

**DEPARTMENT OF NATURAL RESOURCES & MINES
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DATE: 26 October 2004

FROM: Principal Engineer, Dam Safety

TO: Director, Dam Safety (Water Supply)

SUBJECT: Flood Mitigation Manual, Wivenhoe and Somerset Dams

Background

The South East Queensland Water Board Act 1979 set a requirement for Flood Mitigation Manuals to be prepared for Wivenhoe Dam and for Somerset Dam. The requirement for Flood Mitigation Manuals for the dams has been retained through the subsequent legislation changes. It currently exists within Water Act 2000.

The then South East Queensland Water Board elected to prepare a combined Manual for the two dams because of the potential effect of Somerset Dam flood operations on Wivenhoe Dam operations. The Manual defines standard procedures for the operation of both Somerset and Wivenhoe Dams during flood periods. Revision 4 of the Manual is the currently approved version. It was approved in September 2002 for a five year period.

The South East Queensland Water Corporation is currently upgrading Wivenhoe Dam to improve its security against failure. This is being done in response to revised flood estimates indicating an increased likelihood of the dam overtopping and failing. The principal component of the new works will be construction of an auxiliary spillway in the form of a fuse plug at the right abutment. Other works are to occur at the main embankment and existing spillway area so that the dam is secure for water levels up to embankment crest level. Throughout the design process for these upgrade works, regular briefings of progress were provided to the local community and other interested parties. In particular representatives of Natural Resources & Mines, SunWater, Brisbane City Council, Ipswich City Council, Esk Shire Council, and Bureau of Meteorology provided a reference group.

The addition of these new works has implications for the operation of Wivenhoe Dam during floods, and to a very limited extent to Somerset Dam. Operation of the dams to prevent unnecessary triggering of a fuse plug also becomes a consideration.

Flood Mitigation Manual Revision

This revision of the Manual has been prepared for the construction period during which upgrading of Wivenhoe Dam is occurring. During this time the maximum flood level will be lowered for construction of the fuse plugs and post-tensioning works will be occurring in the main spillway area. During the construction period, the lowest point of the embankment will be EL 77.0 – the level of the diversion road/coffer dam.

A further request for revision of the manual is anticipated when the auxiliary spillway is fully functional about the end of 2005. A safety review of Somerset Dam should also be complete by

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that time. Additional modelling of floods passing through the dams under the new conditions will be available at this time.

The SEQWC's intention to seek revision of the flood mitigation manual was flagged during the design process for the dam upgrading and an initial document containing revised operating procedures was circulated to the reference group of Natural Resources & Mines (WIC – Dam Safety), Sun Water (operator of the dams), Brisbane City Council, Ipswich City Council, Esk Shire Council, and Bureau of Meteorology representatives in May 2004. David Gill of SEQWC also contacted Kilcoy Shire Council regarding the manual revisions. Subsequently where possible the SEQWC has attempted to incorporate the wishes of all parties regarding the operating procedures into the document.

The Corporation has now submitted the document as an updated manual under s499 – Regular reviews of flood mitigation manual of Water Act 2000 for the chief executive's approval. A copy of the updated manual they are now seeking approval for is attached

The procedures for Somerset Dam remain unchanged from the currently approved manual.

The procedures for Wivenhoe Dam remain generally unchanged for lake levels up to EL 74.0 providing the same downstream flood mitigation effects up to this level. Above this level, the gates may be opened at a quicker rate than previously to minimise the likelihood of the coffer dam being overtopped. Additional provisions are also included for the conduct of works in the main spillway area to ensure full use can be made of the radial gates.

Approval of Manual

Approval of the attached document as a flood mitigation manual would continue to provide the dam owner and operators with protection from civil liability while the procedures are observed (s.500 of *Water Act 2000*).

The *Water Act 2000* provides that the chief executive may get advice from an advisory council before approving a flood mitigation manual. In this instance I recommend that the option to get advice from such an advisory council be waived – those who would make up the advisory council have already been given the opportunity to comment as agency representatives.

Flood mitigation manuals can be approved for periods not exceeding five years. It would seem reasonable to approve this manual for a five year period.

Recommendation

That the *Manual of Operational Procedures for Flood Mitigation for Wivenhoe and Somerset Dam (Revision 5)* submitted by the South East Queensland Water Corporation be approved for five years as a Flood Mitigation Manual under section 497 of *Water Act 2000*. A gazette notice is required to formalise the approval.

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