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Sent: Tuesday, 18 April 2006 2:30 PM
To: ghales [REDACTED] Guppy Ron
Cc: Tibaldi, John
Subject: WD-SD Flood Ops manual - Response to Ron Guppy's Comments
Attachments: NRMCommentsV71.doc; IDFigure.xls

Geoff/Ron

The attachments provide feedback to Ron's comments in his email dated 27 March 2006.

I will send the modified manual incorporating the modifications after we have had sign-off from you and Ron regarding the water level correlation targets for Somerset dam.

Regards

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Response to NRMW Comments to Version 7 of Manual

There appear to be only two real changes to the operational procedures. These are

- The water level correlation targets in the Somerset Dam procedure (section 9.4) have been changed apparently in recognition of the 'safe' peak water level in Wivenhoe Dam being increased from EL77 to EL80. Can some comment be provided, separate to the procedures document, in support of the change. This probably means outlining the effects of the change. I'm not sure that the proposed changes are for the better.*

The change to the water level correlation targets reflects the new maximum design peak flood level of Wivenhoe Dam (EL80).

The alteration to the target levels is based upon the adjustment the final duty point to EL80 and EL107.46. The main issue is how to progress to this final point when considering the introduction of the auxiliary spillway trigger levels.

It is acknowledged that the change incorporated into the manual actually increases the likelihood of the first fuse plug initiation when compared to the current values (i.e. previously EL75.7 and EL106.1, now suggested as EL75.7 and EL104.8). Refer to the attached figure.

The correlation targets originally attempted to match freeboard – raising the Wivenhoe maximum flood level means that a given level in Somerset will now correlate with a higher level in Wivenhoe. If the freeboard criteria was applied this would further increase the likelihood of the first fuse plug initiation (EL75.7 and EL103.2). The suggested relationship was proposed to take advantage of the increased flood storage now available in Wivenhoe Dam, whilst not wanting to increase the likelihood of the initiation of a fuse plug.

It is recommended that these correlation targets be reassessed taking into account the fuse plug triggers. In general a higher level in Somerset should be correlated with the levels in Wivenhoe when each fuse plug is initiated. An example set of targets are shown in the table below, although the exact figures require further investigation. In particular, assessment of the risk of storing more water in Somerset needs to be performed.

The table below shows a possible modification to the original relationship that could also be followed. This is shown as the red diamonds in the accompanying figure. The trade off with this approach is the reduction in freeboard at Somerset dam after the third fuse plug initiates. (i.e. only 0.31 m between the trigger level of fuse plug 3 EL107.15 and the maximum design level of Somerset dam EL107.46).

Table 1 Example Correlation Target Points

Trigger Point	Somerset Lake Level (m AHD)	Wivenhoe Lake Level (m AHD)
Mary Smokes Bridge Imminent Inundation	102.25	72.00
Fuse Plug 1 Initiation	106.10	75.70
Fuse Plug 2 Initiation	106.60	76.23
Fuse Plug 3 Initiation	107.15	76.77
Maximum Dam Design Level	107.46	80.00

Note these are target points, not a target line. The path to each point is not critical, as long as each decision on Somerset gate openings move towards the next point. For example, if modelling indicates that Wivenhoe will reach EL75.7 before Somerset reaches EL106.1, then gate/s should be closed on Somerset.

- *The option of breaching the saddle dams (section 10.2) is new in this draft manual. Again some comment should be given in support of the change.*

The breaching of the saddle dams was part of previous versions of the manual (i.e. Version 3 24 August 1998). The concept is re-introduced as the existing spillway configurations only provide protection up to the 1 in 100 000 year AEP event and not full Probable Maximum Flood.

Other things picked up in perusal of the document are:

Page 5 The introduction refers twice to the 2002 version of the Manual. I feel it should refer to the latest version i.e. the 2004 version.

Agreed, reference should be made to Version 6 dated 20 December 2004.

Page 21 Table 6.1 – Natural Resources and Mines is now Natural Resources Mines and Water.

Agreed.

Page 32 Procedure 4A – The trigger level for the first bay is actually EL 75.7. An explanation that an allowance for wave action (?), water level prediction uncertainty (?) and whatever else might be added.

Whilst the invert level of the first fuse plug pilot channel is EL75.7, a level of EL75.5 has been adopted as per the recommendation of the Auxiliary Spillway Design Team to allow for possible wave action and uncertainty in forecasting the likely peak lake level.

Page 32 The reference in Procedure 4A should be to Section 8.4 rather than Section 8.3

Agreed.

Page 33 Again the reference in Procedure 4B should be to Section 8.4 rather than Section 8.3

Agreed.

Page 35 The page orientation for the next few pages needs correcting.

Agreed.

Page 38 The format of the second column of Table 9.2 needs correcting.

Agreed.

Page 40 Section 10.2 still talks about will be following completion of auxiliary spillway

The tense of the sentence will be changed to read 'has been.....'

Page 41 The Water Level Correlation Targets table needs correcting.

Agreed.

Page 44 Some minor amendments have been made to this section of the Water Act. Section 498(3) now reads "If the owner complies with the chief executive's request, the chief executive must, by gazette notice, approve the manual as amended" while section 498(4) now starts "The approval of the manual as amended may be for".

Acknowledged, will be incorporated as indicated.

Page 45 For Section 499, the second and third lines should be sub-sections (a) and (b) respectively.

Acknowledged, will be incorporated as indicated.

Page 46 *With reorganisation of Department of Emergency Services, the unit holding the Manual would now be Disaster Operations.*

Change will be incorporated.

Page 55 *The last 4 numbers in the fourth column of Table E1 don't seem right.*

Agreed, the last four entries are not correct.

Page 58 *There is still a note about needing to reformat the table.*

Formatting has been completed, note to be removed.

Page 59 *The title of the chart might be changed to Auxiliary Spillway Rating Curve. The Y-axis might be changed to Lake Level rather than Reduced Level.*

Agreed, curve was provided by Wivenhoe Alliance and will be adjusted accordingly.

Appendix I *There are numerous references cited in this appendix, but they are not listed.*

References made in Appendix I will be incorporated into appropriate listing.

Page 70 *The AEP of the PMP is 0.0007042% I think.*

The AEP of the PMP of Wivenhoe Dam is 0.0007042 % as stated (or 1 in 142 250 years). The Wivenhoe Alliance has rounded this value to 1 in 143 000 years in their report 'design discharges and Downstream Impacts of the Wivenhoe Dam Upgrade Q1091, dated Sep 2005).

Another thing you might think about is the reporting requirements of the Manual e.g. of Schedule of Authorities, Register of Contact Persons, State of Preparedness of Operational Personnel and condition of the Monitoring and Warning System and Communication Network (there may be more). Their timing for lodgement is scattered throughout the year. Is this the best way for it to be?

We recommend that prior to the commencement of the wet season (1st October) each year that a statement of preparedness be submitted that covers the aforementioned issues. A separate report on the bi-annual performance of the warning system should also be submitted corresponding to the six monthly assessment. (i.e prior to the end of April each year).

The Register of Contact Persons and Schedule of Authorities should be updated at least annually be preferably every six months.

Revised Interaction Diagram

