



Queensland
Government

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Natural Resources and Mines

5 September 2003

Mr Graeme Newton
General Manager
Burnett Water Pty Ltd
GPO Box 232
BRISBANE QLD 4001

Attention: Ms Michelle Paton

Dear Mr Newton,

DOCUMENT RECEIVED BY NR&M	
26 SEP 2003	
File No.	Dam/13/00 (1997)
File Location	D. RYAN
Action By	MIC COOBS D. RYAN
Registered Y/N	Y
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MOVEMENT INSTRUCTIONS MUST BE SHOWN ON FRONT COVER.	

Application under *Water Act 2000* for Resource Operations Licence (ROL) and Development Application(s) under the *Integrated Planning Act 1997* for Water-related Operational Works – Burnett River Dam Project

Thank you for your letter of 19 August 2003 which forwarded, for the Burnett River Dam Project, several Development Applications pursuant to Schedule 8 Item 1 Parts B & C of the *Integrated Planning Act 1997* (IPA) for operational works to take and/or interfere with water in a watercourse and to construct a Referable Dam.

As you would be aware, the *Water Act 2000* requires that for an application to be considered to be properly made under the IPA, that 'Resource Managers' consent' must accompany a development application for water-related work. In relation to this matter, we note that our letter of 12 August 2003 advised that the provision of 'Resource Managers' consent' would be contingent on the issue of a Resource Operations Licence (ROL) for the Burnett River Dam. As the ROL has yet to be issued, we note that the timeframes to formally assess the application as prescribed under the Integrated Development Assessment System of IPA have yet to commence.

Preliminary Review of Application(s)

Notwithstanding the above, the Department has undertaken a preliminary review of the development applications that have been submitted. While not a formal information request per se, the preliminary review suggests that the following information will be required to assess a properly made application under the IPA:

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- for that part of the application under Schedule 8 Part 1 Item 3C of the IPA (Referable Dam):
 - as the definition of 'Dam' within the *Water Act 2000* includes the storage area created by the works, Part A of the application form should describe all lands (eg, Lot on Plan) that will be part of the storage area of the proposed Dam;
 - other matters as outlined in Attachments 1 & 2; and
- for that part of the application under Schedule 8 Part 1 Item 3B of the IPA (works to take or interfere with water):
 - a description of and the quantity of vegetation within the watercourse (both above and below full supply level) at the site of the construction of the proposed works to take and/or interfere with water; and
 - other matters as outlined in Attachment 3.

We note that other information may be required once the assessment of the application(s) is further progressed.

Resource Operations Licence (ROL)

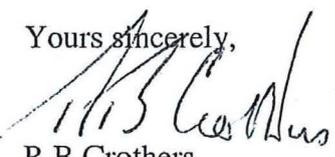
While the Department's deliberations on the application by Burnett Water Pty Ltd for a ROL are progressing, this letter also confirms discussions held on 1 September 2003 regarding several additional matters that should be included in the current application for the ROL. In essence, as the ROL is a licence under the *Water Act 2000* that permits the 'interference' to a watercourse, the Department considers that the ROL is the appropriate mechanism by which to:

- identify all watercourses, in addition to the Burnett River, that will be subject to interference (ie, inundation) by the proposed development; and
- address the likely impacts on vegetation (eg, inundation or other) that will arise from the proposed interference to the watercourses (please note that this only relates to vegetation that is located both within a watercourse and below the full supply level of the proposed works).

As discussed on 1 September 2003, Burnett Water Pty Ltd is requested to provide information to enable the above matters to be addressed as part of any ROL issued for the development. In relation to vegetation issues, the information to be provided would need to identify the quantity, type and location of vegetation within the watercourse to be impacted by the development. The Department anticipates that much of this information will be readily available, either from the Environmental Impact Study, or from consequent investigations that have been undertaken by Burnett Water Pty Ltd pursuant to the recommendations of the Coordinator-General.

Please contact Mr Glenn Flatley on 07 4131 5874 should you require clarification of any of the matters raised herein.

Yours sincerely,


R B Crothers

Regional Services Director
South-East Region

**Comments Arising from Preliminary Review of Development Applications
Referable Dam Matters -- Burnett Alliance**

Hydrology - Background Information

The Failure Impact Assessment produced by SunWater, and accepted by NR&M, indicated that the Burnett River Dam (AMTD 131.4km) will have a Category 2 hazard rating under the Queensland *Water Act 2000*. The associated flood studies undertaken by SunWater extended downstream to Wallaville (AMTD 92km), a distance of approximately 40km downstream from the Burnett River Dam.

It should be noted that the purpose of the Failure Impact Assessment is primarily to determine if a dam is 'referable' under the *Water Act*. As such, the need for further refinement of the assessment is reduced once it has determined, with a high degree of certainty, which Failure Impact Category applies to the dam. While it does provide an indication of the total number of people who could be at risk should a dam fail, the assessment will not automatically provide a value of total population at risk (PAR) for the Hazard Category as described in the ANCOLD Acceptable Flood Capacity Guidelines.

The assessment report by SunWater also states that it does not provide a definitive value for PAR, as their flood model extended downstream to Wallaville and not to the mouth of the river (or the limit of the Flood Impact Zone). The assessment, however, demonstrated that the PAR was well in excess of 100 and the dam was therefore assigned a Failure Impact Category of '2'. The report also states that there were more people potentially at risk at other locations along the stream.

It should also be noted that, where the population at risk exceeds 1000, the ANCOLD guidelines assign a flood hazard category of "extreme" and the fallback acceptable flood capacity of the dam is the 'PMF event'.

Question:

Please provide more detail as to how the required spillway capacity was assessed? Details to be provided should include:

- What is the maximum PAR for a flood failure case for Burnett River Dam assessed in accordance with ANCOLD Guidelines?
- How does the selected spillway capacity conform to ANCOLD Guidelines?

Tailwater Level - Background Information

Estimates of tailwater level are a little vague, but are based on available data. Items such as the stability of the primary and secondary spillways and the abutments and the consequent need or otherwise for a gallery are all dependent on the tailwater level.

Comment:

- Comment is sought on the adequacy of the tailwater assessment and the sensitivity of the adopted design to the adopted tailwater.

Contraction Joints – Background Information

Contraction joints are proposed at 15m intervals across the primary spillway. However, there is little or no information on how these joints are to be prepared, and how waterstops are to be installed

Comment

- It is requested that information be provided as to how the contraction joints will be achieved, and what arrangements will be made for the incorporation of waterstops at these contraction joints?

RCC Design – Background Information

The RCC mix for the main dam will be a high paste mix with 210kg/m³ of cementitious material, including Portland cement and flyash. For the secondary spillway, a mix with 120kg/m³ of cementitious material will be used.

Question

- Are the allowable stresses as described in the design report applicable for both mix designs?

Outlet Works – Background Information

There was no manhole access identified in the pipework associated with the outlet works. Also, the velocities in the pipe work are quoted at 10m/s and up to 20m/s.

Comment

- Provision for internal access to the pipe work needs to be addressed in the final design phase, with overviews from Operations and Maintenance Engineers.
- The velocities through the pipe are reasonably high. What provisions have been made to accommodate these velocities?
- Is the proposed protective coating (Amerlock 400) suitable for such conditions?

**Comments Arising from Preliminary Review of Development Applications
Referable Dam Matters -- Team 1**

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Spillway Hydraulics – Background Information

Section 4, Page 2 of the design report states the flood routing calculations show that the PMP flood event could be reduced from EL92 to EL85.5 or EL87m depending on crest level and secondary spillway. Page 10 of their hydrology report suggests that the tabulated data is based on the adopted profile that gives a maximum reservoir level of EL87.46 for the 1:30,000 event and EL88.45 for the PMF. The values quoted in the hydrology section differ to those in the spillway hydraulics section.

Section 4 Page 1 states that the PMP design flood for the dam is 94,000m³/s. The hydrology section describes a 1:30,000 event as 94,861m³/s with a PMF of 106863m³/s – is it to be assumed that the 1:30,000 event is the PMPDF event?

Comment

- Further information or clarification of the above details is requested.

Foundation – Background Information

The proponent has taken the option of incorporating the basalt flow on the right abutment into the foundation – ie leaving the basalt in place. Their report suggests that the assumptions on which their analysis was based included water level at EL72 (5m over the crest). There also appears to be a reasonable amount of concern by proponent regarding the sub-basaltic alluvium particularly in relation to “squeezing” of the layer with the additional load of the embankment (Ref Section 2 Page 15 of their report).

Comment

- What impact will this zone of sub-basaltic alluvium have on the serviceability and stability of the dam?
- What special provisions are to be made to accommodate the potential compressibility of this sub-basaltic alluvium?
- What was the basis for selection of the EL72 design condition and the linear reduction in water pressure under the block to zero at the downstream face?

Seismic Loading – Background Information.

SMEC have used values of 0.035 and 0.2g respectively for the OBE and MDE peak ground accelerations.

Question:

- What was the methodology used to determine the adopted values?

Load Combinations – Background Information

The loading combinations and associated allowable stress values are referred to in Section 5 of the SMEC Report.

Question(s):

- What was the value adopted for cohesion at the RCC lift joints?
- How will design parameters be validated?

Tailwater Level – Background Information

It was not evident in the report if any allowance has been made in the stability of the structure for reduced water pressures caused by the hydrodynamic effects of the plunging jet.

Question(s)

- Was there any analysis performed in relation to the tailwater level in association with the hydrodynamic effects of the plunging jet?
- Has any allowance been made for the hydrodynamic effect, and if not, why not?

Outlet Works – Background Information

The drawings detailing the general arrangement of the irrigation outlet pipe show a guard valve located near the upstream end of the 2.2m dia pipe. (Ref Dwg 303). The same drawing also details a 0.3m dia air vent for the 5.2m x 4.7m conduit.

Comment & Question:

- Clarification of the arrangement for the valve and outlet works in general is required, with a review during the final design phase by Operations and Maintenance Engineers.
- Air vents can have a significant impact on the performance of the outlet works. Was there any analysis performed in sizing the outlet works vent pipe?

