARI DESIGN FLOOD

100 YEAR ARI DESIGN FLOOD

EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

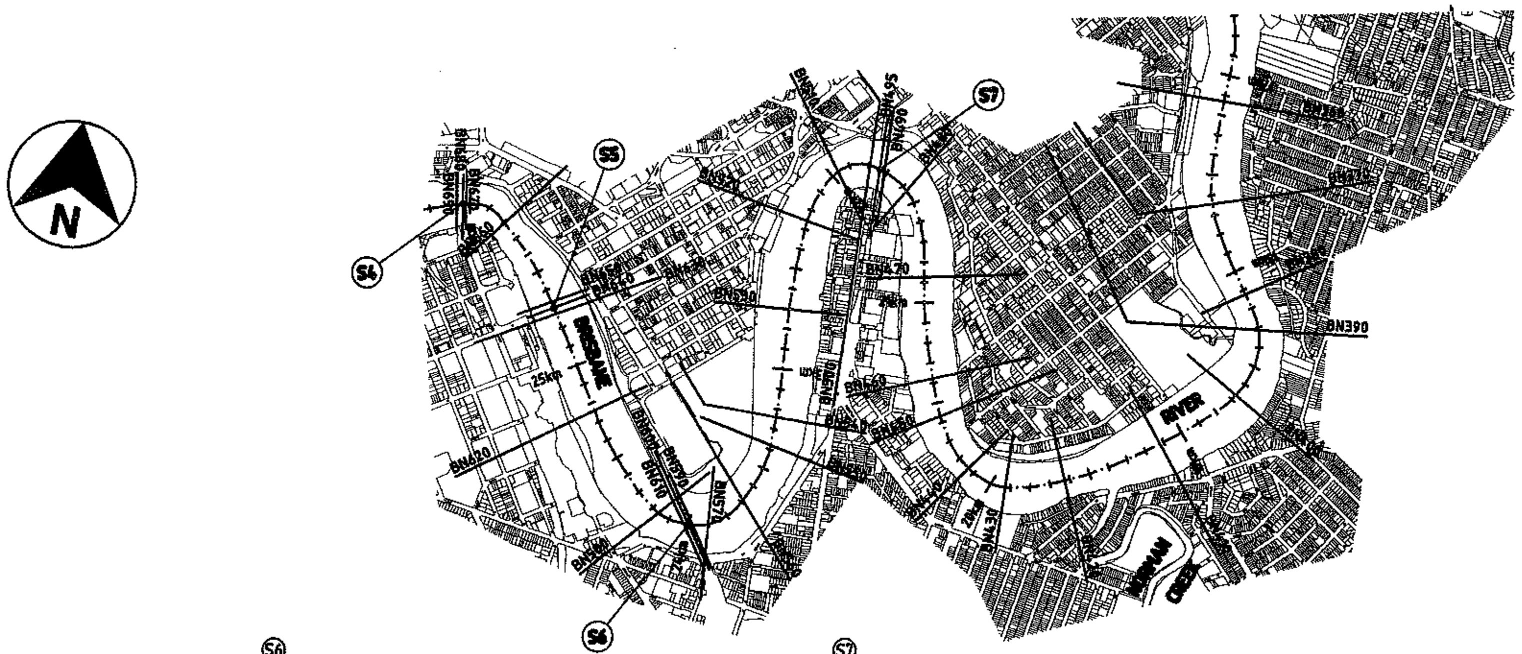
BRISBANE RIVER - BN 1200 TO BN 950

FILE NAME: 4157-... PLOT SCALE: 1=30

FIGURE H-3g

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



PLAN VIEW

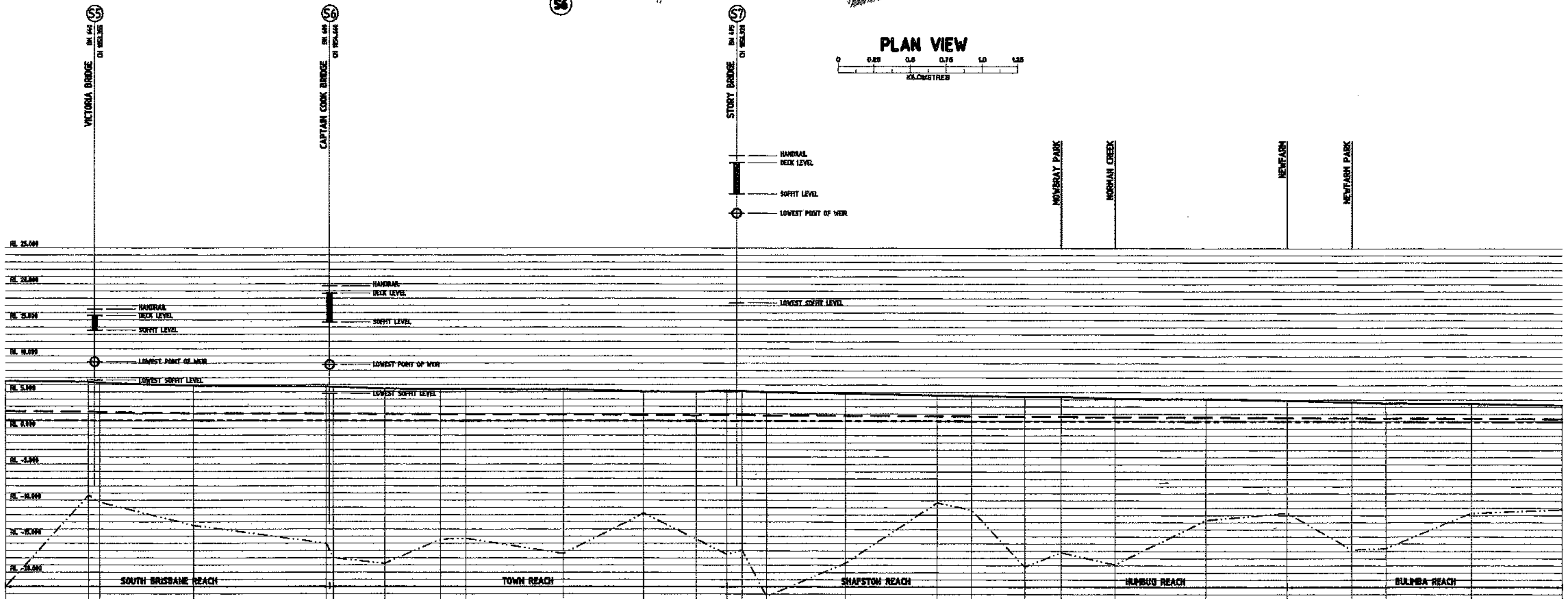
0 0.25 0.5 0.75 1.0 1.25 KILOMETRES

LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION

(S16) LOCATION AND IDENTIFICATION OF STRUCTURE



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	1.060	1.040	1.050	1.030	1.030	1.020	1.010	1.010	1.010
20 YEAR ARI DESIGN FLOOD LEVEL	2.320	2.280	2.200	2.050	2.010	1.980	1.920	1.900	1.900
100 YEAR ARI DESIGN FLOOD LEVEL	6.490	6.420	6.240	5.850	5.780	5.700	5.450	5.490	5.400
BED LEVEL (m AHD)	-22.000	-9.300	-10.300	-13.560	-16.000	-18.040	-18.800	-15.400	-15.500
CROSS SECTION NUMBER	BN 660	BN 650	BN 630	BN 620	BN 610	BN 590	BN 560	BN 550	BN 540
MIKE 11 CHAINAGE (km)	1052.865	1053.320	1053.385	1053.900	1054.440	1054.480	1054.970	1055.280	1055.420
AMTD CHAINAGE (km)	25.795	25.340	25.295	24.760	24.020	23.980	23.490	23.384	23.240

5 YEAR ARI DESIGN FLOOD LEVEL	1.010	1.000	1.000	1.000	1.000	1.000	0.990	0.990	0.980
20 YEAR ARI DESIGN FLOOD LEVEL	1.880	1.810	1.790	1.840	1.810	1.780	1.750	1.680	1.660
100 YEAR ARI DESIGN FLOOD LEVEL	5.340	5.090	5.030	5.220	5.120	4.970	4.830	4.580	4.500
BED LEVEL (m AHD)	-17.400	-11.800	-15.400	-17.580	-16.900	-23.300	-18.700	-11.300	-11.300
CROSS SECTION NUMBER	BN 530	BN 520	BN 510	BN 500	BN 490	BN 480	BN 470	BN 460	BN 450
MIKE 11 CHAINAGE (km)	1055.960	1056.400	1056.695	1056.865	1056.950	1057.090	1057.530	1058.040	1058.230
AMTD CHAINAGE (km)	22.700	22.260	21.965	21.795	21.710	21.570	21.130	20.620	20.430

5 YEAR ARI DESIGN FLOOD LEVEL	0.980	0.980	0.980	0.970	0.970	0.970	0.960	0.960	0.960
20 YEAR ARI DESIGN FLOOD LEVEL	1.630	1.630	1.570	1.550	1.490	1.450	1.420	1.400	1.350
100 YEAR ARI DESIGN FLOOD LEVEL	4.370	4.410	4.130	4.090	3.880	3.650	3.500	3.450	3.240
BED LEVEL (m AHD)	-19.200	-17.200	-18.900	-12.700	-11.700	-16.800	-16.600	-11.300	-11.200
CROSS SECTION NUMBER	BN 440	BN 430	BN 420	BN 410	BN 400	BN 390	BN 380	BN 370	BN 360
MIKE 11 CHAINAGE (km)	1058.530	1058.935	1059.035	1059.540	1059.990	1060.345	1060.535	1061.015	1061.530
AMTD CHAINAGE (km)	20.130	19.725	19.625	19.120	18.670	18.315	18.125	17.645	17.130

LEGEND

(S16) LOCATION AND IDENTIFICATION OF STRUCTURE

5 YEAR ARI DESIGN FLOOD

20 YEAR ARI DESIGN FLOOD

100 YEAR ARI DESIGN FLOOD

EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

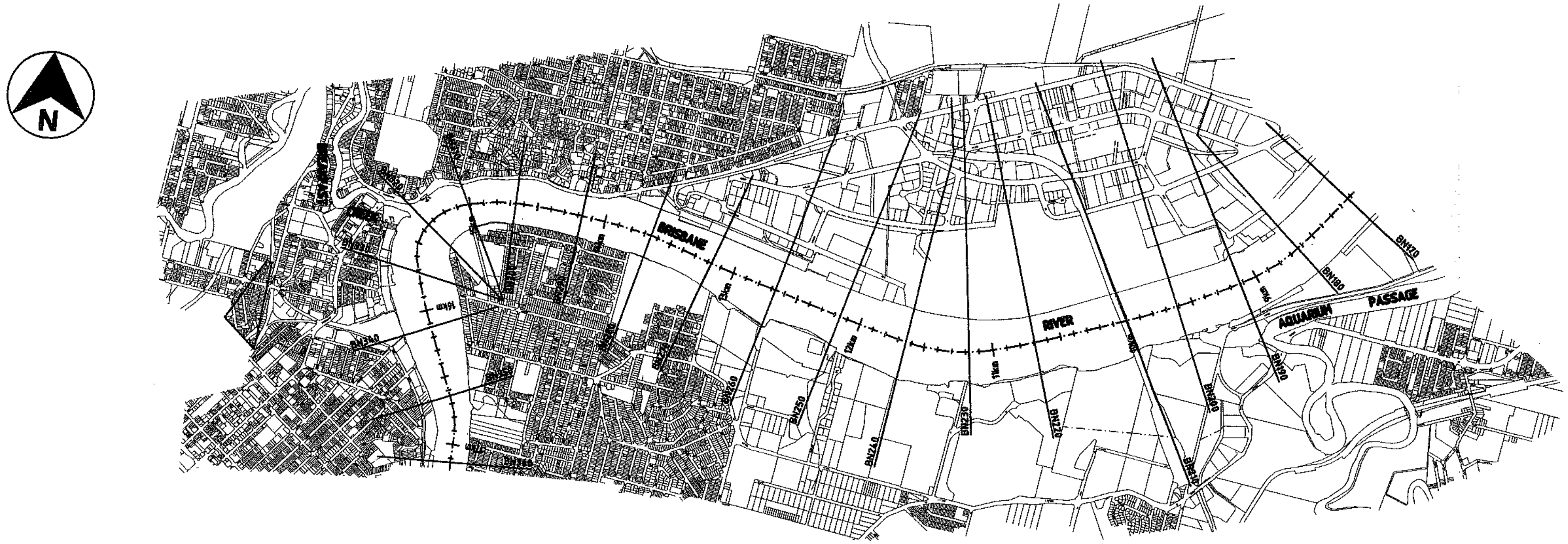
BRISBANE RIVER - BN 660 TO BN 360

FILE ... 4157 ... PLOT SCALE: 1=30

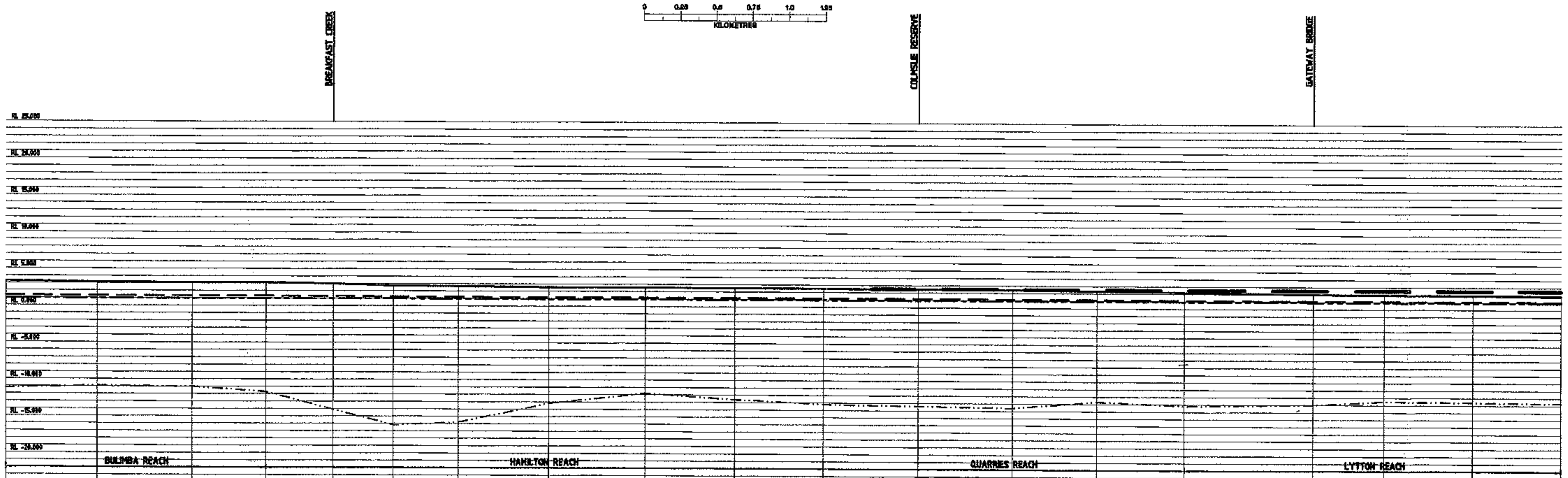
SINCLAIR KNIGHT MERZ

FIGURE H-3h

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISITNG DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



PLAN VIEW



DATUM RL. -25.000

	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
5 YEAR ARI DESIGN FLOOD LEVEL	0.960	0.960	0.950	0.950	0.950	0.950	0.950	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.930	0.930	0.930	0.930
20 YEAR ARI DESIGN FLOOD LEVEL	1.350	1.330	1.310	1.310	1.260	1.250	1.220	1.190	1.200	1.190	1.190	1.180	1.170	1.150	1.120	1.090	1.080	1.070	1.060
100 YEAR ARI DESIGN FLOOD LEVEL	3.240	3.140	3.120	3.110	2.990	2.720	2.680	2.550	2.570	2.530	2.540	2.460	2.430	2.370	2.280	2.020	1.950	1.890	1.820
BED LEVEL (m AHD)	-11.200	-10.900	-11.600	-11.700	-14.100	-16.200	-15.800	-13.200	-11.800	-12.600	-13.200	-13.600	-13.600	-12.700	-13.200	-13.000	-12.500	-12.600	-12.700
CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
MIKE 11 CHAINAGE (km)	1061.530	1062.020	1062.535	1062.940	1063.310	1063.645	1064.000	1064.490	1065.010	1065.503	1065.990	1066.505	1067.020	1067.485	1067.965	1068.660	1069.045	1069.535	1070.025
AMTD CHAINAGE (km)	17.130	16.640	16.125	15.720	15.350	15.015	14.660	14.170	13.650	13.157	12.670	12.155	11.640	11.175	10.695	10.000	9.615	9.125	8.635

BRISBANE RIVER - BN 360 TO BN 180

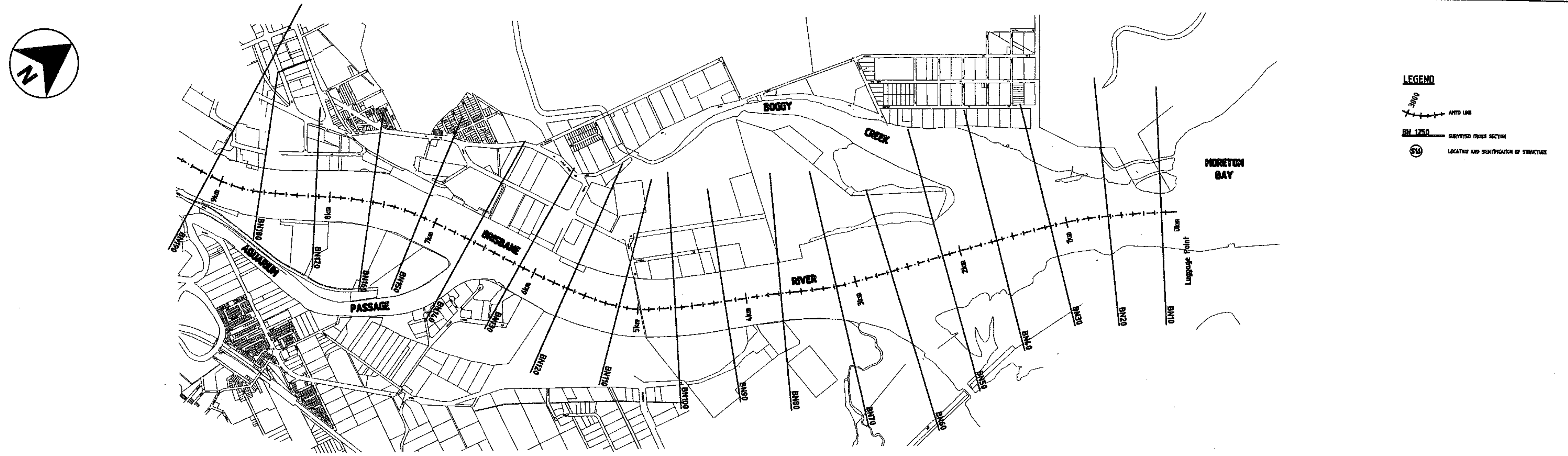
LEGEND
- 5 YEAR ARI DESIGN FLOOD
- 20 YEAR ARI DESIGN FLOOD
- 100 YEAR ARI DESIGN FLOOD
- EXISTING BED LEVEL

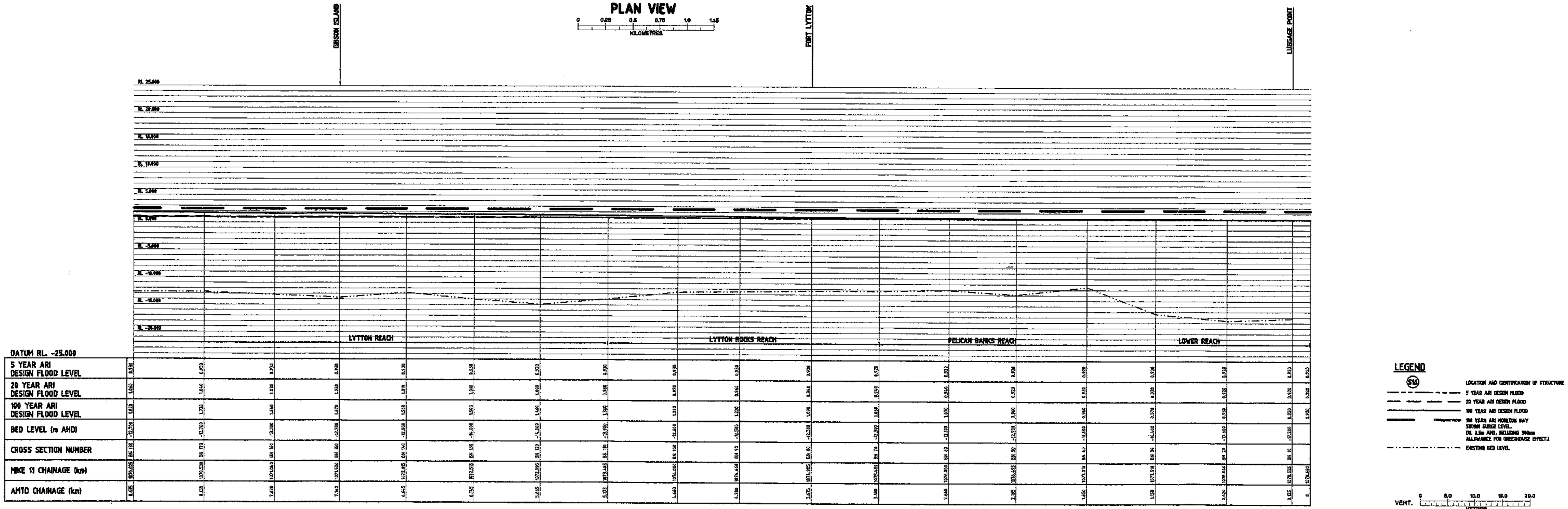
VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

FIGURE H-31

SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS





BRISBANE RIVER - BN 180 TO BN 10

FIGURE H-4a

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS

LEGEND

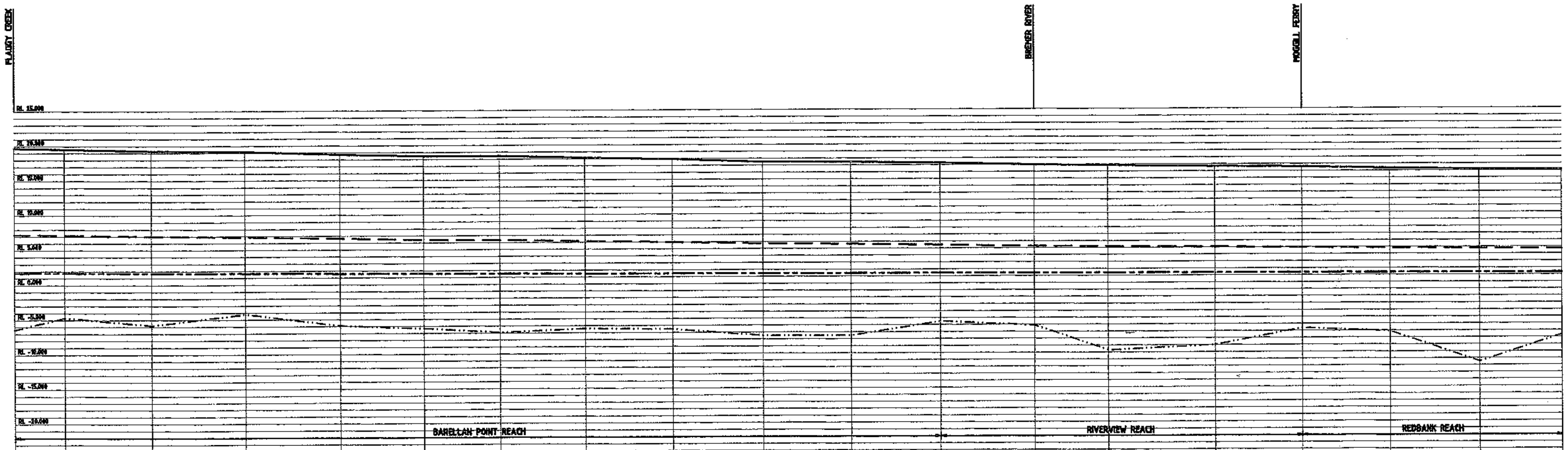
AMTD LINE

BN 1250 SURVEYED CROSS SECTION

LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.770	1.750	1.710	1.650	1.590	1.560	1.530	1.500	1.480	1.460	1.450	1.440	1.420	1.420	1.400	1.380	1.360	1.349	1.340
10 YEAR ARI DESIGN FLOOD LEVEL	7.250	7.160	7.000	6.860	6.660	6.420	6.340	6.160	5.970	5.750	5.630	5.470	5.250	5.180	5.060	4.970	4.850	4.780	4.740
50 YEAR ARI DESIGN FLOOD LEVEL	19.700	19.530	19.280	19.170	18.700	18.480	18.460	18.150	17.910	17.490	17.440	17.280	16.980	16.850	16.660	16.600	16.540	16.290	16.150
BED LEVEL (m AHD)	-4.660	-4.700	-5.600	-4.200	-5.900	-6.300	-6.900	-6.600	-6.500	-7.500	-7.500	-5.500	-6.100	-9.700	-9.000	-6.600	-7.100	-11.500	-7.600
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1000.000	1000.285	1000.775	1001.315	1001.865	1002.350	1002.785	1003.275	1003.775	1004.300	1004.810	1005.325	1005.870	1006.300	1006.910	1007.410	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	78.460	78.375	77.885	77.345	76.795	76.310	75.875	75.385	74.885	74.360	73.850	73.335	72.790	72.360	71.750	71.250	70.740	70.215	69.735

LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE

2 YEAR ARI DESIGN FLOOD

10 YEAR ARI DESIGN FLOOD

50 YEAR ARI DESIGN FLOOD

EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

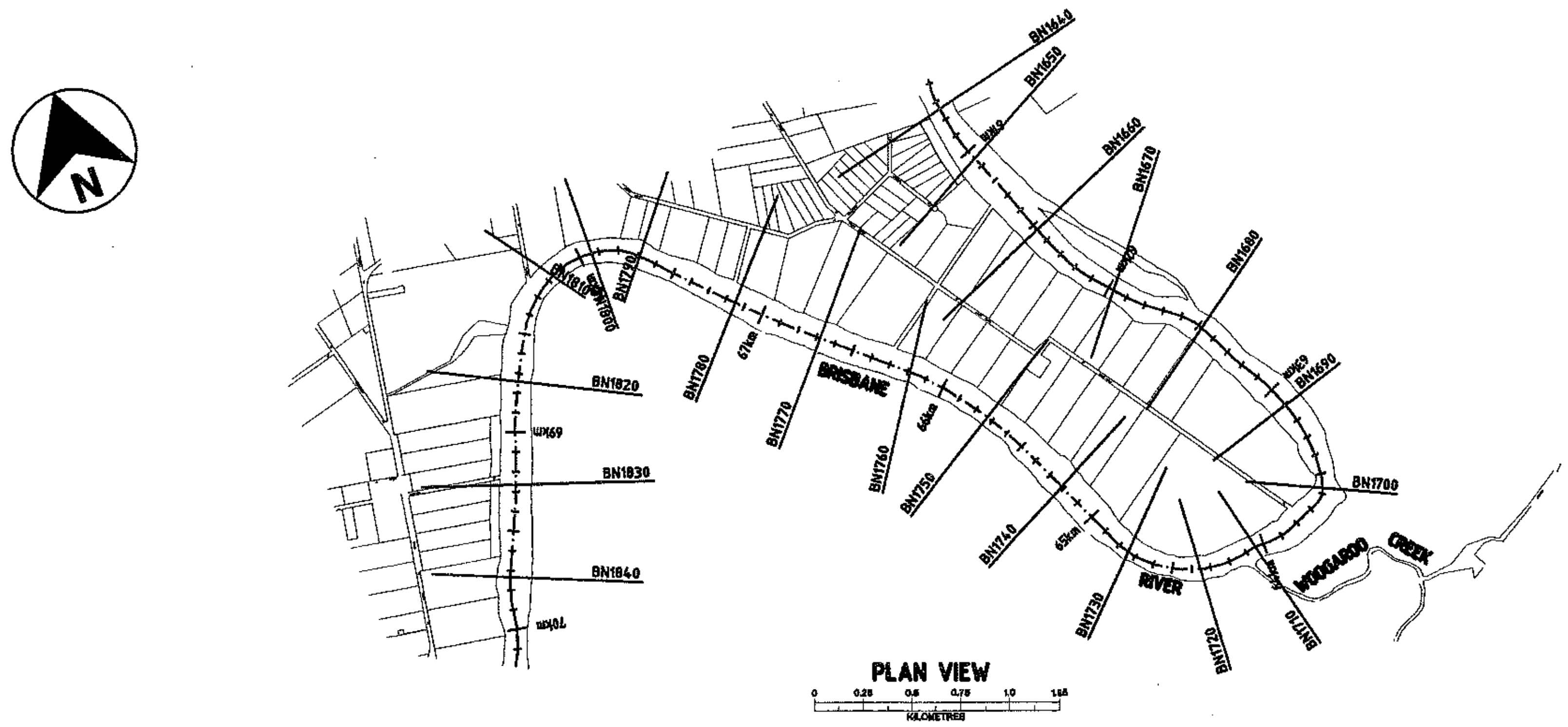
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 2020 TO BN 1840

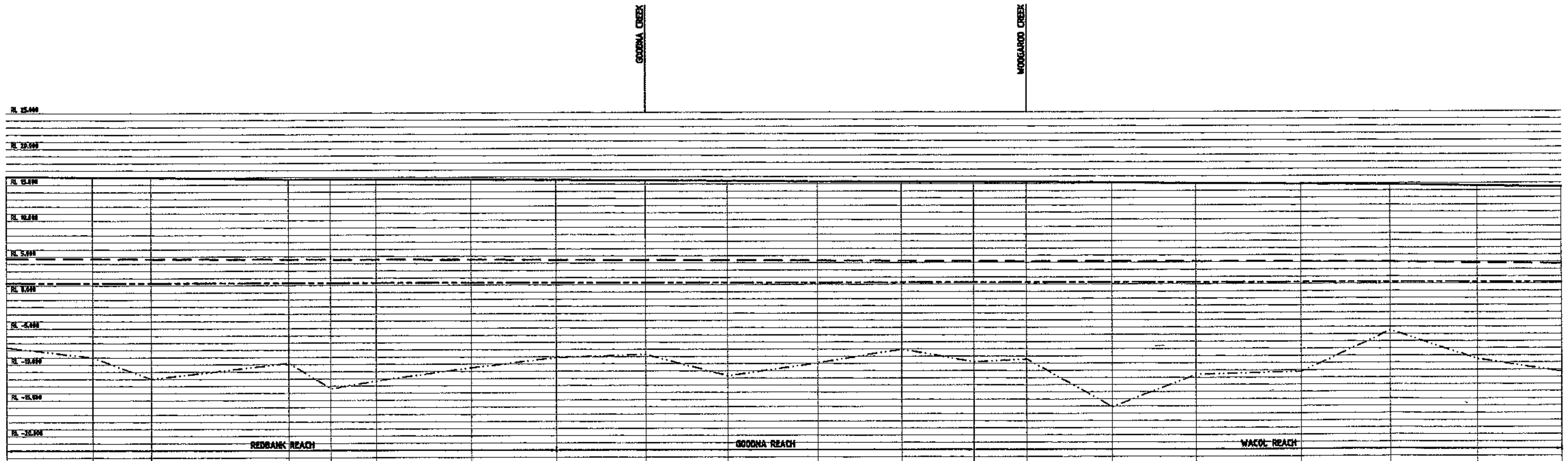
FIGURE H-4b

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS

SINCLAIR KNIGHT MERZ



PLAN VIEW



DATUM RL. -25.000

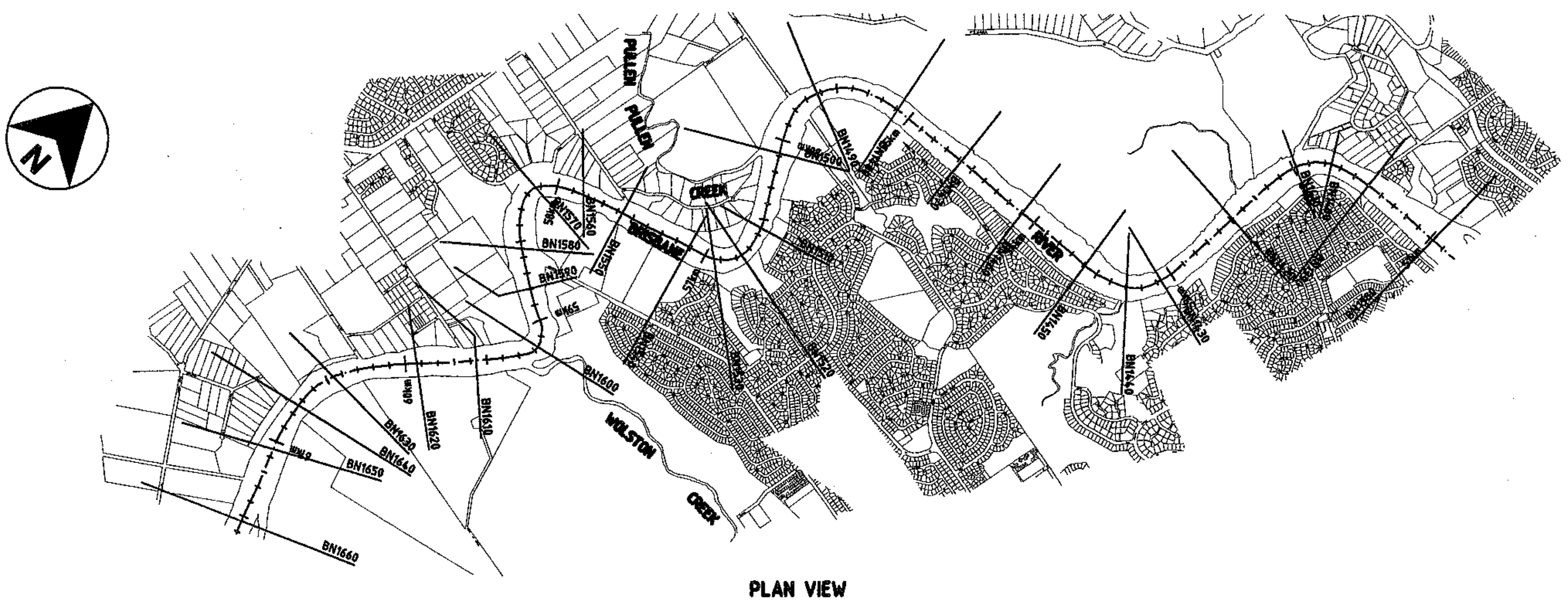
2 YEAR ARI DESIGN FLOOD LEVEL	1.340	1.330	1.330	1.310	1.310	1.310	1.300	1.300	1.290	1.280	1.280	1.260	1.250	1.250	1.250	1.240	1.240	1.220	1.200	1.190
10 YEAR ARI DESIGN FLOOD LEVEL	4.740	4.700	4.670	4.590	4.580	4.560	4.520	4.440	4.420	4.380	4.330	4.270	4.220	4.180	4.170	4.130	4.090	4.010	3.870	3.770
50 YEAR ARI DESIGN FLOOD LEVEL	16.150	16.050	16.030	15.740	15.750	15.690	15.670	15.620	15.530	15.440	15.340	15.270	15.220	15.250	15.130	15.020	14.930	14.820	14.610	14.440
BED LEVEL (m AHD)	-7.600	-9.000	-12.000	-9.800	-13.400	-12.300	-10.500	-9.100	-8.700	-11.700	-9.900	-8.000	-9.800	-9.400	-16.100	-11.600	-11.200	-5.500	-9.500	-11.300
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1008.925	1009.400	1009.720	1010.490	1010.725	1010.988	1011.510	1011.980	1012.475	1012.935	1013.445	1013.910	1014.310	1014.610	1015.090	1015.560	1016.140	1016.640	1017.130	1017.610
AMTD CHAINAGE (km)	69.735	69.260	68.940	68.170	67.935	67.680	67.150	66.680	66.185	65.725	65.215	64.740	64.350	64.050	63.570	63.100	62.520	62.020	61.530	61.050

BRISBANE RIVER - BN 1840 TO BN 1650

SINCLAIR KNIGHT MERZ

FIGURE H-4c

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS

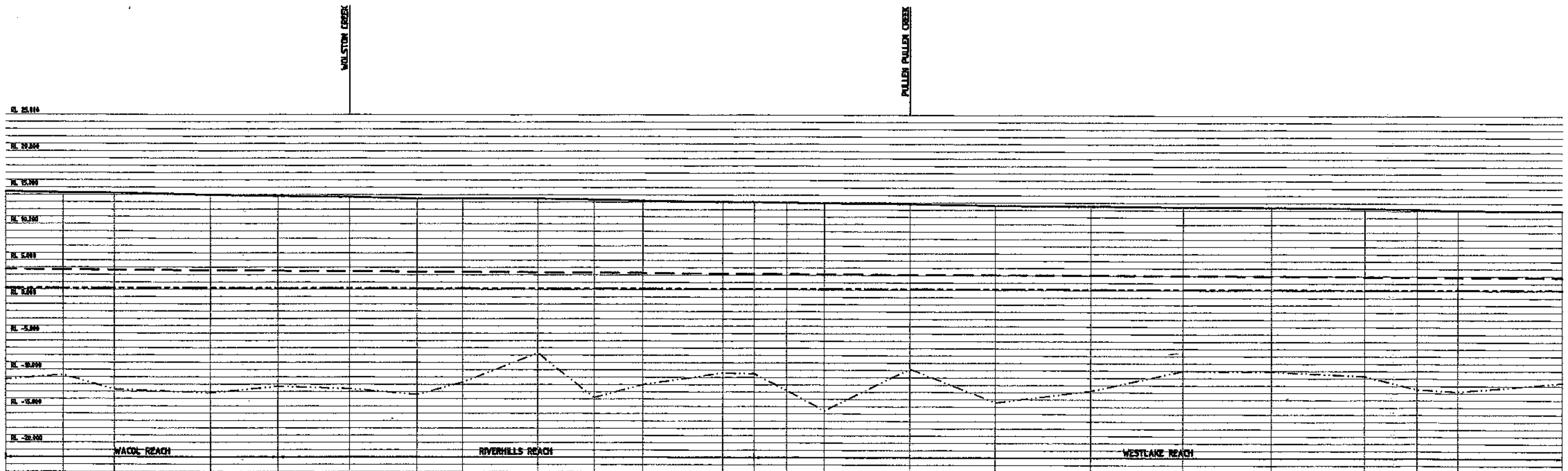


LEGEND

AMTD LINE
BN 1250 SURVEYED CROSS SECTION
LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

CROSS SECTION NUMBER	DESIGN FLOOD LEVEL	DESIGN FLOOD LEVEL	DESIGN FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 1650	1.190	3.779	14.440	-11.300	1017.650	61.050
BN 1640	1.180	3.690	14.280	-10.700	1017.920	60.740
BN 1630	1.180	3.670	14.220	-12.700	1018.200	60.460
BN 1620	1.170	3.600	13.940	-13.200	1018.725	59.935
BN 1610	1.150	3.540	13.800	-12.300	1019.095	59.565
BN 1600	1.140	3.480	13.700	-12.600	1019.490	59.170
BN 1590	1.150	3.430	13.460	-13.400	1019.865	58.795
BN 1580	1.150	3.400	13.510	-11.700	1020.115	58.545
BN 1570	1.140	3.360	13.480	-7.700	1020.525	58.135
BN 1560	1.140	3.320	13.360	-13.800	1020.830	57.830
BN 1550	1.130	3.270	13.190	-12.000	1021.095	57.565
BN 1540	1.130	3.190	13.030	-10.400	1021.539	57.121
BN 1530	1.120	3.170	13.030	-10.500	1021.715	56.945
BN 1520	1.120	3.150	12.980	-12.800	1021.895	56.765
BN 1510	1.120	3.150	12.900	-15.600	1022.195	56.565
BN 1500	1.120	3.100	12.800	-9.800	1022.575	56.085
BN 1490	1.120	3.070	12.590	-16.400	1023.040	55.620
BN 1480	1.110	3.050	12.520	-12.800	1023.570	55.090
BN 1470	1.110	3.020	12.460	-10.000	1024.080	54.580
BN 1460	1.110	2.970	12.400	-10.100	1024.563	54.097
BN 1450	1.100	2.930	12.300	-10.700	1025.070	53.590
BN 1440	1.100	2.890	12.190	-12.500	1025.360	53.300
BN 1430	1.100	2.850	12.040	-12.800	1025.550	53.070
BN 1420	1.090	2.830	11.950	-11.600	1026.170	52.490

LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE
2 YEAR ARI DESIGN FLOOD
10 YEAR ARI DESIGN FLOOD
50 YEAR ARI DESIGN FLOOD
EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

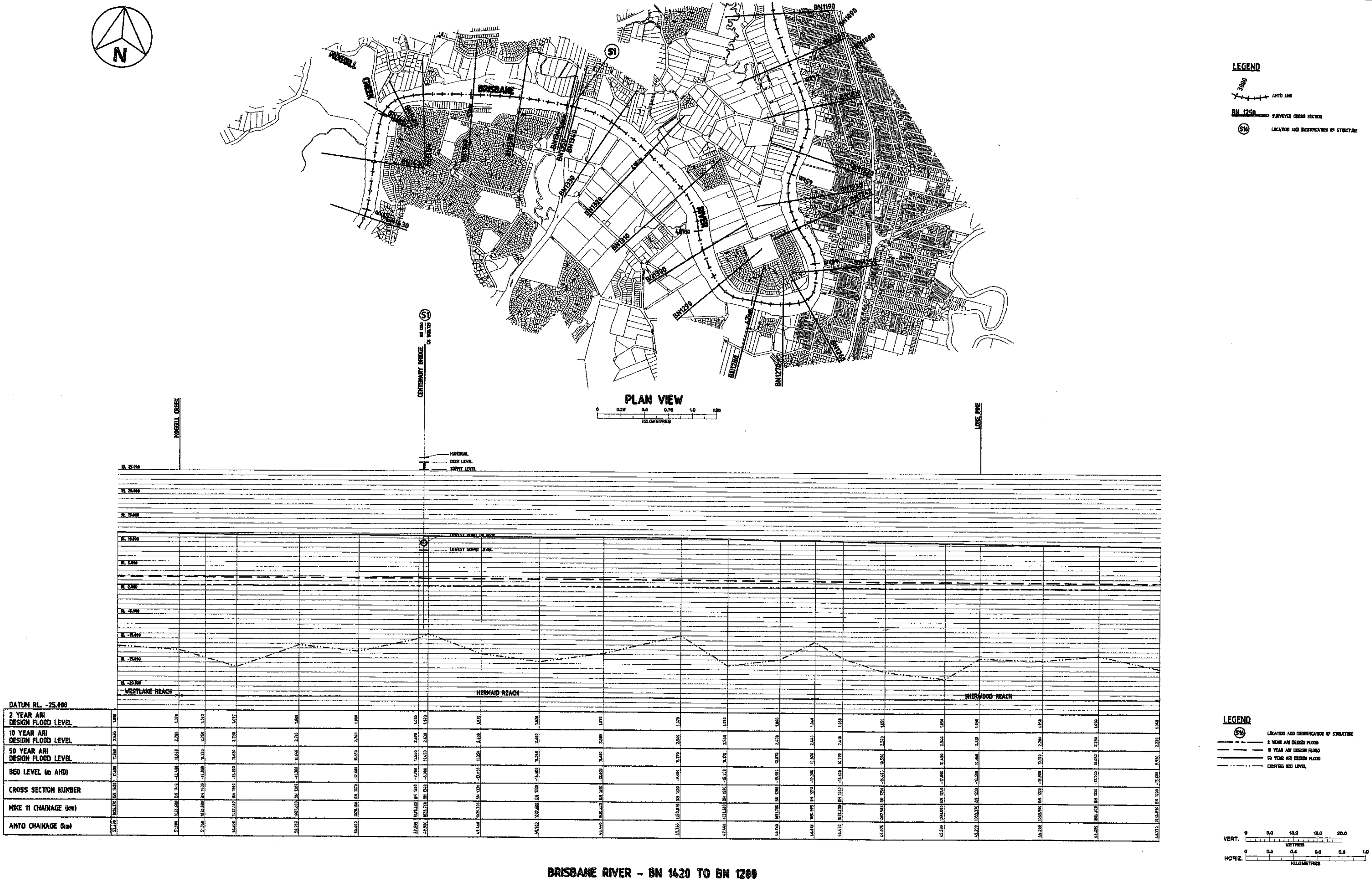
BRISBANE RIVER - BN 1650 TO BN 1420

FILE NAME: 4157-130 PLOT SCALE: 1=30 DISK N°: C:\DWG JOB N°: T004157 DATE: 23/3/97

SINCLAIR KNIGHT MERZ

FIGURE H-4d

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



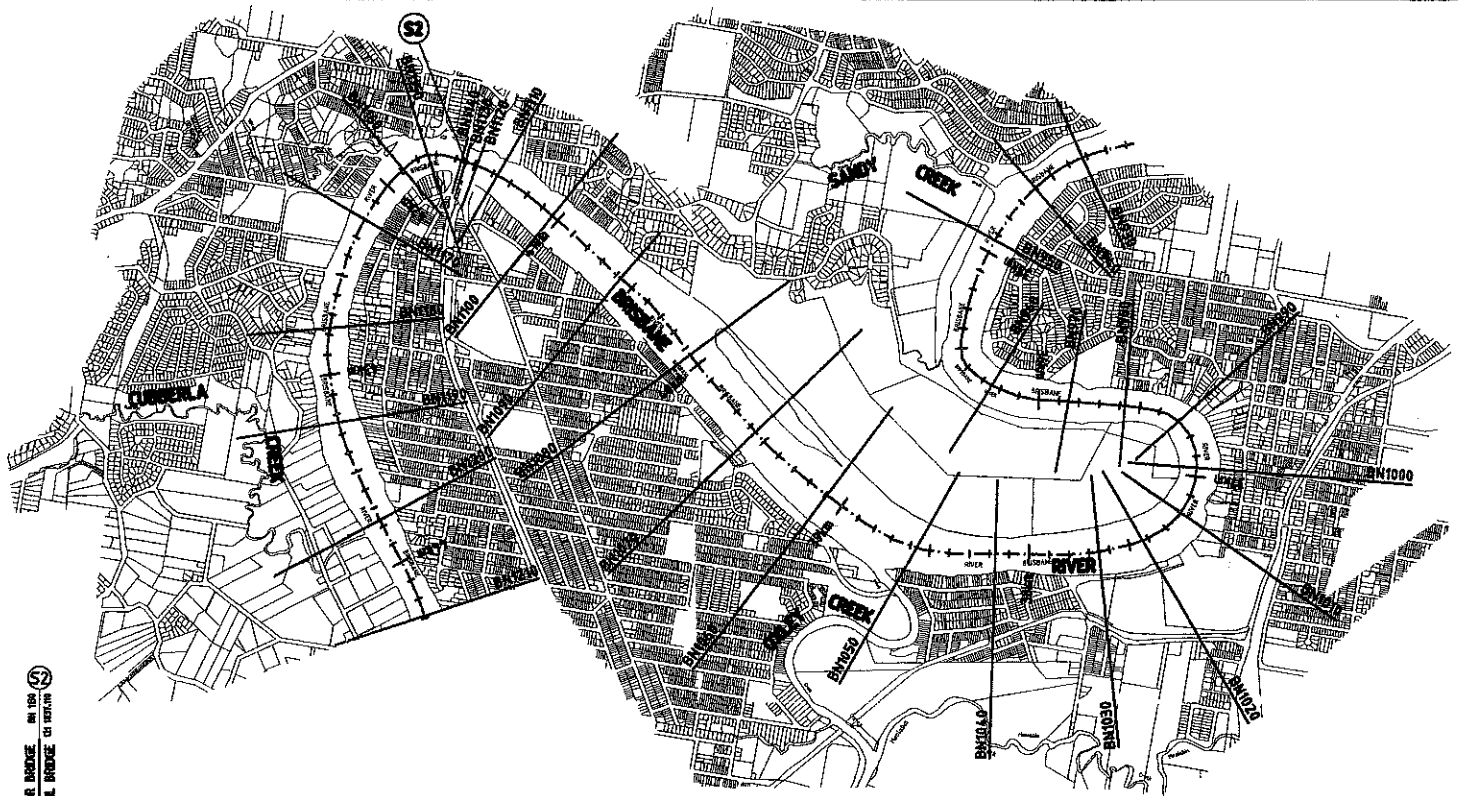
BRISBANE RIVER - BN 1420 TO BN 1200

FILE NAME: 4157-131 PLOT SCALE: 1=30 DISK N°: C:\DWG JOB N°: T00415? DATE: 23/3/97

FIGURE H-4e

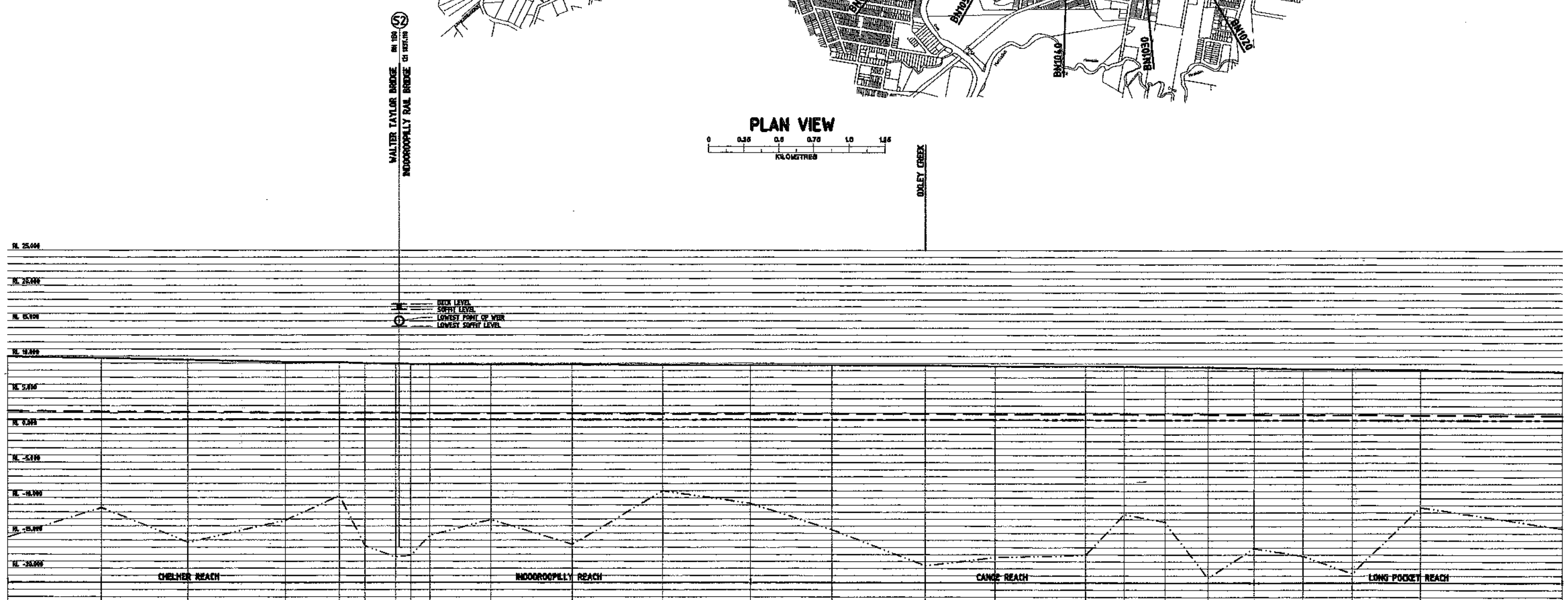
SINCLAIR KNIGHT MERZ

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI
FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



LEGEND
3000 AMTD LINE
BN 1250 SURVEYED CROSS SECTION
S16 LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW
0 0.25 0.5 0.75 1.0 1.25
KILOMETRES



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.040	1.040	1.040	1.030	1.030	1.030	1.030	1.020	1.020	1.020	1.020	1.020	1.020
10 YEAR ARI DESIGN FLOOD LEVEL	2.220	2.150	2.100	2.050	2.020	2.000	2.000	1.940	1.930	1.910	1.900	1.880	1.860
50 YEAR ARI DESIGN FLOOD LEVEL	9.930	9.720	9.470	9.210	9.130	9.010	8.980	8.900	8.840	8.830	8.810	8.790	8.760
BED LEVEL (m AHD)	-15.600	-11.400	-16.300	-13.200	-9.100	-16.800	-18.400	-18.100	-15.300	-13.100	-16.600	-9.000	-10.600
CROSS SECTION NUMBER	BN 1200	BN 1190	BN 1180	BN 1170	BN 1160	BN 1150	BN 1140	BN 1120	BN 1110	BN 1100	BN 1090	BN 1080	BN 1070
MIKE 11 CHAINAGE (km)	1034.890	1035.414	1035.900	1036.460	1036.770	1036.815	1037.090	1037.175	1037.285	1037.625	1038.085	1038.600	1039.100
AMTD CHAINAGE (km)	43.770	43.264	42.760	42.200	41.890	41.745	41.570	41.465	41.335	41.035	40.575	40.040	39.560

2 YEAR ARI DESIGN FLOOD LEVEL	1.020	1.020	1.020	1.020	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.000
10 YEAR ARI DESIGN FLOOD LEVEL	1.850	1.860	1.840	1.840	1.830	1.810	1.810	1.790	1.770	1.730	1.740	1.670
50 YEAR ARI DESIGN FLOOD LEVEL	8.750	8.720	8.600	8.620	8.580	8.510	8.480	8.360	8.230	8.210	8.150	7.850
BED LEVEL (m AHD)	-14.500	-19.600	-18.400	-18.100	-12.300	-13.400	-21.300	-17.100	-18.200	-20.700	-11.300	-14.300
CROSS SECTION NUMBER	BN 1060	BN 1050	BN 1040	BN 1030	BN 1020	BN 1010	BN 1000	BN 990	BN 980	BN 970	BN 960	BN 950
MIKE 11 CHAINAGE (km)	1039.565	1040.090	1040.490	1041.010	1041.230	1041.460	1041.700	1041.960	1042.235	1042.585	1042.910	1043.725
AMTD CHAINAGE (km)	39.050	38.570	38.170	37.560	37.430	37.200	36.960	36.700	36.425	36.145	35.750	34.935

LEGEND
S16 LOCATION AND IDENTIFICATION OF STRUCTURE
2 YEAR ARI DESIGN FLOOD
10 YEAR ARI DESIGN FLOOD
50 YEAR ARI DESIGN FLOOD
EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 1200 TO BN 950

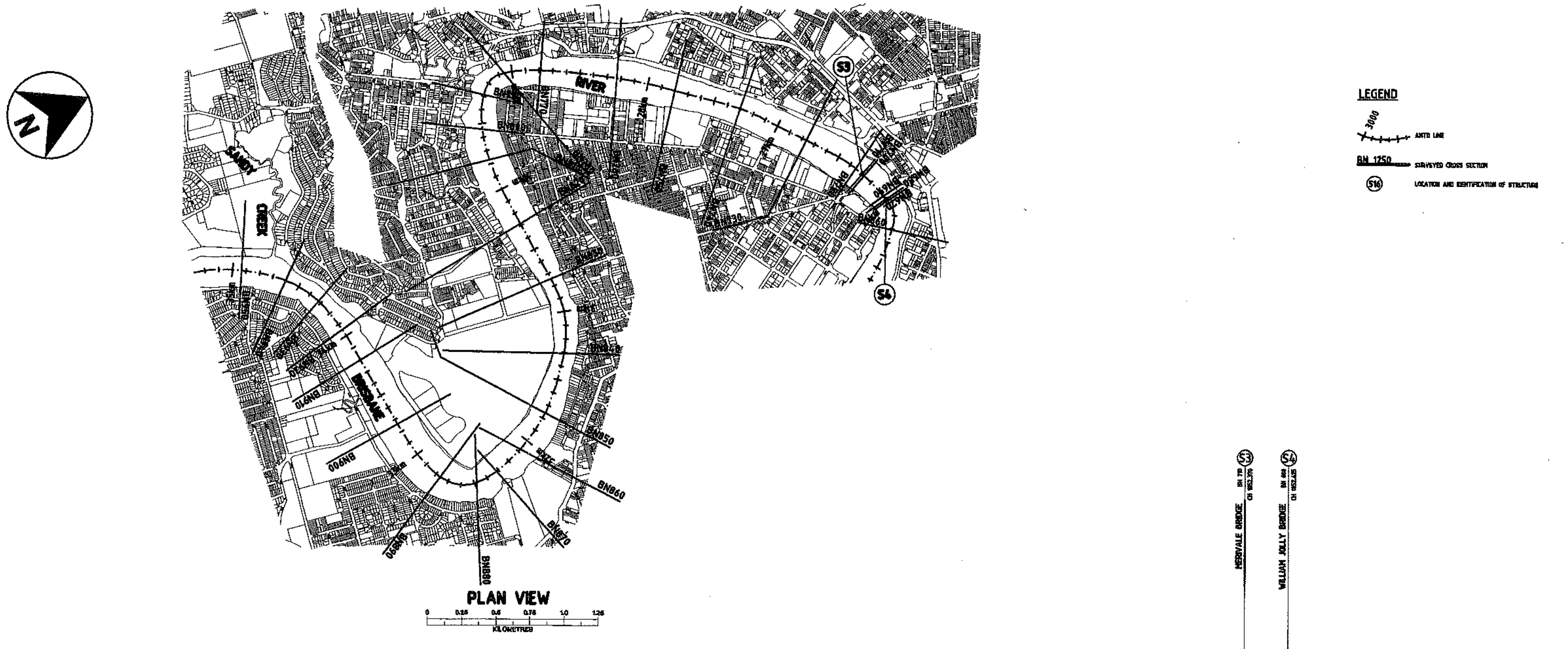
FILE NAME: 4157-102 PLOT SCALE: 1:30 DISK N: C:\DWG JOB N: T00415 DATE: 23/3/??

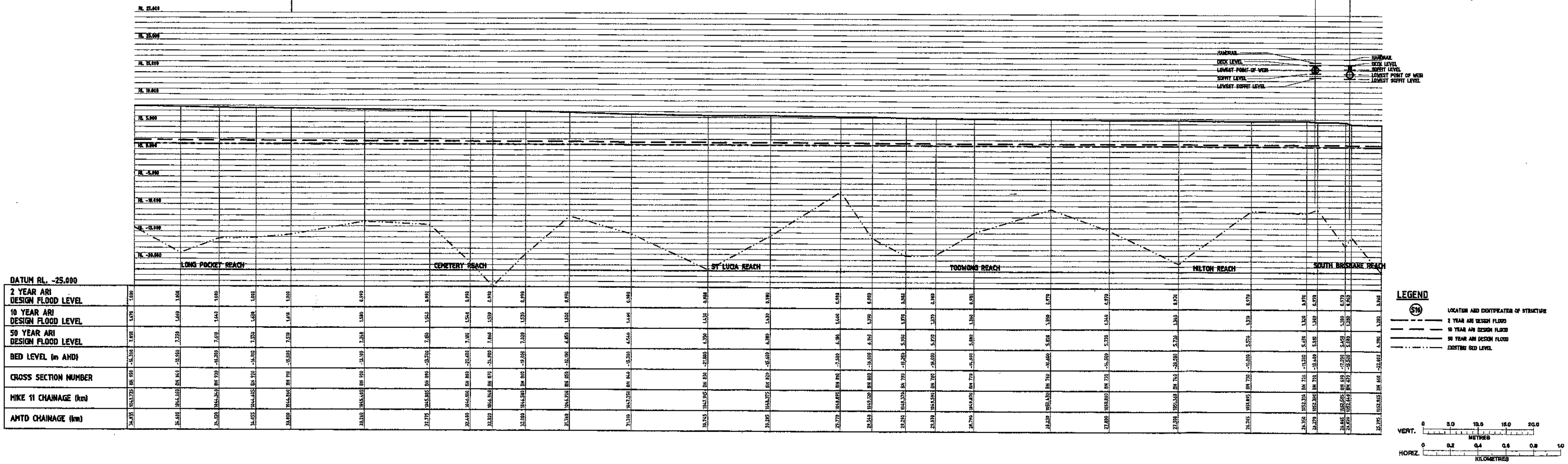
SINCLAIR KNIGHT MERZ

FIGURE H-4f

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS





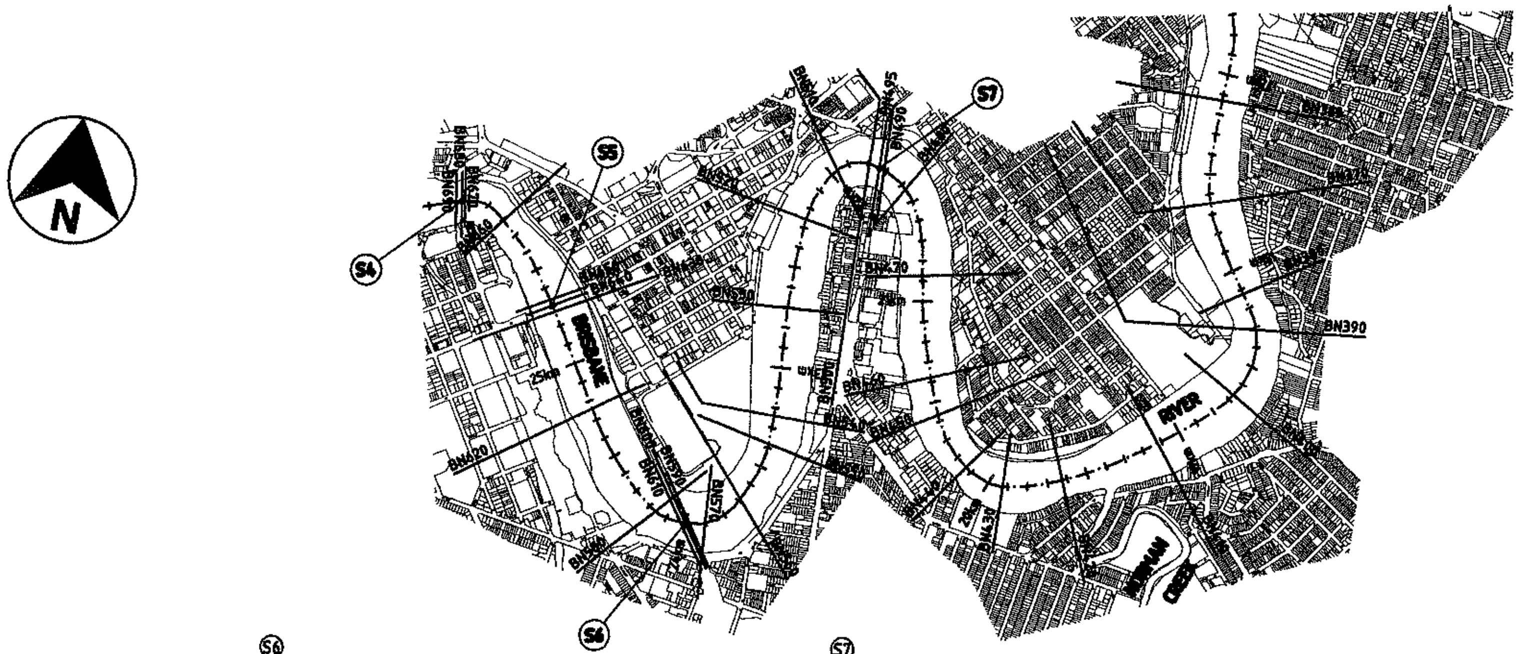
BRISBANE RIVER - BN 950 TO BN 660

FILE NAME: 415/-155 PLOT SCALE: 1=30 DISK N: CADWG JOB N: T00415/ DATE: 23/3/9/

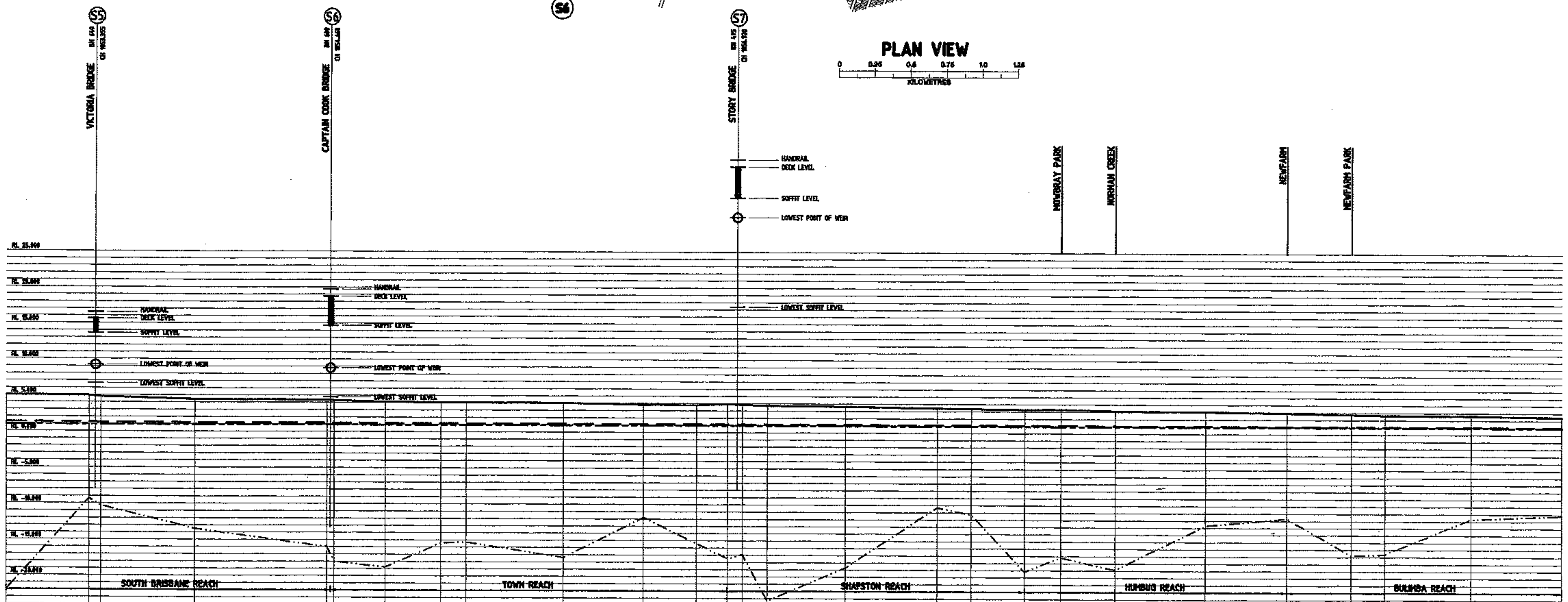
SINCLAIR KNIGHT MERZ

FIGURE H-4g

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI
FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



PLAN VIEW



CROSS SECTION NUMBER	2 YEAR ARI DESIGN FLOOD LEVEL	10 YEAR ARI DESIGN FLOOD LEVEL	50 YEAR ARI DESIGN FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 660	0.960	1.280	4.980	-22.000	1052.865	25.795
BN 650	0.960	1.260	4.920	-9.300	1053.320	25.340
BN 630	0.950	1.240	4.770	-10.300	1053.385	25.295
BN 620	0.950	1.200	4.430	-13.500	1053.900	24.740
BN 610	0.950	1.190	4.360	-16.000	1054.640	24.020
BN 590	0.950	1.180	4.300	-18.000	1054.680	23.980
BN 560	0.950	1.160	4.110	-18.800	1054.970	23.690
BN 550	0.950	1.160	4.080	-15.400	1055.280	23.380
BN 540	0.950	1.160	4.080	-18.300	1055.420	23.240
BN 530	0.950	1.150	4.020	-17.400	1055.960	22.780
BN 520	0.950	1.130	3.840	-14.800	1056.480	22.260
BN 510	0.950	1.130	3.770	-15.400	1056.695	21.965
BN 500	0.950	1.140	3.930	-17.500	1056.865	21.795
BN 490	0.940	1.130	3.850	-16.900	1056.958	21.710
BN 480	0.940	1.120	3.750	-23.300	1057.090	21.570
BN 470	0.940	1.120	3.650	-18.700	1057.530	21.130
BN 460	0.940	1.100	3.450	-10.300	1058.040	20.620
BN 450	0.940	1.090	3.390	-11.300	1058.230	20.430
BN 440	0.940	1.090	3.380	-19.200	1059.530	20.130
BN 430	0.940	1.090	3.320	-17.200	1058.735	19.925
BN 420	0.940	1.070	3.420	-18.900	1059.035	19.625
BN 410	0.940	1.070	3.080	-12.700	1059.540	19.120
BN 400	0.940	1.050	2.920	-11.700	1059.990	18.670
BN 390	0.940	1.040	2.760	-16.800	1060.345	18.315
BN 380	0.940	1.030	2.662	-16.400	1060.535	18.125
BN 370	0.940	1.030	2.620	-11.700	1061.015	17.645
BN 360	0.940	1.020	2.470	-11.200	1061.530	17.130

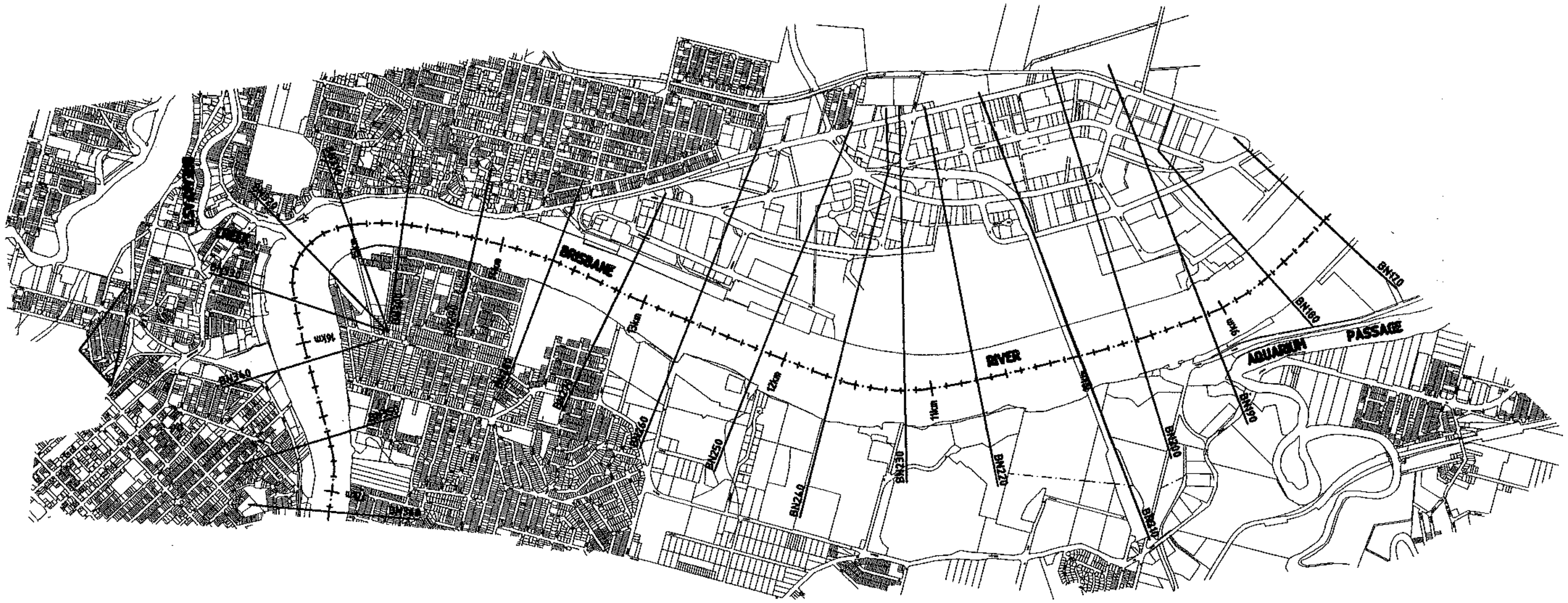
BRISBANE RIVER - BN 660 TO BN 360

PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

FIGURE H-4h

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2, 10 AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS

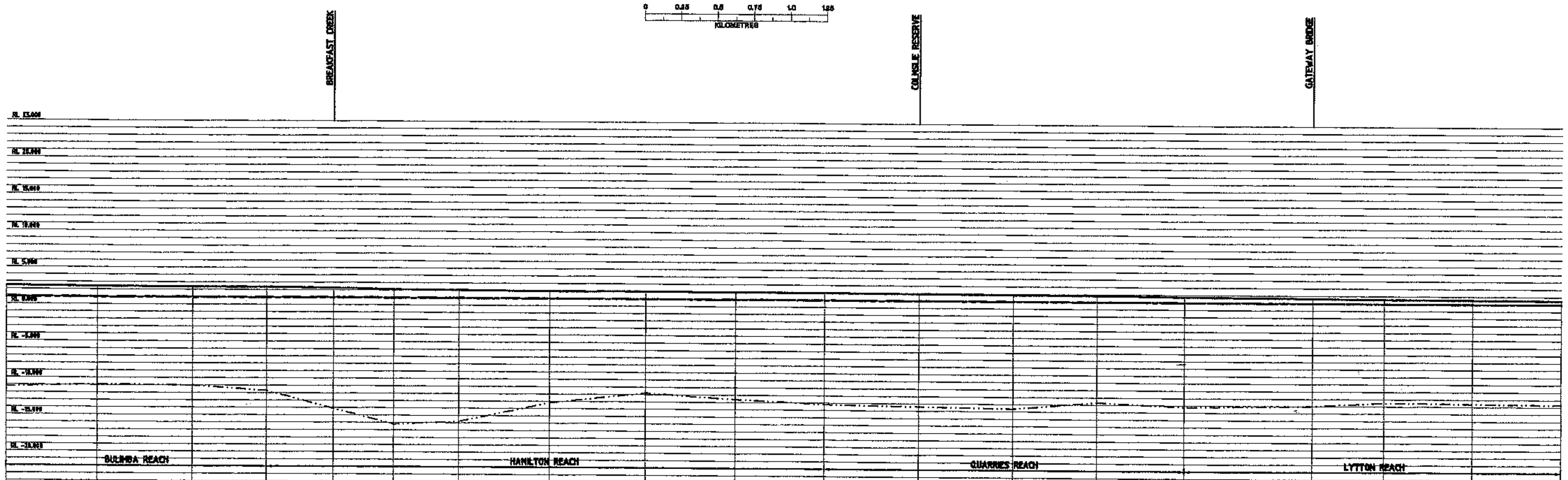


LEGEND

- AMTD LINE
- BN 1250 SURVEYED CROSS SECTION
- LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.930	0.930	0.930
10 YEAR ARI DESIGN FLOOD LEVEL	1.020	1.010	1.010	1.000	1.000	0.990	0.990	0.980	0.980	0.980	0.980	0.980	0.980	0.970	0.970	0.960	0.960	0.950	0.950
50 YEAR ARI DESIGN FLOOD LEVEL	2.470	2.410	2.370	2.340	2.280	2.090	2.060	1.970	1.980	1.950	1.960	1.910	1.880	1.810	1.730	1.610	1.560	1.520	1.480
BED LEVEL (m AHD)	-11.200	-10.980	-11.000	-11.700	-14.100	-16.200	-15.800	-13.200	-11.800	-12.400	-13.200	-13.400	-13.600	-12.700	-13.200	-13.000	-12.500	-12.600	-12.700
CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
MIKE 11 CHAINAGE (km)	1061.530	1062.020	1062.535	1062.940	1063.310	1063.645	1064.000	1064.490	1065.010	1065.503	1065.990	1066.505	1067.020	1067.445	1067.965	1068.460	1069.045	1069.535	1070.025
AMTD CHAINAGE (km)	17.130	16.640	16.125	15.720	15.350	15.015	14.660	14.170	13.650	13.157	12.670	12.155	11.640	11.175	10.695	10.200	9.615	9.125	8.635

LEGEND

- LOCATION AND IDENTIFICATION OF STRUCTURE
- 2 YEAR ARI DESIGN FLOOD
- 10 YEAR ARI DESIGN FLOOD
- 50 YEAR ARI DESIGN FLOOD
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

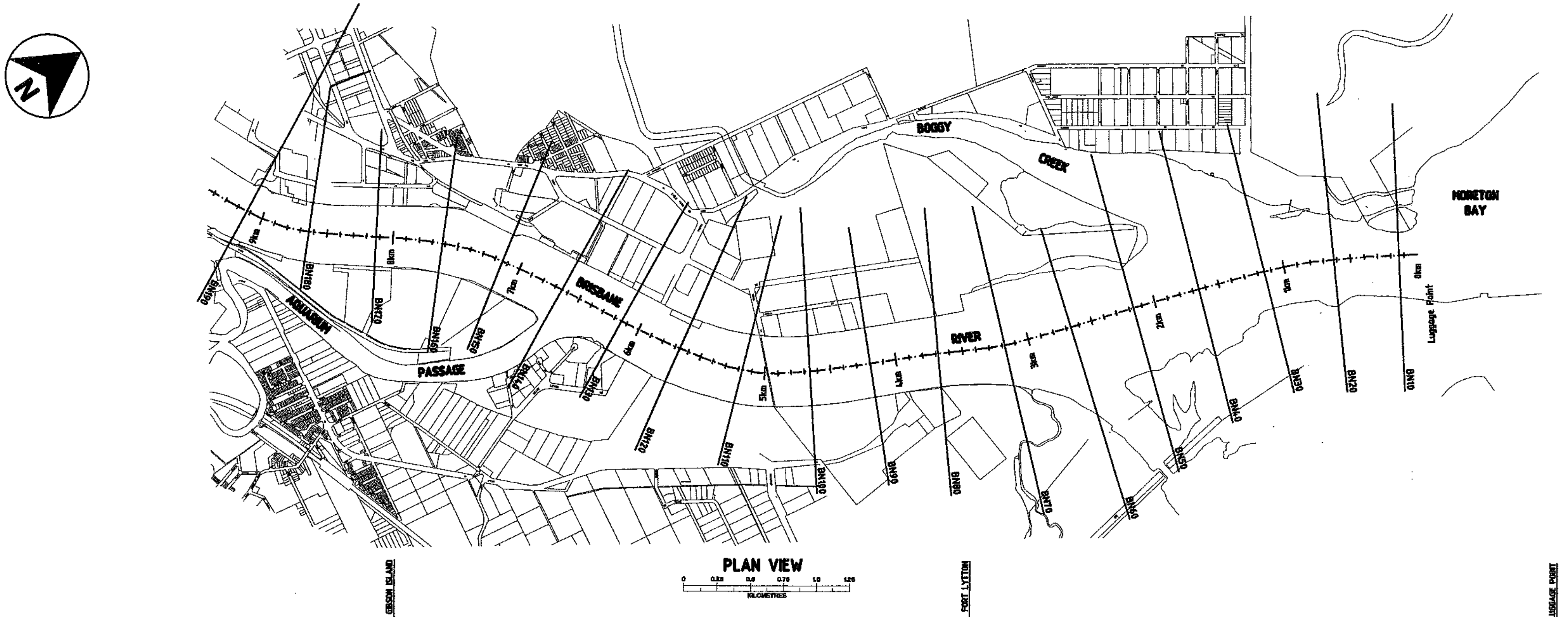
BRISBANE RIVER - BN 360 TO BN 180

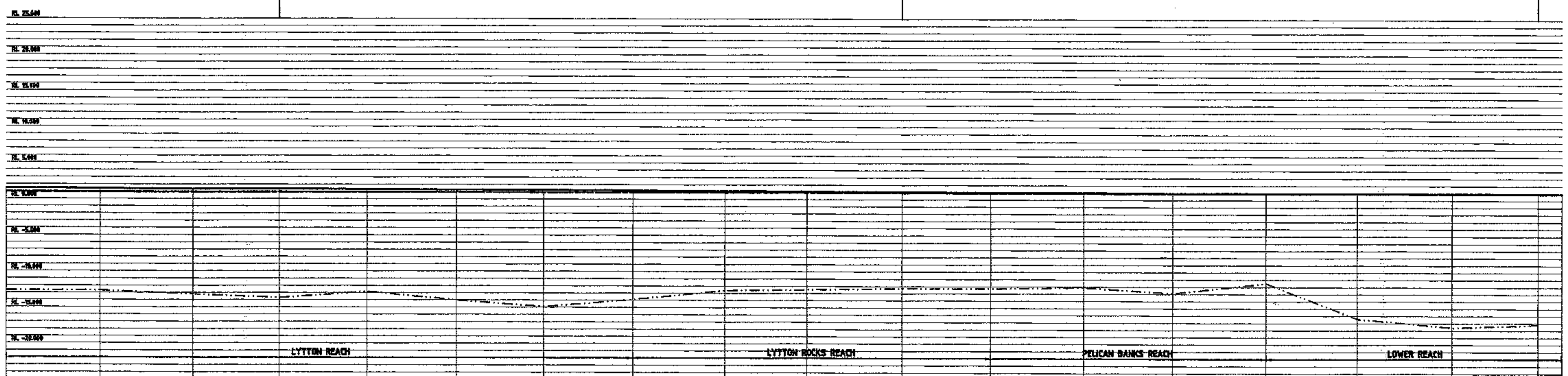
FILE NAME: 4157-155 PLOT SCALE: 1=30 DISK N°: C:\DWG JOB N°: T004157 DATE: 23/3/97

SINCLAIR KNIGHT MERZ

FIGURE H-4i

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS





DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
10 YEAR ARI DESIGN FLOOD LEVEL	0.950	0.950	0.940	0.940	0.940	0.940	0.940	0.930	0.930	0.930	0.930	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
50 YEAR ARI DESIGN FLOOD LEVEL	1.440	1.410	1.340	1.380	1.310	1.280	1.250	1.190	1.140	1.100	1.020	1.000	1.010	0.940	0.950	0.950	0.940	0.920	0.920
BED LEVEL (m AHD)	-12.700	-12.700	-13.200	-13.700	-12.600	-14.000	-14.900	-13.900	-12.600	-12.500	-12.300	-12.300	-12.100	-12.900	-11.500	-16.400	-17.400	-17.200	
CROSS SECTION NUMBER	BN 180	BN 170	BN 160	BN 150	BN 140	BN 130	BN 120	BN 110	BN 100	BN 90	BN 80	BN 70	BN 60	BN 50	BN 40	BN 30	BN 20	BN 10	
MIKE 11 CHAINAGE (km)	1070.035	1070.530	1071.010	1071.520	1072.015	1072.515	1072.995	1073.485	1074.000	1074.440	1074.985	1075.480	1076.000	1076.495	1077.010	1077.510	1078.040	1078.525	1078.660
AMTD CHAINAGE (km)	8.635	8.130	7.620	7.140	6.645	6.145	5.665	5.175	4.680	4.200	3.675	3.180	2.660	2.165	1.650	1.150	0.620	0.135	0

LEGEND

- LOCATION AND IDENTIFICATION OF STRUCTURE
- 2 YEAR ARI DESIGN FLOOD
- 10 YEAR ARI DESIGN FLOOD
- 50 YEAR ARI DESIGN FLOOD
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

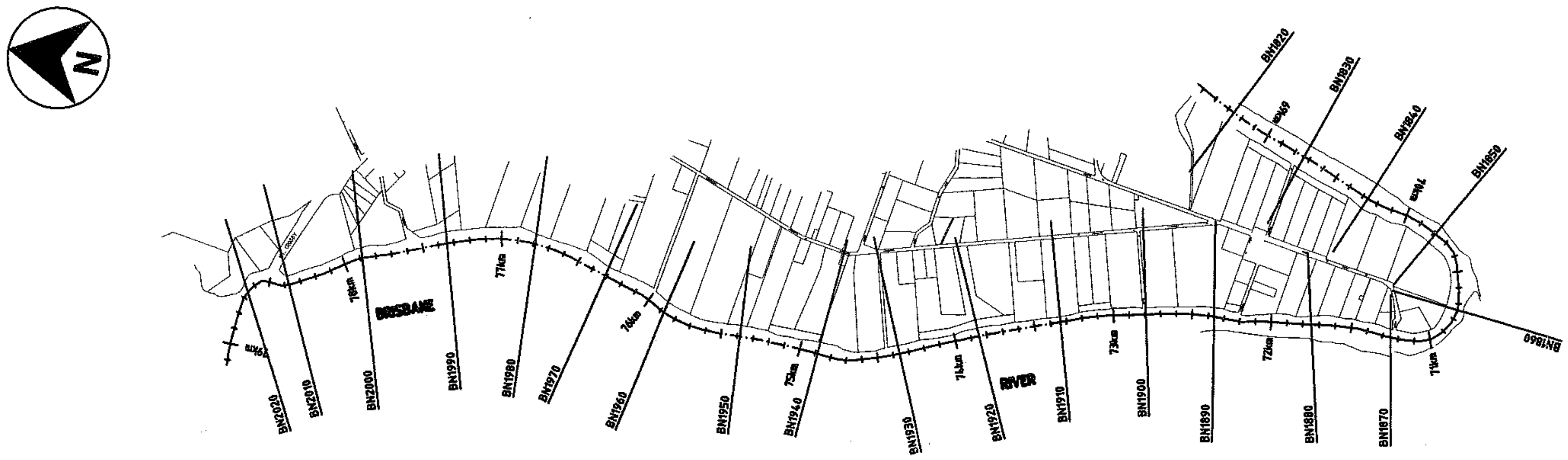
BRISBANE RIVER - BN 180 TO BN 10

FILE NAME: 4157-130 PLOT SCALE: 1=30 DISK No: CADWG JOB No: T00415 DATE: 23/3/?

SINCLAIR KNIGHT MERZ

FIGURE H-5a

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE PMF AND 10 000 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS

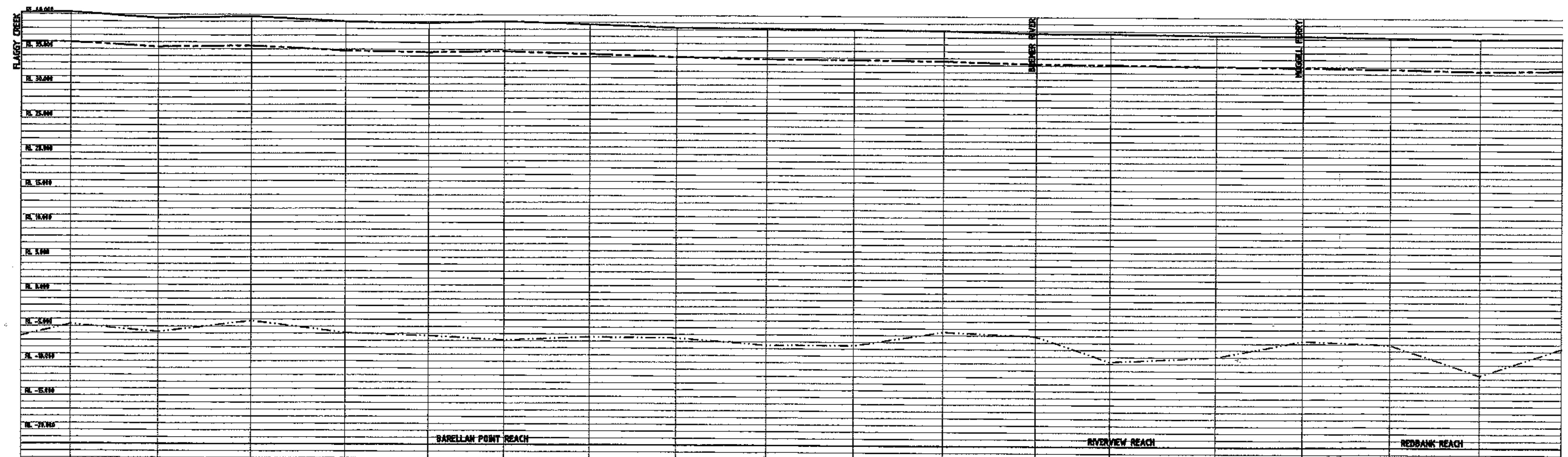


LEGEND

- 3000 — AMTD LINE
- BN 1250 — SURVEYED CROSS SECTION
- (516) — LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

10 000 YEAR ARI DESIGN FLOOD LEVEL	36.040	36.030	35.320	35.430	34.790	34.600	34.760	34.420	34.090	33.790	33.710
PMF DESIGN FLOOD LEVEL	40.260	40.310	39.470	38.730	38.060	38.810	38.080	38.720	38.280	38.190	38.060
BED LEVEL (m AHD)	-6.400	-4.700	-5.800	-4.200	-5.960	-4.300	-4.900	-6.400	-4.500	-7.500	-7.500
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920
MIKE 11 CHAINAGE (km)	1000.000	1000.265	1000.775	1001.315	1001.865	1002.350	1002.785	1003.275	1003.775	1004.300	1004.810
AMTD CHAINAGE (km)	78.660	78.375	77.885	77.345	76.795	76.330	75.875	75.385	74.885	74.360	73.850

10 000 YEAR ARI DESIGN FLOOD LEVEL	33.580	33.210	33.170	32.940	32.860	32.690	32.420	32.540
PMF DESIGN FLOOD LEVEL	37.970	37.610	37.630	37.430	37.410	37.330	37.010	37.160
BED LEVEL (m AHD)	-5.500	-6.100	-9.700	-9.000	-6.600	-7.100	-11.500	-7.600
CROSS SECTION NUMBER	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1005.325	1005.870	1006.360	1006.970	1007.410	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	73.335	72.790	72.360	71.750	71.250	70.740	70.215	69.735

LEGEND

- (516) LOCATION AND IDENTIFICATION OF STRUCTURE
- ——— PMF DESIGN FLOOD
- — — — 10 000 YEAR ARI DESIGN FLOOD
- —··—·· EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 2020 TO BN 1840

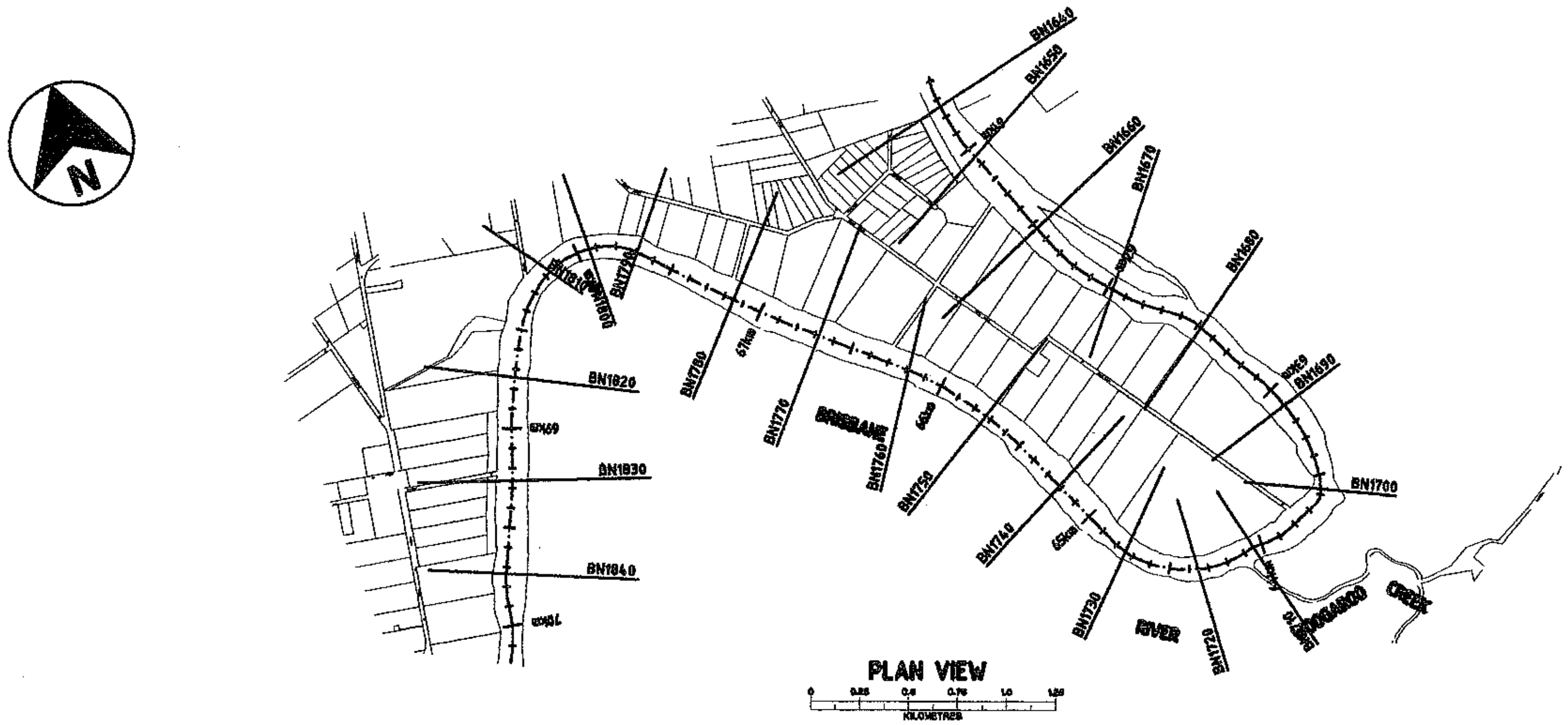
FILE NAME: 4157-157
PLOT SCALE: 1=30
DISK N: C:\DWG
JOB N: T00415?
DATE: 23/3/??

SINCLAIR KNIGHT MERZ

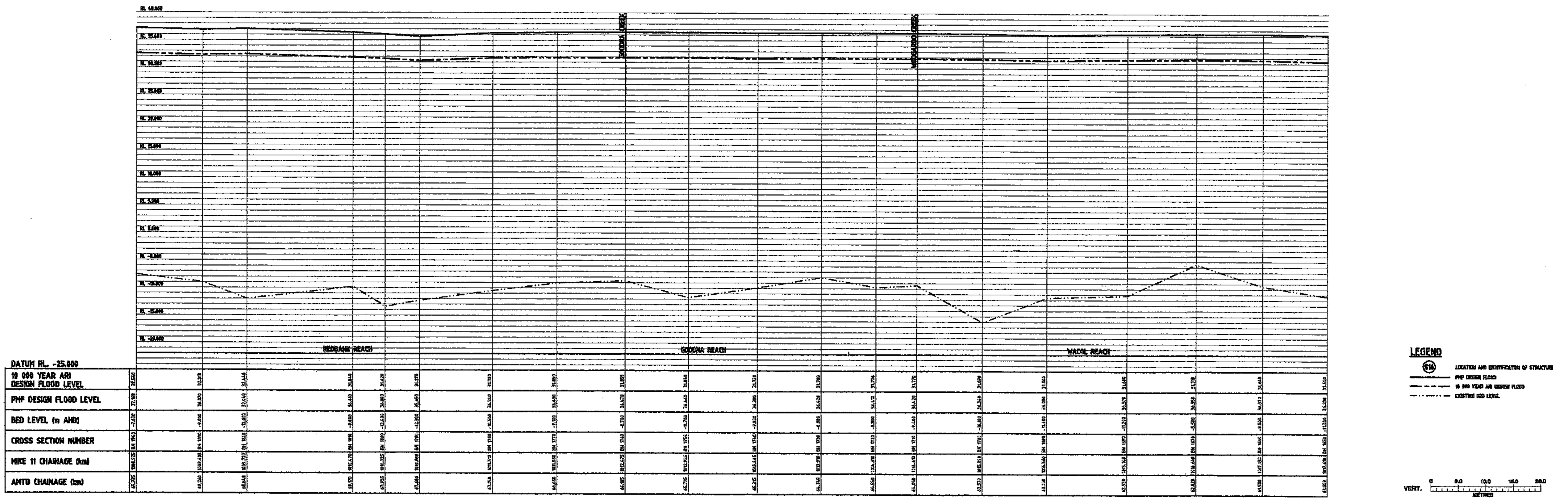
FIGURE H-5b

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE PMF AND 10 000 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



PLAN VIEW



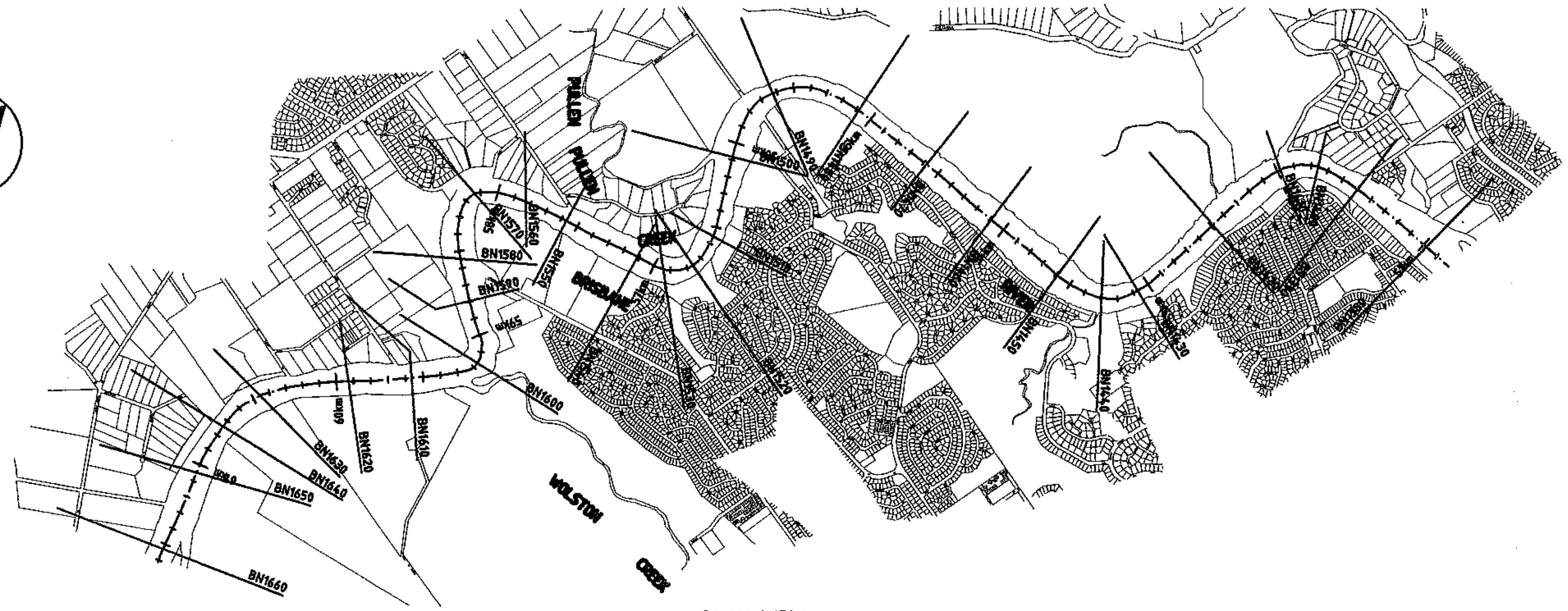
BRISBANE RIVER - BN 1840 TO BN 1650

FILE NAME: 4157-130 PLOT SCALE: 1=30 DISK N: C:\DWG JOB N: T00415? DATE: 23/3/??

FIGURE H-5c

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE PMF AND 10 000 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS

SINCLAIR KNIGHT MERZ

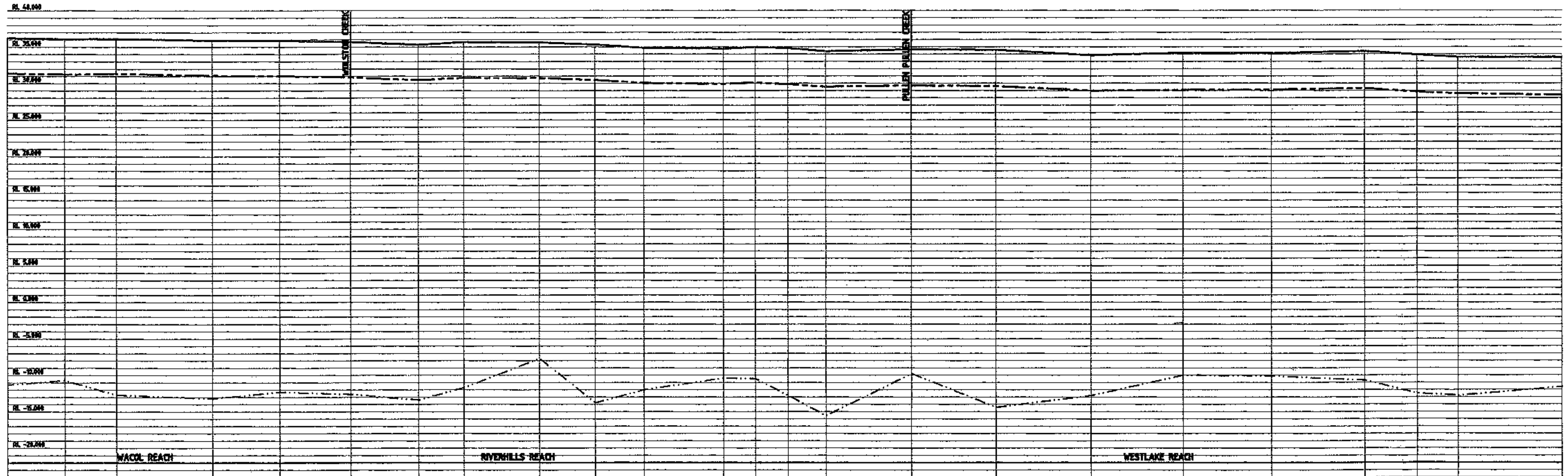


PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25
KILOMETRES

LEGEND

AMTD LINE
BN 1250 SURVEYED CROSS SECTION
516 LOCATION AND IDENTIFICATION OF STRUCTURE



DATUM RL. -25.000

10 000 YEAR ARI DESIGN FLOOD LEVEL	31.480	31.250	31.350	31.090	31.030	30.850	30.470	30.770	30.750	30.450	30.050	29.930	30.080	29.880	29.530	29.490	29.420	29.000	29.080	29.120	29.320	28.950	28.610	28.410
PMF DESIGN FLOOD LEVEL	36.230	36.110	36.160	35.930	35.870	35.690	35.320	35.650	35.630	35.320	34.890	34.790	34.980	34.820	34.390	34.650	34.600	33.870	34.190	34.150	34.390	33.840	33.590	33.410
BED LEVEL (m AHD)	-11.300	-10.700	-12.700	-12.200	-12.300	-12.600	-13.460	-11.700	-7.740	-13.800	-12.000	-10.400	-10.500	-12.800	-15.600	-9.800	-14.400	-12.800	-10.000	-10.120	-10.390	-12.500	-12.800	-11.600
CROSS SECTION NUMBER	BN 1650	BN 1640	BN 1630	BN 1620	BN 1610	BN 1600	BN 1590	BN 1580	BN 1570	BN 1560	BN 1550	BN 1540	BN 1530	BN 1520	BN 1510	BN 1500	BN 1490	BN 1480	BN 1470	BN 1460	BN 1450	BN 1440	BN 1430	BN 1420
MIKE 11 CHAINAGE (km)	1017.610	1017.920	1018.200	1018.725	1019.095	1019.490	1019.865	1020.115	1020.525	1020.830	1021.095	1021.539	1021.715	1021.895	1022.505	1022.575	1023.040	1023.570	1024.080	1024.563	1025.079	1025.360	1025.590	1026.170
AMTD CHAINAGE (km)	61.050	60.740	60.460	59.935	59.565	59.170	58.795	58.545	58.135	57.830	57.565	57.121	56.945	56.765	56.555	56.085	55.620	55.090	54.580	54.097	53.580	53.300	53.070	52.490

LEGEND

516 LOCATION AND IDENTIFICATION OF STRUCTURE
PMF DESIGN FLOOD
10 000 YEAR ARI DESIGN FLOOD
EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

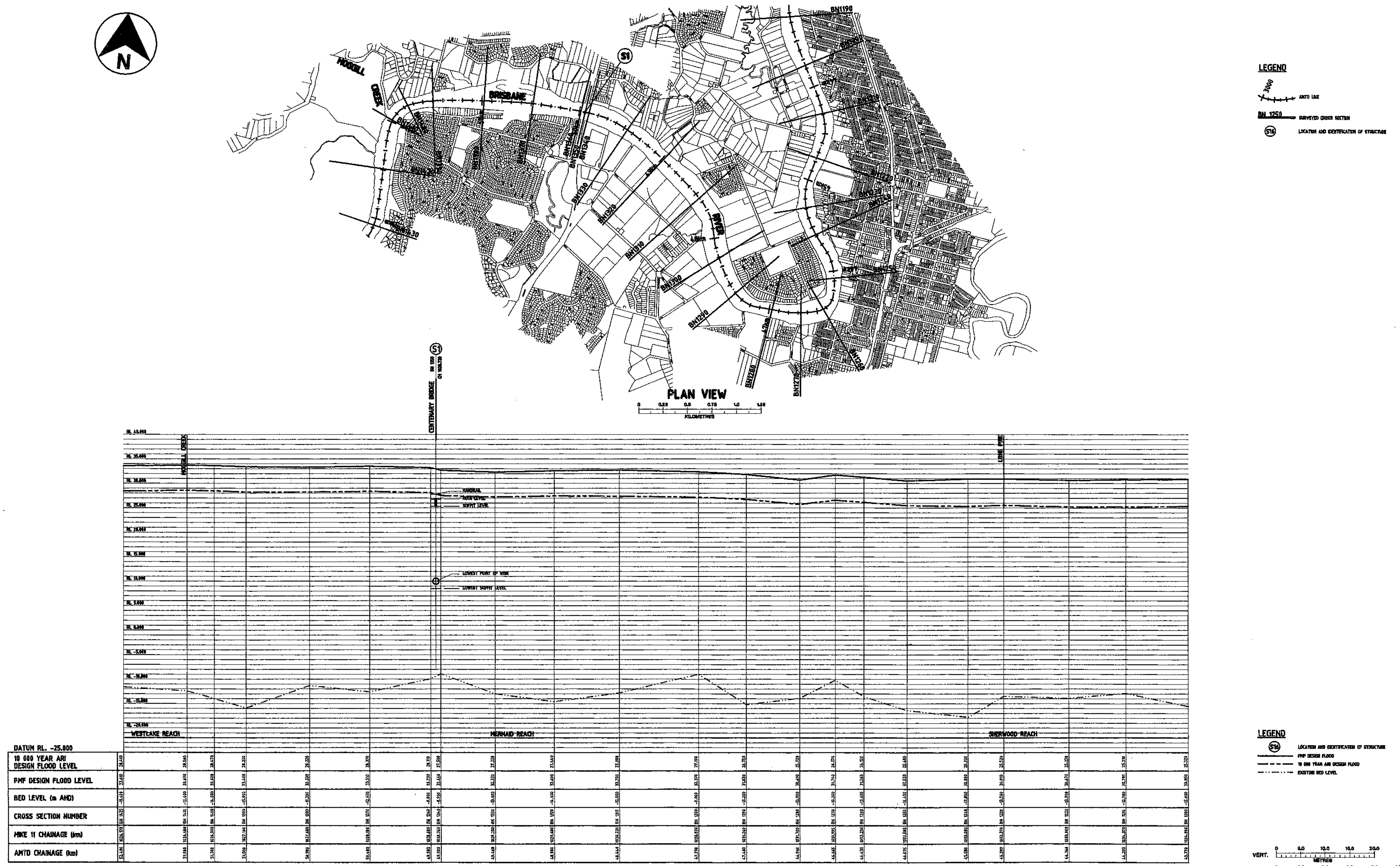
BRISBANE RIVER - BN 1650 TO BN 1420

FILE ... 415 ... PLOT SCALE: 1=30

FIGURE H-5d

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE PMF AND 10 000 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



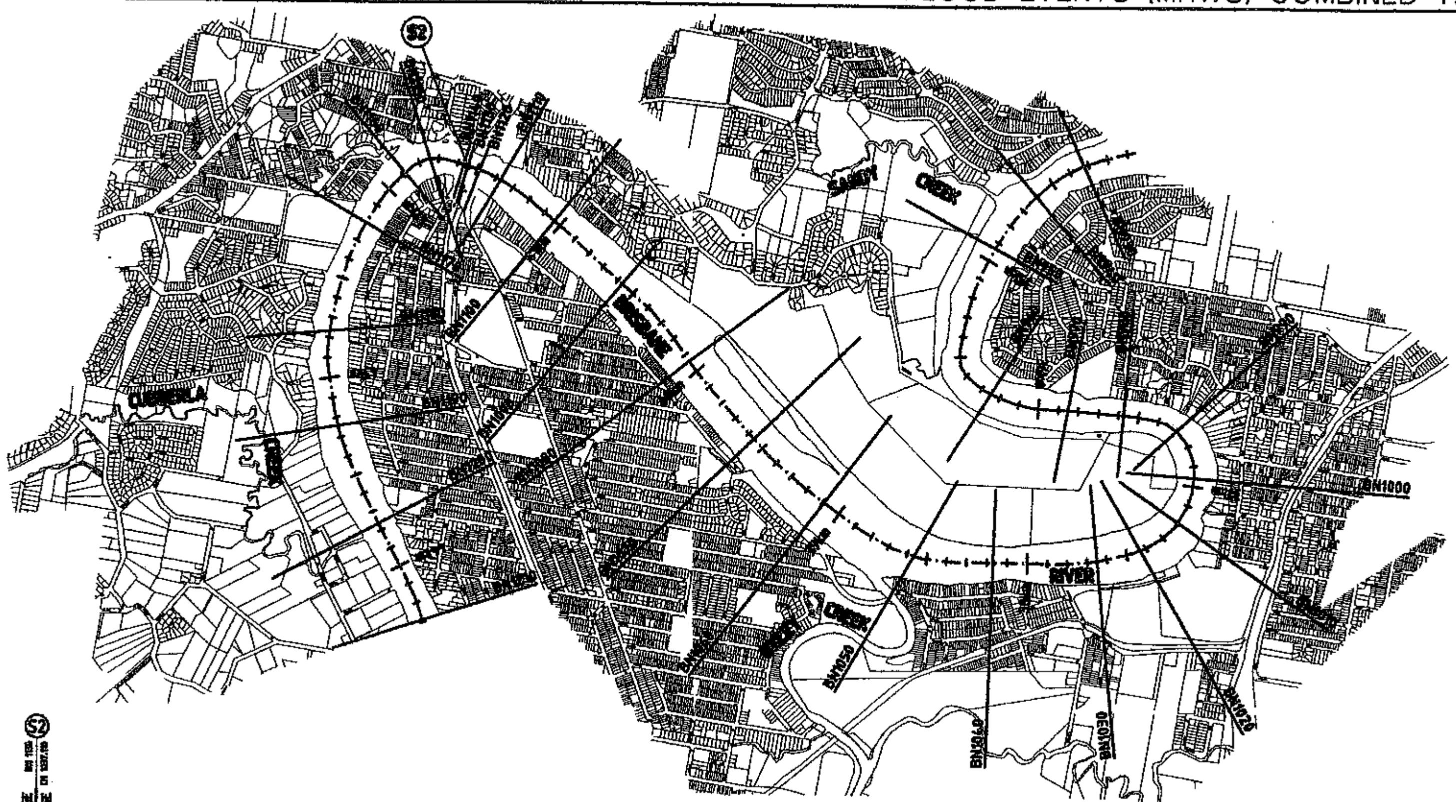
BRISBANE RIVER - BN 1420 TO BN 1200

FILE NAME: 415... PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

FIGURE H-5e

BRISBANE RIVER FLOOD STUDY
MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE PMF AND 10 000 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



LEGEND

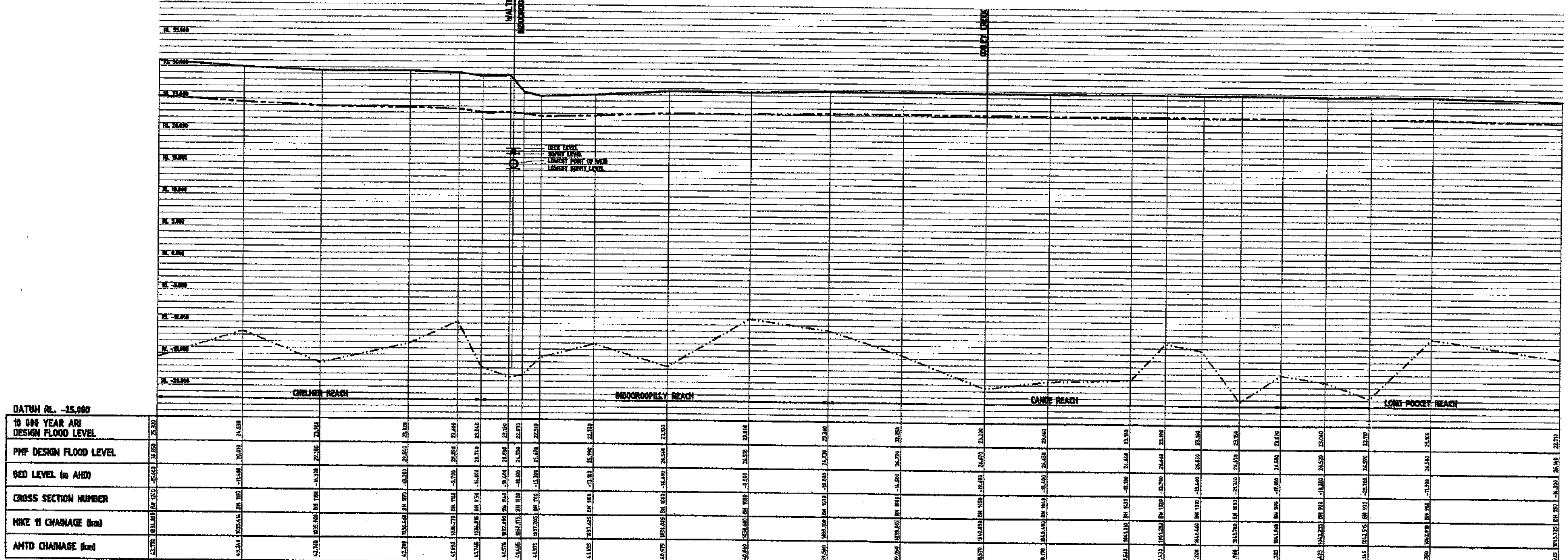
AMTD LINE

SURVEYED CROSS SECTION

LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW

KILOMETRES



LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE

PMF DESIGN FLOOD

10 000 YEAR ARI DESIGN FLOOD

EXISTING BED LEVEL

VERT. METRES

HORIZ. KILOMETRES

BRISBANE RIVER - BN 1200 TO BN 950

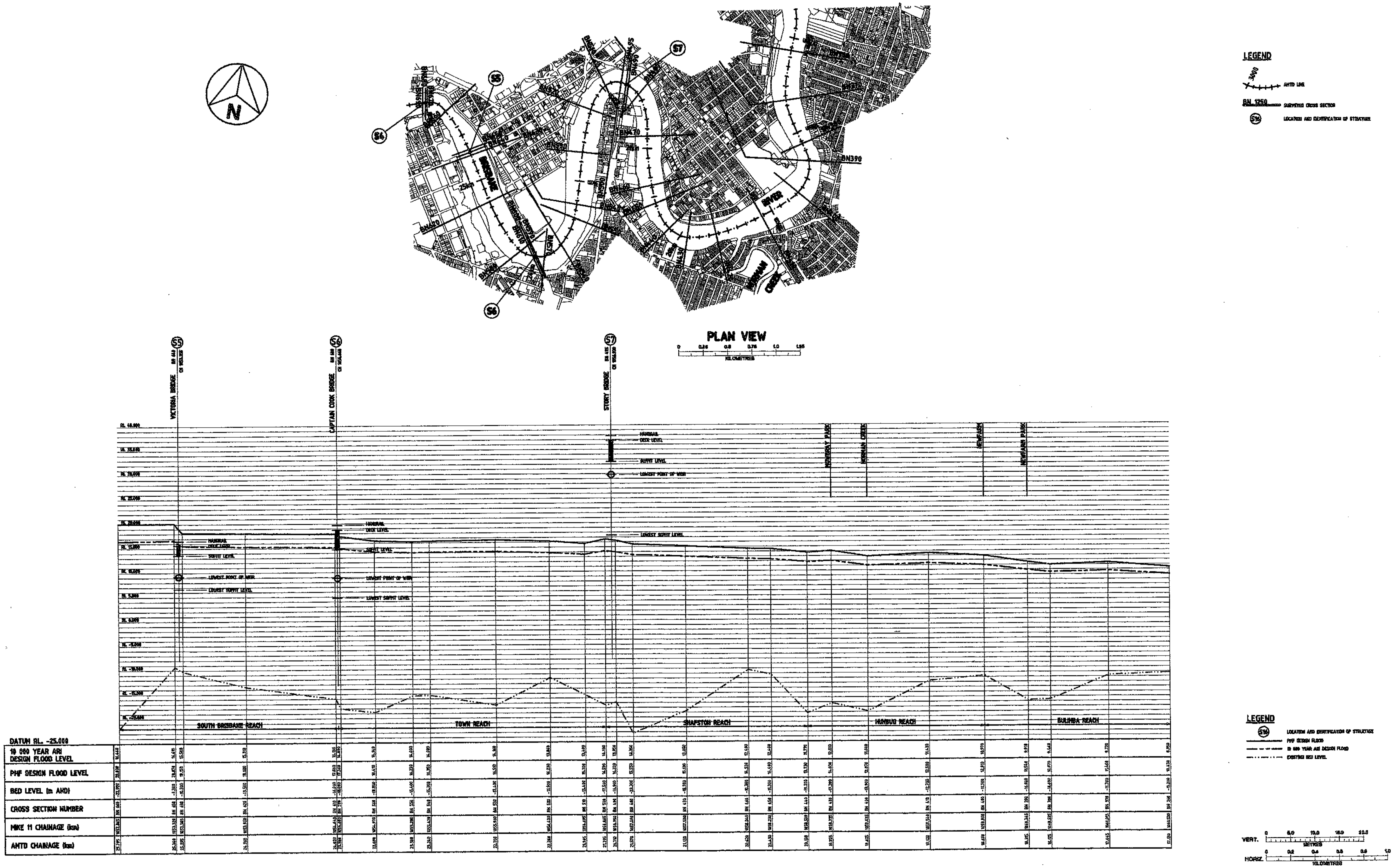
FILE NAME: 4157-141 PLOT SCALE: 1=30 DISK N°: C:\DWG JOB N°: T004157 DATE: 23/3/97

SINCLAIR KNIGHT MERZ

FIGURE H-5g

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE PMF AND 10 000 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



BRISBANE RIVER - BN 660 TO BN 360

FILE NAME: 4157-143 PLOT SCALE: 1=30

DISK N°: C:\DWG

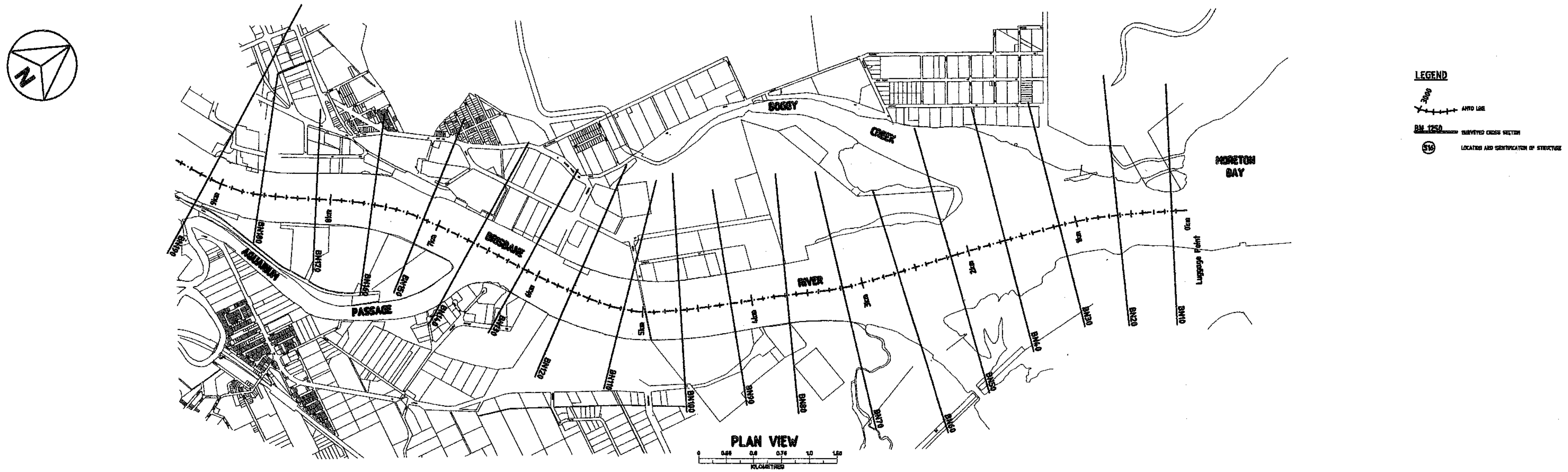
JOB N°: T004157

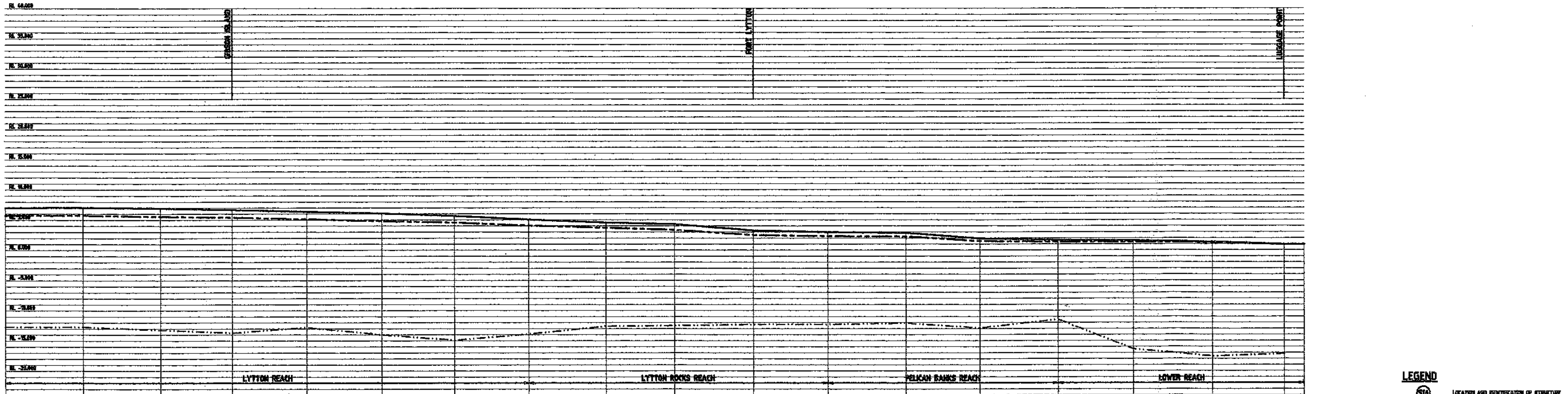
DATE: 23/3/97

FIGURE H-5I

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE PMF AND 10 000 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS





DATUM RL. -25.000

10 000 YEAR ARI DESIGN FLOOD LEVEL	5.740	5.760	5.550	5.410	5.110	4.880	4.580	4.070	3.500	3.330	2.500	2.290	2.340	1.480	1.380	1.340	1.260	0.920	0.920
PMF DESIGN FLOOD LEVEL	7.020	7.060	4.920	4.670	4.360	4.070	5.460	5.460	4.540	4.300	3.250	2.940	2.840	1.590	1.680	1.570	1.310	0.920	0.920
BED LEVEL (m AHD)	-12.700	-12.700	-13.300	-13.700	-12.800	-14.000	-14.900	-13.000	-12.600	-12.080	-12.380	-12.300	-12.100	-12.900	-11.500	-16.600	-17.600	-17.200	
CROSS SECTION NUMBER	BN 180	BN 170	BN 160	BN 150	BN 140	BN 130	BN 120	BN 110	BN 100	BN 90	BN 80	BN 70	BN 60	BN 50	BN 40	BN 30	BN 20	BN 10	-
MIKE 11 CHAINAGE (km)	1070.025	1070.530	1071.044	1071.520	1072.015	1072.515	1072.895	1073.495	1074.000	1074.440	1074.985	1075.460	1076.000	1076.495	1077.010	1077.390	1078.040	1078.525	1078.660
AMTD CHAINAGE (km)	8.635	8.130	7.620	7.140	6.645	6.145	5.665	5.175	4.660	4.280	3.675	3.180	2.640	2.165	1.650	1.150	0.620	0.135	-

VERT. METRES
HORIZ. KILOMETRES

BRISBANE RIVER - BN 180 TO BN 10

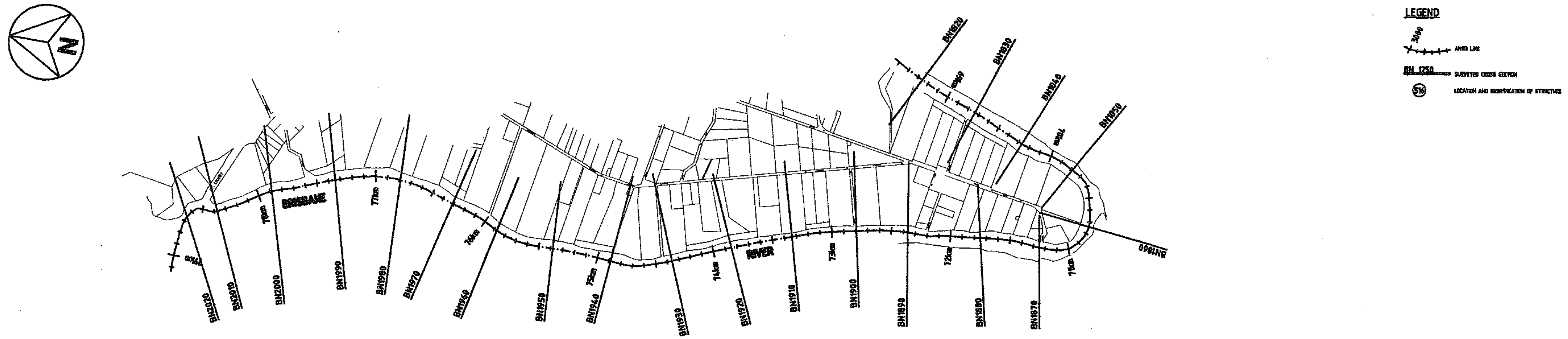
PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

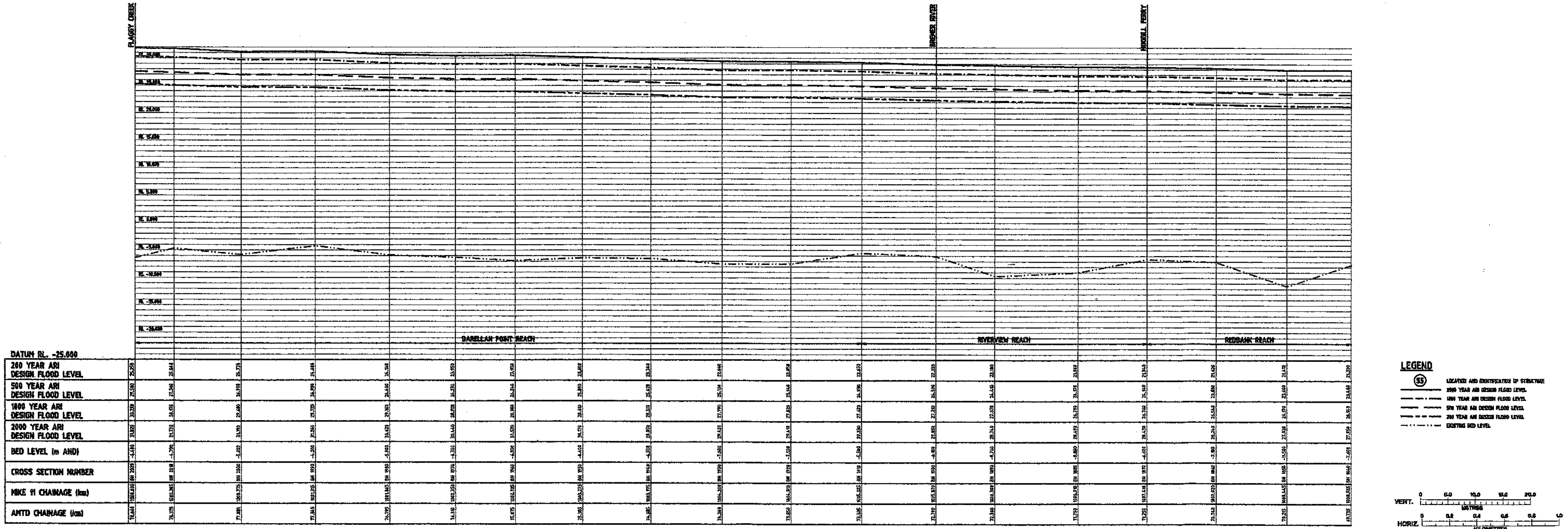
FIGURE H-6a

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2000, 1000, 500, AND 200 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



PLAN VIEW



BRISBANE RIVER - BN 2020 TO BN 1840

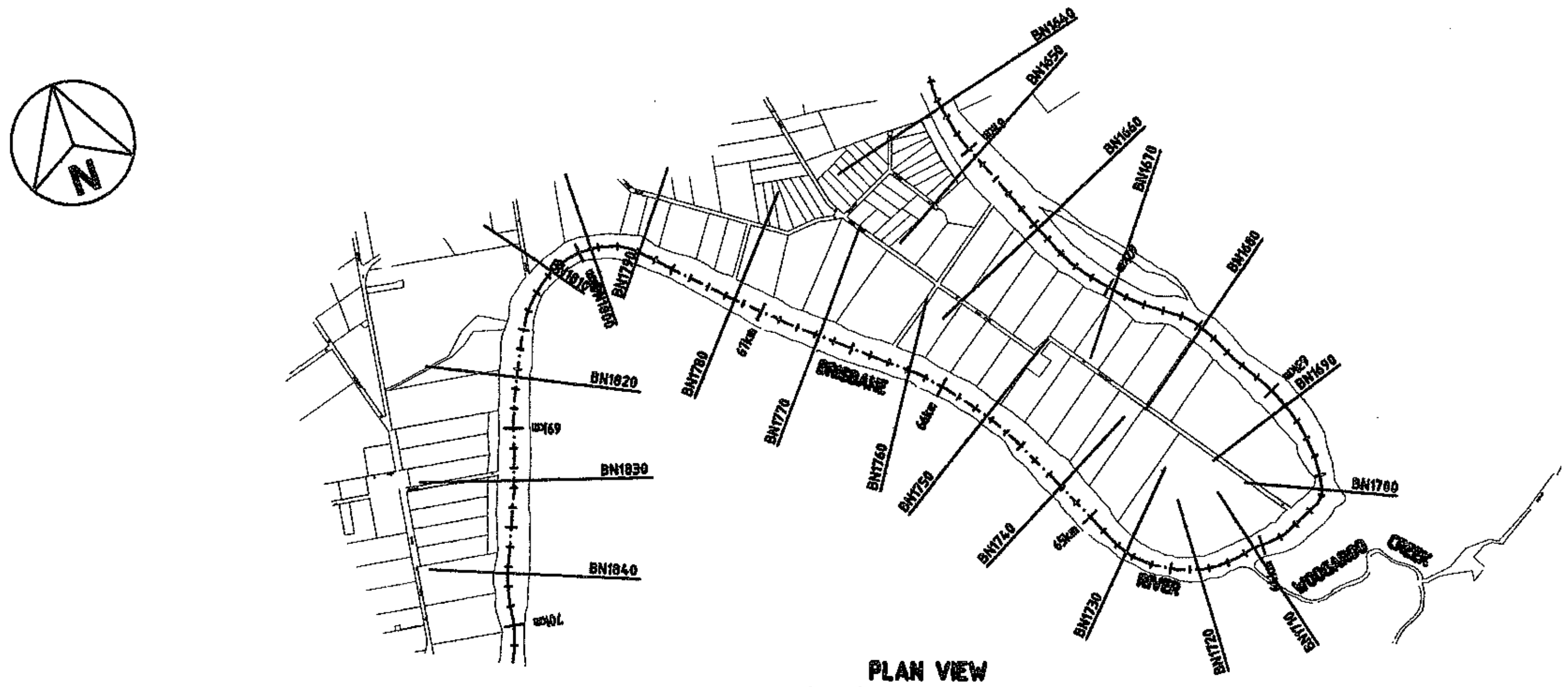
FILE NAME: 4157-140
PLOT SCALE: 1=30
DISK N: C:\DWG
JOB N: T004
DATE: 23/3/

SINCLAIR KNIGHT MERZ

FIGURE H-6b

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2000, 1000, 500, AND 200 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITONS



PLAN VIEW

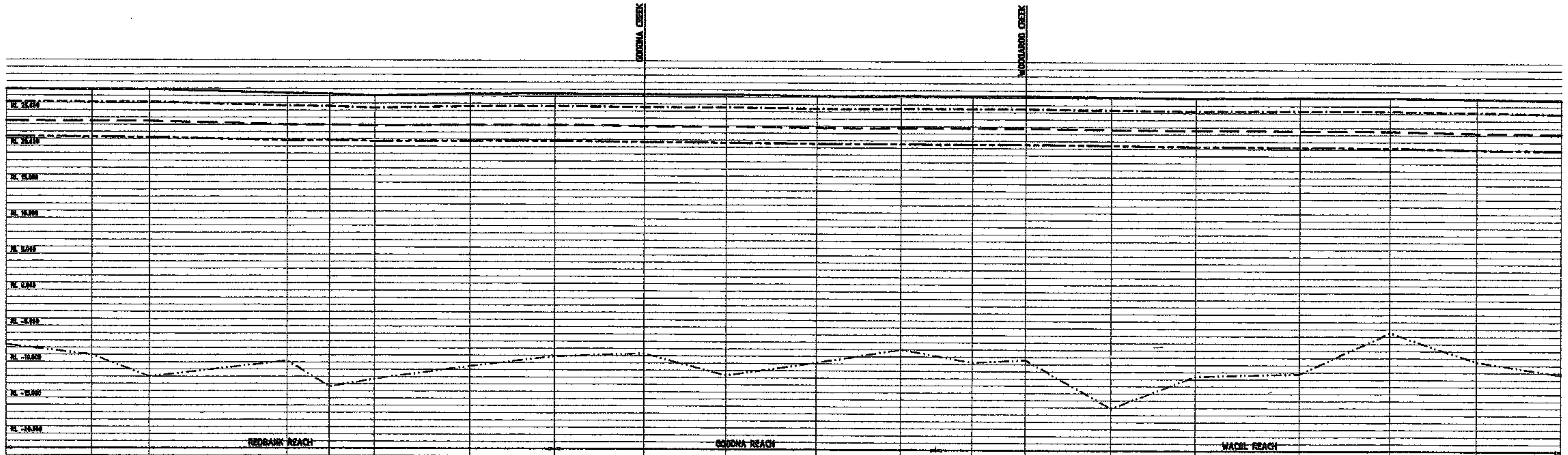
KILOMETRES

LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION

LOCATION AND IDENTIFICATION OF STRUCTURE



DATUM RL. -25.000

CROSS SECTION NUMBER	200 YEAR ARI DESIGN FLOOD LEVEL	500 YEAR ARI DESIGN FLOOD LEVEL	1000 YEAR ARI DESIGN FLOOD LEVEL	2000 YEAR ARI DESIGN FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 1840	21.330	23.480	26.540	27.950	-7.600	1008.925	69.735
BN 1830	21.270	23.480	26.110	27.860	-9.000	1009.400	69.240
BN 1820	21.250	23.440	26.150	27.910	-12.004	1009.720	68.840
BN 1810	20.820	23.030	25.650	27.400	-9.804	1010.490	68.170
BN 1800	20.860	23.020	25.540	27.280	-13.400	1010.725	67.935
BN 1790	20.750	22.880	25.370	27.040	-12.300	1010.980	67.680
BN 1780	20.810	23.020	25.620	27.340	-10.500	1011.510	67.150
BN 1770	20.830	23.040	25.660	27.400	-9.100	1011.980	66.680
BN 1760	20.710	22.900	25.570	27.340	-8.700	1012.475	66.185
BN 1750	20.650	22.880	25.570	27.330	-11.700	1012.935	65.725
BN 1740	20.540	22.750	25.480	27.160	-9.400	1013.445	65.215
BN 1730	20.530	22.760	25.450	27.240	-8.000	1013.910	64.740
BN 1720	20.520	22.750	25.440	27.230	-9.800	1014.310	64.590
BN 1710	20.530	22.740	25.450	27.230	-9.400	1014.610	64.050
BN 1700	20.410	22.640	25.340	27.130	-16.100	1015.090	63.570
BN 1690	20.290	22.530	25.220	27.010	-11.600	1015.560	63.100
BN 1680	20.250	22.540	25.280	27.180	-11.200	1016.140	62.520
BN 1670	20.170	22.500	25.270	27.100	-5.500	1016.640	62.020
BN 1660	19.940	22.270	25.140	27.010	-9.500	1017.130	61.530
BN 1650	19.840	22.170	24.970	26.920	-11.500	1017.610	61.050

BRISBANE RIVER - BN 1840 TO BN 1650

LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE

2000 YEAR ARI DESIGN FLOOD LEVEL

1000 YEAR ARI DESIGN FLOOD LEVEL

500 YEAR ARI DESIGN FLOOD LEVEL

200 YEAR ARI DESIGN FLOOD LEVEL

EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

FILE NAME: 4157-… DISK N.: C:\DWG JOB N.: T004… DATE: 23/3/…

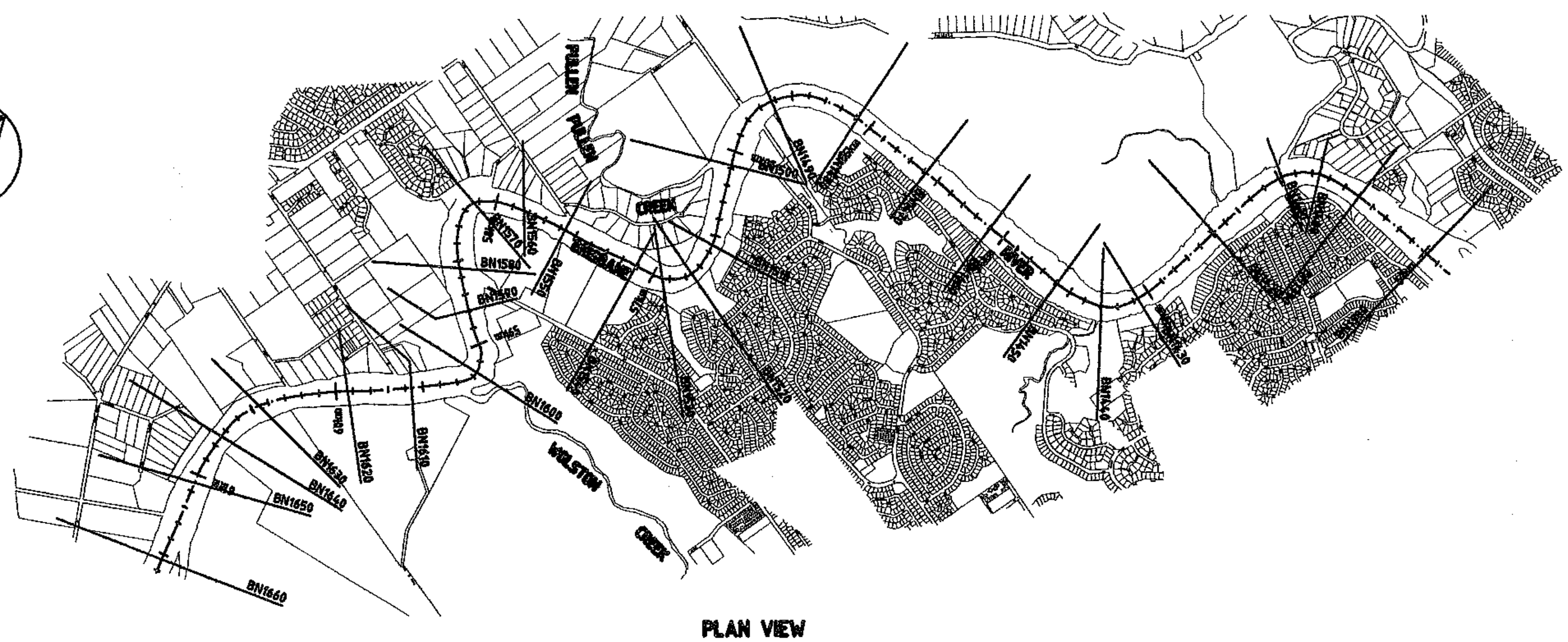
PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

FIGURE H-6c

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2000, 1000, 500, AND 200 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



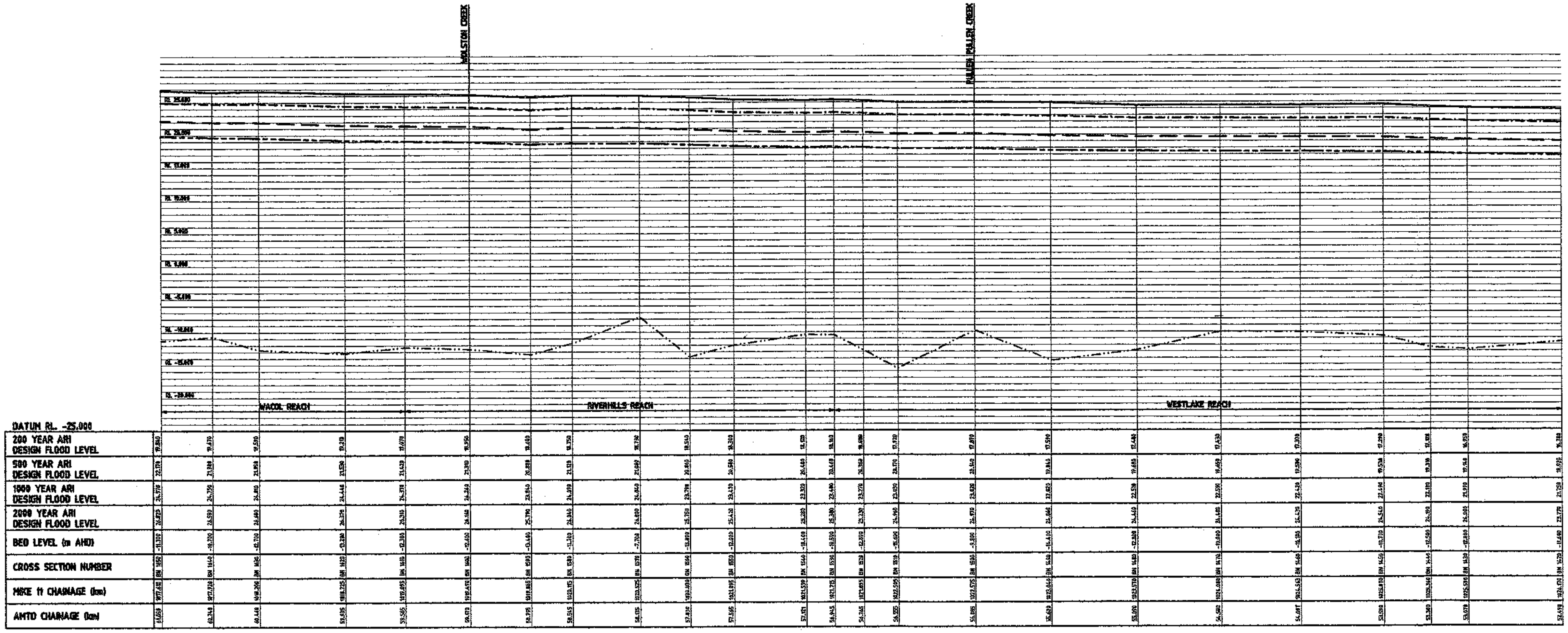
PLAN VIEW

LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION

LOCATION AND IDENTIFICATION OF STRUCTURE



LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE

2000 YEAR ARI DESIGN FLOOD LEVEL

1000 YEAR ARI DESIGN FLOOD LEVEL

500 YEAR ARI DESIGN FLOOD LEVEL

200 YEAR ARI DESIGN FLOOD LEVEL

EXISTING BED LEVEL

VERT. METRES

HORIZ. KILOMETRES

BRISBANE RIVER - BN 1650 TO BN 1420

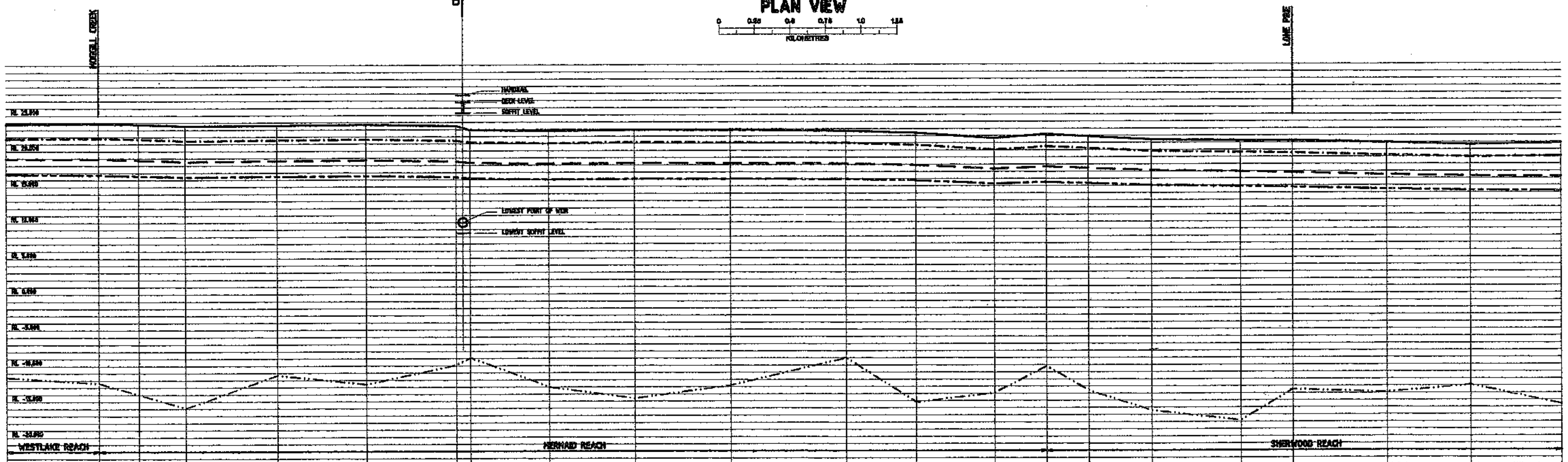
PLOT SCALE: 1=30

FIGURE H-6d

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2000, 1000, 500, AND 200 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS

PLAN VIEW



DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	16.787	16.700	16.540	16.380	16.470	16.510	16.360	16.140	16.090	16.050	16.040
500 YEAR ARI DESIGN FLOOD LEVEL	18.929	18.920	18.780	18.530	18.468	18.710	18.550	18.320	18.180	18.260	18.230
1000 YEAR ARI DESIGN FLOOD LEVEL	21.739	21.820	21.780	21.450	21.540	21.420	21.630	21.180	21.060	21.150	21.110
2000 YEAR ARI DESIGN FLOOD LEVEL	23.779	23.870	23.770	23.530	23.580	23.600	23.480	22.920	22.740	22.900	22.840
BED LEVEL (m AHD)	-11.600	-12.410	-14.600	-15.900	-11.300	-12.400	-9.900	-8.300	-13.000	-14.600	-12.800
CROSS SECTION NUMBER	BN 1420	BN 1410	BN 1400	BN 1390	BN 1380	BN 1370	BN 1360	BN 1348	BN 1330	BN 1320	BN 1310
MIKE 11 CHAINAGE (km)	1026.570	1026.440	1026.940	1027.160	1027.440	1028.180	1028.680	1028.740	1029.280	1029.680	1030.220
AMTD CHAINAGE (km)	52.490	51.980	51.760	51.500	50.980	50.480	49.380	49.388	49.460	48.960	48.440

200 YEAR ARI DESIGN FLOOD LEVEL	15.960	15.770	15.300	15.510	15.340	15.050	14.900	14.760	14.470	14.290	14.280
500 YEAR ARI DESIGN FLOOD LEVEL	18.140	17.920	17.340	17.670	17.440	17.110	16.950	16.810	16.480	16.270	16.190
1000 YEAR ARI DESIGN FLOOD LEVEL	21.010	20.720	20.840	20.540	20.230	19.810	19.450	19.540	19.220	18.950	18.860
2000 YEAR ARI DESIGN FLOOD LEVEL	22.720	22.410	21.650	22.200	21.890	21.450	21.270	21.160	20.970	20.660	20.870
BED LEVEL (m AHD)	-9.500	-15.200	-13.900	-10.200	-13.600	-16.400	-17.800	-13.530	-13.900	-12.900	-15.600
CROSS SECTION NUMBER	BN 1300	BN 1290	BN 1280	BN 1270	BN 1260	BN 1250	BN 1240	BN 1230	BN 1220	BN 1210	BN 1200
MIKE 11 CHAINAGE (km)	1030.610	1031.260	1031.740	1031.995	1032.290	1032.505	1033.080	1033.370	1033.980	1034.370	1034.890
AMTD CHAINAGE (km)	47.798	47.400	46.940	46.665	46.430	46.075	45.500	45.290	44.760	44.390	43.770

LEGEND

- LOCATION AND IDENTIFICATION OF STRUCTURE
- 2000 YEAR ARI DESIGN FLOOD LEVEL
- 1000 YEAR ARI DESIGN FLOOD LEVEL
- 500 YEAR ARI DESIGN FLOOD LEVEL
- 200 YEAR ARI DESIGN FLOOD LEVEL
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 1420 TO BN 1200

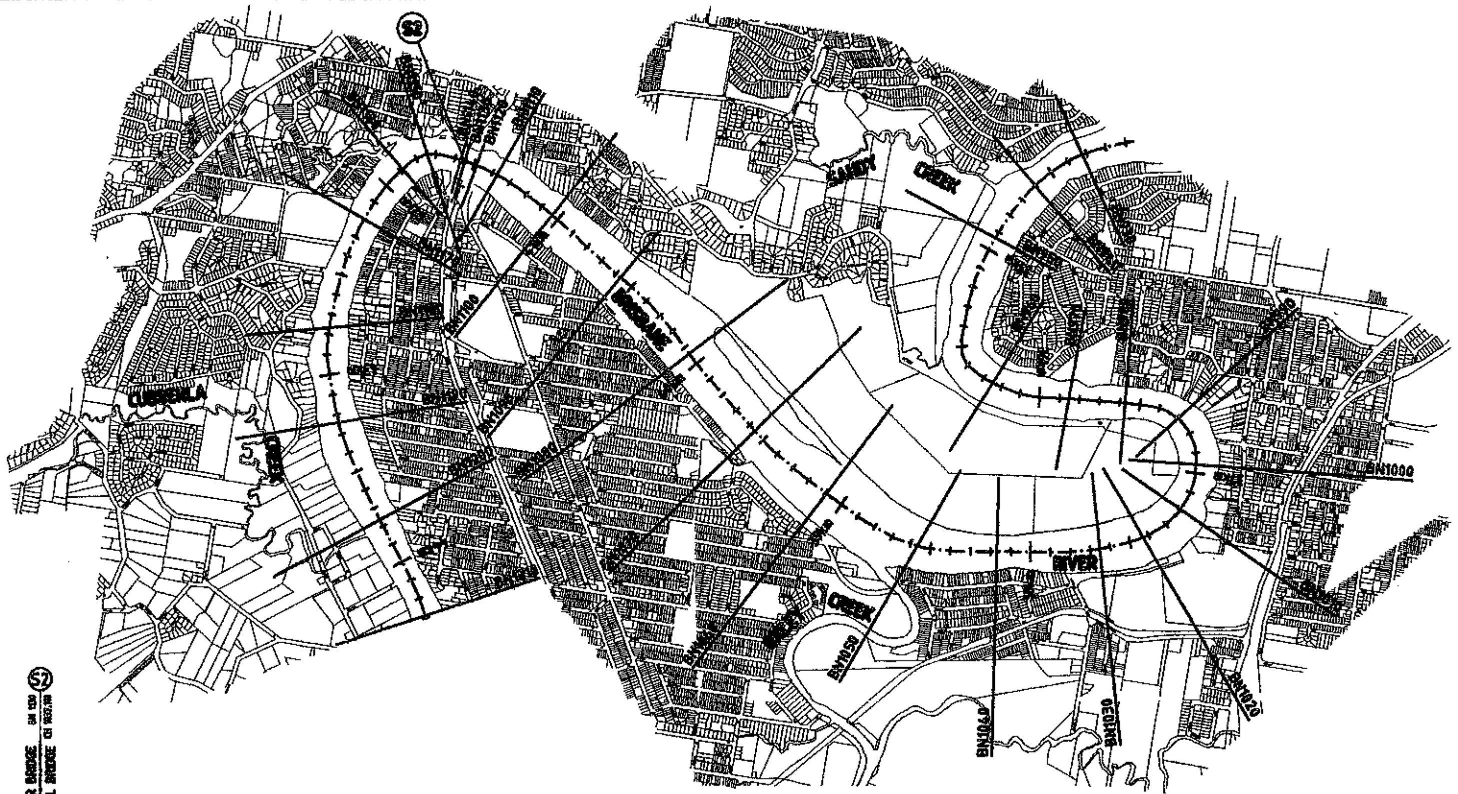
FILE NAME: 4157-149
PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

FIGURE H-6e

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2000, 1000, 500, AND 200 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS

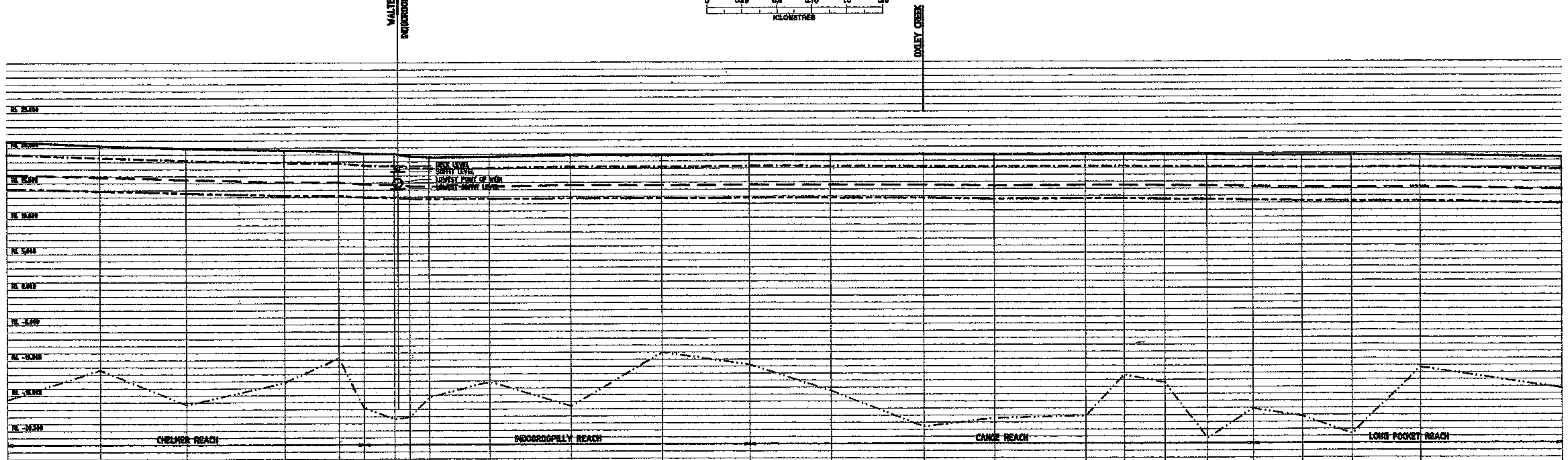


LEGEND

- AMTD LINE
- BN 1250 SURVEYED CROSS SECTION
- LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

	BN 1200	BN 1190	BN 1180	BN 1170	BN 1160	BN 1150	BN 1140	BN 1120	BN 1110
200 YEAR ARI DESIGN FLOOD LEVEL	14.200	13.904	13.500	13.220	13.160	12.970	12.920	12.770	12.710
500 YEAR ARI DESIGN FLOOD LEVEL	16.990	15.950	15.580	15.110	15.860	14.810	14.730	14.540	14.470
1000 YEAR ARI DESIGN FLOOD LEVEL	19.860	18.500	18.200	17.840	17.770	17.460	17.350	17.180	17.010
2000 YEAR ARI DESIGN FLOOD LEVEL	20.070	20.300	19.900	19.610	19.500	19.150	19.100	18.720	18.580
BED LEVEL (m AHD)	-15.600	-11.650	-16.300	-13.200	-9.700	-16.800	-18.600	-18.900	-15.300
CROSS SECTION NUMBER	BN 1200	BN 1190	BN 1180	BN 1170	BN 1160	BN 1150	BN 1140	BN 1120	BN 1110
MIKE 11 CHAINAGE (km)	1034.690	1035.446	1035.940	1036.460	1036.770	1036.915	1037.090	1037.175	1037.285
AMTD CHAINAGE (km)	43.770	43.244	42.760	42.280	41.890	41.745	41.570	41.485	41.375

	BN 1100	BN 1090	BN 1080	BN 1070	BN 1060	BN 1050	BN 1040	BN 1030
200 YEAR ARI DESIGN FLOOD LEVEL	12.740	12.780	12.750	12.790	12.790	12.720	12.576	12.620
500 YEAR ARI DESIGN FLOOD LEVEL	14.430	14.440	14.570	14.640	14.630	14.560	14.430	14.510
1000 YEAR ARI DESIGN FLOOD LEVEL	17.060	17.220	17.190	17.250	17.280	17.220	17.136	17.190
2000 YEAR ARI DESIGN FLOOD LEVEL	18.640	18.860	18.830	18.540	18.930	18.800	18.815	18.860
BED LEVEL (m AHD)	-13.100	-16.600	-9.000	-10.800	-14.500	-19.600	-18.600	-18.160
CROSS SECTION NUMBER	BN 1100	BN 1090	BN 1080	BN 1070	BN 1060	BN 1050	BN 1040	BN 1030
MIKE 11 CHAINAGE (km)	1037.625	1038.085	1038.640	1039.140	1039.565	1040.090	1040.690	1041.010
AMTD CHAINAGE (km)	41.035	40.575	40.060	39.560	39.050	38.570	38.574	37.560

	BN 1020	BN 1010	BN 1000	BN 990	BN 980	BN 970	BN 960	BN 950
200 YEAR ARI DESIGN FLOOD LEVEL	12.620	12.530	12.500	12.370	12.240	12.240	12.210	11.860
500 YEAR ARI DESIGN FLOOD LEVEL	14.590	14.460	14.410	14.380	14.210	14.280	14.210	13.850
1000 YEAR ARI DESIGN FLOOD LEVEL	17.190	17.150	17.130	17.050	16.980	16.990	17.030	16.690
2000 YEAR ARI DESIGN FLOOD LEVEL	18.880	18.870	18.910	18.760	18.580	18.720	18.740	18.410
BED LEVEL (m AHD)	-12.300	-13.600	-21.500	-17.400	-19.200	-20.100	-11.900	-16.300
CROSS SECTION NUMBER	BN 1020	BN 1010	BN 1000	BN 990	BN 980	BN 970	BN 960	BN 950
MIKE 11 CHAINAGE (km)	1041.230	1041.460	1041.700	1041.960	1042.235	1042.515	1042.910	1043.725
AMTD CHAINAGE (km)	37.450	37.280	36.940	36.700	36.425	36.145	35.750	34.935

BRISBANE RIVER - BN 1200 TO BN 950

LEGEND

- S5 LOCATION AND IDENTIFICATION OF STRUCTURE
- 2000 YEAR ARI DESIGN FLOOD LEVEL
- 1000 YEAR ARI DESIGN FLOOD LEVEL
- 500 YEAR ARI DESIGN FLOOD LEVEL
- 200 YEAR ARI DESIGN FLOOD LEVEL
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

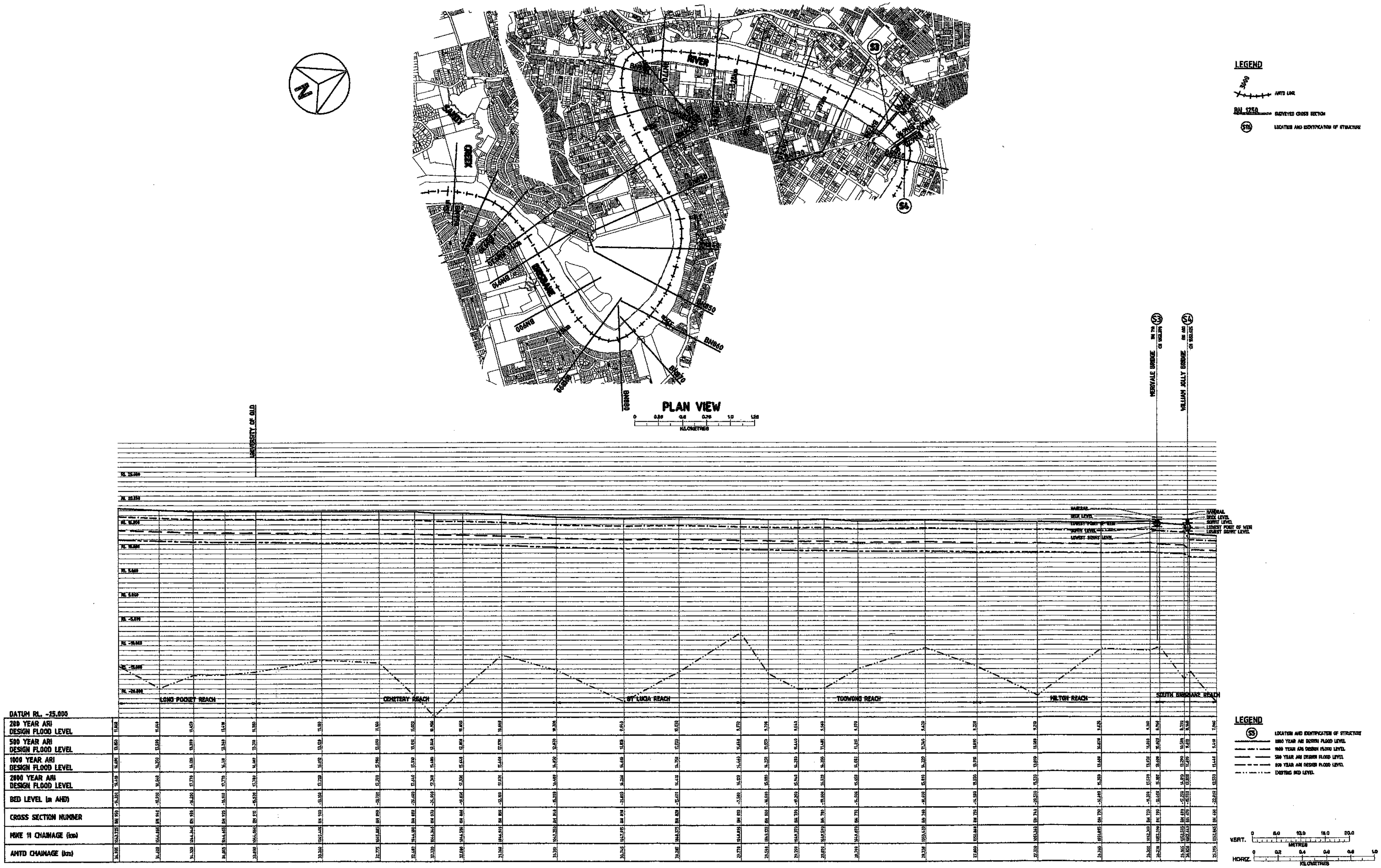
FILE NAME: 415/-150 PLOT SCALE: 1=30 DISK N: C:\DWG JOB N: T00415? DATE: 23/3/9?

FIGURE H-6f

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2000, 1000, 500, AND 200 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS

SINCLAIR KNIGHT MERZ



BRISBANE RIVER - BN 950 TO BN 660

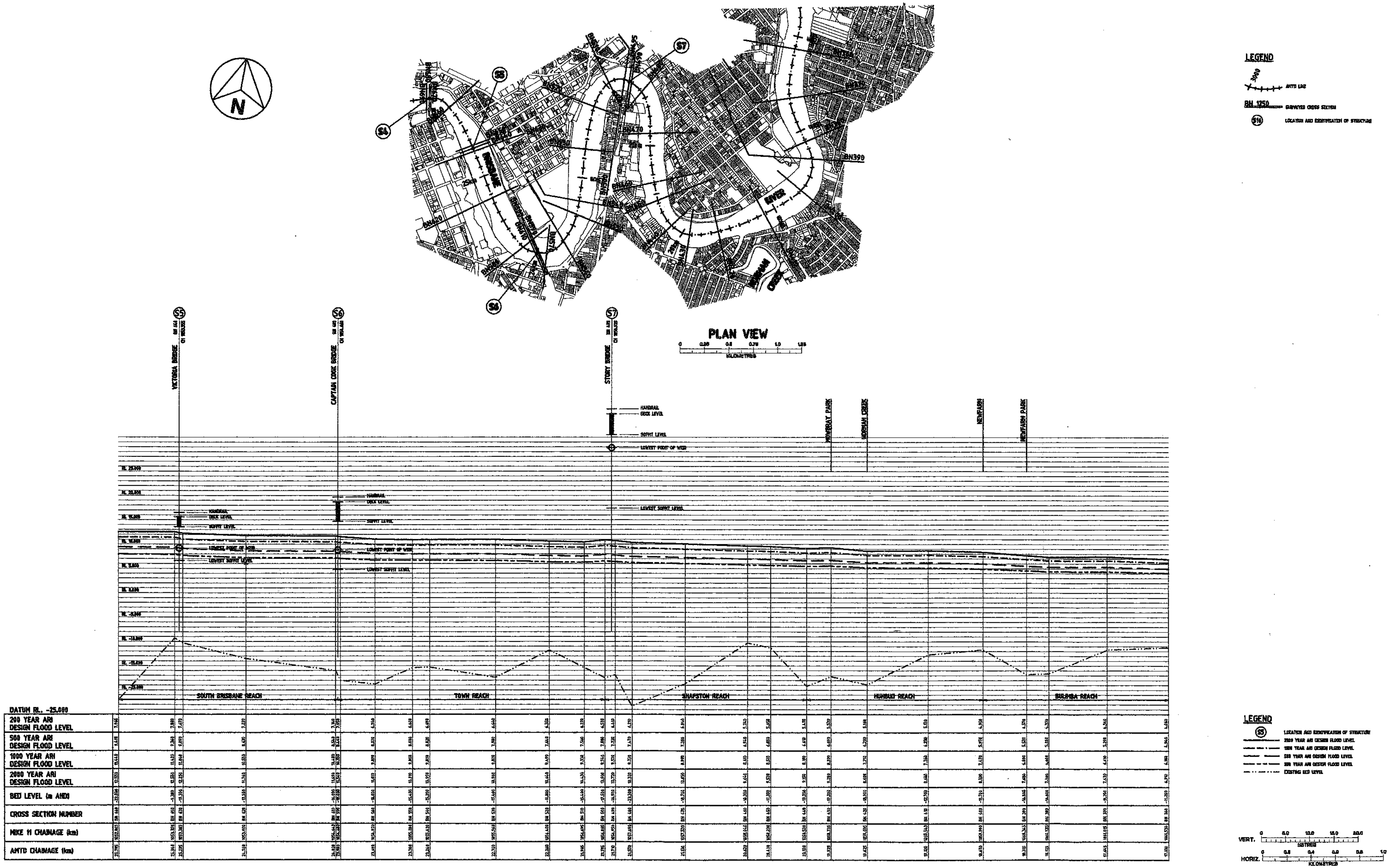
PLOT SCALE: 1=30

SINCLAIR KNIGHT MERZ

FIGURE H-6g

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2000, 1000, 500, AND 200 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



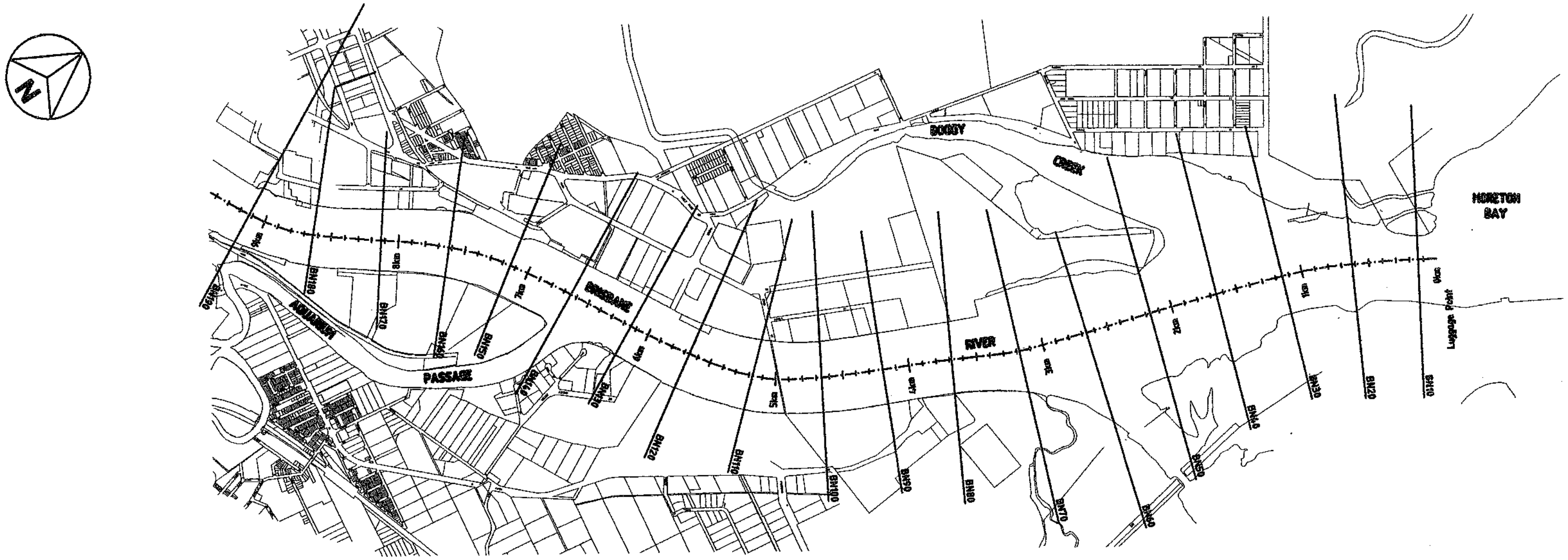
BRISBANE RIVER - BN 660 TO BN 360

FILE NAME: 415-152 PLOT SCALE: 1=30 DISK N°: CADWG JOB N°: T004157 DATE: 23/3/99

FIGURE H-6i

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2000, 1000, 500, AND 200 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



LEGEND

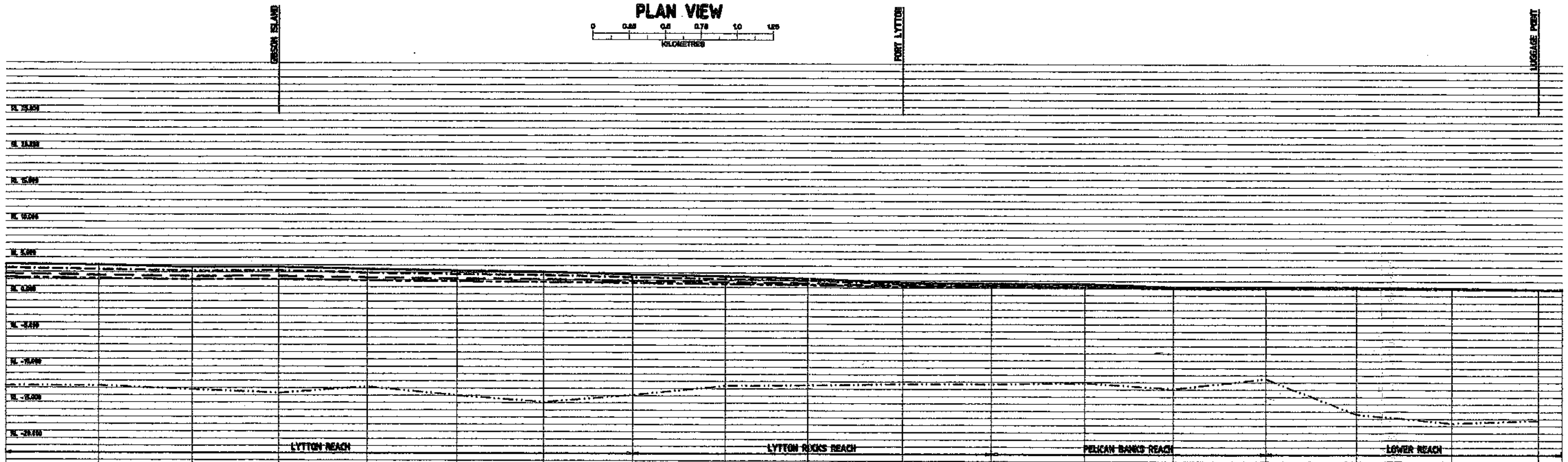
AMTD LINE

BN 1250 SURVEYED CROSS SECTION

LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW

KILOMETRES



DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	2.250	2.110	1.990	2.040	1.886	1.799	1.730	1.594	1.480	1.380	1.180	1.160	1.150	0.940	0.990	1.000	0.970	0.920	0.920
500 YEAR ARI DESIGN FLOOD LEVEL	2.750	2.570	2.430	2.440	2.270	2.150	2.070	1.980	1.730	1.590	1.310	1.250	1.260	1.010	1.020	1.030	0.990	0.920	0.920
1000 YEAR ARI DESIGN FLOOD LEVEL	3.540	3.380	3.110	3.210	2.914	2.770	2.614	2.389	2.170	1.970	1.540	1.450	1.440	1.080	1.066	1.100	1.044	0.928	0.928
2000 YEAR ARI DESIGN FLOOD LEVEL	4.070	3.990	3.720	3.746	3.449	3.260	3.010	2.770	2.510	2.260	1.730	1.620	1.420	1.150	1.140	1.150	1.070	0.920	0.920
BED LEVEL (m AHD)	-12.700	-17.100	-13.300	-13.100	-12.800	-14.000	-14.500	-13.940	-12.450	-12.580	-12.300	-12.300	-12.150	-12.510	-11.580	-16.400	-17.400	-17.200	
CROSS SECTION NUMBER	BN 180	BN 170	BN 160	BN 150	BN 140	BN 130	BN 120	BN 110	BN 100	BN 90	BN 80	BN 70	BN 60	BN 50	BN 40	BN 30	BN 20	BN 10	-
MIKE 11 CHAINAGE (km)	1070.825	1070.530	1071.044	1071.520	1072.019	1072.515	1072.995	1073.465	1074.080	1074.460	1074.985	1075.468	1076.080	1076.495	1077.018	1077.510	1078.040	1078.525	1078.640
AMTD CHAINAGE (km)	8.635	8.130	7.620	7.140	6.645	6.145	5.665	5.175	4.660	4.280	3.675	3.180	2.688	2.195	1.650	1.150	0.620	0.135	0

BRISBANE RIVER - BN 180 TO BN 10

LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE

2000 YEAR ARI DESIGN FLOOD LEVEL

1000 YEAR ARI DESIGN FLOOD LEVEL

500 YEAR ARI DESIGN FLOOD LEVEL

200 YEAR ARI DESIGN FLOOD LEVEL

EXISTING BED LEVEL

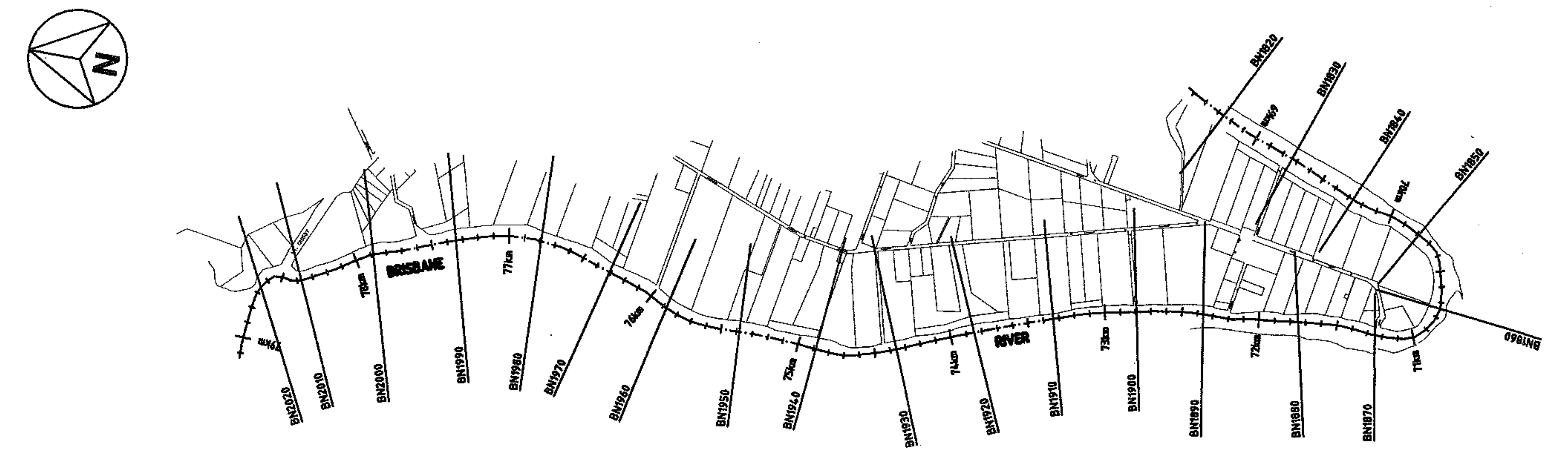
VERT. 0 5.0 10.0 15.0 20.0 METRES

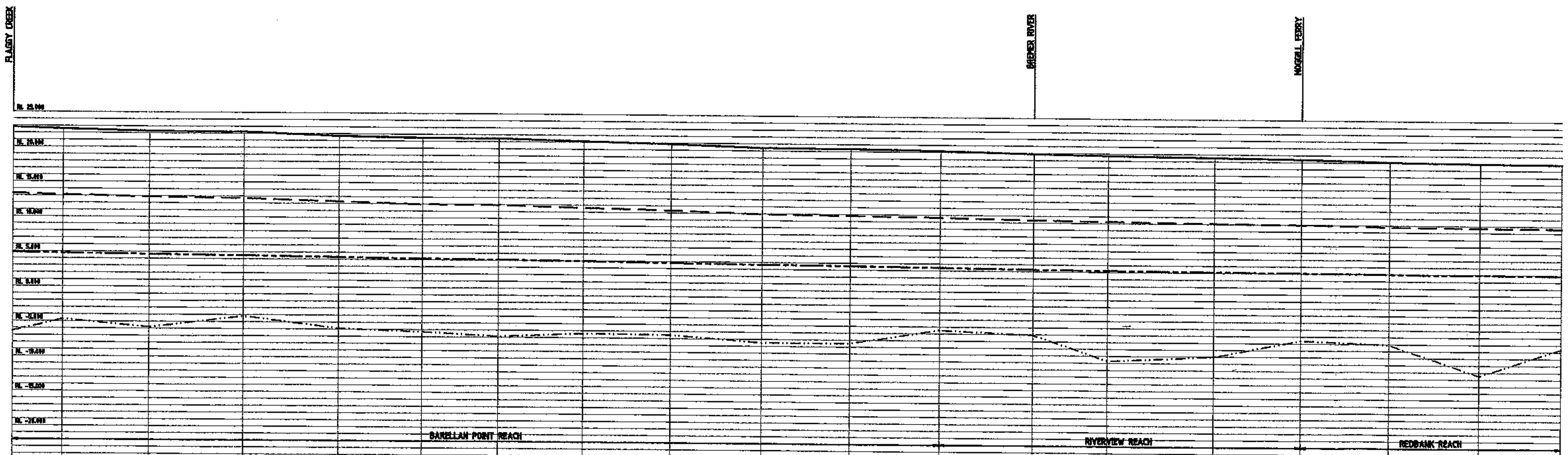
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

SINCLAIR KNIGHT MERZ

FIGURE J-1a

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI
FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS
- REGULATION LINES AND REVEGETATION STRATEGY CASE





	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
5 YEAR ARI DESIGN FLOOD LEVEL	4.839	4.740	4.630	4.560	4.320	4.170	4.090	3.560	3.820	3.680	3.530	3.460	3.300	3.230	3.150	3.080	3.000	2.950	2.920
20 YEAR ARI DESIGN FLOOD LEVEL	13.300	13.120	12.870	12.710	12.290	11.980	11.920	11.600	11.340	10.910	10.770	10.630	10.370	10.270	10.080	9.990	9.790	9.780	9.630
100 YEAR ARI DESIGN FLOOD LEVEL	22.790	22.570	22.310	22.120	21.690	21.500	21.480	21.150	20.880	20.430	20.390	20.200	19.880	19.720	19.520	19.420	19.090	18.950	18.850
BED LEVEL (m AHD)	-4.400	-4.700	-5.800	-4.200	-5.900	-4.300	-6.900	-6.600	-6.500	-7.500	-7.500	-3.300	-6.100	-9.700	-9.000	-6.600	-7.100	-11.500	-7.600
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1000.080	1000.285	1000.775	1001.305	1001.865	1002.350	1002.785	1003.275	1003.775	1004.300	1004.810	1005.325	1005.870	1006.300	1006.910	1007.410	1007.930	1008.445	1008.925
AMTD CHAINAGE (km)	78.680	78.375	77.885	77.345	76.795	76.310	75.825	75.385	74.885	74.360	73.850	73.335	72.790	72.360	71.750	71.250	70.740	70.215	69.735

BRISBANE RIVER - BN 2020 TO BN 1840

LEGEND
- LOCATION AND IDENTIFICATION OF STRUCTURE
- 5 YEAR ARI DESIGN FLOOD
- 20 YEAR ARI DESIGN FLOOD
- 100 YEAR ARI DESIGN FLOOD
- EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

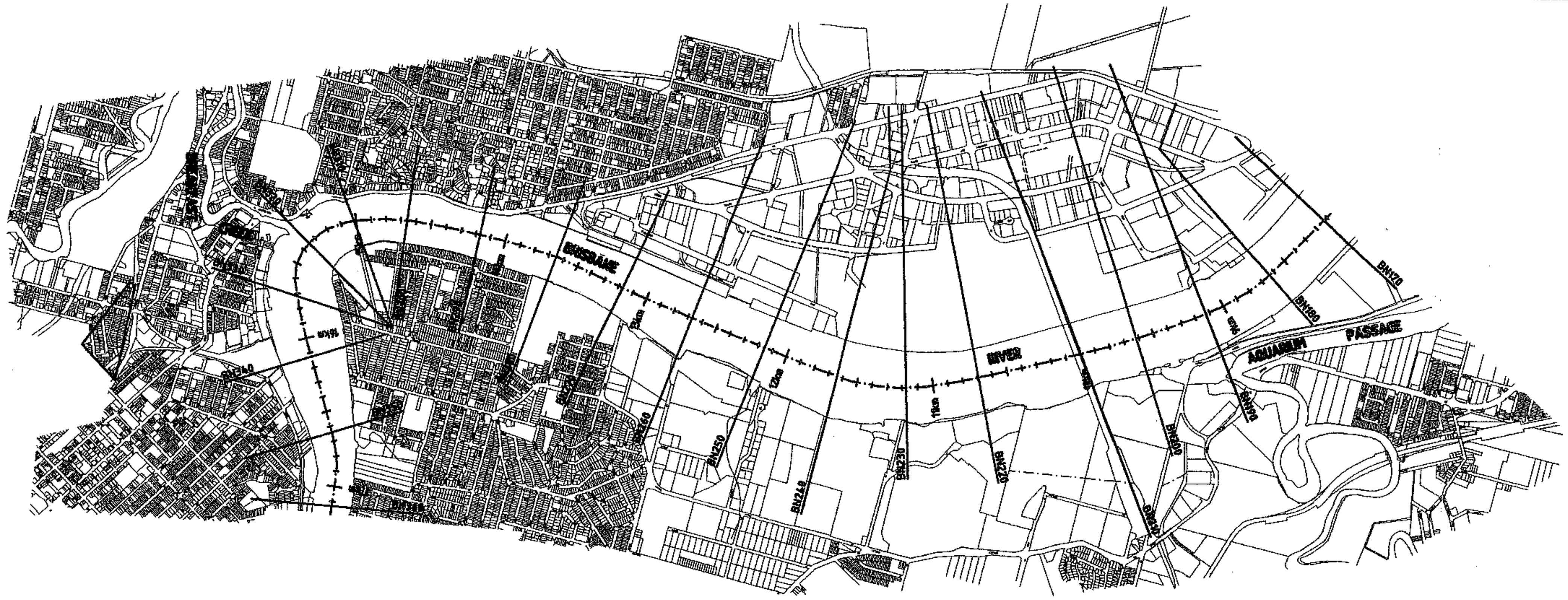
FILE NAME: 4157-156
PLOT SCALE: 1=30
DISK N°: C:\DWG
JOB N°: T004157
DATE: 23/3/97

SINCLAIR KNIGHT MERZ

FIGURE H-6h

BRISBANE RIVER FLOOD STUDY

MIKE 11 EXISTING DESIGN FLOOD PROFILES FOR THE 2000, 1000, 500, AND 200 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS



LEGEND

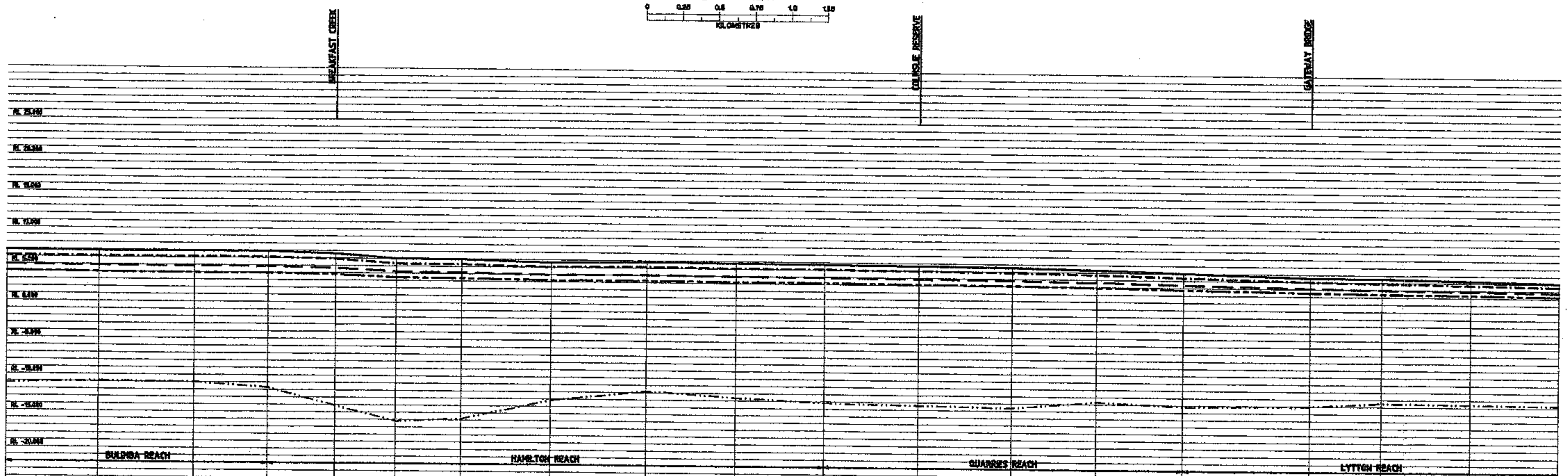
AMTD LINE

BN 1250 SURVEYED CROSS SECTION

LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW

KILOMETRES



DATUM RL. -25.000

200 YEAR ARI DESIGN FLOOD LEVEL	4.040	3.990	3.950	3.950	3.790	3.430	3.380	3.270	3.260	3.190	3.210	3.110	3.070	2.930	2.780	2.520	2.420	2.340	2.150
500 YEAR ARI DESIGN FLOOD LEVEL	4.940	4.870	4.850	4.850	4.650	4.270	4.160	3.960	4.030	3.940	3.950	3.850	3.790	3.630	3.410	3.100	2.930	2.880	2.750
1000 YEAR ARI DESIGN FLOOD LEVEL	6.180	6.120	6.130	6.140	5.890	5.320	5.290	5.010	5.150	5.050	5.050	4.940	4.860	4.680	4.440	4.000	3.860	3.720	3.540
2000 YEAR ARI DESIGN FLOOD LEVEL	6.910	6.870	6.900	6.920	6.690	5.960	5.950	5.630	5.610	5.760	5.720	5.640	5.530	5.330	5.410	4.540	4.590	4.280	4.070
BED LEVEL (m AHD)	-12.200	-10.400	-11.000	-11.700	-14.100	-16.200	-15.600	-13.200	-11.800	-12.680	-13.200	-13.400	-13.400	-12.280	-13.200	-15.000	-12.500	-12.680	-12.700
CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
MIKE 11 CHAINAGE (km)	1061.590	1062.010	1062.535	1062.940	1063.310	1063.445	1064.000	1064.690	1065.080	1065.513	1065.990	1066.505	1067.020	1067.485	1067.865	1068.640	1069.065	1069.535	1070.025
AMTD CHAINAGE (km)	17.130	16.640	16.125	15.720	15.350	15.015	14.460	14.170	13.650	13.157	12.670	12.155	11.640	11.175	10.695	10.000	9.615	9.125	8.635

BRISBANE RIVER - BN 360 TO BN 180

LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE

2000 YEAR ARI DESIGN FLOOD LEVEL

1000 YEAR ARI DESIGN FLOOD LEVEL

500 YEAR ARI DESIGN FLOOD LEVEL

200 YEAR ARI DESIGN FLOOD LEVEL

EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

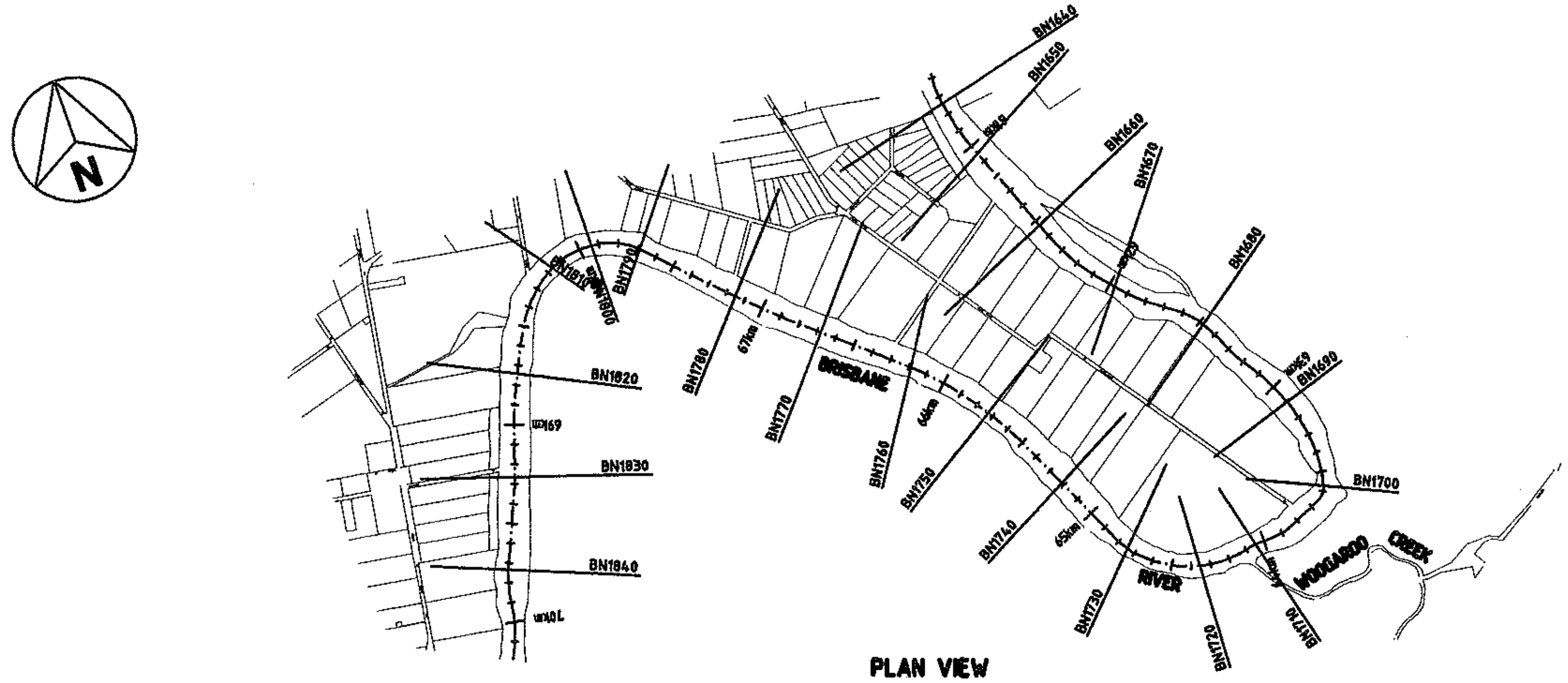
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

PLOT SCALE: 1=30

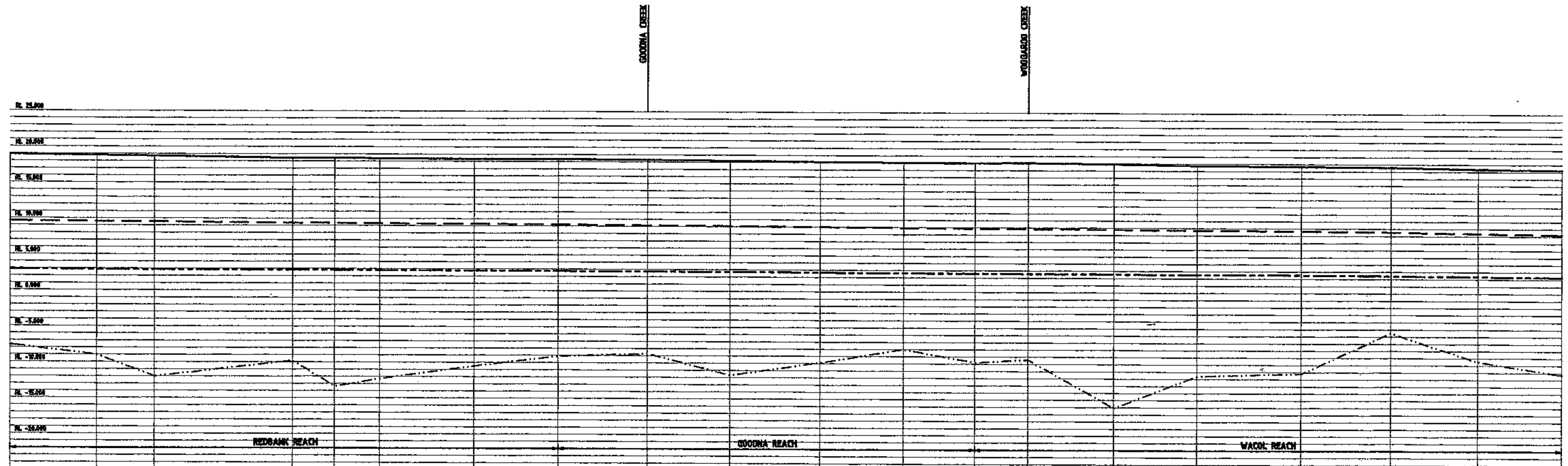
FIGURE J-1b

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI
FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS
- REGULATION LINES AND REVEGETATION STRATEGY CASE

SINCLAIR KNIGHT MERZ



LEGEND
AMTD LINE
BN 1250 SURVEYED CROSS SECTIONS
LOCATION AND IDENTIFICATION OF STRUCTURE



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	2.920	2.890	2.880	2.830	2.820	2.810	2.790	2.760	2.730	2.700	2.670	2.630	2.600	2.580	2.570	2.550	2.530	2.470	2.370	2.300
20 YEAR ARI DESIGN FLOOD LEVEL	9.630	9.560	9.530	9.360	9.370	9.350	9.260	9.230	9.180	9.090	9.01E	8.940	8.880	8.830	8.800	8.710	8.650	8.540	8.360	8.210
100 YEAR ARI DESIGN FLOOD LEVEL	18.850	18.790	18.730	18.630	18.440	18.380	18.370	18.360	18.310	18.200	18.110	18.050	18.010	18.050	17.910	17.750	17.670	17.400	17.370	17.260
BED LEVEL (m AHD)	-7.600	-9.000	-12.000	-9.600	-13.400	-12.300	-10.500	-9.100	-8.700	-11.700	-9.500	-8.000	-9.800	-9.400	-16.100	-11.600	-11.200	-5.500	-9.500	-11.300
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1008.925	1009.400	1009.720	1010.490	1010.725	1010.980	1011.518	1011.980	1012.475	1012.935	1013.445	1013.918	1014.310	1014.410	1015.090	1015.560	1016.140	1016.640	1017.130	1017.610
AMTD CHAINAGE (km)	69.735	69.260	68.940	68.170	67.935	67.680	67.150	66.680	66.185	65.725	65.215	64.740	64.530	64.050	63.570	63.100	62.520	62.020	61.550	61.050

LEGEND
LOCATION AND IDENTIFICATION OF STRUCTURE
5 YEAR ARI DESIGN FLOOD
20 YEAR ARI DESIGN FLOOD
100 YEAR ARI DESIGN FLOOD
EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

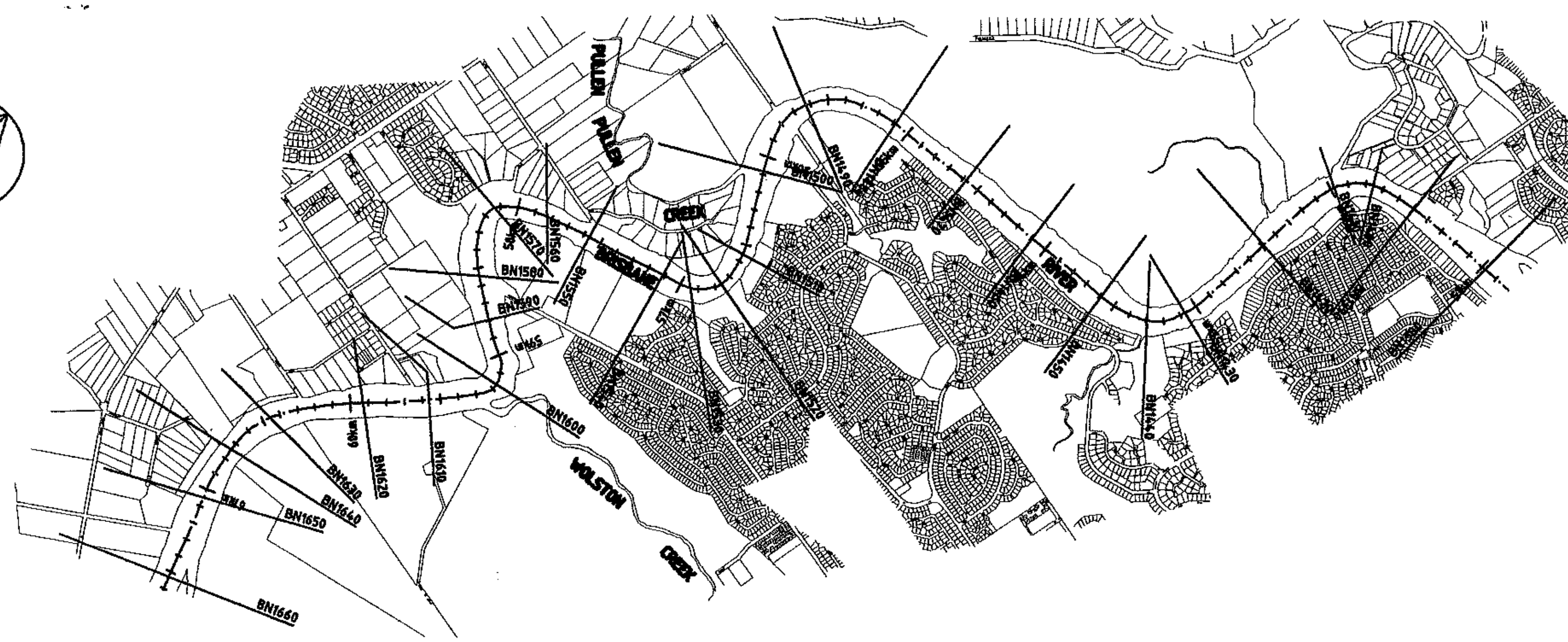
BRISBANE RIVER - BN 1840 TO BN 1650

FILE NAME: 4157-157 PLOT SCALE: 1=30 DISK N°: C:\DWG JOB N°: T004157 DATE: 23/3/97

SINCLAIR KNIGHT MERZ

FIGURE J-1c

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 5, 10, AND 20 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS - REGULATION LINES AND REVEGETATION STRATEGY CASE



LEGEND

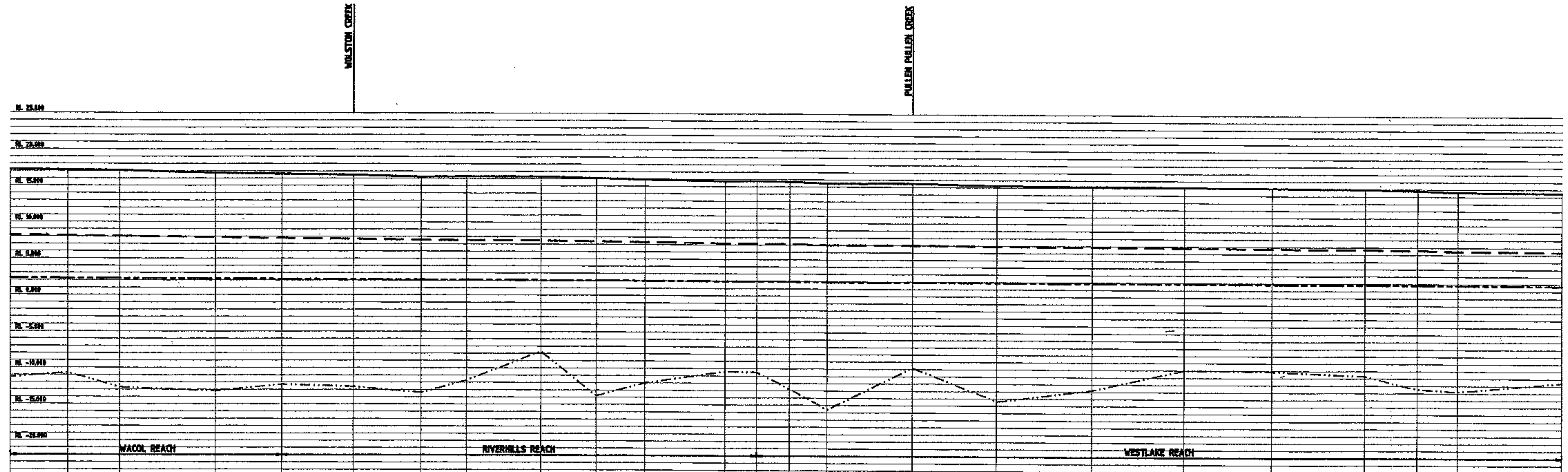
AMTD LINE

BN 1250 — SURVEYED CROSS SECTION

LOCATION AND IDENTIFICATION OF STRUCTURE

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	2.310	2.260	2.250	2.240	2.170	2.140	2.100	2.090	2.060	2.060	2.020	1.980
20 YEAR ARI DESIGN FLOOD LEVEL	8.230	8.090	8.050	7.880	7.770	7.600	7.540	7.530	7.490	7.410	7.310	7.190
100 YEAR ARI DESIGN FLOOD LEVEL	17.260	17.140	17.080	16.760	16.620	16.490	16.220	16.290	16.280	16.110	15.910	15.740
BED LEVEL (m AHD)	-11.300	-10.700	-12.700	-13.200	-12.300	-12.600	-13.440	-11.700	-7.700	-13.800	-12.000	-10.400
CROSS SECTION NUMBER	BN 1650	BN 1640	BN 1630	BN 1620	BN 1610	BN 1600	BN 1590	BN 1580	BN 1570	BN 1560	BN 1550	BN 1540
MIKE 11 CHAINAGE (km)	1017.610	1017.920	1018.200	1018.725	1019.095	1019.490	1019.865	1020.115	1020.525	1020.830	1021.095	1021.539
AMTD CHAINAGE (km)	61.050	60.740	60.460	59.935	59.565	59.170	58.795	58.545	58.135	57.830	57.565	57.121

5 YEAR ARI DESIGN FLOOD LEVEL	1.970	1.950	1.930	1.920	1.900	1.880	1.870	1.840	1.810	1.800	1.780	1.750
20 YEAR ARI DESIGN FLOOD LEVEL	7.170	7.130	7.020	7.010	6.890	6.850	6.790	6.720	6.650	6.570	6.480	6.400
100 YEAR ARI DESIGN FLOOD LEVEL	15.780	15.690	15.490	15.520	15.230	15.170	15.120	15.050	14.950	14.800	14.610	14.500
BED LEVEL (m AHD)	-10.500	-12.800	-15.600	-9.800	-16.400	-12.800	-10.000	-10.100	-10.700	-12.500	-12.800	-11.600
CROSS SECTION NUMBER	BN 1530	BN 1520	BN 1510	BN 1500	BN 1490	BN 1480	BN 1470	BN 1460	BN 1450	BN 1440	BN 1430	BN 1420
MIKE 11 CHAINAGE (km)	1021.715	1021.895	1022.105	1022.575	1023.040	1023.570	1024.080	1024.563	1025.070	1025.360	1025.590	1026.170
AMTD CHAINAGE (km)	56.945	56.765	56.555	56.085	55.620	55.090	54.580	54.097	53.590	53.300	53.070	52.490

LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE

5 YEAR ARI DESIGN FLOOD

20 YEAR ARI DESIGN FLOOD

100 YEAR ARI DESIGN FLOOD

EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

BRISBANE RIVER - BN 1650 TO BN 1420

FILE NAME: 4157-158 PLOT SCALE: 1=30 DISK N°: C:\DWG JOB N°: T004157 DATE: 23/3/97

Appendix I - HEC-RAS Hydraulic Model Results

Table I-1 - HEC-RAS Model Calibration

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	MIKE 11 100 YEAR ARI WL (m AHD)	HEC-RAS 100 YEAR ARI WL (m AHD)	100 YEAR ARI DIFFERENCE (m)	MIKE 11 10 YEAR ARI WL (m AHD)	HEC-RAS 10 YEAR ARI WL (m AHD)	10 YEAR ARI DIFFERENCE (m)
BRISBANE	1000	78.66	BN 2020		22.76	22.58	-0.18	7.25	7.14	-0.11
BRISBANE	1000.285	78.375	BN 2010		22.57	22.38	-0.19	7.16	7.04	-0.12
BRISBANE	1000.775	77.885	BN 2000		22.29	22.13	-0.16	7.00	6.91	-0.09
BRISBANE	1001.315	77.345	BN 1990		22.20	22.07	-0.13	6.86	6.77	-0.09
BRISBANE	1001.865	76.795	BN 1980		21.68	21.39	-0.29	6.64	6.51	-0.13
BRISBANE	1002.35	76.310	BN 1970		21.48	21.28	-0.20	6.42	6.33	-0.09
BRISBANE	1002.785	75.875	BN 1960		21.46	21.25	-0.21	6.34	6.25	-0.09
BRISBANE	1003.275	75.385	BN 1950		21.13	20.93	-0.20	6.16	6.08	-0.08
BRISBANE	1003.775	74.885	BN 1940		20.86	20.67	-0.19	5.97	5.89	-0.08
BRISBANE	1004.3	74.360	BN 1930		20.41	20.19	-0.22	5.75	5.65	-0.10
BRISBANE	1004.81	73.850	BN 1920		20.37	20.21	-0.16	5.63	5.53	-0.10
BRISBANE	1005.325	73.335	BN 1910		20.20	20.04	-0.16	5.47	5.35	-0.12
BRISBANE	1005.87	72.790	BN 1900		19.89	19.67	-0.22	5.25	5.09	-0.16
BRISBANE	1006.3	72.360	BN 1890	Moggill Gauge	19.72	19.55	-0.17	5.18	5.01	-0.17
BRISBANE	1006.91	71.750	BN 1880		19.51	19.38	-0.13	5.06	4.90	-0.16
BRISBANE	1007.41	71.250	BN 1870		19.48	19.34	-0.14	4.97	4.82	-0.15
BRISBANE	1007.92	70.740	BN 1860		19.19	18.99	-0.20	4.85	4.70	-0.15
BRISBANE	1008.445	70.215	BN 1850		19.02	18.89	-0.13	4.78	4.66	-0.12
BRISBANE	1008.925	69.735	BN 1840		18.96	18.85	-0.11	4.74	4.62	-0.12
BRISBANE	1009.4	69.260	BN 1830		18.86	18.74	-0.12	4.70	4.59	-0.11
BRISBANE	1009.72	68.940	BN 1820		18.85	18.72	-0.13	4.67	4.55	-0.12
BRISBANE	1010.49	68.170	BN 1810		18.50	18.39	-0.11	4.59	4.48	-0.11
BRISBANE	1010.725	67.935	BN 1800		18.52	18.37	-0.15	4.58	4.48	-0.10
BRISBANE	1010.98	67.680	BN 1790		18.44	18.34	-0.10	4.56	4.46	-0.10
BRISBANE	1011.51	67.150	BN 1780		18.43	18.33	-0.10	4.52	4.42	-0.10
BRISBANE	1011.98	66.680	BN 1770		18.43	18.30	-0.13	4.48	4.39	-0.09
BRISBANE	1012.475	66.185	BN 1760		18.33	18.21	-0.12	4.42	4.34	-0.08
BRISBANE	1012.935	65.725	BN 1750		18.22	18.15	-0.07	4.38	4.30	-0.08
BRISBANE	1013.445	65.215	BN 1740		18.14	18.07	-0.07	4.33	4.26	-0.07
BRISBANE	1013.91	64.750	BN 1730		18.08	18.06	-0.02	4.27	4.20	-0.07
BRISBANE	1014.31	64.350	BN 1720		18.05	17.99	-0.06	4.22	4.16	-0.06
BRISBANE	1014.61	64.050	BN 1710	Goodna Hospital Gauge	18.08	18.02	-0.06	4.18	4.13	-0.05
BRISBANE	1015.09	63.570	BN 1700		17.94	17.82	-0.12	4.17	4.12	-0.05
BRISBANE	1015.56	63.100	BN 1690		17.81	17.66	-0.15	4.13	4.08	-0.05
BRISBANE	1016.14	62.520	BN 1680		17.71	17.59	-0.12	4.09	4.04	-0.05
BRISBANE	1016.64	62.020	BN 1670		17.62	17.60	-0.02	4.01	3.97	-0.04
BRISBANE	1017.13	61.530	BN 1660		17.39	17.31	-0.08	3.87	3.81	-0.06
BRISBANE	1017.61	61.050	BN 1650		17.26	17.17	-0.09	3.77	3.72	-0.05
BRISBANE	1017.92	60.740	BN 1640		17.10	17.02	-0.08	3.69	3.66	-0.03
BRISBANE	1018.2	60.460	BN 1630		17.02	16.98	-0.04	3.67	3.63	-0.04
BRISBANE	1018.725	59.935	BN 1620		16.69	16.61	-0.08	3.60	3.55	-0.05
BRISBANE	1019.095	59.565	BN 1610		16.56	16.53	-0.03	3.54	3.50	-0.04
BRISBANE	1019.49	59.170	BN 1600		16.45	16.46	0.01	3.48	3.45	-0.03
BRISBANE	1019.865	58.795	BN 1590		16.15	16.14	-0.01	3.43	3.38	-0.05
BRISBANE	1020.115	58.545	BN 1580		16.25	16.21	-0.04	3.40	3.35	-0.05
BRISBANE	1020.525	58.135	BN 1570		16.22	16.20	-0.02	3.36	3.32	-0.04
BRISBANE	1020.83	57.830	BN 1560		16.07	16.03	-0.04	3.32	3.29	-0.03
BRISBANE	1021.095	57.565	BN 1550		15.86	15.79	-0.07	3.27	3.23	-0.04
BRISBANE	1021.539	57.121	BN 1540		15.69	15.66	-0.03	3.19	3.17	-0.02
BRISBANE	1021.715	56.945	BN 1530		15.72	15.66	-0.06	3.17	3.14	-0.03
BRISBANE	1021.895	56.765	BN 1520		15.65	15.61	-0.04	3.15	3.12	-0.03
BRISBANE	1022.105	56.555	BN 1510		15.53	15.49	-0.04	3.15	3.11	-0.04
BRISBANE	1022.575	56.085	BN 1500		15.45	15.43	-0.02	3.10	3.06	-0.04
BRISBANE	1023.04	55.620	BN 1490		15.21	15.12	-0.09	3.07	3.01	-0.06
BRISBANE	1023.57	55.090	BN 1480		15.12	15.05	-0.07	3.05	2.98	-0.07
BRISBANE	1024.08	54.580	BN 1470		15.07	14.98	-0.09	3.02	2.94	-0.08
BRISBANE	1024.563	54.097	BN 1460		15.01	14.95	-0.06	2.97	2.90	-0.07
BRISBANE	1025.07	53.590	BN 1450		14.91	14.87	-0.04	2.93	2.86	-0.07
BRISBANE	1025.36	53.300	BN 1440		14.77	14.70	-0.07	2.89	2.82	-0.07
BRISBANE	1025.59	53.070	BN 1430		14.61	14.53	-0.08	2.85	2.78	-0.07
BRISBANE	1026.17	52.490	BN 1420		14.48	14.43	-0.05	2.83	2.74	-0.09
BRISBANE	1026.68	51.980	BN 1410	Mt Ommaney Gauge	14.38	14.32	-0.06	2.78	2.69	-0.09
BRISBANE	1026.9	51.760	BN 1400		14.25	14.20	-0.05	2.75	2.67	-0.08
BRISBANE	1027.16	51.500	BN 1390		14.11	14.08	-0.03	2.73	2.65	-0.08
BRISBANE	1027.68	50.980	BN 1380		14.17	14.15	-0.02	2.71	2.63	-0.08
BRISBANE	1028.18	50.480	BN 1370		14.19	14.15	-0.04	2.70	2.62	-0.08
BRISBANE	1028.68	49.980	BN 1360		14.06	14.01	-0.05	2.67	2.60	-0.07
BRISBANE	1028.72	49.940	BN1350	Centenary Bridge						
BRISBANE	1028.76	49.900	BN 1340		13.91	13.96	0.05	2.63	2.58	-0.05
BRISBANE	1029.2	49.460	BN 1330		13.80	13.82	0.02	2.60	2.56	-0.04
BRISBANE	1029.68	48.980	BN 1320		13.82	13.81	-0.01	2.60	2.55	-0.05
BRISBANE	1030.22	48.440	BN 1310		13.82	13.85	0.03	2.58	2.54	-0.04
BRISBANE	1030.87	47.790	BN 1300		13.75	13.80	0.05	2.56	2.52	-0.04
BRISBANE	1031.26	47.400	BN 1290		13.59	13.64	0.05	2.54	2.50	-0.04
BRISBANE	1031.7	46.960	BN 1280	Darra Wharf Gauge	13.21	13.27	0.06	2.47	2.44	-0.03
BRISBANE	1031.995	46.665	BN 1270		13.31	13.28	-0.03	2.44	2.40	-0.04

Table I-1 - HEC-RAS Model Calibration

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	MIKE 11 100 YEAR ARI WL (m AHD)	HEC-RAS 100 YEAR ARI WL (m AHD)	100 YEAR ARI DIFFERENCE (m)	MIKE 11 10 YEAR ARI WL (m AHD)	HEC-RAS 10 YEAR ARI WL (m AHD)	10 YEAR ARI DIFFERENCE (m)
BRISBANE	1032.23	46.430	BN 1260		13.18	13.21	0.03	2.41	2.38	-0.03
BRISBANE	1032.585	46.075	BN 1250		12.94	12.97	0.03	2.37	2.34	-0.03
BRISBANE	1033.08	45.580	BN 1240		12.79	12.84	0.05	2.34	2.31	-0.03
BRISBANE	1033.37	45.290	BN 1230		12.68	12.76	0.08	2.31	2.28	-0.03
BRISBANE	1033.9	44.760	BN 1220		12.45	12.55	0.10	2.28	2.24	-0.04
BRISBANE	1034.37	44.290	BN 1210		12.29	12.42	0.13	2.25	2.22	-0.03
BRISBANE	1034.89	43.770	BN 1200	Sherwood Gauge	12.19	12.31	0.12	2.22	2.19	-0.03
BRISBANE	1035.414	43.246	BN 1190		11.94	12.11	0.17	2.16	2.14	-0.02
BRISBANE	1035.9	42.760	BN 1180		11.65	11.80	0.15	2.10	2.08	-0.02
BRISBANE	1036.46	42.200	BN 1170		11.35	11.58	0.23	2.05	2.03	-0.02
BRISBANE	1036.77	41.890	BN 1160		11.28	11.52	0.24	2.02	1.99	-0.03
BRISBANE	1036.915	41.745	BN 1150		11.12	11.37	0.25	2.00	1.98	-0.02
BRISBANE	1037.09	41.570	BN 1140		11.07	11.18	0.11	2.00	1.96	-0.04
BRISBANE	1037.11	41.550	BN 1130	Indooroopilly Bridge						
BRISBANE	1037.175	41.485	BN 1120		10.98	11.08	0.10	1.94	1.95	0.01
BRISBANE	1037.285	41.375	BN 1110	Clarence Road Gauge	10.93	11.10	0.17	1.93	1.95	0.02
BRISBANE	1037.625	41.035	BN 1100		10.91	11.07	0.16	1.91	1.93	0.02
BRISBANE	1038.085	40.575	BN 1090		10.93	11.08	0.15	1.90	1.93	0.03
BRISBANE	1038.6	40.060	BN 1080		10.91	11.07	0.16	1.88	1.90	0.02
BRISBANE	1039.1	39.560	BN 1070		10.90	11.05	0.15	1.86	1.89	0.03
BRISBANE	1039.565	39.095	BN 1060	Oxley Creek Gauge	10.92	11.04	0.12	1.85	1.88	0.03
BRISBANE	1040.09	38.570	BN 1050	King Authur Terrace Gauge	10.84	10.99	0.15	1.86	1.88	0.02
BRISBANE	1040.49	38.170	BN 1040		10.71	10.81	0.10	1.84	1.86	0.02
BRISBANE	1041.01	37.650	BN 1030		10.74	10.84	0.10	1.84	1.86	0.02
BRISBANE	1041.23	37.430	BN 1020		10.71	10.80	0.09	1.83	1.85	0.02
BRISBANE	1041.46	37.200	BN 1010	Tennyson Power House Gaug	10.62	10.71	0.09	1.81	1.84	0.03
BRISBANE	1041.7	36.960	BN 1000		10.59	10.68	0.09	1.81	1.83	0.02
BRISBANE	1041.96	36.700	BN 990		10.45	10.49	0.04	1.79	1.81	0.02
BRISBANE	1042.235	36.425	BN 980		10.30	10.26	-0.04	1.77	1.79	0.02
BRISBANE	1042.515	36.145	BN 970	Yeronga Street Gauge	10.29	10.20	-0.09	1.77	1.78	0.01
BRISBANE	1042.91	35.750	BN 960		10.22	10.03	-0.19	1.74	1.75	0.01
BRISBANE	1043.725	34.935	BN 950		9.91	9.80	-0.11	1.67	1.70	0.03
BRISBANE	1044.06	34.600	BN 940	Sandy Creek Gauge	9.75	9.70	-0.05	1.66	1.69	0.03
BRISBANE	1044.34	34.320	BN 930		9.58	9.52	-0.06	1.64	1.66	0.02
BRISBANE	1044.605	34.055	BN 920		9.53	9.44	-0.09	1.63	1.65	0.02
BRISBANE	1044.86	33.800	BN 910		9.49	9.37	-0.12	1.61	1.64	0.03
BRISBANE	1045.4	33.260	BN 900		9.31	9.22	-0.09	1.58	1.60	0.02
BRISBANE	1045.885	32.775	BN 890		9.17	9.05	-0.12	1.54	1.56	0.02
BRISBANE	1046.18	32.480	BN 880		9.09	8.99	-0.10	1.54	1.56	0.02
BRISBANE	1046.34	32.320	BN 870	Dutton Park Cemetery Gauge	9.02	8.92	-0.10	1.53	1.55	0.02
BRISBANE	1046.58	32.080	BN 860		8.97	8.88	-0.09	1.53	1.55	0.02
BRISBANE	1046.9	31.760	BN 850		8.78	8.69	-0.09	1.50	1.52	0.02
BRISBANE	1047.35	31.310	BN 840		8.41	8.34	-0.07	1.46	1.48	0.02
BRISBANE	1047.915	30.745	BN 830	Highgate Hill Gauge	8.17	8.17	0.00	1.43	1.46	0.03
BRISBANE	1048.375	30.285	BN 820		8.23	8.22	-0.01	1.43	1.46	0.03
BRISBANE	1048.89	29.770	BN 810	St Lucia Ferry Gauge	8.00	8.00	0.00	1.40	1.42	0.02
BRISBANE	1049.12	29.540	BN 800		7.94	7.96	0.02	1.39	1.42	0.03
BRISBANE	1049.37	29.290	BN 790		7.75	7.77	0.02	1.37	1.40	0.03
BRISBANE	1049.59	29.070	BN 780		7.74	7.75	0.01	1.37	1.40	0.03
BRISBANE	1049.87	28.790	BN 770		7.63	7.66	0.03	1.36	1.39	0.03
BRISBANE	1050.43	28.230	BN 760		7.61	7.62	0.01	1.35	1.37	0.02
BRISBANE	1050.86	27.800	BN 750		7.46	7.50	0.04	1.34	1.36	0.02
BRISBANE	1051.36	27.300	BN 740		7.46	7.49	0.03	1.34	1.36	0.02
BRISBANE	1051.895	26.765	BN 730		7.30	7.29	-0.01	1.31	1.34	0.03
BRISBANE	1052.31	26.350	BN 720		7.40	7.27	-0.13	1.32	1.33	0.01
BRISBANE	1052.37	26.290	BN 710	Merivale Bridge						
BRISBANE	1052.39	26.270	BN 700		7.23	7.11	-0.12	1.30	1.32	0.02
BRISBANE	1052.595	26.065	BN 690		7.14	7.04	-0.10	1.30	1.31	0.01
BRISBANE	1052.607	26.053	BN 680	William Jolly Bridge						
BRISBANE	1052.64	26.020	BN 670		6.63	6.49	-0.14	1.28	1.28	0.00
BRISBANE	1052.865	25.795	BN 660		6.49	6.38	-0.11	1.28	1.27	-0.01
BRISBANE	1053.32	25.340	BN 650		6.42	6.21	-0.21	1.26	1.25	-0.01
BRISBANE	1053.356	25.304	BN 640	Victoria Bridge						
BRISBANE	1053.385	25.275	BN630		6.24	6.13	-0.11	1.24	1.23	-0.01
BRISBANE	1053.9	24.760	BN 620	Montague Road Gauge	5.85	5.79	-0.06	1.20	1.19	-0.01
BRISBANE	1054.64	24.020	BN 610		5.78	5.70	-0.08	1.19	1.18	-0.01
BRISBANE	1054.66	24.000	BN 600	Captain Cook Bridge						
BRISBANE	1054.68	23.980	BN 590		5.70	5.61	-0.09	1.18	1.17	-0.01
BRISBANE	1054.97	23.690	BN 560		5.45	5.29	-0.16	1.16	1.15	-0.01
BRISBANE	1055.28	23.380	BN 550		5.40	5.28	-0.12	1.16	1.15	-0.01
BRISBANE	1055.42	23.240	BN 540		5.40	5.27	-0.13	1.16	1.15	-0.01
BRISBANE	1055.96	22.700	BN 530	Port Office Gauge	5.34	5.27	-0.07	1.15	1.15	0.00
BRISBANE	1056.4	22.260	BN 520		5.09	5.06	-0.03	1.13	1.13	0.00
BRISBANE	1056.695	21.965	BN 510		5.03	5.05	0.02	1.13	1.13	0.00
BRISBANE	1056.865	21.795	BN 500		5.22	4.99	-0.23	1.14	1.13	-0.01
BRISBANE	1056.92	21.740	BN 495	Story Bridge						

Table I-1 - HEC-RAS Model Calibration

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	MIKE 11 100 YEAR ARI WL (m AHD)	HEC-RAS 100 YEAR ARI WL (m AHD)	100 YEAR ARI DIFFERENCE (m)	MIKE 11 10 YEAR ARI WL (m AHD)	HEC-RAS 10 YEAR ARI WL (m AHD)	10 YEAR ARI DIFFERENCE (m)
BRISBANE	1056.95	21.710	BN 490		5.12	4.96	-0.16	1.13	1.13	0.00
BRISBANE	1057.09	21.570	BN 480		4.97	4.90	-0.07	1.12	1.12	0.00
BRISBANE	1057.53	21.130	BN 470		4.83	4.77	-0.06	1.12	1.11	-0.01
BRISBANE	1058.04	20.620	BN 460		4.58	4.52	-0.06	1.10	1.10	0.00
BRISBANE	1058.23	20.430	BN 450		4.50	4.45	-0.05	1.09	1.09	0.00
BRISBANE	1058.53	20.130	BN 440		4.37	4.33	-0.04	1.09	1.08	-0.01
BRISBANE	1058.735	19.925	BN 430		4.41	4.32	-0.09	1.09	1.08	-0.01
BRISBANE	1059.035	19.625	BN 420		4.13	4.07	-0.06	1.07	1.07	0.00
BRISBANE	1059.54	19.120	BN 410		4.09	4.02	-0.07	1.07	1.06	-0.01
BRISBANE	1059.99	18.670	BN 400		3.88	3.86	-0.02	1.05	1.05	0.00
BRISBANE	1060.345	18.315	BN 390		3.65	3.63	-0.02	1.04	1.04	0.00
BRISBANE	1060.535	18.125	BN 380		3.50	3.49	-0.01	1.03	1.03	0.00
BRISBANE	1061.015	17.645	BN 370		3.45	3.45	0.00	1.03	1.03	0.00
BRISBANE	1061.53	17.130	BN 360		3.24	3.25	0.01	1.02	1.02	0.00
BRISBANE	1062.02	16.640	BN 350		3.16	3.19	0.03	1.01	1.01	0.00
BRISBANE	1062.535	16.125	BN 340		3.12	3.15	0.03	1.01	1.01	0.00
BRISBANE	1062.94	15.720	BN 330		3.11	3.15	0.04	1.01	1.01	0.00
BRISBANE	1063.31	15.350	BN 320		2.99	3.04	0.05	1.00	1.00	0.00
BRISBANE	1063.645	15.015	BN 310	Cresent Road Gauge	2.72	2.70	-0.02	0.99	0.99	0.00
BRISBANE	1064	14.660	BN 300		2.68	2.68	0.00	0.99	0.99	0.00
BRISBANE	1064.49	14.170	BN 290		2.55	2.56	0.01	0.98	0.98	0.00
BRISBANE	1065.01	13.650	BN 280		2.57	2.58	0.01	0.98	0.98	0.00
BRISBANE	1065.503	13.157	BN 270		2.53	2.56	0.03	0.98	0.98	0.00
BRISBANE	1065.99	12.670	BN 260	Cairncross Dock Gauge	2.54	2.56	0.02	0.98	0.98	0.00
BRISBANE	1066.505	12.155	BN 250		2.46	2.48	0.02	0.98	0.98	0.00
BRISBANE	1067.02	11.640	BN 240		2.43	2.45	0.02	0.98	0.98	0.00
BRISBANE	1067.485	11.175	BN 230		2.32	2.34	0.02	0.97	0.97	0.00
BRISBANE	1067.965	10.695	BN 220		2.20	2.23	0.03	0.97	0.97	0.00
BRISBANE	1068.66	10.000	BN 210		2.02	2.05	0.03	0.96	0.96	0.00
BRISBANE	1069.045	9.615	BN 200		1.95	1.98	0.03	0.96	0.96	0.00
BRISBANE	1069.535	9.125	BN 190	Bulimba Power House Gauge	1.89	1.92	0.03	0.95	0.95	0.00
BRISBANE	1070.025	8.635	BN 180		1.82	1.87	0.05	0.95	0.95	0.00
BRISBANE	1070.53	8.130	BN 170		1.72	1.78	0.06	0.95	0.95	0.00
BRISBANE	1071.04	7.620	BN 160		1.64	1.71	0.07	0.94	0.94	0.00
BRISBANE	1071.52	7.140	BN 150		1.67	1.73	0.06	0.94	0.95	0.01
BRISBANE	1072.015	6.645	BN 140		1.56	1.62	0.06	0.94	0.94	0.00
BRISBANE	1072.515	6.145	BN 130		1.50	1.57	0.07	0.94	0.94	0.00
BRISBANE	1072.995	5.665	BN 120		1.46	1.53	0.07	0.94	0.94	0.00
BRISBANE	1073.485	5.175	BN 110		1.36	1.44	0.08	0.93	0.93	0.00
BRISBANE	1074	4.660	BN 100		1.29	1.38	0.09	0.93	0.93	0.00
BRISBANE	1074.46	4.200	BN 90		1.22	1.32	0.10	0.93	0.93	0.00
BRISBANE	1074.985	3.675	BN 80		1.09	1.19	0.10	0.93	0.93	0.00
BRISBANE	1075.48	3.180	BN 70		1.06	1.14	0.08	0.92	0.92	0.00
BRISBANE	1076	2.660	BN 60		1.07	1.15	0.08	0.92	0.92	0.00
BRISBANE	1076.495	2.165	BN 50		0.96	1.04	0.08	0.92	0.92	0.00
BRISBANE	1077.01	1.650	BN 40		0.96	1.02	0.06	0.92	0.92	0.00
BRISBANE	1077.51	1.150	BN 30		0.97	1.03	0.06	0.92	0.92	0.00
BRISBANE	1078.04	0.620	BN 20		0.95	1.01	0.06	0.92	0.92	0.00
BRISBANE	1078.525	0.135	BN 10		0.92	0.92	0.00	0.92	0.92	0.00
BRISBANE	1078.66	0.000	-	Western Inner Bar Gauge	0.92	0.92	0.00	0.92	0.92	0.00

Table I-2 - Comparison of MIKE 11 & HEC-RAS Mannings n Roughness

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	MIKE 11 MANNINGS COEFFICIENT CHANNEL	HEC-RAS MANNINGS COEFFICIENT CHANNEL	RATIO CHANNEL	MIKE 11 MANNINGS COEFFICIENT BANKS	HEC-RAS MANNINGS COEFFICIENT BANKS	RATIO BANKS
BRISBANE	1000	78.66	BN 2020		0.075	0.0637	0.85	0.180	0.153	0.85
BRISBANE	1000.285	78.375	BN 2010		0.075	0.0637	0.85	0.158	0.134	0.85
BRISBANE	1000.775	77.885	BN 2000		0.070	0.0595	0.85	0.147	0.125	0.85
BRISBANE	1001.315	77.345	BN 1990		0.070	0.0595	0.85	0.147	0.125	0.85
BRISBANE	1001.865	76.795	BN 1980		0.070	0.0595	0.85	0.175	0.149	0.85
BRISBANE	1002.35	76.310	BN 1970		0.065	0.0552	0.85	0.104	0.088	0.85
BRISBANE	1002.785	75.875	BN 1960		0.065	0.0552	0.85	0.104	0.088	0.85
BRISBANE	1003.275	75.385	BN 1950		0.075	0.0637	0.85	0.120	0.102	0.85
BRISBANE	1003.775	74.885	BN 1940		0.075	0.0637	0.85	0.150	0.128	0.85
BRISBANE	1004.3	74.360	BN 1930		0.075	0.0637	0.85	0.150	0.128	0.85
BRISBANE	1004.81	73.850	BN 1920		0.075	0.0637	0.85	0.150	0.128	0.85
BRISBANE	1005.325	73.335	BN 1910		0.070	0.0595	0.85	0.168	0.143	0.85
BRISBANE	1005.87	72.790	BN 1900		0.075	0.0637	0.85	0.180	0.153	0.85
BRISBANE	1006.3	72.360	BN 1890	Moggill Gauge	0.075	0.0637	0.85	0.180	0.153	0.85
BRISBANE	1006.91	71.750	BN 1880		0.075	0.0637	0.85	0.180	0.153	0.85
BRISBANE	1007.41	71.250	BN 1870		0.050	0.0425	0.85	0.120	0.102	0.85
BRISBANE	1007.92	70.740	BN 1860		0.070	0.0595	0.85	0.210	0.179	0.85
BRISBANE	1008.445	70.215	BN 1850		0.050	0.0425	0.85	0.165	0.140	0.85
BRISBANE	1008.925	69.735	BN 1840		0.050	0.0425	0.85	0.170	0.145	0.85
BRISBANE	1009.4	69.260	BN 1830		0.050	0.0425	0.85	0.170	0.145	0.85
BRISBANE	1009.72	68.940	BN 1820		0.050	0.0425	0.85	0.170	0.145	0.85
BRISBANE	1010.49	68.170	BN 1810		0.050	0.0425	0.85	0.170	0.145	0.85
BRISBANE	1010.725	67.935	BN 1800		0.050	0.0425	0.85	0.170	0.145	0.85
BRISBANE	1010.98	67.680	BN 1790		0.050	0.0425	0.85	0.170	0.145	0.85
BRISBANE	1011.51	67.150	BN 1780		0.050	0.0425	0.85	0.170	0.145	0.85
BRISBANE	1011.98	66.680	BN 1770		0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1012.475	66.185	BN 1760		0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1012.935	65.725	BN 1750		0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1013.445	65.215	BN 1740		0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1013.91	64.750	BN 1730		0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1014.31	64.350	BN 1720		0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1014.61	64.050	BN 1710	Goodna Hospital Gauge	0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1015.09	63.570	BN 1700		0.055	0.0467	0.85	0.165	0.140	0.85
BRISBANE	1015.56	63.100	BN 1690		0.055	0.0467	0.85	0.143	0.122	0.85
BRISBANE	1016.14	62.520	BN 1680		0.055	0.0467	0.85	0.176	0.150	0.85
BRISBANE	1016.64	62.020	BN 1670		0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1017.13	61.530	BN 1660		0.070	0.0595	0.85	0.238	0.202	0.85
BRISBANE	1017.61	61.050	BN 1650		0.070	0.0595	0.85	0.238	0.202	0.85
BRISBANE	1017.92	60.740	BN 1640		0.070	0.0595	0.85	0.238	0.202	0.85
BRISBANE	1018.2	60.460	BN 1630		0.075	0.0637	0.85	0.255	0.217	0.85
BRISBANE	1018.725	59.935	BN 1620		0.075	0.0637	0.85	0.255	0.217	0.85
BRISBANE	1019.095	59.565	BN 1610		0.075	0.0637	0.85	0.255	0.217	0.85
BRISBANE	1019.49	59.170	BN 1600		0.075	0.0637	0.85	0.255	0.217	0.85
BRISBANE	1019.865	58.795	BN 1590		0.075	0.0637	0.85	0.255	0.217	0.85
BRISBANE	1020.115	58.545	BN 1580		0.075	0.0637	0.85	0.255	0.217	0.85
BRISBANE	1020.525	58.135	BN 1570		0.075	0.0637	0.85	0.203	0.173	0.85
BRISBANE	1020.83	57.830	BN 1560		0.075	0.0637	0.85	0.195	0.166	0.85
BRISBANE	1021.095	57.565	BN 1550		0.075	0.0637	0.85	0.195	0.166	0.85
BRISBANE	1021.539	57.121	BN 1540		0.070	0.0595	0.85	0.182	0.155	0.85
BRISBANE	1021.715	56.945	BN 1530		0.070	0.0595	0.85	0.182	0.155	0.85
BRISBANE	1021.895	56.765	BN 1520		0.070	0.0595	0.85	0.182	0.155	0.85
BRISBANE	1022.105	56.555	BN 1510		0.070	0.0595	0.85	0.182	0.155	0.85
BRISBANE	1022.575	56.085	BN 1500		0.045	0.0382	0.85	0.090	0.077	0.85
BRISBANE	1023.04	55.620	BN 1490		0.045	0.0382	0.85	0.099	0.084	0.85
BRISBANE	1023.57	55.090	BN 1480		0.045	0.0382	0.85	0.117	0.100	0.85
BRISBANE	1024.08	54.580	BN 1470		0.045	0.0382	0.85	0.117	0.100	0.85
BRISBANE	1024.563	54.097	BN 1460		0.055	0.0467	0.85	0.143	0.122	0.85
BRISBANE	1025.07	53.590	BN 1450		0.055	0.0467	0.85	0.143	0.122	0.85
BRISBANE	1025.36	53.300	BN 1440		0.055	0.0467	0.85	0.143	0.122	0.85
BRISBANE	1025.59	53.070	BN 1430		0.055	0.0467	0.85	0.110	0.094	0.85
BRISBANE	1026.17	52.490	BN 1420		0.055	0.0467	0.85	0.143	0.122	0.85
BRISBANE	1026.68	51.980	BN 1410	Mt Ommaney Gauge	0.055	0.0467	0.85	0.143	0.122	0.85
BRISBANE	1026.9	51.760	BN 1400		0.055	0.0467	0.85	0.143	0.122	0.85
BRISBANE	1027.16	51.500	BN 1390		0.055	0.0467	0.85	0.143	0.122	0.85
BRISBANE	1027.68	50.980	BN 1380		0.030	0.0255	0.85	0.078	0.066	0.85
BRISBANE	1028.18	50.480	BN 1370		0.030	0.0255	0.85	0.078	0.066	0.85
BRISBANE	1028.68	49.980	BN 1360		0.030	0.0255	0.85	0.078	0.066	0.85
BRISBANE	1028.72	49.940	BN1350	Centenary Bridge						
BRISBANE	1028.76	49.900	BN 1340		0.035	0.0297	0.85	0.091	0.077	0.85
BRISBANE	1029.2	49.460	BN 1330		0.035	0.0297	0.85	0.098	0.083	0.85
BRISBANE	1029.68	48.980	BN 1320		0.030	0.0255	0.85	0.090	0.077	0.85
BRISBANE	1030.22	48.440	BN 1310		0.030	0.0255	0.85	0.114	0.097	0.85
BRISBANE	1030.87	47.790	BN 1300		0.030	0.0255	0.85	0.117	0.100	0.85
BRISBANE	1031.26	47.400	BN 1290		0.050	0.0425	0.85	0.200	0.170	0.85
BRISBANE	1031.7	46.960	BN 1280	Darra Wharf Gauge	0.075	0.0637	0.85	0.315	0.268	0.85
BRISBANE	1031.995	46.665	BN 1270		0.075	0.0637	0.85	0.330	0.281	0.85
BRISBANE	1032.23	46.430	BN 1260		0.065	0.0552	0.85	0.286	0.243	0.85
BRISBANE	1032.585	46.075	BN 1250		0.075	0.0637	0.85	0.330	0.281	0.85

Table I-2 - Comparison of MIKE 11 & HEC-RAS Mannings n Roughness

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	MIKE 11 MANNINGS COEFFICIENT CHANNEL	HEC-RAS MANNINGS COEFFICIENT CHANNEL	RATIO CHANNEL	MIKE 11 MANNINGS COEFFICIENT BANKS	HEC-RAS MANNINGS COEFFICIENT BANKS	RATIO BANKS
BRISBANE	1033.08	45.580	BN 1240		0.055	0.0467	0.85	0.242	0.206	0.85
BRISBANE	1033.37	45.290	BN 1230		0.055	0.0467	0.85	0.242	0.206	0.85
BRISBANE	1033.9	44.760	BN 1220		0.050	0.0425	0.85	0.220	0.187	0.85
BRISBANE	1034.37	44.290	BN 1210		0.050	0.0425	0.85	0.210	0.179	0.85
BRISBANE	1034.89	43.770	BN 1200	Sherwood Gauge	0.065	0.0552	0.85	0.267	0.227	0.85
BRISBANE	1035.414	43.246	BN 1190		0.060	0.051	0.85	0.234	0.199	0.85
BRISBANE	1035.9	42.760	BN 1180		0.065	0.0552	0.85	0.260	0.221	0.85
BRISBANE	1036.46	42.200	BN 1170		0.065	0.0552	0.85	0.273	0.232	0.85
BRISBANE	1036.77	41.890	BN 1160		0.065	0.0552	0.85	0.260	0.221	0.85
BRISBANE	1036.915	41.745	BN 1150		0.065	0.0552	0.85	0.254	0.216	0.85
BRISBANE	1037.09	41.570	BN 1140		0.065	0.0552	0.85	0.247	0.210	0.85
BRISBANE	1037.11	41.550	BN 1130	Indooroopilly Bridge						
BRISBANE	1037.175	41.485	BN 1120		0.055	0.0467	0.85	0.209	0.178	0.85
BRISBANE	1037.285	41.375	BN 1110	Clarence Road Gauge	0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1037.625	41.035	BN 1100		0.055	0.0467	0.85	0.187	0.159	0.85
BRISBANE	1038.085	40.575	BN 1090		0.030	0.0255	0.85	0.102	0.087	0.85
BRISBANE	1038.6	40.060	BN 1080		0.030	0.0255	0.85	0.102	0.087	0.85
BRISBANE	1039.1	39.560	BN 1070		0.030	0.0255	0.85	0.102	0.087	0.85
BRISBANE	1039.565	39.095	BN 1060	Oxley Creek Gauge	0.030	0.0255	0.85	0.102	0.087	0.85
BRISBANE	1040.09	38.570	BN 1050	King Authur Terrace Gauge	0.030	0.0255	0.85	0.120	0.102	0.85
BRISBANE	1040.49	38.170	BN 1040		0.030	0.0255	0.85	0.126	0.107	0.85
BRISBANE	1041.01	37.650	BN 1030		0.060	0.051	0.85	0.252	0.214	0.85
BRISBANE	1041.23	37.430	BN 1020		0.060	0.051	0.85	0.252	0.214	0.85
BRISBANE	1041.46	37.200	BN 1010	Tennyson Power House Gauge	0.060	0.051	0.85	0.252	0.214	0.85
BRISBANE	1041.7	36.960	BN 1000		0.060	0.051	0.85	0.252	0.214	0.85
BRISBANE	1041.96	36.700	BN 990		0.060	0.051	0.85	0.252	0.214	0.85
BRISBANE	1042.235	36.425	BN 980		0.060	0.051	0.85	0.252	0.214	0.85
BRISBANE	1042.515	36.145	BN 970	Yeronga Street Gauge	0.060	0.051	0.85	0.252	0.214	0.85
BRISBANE	1042.91	35.750	BN 960		0.060	0.051	0.85	0.252	0.214	0.85
BRISBANE	1043.725	34.935	BN 950		0.060	0.051	0.85	0.252	0.214	0.85
BRISBANE	1044.06	34.600	BN 940	Sandy Creek Gauge	0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1044.34	34.320	BN 930		0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1044.605	34.055	BN 920		0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1044.86	33.800	BN 910		0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1045.4	33.260	BN 900		0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1045.885	32.775	BN 890		0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1046.18	32.480	BN 880		0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1046.34	32.320	BN 870	Dutton Park Cemetery Gauge	0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1046.58	32.080	BN 860		0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1046.9	31.760	BN 850		0.070	0.0595	0.85	0.294	0.250	0.85
BRISBANE	1047.35	31.310	BN 840		0.070	0.0595	0.85	0.315	0.268	0.85
BRISBANE	1047.915	30.745	BN 830	Highgate Hill Gauge	0.050	0.0425	0.85	0.260	0.221	0.85
BRISBANE	1048.375	30.285	BN 820		0.050	0.0425	0.85	0.260	0.221	0.85
BRISBANE	1048.89	29.770	BN 810	St Lucia Ferry Gauge	0.050	0.0425	0.85	0.260	0.221	0.85
BRISBANE	1049.12	29.540	BN 800		0.050	0.0425	0.85	0.260	0.221	0.85
BRISBANE	1049.37	29.290	BN 790		0.050	0.0425	0.85	0.260	0.221	0.85
BRISBANE	1049.59	29.070	BN 780		0.045	0.0382	0.85	0.234	0.199	0.85
BRISBANE	1049.87	28.790	BN 770		0.045	0.0382	0.85	0.225	0.191	0.85
BRISBANE	1050.43	28.230	BN 760		0.030	0.0255	0.85	0.132	0.112	0.85
BRISBANE	1050.86	27.800	BN 750		0.030	0.0255	0.85	0.126	0.107	0.85
BRISBANE	1051.36	27.300	BN 740		0.030	0.0255	0.85	0.150	0.128	0.85
BRISBANE	1051.895	26.765	BN 730		0.030	0.0255	0.85	0.156	0.133	0.85
BRISBANE	1052.31	26.350	BN 720		0.030	0.0255	0.85	0.156	0.133	0.85
BRISBANE	1052.37	26.290	BN 710	Merivale Bridge						
BRISBANE	1052.39	26.270	BN 700		0.030	0.0255	0.85	0.156	0.133	0.85
BRISBANE	1052.595	26.065	BN 690		0.030	0.0255	0.85	0.156	0.133	0.85
BRISBANE	1052.607	26.053	BN 680	William Jolly Bridge						
BRISBANE	1052.64	26.020	BN 670		0.045	0.0382	0.85	0.234	0.199	0.85
BRISBANE	1052.865	25.795	BN 660		0.050	0.0425	0.85	0.360	0.306	0.85
BRISBANE	1053.32	25.340	BN 650		0.060	0.051	0.85	0.312	0.265	0.85
BRISBANE	1053.356	25.304	BN 640	Victoria Bridge						
BRISBANE	1053.385	25.275	BN630		0.060	0.051	0.85	0.312	0.265	0.85
BRISBANE	1053.9	24.760	BN 620	Montague Road Gauge	0.060	0.051	0.85	0.288	0.245	0.85
BRISBANE	1054.64	24.020	BN 610		0.060	0.051	0.85	0.276	0.235	0.85
BRISBANE	1054.66	24.000	BN 600	Captain Cook Bridge						
BRISBANE	1054.68	23.980	BN 590		0.060	0.051	0.85	0.270	0.230	0.85
BRISBANE	1054.97	23.690	BN 560		0.025	0.0212	0.85	0.113	0.096	0.85
BRISBANE	1055.28	23.380	BN 550		0.025	0.0212	0.85	0.105	0.089	0.85
BRISBANE	1055.42	23.240	BN 540		0.025	0.0212	0.85	0.105	0.089	0.85
BRISBANE	1055.96	22.700	BN 530	Port Office Gauge	0.025	0.0212	0.85	0.108	0.092	0.85
BRISBANE	1056.4	22.260	BN 520		0.025	0.0212	0.85	0.118	0.100	0.85
BRISBANE	1056.695	21.965	BN 510		0.025	0.0212	0.85	0.130	0.111	0.85
BRISBANE	1056.865	21.795	BN 500		0.040	0.034	0.85	0.208	0.177	0.85
BRISBANE	1056.92	21.740	BN 495	Story Bridge						
BRISBANE	1056.95	21.710	BN 490		0.040	0.034	0.85	0.208	0.177	0.85
BRISBANE	1057.09	21.570	BN 480		0.040	0.034	0.85	0.208	0.177	0.85
BRISBANE	1057.53	21.130	BN 470		0.040	0.034	0.85	0.208	0.177	0.85
BRISBANE	1058.04	20.620	BN 460		0.040	0.034	0.85	0.180	0.153	0.85

Table I-2 - Comparison of MIKE 11 & HEC-RAS Mannings n Roughness

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	MIKE 11 MANNINGS COEFFICIENT CHANNEL	HEC-RAS MANNINGS COEFFICIENT CHANNEL	RATIO CHANNEL	MIKE 11 MANNINGS COEFFICIENT BANKS	HEC-RAS MANNINGS COEFFICIENT BANKS	RATIO BANKS
BRISBANE	1058.23	20.430	BN 450		0.040	0.034	0.85	0.180	0.153	0.85
BRISBANE	1058.53	20.130	BN 440		0.040	0.034	0.85	0.176	0.150	0.85
BRISBANE	1058.735	19.925	BN 430		0.050	0.0425	0.85	0.225	0.191	0.85
BRISBANE	1059.035	19.625	BN 420		0.050	0.0425	0.85	0.250	0.213	0.85
BRISBANE	1059.54	19.120	BN 410		0.050	0.0425	0.85	0.220	0.187	0.85
BRISBANE	1059.99	18.670	BN 400		0.050	0.0425	0.85	0.215	0.183	0.85
BRISBANE	1060.345	18.315	BN 390		0.045	0.0382	0.85	0.203	0.173	0.85
BRISBANE	1060.535	18.125	BN 380		0.035	0.0297	0.85	0.175	0.149	0.85
BRISBANE	1061.015	17.645	BN 370		0.035	0.0297	0.85	0.182	0.155	0.85
BRISBANE	1061.53	17.130	BN 360		0.035	0.0297	0.85	0.182	0.155	0.85
BRISBANE	1062.02	16.640	BN 350		0.035	0.0297	0.85	0.182	0.155	0.85
BRISBANE	1062.535	16.125	BN 340		0.035	0.0297	0.85	0.182	0.155	0.85
BRISBANE	1062.94	15.720	BN 330		0.035	0.0297	0.85	0.182	0.155	0.85
BRISBANE	1063.31	15.350	BN 320		0.050	0.0425	0.85	0.260	0.221	0.85
BRISBANE	1063.645	15.015	BN 310	Cresent Road Gauge	0.031	0.0264	0.85	0.161	0.137	0.85
BRISBANE	1064	14.660	BN 300		0.031	0.0264	0.85	0.161	0.137	0.85
BRISBANE	1064.49	14.170	BN 290		0.031	0.0264	0.85	0.161	0.137	0.85
BRISBANE	1065.01	13.650	BN 280		0.031	0.0264	0.85	0.143	0.122	0.85
BRISBANE	1065.503	13.157	BN 270		0.031	0.0264	0.85	0.105	0.089	0.85
BRISBANE	1065.99	12.670	BN 260	Cairncross Dock Gauge	0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1066.505	12.155	BN 250		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1067.02	11.640	BN 240		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1067.485	11.175	BN 230		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1067.965	10.695	BN 220		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1068.66	10.000	BN 210		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1069.045	9.615	BN 200		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1069.535	9.125	BN 190	Bulimba Power House Gauge	0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1070.025	8.635	BN 180		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1070.53	8.130	BN 170		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1071.04	7.620	BN 160		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1071.52	7.140	BN 150		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1072.015	6.645	BN 140		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1072.515	6.145	BN 130		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1072.995	5.665	BN 120		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1073.485	5.175	BN 110		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1074	4.660	BN 100		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1074.46	4.200	BN 90		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1074.985	3.675	BN 80		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1075.48	3.180	BN 70		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1076	2.660	BN 60		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1076.495	2.165	BN 50		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1077.01	1.650	BN 40		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1077.51	1.150	BN 30		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1078.04	0.620	BN 20		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1078.525	0.135	BN 10		0.031	0.0264	0.85	0.104	0.088	0.85
BRISBANE	1078.66	0.000	-	Western Inner Bar Gauge	0.031	0.026	0.85	0.104	0.088	0.85

Table I-3 - HEC-RAS Predicted Velocities

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI FLOOD AVERAGE VELOCITY m/s	CHANNEL VELOCITY m/s	LEFT BANK VELOCITY m/s	RIGHT BANK VELOCITY m/s	BANK FULL: BANK FULL FLOW m^3/s	AVERAGE VELOCITY m/s	CHANNEL VELOCITY m/s	LEFT BANK VELOCITY m/s	RIGHT BANK VELOCITY m/s
BRISBANE	1000	78.66	BN 2020		1.65	2.27	0.44	0.54	6000	1.47	1.87	0.41	0.42
BRISBANE	1000.285	78.375	BN 2010		1.96	2.79	0.71	0.76	6000	1.80	2.38	0.58	0.57
BRISBANE	1000.775	77.885	BN 2000		2.18	2.93	0.78	0.75	750	0.83	0.87	0.21	0.19
BRISBANE	1001.315	77.345	BN 1990		1.59	2.40	0.88	0.53	3500	1.22	1.69	0.55	0.35
BRISBANE	1001.865	76.795	BN 1980		2.58	3.76	0.73	0.68	6000	2.38	3.13	0.65	0.63
BRISBANE	1002.35	76.310	BN 1970		2.36	3.20	0.96	1.10	2000	1.62	1.77	0.63	0.51
BRISBANE	1002.785	75.875	BN 1960		1.85	2.52	0.87	0.86	750	0.81	0.84	0.26	0.08
BRISBANE	1003.275	75.385	BN 1950		2.32	2.98	0.84	0.84	3000	1.74	1.89	0.35	0.63
BRISBANE	1003.775	74.885	BN 1940		2.13	3.11	1.02	0.78	1500	1.15	1.38	0.35	0.42
BRISBANE	1004.3	74.360	BN 1930		2.41	3.64	0.90	0.94	750	0.96	1.03	0.25	0.16
BRISBANE	1004.81	73.850	BN 1920		1.70	2.17	0.58	0.60	3500	1.40	1.54	0.39	0.25
BRISBANE	1005.325	73.335	BN 1910		1.47	2.44	0.72	0.59	2000	1.15	1.47	0.39	0.17
BRISBANE	1005.87	72.790	BN 1900		1.88	3.01	0.75	0.66	750	0.93	1.02	0.18	0.18
BRISBANE	1006.3	72.360	BN 1890	Moggill Gauge	1.95	2.49	0.60	0.54	750	0.63	0.65	0.08	0.09
BRISBANE	1006.91	71.750	BN 1880		1.55	2.38	0.49	0.56	2500	1.19	1.34	0.19	0.31
BRISBANE	1007.41	71.250	BN 1870		1.22	2.09	0.55	0.38	1000	0.81	0.85	0.15	0.16
BRISBANE	1007.92	70.740	BN 1860		1.83	2.95	0.50	0.42	2000	1.42	1.51	0.19	0.21
BRISBANE	1008.445	70.215	BN 1850		1.99	2.69	0.41	0.38	2500	1.18	1.32	0.19	0.18
BRISBANE	1008.925	69.735	BN 1840		1.92	2.49	0.39	0.37	5000	1.59	1.84	0.29	0.29
BRISBANE	1009.4	69.260	BN 1830		1.71	2.63	0.36	0.35	5000	1.57	1.94	0.29	0.29
BRISBANE	1009.72	68.940	BN 1820		1.43	2.32	0.27	0.32	3000	1.27	1.38	0.18	0.17
BRISBANE	1010.49	68.170	BN 1810		2.34	3.06	0.41	0.44	2000	1.27	1.35	0.14	0.18
BRISBANE	1010.725	67.935	BN 1800		2.17	2.89	0.30	0.36	5000	1.74	2.03	0.29	0.27
BRISBANE	1010.98	67.680	BN 1790		2.12	2.84	0.36	0.45	3000	1.35	1.53	0.22	0.23
BRISBANE	1011.51	67.150	BN 1780		1.53	2.44	0.36	0.46	1000	0.68	0.73	0.08	0.08
BRISBANE	1011.98	66.680	BN 1770		1.27	2.24	0.38	0.27	5000	1.19	1.76	0.21	0.21
BRISBANE	1012.475	66.185	BN 1760		1.16	2.27	0.30	0.28	3000	1.07	1.39	0.17	0.20
BRISBANE	1012.935	65.725	BN 1750		1.30	2.22	0.38	0.21	1000	0.71	0.72	0.06	0.04
BRISBANE	1013.445	65.215	BN 1740		1.24	2.14	0.25	0.21	1500	0.87	0.88	0.08	0.07
BRISBANE	1013.91	64.750	BN 1730		0.87	2.05	0.16	0.47	7000	0.87	1.86	0.12	0.41
BRISBANE	1014.31	64.350	BN 1720		0.85	2.12	0.26	0.45	7000	0.85	1.94	0.18	0.40
BRISBANE	1014.61	64.050	BN 1710	Goodna Hospital Gauge	0.76	1.38	0.26	0.38	1000	0.60	0.80	0.11	0.09
BRISBANE	1015.09	63.570	BN 1700		1.61	2.05	0.36	0.25	1500	0.64	0.66	0.08	0.05
BRISBANE	1015.56	63.100	BN 1690		1.99	2.48	0.41	0.51	5000	1.58	1.81	0.27	0.29
BRISBANE	1016.14	62.520	BN 1680		1.74	2.29	0.40	0.23	3000	1.15	1.26	0.18	0.18
BRISBANE	1016.64	62.020	BN 1670		1.37	1.69	0.25	0.16	3500	1.19	1.24	0.16	0.24
BRISBANE	1017.13	61.530	BN 1660		1.42	2.74	0.43	0.40	4000	1.34	1.98	0.32	0.28
BRISBANE	1017.61	61.050	BN 1650		1.17	2.46	0.31	0.22	3500	1.43	1.66	0.18	0.18
BRISBANE	1017.92	60.740	BN 1640		1.30	2.66	0.34	0.33	750	0.63	0.64	0.04	0.04
BRISBANE	1018.2	60.460	BN 1630		1.44	2.23	0.24	0.33	2000	0.99	1.02	0.08	0.10
BRISBANE	1018.725	59.935	BN 1620		2.08	2.89	0.25	0.47	3000	1.38	1.54	0.19	0.17
BRISBANE	1019.095	59.565	BN 1610		1.69	2.51	0.27	0.27	5000	1.66	1.86	0.21	0.23
BRISBANE	1019.49	59.170	BN 1600		1.40	2.19	0.40	0.28	1500	0.76	0.85	0.10	0.04
BRISBANE	1019.865	58.795	BN 1590		2.17	2.81	0.43	0.40	1000	0.67	0.70	0.07	0.07
BRISBANE	1020.115	58.545	BN 1580		1.09	1.97	0.36	0.28	1000	0.55	0.63	0.07	0.08
BRISBANE	1020.525	58.135	BN 1570		1.01	1.32	0.32	0.19	1000	0.43	0.46	0.08	0.07
BRISBANE	1020.83	57.830	BN 1560		1.52	2.01	0.39	0.38	2000	0.76	0.83	0.15	0.12
BRISBANE	1021.095	57.565	BN 1550		2.14	2.65	0.53	0.48	1500	0.91	0.94	0.14	0.09
BRISBANE	1021.539	57.121	BN 1540		1.87	2.45	0.60	0.45	5000	1.52	1.81	0.41	0.38
BRISBANE	1021.715	56.945	BN 1530		1.62	2.07	0.46	0.31	5000	1.36	1.57	0.36	0.24
BRISBANE	1021.895	56.765	BN 1520		1.64	2.12	0.42	0.46	750	0.45	0.46	0.05	0.06
BRISBANE	1022.105	56.555	BN 1510		2.01	2.35	0.41	0.43	4000	1.38	1.47	0.21	0.22
BRISBANE	1022.575	56.085	BN 1500		1.81	2.21	0.42	0.61	5000	1.49	1.66	0.37	0.50
BRISBANE	1023.04	55.620	BN 1490		2.23	3.11	0.56	0.68	5000	1.99	2.27	0.33	0.48
BRISBANE	1023.57	55.090	BN 1480		2.44	2.84	0.46	0.47	3500	1.60	1.69	0.28	0.23
BRISBANE	1024.08	54.580	BN 1470		2.16	2.78	0.47	0.47	7000	2.00	2.38	0.49	0.40
BRISBANE	1024.563	54.097	BN 1460		1.97	2.35	0.44	0.38	4000	1.51	1.61	0.30	0.28
BRISBANE	1025.07	53.590	BN 1450		1.76	2.20	0.27	0.42	5000	1.49	1.64	0.32	0.29
BRISBANE	1025.36	53.300	BN 1440		2.00	2.66	0.49	0.41	3500	1.49	1.61	0.26	0.25
BRISBANE	1025.59	53.070	BN 1430		2.43	3.01	0.74	0.50	4000	1.83	1.96	0.39	0.35
BRISBANE	1026.17	52.490	BN 1420		2.27	2.65	0.52	0.47	5000	1.77	1.92	0.36	0.30
BRISBANE	1026.68	51.980	BN 1410	Mt Ommaney Gauge	1.93	2.59	0.40	0.37	750	0.50	0.51	0.05	0.05

Table I-3 - HEC-RAS Predicted Velocities

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI FLOOD AVERAGE VELOCITY m/s	CHANNEL VELOCITY m/s	LEFT BANK VELOCITY m/s	RIGHT BANK VELOCITY m/s	BANK FULL BANK FULL FLOW m^3/s	AVERAGE VELOCITY m/s	CHANNEL VELOCITY m/s	LEFT BANK VELOCITY m/s	RIGHT BANK VELOCITY m/s
BRISBANE	1049.59	29.070	BN 780		2.07	2.59	0.13	0.15	2000	0.83	0.83	0.03	0.03
BRISBANE	1049.87	28.790	BN 770		2.35	2.69	0.15	0.22	3000	1.27	1.28	0.06	0.07
BRISBANE	1050.43	28.230	BN 760		1.94	2.42	0.17	0.22	2000	0.88	0.89	0.04	0.07
BRISBANE	1050.86	27.800	BN 750		2.28	2.70	0.16	0.26	2000	0.92	0.93	0.06	0.05
BRISBANE	1051.36	27.300	BN 740		1.97	2.49	0.12	0.20	3000	1.11	1.14	0.06	0.04
BRISBANE	1051.895	26.765	BN 730		2.27	2.96	0.18	0.18	3000	1.45	1.48	0.08	0.06
BRISBANE	1052.31	26.350	BN 720		2.57	2.76	0.28	0.22	3000	1.36	1.38	0.08	0.06
BRISBANE	1052.37	26.290	BN 710	Merivale Bridge	Bridge				2500				
BRISBANE	1052.39	26.270	BN 700		2.63	2.76	0.33	0.17	2500	1.16	1.18	0.07	0.06
BRISBANE	1052.595	26.065	BN 690		2.73	2.89	0.20	0.15	4000	1.66	1.68	0.10	0.07
BRISBANE	1052.607	26.053	BN 680	William Jolly Bridge	Bridge				4000				
BRISBANE	1052.64	26.020	BN 670		2.50	2.64	0.16	0.18	1500	0.62	0.62	0.03	0.01
BRISBANE	1052.865	25.795	BN 660		2.57	2.81	0.08	0.10	4000	1.53	1.53	0.03	0.04
BRISBANE	1053.32	25.340	BN 650		2.65	2.67	0.31	0.19	1500	0.72	0.72	0.05	0.03
BRISBANE	1053.356	25.304	BN 640	Victoria Bridge	Bridge				1500				
BRISBANE	1053.385	25.275	BN630		2.58	2.67	0.26	0.20	3000	1.32	1.33	0.09	0.05
BRISBANE	1053.9	24.760	BN 620	Montague Road Gauge	2.46	2.72	0.13	0.21	3500	1.42	1.44	0.04	0.11
BRISBANE	1054.64	24.020	BN 610		1.61	1.68	0.11	0.21	3000	0.75	0.77	0.04	0.06
BRISBANE	1054.66	24.000	BN 600	Captain Cook Bridge	Bridge				3000				
BRISBANE	1054.68	23.980	BN 590		1.73	1.89		0.19	3000	0.81	0.84		0.04
BRISBANE	1054.97	23.690	BN 560		2.44	2.66	0.18	0.23	3000	1.14	1.16	0.06	0.07
BRISBANE	1055.28	23.380	BN 550		2.41	2.56	0.22	0.20	4000	1.40	1.42	0.08	0.09
BRISBANE	1055.42	23.240	BN 540		2.44	2.54	0.19	0.24	5000	1.69	1.71	0.10	0.13
BRISBANE	1055.96	22.700	BN 530	Port Office Gauge	2.16	2.27	0.20	0.07	5000	1.52	1.54	0.13	0.02
BRISBANE	1056.4	22.260	BN 520		2.73	2.87	0.18	0.17	5000	1.91	1.95	0.15	0.03
BRISBANE	1056.695	21.965	BN 510		2.57	2.73	0.13	0.13	3500	1.33	1.35	0.08	0.00
BRISBANE	1056.865	21.795	BN 500		2.78	2.84	0.25	0.08	1500	0.62	0.62	0.02	0.03
BRISBANE	1056.92	21.740	BN 495	Story Bridge	Bridge				1500				
BRISBANE	1056.95	21.710	BN 490		2.82	2.86		0.12	7000	2.37	2.38		0.04
BRISBANE	1057.09	21.570	BN 480		2.02	2.14	0.13	0.12	7000	1.70	1.76	0.11	0.07
BRISBANE	1057.53	21.130	BN 470		2.36	2.40	0.11	0.12	5000	1.55	1.55	0.04	0.06
BRISBANE	1058.04	20.620	BN 460		2.78	2.85	0.22	0.18	6000	2.13	2.16	0.15	0.17
BRISBANE	1058.23	20.430	BN 450		2.77	2.88	0.26	0.17	5000	1.87	1.89	0.14	0.07
BRISBANE	1058.53	20.130	BN 440		2.86	2.95	0.15	0.12	4000	1.54	1.55	0.08	0.08
BRISBANE	1058.735	19.925	BN 430		2.52	2.69	0.19	0.17	3000	1.08	1.10	0.06	0.07
BRISBANE	1059.035	19.625	BN 420		3.01	3.09	0.11	0.14	3500	1.41	1.42	0.04	0.04
BRISBANE	1059.54	19.120	BN 410		2.25	2.32	0.09	0.16	6000	1.70	1.72	0.05	0.14
BRISBANE	1059.99	18.670	BN 400		2.26	2.35	0.12	0.17	3500	1.12	1.13	0.08	0.07
BRISBANE	1060.345	18.315	BN 390		2.71	2.73	0.16	0.15	13000	3.45	3.50	0.24	0.21
BRISBANE	1060.535	18.125	BN 380		2.98	3.01	0.15	0.17	11000	3.41	3.46	0.19	0.13
BRISBANE	1061.015	17.645	BN 370		2.59	2.66	0.13	0.10	5000	1.67	1.68	0.07	0.05
BRISBANE	1061.53	17.130	BN 360		2.85	2.89	0.19		5000	1.78	1.79	0.09	0.02
BRISBANE	1062.02	16.640	BN 350		2.55	2.62	0.12	0.16	9000	2.53	2.60	0.14	0.16
BRISBANE	1062.535	16.125	BN 340		2.15	2.23	0.17	0.16	8000	1.97	2.04	0.16	0.16
BRISBANE	1062.94	15.720	BN 330		1.77	1.80	0.12	0.06	8000	1.63	1.65	0.11	0.08
BRISBANE	1063.31	15.350	BN 320		1.97	1.99	0.09		6000	1.44	1.44	0.07	0.14
BRISBANE	1063.645	15.015	BN 310	Cresent Road Gauge	2.75	2.91	0.21	0.19	9000	2.73	2.89	0.21	0.18
BRISBANE	1064	14.660	BN 300		2.55	2.69	0.11	0.13	6000	1.86	1.91	0.12	0.08
BRISBANE	1064.49	14.170	BN 290		2.61	2.76	0.07	0.14	3500	1.19	1.20	0.06	0.05
BRISBANE	1065.01	13.650	BN 280		2.11	2.18	0.06	0.15	7000	1.75	1.76	0.08	0.12
BRISBANE	1065.503	13.157	BN 270		1.92	1.96	0.08		6000	1.38	1.39	0.09	0.08
BRISBANE	1065.99	12.670	BN 260	Cairncross Dock Gauge	1.67	1.67			14000	2.27	2.30		0.10
BRISBANE	1066.505	12.155	BN 250		1.80	1.82		0.07	14000	2.14	2.49		0.15
BRISBANE	1067.02	11.640	BN 240		1.64	1.74	0.18	0.11	13000	2.00	2.27	0.30	0.16
BRISBANE	1067.485	11.175	BN 230		1.89	2.06	0.21	0.12	8000	1.75	1.87	0.17	0.13
BRISBANE	1067.965	10.695	BN 220		2.14	2.23	0.13	0.13	6000	1.55	1.58	0.08	0.14
BRISBANE	1068.66	10.000	BN 210		2.37	2.41	0.21	0.24	9000	2.35	2.39	0.20	0.24
BRISBANE	1069.045	9.615	BN 200		2.34	2.39		0.20	7000	1.89	1.92		0.18
BRISBANE	1069.535	9.125	BN 190	Bulimba Power House Gauge	2.16	2.21		0.14	8000	1.95	1.99		0.18
BRISBANE	1070.025	8.635	BN 180		2.06	2.08	0.06	0.21	19000	3.38	3.60	0.14	0.18
BRISBANE	1070.53	8.130	BN 170		2.11	2.13	0.14	0.11	5000	1.24	1.25	0.08	0.05
BRISBANE	1071.04	7.620	BN 160		2.05	2.09	0.18	0.13	8000	1.84	1.87	0.15	0.13

Table I-3 - HEC-RAS Predicted Velocities

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI FLOOD				BANK FULL				
					AVERAGE VELOCITY m/s	CHANNEL VELOCITY m/s	LEFT BANK VELOCITY m/s	RIGHT BANK VELOCITY m/s	BANK FULL FLOW m^3/s	AVERAGE VELOCITY m/s	CHANNEL VELOCITY m/s	LEFT BANK VELOCITY m/s	RIGHT BANK VELOCITY m/s
BRISBANE	1071.52	7.140	BN 150		1.53	1.55	0.14	0.06	11000	1.79	1.83	0.16	0.08
BRISBANE	1072.015	6.645	BN 140		1.92	1.92		0.07	17000	3.06	3.12		0.11
BRISBANE	1072.515	6.145	BN 130		1.86	1.89	0.13	0.12	750	0.16	0.17	0.01	0.01
BRISBANE	1072.995	5.665	BN 120		1.76	1.77	0.12	0.12	14000	2.54	2.55	0.20	0.18
BRISBANE	1073.485	5.175	BN 110		1.95	1.97	0.14	0.19	14000	2.81	2.85	0.22	0.12
BRISBANE	1074	4.660	BN 100		1.91	1.91	0.13	0.16	13000	2.60	2.62	0.20	0.22
BRISBANE	1074.46	4.200	BN 90		1.89	1.89	0.13	0.13	17000	3.18	3.24	0.27	0.12
BRISBANE	1074.985	3.675	BN 80		2.11	2.12	0.15	0.15	15000	3.31	3.33	0.26	0.24
BRISBANE	1075.48	3.180	BN 70		1.75	1.85	0.12	0.18	12000	2.25	2.39	0.16	0.25
BRISBANE	1076	2.660	BN 60		1.22	1.29	0.09	0.14	26000	2.88	3.11	0.11	0.42
BRISBANE	1076.495	2.165	BN 50		1.67	1.68		0.13	33000	4.95	4.96		0.22
BRISBANE	1077.01	1.650	BN 40		1.17	1.26	0.08	0.14	9000	1.16	1.24	0.08	0.14
BRISBANE	1077.51	1.150	BN 30		0.89	0.89	0.04	0.05	26000	2.36	2.38	0.15	0.15
BRISBANE	1078.04	0.620	BN 20		0.94	0.95	0.05	0.04	19000	1.92	1.95	0.10	0.10
BRISBANE	1078.525	0.135	BN 10		1.43	1.54	0.31	0.07	-	-	-	-	-
BRISBANE	1078.66	0.000	-	Western Inner Bar Gauge					-	-	-	-	-

Table I-4 - HEC-RAS Predicted Conveyances

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI TOTAL CONVEYANCE (m³/s)	CHANNEL CONVEYANCE (m³/s)	LEFT CONVEYANCE (m³/s)	RIGHT CONVEYANCE (m³/s)	% CHANNEL CONVEYANCE	% LEFT CONVEYANCE	% RIGHT CONVEYANCE	20 YEAR ARI TOTAL CONVEYANCE (m³/s)	CHANNEL CONVEYANCE (m³/s)	LEFT CONVEYANCE (m³/s)	RIGHT CONVEYANCE (m³/s)	% CHANNEL CONVEYANCE	% LEFT CONVEYANCE	% RIGHT CONVEYANCE
BRISBANE	1000	78.66	BN 2020		572181	515467	35924	20791	90.1	6.3	3.6	270084	253823	11100	5161	94.0	4.1	1.9
BRISBANE	1000.285	78.375	BN 2010		455798	388138	43063	24598	85.2	9.4	5.4	202694	186709	10941	5043	92.1	5.4	2.5
BRISBANE	1000.775	77.885	BN 2000		469461	411860	39718	17884	87.7	8.5	3.8	217749	201853	10716	5180	92.7	4.9	2.4
BRISBANE	1001.315	77.345	BN 1990		554485	412732	121822	19931	74.4	22.0	3.6	233868	190083	40787	2997	81.3	17.4	1.3
BRISBANE	1001.865	76.795	BN 1980		357587	319736	23561	14290	89.4	6.6	4.0	164502	154529	5846	4127	93.9	3.6	2.5
BRISBANE	1002.35	76.310	BN 1970		444458	368989	34059	41410	83.0	7.7	9.3	184104	170651	6416	7037	92.7	3.5	3.8
BRISBANE	1002.785	75.875	BN 1960		571203	463604	46654	60945	81.2	8.2	10.7	245720	217392	11480	16848	88.5	4.7	6.9
BRISBANE	1003.275	75.385	BN 1950		406807	361847	9137	35824	88.9	2.2	8.8	173581	165191	992	7398	95.2	0.6	4.3
BRISBANE	1003.775	74.885	BN 1940		405133	330959	37474	36700	81.7	9.2	9.1	180955	156906	12572	11477	86.7	6.9	6.3
BRISBANE	1004.3	74.360	BN 1930		346986	286115	16162	44709	82.5	4.7	12.9	149219	137998	4638	6582	92.5	3.1	4.4
BRISBANE	1004.81	73.850	BN 1920		544699	488061	15284	41354	89.6	2.8	7.6	214624	208719	3134	2770	97.2	1.5	1.3
BRISBANE	1005.325	73.335	BN 1910		526655	397545	78527	50583	75.5	14.9	9.6	197653	170400	21596	5658	86.2	10.9	2.9
BRISBANE	1005.87	72.790	BN 1900		399670	322554	64285	12831	80.7	16.1	3.2	154520	139187	13891	1442	90.1	9.0	0.9
BRISBANE	1006.3	72.360	BN 1890	Moggill Gauge	504765	461286	31034	12445	91.4	6.1	2.5	222266	213474	5849	2943	96.0	2.6	1.3
BRISBANE	1006.91	71.750	BN 1880		540594	463090	59892	17612	85.7	11.1	3.3	222499	211711	5668	5121	95.2	2.5	2.3
BRISBANE	1007.41	71.250	BN 1870		893635	695394	149714	48527	77.8	16.8	5.4	334569	298088	25109	11372	89.1	7.5	3.4
BRISBANE	1007.92	70.740	BN 1860		449763	402046	11866	35851	89.4	2.6	8.0	179494	174897	1353	3245	97.4	0.8	1.8
BRISBANE	1008.445	70.215	BN 1850		735885	690763	19426	25696	93.9	2.6	3.5	346454	336970	4477	5007	97.3	1.3	1.4
BRISBANE	1008.925	69.735	BN 1840		755176	716056	15060	24059	94.8	2.0	3.2	324257	316560	3445	4253	97.6	1.1	1.3
BRISBANE	1009.4	69.260	BN 1830		740203	678317	18305	43581	91.6	2.5	5.9	333301	322307	3982	7012	96.7	1.2	2.1
BRISBANE	1009.72	68.940	BN 1820		811928	734485	21606	55838	90.5	2.7	6.9	344150	338932	2296	2922	98.5	0.7	0.8
BRISBANE	1010.49	68.170	BN 1810		627096	596180	19281	11636	95.1	3.1	1.9	286312	281642	2190	2479	98.4	0.8	0.9
BRISBANE	1010.725	67.935	BN 1800		686738	659438	20898	6402	96.0	3.0	0.9	338551	331315	5276	1960	97.9	1.6	0.6
BRISBANE	1010.98	67.680	BN 1790		691381	653989	25029	12364	94.6	3.6	1.8	329012	320743	4701	3569	97.5	1.4	1.1
BRISBANE	1011.51	67.150	BN 1780		788892	697499	53176	38217	88.4	6.7	4.8	343526	329570	5849	8107	95.9	1.7	2.4
BRISBANE	1011.98	66.680	BN 1770		768693	654241	101958	12494	85.1	13.3	1.6	312344	298728	12369	1247	95.6	4.0	0.4
BRISBANE	1012.475	66.185	BN 1760		754567	646168	99809	8590	85.6	13.2	1.1	310805	294531	14330	1943	94.8	4.6	0.6
BRISBANE	1012.935	65.725	BN 1750		768103	668072	87473	12558	87.0	11.4	1.6	309654	303199	6111	344	97.9	2.0	0.1
BRISBANE	1013.445	65.215	BN 1740		787697	718233	41929	27536	91.2	5.3	3.5	328595	320733	7464	398	97.6	2.3	0.1
BRISBANE	1013.91	64.750	BN 1730		817126	535825	19691	261610	65.6	2.4	32.0	306305	235914	390	70001	77.0	0.1	22.9
BRISBANE	1014.31	64.350	BN 1720		821620	557683	68947	194990	67.9	8.4	23.7	312025	260958	1452	49616	83.6	0.5	15.9
BRISBANE	1014.61	64.050	BN 1710	Goodna Hospital Gauge	953822	710061	77468	166294	74.4	8.1	17.4	264167	218637	8164	37366	82.8	3.1	14.1
BRISBANE	1015.09	63.570	BN 1700		908263	866952	17130	24181	95.5	1.9	2.7	458515	450969	3441	4104	98.4	0.8	0.9
BRISBANE	1015.56	63.100	BN 1690		700452	657474	6447	36532	93.9	0.9	5.2	321989	314905	939	6145	97.8	0.3	1.9
BRISBANE	1016.14	62.520	BN 1680		757002	718828	23969	14205	95.0	3.2	1.9	347313	341501	2698	3113	98.3	0.8	0.9
BRISBANE	1016.64	62.020	BN 1670		862178	831409	25118	5652	96.4	2.9	0.7	284849	282404	469	1977	99.1	0.2	0.7
BRISBANE	1017.13	61.530	BN 1660		466582	384915	77142	4525	82.5	16.5	1.0	181203	166154	14047	1002	91.7	7.8	0.6
BRISBANE	1017.61	61.050	BN 1650		540474	462210	62629	15635	85.5	11.6	2.9	216590	213055	2748	787	98.4	1.3	0.4
BRISBANE	1017.92	60.740	BN 1640		500821	425293	57671	17856	84.9	11.5	3.6	202914	198943	3231	741	98.0	1.6	0.4
BRISBANE	1018.2	60.460	BN 1630		558809	517162	25733	15914	92.5	4.6	2.8	243418	239633	2029	1757	98.4	0.8	0.7
BRISBANE	1018.725	59.935	BN 1620		443699	421059	10679	11960	94.9	2.4	2.7	212911	208765	1954	2193	98.1	0.9	1.0
BRISBANE	1019.095	59.565	BN 1610		495632	466711	21525	7396	94.2	4.3	1.5	222666	220016	1752	898	98.8	0.8	0.4
BRISBANE	1019.49	59.170	BN 1600		560051	500255	38254	21543	89.3	6.8	3.8	242823	231123	8507	3193	95.2	3.5	1.3
BRISBANE	1019.865	58.795	BN 1590		447235	424229	12418	10589	94.9	2.8	2.4	211850	207433	2370	2047	97.9	1.1	1.0
BRISBANE	1020.115	58.545	BN 1580		608911	513384	50467	45061	84.3	8.3	7.4	248374	227858	12290	8226	91.7	4.9	3.3
BRISBANE	1020.525	58.135	BN 1570		855178	786457	50010	18711	92.0	5.8	2.2	331757	313602	10222	7934	94.5	3.1	2.4
BRISBANE	1020.83	57.830	BN 1560		639617	590633	38754	10231	92.3	6.1	1.6	305029	295871	7282	1877	97.0	2.4	0.6
BRISBANE	1021.095	57.565	BN 1550		461838	435820	16841	9177	94.4	3.6	2.0	210823	206740	3066	1017	98.1	1.5	0.5
BRISBANE	1021.539	57.121	BN 1540		522323	478757	24519	19047	91.7	4.7	3.6	227962	218252	5534	4176	95.7	2.4	1.8
BRISBANE	1021.715	56.945	BN 1530		592915	550449	33390	9076	92.8	5.6	1.5	240722	232494	7547	681	96.6	3.1	0.3
BRISBANE	1021.895	56.765	BN 1520		606555	558474	9134	38948	92.1	1.5	6.4	265201	255830	1688	7684	96.5	0.6	2.9
BRISBANE	1022.105	56.555	BN 1510		556098	535869	6262	13968	96.4	1.1	2.5	270233	267706	755	1772	99.1	0.3	0.7
BRISBANE	1022.575	56.085	BN 1500		860388	801411	20169	38809	93.1	2.3	4.5	352180	339315	3330	9535	96.3	0.9	2.7
BRISBANE	1023.04	55.620	BN 1490		670547	609509	45412	15626	90.9	6.8	2.3	322828	315447	4001	3380	97.7	1.2	1.0
BRISBANE	1023.57	55.090	BN 1480		699396	677247	16656	5493	96.8	2.4	0.8	322411	319038	2590	783	99.0	0.8	0.2
BRISBANE	1024.08	54.580	BN 1470		696432	656190	34020	6222	94.2	4.9	0.9	308335	298860	8482	993	96.9	2.8	0.3
BRISBANE	1024.563	54.097	BN 1460		645857	618880	19938	7039	95.8	3.1	1.1	263298	260269	2122	908	98.8	0.8	0.3
BRISBANE	1025.07	53.590	BN 1450		708908	677975	15618	15315	95.6	2.2	2.2	300902	294880	3048	2974	98.0	1.0	1.0
BRISBANE	1025.36	53.300	BN 1440		614681	574135	18687	21859	93.4	3.0	3.6	277822	273368	2826	1628	98.4	1.0	0.6

Table I-3 - HEC-RAS Predicted Velocities

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI FLOOD AVERAGE VELOCITY m/s	CHANNEL VELOCITY m/s	LEFT BANK VELOCITY m/s	RIGHT BANK VELOCITY m/s	BANK FULL BANK FULL FLOW m^3/s	AVERAGE VELOCITY m/s	CHANNEL VELOCITY m/s	LEFT BANK VELOCITY m/s	RIGHT BANK VELOCITY m/s
BRISBANE	1026.9	51.760	BN 1400		2.07	2.85	0.42	0.56	1500	0.89	0.94	0.08	0.13
BRISBANE	1027.16	51.500	BN 1390		2.45	2.93	0.43	0.38	7000	2.19	2.47	0.44	0.30
BRISBANE	1027.68	50.980	BN 1380		1.77	2.25	0.40	0.50	4000	1.32	1.51	0.32	0.31
BRISBANE	1028.18	50.480	BN 1370		1.54	2.11	0.30	0.53	1000	0.58	0.61	0.08	0.08
BRISBANE	1028.68	49.980	BN 1360		1.97	2.49	0.36	0.36	2500	1.29	1.31	0.14	0.14
BRISBANE	1028.72	49.940	BN1350	Centenary Bridge	Bridge				2500				
BRISBANE	1028.76	49.900	BN 1340		1.94	2.52	0.35	0.56	2000	1.14	1.18	0.17	0.16
BRISBANE	1029.2	49.460	BN 1330		1.90	2.88	0.46	0.42	3500	1.60	1.79	0.28	0.23
BRISBANE	1029.68	48.980	BN 1320		1.61	2.72	0.31	0.34	5000	1.63	1.99	0.30	0.25
BRISBANE	1030.22	48.440	BN 1310		1.17	2.30	0.28	0.28	1000	0.62	0.63	0.04	0.05
BRISBANE	1030.87	47.790	BN 1300		1.58	2.24	0.20	0.28	2000	1.04	1.07	0.11	0.09
BRISBANE	1031.26	47.400	BN 1290		2.09	2.67	0.29	0.24	2500	1.29	1.32	0.09	0.10
BRISBANE	1031.7	46.960	BN 1280	Darra Wharf Gauge	2.70	3.30	0.37	0.27	1000	0.71	0.72	0.05	0.04
BRISBANE	1031.995	46.665	BN 1270		1.81	2.46	0.28	0.20	1000	0.58	0.60	0.05	0.04
BRISBANE	1032.23	46.430	BN 1260		1.73	2.37	0.31	0.20	1500	0.75	0.80	0.06	0.06
BRISBANE	1032.585	46.075	BN 1250		2.28	2.73	0.22	0.17	1000	0.56	0.56	0.02	0.03
BRISBANE	1033.08	45.580	BN 1240		1.86	2.58	0.22	0.21	5000	1.68	1.81	0.14	0.16
BRISBANE	1033.37	45.290	BN 1230		2.10	2.63	0.23	0.22	1000	0.59	0.60	0.02	0.04
BRISBANE	1033.9	44.760	BN 1220		2.34	2.87	0.28	0.30	3500	1.54	1.62	0.12	0.14
BRISBANE	1034.37	44.290	BN 1210		2.44	2.89	0.34	0.26	5000	1.85	2.01	0.22	0.20
BRISBANE	1034.89	43.770	BN 1200	Sherwood Gauge	1.88	2.69	0.30	0.24	5000	1.66	1.89	0.17	0.17
BRISBANE	1035.414	43.246	BN 1190		2.31	2.72	0.31	0.29	6000	1.92	2.13	0.27	0.21
BRISBANE	1035.9	42.760	BN 1180		2.41	3.08	0.29	0.38	5000	1.93	2.14	0.21	0.24
BRISBANE	1036.46	42.200	BN 1170		2.41	2.85	0.23	0.34	3000	1.41	1.45	0.10	0.14
BRISBANE	1036.77	41.890	BN 1160		1.97	2.49	0.26	0.30	8000	1.84	2.25	0.28	0.28
BRISBANE	1036.915	41.745	BN 1150		2.40	2.78	0.23	0.29	2500	1.16	1.18	0.06	0.08
BRISBANE	1037.09	41.570	BN 1140		2.70	3.12	0.36	0.29	1000	0.58	0.59	0.03	0.03
BRISBANE	1037.11	41.550	BN 1130	Indooroopilly Bridge	Bridge				1000				
BRISBANE	1037.175	41.485	BN 1120		2.71	3.04	0.40	0.30	2500	1.23	1.27	0.10	0.08
BRISBANE	1037.285	41.375	BN 1110	Clarence Road Gauge	2.54	2.77	0.37	0.33	1500	0.78	0.79	0.07	0.05
BRISBANE	1037.625	41.035	BN 1100		2.07	2.47	0.40	0.36	3000	1.19	1.28	0.15	0.14
BRISBANE	1038.085	40.575	BN 1090		1.31	2.08	0.17	0.26	1500	0.64	0.64	0.06	0.03
BRISBANE	1038.6	40.060	BN 1080		1.17	2.01	0.25	0.29	1500	0.77	0.78	0.06	0.02
BRISBANE	1039.1	39.560	BN 1070		1.03	2.01	0.25	0.29	5000	1.16	1.62	0.15	0.21
BRISBANE	1039.565	39.095	BN 1060	Oxley Creek Gauge	1.06	1.83	0.23	0.29	5000	1.14	1.47	0.11	0.18
BRISBANE	1040.09	38.570	BN 1050	King Authur Terrace Gauge	1.32	1.90	0.15	0.24	5000	1.10	1.34	0.10	0.10
BRISBANE	1040.49	38.170	BN 1040		1.70	2.61	0.25	0.30	5000	1.43	1.82	0.14	0.13
BRISBANE	1041.01	37.650	BN 1030		1.40	2.01	0.17	0.20	4000	1.17	1.25	0.07	0.08
BRISBANE	1041.23	37.430	BN 1020		1.24	2.00	0.19	0.18	3000	1.00	1.06	0.09	0.08
BRISBANE	1041.46	37.200	BN 1010	Tennyson Power House Gauge	1.65	2.14	0.27	0.20	3000	1.04	1.10	0.10	0.05
BRISBANE	1041.7	36.960	BN 1000		1.66	2.03	0.14	0.15	1500	0.51	0.51	0.02	0.02
BRISBANE	1041.96	36.700	BN 990		1.94	2.55	0.21	0.21	2000	0.89	0.90	0.05	0.05
BRISBANE	1042.235	36.425	BN 980		2.43	2.85	0.20	0.16	2000	0.94	0.95	0.05	0.03
BRISBANE	1042.515	36.145	BN 970	Yeronga Street Gauge	2.01	2.48	0.27	0.19	6000	1.68	1.86	0.18	0.13
BRISBANE	1042.91	35.750	BN 960		2.11	2.61	0.27	0.16	3000	1.27	1.31	0.11	0.10
BRISBANE	1043.725	34.935	BN 950		2.00	2.18	0.15	0.23	5000	1.51	1.56	0.12	0.14
BRISBANE	1044.06	34.600	BN 940	Sandy Creek Gauge	2.00	2.21	0.21	0.19	4000	1.25	1.30	0.11	0.08
BRISBANE	1044.34	34.320	BN 930		2.18	2.44	0.19	0.20	2000	0.84	0.85	0.06	0.04
BRISBANE	1044.605	34.055	BN 920		1.80	2.18	0.17	0.21	1500	0.60	0.61	0.04	0.04
BRISBANE	1044.86	33.800	BN 910		1.42	1.93	0.18	0.20	2500	0.87	0.88	0.07	0.07
BRISBANE	1045.4	33.260	BN 900		1.40	1.89	0.16	0.24	1500	0.57	0.58	0.04	0.04
BRISBANE	1045.885	32.775	BN 890		1.31	1.99	0.18	0.16	1500	0.60	0.62	0.04	0.04
BRISBANE	1046.18	32.480	BN 880		1.36	1.76	0.11	0.10	2500	0.68	0.69	0.04	0.03
BRISBANE	1046.34	32.320	BN 870	Dutton Park Cemetery Gauge	1.76	1.87	0.10	0.09	3000	0.82	0.83	0.04	0.03
BRISBANE	1046.58	32.080	BN 860		1.60	1.84	0.18	0.11	4000	1.06	1.09	0.09	0.06
BRISBANE	1046.9	31.760	BN 850		1.85	2.25	0.19	0.19	4000	1.39	1.42	0.10	0.12
BRISBANE	1047.35	31.310	BN 840		2.33	2.75	0.18	0.18	6000	2.07	2.15	0.12	0.13
BRISBANE	1047.915	30.745	BN 830	Highgate Hill Gauge	2.00	2.67	0.13	0.15	5000	1.71	1.79	0.10	0.06
BRISBANE	1048.375	30.285	BN 820		1.26	1.89	0.11	0.13	1500	0.51	0.51	0.02	0.02
BRISBANE	1048.89	29.770	BN 810	St Lucia Ferry Gauge	2.01	2.39	0.18	0.11	2000	0.95	0.96	0.06	0.05
BRISBANE	1049.12	29.540	BN 800		1.88	2.30	0.14	0.14	2000	0.80	0.81	0.04	0.04
BRISBANE	1049.37	29.290	BN 790		2.34	2.74	0.15	0.16	2500	1.10	1.11	0.06	0.04

Table I-4 - HEC-RAS Predicted Conveyances

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI TOTAL CONVEYANCE (m^3/s)	100 YEAR ARI CHANNEL CONVEYANCE (m^3/s)	100 YEAR ARI LEFT CONVEYANCE (m^3/s)	100 YEAR ARI RIGHT CONVEYANCE (m^3/s)	100 YEAR ARI % CHANNEL CONVEYANCE	100 YEAR ARI % LEFT CONVEYANCE	100 YEAR ARI % RIGHT CONVEYANCE	20 YEAR ARI TOTAL CONVEYANCE (m^3/s)	20 YEAR ARI CHANNEL CONVEYANCE (m^3/s)	20 YEAR ARI LEFT CONVEYANCE (m^3/s)	20 YEAR ARI RIGHT CONVEYANCE (m^3/s)	20 YEAR ARI % CHANNEL CONVEYANCE	20 YEAR ARI % LEFT CONVEYANCE	20 YEAR ARI % RIGHT CONVEYANCE
BRISBANE	1025.59	53.070	BN 1430		534096	502509	16438	15150	94.1	3.1	2.8	243042	239618	2136	1288	98.6	0.9	0.5
BRISBANE	1026.17	52.490	BN 1420		603147	580125	10124	12898	96.2	1.7	2.1	273264	269735	1970	1559	98.7	0.7	0.6
BRISBANE	1026.68	51.980	BN 1410	Mt Ommaney Gauge	617600	580004	31627	5968	93.9	5.1	1.0	277543	271816	5019	708	97.9	1.8	0.3
BRISBANE	1026.9	51.760	BN 1400		583010	540872	28929	13210	92.8	5.0	2.3	278512	271580	4203	2729	97.5	1.5	1.0
BRISBANE	1027.16	51.500	BN 1390		562209	543388	16645	2177	96.7	3.0	0.4	277066	273562	3267	236	98.7	1.2	0.1
BRISBANE	1027.68	50.980	BN 1380		1244963	1159168	36323	49472	93.1	2.9	4.0	525222	507354	8713	9155	96.6	1.7	1.7
BRISBANE	1028.18	50.480	BN 1370		1315831	1196068	42133	77631	90.9	3.2	5.9	537048	515977	6018	15053	96.1	1.1	2.8
BRISBANE	1028.68	49.980	BN 1360		1117645	1066603	46106	4936	95.4	4.1	0.4	465833	464263	1073	498	99.7	0.2	0.1
BRISBANE	1028.72	49.940	BN1350	Centenary Bridge	Bridge							Bridge						
BRISBANE	1028.76	49.900	BN 1340		940823	886758	33871	20193	94.3	3.6	2.1	387264	382316	2188	2761	98.7	0.6	0.7
BRISBANE	1029.2	49.460	BN 1330		868088	786563	51851	29674	90.6	6.0	3.4	383289	375322	6037	1930	97.9	1.6	0.5
BRISBANE	1029.68	48.980	BN 1320		1119674	1014903	57329	47442	90.6	5.1	4.2	530062	518847	6835	4380	97.9	1.3	0.8
BRISBANE	1030.22	48.440	BN 1310		1259074	1092284	136363	30428	86.8	10.8	2.4	521416	508113	8928	4374	97.4	1.7	0.8
BRISBANE	1030.87	47.790	BN 1300		1204430	1148975	40184	15272	95.4	3.3	1.3	481932	477740	1813	2380	99.1	0.4	0.5
BRISBANE	1031.26	47.400	BN 1290		634870	614754	14327	5790	96.8	2.3	0.9	283202	282171	579	452	99.6	0.2	0.2
BRISBANE	1031.7	46.960	BN 1280	Darra Wharf Gauge	354950	346986	3041	4924	97.8	0.9	1.4	176430	175253	435	742	99.3	0.2	0.4
BRISBANE	1031.995	46.665	BN 1270		460001	443031	7230	9740	96.3	1.6	2.1	207490	205185	1024	1282	98.9	0.5	0.6
BRISBANE	1032.23	46.430	BN 1260		555440	532132	11046	12263	95.8	2.0	2.2	255504	251530	2016	1958	98.4	0.8	0.8
BRISBANE	1032.585	46.075	BN 1250		441720	435663	892	5164	98.6	0.2	1.2	228701	227858	110	734	99.6	0.0	0.3
BRISBANE	1033.08	45.580	BN 1240		631484	609909	7829	13746	96.6	1.2	2.2	318819	317637	620	562	99.6	0.2	0.2
BRISBANE	1033.37	45.290	BN 1230		589070	575256	5278	8535	97.7	0.9	1.4	278324	276691	463	1170	99.4	0.2	0.4
BRISBANE	1033.9	44.760	BN 1220		606348	591179	9194	5975	97.5	1.5	1.0	299561	298232	478	851	99.6	0.2	0.3
BRISBANE	1034.37	44.290	BN 1210		600024	588048	4493	7482	98.0	0.7	1.2	300095	298163	967	965	99.4	0.3	0.3
BRISBANE	1034.89	43.770	BN 1200	Sherwood Gauge	507150	484222	6947	15981	95.5	1.4	3.2	256096	253753	1162	1181	99.1	0.5	0.5
BRISBANE	1035.414	43.246	BN 1190		506035	494654	9503	1878	97.8	1.9	0.4	239803	237948	1643	212	99.2	0.7	0.1
BRISBANE	1035.9	42.760	BN 1180		428992	415498	9291	4204	96.9	2.2	1.0	217902	216256	864	782	99.2	0.4	0.4
BRISBANE	1036.46	42.200	BN 1170		446921	438687	5043	3191	98.2	1.1	0.7	218914	218150	162	601	99.7	0.1	0.3
BRISBANE	1036.77	41.890	BN 1160		485034	468439	5766	10829	96.6	1.2	2.2	214626	212243	854	1529	98.9	0.4	0.7
BRISBANE	1036.915	41.745	BN 1150		478509	471145	5046	2317	98.5	1.1	0.5	252295	251867	249	180	99.8	0.1	0.1
BRISBANE	1037.09	41.570	BN 1140		429873	421457	7264	1153	98.0	1.7	0.3	232501	231773	608	119	99.7	0.3	0.1
BRISBANE	1037.11	41.550	BN 1130	Indooroopilly Bridge	Bridge							Bridge						
BRISBANE	1037.175	41.485	BN 1120		515979	507053	7194	1732	98.3	1.4	0.3	277412	276355	871	186	99.6	0.3	0.1
BRISBANE	1037.285	41.375	BN 1110	Clarence Road Gauge	549500	542132	5451	1918	98.7	1.0	0.3	283812	283022	578	211	99.7	0.2	0.1
BRISBANE	1037.625	41.035	BN 1100		593720	572209	17029	4483	96.4	2.9	0.8	285509	282308	2475	726	98.9	0.9	0.3
BRISBANE	1038.085	40.575	BN 1090		1311814	1239753	64049	8013	94.5	4.9	0.6	625041	623041	961	1039	99.7	0.2	0.2
BRISBANE	1038.6	40.060	BN 1080		1220366	1086038	62258	72070	89.0	5.1	5.9	466150	460354	414	5382	98.8	0.1	1.2
BRISBANE	1039.1	39.560	BN 1070		1240656	1053839	53216	133601	84.9	4.3	10.8	471928	459074	1206	11648	97.3	0.3	2.5
BRISBANE	1039.565	39.095	BN 1060	Oxley Creek Gauge	1359194	1184974	48087	126133	87.2	3.5	9.3	527176	516993	535	9648	98.1	0.1	1.8
BRISBANE	1040.09	38.570	BN 1050	King Authur Terrace Gauge	1483285	1391325	2132	89828	93.8	0.1	6.1	740731	735704	223	4804	99.3	0.0	0.6
BRISBANE	1040.49	38.170	BN 1040		1114236	1038776	3186	72274	93.2	0.3	6.5	582095	577546	353	4197	99.2	0.1	0.7
BRISBANE	1041.01	37.650	BN 1030		682433	651733	10486	20214	95.5	1.5	3.0	333385	332293	239	853	99.7	0.1	0.3
BRISBANE	1041.23	37.430	BN 1020		673236	630535	27366	15335	93.7	4.1	2.3	315679	313795	1064	821	99.4	0.3	0.3
BRISBANE	1041.46	37.200	BN 1010	Tennyson Power House Gauge	629956	607862	8447	13648	96.5	1.3	2.2	307077	305059	1509	510	99.3	0.5	0.2
BRISBANE	1041.7	36.960	BN 1000		762624	749205	1790	11629	98.2	0.2	1.5	444335	443647	199	489	99.8	0.0	0.1
BRISBANE	1041.96	36.700	BN 990		553664	537701	5246	10718	97.1	0.9	1.9	293475	292850	414	211	99.8	0.1	0.1
BRISBANE	1042.235	36.425	BN 980		506060	500748	1178	4135	99.0	0.2	0.8	285579	285174	125	280	99.9	0.0	0.1
BRISBANE	1042.515	36.145	BN 970	Yeronga Street Gauge	577911	564948	5083	7881	97.8	0.9	1.4	322682	321439	768	476	99.6	0.2	0.1
BRISBANE	1042.91	35.750	BN 960		500417	488412	10009	1995	97.6	2.0	0.4	249493	248737	500	256	99.7	0.2	0.1
BRISBANE	1043.725	34.935	BN 950		574763	570035	2590	2138	99.2	0.5	0.4	297360	296959	137	265	99.9	0.0	0.1
BRISBANE	1044.06	34.600	BN 940	Sandy Creek Gauge	531749	525826	4971	951	98.9	0.9	0.2	307127	306330	701	97	99.7	0.2	0.0
BRISBANE	1044.34	34.320	BN 930		460849	456230	3992	627	99.0	0.9	0.1	257032	256608	363	62	99.8	0.1	0.0
BRISBANE	1044.605	34.055	BN 920		505540	495677	4987	4877	98.0	1.0	1.0	271950	271277	250	422	99.8	0.1	0.2
BRISBANE	1044.86	33.800	BN 910		542911	522117	18389	2405	96.2	3.4	0.4	273568	272897	499	172	99.8	0.2	0.1
BRISBANE	1045.4	33.260	BN 900		536063	517630	14605	3828	96.6	2.7	0.7	261210	260159	441	609	99.6	0.2	0.2
BRISBANE	1045.885	32.775	BN 890		505967	480626	13986	11355	95.0	2.8	2.2	243150	242254	360	537	99.6	0.1	0.2
BRISBANE	1046.18	32.480	BN 880		690501	677545	8392	4563	98.1	1.2	0.7	419853	419344	409	100	99.9	0.1	0.0
BRISBANE	1046.34	32.320	BN 870	Dutton Park Cemetery Gauge	666021	663721	1097	1203	99.7	0.2	0.2	423747	423663	60	24	100.0	0.0	0.0
BRISBANE	1046.58	32.080	BN 860		612509	605306	3797	3407	98.8	0.6	0.6	350967	350371	514	82	99.8	0.1	0.0
BRISBANE	1046.9	31.760	BN 850		447127	437991	835	8301	98.0	0.2	1.9	227681	227386	87	208	99.9	0.0	0.1

Table I-4 - HEC-RAS Predicted Conveyances

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI							20 YEAR ARI						
					TOTAL CONVEYANCE (m^3/s)	CHANNEL CONVEYANCE (m^3/s)	LEFT CONVEYANCE (m^3/s)	RIGHT CONVEYANCE (m^3/s)	% CHANNEL CONVEYANCE	% LEFT CONVEYANCE	% RIGHT CONVEYANCE	TOTAL CONVEYANCE (m^3/s)	CHANNEL CONVEYANCE (m^3/s)	LEFT CONVEYANCE (m^3/s)	RIGHT CONVEYANCE (m^3/s)	% CHANNEL CONVEYANCE	% LEFT CONVEYANCE	% RIGHT CONVEYANCE
BRISBANE	1047.35	31.310	BN 840		394397	389382	303	4713	98.7	0.1	1.2	228129	227891	29	209	99.9	0.0	0.1
BRISBANE	1047.915	30.745	BN 830	Highgate Hill Gauge	610837	599179	1421	10237	98.1	0.2	1.7	381709	381360	137	211	99.9	0.0	0.1
BRISBANE	1048.375	30.285	BN 820		789939	761835	3780	24324	96.4	0.5	3.1	438190	437986	76	129	100.0	0.0	0.0
BRISBANE	1048.89	29.770	BN 810	St Lucia Ferry Gauge	522367	515928	4228	2212	98.8	0.8	0.4	241955	241703	188	65	99.9	0.1	0.0
BRISBANE	1049.12	29.540	BN 800		609455	600734	5165	3556	98.6	0.8	0.6	331682	331230	249	203	99.9	0.1	0.1
BRISBANE	1049.37	29.290	BN 790		529125	523865	4310	950	99.0	0.8	0.2	306492	306217	227	48	99.9	0.1	0.0
BRISBANE	1049.59	29.070	BN 780		658504	649525	6366	2613	98.6	1.0	0.4	399118	398760	209	149	99.9	0.1	0.0
BRISBANE	1049.87	28.790	BN 770		588985	583373	4040	1572	99.0	0.7	0.3	334946	334650	98	198	99.9	0.0	0.1
BRISBANE	1050.43	28.230	BN 760		910072	891530	13977	4564	98.0	1.5	0.5	469012	468440	187	385	99.9	0.0	0.1
BRISBANE	1050.86	27.800	BN 750		848181	837211	8508	2462	98.7	1.0	0.3	469174	468417	611	146	99.8	0.1	0.0
BRISBANE	1051.36	27.300	BN 740		1013430	998659	11696	3074	98.5	1.2	0.3	618240	617437	583	220	99.9	0.1	0.0
BRISBANE	1051.895	26.765	BN 730		736167	721833	11827	2508	98.1	1.6	0.3	389061	388457	448	157	99.8	0.1	0.0
BRISBANE	1052.31	26.350	BN 720		779061	773012	4525	1524	99.2	0.6	0.2	410680	410220	357	103	99.9	0.1	0.0
BRISBANE	1052.37	26.290	BN 710	Merivale Bridge	Bridge							Bridge						
BRISBANE	1052.39	26.270	BN 700		776336	772353	2789	1195	99.5	0.4	0.2	415844	415262	472	110	99.9	0.1	0.0
BRISBANE	1052.595	26.065	BN 690		801070	797902	2665	503	99.6	0.3	0.1	472383	472131	217	36	99.9	0.0	0.0
BRISBANE	1052.607	26.053	BN 680	William Jolly Bridge	Bridge							Bridge						
BRISBANE	1052.64	26.020	BN 670		599039	596645	1319	1076	99.6	0.2	0.2	380066	379791	199	76	99.9	0.1	0.0
BRISBANE	1052.865	25.795	BN 660		527861	526418	1334	109	99.7	0.3	0.0	352647	352628	8	12	100.0	0.0	0.0
BRISBANE	1053.32	25.340	BN 650		362628	362357	43	228	99.9	0.0	0.1	194123	194087	10	27	100.0	0.0	0.0
BRISBANE	1053.356	25.304	BN 640	Victoria Bridge	Bridge							Bridge						
BRISBANE	1053.385	25.275	BN630		356090	354925	818	347	99.7	0.2	0.1	186868	186753	95	20	99.9	0.1	0.0
BRISBANE	1053.9	24.760	BN 620	Montague Road Gauge	372589	369592	531	2466	99.2	0.1	0.7	217250	216909	4	338	99.8	0.0	0.2
BRISBANE	1054.64	24.020	BN 610		617361	614118	307	2935	99.5	0.0	0.5	370375	369714	31	630	99.8	0.0	0.2
BRISBANE	1054.66	24.000	BN 600	Captain Cook Bridge	Bridge							Bridge						
BRISBANE	1054.68	23.980	BN 590		579194	573121		6073	99.0	0.0	1.0	367689	366954		735	99.8	0.0	0.2
BRISBANE	1054.97	23.690	BN 560		972507	964703	1494	6311	99.2	0.2	0.6	629645	628799	142	705	99.9	0.0	0.1
BRISBANE	1055.28	23.380	BN 550		1011175	1005454	4394	1327	99.4	0.4	0.1	658020	657449	401	171	99.9	0.1	0.0
BRISBANE	1055.42	23.240	BN 540		961915	958317	1491	2107	99.6	0.2	0.2	596027	595638	67	322	99.9	0.0	0.1
BRISBANE	1055.96	22.700	BN 530	Port Office Gauge	1051042	1047576	2568	898	99.7	0.2	0.1	643082	642634	448		99.9	0.1	0.0
BRISBANE	1056.4	22.260	BN 520		801994	799122	2534	338	99.6	0.3	0.0	491617	491070	547		99.9	0.1	0.0
BRISBANE	1056.695	21.965	BN 510		917018	914137	2733	148	99.7	0.3	0.0	598695	598141	554	0	99.9	0.1	0.0
BRISBANE	1056.865	21.795	BN 500		572493	571311	1144	38	99.8	0.2	0.0	395262	395081	180		100.0	0.0	0.0
BRISBANE	1056.92	21.740	BN 495	Story Bridge	Bridge							Bridge						
BRISBANE	1056.95	21.710	BN 490		596689	596329		361	99.9	0.0	0.1	425017	425017			100.0	0.0	0.0
BRISBANE	1057.09	21.570	BN 480		852010	848957	1010	2044	99.6	0.1	0.2	623767	623217	244	307	99.9	0.0	0.0
BRISBANE	1057.53	21.130	BN 470		671781	671294	369	118	99.9	0.1	0.0	461470	461432	23	15	100.0	0.0	0.0
BRISBANE	1058.04	20.620	BN 460		507478	506652	338	488	99.8	0.1	0.1	330855	330696	50	109	100.0	0.0	0.0
BRISBANE	1058.23	20.430	BN 450		509576	508102	707	767	99.7	0.1	0.2	338824	338632	151	41	99.9	0.0	0.0
BRISBANE	1058.53	20.130	BN 440		547876	547129	283	464	99.9	0.1	0.1	394732	394643	48	40	100.0	0.0	0.0
BRISBANE	1058.735	19.925	BN 430		476336	474166	542	1628	99.5	0.1	0.3	340108	339642	76	390	99.9	0.0	0.1
BRISBANE	1059.035	19.625	BN 420		421711	421196	135	380	99.9	0.0	0.1	313671	313645	9	17	100.0	0.0	0.0
BRISBANE	1059.54	19.120	BN 410		508420	507309	54	1056	99.8	0.0	0.2	357728	357476	3	249	99.9	0.0	0.1
BRISBANE	1059.99	18.670	BN 400		466569	465238	260	1071	99.7	0.1	0.2	318768	318578	88	103	99.9	0.0	0.0
BRISBANE	1060.345	18.315	BN 390		513249	512957	172	120	99.9	0.0	0.0	390772	390727	30	16	100.0	0.0	0.0
BRISBANE	1060.535	18.125	BN 380		604669	604251	170	248	99.9	0.0	0.0	470170	470089	29	52	100.0	0.0	0.0
BRISBANE	1061.015	17.645	BN 370		604381	603570	776	34	99.9	0.1	0.0	443928	443843	79	6	100.0	0.0	0.0
BRISBANE	1061.53	17.130	BN 360		563580	562977	602		99.9	0.1	0.0	432709	432537	172		100.0	0.0	0.0
BRISBANE	1062.02	16.640	BN 350		616367	615458	689	219	99.9	0.1	0.0	468560	468115	385	60	99.9	0.1	0.0
BRISBANE	1062.535	16.125	BN 340		645217	643290	605	1322	99.7	0.1	0.2	463831	463203	195	433	99.9	0.0	0.1
BRISBANE	1062.94	15.720	BN 330		800826	800063	440	323	99.9	0.1	0.0	577162	576827	154	182	99.9	0.0	0.0
BRISBANE	1063.31	15.350	BN 320		536186	536038	148		100.0	0.0	0.0	406440	406413	27		100.0	0.0	0.0
BRISBANE	1063.645	15.015	BN 310	Cresent Road Gauge	621278	618467	2145	666	99.5	0.3	0.1	500465	499424	816	224	99.8	0.2	0.0
BRISBANE	1064	14.660	BN 300		670769	669123	1515	131	99.8	0.2	0.0	541442	540879	532	31	99.9	0.1	0.0
BRISBANE	1064.49	14.170	BN 290		635085	634070	888	127	99.8	0.1	0.0	515419	515158	229	32	99.9	0.0	0.0
BRISBANE	1065.01	13.650	BN 280		813116	812164	689	263	99.9	0.1	0.0	660492	660314	73	105	100.0	0.0	0.0
BRISBANE	1065.503	13.157	BN 270		919610	918778	832		99.9	0.1	0.0	758023	757863	160		100.0	0.0	0.0
BRISBANE	1065.99	12.670	BN 260	Cairncross Dock Gauge	1086542	1086542			100.0	0.0	0.0	904860	904860			100.0	0.0	0.0
BRISBANE	1066.505	12.155	BN 250		976146	975637		509	99.9	0.0	0.1	811936	811905		31	100.0	0.0	0.0

Table I-4 - HEC-RAS Predicted Conveyances

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI							20 YEAR ARI						
					TOTAL CONVEYANCE (m^3/s)	CHANNEL CONVEYANCE (m^3/s)	LEFT CONVEYANCE (m^3/s)	RIGHT CONVEYANCE (m^3/s)	% CHANNEL CONVEYANCE	% LEFT CONVEYANCE	% RIGHT CONVEYANCE	TOTAL CONVEYANCE (m^3/s)	CHANNEL CONVEYANCE (m^3/s)	LEFT CONVEYANCE (m^3/s)	RIGHT CONVEYANCE (m^3/s)	% CHANNEL CONVEYANCE	% LEFT CONVEYANCE	% RIGHT CONVEYANCE
BRISBANE	1067.02	11.640	BN 240		1036259	1030838	2121	3300	99.5	0.2	0.3	857339	856200	724	414	99.9	0.1	0.0
BRISBANE	1067.485	11.175	BN 230		766947	762205	645	4097	99.4	0.1	0.5	617834	616266	173	1395	99.7	0.0	0.2
BRISBANE	1067.965	10.695	BN 220		724184	722411	38	1735	99.8	0.0	0.2	598741	598108	12	622	99.9	0.0	0.1
BRISBANE	1068.66	10.000	BN 210		628796	627875	220	701	99.9	0.0	0.1	524757	524407	60	291	99.9	0.0	0.1
BRISBANE	1069.045	9.615	BN 200		653733	652569		1164	99.8	0.0	0.2	558390	557846		545	99.9	0.0	0.1
BRISBANE	1069.535	9.125	BN 190	Bullmba Power House Gauge	703154	701974		1180	99.8	0.0	0.2	605729	604998		731	99.9	0.0	0.1
BRISBANE	1070.025	8.635	BN 180		775320	774695	4	621	99.9	0.0	0.1	676164	675859	2	303	100.0	0.0	0.0
BRISBANE	1070.53	8.130	BN 170		718031	717738	274	19	100.0	0.0	0.0	627123	627018	103	3	100.0	0.0	0.0
BRISBANE	1071.04	7.620	BN 160		731226	730142	364	720	99.9	0.0	0.1	646346	645727	153	466	99.9	0.0	0.1
BRISBANE	1071.52	7.140	BN 150		1209461	1208298	749	414	99.9	0.1	0.0	1107901	1107385	420	95	100.0	0.0	0.0
BRISBANE	1072.015	6.645	BN 140		772750	772747		3	100.0	0.0	0.0	690071	690071		0	100.0	0.0	0.0
BRISBANE	1072.515	6.145	BN 130		908334	907136	1096	102	99.9	0.1	0.0	835138	834481	606	50	99.9	0.1	0.0
BRISBANE	1072.995	5.665	BN 120		918726	918552	65	109	100.0	0.0	0.0	842304	842214	35	55	100.0	0.0	0.0
BRISBANE	1073.485	5.175	BN 110		775434	774716	79	639	99.9	0.0	0.1	715218	714754	44	419	99.9	0.0	0.1
BRISBANE	1074	4.660	BN 100		795478	795207	96	175	100.0	0.0	0.0	740730	740558	56	115	100.0	0.0	0.0
BRISBANE	1074.46	4.200	BN 90		803353	803217	76	60	100.0	0.0	0.0	754708	754623	48	38	100.0	0.0	0.0
BRISBANE	1074.985	3.675	BN 80		666783	666654	55	75	100.0	0.0	0.0	636100	636009	39	53	100.0	0.0	0.0
BRISBANE	1075.48	3.180	BN 70		740283	735674	61	4548	99.4	0.0	0.6	709723	706016	46	3661	99.5	0.0	0.5
BRISBANE	1076	2.660	BN 60		1086764	1080048	86	6630	99.4	0.0	0.6	1041255	1035731	64	5459	99.5	0.0	0.5
BRISBANE	1076.495	2.165	BN 50		695470	695416		53	100.0	0.0	0.0	678503	678457		46	100.0	0.0	0.0
BRISBANE	1077.01	1.650	BN 40		1037931	1028392	533	9007	99.1	0.1	0.9	1016981	1008152	465	8364	99.1	0.0	0.8
BRISBANE	1077.51	1.150	BN 30		1921670	1921328	26	316	100.0	0.0	0.0	1894493	1894202	22	269	100.0	0.0	0.0
BRISBANE	1078.04	0.620	BN 20		2148044	2146871	1045	128	99.9	0.0	0.0	2128242	2127217	917	108	100.0	0.0	0.0
BRISBANE	1078.525	0.135	BN 10		1320378	1295085	25237	57	98.1	1.9	0.0	1320378	1295085	25237	57	98.1	1.9	0.0
BRISBANE	1078.66	0.000	-	Western Inner Bar Gauge	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix J - Design Hydraulic Model Results

TABLE J-1 - Flood Levels for the Regulation Lines & Revegetation Case for Flood Events 100 Year ARI to 2 Year ARI

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	REGULATION LINES & REVEGETATION IN PLACE					
					100 YEAR ARI WL (m AHD)	50 YEAR ARI WL (m AHD)	20 YEAR ARI WL (m AHD)	10 YEAR ARI WL (m AHD)	5 YEAR ARI WL (m AHD)	2 YEAR ARI WL (m AHD)
BRISBANE	1000	78.66	BN 2020		22.79	19.75	13.30	7.34	4.83	1.83
BRISBANE	1000.285	78.375	BN 2010		22.57	19.56	13.12	7.24	4.76	1.80
BRISBANE	1000.775	77.885	BN 2000		22.31	19.32	12.87	7.08	4.63	1.76
BRISBANE	1001.315	77.345	BN 1990		22.22	19.21	12.71	6.94	4.50	1.70
BRISBANE	1001.865	76.795	BN 1980		21.69	18.74	12.29	6.71	4.32	1.63
BRISBANE	1002.35	76.310	BN 1970		21.50	18.53	11.98	6.49	4.17	1.59
BRISBANE	1002.785	75.875	BN 1960		21.48	18.51	11.92	6.42	4.09	1.56
BRISBANE	1003.275	75.385	BN 1950		21.15	18.19	11.60	6.24	3.96	1.52
BRISBANE	1003.775	74.885	BN 1940		20.88	17.95	11.34	6.05	3.82	1.50
BRISBANE	1004.3	74.360	BN 1930		20.42	17.54	10.91	5.84	3.68	1.49
BRISBANE	1004.81	73.850	BN 1920		20.39	17.49	10.79	5.72	3.58	1.48
BRISBANE	1005.325	73.335	BN 1910		20.20	17.32	10.63	5.58	3.46	1.47
BRISBANE	1005.87	72.790	BN 1900		19.88	17.04	10.37	5.38	3.30	1.45
BRISBANE	1006.3	72.360	BN 1890	Moggill Gauge	19.72	16.90	10.27	5.29	3.23	1.44
BRISBANE	1006.91	71.750	BN 1880		19.52	16.69	10.08	5.16	3.15	1.42
BRISBANE	1007.41	71.250	BN 1870		19.42	16.60	9.99	5.08	3.08	1.40
BRISBANE	1007.92	70.740	BN 1860		19.09	16.33	9.79	4.94	3.00	1.38
BRISBANE	1008.445	70.215	BN 1850		18.96	16.21	9.70	4.88	2.95	1.36
BRISBANE	1008.925	69.735	BN 1840		18.89	16.14	9.63	4.83	2.92	1.35
BRISBANE	1009.4	69.260	BN 1830		18.79	16.04	9.56	4.79	2.89	1.35
BRISBANE	1009.72	68.940	BN 1820		18.73	16.00	9.53	4.77	2.88	1.34
BRISBANE	1010.49	68.170	BN 1810		18.43	15.75	9.36	4.68	2.83	1.33
BRISBANE	1010.725	67.935	BN 1800		18.44	15.75	9.37	4.68	2.82	1.33
BRISBANE	1010.98	67.680	BN 1790		18.38	15.69	9.33	4.66	2.81	1.33
BRISBANE	1011.51	67.150	BN 1780		18.37	15.68	9.28	4.62	2.79	1.32
BRISBANE	1011.98	66.680	BN 1770		18.36	15.63	9.23	4.58	2.76	1.32
BRISBANE	1012.475	66.185	BN 1760		18.31	15.56	9.16	4.53	2.73	1.31
BRISBANE	1012.935	65.725	BN 1750		18.20	15.47	9.08	4.48	2.70	1.30
BRISBANE	1013.445	65.215	BN 1740		18.11	15.38	9.01	4.44	2.67	1.29
BRISBANE	1013.91	64.750	BN 1730		18.05	15.31	8.94	4.38	2.63	1.28
BRISBANE	1014.31	64.350	BN 1720		18.01	15.25	8.88	4.34	2.60	1.27
BRISBANE	1014.61	64.050	BN 1710	Goodna Hospital Gauge	18.05	15.27	8.83	4.30	2.58	1.27
BRISBANE	1015.09	63.570	BN 1700		17.91	15.16	8.80	4.29	2.57	1.27
BRISBANE	1015.56	63.100	BN 1690		17.75	15.03	8.71	4.25	2.55	1.26
BRISBANE	1016.14	62.520	BN 1680		17.67	14.95	8.65	4.21	2.53	1.26
BRISBANE	1016.64	62.020	BN 1670		17.60	14.87	8.56	4.13	2.47	1.24
BRISBANE	1017.13	61.530	BN 1660		17.37	14.66	8.38	3.98	2.37	1.22
BRISBANE	1017.61	61.050	BN 1650		17.26	14.47	8.21	3.87	2.30	1.20
BRISBANE	1017.92	60.740	BN 1640		17.14	14.34	8.09	3.80	2.26	1.19
BRISBANE	1018.2	60.460	BN 1630		17.08	14.29	8.05	3.77	2.25	1.19
BRISBANE	1018.725	59.935	BN 1620		16.76	14.01	7.88	3.68	2.20	1.18
BRISBANE	1019.095	59.565	BN 1610		16.62	13.87	7.77	3.63	2.17	1.17
BRISBANE	1019.49	59.170	BN 1600		16.49	13.76	7.68	3.57	2.14	1.17
BRISBANE	1019.865	58.795	BN 1590		16.22	13.53	7.54	3.50	2.10	1.16
BRISBANE	1020.115	58.545	BN 1580		16.29	13.57	7.53	3.48	2.09	1.16
BRISBANE	1020.525	58.135	BN 1570		16.28	13.54	7.49	3.44	2.06	1.15
BRISBANE	1020.83	57.830	BN 1560		16.11	13.41	7.41	3.40	2.04	1.15
BRISBANE	1021.095	57.565	BN 1550		15.91	13.24	7.31	3.36	2.02	1.14
BRISBANE	1021.539	57.121	BN 1540		15.74	13.09	7.19	3.29	1.98	1.14
BRISBANE	1021.715	56.945	BN 1530		15.78	13.10	7.17	3.27	1.97	1.13
BRISBANE	1021.895	56.765	BN 1520		15.69	13.04	7.13	3.24	1.95	1.13
BRISBANE	1022.105	56.555	BN 1510		15.49	12.87	7.02	3.19	1.93	1.13
BRISBANE	1022.575	56.085	BN 1500		15.52	12.87	7.01	3.18	1.92	1.12
BRISBANE	1023.04	55.620	BN 1490		15.23	12.64	6.89	3.14	1.90	1.12
BRISBANE	1023.57	55.090	BN 1480		15.17	12.60	6.85	3.11	1.88	1.12
BRISBANE	1024.08	54.580	BN 1470		15.12	12.54	6.79	3.07	1.87	1.11
BRISBANE	1024.563	54.097	BN 1460		15.05	12.47	6.72	3.02	1.84	1.11
BRISBANE	1025.07	53.590	BN 1450		14.95	12.38	6.65	2.98	1.81	1.10
BRISBANE	1025.36	53.300	BN 1440		14.80	12.25	6.57	2.94	1.80	1.10
BRISBANE	1025.59	53.070	BN 1430		14.61	12.10	6.48	2.91	1.78	1.10
BRISBANE	1026.17	52.490	BN 1420		14.50	11.99	6.40	2.86	1.75	1.09
BRISBANE	1026.68	51.980	BN 1410	Mt Ommaney Gauge	14.38	11.87	6.30	2.81	1.73	1.09
BRISBANE	1026.9	51.760	BN 1400		14.21	11.75	6.24	2.79	1.72	1.09
BRISBANE	1027.16	51.500	BN 1390		14.12	11.68	6.20	2.77	1.71	1.09
BRISBANE	1027.68	50.980	BN 1380		14.19	11.70	6.18	2.75	1.70	1.08
BRISBANE	1028.18	50.480	BN 1370		14.19	11.70	6.17	2.74	1.69	1.08
BRISBANE	1028.68	49.980	BN 1360		14.10	11.62	6.11	2.71	1.68	1.08
BRISBANE	1028.72	49.940	BN1350	Centenary Bridge						
BRISBANE	1028.76	49.900	BN 1340		13.97	11.49	6.02	2.67	1.66	1.08
BRISBANE	1029.2	49.460	BN 1330		13.80	11.37	5.95	2.64	1.65	1.07
BRISBANE	1029.68	48.980	BN 1320		13.80	11.37	5.95	2.64	1.64	1.07
BRISBANE	1030.22	48.440	BN 1310		13.85	11.35	5.93	2.62	1.64	1.07
BRISBANE	1030.87	47.790	BN 1300		13.81	11.33	5.89	2.60	1.63	1.07
BRISBANE	1031.26	47.400	BN 1290		13.69	11.24	5.83	2.57	1.61	1.07
BRISBANE	1031.7	46.960	BN 1280	Darra Wharf Gauge	13.33	10.95	5.68	2.51	1.58	1.06
BRISBANE	1031.995	46.665	BN 1270		13.41	10.96	5.63	2.47	1.57	1.06
BRISBANE	1032.23	46.430	BN 1260		13.28	10.86	5.57	2.44	1.55	1.06
BRISBANE	1032.585	46.075	BN 1250		13.03	10.67	5.47	2.41	1.54	1.05
BRISBANE	1033.08	45.580	BN 1240		12.90	10.53	5.38	2.37	1.52	1.05

TABLE J-1 - Flood Levels for the Regulation Lines & Revegetation Case for Flood Events 100 Year ARI to 2 Year ARI

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	REGULATION LINES & REVEGETATION IN PLACE					
					100 YEAR ARI WL (m AHD)	50 YEAR ARI WL (m AHD)	20 YEAR ARI WL (m AHD)	10 YEAR ARI WL (m AHD)	5 YEAR ARI WL (m AHD)	2 YEAR ARI WL (m AHD)
BRISBANE	1033.37	45.290	BN 1230		12.83	10.45	5.32	2.34	1.51	1.05
BRISBANE	1033.9	44.760	BN 1220		12.57	10.25	5.22	2.30	1.49	1.05
BRISBANE	1034.37	44.290	BN 1210		12.42	10.13	5.14	2.27	1.48	1.05
BRISBANE	1034.89	43.770	BN 1200	Sherwood Gauge	12.32	10.02	5.07	2.24	1.46	1.04
BRISBANE	1035.414	43.246	BN 1190		12.08	9.82	4.95	2.19	1.44	1.04
BRISBANE	1035.9	42.760	BN 1180		11.76	9.55	4.79	2.13	1.41	1.04
BRISBANE	1036.46	42.200	BN 1170		11.46	9.30	4.64	2.07	1.39	1.03
BRISBANE	1036.77	41.890	BN 1160		11.39	9.21	4.56	2.03	1.37	1.03
BRISBANE	1036.915	41.745	BN 1150		11.23	9.10	4.52	2.01	1.36	1.03
BRISBANE	1037.09	41.570	BN 1140		11.20	9.07	4.51	2.01	1.36	1.03
BRISBANE	1037.11	41.550	BN 1130	Indooroopilly Bridge						
BRISBANE	1037.175	41.485	BN 1120		11.10	9.00	4.35	1.95	1.34	1.02
BRISBANE	1037.285	41.375	BN 1110	Clarence Road Gauge	11.04	8.94	4.32	1.94	1.33	1.02
BRISBANE	1037.625	41.035	BN 1100		11.02	8.92	4.28	1.92	1.32	1.02
BRISBANE	1038.085	40.575	BN 1090		10.99	8.88	4.26	1.91	1.32	1.02
BRISBANE	1038.6	40.060	BN 1080		10.98	8.84	4.21	1.89	1.31	1.02
BRISBANE	1039.1	39.560	BN 1070		11.05	8.90	4.21	1.87	1.30	1.02
BRISBANE	1039.565	39.095	BN 1060	Oxley Creek Gauge	11.00	8.83	4.17	1.86	1.30	1.02
BRISBANE	1040.09	38.570	BN 1050	King Authur Terrace Gauge	10.93	8.79	4.17	1.86	1.30	1.02
BRISBANE	1040.49	38.170	BN 1040		10.80	8.68	4.11	1.85	1.29	1.01
BRISBANE	1041.01	37.650	BN 1030		10.86	8.70	4.11	1.85	1.29	1.01
BRISBANE	1041.23	37.430	BN 1020		10.80	8.65	4.08	1.83	1.29	1.01
BRISBANE	1041.46	37.200	BN 1010	Tennyson Power House Gauge	10.72	8.59	4.04	1.82	1.28	1.01
BRISBANE	1041.7	36.960	BN 1000		10.69	8.56	4.04	1.82	1.28	1.01
BRISBANE	1041.96	36.700	BN 990		10.58	8.43	3.97	1.80	1.27	1.01
BRISBANE	1042.235	36.425	BN 980		10.41	8.30	3.91	1.78	1.27	1.01
BRISBANE	1042.515	36.145	BN 970	Yeronga Street Gauge	10.40	8.29	3.90	1.78	1.26	1.01
BRISBANE	1042.91	35.750	BN 960		10.23	8.14	3.82	1.75	1.25	1.01
BRISBANE	1043.725	34.935	BN 950		9.98	7.91	3.67	1.69	1.23	1.00
BRISBANE	1044.06	34.600	BN 940	Sandy Creek Gauge	9.86	7.82	3.63	1.68	1.22	1.00
BRISBANE	1044.34	34.320	BN 930		9.69	7.68	3.56	1.65	1.21	1.00
BRISBANE	1044.605	34.055	BN 920		9.65	7.63	3.52	1.64	1.21	1.00
BRISBANE	1044.86	33.800	BN 910		9.59	7.57	3.49	1.63	1.20	1.00
BRISBANE	1045.4	33.260	BN 900		9.40	7.40	3.39	1.59	1.19	0.99
BRISBANE	1045.885	32.775	BN 890		9.23	7.21	3.28	1.56	1.17	0.99
BRISBANE	1046.18	32.480	BN 880		9.17	7.17	3.26	1.55	1.17	0.99
BRISBANE	1046.34	32.320	BN 870	Dutton Park Cemetery Gauge	9.11	7.13	3.25	1.55	1.17	0.99
BRISBANE	1046.58	32.080	BN 860		9.08	7.08	3.22	1.54	1.17	0.99
BRISBANE	1046.9	31.760	BN 850		8.87	6.91	3.14	1.52	1.16	0.99
BRISBANE	1047.35	31.310	BN 840		8.47	6.60	2.99	1.47	1.14	0.98
BRISBANE	1047.915	30.745	BN 830	Highgate Hill Gauge	8.24	6.40	2.91	1.45	1.13	0.98
BRISBANE	1048.375	30.285	BN 820		8.29	6.43	2.91	1.45	1.13	0.98
BRISBANE	1048.89	29.770	BN 810	St Lucia Ferry Gauge	8.08	6.24	2.80	1.41	1.12	0.98
BRISBANE	1049.12	29.540	BN 800		8.03	6.20	2.78	1.40	1.12	0.98
BRISBANE	1049.37	29.290	BN 790		7.85	6.05	2.72	1.39	1.11	0.98
BRISBANE	1049.59	29.070	BN 780		7.82	6.03	2.71	1.39	1.11	0.98
BRISBANE	1049.87	28.790	BN 770		7.70	5.94	2.67	1.37	1.10	0.98
BRISBANE	1050.43	28.230	BN 760		7.66	5.89	2.62	1.36	1.10	0.97
BRISBANE	1050.86	27.800	BN 750		7.53	5.79	2.58	1.34	1.09	0.97
BRISBANE	1051.36	27.300	BN 740		7.54	5.78	2.58	1.35	1.09	0.97
BRISBANE	1051.895	26.765	BN 730		7.37	5.62	2.50	1.32	1.08	0.97
BRISBANE	1052.31	26.350	BN 720		7.51	5.71	2.52	1.33	1.09	0.97
BRISBANE	1052.37	26.290	BN 710	Merivale Bridge						
BRISBANE	1052.39	26.270	BN 700		7.31	5.57	2.47	1.31	1.08	0.97
BRISBANE	1052.595	26.065	BN 690		7.22	5.50	2.45	1.31	1.08	0.97
BRISBANE	1052.607	26.053	BN 680	William Jolly Bridge						
BRISBANE	1052.64	26.020	BN 670		6.69	5.13	2.37	1.29	1.07	0.96
BRISBANE	1052.865	25.795	BN 660		6.54	5.03	2.34	1.28	1.07	0.96
BRISBANE	1053.32	25.340	BN 650		6.47	4.95	2.29	1.27	1.06	0.96
BRISBANE	1053.356	25.304	BN 640	Victoria Bridge						
BRISBANE	1053.385	25.275	BN630		6.40	4.90	2.27	1.26	1.05	0.96
BRISBANE	1053.9	24.760	BN 620	Montague Road Gauge	5.98	4.54	2.11	1.21	1.03	0.95
BRISBANE	1054.64	24.020	BN 610		5.86	4.42	2.03	1.19	1.03	0.95
BRISBANE	1054.66	24.000	BN 600	Captain Cook Bridge						
BRISBANE	1054.68	23.980	BN 590		5.76	4.34	2.00	1.18	1.02	0.95
BRISBANE	1054.97	23.690	BN 560		5.52	4.15	1.93	1.16	1.01	0.95
BRISBANE	1055.28	23.380	BN 550		5.44	4.11	1.92	1.16	1.01	0.95
BRISBANE	1055.42	23.240	BN 540		5.43	4.09	1.91	1.16	1.01	0.95
BRISBANE	1055.96	22.700	BN 530	Port Office Gauge	5.38	4.05	1.89	1.15	1.01	0.95
BRISBANE	1056.4	22.260	BN 520		5.13	3.86	1.82	1.14	1.00	0.95
BRISBANE	1056.695	21.965	BN 510		5.06	3.81	1.80	1.13	1.00	0.95
BRISBANE	1056.865	21.795	BN 500		5.27	3.95	1.85	1.14	1.00	0.95
BRISBANE	1056.92	21.740	BN 495	Story Bridge						
BRISBANE	1056.95	21.710	BN 490		5.16	3.88	1.82	1.13	1.00	0.95
BRISBANE	1057.09	21.570	BN 480		5.01	3.77	1.79	1.12	0.99	0.95
BRISBANE	1057.53	21.130	BN 470		4.87	3.67	1.76	1.12	0.99	0.95
BRISBANE	1058.04	20.620	BN 460		4.61	3.47	1.68	1.10	0.98	0.95
BRISBANE	1058.23	20.430	BN 450		4.53	3.40	1.66	1.09	0.98	0.95
BRISBANE	1058.53	20.130	BN 440		4.39	3.31	1.63	1.09	0.98	0.94
BRISBANE	1058.735	19.925	BN 430		4.42	3.32	1.63	1.09	0.98	0.94

TABLE J-1 - Flood Levels for the Regulation Lines & Revegetation Case for Flood Events 100 Year ARI to 2 Year ARI

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	REGULATION LINES & REVEGETATION IN PLACE					
					100 YEAR ARI WL (m AHD)	50 YEAR ARI WL (m AHD)	20 YEAR ARI WL (m AHD)	10 YEAR ARI WL (m AHD)	5 YEAR ARI WL (m AHD)	2 YEAR ARI WL (m AHD)
BRISBANE	1059.035	19.625	BN 420		4.15	3.13	1.57	1.07	0.97	0.94
BRISBANE	1059.54	19.120	BN 410		4.11	3.09	1.55	1.07	0.97	0.94
BRISBANE	1059.99	18.670	BN 400		3.90	2.92	1.49	1.05	0.97	0.94
BRISBANE	1060.345	18.315	BN 390		3.64	2.74	1.43	1.04	0.96	0.94
BRISBANE	1060.535	18.125	BN 380		3.50	2.65	1.41	1.03	0.96	0.94
BRISBANE	1061.015	17.645	BN 370		3.46	2.61	1.39	1.03	0.96	0.94
BRISBANE	1061.53	17.130	BN 360		3.24	2.46	1.35	1.02	0.96	0.94
BRISBANE	1062.02	16.640	BN 350		3.16	2.40	1.32	1.01	0.95	0.94
BRISBANE	1062.535	16.125	BN 340		3.12	2.36	1.31	1.01	0.95	0.94
BRISBANE	1062.94	15.720	BN 330		3.11	2.35	1.30	1.01	0.95	0.94
BRISBANE	1063.31	15.350	BN 320		2.99	2.26	1.28	1.00	0.95	0.94
BRISBANE	1063.645	15.015	BN 310	Cresent Road Gauge	2.70	2.06	1.22	0.99	0.95	0.94
BRISBANE	1064	14.660	BN 300		2.66	2.04	1.21	0.99	0.94	0.94
BRISBANE	1064.49	14.170	BN 290		2.53	1.95	1.19	0.98	0.94	0.94
BRISBANE	1065.01	13.650	BN 280		2.55	1.96	1.19	0.98	0.94	0.94
BRISBANE	1065.503	13.157	BN 270		2.51	1.93	1.18	0.98	0.94	0.94
BRISBANE	1065.99	12.670	BN 260	Calmcross Dock Gauge	2.54	1.95	1.19	0.98	0.94	0.94
BRISBANE	1066.505	12.155	BN 250		2.46	1.90	1.17	0.98	0.94	0.94
BRISBANE	1067.02	11.640	BN 240		2.41	1.86	1.16	0.97	0.94	0.94
BRISBANE	1067.485	11.175	BN 230		2.29	1.78	1.14	0.97	0.94	0.94
BRISBANE	1067.965	10.695	BN 220		2.18	1.71	1.12	0.96	0.94	0.94
BRISBANE	1068.66	10.000	BN 210		2.00	1.59	1.09	0.96	0.93	0.94
BRISBANE	1069.045	9.615	BN 200		1.93	1.55	1.08	0.95	0.93	0.94
BRISBANE	1069.535	9.125	BN 190	Bulimba Power House Gauge	1.87	1.51	1.06	0.95	0.93	0.93
BRISBANE	1070.025	8.635	BN 180		1.80	1.46	1.05	0.95	0.93	0.93
BRISBANE	1070.53	8.130	BN 170		1.70	1.40	1.04	0.95	0.93	0.93
BRISBANE	1071.04	7.620	BN 160		1.62	1.34	1.02	0.94	0.93	0.93
BRISBANE	1071.52	7.140	BN 150		1.66	1.37	1.03	0.94	0.93	0.93
BRISBANE	1072.015	6.645	BN 140		1.62	1.35	1.02	0.94	0.93	0.93
BRISBANE	1072.515	6.145	BN 130		1.50	1.27	1.00	0.94	0.93	0.93
BRISBANE	1072.995	5.665	BN 120		1.46	1.25	1.00	0.94	0.93	0.93
BRISBANE	1073.485	5.175	BN 110		1.36	1.18	0.98	0.93	0.93	0.93
BRISBANE	1074	4.660	BN 100		1.28	1.14	0.97	0.93	0.93	0.93
BRISBANE	1074.46	4.200	BN 90		1.23	1.10	0.96	0.93	0.93	0.93
BRISBANE	1074.985	3.675	BN 80		1.09	1.02	0.94	0.93	0.92	0.93
BRISBANE	1075.48	3.180	BN 70		1.05	1.00	0.94	0.92	0.92	0.92
BRISBANE	1076	2.660	BN 60		1.07	1.01	0.94	0.92	0.92	0.92
BRISBANE	1076.495	2.165	BN 50		0.95	0.94	0.92	0.92	0.92	0.92
BRISBANE	1077.01	1.650	BN 40		0.97	0.95	0.93	0.92	0.92	0.92
BRISBANE	1077.51	1.150	BN 30		0.97	0.95	0.93	0.92	0.92	0.92
BRISBANE	1078.04	0.620	BN 20		0.95	0.94	0.92	0.92	0.92	0.92
BRISBANE	1078.525	0.135	BN 10		0.92	0.92	0.92	0.92	0.92	0.92
BRISBANE	1078.66	0.000	-	Western Inner Bar Gauge	0.92	0.92	0.92	0.92	0.92	0.92
BREMER	599.4	-	-		19.76	16.93	10.29	5.31	3.24	1.44
BREMER	600	-	-		19.76	16.93	10.29	5.31	3.24	1.45
OXLEY	599.4	-	-		10.96	8.80	4.17	1.86	1.30	1.01
OXLEY	600	-	-		10.96	8.80	4.17	1.86	1.30	1.02
BREAKFAST	599.4	-	-		3.06	2.31	1.29	1.00	0.95	0.94
BREAKFAST	600	-	-		3.06	2.31	1.29	1.00	0.95	0.94
BULIMBA	599.4	-	-		1.62	1.35	1.02	0.94	0.93	0.93
BULIMBA	600	-	-		1.62	1.35	1.02	0.94	0.93	0.93
CENTWEIR	0	-	-		14.10	11.62	6.11	2.71	1.68	1.08
CENTWEIR	0.08	-	-		13.97	11.49	6.02	2.67	1.66	1.08
INDOORWEIR	0	-	-		11.20	9.07	4.51	2.01	1.36	1.03
INDOORWEIR	0.085	-	-		11.10	9.00	4.35	1.95	1.34	1.02
WILLIAMWEIR	0	-	-		7.22	5.50	2.45	1.31	1.08	0.97
WILLIAMWEIR	0.045	-	-		6.69	5.13	2.37	1.29	1.07	0.96
VICTORIAWEIR	0	-	-		6.47	4.95	2.29	1.27	1.06	0.96
VICTORIAWEIR	0.065	-	-		6.40	4.90	2.27	1.26	1.05	0.96
CAPTAINWEIR	0	-	-		5.86	4.42	2.03	1.19	1.03	0.95
CAPTAINWEIR	0.04	-	-		5.76	4.34	2.00	1.18	1.02	0.95
STORYWEIR	0	-	-		5.27	3.95	1.85	1.14	1.00	0.95
STORYWEIR	0.085	-	-		5.16	3.88	1.82	1.13	1.00	0.95
MERIVALEWEIR	0	-	-		7.51	5.71	2.52	1.33	1.09	0.97
MERIVALEWEIR	0.08	-	-		7.31	5.57	2.47	1.31	1.08	0.97
GOODNALINK1	0	-	-		18.16	15.43	9.05	4.47	2.69	1.30
GOODNALINK1	1	-	-		17.50	14.78	8.48	4.06	2.42	1.23
GOODNALINK2	0	-	-		18.08	15.34	8.98	4.41	2.65	1.29
GOODNALINK2	1.07	-	-		17.71	14.99	8.68	4.23	2.54	1.26
STLUCIALINK1	0	-	-		11.04	8.89	4.20	1.87	1.30	1.02
STLUCIALINK1	1.05	-	-		10.22	8.11	3.78	1.73	1.24	1.00
STLUCIALINK2	0	-	-		10.99	8.81	4.17	1.86	1.30	1.02
STLUCIALINK2	1.05	-	-		10.24	8.13	3.79	1.74	1.25	1.01
STLUCIALINK3	0	-	-		10.88	8.76	4.15	1.86	1.30	1.02
STLUCIALINK3	0.85	-	-		10.40	8.29	3.90	1.78	1.26	1.01

TABLE J-2 - Discharges for the Regulation Lines & Revegetation Case for the Flood Events 100 Year ARI to 2 Year ARI

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	DESIGN EVENTS (REG LINE & REVEG CASE) 100 YEAR ARI Q (m^3/s)	50 YEAR ARI Q (m^3/s)	20 YEAR ARI Q (m^3/s)	10 YEAR ARI Q (m^3/s)	5 YEAR ARI Q (m^3/s)	2 YEAR ARI Q (m^3/s)
BRISBANE	1000.14	78.52	9235	7185	4225	1627	930	284
BRISBANE	1000.53	78.13	9234	7184	4223	1627	930	283
BRISBANE	1001.05	77.62	9232	7182	4219	1626	929	283
BRISBANE	1001.59	77.07	9229	7179	4214	1624	928	283
BRISBANE	1002.11	76.55	9227	7177	4211	1623	928	283
BRISBANE	1002.57	76.09	9225	7175	4207	1623	927	283
BRISBANE	1003.03	75.63	9223	7172	4202	1622	927	283
BRISBANE	1003.53	75.14	9220	7170	4198	1621	926	283
BRISBANE	1004.04	74.62	9218	7167	4193	1619	926	283
BRISBANE	1004.56	74.11	9215	7165	4189	1618	925	283
BRISBANE	1005.07	73.59	9212	7161	4181	1617	924	283
BRISBANE	1005.60	73.06	9208	7157	4172	1615	923	283
BRISBANE	1006.04	72.63	9206	7154	4165	1614	923	283
BRISBANE	1006.25	72.41	9570	7354	3648	1598	952	365
BRISBANE	1006.61	72.06	9570	7353	3646	1598	952	365
BRISBANE	1007.16	71.50	9569	7351	3642	1597	951	365
BRISBANE	1007.67	71.00	9567	7349	3637	1597	951	365
BRISBANE	1008.18	70.48	9567	7347	3634	1596	951	365
BRISBANE	1008.69	69.98	9566	7346	3631	1596	951	365
BRISBANE	1009.16	69.50	9565	7344	3629	1596	951	365
BRISBANE	1009.56	69.10	9565	7343	3626	1595	950	365
BRISBANE	1010.11	68.56	9563	7341	3623	1595	950	365
BRISBANE	1010.61	68.05	9563	7340	3621	1594	950	365
BRISBANE	1010.85	67.81	9562	7339	3620	1594	950	365
BRISBANE	1011.25	67.42	9562	7338	3618	1594	950	365
BRISBANE	1011.75	66.92	9561	7335	3614	1594	949	365
BRISBANE	1012.23	66.43	9559	7332	3610	1593	949	365
BRISBANE	1012.71	65.96	9557	7328	3605	1593	949	365
BRISBANE	1013.06	65.60	9555	7326	3602	1593	949	365
BRISBANE	1013.32	65.34	9363	7324	3600	1592	949	365
BRISBANE	1013.56	65.10	9362	7323	3598	1592	949	365
BRISBANE	1013.80	64.87	9290	7322	3596	1592	949	365
BRISBANE	1014.11	64.55	9289	7321	3592	1591	948	365
BRISBANE	1014.46	64.20	9287	7319	3588	1591	948	365
BRISBANE	1014.85	63.81	9284	7317	3583	1590	948	365
BRISBANE	1015.33	63.34	9283	7317	3581	1590	948	365
BRISBANE	1015.71	62.96	9282	7316	3579	1590	948	366
BRISBANE	1016.00	62.67	9352	7316	3578	1590	948	366
BRISBANE	1016.39	62.27	9351	7315	3576	1590	947	366
BRISBANE	1016.77	61.90	9349	7314	3574	1589	947	366
BRISBANE	1017.01	61.65	9538	7313	3572	1589	947	366
BRISBANE	1017.37	61.29	9537	7313	3570	1589	947	366
BRISBANE	1017.77	60.90	9536	7312	3568	1589	947	366
BRISBANE	1018.06	60.60	9535	7311	3566	1589	947	366
BRISBANE	1018.46	60.20	9534	7310	3564	1589	947	366
BRISBANE	1018.91	59.75	9532	7309	3563	1588	947	366
BRISBANE	1019.29	59.37	9531	7308	3561	1588	947	366
BRISBANE	1019.68	58.98	9529	7307	3560	1588	947	366
BRISBANE	1019.99	58.67	9528	7307	3559	1588	947	366
BRISBANE	1020.32	58.34	9527	7306	3557	1588	947	366
BRISBANE	1020.68	57.98	9525	7304	3554	1587	947	366
BRISBANE	1020.96	57.70	9524	7304	3553	1587	947	366
BRISBANE	1021.32	57.34	9523	7303	3552	1587	946	366
BRISBANE	1021.63	57.03	9523	7302	3550	1587	946	366
BRISBANE	1021.81	56.86	9523	7302	3549	1587	946	366
BRISBANE	1022.00	56.66	9522	7301	3548	1587	946	367
BRISBANE	1022.34	56.32	9522	7301	3547	1587	946	367
BRISBANE	1022.81	55.85	9522	7301	3545	1586	946	367
BRISBANE	1023.31	55.36	9522	7300	3544	1586	946	367
BRISBANE	1023.83	54.84	9522	7300	3543	1586	946	367
BRISBANE	1024.32	54.34	9521	7300	3541	1586	946	367
BRISBANE	1024.82	53.84	9521	7301	3539	1586	946	367
BRISBANE	1025.22	53.45	9521	7301	3538	1586	946	367

TABLE J-2 - Discharges for the Regulation Lines & Revegetation Case for the Flood Events 100 Year ARI to 2 Year ARI

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	DESIGN EVENTS (REG LINE & REVEG CASE) 100 YEAR ARI Q (m^3/s)	50 YEAR ARI Q (m^3/s)	20 YEAR ARI Q (m^3/s)	10 YEAR ARI Q (m^3/s)	5 YEAR ARI Q (m^3/s)	2 YEAR ARI Q (m^3/s)
BRISBANE	1025.48	53.19	9521	7301	3537	1586	946	367
BRISBANE	1025.88	52.78	9521	7302	3536	1586	946	367
BRISBANE	1026.43	52.24	9522	7304	3534	1585	946	367
BRISBANE	1026.79	51.87	9523	7305	3533	1585	946	367
BRISBANE	1027.03	51.63	9524	7307	3532	1585	946	367
BRISBANE	1027.42	51.24	9525	7308	3531	1585	946	367
BRISBANE	1027.93	50.73	9526	7312	3529	1585	946	367
BRISBANE	1028.43	50.23	9526	7317	3526	1585	946	367
BRISBANE	1028.72	49.94	9258	7315	3525	1585	946	367
BRISBANE	1028.98	49.68	9527	7318	3524	1585	946	367
BRISBANE	1029.44	49.22	9527	7313	3523	1585	946	367
BRISBANE	1029.95	48.71	9526	7308	3521	1585	946	368
BRISBANE	1030.55	48.11	9524	7302	3519	1584	946	368
BRISBANE	1031.07	47.59	9522	7298	3517	1584	946	368
BRISBANE	1031.48	47.18	9520	7295	3516	1584	946	368
BRISBANE	1031.85	46.81	9519	7293	3515	1584	946	368
BRISBANE	1032.11	46.55	9518	7291	3514	1584	946	368
BRISBANE	1032.41	46.25	9516	7289	3513	1584	946	368
BRISBANE	1032.83	45.83	9514	7287	3512	1584	946	368
BRISBANE	1033.23	45.44	9512	7285	3511	1584	946	368
BRISBANE	1033.64	45.03	9510	7282	3509	1584	946	368
BRISBANE	1034.14	44.53	9508	7279	3508	1584	946	368
BRISBANE	1034.63	44.03	9506	7277	3507	1584	946	368
BRISBANE	1035.15	43.51	9503	7274	3505	1584	946	368
BRISBANE	1035.66	43.00	9501	7272	3503	1584	946	368
BRISBANE	1036.18	42.48	9498	7269	3502	1584	946	368
BRISBANE	1036.62	42.05	9497	7268	3500	1583	946	368
BRISBANE	1036.84	41.82	9495	7267	3500	1583	946	368
BRISBANE	1037.00	41.66	9495	7266	3499	1583	946	369
BRISBANE	1037.11	41.55	9494	7266	3499	1583	946	369
BRISBANE	1037.23	41.43	9494	7265	3498	1583	946	369
BRISBANE	1037.46	41.21	9493	7264	3498	1583	945	369
BRISBANE	1037.86	40.81	9491	7263	3496	1583	945	369
BRISBANE	1038.34	40.32	9489	7261	3494	1583	945	369
BRISBANE	1038.85	39.81	9486	7258	3491	1583	945	369
BRISBANE	1039.15	39.51	9482	7254	3488	1583	945	369
BRISBANE	1039.38	39.28	9286	7195	3486	1583	945	369
BRISBANE	1039.62	39.04	9281	7192	3485	1583	945	369
BRISBANE	1039.75	38.91	9086	7164	3484	1583	945	369
BRISBANE	1039.96	38.70	8723	6963	3412	1582	946	414
BRISBANE	1040.17	38.49	8723	6962	3412	1582	946	414
BRISBANE	1040.37	38.29	8595	6962	3411	1582	946	414
BRISBANE	1040.75	37.91	8595	6961	3411	1582	946	414
BRISBANE	1041.12	37.54	8594	6960	3411	1582	946	415
BRISBANE	1041.35	37.32	8594	6960	3410	1582	946	415
BRISBANE	1041.58	37.08	8594	6959	3410	1582	946	415
BRISBANE	1041.83	36.83	8593	6959	3410	1582	946	415
BRISBANE	1042.10	36.56	8593	6959	3410	1582	946	415
BRISBANE	1042.37	36.29	8592	6959	3410	1582	946	415
BRISBANE	1042.51	36.15	8719	6959	3410	1582	946	415
BRISBANE	1042.71	35.95	8718	6959	3410	1582	946	415
BRISBANE	1042.96	35.70	8717	6959	3410	1582	946	415
BRISBANE	1043.05	35.61	8975	6991	3410	1582	946	415
BRISBANE	1043.10	35.57	8975	6991	3410	1582	946	415
BRISBANE	1043.42	35.24	9200	7057	3409	1582	946	415
BRISBANE	1043.89	34.77	9201	7057	3409	1582	946	415
BRISBANE	1044.20	34.46	9202	7057	3409	1582	946	415
BRISBANE	1044.47	34.19	9203	7058	3409	1582	946	416
BRISBANE	1044.73	33.93	9204	7058	3409	1582	946	416
BRISBANE	1045.13	33.53	9206	7058	3409	1582	946	416
BRISBANE	1045.64	33.02	9210	7059	3409	1582	946	416
BRISBANE	1046.03	32.63	9215	7059	3408	1582	946	416
BRISBANE	1046.26	32.40	9217	7060	3408	1582	946	416

TABLE J-2 - Discharges for the Regulation Lines & Revegetation Case for the Flood Events 100 Year ARI to 2 Year ARI

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	DESIGN EVENTS (REG LINE & REVEG CASE) 100 YEAR ARI Q (m^3/s)	50 YEAR ARI Q (m^3/s)	20 YEAR ARI Q (m^3/s)	10 YEAR ARI Q (m^3/s)	5 YEAR ARI Q (m^3/s)	2 YEAR ARI Q (m^3/s)
BRISBANE	1046.46	32.20	9218	7060	3408	1582	946	416
BRISBANE	1046.74	31.92	9220	7060	3408	1582	946	416
BRISBANE	1047.13	31.54	9222	7060	3408	1582	946	416
BRISBANE	1047.63	31.03	9223	7060	3408	1582	946	417
BRISBANE	1048.15	30.52	9223	7060	3408	1582	946	417
BRISBANE	1048.63	30.03	9221	7060	3408	1582	946	417
BRISBANE	1049.01	29.65	9218	7061	3408	1582	946	417
BRISBANE	1049.25	29.42	9217	7062	3408	1582	946	417
BRISBANE	1049.48	29.18	9215	7063	3408	1582	946	417
BRISBANE	1049.73	28.93	9212	7064	3408	1582	946	417
BRISBANE	1050.15	28.51	9212	7066	3408	1582	946	417
BRISBANE	1050.65	28.02	9225	7075	3408	1582	946	417
BRISBANE	1051.11	27.55	9238	7083	3408	1582	946	418
BRISBANE	1051.63	27.03	9253	7093	3408	1582	946	418
BRISBANE	1052.10	26.56	9301	7102	3408	1582	946	418
BRISBANE	1052.35	26.31	9335	7110	3408	1582	946	418
BRISBANE	1052.49	26.17	9348	7113	3408	1582	946	418
BRISBANE	1052.63	26.04	9360	7119	3408	1582	946	418
BRISBANE	1052.75	25.91	9356	7111	3408	1582	946	418
BRISBANE	1053.09	25.57	9347	7104	3408	1582	946	418
BRISBANE	1053.36	25.31	9327	7098	3408	1582	946	418
BRISBANE	1053.64	25.02	9309	7090	3408	1582	946	418
BRISBANE	1054.27	24.39	9329	7086	3407	1582	946	418
BRISBANE	1054.66	24.00	9314	7084	3407	1582	946	419
BRISBANE	1054.83	23.84	9310	7084	3407	1582	946	419
BRISBANE	1055.13	23.54	9304	7084	3407	1582	946	419
BRISBANE	1055.35	23.31	9300	7083	3407	1582	946	419
BRISBANE	1055.69	22.97	9291	7082	3407	1582	946	419
BRISBANE	1056.18	22.48	9270	7080	3408	1582	946	419
BRISBANE	1056.55	22.11	9260	7078	3408	1582	946	419
BRISBANE	1056.78	21.88	9254	7077	3408	1582	946	419
BRISBANE	1056.92	21.74	9245	7075	3408	1582	946	419
BRISBANE	1057.02	21.64	9241	7074	3408	1582	946	419
BRISBANE	1057.31	21.35	9235	7073	3408	1582	946	419
BRISBANE	1057.79	20.87	9225	7070	3408	1582	946	419
BRISBANE	1058.14	20.53	9219	7068	3408	1582	946	420
BRISBANE	1058.38	20.28	9221	7067	3408	1582	946	420
BRISBANE	1058.63	20.03	9223	7066	3408	1582	946	420
BRISBANE	1058.89	19.78	9224	7064	3408	1582	946	420
BRISBANE	1059.29	19.37	9225	7063	3408	1582	946	420
BRISBANE	1059.77	18.89	9222	7064	3408	1582	946	420
BRISBANE	1060.17	18.49	9219	7066	3408	1582	946	420
BRISBANE	1060.44	18.22	9218	7066	3408	1582	946	420
BRISBANE	1060.78	17.88	9217	7066	3408	1582	946	420
BRISBANE	1061.27	17.39	9213	7067	3408	1582	946	420
BRISBANE	1061.78	16.88	9210	7067	3408	1582	946	420
BRISBANE	1062.28	16.38	9206	7067	3408	1582	946	420
BRISBANE	1062.74	15.92	9205	7066	3408	1582	946	421
BRISBANE	1063.03	15.63	9206	7065	3408	1582	946	421
BRISBANE	1063.22	15.44	9200	7055	3408	1582	946	428
BRISBANE	1063.48	15.18	9198	7054	3408	1582	946	428
BRISBANE	1063.82	14.84	9197	7054	3408	1582	946	428
BRISBANE	1064.25	14.42	9197	7053	3408	1582	946	428
BRISBANE	1064.75	13.91	9197	7053	3408	1582	946	429
BRISBANE	1065.26	13.40	9197	7053	3408	1582	946	429
BRISBANE	1065.75	12.91	9197	7053	3408	1582	946	429
BRISBANE	1066.25	12.41	9197	7053	3408	1582	946	429
BRISBANE	1066.76	11.90	9197	7053	3408	1582	946	429
BRISBANE	1067.25	11.41	9197	7052	3408	1582	946	429
BRISBANE	1067.73	10.94	9197	7052	3408	1582	946	429
BRISBANE	1068.31	10.35	9197	7052	3408	1582	946	430
BRISBANE	1068.85	9.81	9197	7053	3408	1582	946	430
BRISBANE	1069.29	9.37	9198	7053	3408	1582	946	430

TABLE J-2 - Discharges for the Regulation Lines & Revegetation Case for the Flood Events 100 Year ARI to 2 Year ARI

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	DESIGN EVENTS (REG LINE & REVEG CASE) 100 YEAR ARI Q (m^3/s)	50 YEAR ARI Q (m^3/s)	20 YEAR ARI Q (m^3/s)	10 YEAR ARI Q (m^3/s)	5 YEAR ARI Q (m^3/s)	2 YEAR ARI Q (m^3/s)
BRISBANE	1069.78	8.88	9198	7053	3408	1582	946	430
BRISBANE	1070.28	8.38	9198	7054	3408	1582	946	430
BRISBANE	1070.79	7.87	9198	7054	3408	1583	946	430
BRISBANE	1071.28	7.38	9199	7054	3408	1583	946	430
BRISBANE	1071.77	6.89	9199	7054	3408	1583	946	430
BRISBANE	1072.02	6.64	9199	7054	3409	1583	946	430
BRISBANE	1072.27	6.39	9191	7051	3409	1583	951	504
BRISBANE	1072.76	5.90	9191	7051	3409	1583	951	504
BRISBANE	1073.24	5.42	9191	7051	3409	1583	952	504
BRISBANE	1073.74	4.92	9191	7051	3409	1583	952	504
BRISBANE	1074.23	4.43	9191	7051	3409	1583	952	505
BRISBANE	1074.72	3.94	9191	7051	3409	1583	952	505
BRISBANE	1075.23	3.43	9191	7051	3409	1583	952	505
BRISBANE	1075.74	2.92	9191	7051	3409	1583	953	505
BRISBANE	1076.25	2.41	9191	7052	3409	1583	953	505
BRISBANE	1076.75	1.91	9192	7052	3409	1583	953	505
BRISBANE	1077.26	1.40	9192	7052	3409	1583	953	506
BRISBANE	1077.78	0.88	9192	7052	3409	1583	953	506
BRISBANE	1078.28	0.38	9192	7052	3409	1583	953	506
BRISBANE	1078.59	0.07	9192	7052	3409	1583	953	506
BREMER	599.70	-	2204	1890	951	862	628	230
OXLEY	599.70	-	1195	849	474	400	307	164
BREAKFAST	599.70	-	408	335	249	201	168	99
BULIMBA	599.70	-	651	538	368	301	249	162
CENTWEIR	0.04	-	582	11	0	0	0	0
INDOORWEIR	0.04	-	0	0	0	0	0	0
WILLIAMWEIR	0.02	-	0	0	0	0	0	0
VICTORIAWEIR	0.03	-	0	0	0	0	0	0
CAPTAINWEIR	0.02	-	0	0	0	0	0	0
STORYWEIR	0.04	-	0	0	0	0	0	0
MERIVALEWEIR	0.04	-	0	0	0	0	0	0
GOODNALINK1	0.50	-	201	0	0	0	0	0
GOODNALINK2	0.54	-	75	0	0	0	0	0
STLUCIALINK1	0.53	-	226	66	0	0	0	0
STLUCIALINK2	0.53	-	259	31	0	0	0	0
STLUCIALINK3	0.43	-	127	0	0	0	0	0

TABLE J-3 - Affluxes Due to Regulation Lines and Revegetation Combined Effects for the 100 Year ARI Flood

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI DESIGN WL (m AHD)	100 YEAR ARI REG LINES + REVEG WL (m AHD)	100 YEAR ARI REG LINES	100 YEAR ARI REVEGETATION	REVEGETATION AFFLUX (mm)	REG LINES AFFLUX (mm)	REG + REVEG AFFLUX (mm)
BRISBANE	1051.36	27.300	BN 740		7.46	7.54	7.54	7.46	0	80	80
BRISBANE	1051.895	26.765	BN 730		7.30	7.37	7.37	7.30	0	70	70
BRISBANE	1052.31	26.350	BN 720		7.40	7.51	7.51	7.40	0	110	110
BRISBANE	1052.37	26.290	BN 710	Merivale Bridge			0.00		0	0	0
BRISBANE	1052.39	26.270	BN 700		7.23	7.31	7.31	7.23	0	80	80
BRISBANE	1052.595	26.065	BN 690		7.14	7.22	7.22	7.14	0	80	80
BRISBANE	1052.607	26.053	BN 680	William Jolly Bridge			0.00		0	0	0
BRISBANE	1052.64	26.020	BN 670		6.63	6.69	6.69	6.63	0	60	60
BRISBANE	1052.865	25.795	BN 660		6.49	6.54	6.54	6.49	0	50	50
BRISBANE	1053.32	25.340	BN 650		6.42	6.47	6.47	6.42	0	50	50
BRISBANE	1053.356	25.304	BN 640	Victoria Bridge			0.00		0	0	0
BRISBANE	1053.385	25.275	BN630		6.24	6.40	6.40	6.24	0	160	160
BRISBANE	1053.9	24.760	BN 620	Montague Road Gauge	5.85	5.98	5.98	5.85	0	130	130
BRISBANE	1054.64	24.020	BN 610		5.78	5.86	5.87	5.77	-10	90	80
BRISBANE	1054.66	24.000	BN 600	Captain Cook Bridge			0.00		0	0	0
BRISBANE	1054.68	23.980	BN 590		5.70	5.76	5.76	5.70	0	60	60
BRISBANE	1054.97	23.690	BN 560		5.45	5.52	5.52	5.45	0	70	70
BRISBANE	1055.28	23.380	BN 550		5.40	5.44	5.44	5.40	0	40	40
BRISBANE	1055.42	23.240	BN 540		5.40	5.43	5.43	5.40	0	30	30
BRISBANE	1055.96	22.700	BN 530	Port Office Gauge	5.34	5.38	5.38	5.34	0	40	40
BRISBANE	1056.4	22.260	BN 520		5.09	5.13	5.13	5.09	0	40	40
BRISBANE	1056.695	21.965	BN 510		5.03	5.06	5.07	5.02	-10	40	30
BRISBANE	1056.865	21.795	BN 500		5.22	5.27	5.27	5.22	0	50	50
BRISBANE	1056.92	21.740	BN 495	Story Bridge			0.00		0	0	0
BRISBANE	1056.95	21.710	BN 490		5.12	5.16	5.16	5.12	0	40	40
BRISBANE	1057.09	21.570	BN 480		4.97	5.01	5.01	4.97	0	40	40
BRISBANE	1057.53	21.130	BN 470		4.83	4.87	4.87	4.83	0	40	40
BRISBANE	1058.04	20.620	BN 460		4.58	4.61	4.61	4.58	0	30	30
BRISBANE	1058.23	20.430	BN 450		4.50	4.53	4.53	4.50	0	30	30
BRISBANE	1058.53	20.130	BN 440		4.37	4.39	4.39	4.37	0	20	20
BRISBANE	1058.735	19.925	BN 430		4.41	4.42	4.42	4.41	0	10	10
BRISBANE	1059.035	19.625	BN 420		4.13	4.15	4.15	4.13	0	20	20
BRISBANE	1059.54	19.120	BN 410		4.09	4.11	4.11	4.09	0	20	20
BRISBANE	1059.99	18.670	BN 400		3.88	3.90	3.90	3.88	0	20	20
BRISBANE	1060.345	18.315	BN 390		3.65	3.64	3.64	3.65	0	-10	-10
BRISBANE	1060.535	18.125	BN 380		3.50	3.50	3.50	3.50	0	0	0
BRISBANE	1061.015	17.645	BN 370		3.45	3.46	3.46	3.45	0	10	10
BRISBANE	1061.53	17.130	BN 360		3.24	3.24	3.24	3.24	0	0	0
BRISBANE	1062.02	16.640	BN 350		3.16	3.16	3.16	3.16	0	0	0
BRISBANE	1062.535	16.125	BN 340		3.12	3.12	3.12	3.12	0	0	0
BRISBANE	1062.94	15.720	BN 330		3.11	3.11	3.11	3.11	0	0	0
BRISBANE	1063.31	15.350	BN 320		2.99	2.99	2.99	2.99	0	0	0
BRISBANE	1063.645	15.015	BN 310	Cresent Road Gauge	2.72	2.70	2.70	2.72	0	-20	-20
BRISBANE	1064	14.660	BN 300		2.68	2.66	2.66	2.68	0	-20	-20
BRISBANE	1064.49	14.170	BN 290		2.55	2.53	2.53	2.55	0	-20	-20
BRISBANE	1065.01	13.650	BN 280		2.57	2.55	2.55	2.57	0	-20	-20
BRISBANE	1065.503	13.157	BN 270		2.53	2.51	2.51	2.53	0	-20	-20
BRISBANE	1065.99	12.670	BN 260	Cairncross Dock Gauge	2.54	2.54	2.54	2.54	0	0	0
BRISBANE	1066.505	12.155	BN 250		2.46	2.46	2.46	2.46	0	0	0
BRISBANE	1067.02	11.640	BN 240		2.43	2.41	2.41	2.43	0	-20	-20
BRISBANE	1067.485	11.175	BN 230		2.32	2.29	2.29	2.32	0	-30	-30
BRISBANE	1067.965	10.695	BN 220		2.20	2.18	2.18	2.20	0	-20	-20
BRISBANE	1068.66	10.000	BN 210		2.02	2.00	2.00	2.02	0	-20	-20
BRISBANE	1069.045	9.615	BN 200		1.95	1.93	1.93	1.95	0	-20	-20
BRISBANE	1069.535	9.125	BN 190	Bulimba Power House Gauge	1.89	1.87	1.87	1.89	0	-20	-20
BRISBANE	1070.025	8.635	BN 180		1.82	1.80	1.80	1.82	0	-20	-20
BRISBANE	1070.53	8.130	BN 170		1.72	1.70	1.70	1.72	0	-20	-20
BRISBANE	1071.04	7.620	BN 160		1.64	1.62	1.62	1.64	0	-20	-20
BRISBANE	1071.52	7.140	BN 150		1.67	1.66	1.66	1.67	0	-10	-10
BRISBANE	1072.015	6.645	BN 140		1.56	1.62	1.62	1.56	0	60	60
BRISBANE	1072.515	6.145	BN 130		1.50	1.50	1.50	1.50	0	0	0
BRISBANE	1072.995	5.665	BN 120		1.46	1.46	1.46	1.46	0	0	0
BRISBANE	1073.485	5.175	BN 110		1.36	1.36	1.36	1.36	0	0	0
BRISBANE	1074	4.660	BN 100		1.29	1.28	1.28	1.29	0	-10	-10

TABLE J-3 - Affluxes Due to Regulation Lines and Revegetation Combined Effects for the 100 Year ARI Flood

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI DESIGN WL (m AHD)	100 YEAR ARI REG LINES + REVEG WL (m AHD)	100 YEAR ARI REG LINES	100 YEAR ARI REVEGETATION	REVEGETATION AFFLUX (mm)	REG LINES AFFLUX (mm)	REG + REVEG AFLUX (mm)
BRISBANE	1074.46	4.200	BN 90		1.22	1.23	1.23	1.22	0	10	10
BRISBANE	1074.985	3.675	BN 80		1.09	1.09	1.09	1.09	0	0	0
BRISBANE	1075.48	3.180	BN 70		1.06	1.05	1.05	1.06	0	-10	-10
BRISBANE	1076	2.660	BN 60		1.07	1.07	1.07	1.07	0	0	0
BRISBANE	1076.495	2.165	BN 50		0.96	0.95	0.95	0.96	0	-10	-10
BRISBANE	1077.01	1.650	BN 40		0.96	0.97	0.97	0.96	0	10	10
BRISBANE	1077.51	1.150	BN 30		0.97	0.97	0.97	0.97	0	0	0
BRISBANE	1078.04	0.620	BN 20		0.95	0.95	0.95	0.95	0	0	0
BRISBANE	1078.525	0.135	BN 10		0.92	0.92	0.92	0.92	0	0	0
BRISBANE	1078.66	0.000	-	Western Inner Bar Gauge	0.92	0.92	0.92	0.92	0	0	0
BREMER	599.4	-	-		19.76	19.76	19.75	19.77	10	-10	0
BREMER	600	-	-		19.76	19.76	19.75	19.77	10	-10	0
OXLEY	599.4	-	-		10.87	10.96	10.95	10.88	10	80	90
OXLEY	600	-	-		10.87	10.96	10.95	10.88	10	80	90
BREAKFAST	599.4	-	-		3.09	3.06	3.07	3.08	-10	-20	-30
BREAKFAST	600	-	-		3.08	3.06	3.06	3.08	0	-20	-20
BULIMBA	599.4	-	-		1.56	1.62	1.62	1.56	0	60	60
BULIMBA	600	-	-		1.56	1.62	1.62	1.56	0	60	60
CENTWEIR	0	-	-		14.06	14.10	14.09	14.07	10	30	40
CENTWEIR	0.08	-	-		13.91	13.97	13.96	13.92	10	50	60
INDOORWEIR	0	-	-		11.07	11.20	11.19	11.08	10	120	130
INDOORWEIR	0.085	-	-		10.98	11.10	11.10	10.98	0	120	120
WILLIAMWEIR	0	-	-		7.14	7.22	7.22	7.14	0	80	80
WILLIAMWEIR	0.045	-	-		6.63	6.69	6.69	6.63	0	60	60
VICTORIAWEIR	0	-	-		6.42	6.47	6.47	6.42	0	50	50
VICTORIAWEIR	0.065	-	-		6.24	6.40	6.40	6.24	0	160	160
CAPTAINWEIR	0	-	-		5.78	5.86	5.87	5.77	-10	90	80
CAPTAINWEIR	0.04	-	-		5.70	5.76	5.76	5.70	0	60	60
STORYWEIR	0	-	-		5.22	5.27	5.27	5.22	0	50	50
STORYWEIR	0.085	-	-		5.12	5.16	5.16	5.12	0	40	40
MERIVALEWEIR	0	-	-		7.40	7.51	7.51	7.40	0	110	110
MERIVALEWEIR	0.08	-	-		7.23	7.31	7.31	7.23	0	80	80
GOODNALINK1	0	-	-		18.18	18.16	18.16	18.18	0	-20	-20
GOODNALINK1	1	-	-		17.53	17.50	17.50	17.53	0	-30	-30
GOODNALINK2	0	-	-		18.11	18.08	18.08	18.11	0	-30	-30
GOODNALINK2	1.07	-	-		17.77	17.71	17.71	17.77	0	-60	-60
STLUCIALINK1	0	-	-		10.91	11.04	11.04	10.91	0	130	130
STLUCIALINK1	1.05	-	-		10.15	10.22	10.22	10.15	0	70	70
STLUCIALINK2	0	-	-		10.90	10.99	10.99	10.90	0	90	90
STLUCIALINK2	1.05	-	-		10.18	10.24	10.24	10.18	0	60	60
STLUCIALINK3	0	-	-		10.79	10.88	10.88	10.79	0	90	90
STLUCIALINK3	0.85	-	-		10.29	10.40	10.39	10.30	10	100	110

TABLE J-3 - Affluxes Due to Regulation Lines and Revegetation Combined Effects for the 100 Year ARI Flood

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI DESIGN WL (m AHD)	100 YEAR ARI REG LINES + REVEG WL (m AHD)	100 YEAR ARI REG LINES	100 YEAR ARI REVEGETATION	REVEGETATION AFFLUX (mm)	REG LINES AFFLUX (mm)	REG + REVEG AFLUX (mm)
BRISBANE	1000	78.66	BN 2020		22.76	22.79	22.78	22.77	10	20	30
BRISBANE	1000.285	78.375	BN 2010		22.57	22.57	22.56	22.58	10	-10	0
BRISBANE	1000.775	77.885	BN 2000		22.29	22.31	22.30	22.30	10	10	20
BRISBANE	1001.315	77.345	BN 1990		22.20	22.22	22.21	22.21	10	10	20
BRISBANE	1001.865	76.795	BN 1980		21.68	21.69	21.68	21.69	10	0	10
BRISBANE	1002.35	76.310	BN 1970		21.48	21.50	21.49	21.49	10	10	20
BRISBANE	1002.785	75.875	BN 1960		21.46	21.48	21.47	21.47	10	10	20
BRISBANE	1003.275	75.385	BN 1950		21.13	21.15	21.14	21.14	10	10	20
BRISBANE	1003.775	74.885	BN 1940		20.86	20.88	20.87	20.87	10	10	20
BRISBANE	1004.3	74.360	BN 1930		20.41	20.42	20.41	20.42	10	0	10
BRISBANE	1004.81	73.850	BN 1920		20.37	20.39	20.37	20.39	20	0	20
BRISBANE	1005.325	73.335	BN 1910		20.20	20.20	20.19	20.21	10	-10	0
BRISBANE	1005.87	72.790	BN 1900		19.89	19.88	19.87	19.90	10	-20	-10
BRISBANE	1006.3	72.360	BN 1890	Moggill Gauge	19.72	19.72	19.71	19.73	10	-10	0
BRISBANE	1006.91	71.750	BN 1880		19.51	19.52	19.50	19.53	20	-10	10
BRISBANE	1007.41	71.250	BN 1870		19.48	19.42	19.42	19.48	0	-60	-60
BRISBANE	1007.92	70.740	BN 1860		19.19	19.09	19.09	19.19	0	-100	-100
BRISBANE	1008.445	70.215	BN 1850		19.02	18.96	18.96	19.02	0	-60	-60
BRISBANE	1008.925	69.735	BN 1840		18.96	18.89	18.89	18.96	0	-70	-70
BRISBANE	1009.4	69.260	BN 1830		18.86	18.79	18.79	18.86	0	-70	-70
BRISBANE	1009.72	68.940	BN 1820		18.85	18.73	18.73	18.85	0	-120	-120
BRISBANE	1010.49	68.170	BN 1810		18.50	18.43	18.43	18.50	0	-70	-70
BRISBANE	1010.725	67.935	BN 1800		18.52	18.44	18.44	18.52	0	-80	-80
BRISBANE	1010.98	67.680	BN 1790		18.44	18.38	18.38	18.44	0	-60	-60
BRISBANE	1011.51	67.150	BN 1780		18.43	18.37	18.37	18.43	0	-60	-60
BRISBANE	1011.98	66.680	BN 1770		18.43	18.36	18.36	18.43	0	-70	-70
BRISBANE	1012.475	66.185	BN 1760		18.33	18.31	18.31	18.33	0	-20	-20
BRISBANE	1012.935	65.725	BN 1750		18.22	18.20	18.19	18.23	10	-30	-20
BRISBANE	1013.445	65.215	BN 1740		18.14	18.11	18.11	18.14	0	-30	-30
BRISBANE	1013.91	64.750	BN 1730		18.08	18.05	18.05	18.08	0	-30	-30
BRISBANE	1014.31	64.350	BN 1720		18.05	18.01	18.01	18.05	0	-40	-40
BRISBANE	1014.61	64.050	BN 1710	Goodna Hospital Gauge	18.08	18.05	18.04	18.09	10	-40	-30
BRISBANE	1015.09	63.570	BN 1700		17.94	17.91	17.90	17.95	10	-40	-30
BRISBANE	1015.56	63.100	BN 1690		17.81	17.75	17.75	17.81	0	-60	-60
BRISBANE	1016.14	62.520	BN 1680		17.71	17.67	17.66	17.72	10	-50	-40
BRISBANE	1016.64	62.020	BN 1670		17.62	17.60	17.60	17.62	0	-20	-20
BRISBANE	1017.13	61.530	BN 1660		17.39	17.37	17.37	17.39	0	-20	-20
BRISBANE	1017.61	61.050	BN 1650		17.26	17.26	17.25	17.27	10	-10	0
BRISBANE	1017.92	60.740	BN 1640		17.10	17.14	17.14	17.10	0	40	40
BRISBANE	1018.2	60.460	BN 1630		17.02	17.08	17.07	17.03	10	50	60
BRISBANE	1018.725	59.935	BN 1620		16.69	16.76	16.75	16.70	10	60	70
BRISBANE	1019.095	59.565	BN 1610		16.56	16.62	16.62	16.56	0	60	60
BRISBANE	1019.49	59.170	BN 1600		16.45	16.49	16.49	16.45	0	40	40
BRISBANE	1019.865	58.795	BN 1590		16.15	16.22	16.22	16.15	0	70	70
BRISBANE	1020.115	58.545	BN 1580		16.25	16.29	16.29	16.25	0	40	40
BRISBANE	1020.525	58.135	BN 1570		16.22	16.28	16.27	16.23	10	50	60
BRISBANE	1020.83	57.830	BN 1560		16.07	16.11	16.11	16.07	0	40	40
BRISBANE	1021.095	57.565	BN 1550		15.86	15.91	15.90	15.87	10	40	50
BRISBANE	1021.539	57.121	BN 1540		15.69	15.74	15.73	15.70	10	40	50
BRISBANE	1021.715	56.945	BN 1530		15.72	15.78	15.78	15.72	0	60	60
BRISBANE	1021.895	56.765	BN 1520		15.65	15.69	15.68	15.66	10	30	40
BRISBANE	1022.105	56.555	BN 1510		15.53	15.49	15.48	15.54	10	-50	-40
BRISBANE	1022.575	56.085	BN 1500		15.45	15.52	15.51	15.46	10	60	70
BRISBANE	1023.04	55.620	BN 1490		15.21	15.23	15.22	15.22	10	10	20
BRISBANE	1023.57	55.090	BN 1480		15.12	15.17	15.17	15.12	0	50	50
BRISBANE	1024.08	54.580	BN 1470		15.07	15.12	15.12	15.07	0	50	50
BRISBANE	1024.563	54.097	BN 1460		15.01	15.05	15.05	15.01	0	40	40
BRISBANE	1025.07	53.590	BN 1450		14.91	14.95	14.94	14.92	10	30	40
BRISBANE	1025.36	53.300	BN 1440		14.77	14.80	14.80	14.77	0	30	30
BRISBANE	1025.59	53.070	BN 1430		14.61	14.61	14.61	14.61	0	0	0
BRISBANE	1026.17	52.490	BN 1420		14.48	14.50	14.49	14.49	10	10	20
BRISBANE	1026.68	51.980	BN 1410	Mt Ommaney Gauge	14.38	14.38	14.38	14.38	0	0	0
BRISBANE	1026.9	51.760	BN 1400		14.25	14.21	14.20	14.26	10	-50	-40
BRISBANE	1027.16	51.500	BN 1390		14.11	14.12	14.11	14.12	10	0	10

TABLE J-3 - Affluxes Due to Regulation Lines and Revegetation Combined Effects for the 100 Year ARI Flood

LOCATION	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)	CROSS SECTION NUMBER	STRUCTURE\GAUGE IDENTIFICATION	100 YEAR ARI DESIGN WL (m AHD)	100 YEAR ARI REG LINES + REVEG WL (m AHD)	100 YEAR ARI REG LINES	100 YEAR ARI REVEGETATION	REVEGETATION AFFLUX (mm)	REG LINES AFFLUX (mm)	REG + REVEG AFLUX (mm)
BRISBANE	1027.68	50.980	BN 1380		14.17	14.19	14.18	14.18	10	10	20
BRISBANE	1028.18	50.480	BN 1370		14.19	14.19	14.18	14.20	10	-10	0
BRISBANE	1028.68	49.980	BN 1360		14.06	14.10	14.09	14.07	10	30	40
BRISBANE	1028.72	49.940	BN1350	Centenary Bridge			0.00		0	0	0
BRISBANE	1028.76	49.900	BN 1340		13.91	13.97	13.96	13.92	10	50	60
BRISBANE	1029.2	49.460	BN 1330		13.80	13.80	13.80	13.80	0	0	0
BRISBANE	1029.68	48.980	BN 1320		13.82	13.80	13.80	13.82	0	-20	-20
BRISBANE	1030.22	48.440	BN 1310		13.82	13.85	13.85	13.82	0	30	30
BRISBANE	1030.87	47.790	BN 1300		13.75	13.81	13.81	13.75	0	60	60
BRISBANE	1031.26	47.400	BN 1290		13.59	13.69	13.68	13.60	10	90	100
BRISBANE	1031.7	46.960	BN 1280	Darra Wharf Gauge	13.21	13.33	13.33	13.21	0	120	120
BRISBANE	1031.995	46.665	BN 1270		13.31	13.41	13.41	13.31	0	100	100
BRISBANE	1032.23	46.430	BN 1260		13.18	13.28	13.28	13.18	0	100	100
BRISBANE	1032.585	46.075	BN 1250		12.94	13.03	13.03	12.94	0	90	90
BRISBANE	1033.08	45.580	BN 1240		12.79	12.90	12.90	12.79	0	110	110
BRISBANE	1033.37	45.290	BN 1230		12.68	12.83	12.83	12.68	0	150	150
BRISBANE	1033.9	44.760	BN 1220		12.45	12.57	12.58	12.44	-10	130	120
BRISBANE	1034.37	44.290	BN 1210		12.29	12.42	12.42	12.29	0	130	130
BRISBANE	1034.89	43.770	BN 1200	Sherwood Gauge	12.19	12.32	12.32	12.19	0	130	130
BRISBANE	1035.414	43.246	BN 1190		11.94	12.08	12.08	11.94	0	140	140
BRISBANE	1035.9	42.760	BN 1180		11.65	11.76	11.75	11.66	10	100	110
BRISBANE	1036.46	42.200	BN 1170		11.35	11.46	11.46	11.35	0	110	110
BRISBANE	1036.77	41.890	BN 1160		11.28	11.39	11.39	11.28	0	110	110
BRISBANE	1036.915	41.745	BN 1150		11.12	11.23	11.23	11.12	0	110	110
BRISBANE	1037.09	41.570	BN 1140		11.07	11.20	11.19	11.08	10	120	130
BRISBANE	1037.11	41.550	BN 1130	Indooroopilly Bridge			0.00		0	0	0
BRISBANE	1037.175	41.485	BN 1120		10.98	11.10	11.10	10.98	0	120	120
BRISBANE	1037.285	41.375	BN 1110	Clarence Road Gauge	10.93	11.04	11.04	10.93	0	110	110
BRISBANE	1037.625	41.035	BN 1100		10.91	11.02	11.01	10.92	10	100	110
BRISBANE	1038.085	40.575	BN 1090		10.93	10.99	10.98	10.94	10	50	60
BRISBANE	1038.6	40.060	BN 1080		10.91	10.98	10.98	10.91	0	70	70
BRISBANE	1039.1	39.560	BN 1070		10.90	11.05	11.04	10.91	10	140	150
BRISBANE	1039.565	39.095	BN 1060	Oxley Creek Gauge	10.92	11.00	11.00	10.92	0	80	80
BRISBANE	1040.09	38.570	BN 1050	King Authur Terrace Gauge	10.84	10.93	10.93	10.84	0	90	90
BRISBANE	1040.49	38.170	BN 1040		10.71	10.80	10.80	10.71	0	90	90
BRISBANE	1041.01	37.650	BN 1030		10.74	10.86	10.86	10.74	0	120	120
BRISBANE	1041.23	37.430	BN 1020		10.71	10.80	10.81	10.70	-10	100	90
BRISBANE	1041.46	37.200	BN 1010	Tennyson Power House Gauge	10.62	10.72	10.72	10.62	0	100	100
BRISBANE	1041.7	36.960	BN 1000		10.59	10.69	10.69	10.59	0	100	100
BRISBANE	1041.96	36.700	BN 990		10.45	10.58	10.58	10.45	0	130	130
BRISBANE	1042.235	36.425	BN 980		10.30	10.41	10.41	10.30	0	110	110
BRISBANE	1042.515	36.145	BN 970	Yeronga Street Gauge	10.29	10.40	10.39	10.30	10	100	110
BRISBANE	1042.91	35.750	BN 960		10.22	10.23	10.22	10.23	10	0	10
BRISBANE	1043.725	34.935	BN 950		9.91	9.98	9.98	9.91	0	70	70
BRISBANE	1044.06	34.600	BN 940	Sandy Creek Gauge	9.75	9.86	9.86	9.75	0	110	110
BRISBANE	1044.34	34.320	BN 930		9.58	9.69	9.68	9.59	10	100	110
BRISBANE	1044.605	34.055	BN 920		9.53	9.65	9.65	9.53	0	120	120
BRISBANE	1044.86	33.800	BN 910		9.49	9.59	9.58	9.50	10	90	100
BRISBANE	1045.4	33.260	BN 900		9.31	9.40	9.40	9.31	0	90	90
BRISBANE	1045.885	32.775	BN 890		9.17	9.23	9.23	9.17	0	60	60
BRISBANE	1046.18	32.480	BN 880		9.09	9.17	9.17	9.09	0	80	80
BRISBANE	1046.34	32.320	BN 870	Dutton Park Cemetery Gauge	9.02	9.11	9.11	9.02	0	90	90
BRISBANE	1046.58	32.080	BN 860		8.97	9.08	9.08	8.97	0	110	110
BRISBANE	1046.9	31.760	BN 850		8.78	8.87	8.87	8.78	0	90	90
BRISBANE	1047.35	31.310	BN 840		8.41	8.47	8.47	8.41	0	60	60
BRISBANE	1047.915	30.745	BN 830	Highgate Hill Gauge	8.17	8.24	8.24	8.17	0	70	70
BRISBANE	1048.375	30.285	BN 820		8.23	8.29	8.28	8.24	10	50	60
BRISBANE	1048.89	29.770	BN 810	St Lucia Ferry Gauge	8.00	8.08	8.09	7.99	-10	90	80
BRISBANE	1049.12	29.540	BN 800		7.94	8.03	8.04	7.93	-10	100	90
BRISBANE	1049.37	29.290	BN 790		7.75	7.85	7.85	7.75	0	100	100
BRISBANE	1049.59	29.070	BN 780		7.74	7.82	7.82	7.74	0	80	80
BRISBANE	1049.87	28.790	BN 770		7.63	7.70	7.70	7.63	0	70	70
BRISBANE	1050.43	28.230	BN 760		7.61	7.66	7.66	7.61	0	50	50
BRISBANE	1050.86	27.800	BN 750		7.46	7.53	7.53	7.46	0	70	70

Legend

In - Regulation Lines set at Extent of Inundation
A - Regulation Lines adjusted until Maximum Afflux Achieved
B - Regulation Lines Set at 15 m Buffer Zone
E - Regulation Lines set at Extent of Cross Section
W - Regulation Lines set at 30 m for Wharfs in Lieu of 15 m Buffer Zone

Table J-4 - Development Levels & Location of Regulation Lines for the Brisbane River

WATER LEVEL Location	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	Reach No. and Name	100 Year ARI Development Levels (m AHD)	Limiting Factor Left Bank	Regulation Line Chainage Left (m)	Regulation Line Chainage Right (m)	Limiting Factor Right Bank
BRISBANE	1000.00	78.66	BN 2020	Reach 1 - Upper Boundary	23.09	In	446.7	772.6	In
BRISBANE	1000.29	78.38	BN 2010		22.87	In	644.2	892.1	In
BRISBANE	1000.78	77.89	BN 2000		22.61	In	790	1009.7	In
BRISBANE	1001.32	77.35	BN 1990		22.52	In	782.7	1088.80	A
BRISBANE	1001.87	76.80	BN 1980		21.99	In	823	1067.1	In
BRISBANE	1002.35	76.31	BN 1970	Reach 2 - Barellan Point	21.80	A	745.5	1001.0	In
BRISBANE	1002.79	75.88	BN 1960		21.78	In	664.5	972.1	In
BRISBANE	1003.28	75.39	BN 1950		21.45	In	517.8	787.0	In
BRISBANE	1003.78	74.89	BN 1940		21.18	In	705.5	960.5	In
BRISBANE	1004.30	74.36	BN 1930		20.72	In	540.5	795.6	In
BRISBANE	1004.81	73.85	BN 1920		20.69	In	498.3	817.6	In
BRISBANE	1005.33	73.34	BN 1910		20.50	In	461.3	826.1	In
BRISBANE	1005.87	72.79	BN 1900	Reach 3 - Riverview	20.18	A	430.4	717.4	In
BRISBANE	1006.30	72.36	BN 1890		20.02	In	531.6	776.4	In
BRISBANE	1006.91	71.75	BN 1880		19.82	A	387.1	812.2	In
BRISBANE	1007.41	71.25	BN 1870		19.72	In	350.2	765.60	A
BRISBANE	1007.92	70.74	BN 1860	Reach 4 - Redbank	19.39	In	580.3	840.1	A
BRISBANE	1008.45	70.22	BN 1850		19.26	In	583.3	866.2	In
BRISBANE	1008.93	69.74	BN 1840		19.19	In	517.7	814.4	In
BRISBANE	1009.40	69.26	BN 1830		19.09	In	550.7	823.30	A
BRISBANE	1009.72	68.84	BN 1820		19.03	In	405.5	738.3	A
BRISBANE	1010.49	68.17	BN 1810		18.73	In	30.8	284.6	In
BRISBANE	1010.73	67.94	BN 1800		18.74	A	265.5	504.3	In
BRISBANE	1010.98	67.68	BN 1790		18.68	In	73.4	335.2	In
BRISBANE	1011.51	67.15	BN 1780		18.67	In	296.6	695.80	A
BRISBANE	1011.98	66.68	BN 1770		18.66	A	250.2	766.1	In
BRISBANE	1012.48	66.19	BN 1760	Reach 5 - Goodna	18.61	In	767.2	1528.3	In
BRISBANE	1012.94	65.73	BN 1750		18.50	In	327.1	898.90	A
BRISBANE	1013.45	65.22	BN 1740		18.41	In	159.6	1004.1	In
BRISBANE	1013.91	64.74	BN 1730		18.35	In	204.9	1135.0	In
BRISBANE	1014.31	64.55	BN 1720		18.31	In	0	896.7	In
BRISBANE	1014.61	64.05	BN 1710	Reach 6 - Wacol	18.35	In	0	923.7	In
BRISBANE	1015.09	63.57	BN 1700		18.21	In	239.6	643.6	In
BRISBANE	1015.56	63.10	BN 1690		18.05	In	249.8	508.20	A
BRISBANE	1016.14	62.52	BN 1680		17.97	A	405	803.9	In
BRISBANE	1016.64	62.02	BN 1670		17.90	A	352.5	959.2	In
BRISBANE	1017.13	61.53	BN 1660		17.67	A	463.2	870.7	In
BRISBANE	1017.61	61.05	BN 1650		17.56	A	398.9	851.9	A
BRISBANE	1017.92	60.74	BN 1640		17.44	A	502.6	905.20	A
BRISBANE	1018.20	60.46	BN 1630		17.38	A	407.3	809.0	A
BRISBANE	1018.73	59.94	BN 1620		17.06	In	768.7	1141.0	In
BRISBANE	1019.10	59.57	BN 1610		16.92	In	124.2	648.9	In
BRISBANE	1019.49	59.17	BN 1600	Reach 7 - Riverhills	16.79	A	435.5	836.0	In
BRISBANE	1019.87	58.80	BN 1590		16.52	In	131.8	441.90	A
BRISBANE	1020.12	58.55	BN 1580		16.59	In	62.9	613.10	A
BRISBANE	1020.53	58.14	BN 1570		16.58	In	136.5	656.0	A
BRISBANE	1020.83	57.83	BN 1560		16.41	In	103.8	395.80	B
BRISBANE	1021.10	57.57	BN 1550		16.21	B	297	548.9	In
BRISBANE	1021.54	57.12	BN 1540		16.04	A	685	998.3	In
BRISBANE	1021.72	56.95	BN 1530		16.08	B	676	1012.4	In
BRISBANE	1021.90	56.77	BN 1520	Reach 8 - Westlake	15.99	In	828.4	1178.70	B
BRISBANE	1022.11	56.56	BN 1510		15.79	B	371.4	905.60	In
BRISBANE	1022.58	56.09	BN 1500		15.82	B	292.9	603.5	A
BRISBANE	1023.04	55.62	BN 1490		15.53	In	258	618.10	B
BRISBANE	1023.57	55.09	BN 1480		15.47	A	353.9	565.00	B
BRISBANE	1024.08	54.58	BN 1470		15.42	B	212.5	444.30	B
BRISBANE	1024.56	54.10	BN 1460		15.35	B	295.7	591.9	In
BRISBANE	1025.07	53.59	BN 1450		15.25	A	380.5	680.4	In
BRISBANE	1025.36	53.30	BN 1440		15.10	B	480.6	810.6	In
BRISBANE	1025.59	53.07	BN 1430		14.91	B	271.4	606.50	B
BRISBANE	1026.17	52.49	BN 1420		14.80	B	373.1	669.70	B
BRISBANE	1026.68	51.98	BN 1410		14.68	B	155	491.70	A
BRISBANE	1026.90	51.76	BN 1400	Reach 9 - Mermaid Reach	14.51	A	200.6	462.30	B
BRISBANE	1027.16	51.50	BN 1390		14.42	B	599.6	853.20	B
BRISBANE	1027.68	50.98	BN 1380		14.49	B	561.4	901.8	B
BRISBANE	1028.18	50.48	BN 1370		14.49	B	445.1	905.60	B
BRISBANE	1028.68	49.98	BN 1360		14.40	In	350.6	613.7	A
BRISBANE	1028.76	49.90	BN 1340		14.27	B	350.6	613.7	B
BRISBANE	1029.20	49.46	BN 1330		14.10	A	735.9	1023.80	B

Legend

In - Regulation Lines set at Extent of Inundation
A - Regulation Lines adjusted until Maximum Afflux Achieved
B - Regulation Lines Set at 15 m Buffer Zone
E - Regulation Lines set at Extent of Cross Section
W - Regulation Lines set at 30 m for Wharfs in Lieu of 15 m Buffer Zone

Table J-4 - Development Levels & Location of Regulation Lines for the Brisbane River

WATER LEVEL Location	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	Reach No. and Name	100 Year ARI Development Levels (m AHD)	Limiting Factor Left Bank	Regulation Line Chainage Left (m)	Regulation Line Chainage Right (m)	Limiting Factor Right Bank
BRISBANE	1029.68	48.98	BN 1320		14.10	B	744.3	1030.80	B
BRISBANE	1030.22	48.44	BN 1310		14.15	B	746.3	1119.9	B
BRISBANE	1030.87	47.79	BN 1300		14.11	B	525.5	804.5	B
BRISBANE	1031.26	47.40	BN 1290		13.99	B	457.5	682.5	B
BRISBANE	1031.70	46.96	BN 1280		13.63	B	703.4	923.40	B
BRISBANE	1032.00	46.67	BN 1270		13.71	B	682.7	985.7	B
BRISBANE	1032.23	46.43	BN 1260	Reach 10 - Sherwood Reach	13.58	B	576.1	919.70	B
BRISBANE	1032.59	46.08	BN 1250		13.33	B	473.1	769.70	B
BRISBANE	1033.08	45.58	BN 1240		13.20	B	730.3	972.3	B
BRISBANE	1033.37	45.29	BN 1230		13.13	B	671.1	941.3	B
BRISBANE	1033.90	44.76	BN 1220		12.87	B	678.7	925.20	B
BRISBANE	1034.37	44.29	BN 1210		12.72	B	465	707.60	B
BRISBANE	1034.89	43.77	BN 1200		12.62	B	533.8	792.20	B
BRISBANE	1035.41	43.25	BN 1190	Reach 11 - Chelmer Reach	12.38	B	504.6	788.80	B
BRISBANE	1035.90	42.76	BN 1180		12.06	B	424.8	682.40	B
BRISBANE	1036.46	42.20	BN 1170		11.76	B	443.8	674.40	B
BRISBANE	1036.77	41.89	BN 1160		11.69	B	150.3	451.8	B
BRISBANE	1036.92	41.75	BN 1150		11.53	B	420.5	683.90	B
BRISBANE	1037.09	41.57	BN 1140	Reach 12 - Indooroopilly Reach	11.50	B	49.2	271.40	A
BRISBANE	1037.18	41.49	BN 1120		11.40	A	103.8	318.90	A
BRISBANE	1037.29	41.38	BN 1110		11.34	B	239	523.10	B
BRISBANE	1037.63	41.04	BN 1100		11.32	B	576.3	943.20	B
BRISBANE	1038.09	40.58	BN 1090		11.29	B	892.8	1178.80	B
BRISBANE	1038.60	40.06	BN 1080		11.28	B	867.6	1280.00	B
BRISBANE	1039.10	39.56	BN 1070		11.35	B	845.9	1729.3	E
BRISBANE	1039.57	39.05	BN 1060	Reach 13 - Canoe Reach	11.30	B	868	1622.5	E
BRISBANE	1040.09	38.57	BN 1050		11.23	B	634.7	1201.9	E
BRISBANE	1040.49	38.17	BN 1040		11.10	B	870	1369.50	E
BRISBANE	1041.01	37.56	BN 1030		11.16	B	810	1344.7	E
BRISBANE	1041.23	37.43	BN 1020		11.10	B	861.4	1434.8	E
BRISBANE	1041.46	37.20	BN 1010		11.02	B	728.3	1277.10	E
BRISBANE	1041.70	36.96	BN 1000		10.99	B	925.1	1401.20	E
BRISBANE	1041.96	36.70	BN 990		10.88	B	633.9	1077.30	E
BRISBANE	1042.24	36.43	BN 980	Reach 14 - Long Pocket Reach	10.71	B	404.8	813.90	E
BRISBANE	1042.52	36.15	BN 970		10.70	B	322.5	808.70	E
BRISBANE	1042.91	35.75	BN 960		10.53	B	346	871.00	E
BRISBANE	1043.73	34.94	BN 950		10.28	B	199.6	490.70	B
BRISBANE	1044.06	34.60	BN 940		10.16	B	428.4	703.00	B
BRISBANE	1044.34	34.32	BN 930		9.99	B	374.6	624.30	B
BRISBANE	1044.61	34.06	BN 920		9.95	B	333.2	652.8	B
BRISBANE	1044.86	33.80	BN 910		9.89	B	408	726.4	B
BRISBANE	1045.40	33.26	BN 900	Reach 15 - Cemetery Reach	9.70	B	362.3	1026.20	B
BRISBANE	1045.89	32.78	BN 890		9.53	B	507.6	1179.1	B
BRISBANE	1046.18	32.48	BN 880		9.47	B	584.6	1086.5	B
BRISBANE	1046.34	32.32	BN 870		9.41	B	621.7	939.5	B
BRISBANE	1046.58	32.08	BN 860		9.38	B	661.2	1154.9	A
BRISBANE	1046.90	31.76	BN 850		9.17	B	284.7	778.40	B
BRISBANE	1047.35	31.31	BN 840		8.77	B	257.3	518.30	B
BRISBANE	1047.92	30.75	BN 830		8.54	B	302.6	535.6	B
BRISBANE	1048.38	30.29	BN 820	Reach 16 - St Lucia Reach	8.59	B	394.9	737.90	B
BRISBANE	1048.89	29.77	BN 810		8.38	B	593.1	950.6	B
BRISBANE	1049.12	29.54	BN 800	Reach 17 - Toowong Reach	8.33	B	180.8	455.4	B
BRISBANE	1049.37	29.29	BN 790		8.15	B	177.6	415.0	B
BRISBANE	1049.59	29.07	BN 780		8.12	B	816.4	1145.8	B
BRISBANE	1049.87	28.79	BN 770		8.00	B	200.3	468.60	A
BRISBANE	1050.43	28.23	BN 760		7.96	A	571.8	880.70	A
BRISBANE	1050.86	27.80	BN 750		7.83	B	614.3	873.5	B
BRISBANE	1051.36	27.30	BN 740	Reach 18 - Milton Reach	7.84	B	747	990.6	B
BRISBANE	1051.90	26.77	BN 730		7.67	A	895.9	1160.5	A
BRISBANE	1052.31	26.35	BN 720		7.81	B	125.9	398.00	B
BRISBANE	1052.39	26.27	BN 700		7.61	B	41.7	330.0	B
BRISBANE	1052.60	26.07	BN 690	Reach 19 - South Brisbane Reach	7.52	B	10.7	245.80	B
BRISBANE	1052.64	26.02	BN 670		6.99	B	0	261.10	B
BRISBANE	1052.87	25.80	BN 660		6.84	A	153.5	378.80	A
BRISBANE	1053.32	25.34	BN 650		6.77	B	0	365.20	B
BRISBANE	1053.39	25.80	BN 630		6.70	B	252.4	616.00	B
BRISBANE	1053.90	24.76	BN 620		6.28	B	630.5	935.4	B
BRISBANE	1054.64	24.02	BN 610		6.16	B	65.9	567.40	B
BRISBANE	1054.68	23.98	BN 590	Reach 20 - Town Reach	6.06	B	52.4	467.6	B

Legend

In - Regulation Lines set at Extent of Inundation
A - Regulation Lines adjusted until Maximum Afflux Achieved
B - Regulation Lines Set at 15 m Buffer Zone
E - Regulation Lines set at Extent of Cross Section
W - Regulation Lines set at 30 m for Wharfs in Lieu of 15 m Buffer Zone

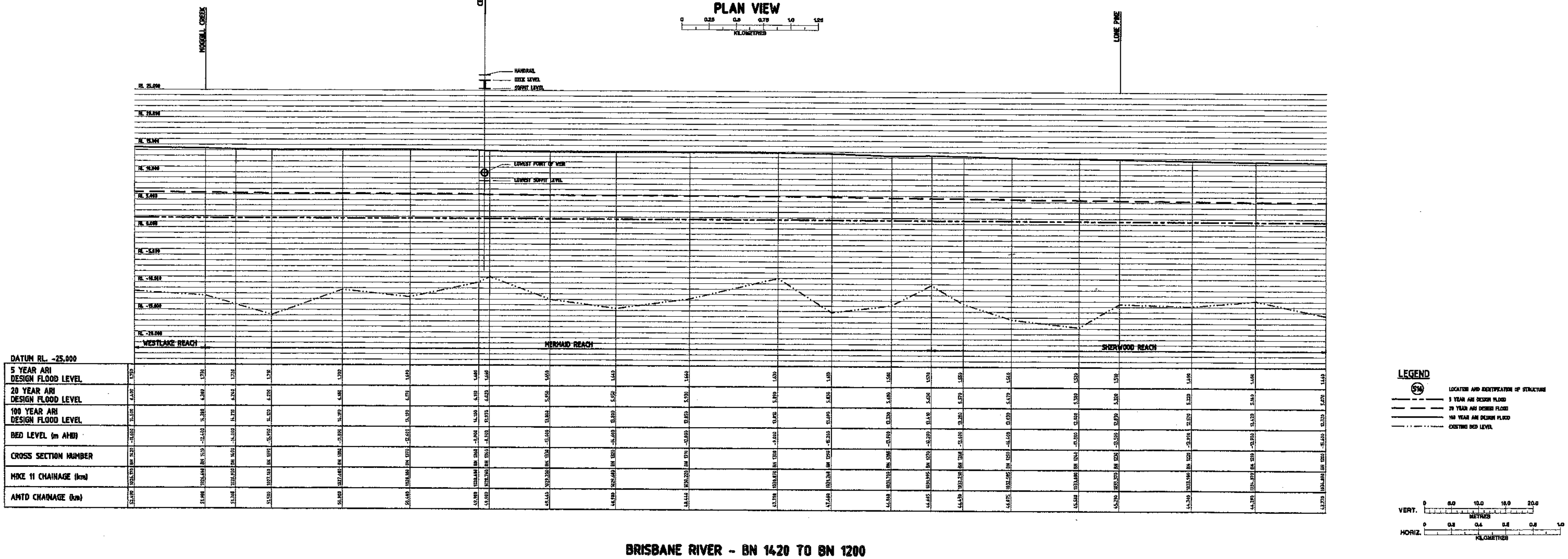
Table J-4 - Development Levels & Location of Regulation Lines for the Brisbane River

WATER LEVEL Location	MIKE 11 Chainage (km)	AMTD Chainage (km)	Cross Section Number	Reach No. and Name	100 Year ARI Development Levels (m AHD)	Limiting Factor Left Bank	Regulation Line Chainage Left (m)	Regulation Line Chainage Right (m)	Limiting Factor Right Bank
BRISBANE	1054.97	23.69	BN 560		5.82	B	269.4	588.8	B
BRISBANE	1055.28	23.38	BN 550		5.74	B	325.1	631.20	B
BRISBANE	1055.42	23.24	BN 540		5.73	B	271.6	615.60	B
BRISBANE	1055.96	22.70	BN 530		5.68	B	85.1	444.60	B
BRISBANE	1056.40	22.26	BN 520		5.43	B	109.9	414.10	B
BRISBANE	1056.70	21.97	BN 510		5.36	B	120	405.00	B
BRISBANE	1056.87	21.80	BN 500		5.57	B	1084.8	1345.00	B
BRISBANE	1056.95	21.71	BN 490	Reach 21 - Shaftston Reach	5.46	B	1058.7	1345.00	B
BRISBANE	1057.09	21.57	BN 480		5.31	B	100	407.80	B
BRISBANE	1057.53	21.13	BN 470		5.17	B	149.6	462.60	B
BRISBANE	1058.04	20.62	BN 460		4.91	B	271.4	613.00	B
BRISBANE	1058.23	20.43	BN 450		4.83	B	217	511.40	B
BRISBANE	1058.53	20.13	BN 440		4.69	B	273	519.70	B
BRISBANE	1058.74	19.93	BN 430	Reach 22 - Humbug Reach	4.72	B	184.8	474.90	B
BRISBANE	1059.04	19.63	BN 420		4.45	B	431.3	657.00	B
BRISBANE	1059.54	19.12	BN 410		4.41	B	455	805.00	B
BRISBANE	1059.99	18.67	BN 400		4.20	B	320	703.30	B
BRISBANE	1060.35	18.32	BN 390	Reach 23 - Bulimba Reach	3.94	B	386.2	676.70	B
BRISBANE	1060.54	18.13	BN 380		3.80	B	308.7	577.20	B
BRISBANE	1061.02	17.65	BN 370		3.76	B	634	955.00	B
BRISBANE	1061.53	17.13	BN 360		3.54	B	442	743.00	B
BRISBANE	1062.02	16.64	BN 350		3.46	B	315	673.10	B
BRISBANE	1062.54	16.13	BN 340		3.42	B	240.4	732.50	B
BRISBANE	1062.94	15.72	BN 330		3.41	B	326.6	868.00	B
BRISBANE	1063.31	15.35	BN 320	Reach 24 - Hamilton Reach	3.29	B	529.6	1001.00	B
BRISBANE	1063.65	15.02	BN 310		3.00	B	538	885.10	B
BRISBANE	1064.00	14.66	BN 300		2.96	B	483.2	845.60	B
BRISBANE	1064.49	14.17	BN 290		2.83	B	479.7	827.70	B
BRISBANE	1065.01	13.65	BN 280		2.85	B	722.2	1101.80	B
BRISBANE	1065.50	13.16	BN 270		2.81	W	671.9	1071.90	W
BRISBANE	1065.99	12.67	BN 260		2.84	W	590	1101.80	W
BRISBANE	1066.51	12.16	BN 250	Reach 25 - Quarries Reach	2.76	W	565.8	1051.70	W
BRISBANE	1067.02	11.64	BN 240		2.71	W	739.7	1169.10	W
BRISBANE	1067.49	11.18	BN 230		2.59	W	399.8	829.3	W
BRISBANE	1067.97	10.70	BN 220		2.50	W	462.5	906.80	W
BRISBANE	1068.66	10.00	BN 210	Reach 26 - Lytton Reach	2.50	W	1062.9	1520.30	W
BRISBANE	1069.05	9.62	BN 200		2.50	W	591.4	1015.70	W
BRISBANE	1069.54	9.13	BN 190		2.50	W	526.9	984.30	W
BRISBANE	1070.03	8.64	BN 180		2.50	W	206.3	656.20	W
BRISBANE	1070.53	8.13	BN 170		2.50	W	417	874.9	W
BRISBANE	1071.04	7.62	BN 160		2.50	W	608	1081.9	W
BRISBANE	1071.52	7.14	BN 150		2.50	W	451.4	938.70	W
BRISBANE	1072.02	6.65	BN 140		2.50	W	171.7	1074.10	W
BRISBANE	1072.52	6.15	BN 130		2.50	W	435.8	893.30	W
BRISBANE	1073.00	5.67	BN 120		2.50	W	571.9	1063.20	W
BRISBANE	1073.49	5.18	BN 110		2.50	W	494	991.40	W
BRISBANE	1074.00	4.66	BN 100	Reach 27 - Lytton Rocks Reach	2.50	W	658.7	1127.40	W
BRISBANE	1074.46	4.20	BN 90		2.50	W	667.4	1183.00	W
BRISBANE	1074.99	3.68	BN 80		2.50	W	825.4	1338.30	W
BRISBANE	1075.48	3.18	BN 70		2.50	W	994.7	1796.30	W
BRISBANE	1076.00	2.66	BN 60	Reach 28 - Pelican Banks Reach	2.50	W	927.8	2006.00	W
BRISBANE	1076.50	2.17	BN 50		2.50	W	748.5	1641.70	W
BRISBANE	1077.01	1.65	BN 40		2.50	W	418.7	2026.30	W
BRISBANE	1077.51	1.15	BN 30	Reach 29 - Lower Reach	2.50	W	621.6	1598.40	W
BRISBANE	1078.04	0.62	BN 20		2.50	W	618.9	1399.70	W
BRISBANE	1078.53	0.14	BN 10		2.50	W	691.5	1218.70	W
BRISBANE	1078.66	-	-		2.50		0	644.2	

FIGURE J-1d

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS - REGULATION LINES AND REVEGETATION STRATEGY CASE

PLAN VIEW



BRISBANE RIVER - BN 1420 TO BN 1200

SINCLAIR KNIGHT MERZ

FIGURE J-1e

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI
FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS
- REGULATION LINES AND REVEGETATION STRATEGY CASE

BRISBANE RIVER - BN 1200 TO BN 950

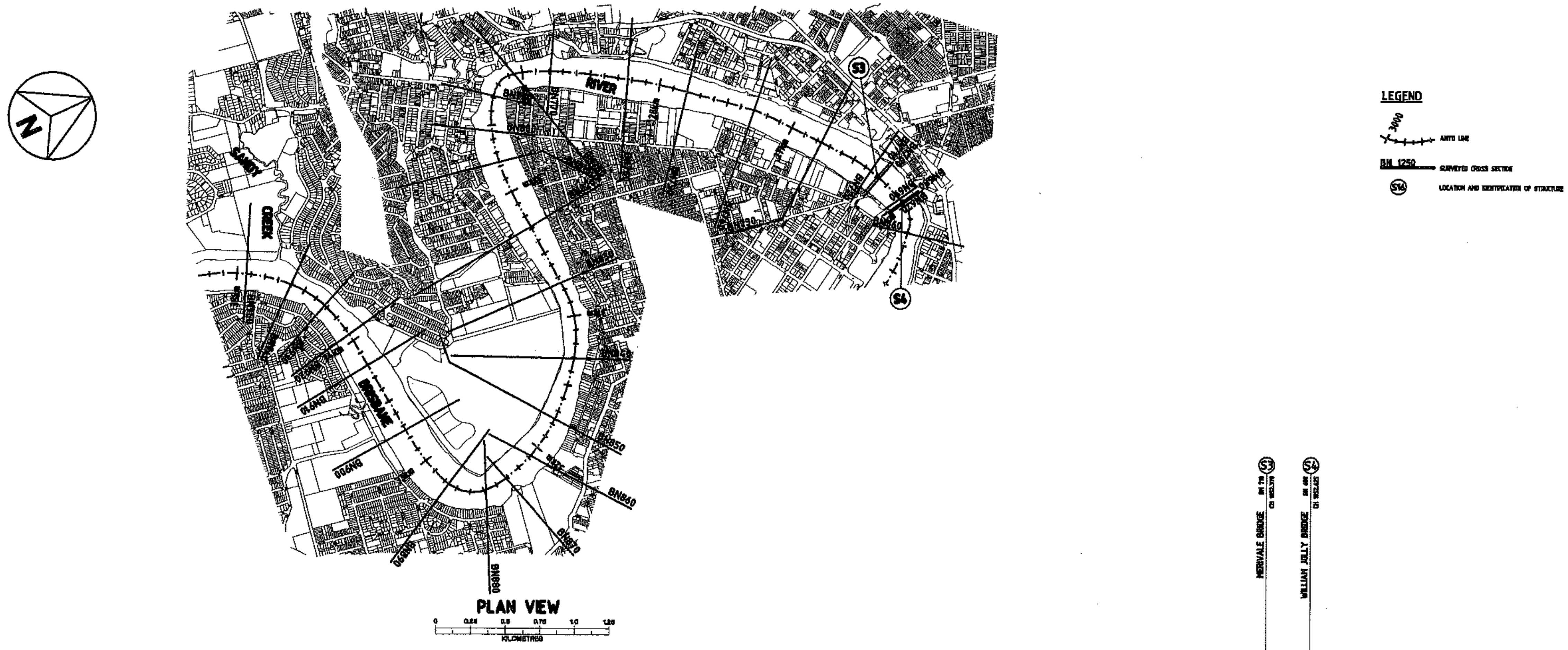
FILE NAME: 415/-160
PLOT SCALE: 1=30
DISK N°: C:\UWG
JOB N°: T00415/
DATE: 23/3/97

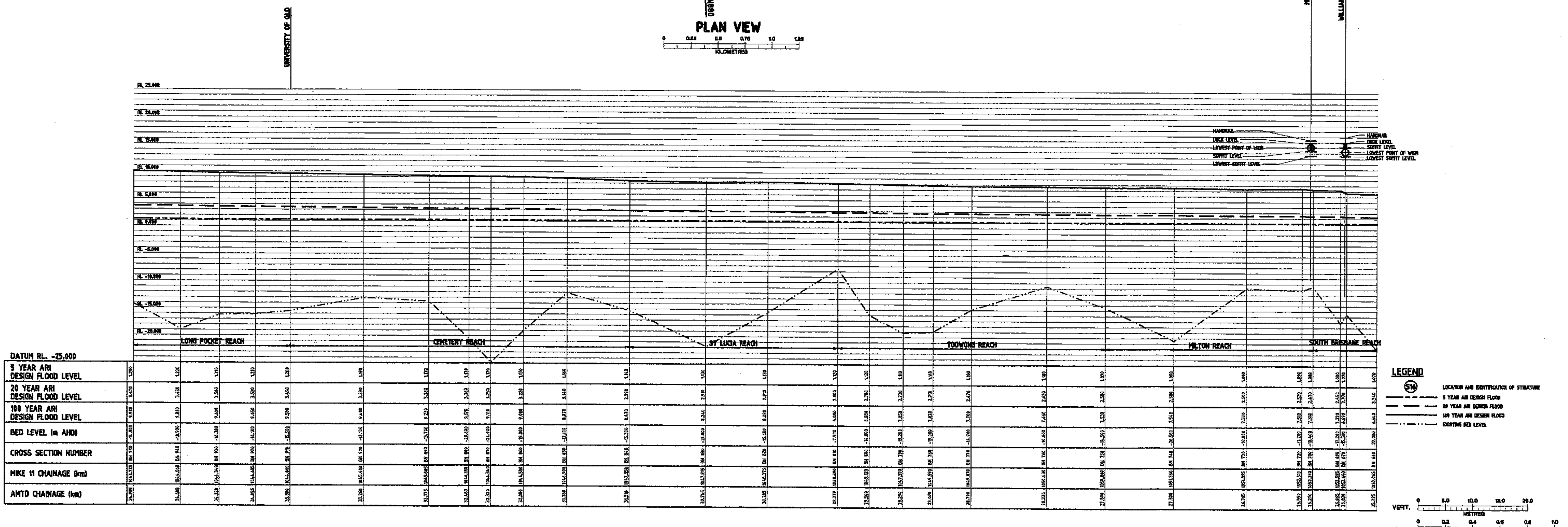
SINCLAIR KNIGHT MERZ

FIGURE J-1f

BRISBANE RIVER FLOOD STUDY

MIKE 11 DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS - REGULATION LINES AND REVEGETATION STRATEGY CASE





BRISBANE RIVER - BN 950 TO BN 660

FILE NAME: 415/-161
PLOT SCALE: 1=30
DISK N°: C:\DWG
JOB N°: T00415?
DATE: 23/3/97

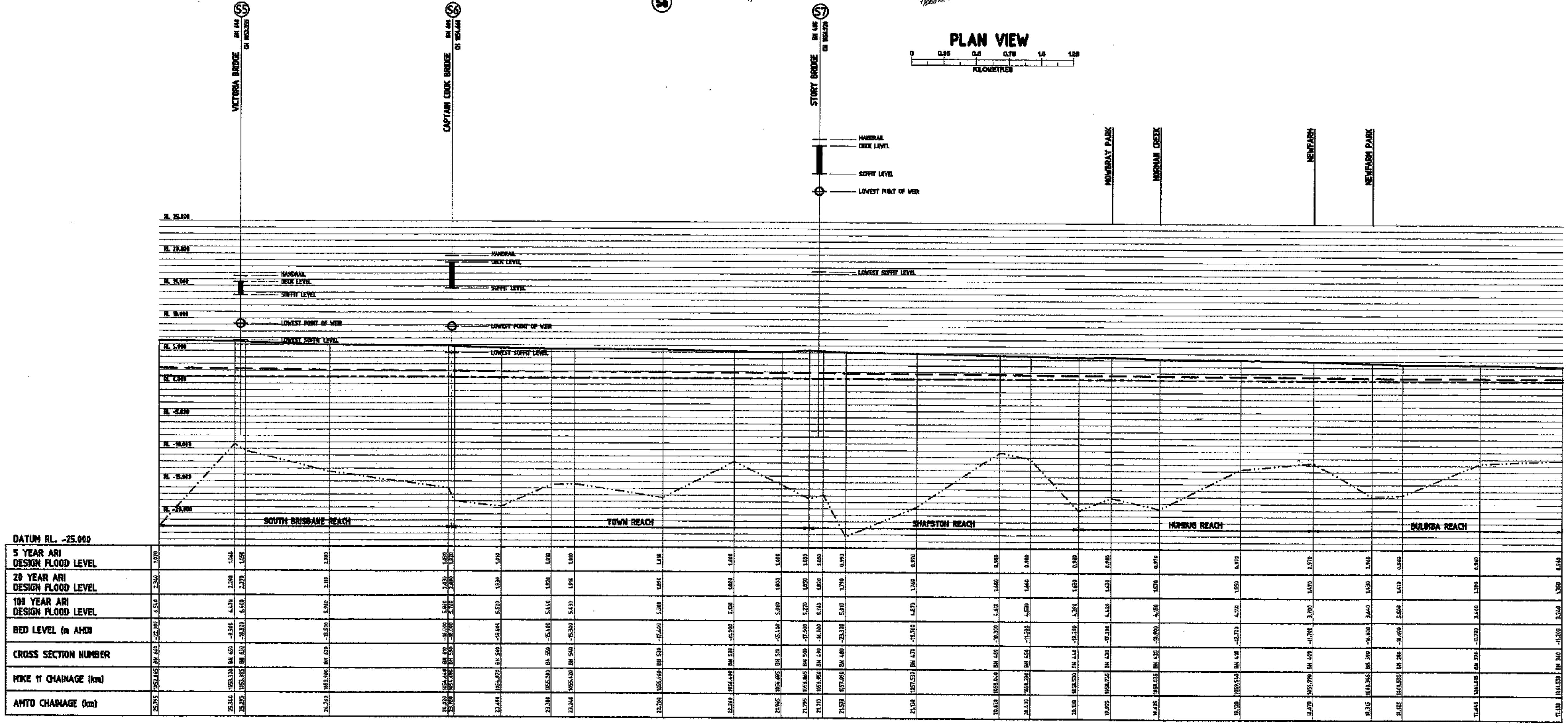
SINCLAIR KNIGHT MERZ

FIGURE J-1g

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI
FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS
- REGULATION LINES AND REVEGETATION STRATEGY CASE

PLAN VIEW

LEGEND



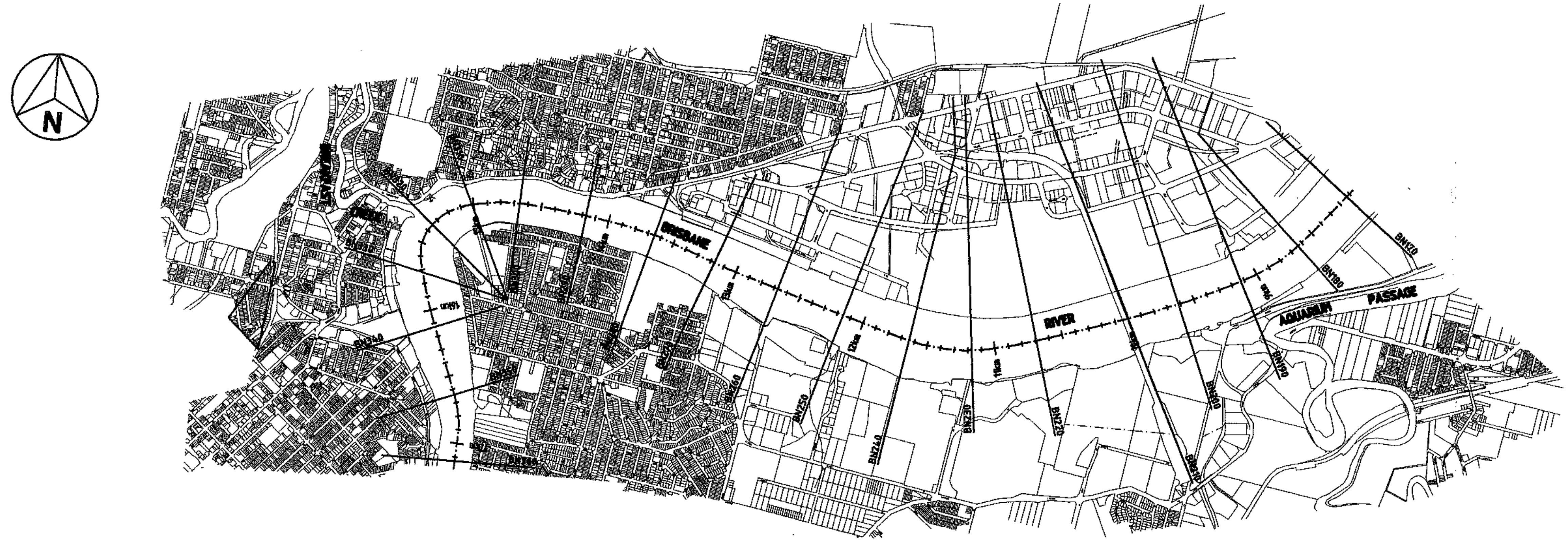
LEGEND

BRISBANE RIVER - BN 660 TO BN 360

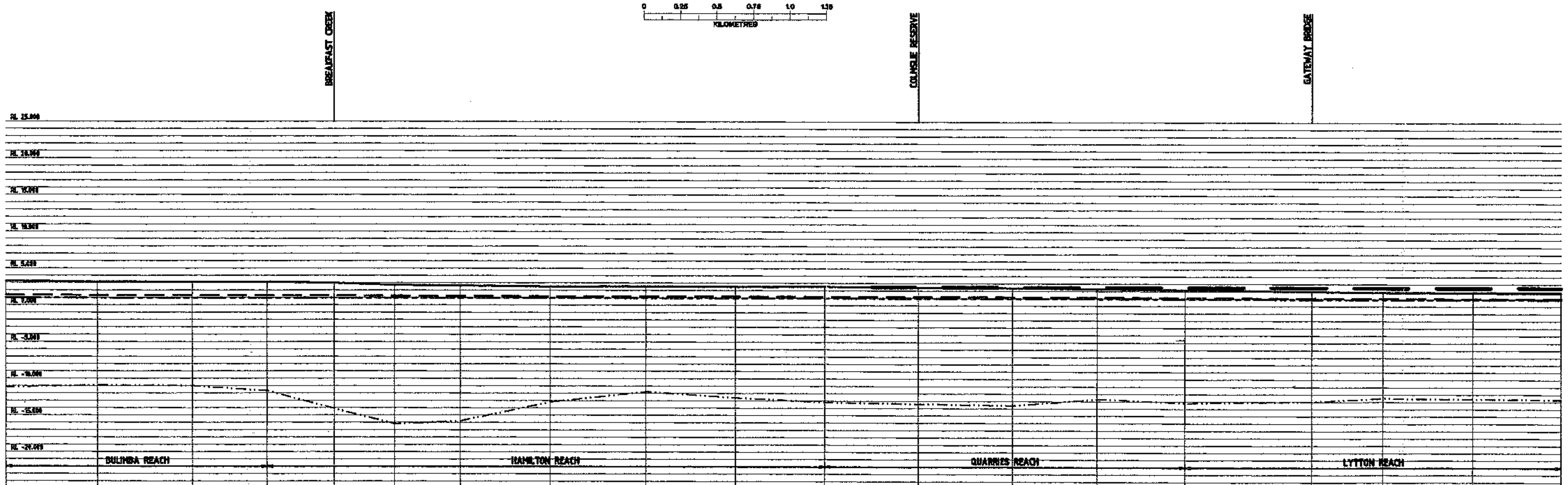
FILE NAME: 415/-162
PLOT SCALE: 1=30
DISK N°: C:\DWG
JOB N°: T00457
DATE: 23/3/97

FIGURE J-1h

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI
FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS
- REGULATION LINES AND REVEGETATION STRATEGY CASE



PLAN VIEW



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	0.960	0.950	0.950	0.950	0.950	0.950	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.930	0.930	0.930	0.930
20 YEAR ARI DESIGN FLOOD LEVEL	1.350	1.320	1.310	1.300	1.280	1.220	1.210	1.190	1.170	1.180	1.190	1.170	1.160	1.140	1.120	1.090	1.080	1.060	1.050
100 YEAR ARI DESIGN FLOOD LEVEL	3.240	3.160	3.120	3.110	2.990	2.780	2.640	2.530	2.550	2.510	2.540	2.460	2.410	2.290	2.180	2.000	1.930	1.870	1.800
BED LEVEL (m AHD)	-11.200	-10.900	-11.000	-11.700	-14.100	-16.200	-15.800	-13.200	-11.000	-12.600	-13.200	-13.400	-13.600	-12.700	-13.200	-13.000	-12.500	-12.600	-12.700
CROSS SECTION NUMBER	BN 360	BN 350	BN 340	BN 330	BN 320	BN 310	BN 300	BN 290	BN 280	BN 270	BN 260	BN 250	BN 240	BN 230	BN 220	BN 210	BN 200	BN 190	BN 180
MIKE 11 CHAINAGE (km)	1061.530	1062.020	1062.535	1062.940	1063.310	1063.445	1064.080	1064.450	1065.010	1065.503	1065.990	1066.505	1067.020	1067.445	1067.965	1068.660	1069.045	1069.535	1070.025
AMTD CHAINAGE (km)	17.130	16.640	16.125	15.720	15.350	15.015	14.660	14.170	13.650	13.157	12.670	12.155	11.660	11.175	10.695	10.000	9.615	9.125	8.635

LEGEND
LOCATION AND IDENTIFICATION OF STRUCTURE
5 YEAR ARI DESIGN FLOOD
20 YEAR ARI DESIGN FLOOD
100 YEAR ARI DESIGN FLOOD
100 YEAR ARI MORETON BAY STORM SURGE LEVEL (RL 2.5m AHD, INCLUDING 300mm ALLOWANCE FOR GREENHOUSE EFFECT)
EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES
HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

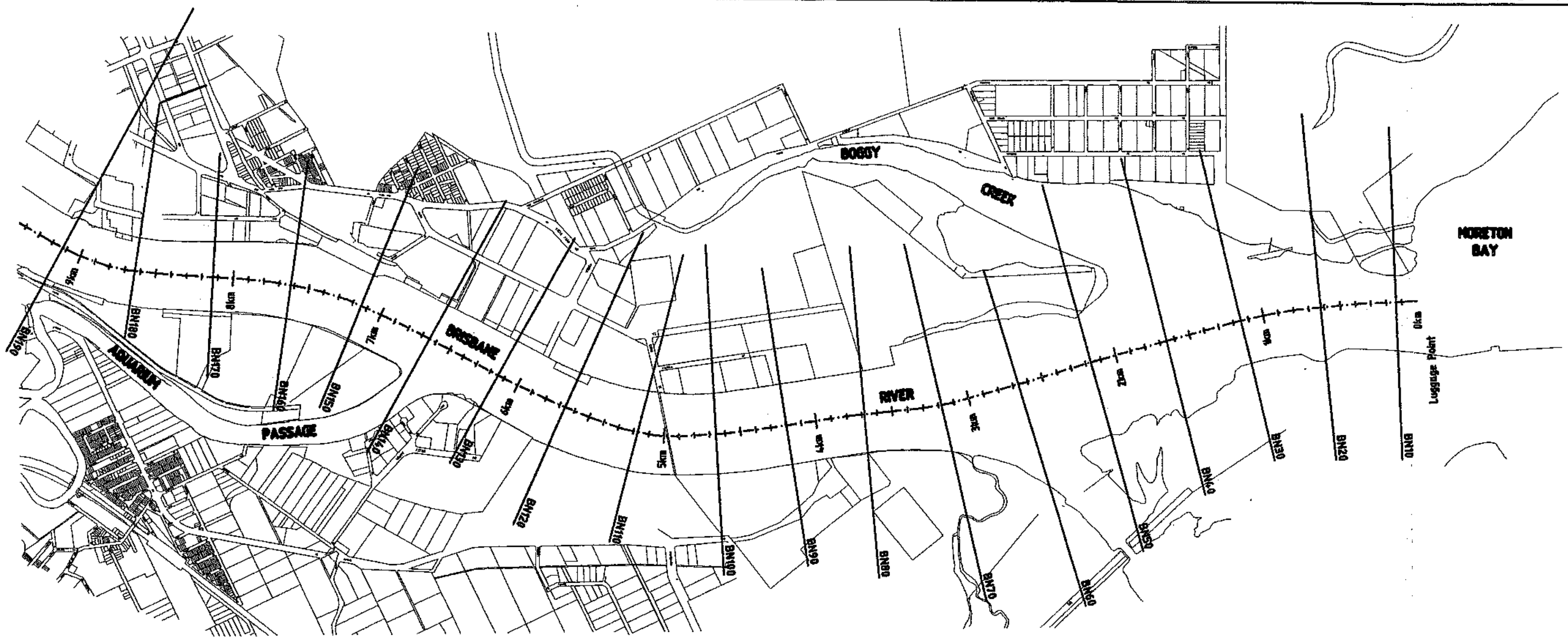
BRISBANE RIVER - BN 360 TO BN 180

FILE NAME: 4157-185 PLOT SCALE: 1=30 DISK N: C:\DWG JOB N: T00415? DATE: 23/3/97

SINCLAIR KNIGHT MERZ

FIGURE J-1l

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 5, 20, AND 100 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS - REGULATION LINES AND REVEGETATION STRATEGY CASE

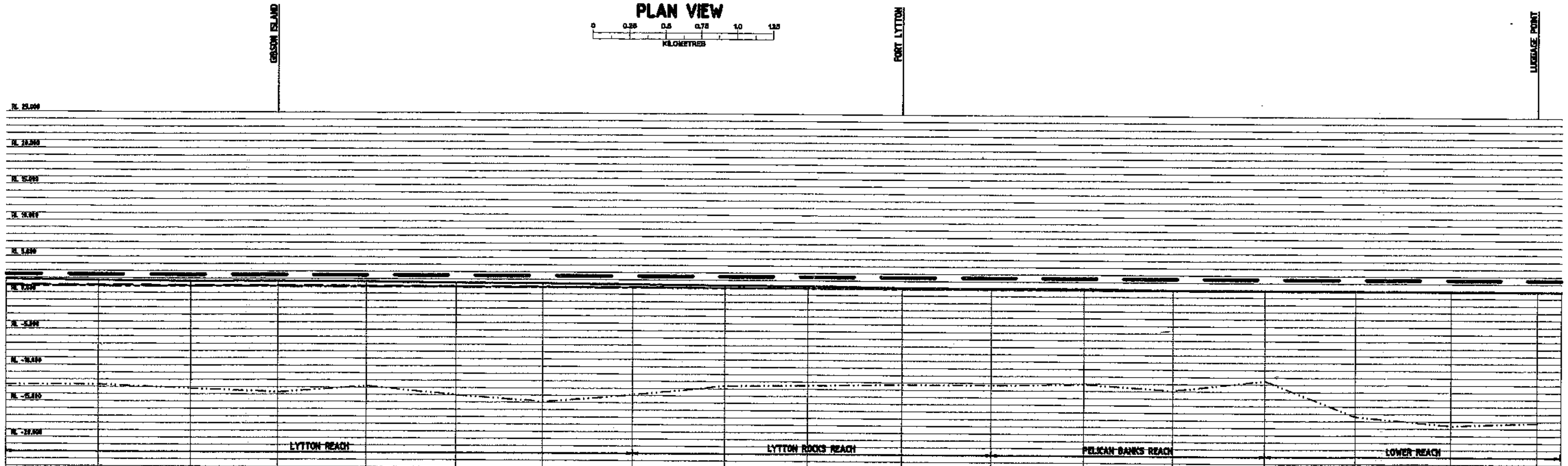


LEGEND

BN 1250 — SURVEYED CROSS SECTION

PLAN VIEW

0 0.25 0.5 0.75 1.0 1.25 KILOMETRES



DATUM RL. -25.000

5 YEAR ARI DESIGN FLOOD LEVEL	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
20 YEAR ARI DESIGN FLOOD LEVEL	1.050	1.040	1.020	1.030	1.020	1.000	1.000	0.980	0.970	0.960	0.940	0.940	0.940	0.920	0.930	0.930	0.930	0.920	0.920
100 YEAR ARI DESIGN FLOOD LEVEL	1.800	1.700	1.620	1.640	1.620	1.500	1.460	1.360	1.280	1.230	1.090	1.050	1.070	0.950	0.970	0.970	0.950	0.920	0.920
BED LEVEL (m AHD)	-12.700	-12.700	-13.200	-13.700	-12.800	-14.080	-14.900	-13.900	-12.600	-12.500	-12.300	-12.300	-12.100	-12.900	-11.500	-15.400	-17.600	-17.204	
CROSS SECTION NUMBER	BN 180	BN 170	BN 160	BN 150	BN 140	BN 130	BN 120	BN 110	BN 100	BN 90	BN 80	BN 70	BN 60	BN 50	BN 40	BN 30	BN 20	BN 10	
MIKE 11 CHAINAGE (km)	1070.025	1070.530	1071.040	1071.520	1072.015	1072.515	1072.995	1073.485	1074.400	1074.640	1074.985	1075.480	1076.080	1076.495	1077.010	1077.510	1078.040	1078.525	1078.660
AMTD CHAINAGE (km)	8.635	8.130	7.620	7.140	6.645	6.145	5.665	5.175	4.660	4.280	3.875	3.380	2.660	2.165	1.650	1.150	0.620	0.135	0

LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE

5 YEAR ARI DESIGN FLOOD

20 YEAR ARI DESIGN FLOOD

100 YEAR ARI DESIGN FLOOD

100 YEAR ARI MORETON BAY STORM SURGE LEVEL (RL 3.3m AHD, INCLUDING 300mm ALLOWANCE FOR GREENHOUSE EFFECT)

EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

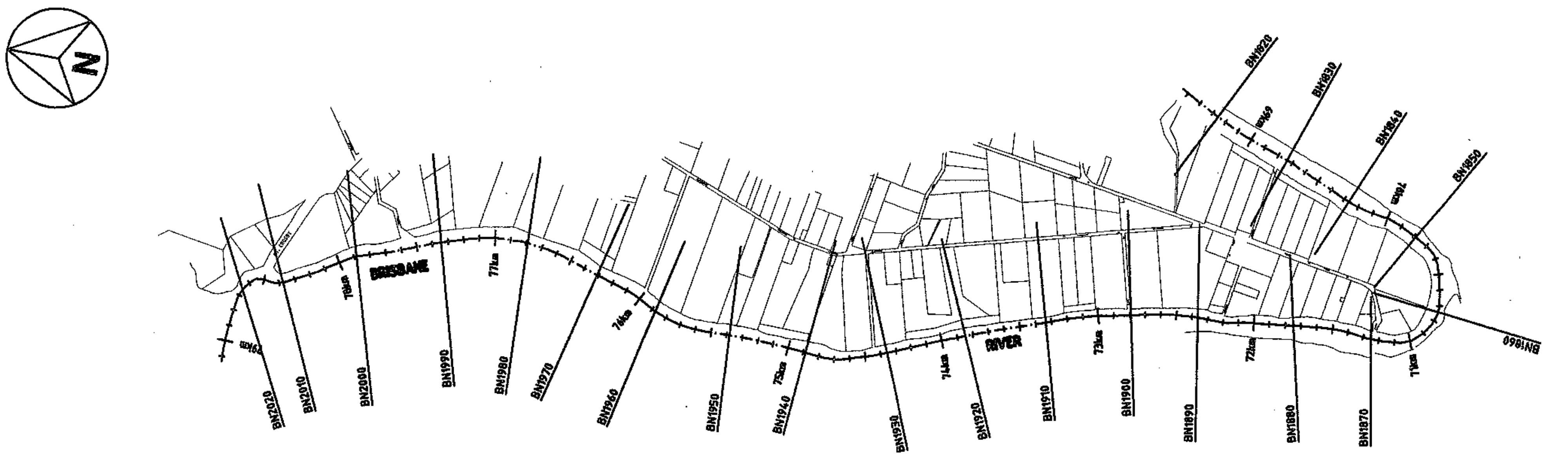
BRISBANE RIVER - BN 180 TO BN 10

FILE NAME: 415/-/-/04 PLOT SCALE: 1=30

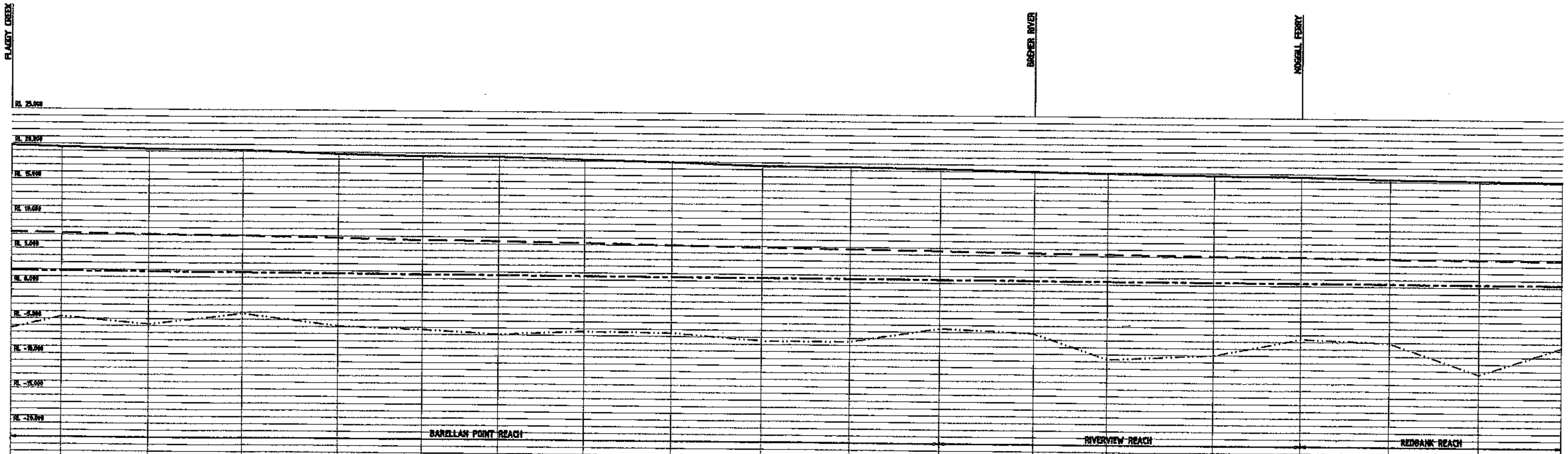
SINCLAIR KNIGHT MERZ

FIGURE J-2a

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI
FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS
- REGULATION LINES AND REVEGETATION STRATEGY CASE



PLAN VIEW



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.830	1.800	1.760	1.700	1.630	1.590	1.560	1.520	1.500	1.490	1.480	1.470	1.450	1.440	1.420	1.400	1.380	1.360	1.350
10 YEAR ARI DESIGN FLOOD LEVEL	7.340	7.240	7.080	6.840	6.710	6.690	6.420	6.240	6.050	5.940	5.720	5.580	5.380	5.290	5.160	5.080	4.940	4.880	4.830
50 YEAR ARI DESIGN FLOOD LEVEL	19.730	19.560	19.320	19.210	18.740	18.530	18.510	18.190	17.950	17.540	17.490	17.320	17.040	16.900	16.690	16.600	16.330	16.210	16.140
BED LEVEL (m AHD)	-6.600	-4.700	-5.800	-4.200	-5.900	-6.360	-6.900	-6.410	-6.530	-7.500	-7.500	-5.500	-6.100	-9.700	-9.000	-6.600	-7.100	-11.500	-7.600
CROSS SECTION NUMBER	BN 2020	BN 2010	BN 2000	BN 1990	BN 1980	BN 1970	BN 1960	BN 1950	BN 1940	BN 1930	BN 1920	BN 1910	BN 1900	BN 1890	BN 1880	BN 1870	BN 1860	BN 1850	BN 1840
MIKE 11 CHAINAGE (km)	1000.000	1000.285	1000.775	1001.335	1001.645	1002.350	1002.705	1003.275	1003.775	1004.300	1004.810	1005.335	1005.870	1006.390	1006.910	1007.410	1007.920	1008.445	1008.925
AMTD CHAINAGE (km)	78.660	78.375	77.885	77.365	76.795	76.310	75.875	75.385	74.885	74.360	73.850	73.335	72.770	72.360	71.750	71.250	70.740	70.225	69.735

LEGEND
LOCATION AND IDENTIFICATION OF STRUCTURE
2 YEAR ARI DESIGN FLOOD
10 YEAR ARI DESIGN FLOOD
50 YEAR ARI DESIGN FLOOD
EXISTING BED LEVEL

VERT. METRES
HORIZ. KILOMETRES

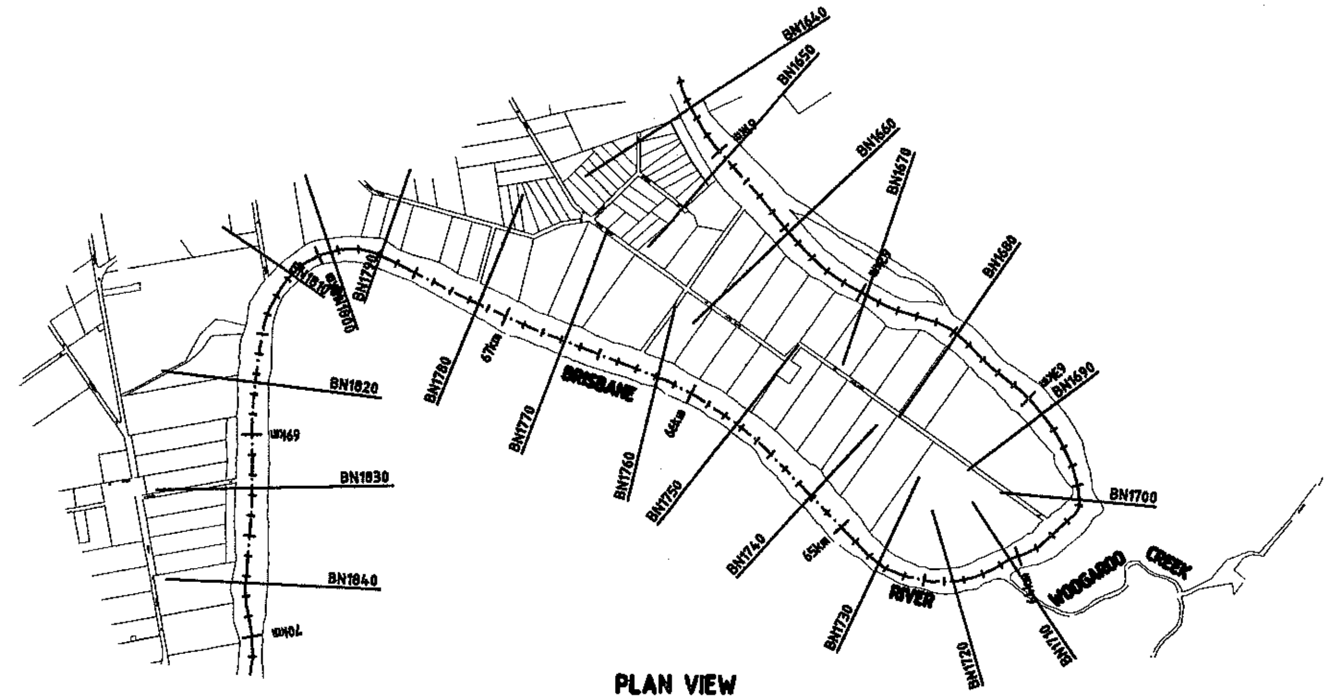
BRISBANE RIVER - BN 2020 TO BN 1840

FILE NAME: 4157-165 PLOT SCALE: 1:30 DISK Nº: CADWG JOB Nº: T004157 DATE: 23/3/97

SINCLAIR KNIGHT MERZ

FIGURE J-2b

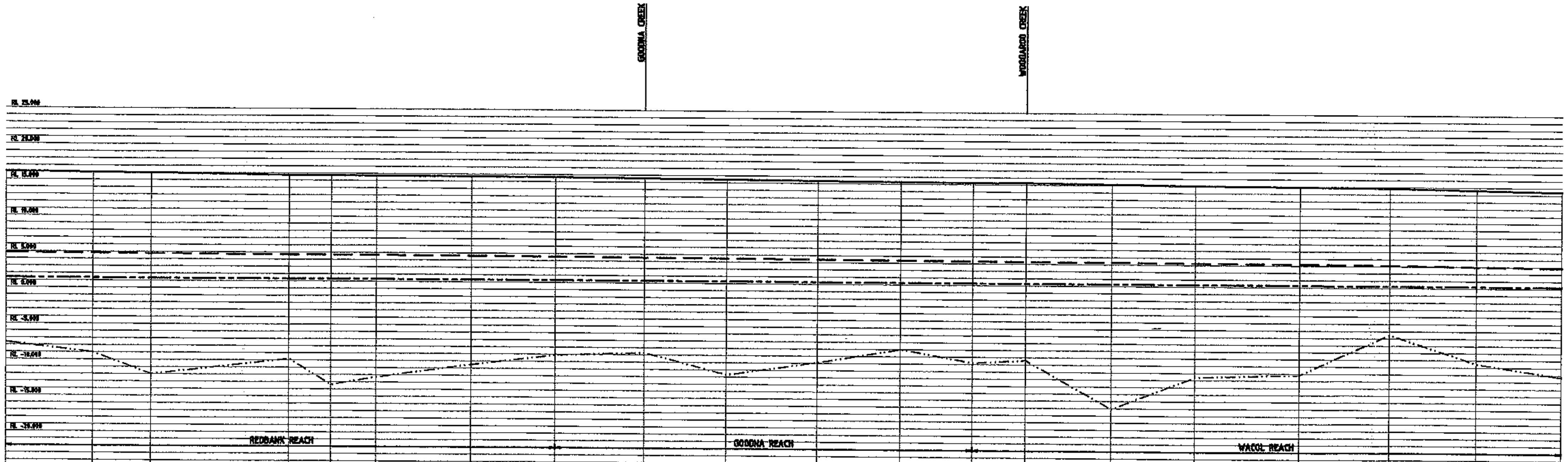
BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI
FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS
- REGULATION LINES AND REVEGETATION STRATEGY CASE



PLAN VIEW

LEGEND

AMTD LINE
BN 1250 SURVEYED CROSS SECTION
LOCATION AND IDENTIFICATION OF STRUCTURE



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.350	1.350	1.340	1.330	1.330	1.330	1.320	1.320	1.310	1.300
10 YEAR ARI DESIGN FLOOD LEVEL	4.830	4.790	4.770	4.680	4.680	4.660	4.620	4.580	4.530	4.480
50 YEAR ARI DESIGN FLOOD LEVEL	16.340	16.040	16.000	15.750	15.750	15.690	15.680	15.630	15.560	15.470
BED LEVEL (m AHD)	-7.680	-9.000	-12.000	-9.800	-13.400	-12.300	-10.500	-9.100	-8.700	-11.700
CROSS SECTION NUMBER	BN 1840	BN 1830	BN 1820	BN 1810	BN 1800	BN 1790	BN 1780	BN 1770	BN 1760	BN 1750
MIKE 11 CHAINAGE (km)	1008.925	1009.400	1009.720	1010.450	1010.725	1010.980	1011.510	1011.980	1012.475	1012.935
AMTD CHAINAGE (km)	69.735	69.240	68.840	68.510	67.935	67.680	67.150	66.680	66.185	65.725

2 YEAR ARI DESIGN FLOOD LEVEL	1.290	1.280	1.270	1.270	1.270	1.260	1.260	1.240	1.220	1.200
10 YEAR ARI DESIGN FLOOD LEVEL	4.440	4.380	4.340	4.380	4.290	4.250	4.210	4.130	3.980	3.870
50 YEAR ARI DESIGN FLOOD LEVEL	15.380	15.310	15.250	15.270	15.160	15.030	14.950	14.870	14.460	14.470
BED LEVEL (m AHD)	-9.980	-8.060	-9.800	-9.400	-16.100	-11.600	-11.200	-5.500	-9.500	-11.300
CROSS SECTION NUMBER	BN 1740	BN 1730	BN 1720	BN 1710	BN 1700	BN 1690	BN 1680	BN 1670	BN 1660	BN 1650
MIKE 11 CHAINAGE (km)	1013.445	1013.910	1014.310	1014.610	1015.090	1015.560	1016.140	1016.640	1017.130	1017.610
AMTD CHAINAGE (km)	65.215	64.740	64.350	64.050	63.570	63.100	62.520	62.020	61.530	61.050

LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE
2 YEAR ARI DESIGN FLOOD
10 YEAR ARI DESIGN FLOOD
50 YEAR ARI DESIGN FLOOD
EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

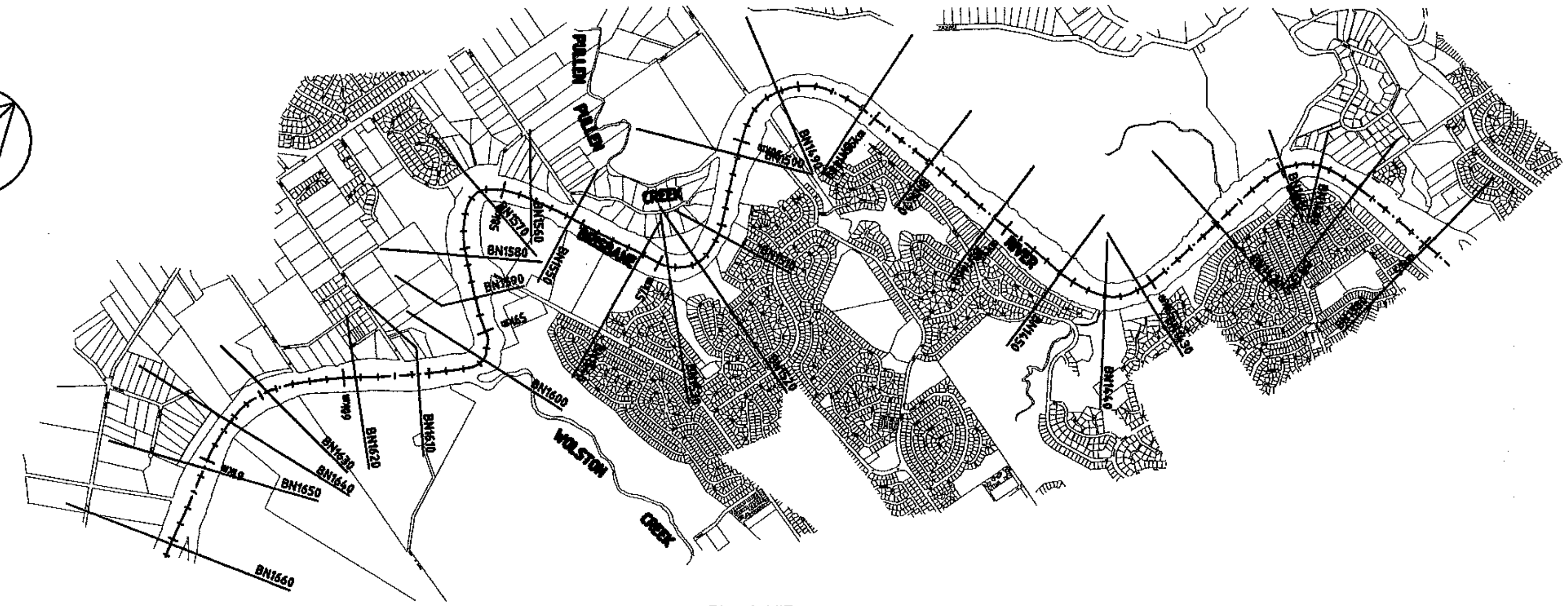
BRISBANE RIVER - BN 1840 TO BN 1650

PLOT SCALE: 1:30

FIGURE J-2c

BRISBANE RIVER FLOOD STUDY
MIKE 11 DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS - REGULATION LINES AND REVEGETATION STRATEGY CASE

SINCLAIR KNIGHT MERZ



PLAN VIEW

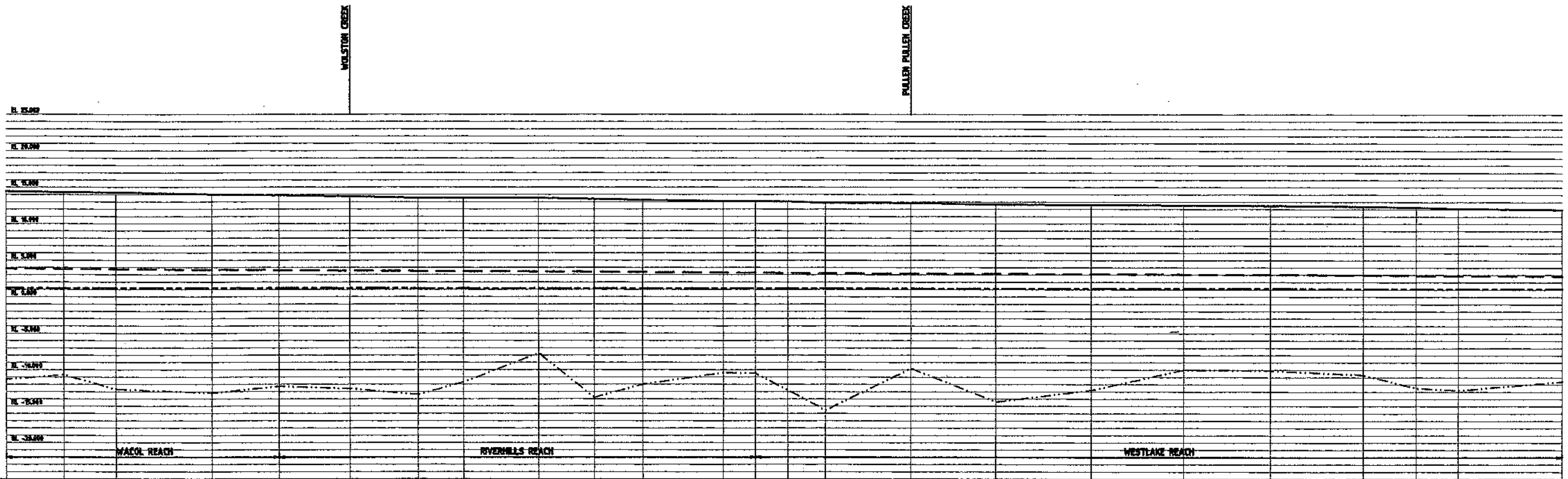
KILOMETRES

LEGEND

AMTD LINE

BN 1250 SURVEYED CROSS SECTION

LOCATION AND IDENTIFICATION OF STRUCTURE



DATUM RL. -25.000

2 YEAR ARI DESIGN FLOOD LEVEL	1.200	1.190	1.170	1.180	1.170	1.170	1.160	1.160	1.150	1.150	1.140	1.140
10 YEAR ARI DESIGN FLOOD LEVEL	3.870	3.800	3.770	3.680	3.630	3.570	3.500	3.480	3.440	3.400	3.360	3.290
50 YEAR ARI DESIGN FLOOD LEVEL	14.470	14.340	14.290	14.010	13.870	13.740	13.530	13.570	13.540	13.410	13.240	13.090
BED LEVEL (m AHD)	-11.300	-10.700	-12.700	-13.200	-12.300	-12.600	-13.400	-11.700	-7.300	-13.800	-12.000	-10.400
CROSS SECTION NUMBER	BN 1650	BN 1640	BN 1630	BN 1620	BN 1610	BN 1600	BN 1590	BN 1580	BN 1570	BN 1560	BN 1550	BN 1540
MIKE 11 CHAINAGE (km)	1017.610	1017.920	1018.200	1018.725	1019.045	1019.490	1019.845	1020.115	1020.525	1020.830	1021.095	1021.539
AMTD CHAINAGE (km)	61.050	60.740	60.460	59.935	59.565	59.170	58.795	58.545	58.135	57.830	57.565	57.121

2 YEAR ARI DESIGN FLOOD LEVEL	1.130	1.120	1.130	1.120	1.120	1.120	1.110	1.110	1.100	1.100	1.100	1.090
10 YEAR ARI DESIGN FLOOD LEVEL	3.270	3.240	3.190	3.180	3.160	3.110	3.070	3.020	2.980	2.960	2.910	2.860
50 YEAR ARI DESIGN FLOOD LEVEL	13.100	13.040	12.870	12.970	12.640	12.600	12.540	12.470	12.330	12.250	12.180	11.990
BED LEVEL (m AHD)	+10.500	-12.800	-15.600	-9.800	-14.400	-12.800	-10.000	-10.100	-10.700	-12.500	-12.800	-11.600
CROSS SECTION NUMBER	BN 1530	BN 1520	BN 1510	BN 1500	BN 1490	BN 1480	BN 1470	BN 1460	BN 1450	BN 1440	BN 1430	BN 1420
MIKE 11 CHAINAGE (km)	1021.715	1021.895	1022.105	1022.575	1023.040	1023.570	1024.080	1024.563	1025.010	1025.360	1025.590	1026.170
AMTD CHAINAGE (km)	56.945	56.765	56.555	56.085	55.610	55.090	54.580	54.097	53.590	53.300	53.070	52.490

BRISBANE RIVER - BN 1650 TO BN 1420

LEGEND

LOCATION AND IDENTIFICATION OF STRUCTURE
2 YEAR ARI DESIGN FLOOD
10 YEAR ARI DESIGN FLOOD
50 YEAR ARI DESIGN FLOOD
EXISTING BED LEVEL

VERT. 0 5.0 10.0 15.0 20.0 METRES

HORIZ. 0 0.2 0.4 0.6 0.8 1.0 KILOMETRES

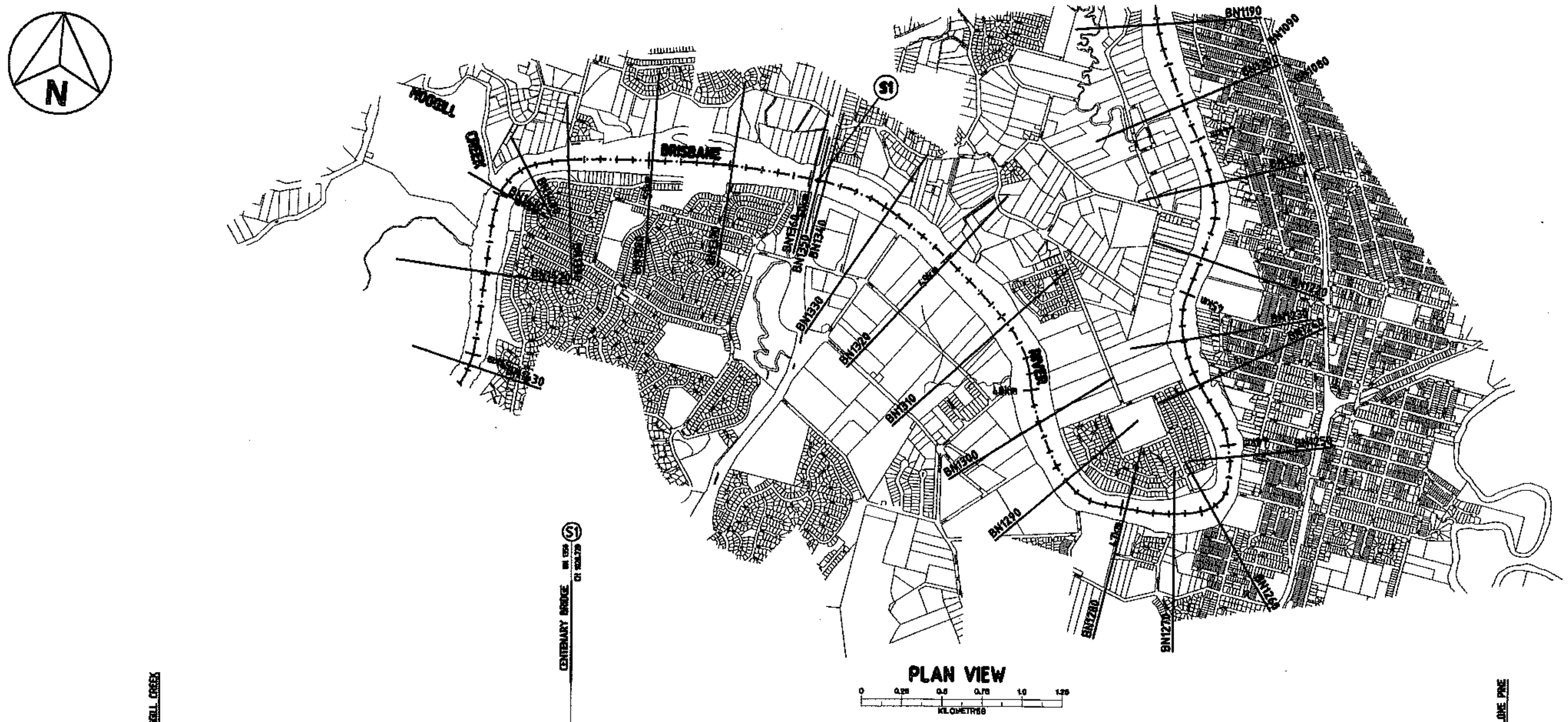
FILE NAME: 4157-767 PLOT SCALE: 1=30 DISK N°: C:\DWG JOB N°: T00457 DATE: 23/3/97

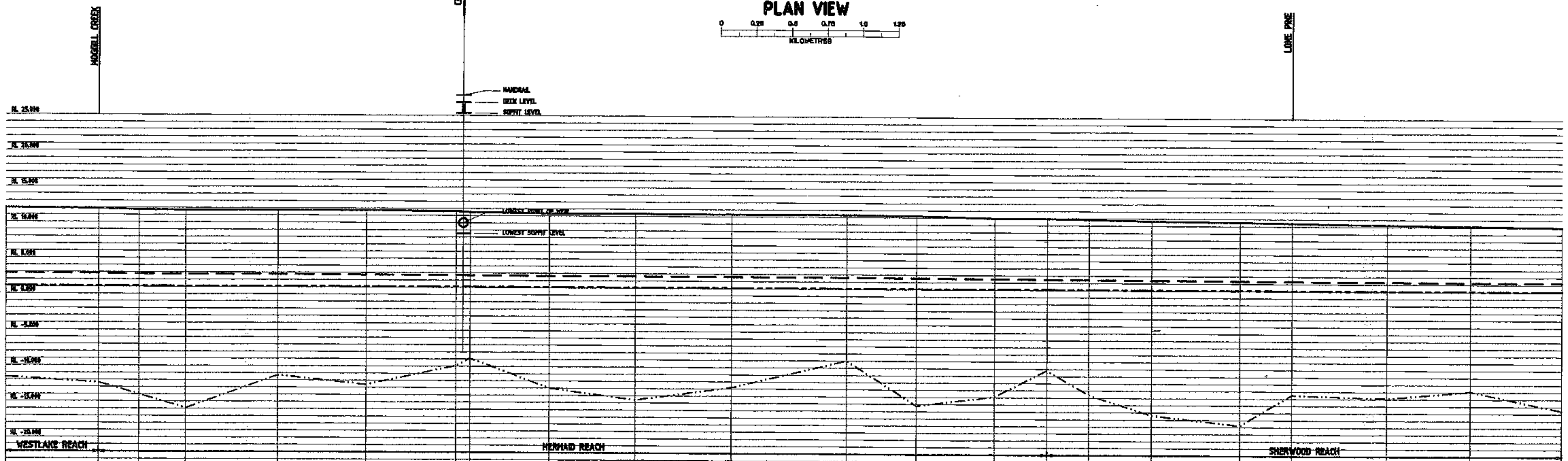
SINCLAIR KNIGHT MERZ

FIGURE J-2d

BRISBANE RIVER FLOOD STUDY

MIKE 11 DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS - REGULATION LINES AND REVEGETATION STRATEGY CASE





DATUM RL. -25.000

CROSS SECTION NUMBER	2 YEAR ARI DESIGN FLOOD LEVEL	10 YEAR ARI DESIGN FLOOD LEVEL	50 YEAR ARI DESIGN FLOOD LEVEL	BED LEVEL (m AHD)	MIKE 11 CHAINAGE (km)	AMTD CHAINAGE (km)
BN 1420	1.090	2.560	11.990	-11.600	1026.170	52.470
BN 1410	1.090	2.610	11.870	-12.400	1026.680	51.980
BN 1400	1.090	2.730	11.750	-14.000	1026.900	51.760
BN 1390	1.070	2.770	11.680	-15.900	1027.160	51.500
BN 1380	1.080	2.750	11.700	-13.300	1027.660	50.980
BN 1370	1.080	2.740	11.700	-12.400	1028.180	50.440
BN 1360	1.080	2.710	11.620	-9.900	1028.680	49.950
BN 1340	1.080	2.470	11.490	-9.900	1028.740	49.900
BN 1330	1.070	2.660	11.370	-13.900	1029.240	49.460
BN 1320	1.070	2.640	11.370	-14.600	1029.600	48.980
BN 1310	1.070	2.630	11.350	-12.800	1030.270	48.440
BN 1300	1.070	2.600	11.330	-9.800	1030.870	47.790
BN 1290	1.070	2.530	11.240	-15.200	1031.260	47.490
BN 1280	1.060	2.510	10.950	-13.900	1031.700	46.960
BN 1270	1.060	2.470	10.960	-10.200	1031.995	46.665
BN 1260	1.060	2.440	10.860	-13.600	1032.230	46.430
BN 1250	1.050	2.410	10.670	-16.400	1032.585	46.075
BN 1240	1.050	2.370	10.530	-17.800	1033.080	45.580
BN 1230	1.050	2.340	10.450	-13.500	1033.370	45.290
BN 1220	1.050	2.300	10.250	-13.900	1033.900	44.760
BN 1210	1.050	2.270	10.130	-12.990	1034.370	44.290
BN 1200	1.040	2.240	10.020	-15.600	1034.890	43.770

BRISBANE RIVER - BN 1420 TO BN 1200

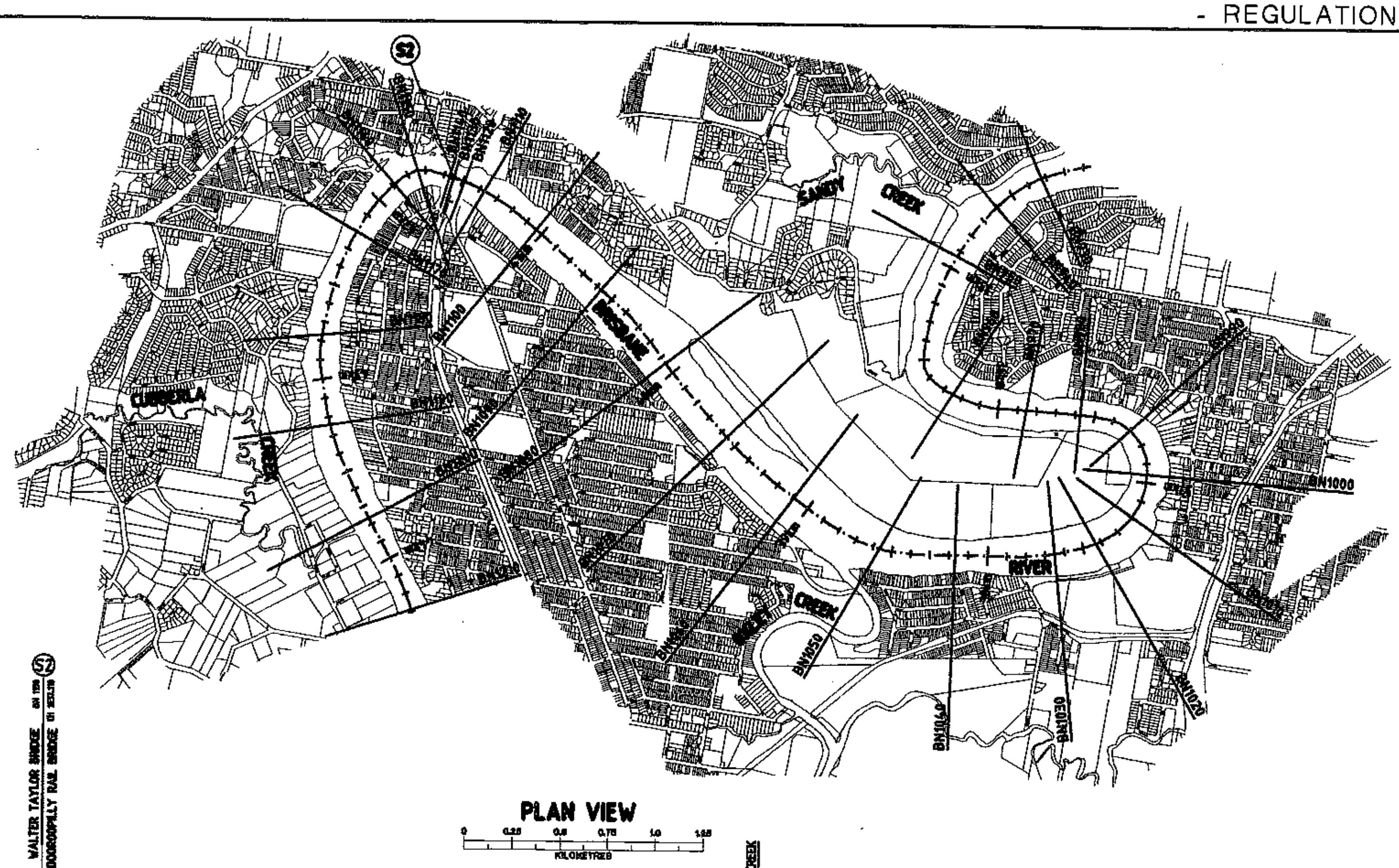
FILE NAME: 415.-100 PLOT SCALE: 1=30 DISK N: CNGWG JOB N: T00415 DATE: 23/3/?

SINCLAIR KNIGHT MERZ

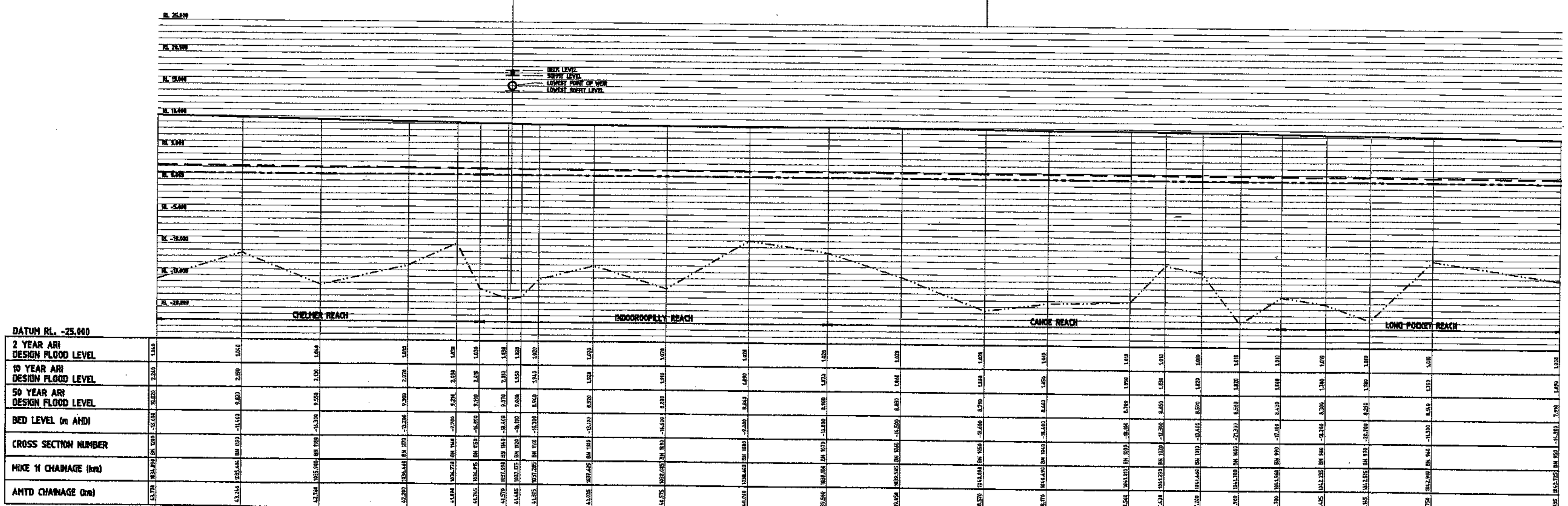
FIGURE J-2e

BRISBANE RIVER FLOOD STUDY

MIKE 11 DESIGN FLOOD PROFILES FOR THE 2, 10, AND 50 YEAR ARI FLOOD EVENTS (MHWS) COMBINED TAILWATER AND RIVER FLOODING CONDITIONS - REGULATION LINES AND REVEGETATION STRATEGY CASE



LEGEND
AMTD LINE
SURVEYED CROSS SECTION
LOCATION AND IDENTIFICATION OF STRUCTURE



LEGEND
LOCATION AND IDENTIFICATION OF STRUCTURE
2 YEAR ARI DESIGN FLOOD
10 YEAR ARI DESIGN FLOOD
50 YEAR ARI DESIGN FLOOD
EXISTING BED LEVEL

VERT. METRES
HORIZ. KILOMETRES

BRISBANE RIVER - BN 1200 TO BN 950

FILE NAME: 415/-167 PLOT SCALE: 1:30 DISK No: CNDWG JOB No: T00457 DATE: 23/5/97