Queensland Floods Commission of Inquiry

CROWN LAW–(DERM – Michael Birchley)
Response to Req #1695286
SM # 1731360 &
Annexures MBF-14 to MBF-16
File 539985/1

Statement of Michael Francis Birchley

(Levees)

September 2011 Vol 1

QFCI

Date: 9/11/11 JM

Exhibit Number: 943

QUEENSLAND FLOODS
COMMISSION OF INQUIRY

STATEMENT OF MICHAEL (MIKE) FRANCIS BIRCHLEY

I, **MICHAEL (MIKE) FRANCIS BIRCHLEY**, of c/- 400 George Street Brisbane in the State of Queensland, Assistant Director-General, Regional Service Delivery, Department of Environment and Resource Management ("DERM"), state on oath:

Requirement from Queensland Floods Commission of Inquiry

1. I have seen:

   a. a copy of a letter dated 7 September 2011 ("Requirement") from the Commissioner, Queensland Floods Commission of Inquiry ("the Commission") to me requiring a written statement under oath or affirmation and detailing the topics my statement should cover; and

   b. a copy of a letter dated 9 September 2011 from an Assistant Crown Solicitor, Crown Law to the Executive Director, Queensland Floods Commission of Inquiry confirming an extension of time to provide my statement;

which are attachment **MFB-14**.

Previous statement and role

2. I have previously provided a sworn statement to the Commission dated 5 September 2011.

3. Paragraph 2 of my statement dated 5 September 2011 details my role at DERM.

4. While I have general knowledge of levee banks in my role as Assistant Director-General, I have limited specific knowledge in this area. Material for this statement was provided by various DERM officers and I have relied on their information provided to supplement my general knowledge. The following DERM officers have provided information to me for this statement:

   a. [redacted] A/Director, Dam Safety;

   b. Peter Allen, Project Director, Dam Safety;

   c. [redacted], General Manager, Water Allocation and Planning;

   d. [redacted] Regional Manager, Water Services

   e. John Ruffini, Director, Water Planning Sciences;

f. [redacted] Director, Water Management;

g. Russell Cuerel, Manager (Infrastructure Management) Water Industry Asset Management & Standards;

h. [redacted], Manager (Containment Systems), Dam Safety; and

i. Various Dam Safety Officers.

Item 1: A description of the types of levee structures currently existing in Queensland;

5. Artificial levee structures in Queensland are mainly earthen embankments constructed to control the flow of water over land.

6. Artificial levee structures in Queensland serve a variety of purposes including:

   a. Flood prevention by stopping flood waters erupting from a watercourse onto an adjacent floodplain, in which case the levee bank is constructed on or within a short distance from the outer bank of the watercourse.

   b. Flood protection by surrounding infrastructure, dwellings, mines or crops thus preventing inundation. Such works may be constructed well away from the watercourse or out on a floodplain. An example of crop protection can be seen in some of the levees constructed in the Lower Balonne.

   c. Diversion of overland flow water, including floodwater for water harvesting into an off-stream storage either under gravity flow conditions or by pumping. Examples of this type of levee can be seen in the Condamine-Balonne catchment.

7. DERM does not hold comprehensive information on artificial levees in Queensland because DERM is not responsible for all levees. A large proportion of levees in Queensland have been constructed by landholders and did not require any approval. In other cases levees are approved by entities other than DERM such as local authorities. An example of this is Goondiwindi Regional Council which regulates levee construction on the floodplain in the Goondiwindi area. Accordingly, a large proportion of levees are not regulated nor recorded by DERM. Some old historical levee information is available on request.

8. DERM does not have responsibility or authority in respect of levee structures in Queensland, apart from the following limited situations:

   a. diversion of a watercourse approved under the *Water Act 2000* as part of mining activities authorised by the *Environmental Protection Act 1994*;

   b. part of activities authorised by the *Environmental Protection Act 1994* ("EP Act") (flood protection levees for mining activities and bunding for contaminant containment);

c. within a drainage and embankment area mentioned in the *Water Regulation 2002* ("the Regulation") in Part 6, section 61 and Schedule 9. Only three areas have been designated 'Drainage and Embankment Areas' under the Regulation, namely:

   i. Haughton River;
   ii. Major Creek; and
   iii. Tully/Murray Rivers; and/or

d. within an area where taking overland flow is regulated under a Water Resource Plan ("WRP") and the embankment is taking water by diversion. DERM regulates the construction and use of infrastructure, such as dams and associated works that are intended to take overland flow water, including floodwater, for water supply purposes. Only some WRPs regulate the taking of overland flow water. Constructing a levee to take water by diversion is potentially a breach of the *Water Act 2000* if a moratorium on works exists and if that levee was not properly authorised under the *Water Act 2000.*

9. Information on levees approved by DERM is contained within the conditions applied to the respective types of approval/authorisation issued by the department as follows:

   a. For paragraph 8(a) above Environmental Authorities pursuant to the *Environmental Protection Act 1994* and also relevant approvals/authorisations pursuant to the *Water Act 2000*;

   b. For paragraph 8(b) above Environmental Authorities pursuant to the *Environmental Protection Act 1994;*

   c. For paragraph 8(c) above Development Approvals pursuant to the *Sustainable Planning Act 2009*; and

   d. For paragraph 8(d) above relevant approvals/authorisations pursuant to the *Water Act 2000.*

Item 2: The role of any department of the State government regarding levees for flood mitigation

10. DERM does not have an overarching role or responsibility in respect of levees for flood mitigation purposes and has very limited capacity and expertise in this field. DERM's responsibility in respect of approval and regulation of levee type structures is limited to those instances outlined in paragraph 8 above.

11. With respect to the drainage and embankment areas mentioned in paragraph 8(c) above, the *Water Act 2000* did not carry forward the related flood control provisions pertaining to the licensing of levee banks adjacent to watercourses that had been part of the *Water Resources Act 1989.* When the *Water Act 2000* was being developed, there was an identified need to maintain management of levees

on or adjacent to watercourses in three areas of the department's North Region in order to allow the relevant Councils time to transition to the new arrangements. This was catered for by giving a regulation making power under section 1014(2)(h) of the *Water Act 2000.* Section 61 and schedule 9 of the *Water Regulation 2002* deals with these as drainage and embankment areas in which levee banks are assessable development under the *Sustainable Planning Act 2009* (SPA).

12. I am not aware of any significant regulatory role that other State Government departments have in respect of levees for flood mitigation.

13. The *River Improvement Trust Act 1940* ("RIT Act") provides for the constitution of River Improvement Trusts ("RITs") to undertake the following activities in improvement areas constituted for the RIT:

    a. protection and improvement of the bed and banks of rivers;

    b. repair and prevention of damage to the beds and banks of rivers; and

    c. prevention of flooding and the prevention or mitigation of inundation of certain land by floodwaters from rivers.

14. The primary role of a RIT is to plan, design, finance, undertake and maintain improvement works to benefit the community within its "improvement area". Works undertaken may include preventative and remedial work - restoring stream-banks, controlling weeds, re-vegetating degraded riparian areas, clearing in-stream vegetation, and diverting and realigning stream channels.

15. In respect of flood mitigation, some RITs (e.g. Whitsunday RIT and Pioneer River RIT) have developed, and now operate and maintain, levee banks for the purpose of protecting urban and rural areas from river flooding. Presently there are fifteen RITs operating in Queensland as set out in section 3(1) of the RIT Act and the Schedule to the *River Improvement Trust Regulation 1998.*

16. The RIT Act requires a RIT each year to plan, within the purview of its powers and responsibilities under the RIT Act, a program of works for the following financial year. This program must be submitted to the Chief Executive of DERM who, subject to the consent of the Minister, may approve the program either with or without modification. Part of these programs would be to provide for flood mitigation through construction of levee banks.

Item 3: any State government guidelines, processes or procedures regarding levees for flood mitigation;

and

Item 4: any State government approval required to construct or alter a levee for flood mitigation;

17. Given DERM's limited role and heads of power in respect of regulating levee banks, there are a narrow amount of guidelines and approval processes. The provisions outlined below are invoked in relation to the cases where DERM is involved. Many constructed levees fall outside the ambit of State government regulation.

18. Infrastructure involving water that is effectively regulated through Environmentally Relevant Activities (ERAs) and Environmental Authorities (mining, coal seam gas, and other industries) under the *Environmental Protection Act 1994* includes dams, tailings storage facilities and levees. Water management on or associated with such sites is an aspect of environmental management considered by the Department of Environment and Resource Management (DERM) and others. For certain Environmentally Relevant Activities, notably not mining and petroleum industries, local government and certain other agencies hold delegations under the *Environmental Protection Act 1994*, with DERM being the referral agency.

19. In 2002, the Code of Environmental Compliance for Environmental Authorities for High Hazard Dams Containing Hazardous Waste ("the Code") was enacted under the *Environmental Protection Act 1994* for use in conditions of licence for Environmental Authorities/Development Approvals. Under the Code, dam is defined as follows:

    " *'dam' means*
    (a) a containment or proposed containment whether permanent or temporary; and
    (b) which does, would or could contain, divert or control flowable substances; and
    (c) *but does not include a fabricated or manufactured tank or container designed to a recognised standard.* "

    This definition would include levee banks. A copy of the Code is attachment **MBF-15.**

20. The department is currently finalising the development of a draft manual and guideline in consultation with industry and external engineering experts to replace the Code. This has been a long term departmental project which commenced prior to the flooding events of December 2010 - January 2011. Pages 4 and 5 of the current draft are attachment **MBF-16.** As this document has not yet been finalised and is currently in a pre-consultation phase, an entire copy is not provided. However, the complete current document is available on request.

21. The *Water Act 2000* does not regulate the construction of flood mitigation and protection works on floodplains. However, the Guidelines for Administering Moratorium Notices in the Condamine-Balonne and Border Rivers dated 2 November 2000 ('the Guidelines") consider this issue at paragraph 5.2(b) and state:

"5.2 Certain works may proceed provided that construction is in accordance with normal practice and does not have the intent/effect of storing or facilitating the storage or taking of overland flow water, viz:
[...]
Construction of flood protection levees that do not cause any significant re-distribution of flows away from established flow paths. In the Lower Balonne floodplain, such levees must meet the minimum acceptance criteria set out in the Lower Balonne Floodplain Management Study – Phase 1,"

22. The reference in the Guidelines to the Lower Balonne Floodplain Management Study – Phase 1 is not meant to suggest that DERM has any role in approving flood protection levees. Rather, a levee that does not meet those minimum acceptance criteria provides functions beyond flood protection and represents works to take water (in which case the levee is regulated by DERM).

23. The former Director-General of DERM, Mr John Bradley (now Director-General, Department of Premier and Cabinet) has made a statement to the Commission dated 18 April 2011 regarding the issues in paragraphs 21 and 22 above. Mr Bradley's statement attaches a copy of the Guidelines to the Lower Balonne Floodplain Management Study – Phase 1 as attachment JNB-59.

24. Local governments have the power to regulate new levee banks. In those areas where local government have put in place regulatory arrangements to actively manage levees these works are 'development' under the *Sustainable Planning Act 2009* with assessable triggers applied through the local government planning scheme. A local government can also make local laws to prohibit the construction of levee banks without a permit (as per section 29 of the *Local Government (Operations) Regulation 2010).*

25. State Planning Policy 1/03 on Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (SPP 1/03), is an important aspect of flood mitigation planning, and states:

"Under the Integrated Planning Act 1997 (IPA), the SPP has effect when development applications are assessed, when planning schemes are made or amended and when land is designated for community infrastructure".

26. This places an obligation on the assessing agency for a new development under SPA to consider the SPP when appropriate.

27. An approval as mentioned in Paragraph 29 below may be required for an approval under the RIT Act. The RIT Act gives a RIT qualified powers to undertake works. The RIT Act requires a RIT to submit an annual works program in advance of each financial year to the Chief Executive of DERM who may, subject to the Minister's consent, approve the program of works (section 10(2) RIT Act). The RIT Act also requires Trusts to have individual works (plans and specifications) approved by the chief executive under section 10(1) and a RIT must comply with all laws in relation to undertaking or maintaining the works approved. Subject to the RIT Act, a RIT may plan, design and do works as approved.

28. The involvement of DERM's staff in the review or assessment of planned projects/program of RIT works does not waive a RIT's responsibility to undertake the formal planning, design and construction of works, and it remains the obligation of the RIT to obtain development approvals and any other approvals or permits (e.g., vegetation, environmental, fisheries permits) necessary for the proposed works. In other words, to gain funding for its works, the RIT must warrant to the State that it has obtained all relevant approvals.

29. These approvals for annual works programs include, for example:

    a. development approvals (*Sustainable Planning Act 2009*);

    b. permits and other approvals required under legislation administered by the Department of Employment, Economic Development and Innovation (DEEDI), (e.g. *Fisheries Act 1994*);

    c. approvals and authorities required by DERM or other departments (e.g. *Environmental Protection Act 1994, Coastal Protection and Management Act 1995, Water Act 2000, Vegetation Management Act 1999, Aboriginal Cultural Heritage Act 2003Environment Protection and Biodiversity Conservation Act 1999 (Cth)* etc.); and

    d. addressing requirements under the *Native Title Act 1993 (Cth).*

30. Levee structures to mitigate flooding have been constructed in tidal zones, especially in North Queensland. Construction of levee banks in those coastal zones requires DERM approval by virtue of the *Coastal Protection and Management Act 1995*. The Act states DERM may be an assessment manager or concurrence agency for Development Approvals for assessable development within a coastal zone.

Item 5: Any State government assistance given to local governments, catchment authorities or members of the public regarding levees for flood mitigation

31. The department does not directly provide any funding or other assistance for levees for flood mitigation. The current State - Commonwealth Natural Disaster Resilience Program provides funding to local and state agencies for disaster mitigation related activities including flood mitigation levees. The administration (and State funding) of this program in Queensland is the responsibility of the Department of Community Safety ("DCS"). However, DERM does have a role in assisting DCS in administering the program. This assistance is in the form of determining whether flood mitigation related projects selected for funding (including levees) have met their project milestones and are hence eligible to receive payment. The process for selection of projects that receive funding under the Natural Disaster Resilience Program is the responsibility of DCS.

32. Some assistance is provided to RITs for their implementation of levee banks in North Queensland. Grant monies (totalling approximately $230,000 excluding

GST) are provided by the State to RITs for their annual works programs. Such works program can and have involved construction or maintenance of levees for the purpose of flood mitigation, example instances are in the Pioneer River in North Queensland and the Halifax levee project in the Herbert Shire.

Item 6: Any State government involvement in the understanding of, and resolution of, cross border issues surrounding the use of levee banks on both sides of the Queensland-New South Wales border.

33. Cross and near border levee bank issues relate primarily to works located on the Macintyre and Barwon River floodplains extending from upstream of Goondiwindi through to Mungindi. The majority of development is associated with banks built to protect irrigation operations that have been developed on the floodplain.

34. State government involvement in regulating levee development exists only on the New South Wales ("NSW") side of the floodplain where the NSW Office of Water (OOW) is the consent authority for works. OOW runs an application, public advertising, receipt of submissions, negotiating and decision making and approval/refusal process. It is possible for applicants to appeal to the NSW Land and Environment Court if aggrieved with the outcome. This regulatory process has been in operation since 1984 when Part 8 of the NSW *Water Act 1912* was enacted.

35. On the Queensland side of the border a similar regulatory process exists, however it is carried out by the Goondiwindi Regional Council. Goondiwindi Regional Council has a local law in place regulating the construction of levee banks in the original Waggamba Shire Council Local Authority Area. These laws provide for public notification of any applications for development permits for levees. Both Councils have sought DERM's (or its predecessors') comments on specific floodplain development proposals in the past, however the funding is generated entirely by the Council. Council undertakes assessment of applications and DERM involvement is essentially one of information and advice provision as deemed necessary and relevant on an application by application basis. Such information and advice may include flood images, aerial photographs and or knowledge of any infrastructure development in the relevant area that the department may hold.

36. Part of the Queensland side of the border upstream of Mungindi is located in the Balonne Shire. The Balonne Shire Council has not enacted local laws in relation to regulating developments on the floodplain.

37. In the early 1980's the then Queensland Water Resources Commission, the State water agency at that time, was instrumental in taking a lead on initial floodplain development and management studies for the Queensland side of the border floodplain system extending from Goondiwindi through to Mungindi. The product of that work was the publishing of a set of floodplain development maps and associated guidelines. It was from this early planning work and with the onset of considerable floodplain development from the mid 1980's that the then

Waggamba Shire Council chose to take up the regulatory provisions available under the then Local Government Act.

38. During the period of extensive development of the floodplains for irrigation in the 1990's, a group existed that considered cross border impacts. This group consisted of representatives of the Moree Plains Shire Council, Goondiwindi Regional Council (Waggamba Shire at that time), together with the then New South Wales state water agency responsible for floodplain planning and management. As floodplain development has now reached a level of maturity, this group has not met for some years. A floodplain hydraulic model has been developed and is used by local authorities in both states to assess the impacts of development.

Item 7: His opinion as to what types of levee-type structures should be regulated by government (at any level);

and

Item 9: his opinion as to whether government regulation of levees should be mandatory for flood mitigation;

39. It is difficult to provide an opinion as to the specific types of levee structures that should be regulated by government as I do not have expertise in this area. Namely, I am not qualified to determine the potential risk and impact of levee-type structures. My comments in this matter are therefore based on my general experience in public administration in the areas of natural resource and environmental regulation and management.

40. In my opinion, any new levee-type structures that have the potential to materially impact on safety or the environment, and/or cause material physical damage to infrastructure or property, should be regulated by government at some level. In giving effect to this it is important that the regulatory regime does not impose a cost and burden beyond that required to manage such impacts. Accordingly, the decision on where and what to regulate should be based on the level of risk. This needs to be determined through appropriate risk assessments and planning studies. An example of where this type of regulation has occurred is the floodplain around Goondiwindi as referred to in paragraph 35 above.

Item 8: his opinion as to the most appropriate body to regulate levees for flood mitigation;

41. I have no strong basis to suggest alternative arrangements to those that currently exist. This is because I do not feel I have the knowledge or qualifications to give such an opinion.

42. Currently, for general flood mitigation purposes, Local Governments play a key role in managing the development of land and built infrastructure in a local government area. Such development approval needs to be made in consideration

of flood levels and impact of any proposed levees on future flooding. As such, the development can be conditioned such that works are undertaken to prevent flood inundation. Where Local Government and one or more State Government agencies have a role in development approval involving flood mitigation levees, the role of assessment manager under the *Sustainable Planning Act 2009* falls to the Local Government.

Item 10: his opinion as to what type of public consultation is appropriate with respect to the construction or alteration of levees for flood mitigation;

43. The extent of any consultation needs to be considered in the context of the scope and potential impacts of any works or changes to works. The interests of affected landholders, communities and other stakeholders need to be considered in this context. Land use planning and development approval processes under SPA and the EP Act currently afford stakeholders the opportunity to comment on planning and development proposals.

Item 11: his opinion as to the appropriate scientific or technical studies or assessments necessary before the construction, alteration or approval of a levee for flood mitigation.

44. The matters in this item generally fall outside the scope of my knowledge and expertise. However as outlined above, I consider that any regulation should be based on risk assessments undertaken by suitably qualified parties and including necessary scientific and/or technical investigations such as floodplain studies and modelling. DERM does not possess the expertise and resources to undertake such studies and investigations for levee banks with regard to flood mitigation.

I make this statement on oath conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1867.*

[redacted]

Signed

Michael (Mike) Francis Birchley

Taken and declared before me, at Toowoomba this 22nd day of September 2011

[redacted]

JUSTICE OF THE PEACE (QUALIFIED) QUEENSLAND GOVERNMENT Reg.No.[redacted] DEPARTMENT OF JUSTICE QUEENSLAND

Solicitor/Barrister/Justice of the Peace/Commissioner for Declarations [redacted] JP (Qual)

Our ref: Doc 1695286

7 September 2011

Mr Michael Birchley
Assistant Director-General, Regional Service Delivery
Department of Environment and Resource Management
GPO Box 2454
BRISBANE QLD 4001

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 Michael Birchley to provide a written statement, under oath or affirmation, to the Queensland Floods Commission of Inquiry, in which the said Mr Birchley gives an account of:

1. a description of the types of levee structures currently existing in Queensland;

2. the role of any department of the State government regarding levees for flood mitigation;

3. any State government guidelines, processes or procedures regarding levees for flood mitigation;

4. any State government approval required to construct or alter a levee for flood mitigation;

5. any State government assistance give to local governments, catchment authorities or members of the public regarding levees for flood mitigation;

6. any State government involvement in the understanding of, and resolution of, cross-border issues surrounding the use of levee banks on both sides of the Queensland-New South Wales border;

7. his opinion as to what types of levee-type structures should be regulated by government (at any level);

8. his opinion as to the most appropriate body to regulate levees for flood mitigation;

9. his opinion as to whether government regulation of levees should be mandatory for flood mitigation;

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10. his opinion as to what type of public consultation is appropriate with respect to the construction or alteration of levees for flood mitigation;

11. his opinion as to the appropriate scientific or technical studies or assessments necessary before the construction, alteration or approval of a levee for flood mitigation.

In addressing these matters, Mr Birchley 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.

Mr Birchley 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 5pm, Thursday 15 September 2011.

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

C. E. Holmes

Commissioner
Justice C E Holmes

Crown Law

Your ref:
Our ref: CRS/PRE052/1856/LAP
Contact: Paul Lack
Direct ph: 07 3006 9081
Direct fax: 07 3239 6961

Department of
Justice and Attorney-General

9 September 2011

The Executive Director
Ms Jane Moynihan
Queensland Floods Commission of Inquiry
Level 30, 400 George Street
BRISBANE QLD 4000

Dear Jane

Queensland Floods Commission of Inquiry - State Representation
Extension for response to DERM Requirements

I refer to the discussion between Senior Counsel for the State and Ms Liz Wilson, counsel assisting, today. I confirm that Ms Wilson has kindly agreed to allow further time for the provision of a response respect to certain Requirements as follows:

1. **Requirement 1684437** – Statement of Peter Allen – now due **16 September 2011.**
2. **Requirement 1695286** – Statement of Michael Birchley – now due **19 September 2011.**
3. **Requirement 1704982** - Statement of Jon Womersley – now due **19 September 2011.**
4. **Requirements 1690693** - Statement of Russell Cuerell – now due **14 September 2011.**
5. **Requirement 1697934** – Statement of Russell Cuerell – now due **14 September 2011.**

I thank you for your indulgence with respect to those Requirements.

In response to [redacted] request to provide the names appropriate officers to provide statements with respect to various mine sites, I am instructed that the following persons are the appropriate officers to provide such statements:

(a) Mt Oxide Mine (abandoned) - **Rob Lawrence**, Director, Environmental Services
(b) Century Mine - **Rob Lawrence**

State Law Building
50 Ann Street Brisbane
GPO Box 5221 Brisbane
Queensland 4001 Australia
DX 40121 Brisbane Uptown
Telephone 07 3239 6703
Facsimile 07 3239 0407
ABN 13 846 673 994

(c) Ensham Coal Mine - **Andrew Brier**, General Manager, Coal and CSG Operations
(d) Moranbah North Coal Mine - **Andrew Brier**
(e) Callide Power Station Dams - **Andrew Brier**
(f) Hail Creek Mine - **Andrew Brier**
(g) Moranbah CSG project - **Andrew Brier**
(h) Dawson Mine - **Andrew Brier**
(i) Rolleston Mine - **Andrew Brier**

I understand that Requirements will be issued with respect to those statements and that the date to provide those statements will be 26 September 2011.

Yours faithfully

[redacted]

Assistant Crown Solicitor
for **Crown Solicitor**

Department of Environment and Resource Management

Code of environmental compliance

Environmental authorities for high hazard dams containing hazardous waste

This code of environmental compliance (code) contains the standard environmental conditions approved by the Minister, under section 549(2) of the Environmental Protection Act 1994.

Department of Environment and Resource Management
www.derm.qld.gov.au ABN 46 640 294 485

Queensland Government

Code of Environmental Compliance for Environmental Authorities for High Hazard Dams Containing Hazardous Waste

Introduction

1. The Minister, pursuant to section 549, of the *Environmental Protection Act 1994* has approved the standard environmental conditions contained in this Code of Environmental Compliance for Environmental Authorities for High Hazard Dams Containing Hazardous Waste.

Application

2. This Code applies to environmental authorities for high hazard dams containing hazardous waste.

Conditions

3. The standard environmental conditions contained in column 1 must be complied with.

Supporting Information

4. The EPA has prepared non-mandatory guidelines that detail the steps that can be taken to comply with the standard environmental conditions in column 1. However, operators can take different approaches to achieving compliance with the standard environmental conditions stated in this Code. These guidelines are contained in column 2.

Other Obligations and Laws

5. In addition to the standard environmental conditions of this Code, the *Environmental Protection Act 1994* imposes an obligation to take all reasonable and practicable measures to prevent or minimise environmental harm ('the general environmental duty').

   The requirements of this Code are in addition to other requirements of the *Environmental Protection Act 1994*. Further, this Code does not negate any lawful requirements under Commonwealth, State or local government plans, standards, agreements or legislation. It is the responsibility of the person carrying out the activity to ensure compliance with all relevant laws.

Standard Environmental Conditions *The holder of the environmental authority for the dam must comply with the conditions in this column.*	Environmental Guidelines *The following Guidelines provide guidance on how to comply with the corresponding standard environmental condition.*
1. General Obligation The holder of the environmental authority for the dam must design, construct, alter, repair, maintain and operate any dam containing hazardous waste in the location specified in the relevant environmental authority, and take all reasonable and practicable measures to minimise the risk to the environment.	**1.1 Notes** **1.1.1** Examples of dams containing hazardous waste are tailings dams or process water dams.
2. Preparing and Certifying Design Plans Before construction of a dam containing hazardous waste, a person suitably qualified and experienced in dam engineering must: (a) prepare design plans which design the dam to an appropriate engineering standard; and (b) certify that the design plans meet an appropriate engineering standard and are consistent with the dam conditions in the environmental authority.	**2.1 Design Plans** **2.1.1** Some of the factors that a person should consider in designing the dam to an appropriate engineering standard include: • dams designed and located to have the smallest practical catchment; • dams should be designed to accept waste inputs for the operational year and inputs from the critical wet season; • the spillway should be designed and maintained to withstand the peak flow from the critical design storm (the critical design storm has a duration that produces the peak discharge for the catchment); • the gradients of earth embankment batters should be stable; • where the foundation material differs from the embankment fill material, the batters should be

Standard Environmental Conditions *The holder of the environmental authority for the dam must comply with the conditions in this column.*	Environmental Guidelines *The following Guidelines provide guidance on how to comply with the corresponding standard environmental condition.*
	chosen conservatively to be consistent with the weaker material classification; • the dam design should provide adequate measures to minimise seepage through the dam wall and to groundwater; • the dam design should prevent any erosion of the downstream face of the dam and spillway to avoid surface scour which may lead to failure of the wall; • the contents of the ANCOLD Guidelines and Tailings Dam Design Construction and Operation October 1999; and • the contents of Department of Mines and Energy, Technical Guidelines for Environmental Management of Exploration and Mining in Queensland, January 1995.
3. Submitting Certified Design Plans Before construction of a dam containing hazardous waste, the holder of the environmental authority for the dam must submit the certified design plans to the administering authority.	
4. Commencing Construction If the holder of the environmental authority for the dam has: (a) received a letter acknowledging receipt of the design plans from the administering authority; and (b) not received any further	**4.1 Date for Commencing Construction** **4.1.1** The letter of acknowledgement from the administering authority will state a date from which the operator may commence construction of the dam if they have not heard from the administering authority within 28 days. In other words,

Standard Environmental Conditions *The holder of the environmental authority for the dam must comply with the conditions in this column.*	Environmental Guidelines *The following Guidelines provide guidance on how to comply with the corresponding standard environmental condition.*
correspondence from the administering authority within 28 days of the receipt date stated in the letter of acknowledgment, they may commence construction of the dam containing hazardous waste in accordance with the certified design plans.	the operator will usually be able to commence construction after 28 days of the administering authority receiving the design plans. **4.1.2** The administering authority will send out a letter of acknowledgement within a maximum period of 5 business days.
5. Completion of Construction When the construction of the dam containing hazardous waste is complete, the holder of the environmental authority must: (a) obtain certification from a person suitably qualified and experienced in dam construction that the construction of the dam is either in accordance with or generally in accordance with the certified design plans; and (b) submit the construction certification to the administering authority.	**5.1 Minor Variation of Design Plans** **5.1.1** If the person certifying the construction of the dam is required to make a minor modification of the dam design during its construction, they should contact the person who certified the design plans and obtain their agreement to the modifications. They should obtain this agreement before certifying that the construction of the dam is generally in accordance with the certified design plans. **5.1.2** If the design of the dam has been modified during construction, the person certifying the construction of the dam must include in their certification: (a) written agreement of the modification by the person who certified the design of the dam; and (b) details of the modification.
6. Preparing and Certifying	**6.1 Operational Plans**

Standard Environmental Conditions *The holder of the environmental authority for the dam must comply with the conditions in this column.*	Environmental Guidelines *The following Guidelines provide guidance on how to comply with the corresponding standard environmental condition.*
Operational Plans Before operating a dam containing hazardous waste (other than on a mining tenure), a person suitably qualified and experienced in dam engineering must: (a) prepare an operational plan; and (b) certify the operational plan.	**6.1.1** Operational plans outline the detail of how the holder of the environmental authority for the dam proposes to operate the dam. In the case of mining activities, a Plan of Operations contains information, which would otherwise be contained in an operational plan. In this situation, it is not necessary to prepare another document, the Plan of Operations can be submitted to the administering authority. **6.1.2** An example of the type of information that may be included in an operational plan is that a suitably qualified and experienced person in dam engineering shall inspect all dams containing hazardous waste at least once a year in October. **6.1.3** The information sheet relating to the preparation of Plan of Operations contains more information about these documents.
7. Commencing Operation Before operating a dam containing hazardous waste (other than on a mining tenure), the holder of the environmental authority for the dam must submit to the administering authority the: (a) operational plan; (b) certification of the operational plan; and (c) certification that the construction of the dam was in accordance with the certified design plans.	

Standard Environmental Conditions *The holder of the environmental authority for the dam must comply with the conditions in this column.*	Environmental Guidelines *The following Guidelines provide guidance on how to comply with the corresponding standard environmental condition.*
8. Compliance with Plans The holder of the environmental authority must construct and operate the dam in accordance with the certified: (a) design plans; (b) operational plans; and (c) conditions contained in the environmental authority, in order to prevent or minimise environmental harm.	
9. Definitions '**construction**' includes building a new dam and modifying or lifting an existing dam. **'hazardous waste'** means any substance, whether liquid, solid or gaseous, derived by or resulting from, the processing of minerals that tends to destroy life or impair or endanger health. '**dam**' means: (a) a containment or proposed containment whether permanent or temporary; and (b) which does, would or could contain, divert or control flowable substances; and (c) but does not include a fabricated or manufactured tank or container designed to a recognised standard. **'suitably qualified and experienced person'** means a person who is a	

Standard Environmental Conditions *The holder of the environmental authority for the dam must comply with the conditions in this column.*	**Environmental Guidelines** *The following Guidelines provide guidance on how to comply with the corresponding standard environmental condition.*
Registered Professional Engineer of Queensland under the provisions of the *Professional Engineers Act 1988* or a Corporate Member of the Institution of Engineers Australia or holds equivalent professional qualifications and has the following: (a) knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams; and (b) at least a total of five years of suitable experience and demonstrated expertise in at least four of the following areas: • investigation, design or construction of dams; • operation and maintenance of dams; • geomechanics with particular emphasis stability, geology and geochemistry; • hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology; • hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes; and • hydrogeology with particular reference to seepage, groundwater, • solute transport processes and monitoring thereof; and • dam safety.	

SCOPE

This manual sets out the requirements of the administering authority, for hazard category assessment and certification of the design of '**regulated structures**', constructed as part of environmentally relevant activities (ERAs) under the *Environmental Protection Act 1994* (EP Act).

The term regulated structures includes land-based containment structures, levees, bunds and voids, but *not* a tank or container designed and constructed to an Australian Standard that deals with strength and structural integrity. Regulated structures may be assessed using this manual as being in one of three hazard categories: low, significant or high. Where categorised as a significant or high hazard, the structure is referred to as a regulated structure. Notes on hazard assessment based on failure event scenarios are in Appendix A of this document.

This manual **does not** provide a detailed methodology for the design of dams,spillways and levee structures. The detailed design of a regulated structure is to be undertaken by a suitably qualified and experienced person[1] with relevant professional experience, and requires appropriate documentation and certification[2].

The *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* does not limit, amend or change in any way, any other requirements to be complied with under authority conditions and/or regulations for the design and operation of a dam[3]. Further, it does not negate any lawful requirements of the *Environmental Protection Act 1994*, other Commonwealth, State or Local Government laws or requirements under relevant standards or agreements.

Related Documents

This Manual relates to, and should be read in conjunction with, the *'Guideline: Dams constructed as part of environmentally relevant activities'* published by the administering authority, as both relate to environmental authority and development approval conditions.

Background

Good practice engineering for dams, spillways, and levee structures requires that they be assessed for the hazards associated with 'dam break' and 'failure to contain' scenarios, and that the impacts of such potential failures are identified and considered in their design and operation.

The early identification of the hazard potential of these structures is important in determining the standard of reliability required for design, construction and operation of the structure. The default objective for any structure containing substances (liquid and/or solid material) that could result in environmental harm is that the substances be contained so as to prevent or otherwise minimise harm to the environment. In this context the water management strategy for a site should minimise unnecessary accumulation of contaminated waters by sufficient segregation of clean and contaminated waters. Hence regulated structures also include flood protection levees to reduce risk of ingress of clean floodwaters into operational areas where they may become contaminated and difficult to remove.

Structures that could have significant or high impacts need to be carefully designed and operated.

Purpose

The purpose of this manual is to:

1. guide the assessment of the hazard category of all structures constructed as part of activities that require an environmental authority or development approval,

[1] The term 'suitably qualified and experienced person' is defined in the definitions.
[2] A copy of the certification required can be found at appendix B
[3] An example of other legislative requirements that may be relevant are those relating to referrable dams under the *Water Supply (Safety and Reliability) Act 2008.*