State water

Keepit Dam Upgrade

Submissions Report and Preferred Project Report

Keepit Dam Upgrade - Submissions report and preferred project report

September, 2008

State Water

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1. Introduction and overview

1.1 Purpose of this report

This Submissions Report (and Preferred Project Report) documents and considers the submissions received on the proposed Keepit Dam Upgrade Environmental Assessment (the Environmental Assessment) and outlines State Water Corporation's responses to these submissions, as required under Section 75H(6) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Submissions Report also provides a review of the Environmental Assessment and details of additional investigations and information since exhibition. Modifications which have subsequently occurred are also documented (refer Section 5) and a revised Statement of Commitments (SoC) is provided to reflect these changes.

1.2 Overview of the Environmental Assessment

The following sections present a summary of the Environmental Assessment. For more detailed information on the project benefits and impacts, the reader is referred to Sections 5 to 9 of the Environmental Assessment report.

1.2.1 Need and benefits

The NSW Dams Safety Committee requires that Keepit Dam be upgraded to be able to safely withstand extreme natural events, including the largest flood that could theoretically occur (known as the probable maximum flood or PMF) and earthquakes. Such extreme events have a very low likelihood of occurrence, although if they were to occur, the consequences would be catastrophic. It is estimated that these consequences would include approximately $1.7 billion (2002 estimate) in direct damages and the risk of significant loss of human life.

The PMF in the Namoi River catchment is estimated to occur less frequently than 1 chance in 500,000 each year. Dam safety upgrade works are, therefore, required to reduce the probability of dam collapse during more frequent flood events and to achieve compliance with the requirements of the NSW Dams Safety Committee.

1.2.2 Dam safety options

The key features of the three (B1, D2 & D3) dam safety upgrade options are provided in Table 1-1. All three options would involve raising of the main and subsidiary dam walls, strengthening of the main dam wall with post-tensioned steel cables, and the construction of additional spillways and saddle dams. All of the options proposed would each satisfy the requirements of the NSW Dams Safety Committee, although only one of the three options would be implemented.

No change to the full supply level of Lake Keepit is proposed. No change to the existing operation of the dam would occur unless a storm larger than a likelihood of occurrence of 1 chance in 2,400 each year occurred. Figure 1-1 shows the key features of the three dam safety upgrade options.

Table 1-1 Key features of the options

Option	Main and subsidiary dam wall raising	Proposed spillway locations	Spillway discharge locations	Saddle dam locations	Estimated cost (March 2007) $ million
Option B1	3.4 metres	▪ right-hand abutment (220 metres) ▪ subsidiary dam wall (380 metres)	Namoi and Peel Rivers	▪ boat ramp ▪ sailing club ▪ caravan park	75.0
Option D2	4.6 metres	▪ right-hand abutment (220 metres) ▪ sailing club and boat ramp (total 380 metres)	Namoi River	▪ caravan park	87.0
Option D3	5.5 metres	▪ right-hand abutment (220 metres) ▪ sailing club and boat ramp (total 380 metres)	Namoi River	▪ caravan park	89.0

Source: Table S-1 of the Environmental Assessment.

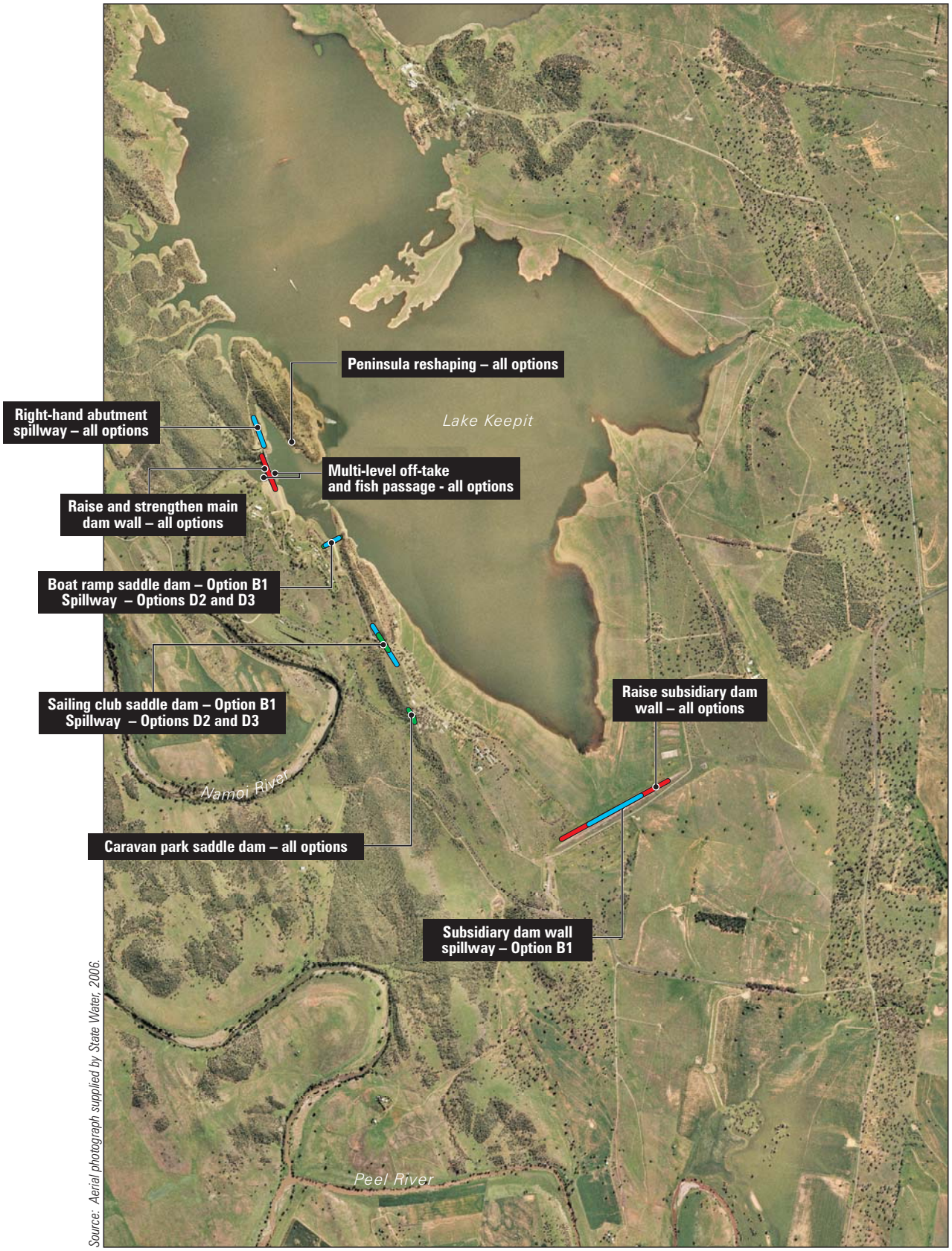


Figure 1-1 **Key features of the options**

1.2.3 Environmental improvements

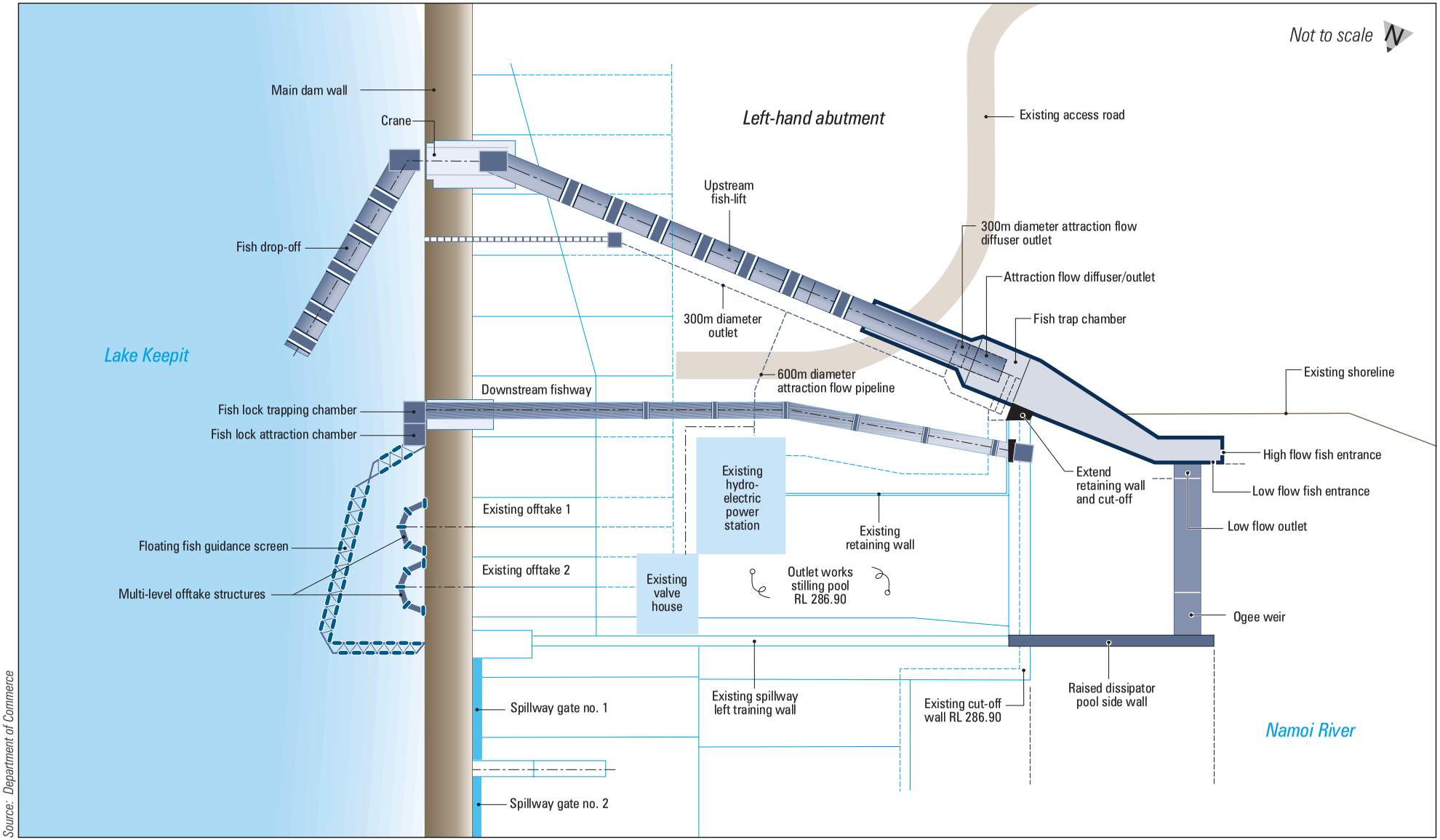
In addition to the dam safety upgrade works, various measures to improve the environmental performance of the dam infrastructure are also being proposed, comprising:

- a multi-level offtake (i.e. a mechanism for releasing water from various depths within Lake Keepit)
- fish passage.

A multi-level offtake is proposed to reduce the impact of cold water releases from the dam on the downstream riverine environment.

Fish passage at the dam wall has been considered as a requirement of the NSW Department of Primary Industries (Fisheries) under Section 218 of the *Fisheries Management Act 1994*.

Figure 1-2 shows the proposed environmental improvement measures.



Source: Department of Commerce

Figure 1-2 **Key components of the enviromental improvements**

1.2.4 Construction impacts

The potential construction impacts, which would occur if the proposal was implemented, would include terrestrial and aquatic ecology, heritage, visual and social issues that are described in detail in Section 5 of the Environmental Assessment. There are some specific differences in impact between the three dam safety upgrade options, associated with particular environmental issues. These issues would be manageable given the commitments to environmental protection and management made by State Water (refer Appendix A).

Terrestrial ecology

Clearing of native vegetation is required for all of the dam safety upgrade options:

- 41.0 hectares for Option B1
- 49.8 hectares for Option D2
- 49.3 hectares for Option D3.

These areas include a threatened ecological community – White Box Yellow Box Blakely's Red Gum Woodland. Clearing of 13.6 hectares of the community is for Option B1 and 18.0 and 17.6 hectares respectively for Options D2 and D3.

State Water has revised the sizing of the construction works areas to minimise the extent of clearing required, however, the environmental assessment concluded that the proposal is likely to have a significant impact on this community. A referral under the *Environment Protection and Biodiversity Conservation Act 1999* was submitted to the Commonwealth Department of Environment and Water Resources to seek approval for the necessary vegetation clearing.

State Water is committed to implementing a strategy to offset these impacts and has identified a package of measures to be further investigated (refer Section 5.1.6). The Department of Environment and Climate Change's BioBanking Assessment Methodology would be used as a guideline for sizing an appropriate area of offset in combination with other measures proposed following any approval of the proposal. An approval from the Commonwealth Minister for the Environment and Water Resources would also be required before any construction which would affect the threatened ecological community could be undertaken.

Aquatic ecology

Potential water quality impacts could occur as a result of sediment entering Lake Keepit or downstream areas during construction. Lake Keepit has previously been stocked with Murray Cod which is a Commonwealth-listed threatened species. The dam area also provides potential habitat for another Commonwealth-listed threatened species, the Namoi River Turtle. An assessment of significance for both species was conducted and concluded that impacts were unlikely based on the implementation of a comprehensive Soil and Water Quality Management Plan as proposed by State Water (refer Appendix A). As part of the plan, sediment and erosion controls would be routinely audited by a soil scientist during construction to ensure their continued effectiveness.

Non-Indigenous Heritage

All the options would require modifications to the main dam wall, which is listed on State Water's draft heritage register and which also meets the criteria for listing on the State Heritage Register. The potential impacts of the upgrade on the dam wall's heritage values are proposed to be reduced by designing the proposed modifications in harmony with the existing structure. Existing elements of the wall such as the gantry crane would also be retained following completion of construction works.

The central spoil stockpile proposed for the construction of Options D2 and D3 would encroach on a historical school/scout hall that fulfils the criteria for local heritage listing. Management and mitigation measures would be implemented during construction to minimise the potential for disturbance to this item.

Construction is expected to last for approximately 2.5 years.

Indigenous Heritage

There is potential for the construction of Options D2 and D3 to affect an Aboriginal stone procurement source (i.e. a quarry) if these options were to be pursued. Further investigations would be conducted to determine the extent of the site and management measures to reduce the impacts.

Visual

The proposal would increase the visibility of infrastructure around the storage. The raised dam walls, additional spillways and saddle dams would be visible to users of Lake Keepit State Park and Lake Keepit and, to a lesser extent and depending on their location, local land owners and users of public roads. The visual impacts resulting from vegetation clearance would be mitigated by revegetating stockpile areas and other construction work areas.

Overall, Option B1 would have the least visual impacts of the three options and Option D3 would have the greatest visual impacts.

The ability to mitigate the visual impacts of the proposal is limited by the scale of the works and the inherent engineering function of the individual components. A Visual, Landscaping and Vegetation Management Plan (refer Appendix A) would however be prepared in consultation with the local community at the dam and would address opportunities for revegetation and rehabilitation of areas as well as ensuring design elements integrate with the existing infrastructure.

Social

Construction of the proposal would result in disruption to users of the Lake Keepit State Park including temporary reductions in amenity and access. As a result, the State Park may suffer a loss of patronage during the construction period. However, it is possible that at least part of any impact may be offset by providing accommodation and supplies required by the construction workforce e.g. meals, recreation needs, and short-term accommodation.

State Water would develop a master plan for Lake Keepit State Park for the preferred dam safety upgrade option in consultation with the Lake Keepit State Park Trust and local clubs. The relocation of some structures would be required outside the inundation area, subject to negotiations with the affected owners. The cost of the proposed relocation and management of associated impacts has been included in the option cost estimates.

The construction of Options D2 and D3 would cause greater disruption to Lake Keepit State Park operations than Option B1, although this disruption would be temporary over the 2.5 year the construction period.

Other environmental issues

A number of other, more minor impacts may be generated during construction of the proposal. These include construction dust, noise and vibration, traffic and waste generation, erosion and sedimentation, and impacts on existing utilities and services.

State Water would manage these issues and other important aspects such as resource use and energy efficiency, ongoing consultation with affected residents and owners, potential property damage and public safety issues in accordance with the principles contained in its Statement of Commitments (refer Appendix A). A fundamental element of these commitments is the implementation of a comprehensive Construction Environmental Management Plan which would include procedures and measures to reduce or avoid these and the other impacts identified in the Environmental Assessment. Independent supervision of the construction works would also be undertaken by an Environmental Management Representative reporting to the NSW Department of Planning. State Water would also establish a community liaison group to oversee any concerns relating to the works.

1.2.5 Operational benefits and impacts

A hydraulic analysis was undertaken to investigate the hydraulic performance of each of the three dam safety upgrade options. The key results, which are common to all dam safety upgrade options, are that:

- the depth of floodwaters during an extreme flood event would be reduced compared to the 'do nothing' scenario which would result in dam failure
- the dam safety upgrade would have no effect on the environment for floods smaller than 1 chance in 2,400 each year on average. By contrast, the largest recorded flood in the Namoi River catchment occurred in 1955 and had an estimated likelihood of occurrence of 1 chance in 100 each year
- the hydraulic effects of the dam safety upgrade during an extreme flood event are not observable beyond a point approximately 13 kilometres downstream of the main dam wall or at a point roughly coinciding with the confluence of the Namoi and Peel Rivers
- downstream inundation would be more frequent than without the upgrade for a limited range of floods between 1 chance in 2,400 and 1 chance in 2,800 each year on average
- the 'worst case' environmental impact would result from the probable maximum flood which has an estimated likelihood of occurrence of 1 chance in 500,000 each year. The effects of all other flood events would be less, although impacts for all storms larger than 1 change 10,000 each year would be severe.

The potential operational impacts, which would occur only if a large to extreme flood event less frequent than 1:2,400 AEP occurred, are detailed in Sections 6.2-6.4 of the Environmental Assessment. These would include terrestrial and aquatic ecology, heritage, erosion, social and water supply security issues. The potential impacts and benefits of the proposal are considered relative to the base case (i.e. dam failure).

Downstream inundation

Compared to the do nothing option (dam failure) all options result in less downstream inundation. While the operational impacts of the options are similar in overall terms, they result in different local effects. For a PMF event (1:500,000 AEP) Option B1 would discharge approximately 60% of flood flows to the Peel River while Options D2 and D3 would only discharge to the Namoi River consistent with the original design of the dam. Option B1only results in erosion and sedimentation impacts to the lower Peel valley for storms larger than 1 chance in 10,000 each year on average.

Terrestrial ecology

All the options would reduce the impact on the endangered plant species, *Hakea pulvinifera*, located in the Namoi River valley. Options D2 and D3 would provide a greater benefit to this population for floods between 1 chance in 2,400 each year and 1 chance in 10,000 each year. Option B1 would provide a greater benefit to this population than Options D2 and D3 for floods larger than 1 chance in 10,000 each year.

Discharges from the subsidiary dam spillway for Option B1 would result in additional impacts to the Peel River valley for floods less frequent than 1 chance in 10,000 each year. A single individual of a threatened plant species located downstream of the subsidiary dam wall would be destroyed in the event of the operation of this spillway, however, a significance assessment concluded that this loss was not important to the survival of the species.

Aquatic ecology

All the options would reduce the extent of impacts in the Namoi River valley, with Option B1 providing a greater benefit than Options D2 and D3. For Option B1, discharges from the subsidiary dam spillway would result in additional impacts to the Peel River valley for storms larger than 1 chance in 10,000 each year. Both riverine environments are highly degraded and in relatively poor condition.

Heritage

The proposal would result in reduced impacts to known and potential heritage sites in the Namoi River valley compared to the 'do nothing' scenario. The release of floodwaters from the subsidiary dam would exacerbate impacts to 15 known heritage sites in the Peel River valley for storms larger than 1 chance in 10,000 each year.

Erosion and sedimentation

A storm of sufficient magnitude to cause operation of a second auxiliary spillway would mobilise a huge sediment load from the upstream catchment. The dam itself would act as a sink for a portion of this material including gravels, cobbles and boulders, vegetation and trees, although a large portion is also expected to pass through the dam and be deposited in downstream areas.

For Option B1, discharges from the subsidiary dam spillway into the Peel River valley would result in substantially greater local erosion due to the spillway's location on a highly erodible soil profile. Subsidiary dam spillway discharges would create a new channel between the spillway and the Peel River over a distance of approximately 2.5 kilometres. The channel could be several metres deep and hundreds of metres wide. The likelihood of this impact is very low and estimated to be 1 chance in 10,000 each year on average. In a regional context, the additional sediment arising from this spillway represents a small increase in the total sediment load generated by the storm.

Social

All the options would avoid the social impacts that would result from catastrophic failure of the dam including the risk of significant loss of human life.

For Option B1, State Water would acquire some privately owned land immediately downstream of the subsidiary dam wall for construction and buffer zone purposes.

For Option B1, the operation of the subsidiary dam spillway for storm larger than 1 chance in 10,000 each year would result in floodwater flow across Lake Keepit State Park, including an access road to the camping area, the golf course, a sewage treatment plant, and Keepit Dam Road (the main entry road into Keepit Dam). The affected infrastructure would require repair or replacement following operation of the subsidiary dam spillway. The operation of the subsidiary dam spillway would also affect an area of privately-owned land between the spillway and the Peel River. The affected land is currently used for grazing/agriculture.

For Options D2 and D3, the operation of the sailing club and boat ramp spillways has the potential to damage sections of Lake Keepit State Park between the spillways and Namoi River. The damage would be limited to land degradation and some erosion.

Upstream inundation

The dam safety upgrade would result in a temporary increase in upstream inundation during storms larger than 1 chance in 5,000 each year for Option D3, 1 chance in 6,700 each year for Option D2, and 1 chance in 17,300 each year for Option B1. Upstream inundation would affect an area of land above the full supply level of the dam of between approximately 1,085 (for Option B1) and 1,795 hectares (Option D3). Land at a higher elevation would be inundated for a lesser period of time than that nearer to the full supply level of the dam. The maximum duration of temporary inundation above full supply level (FSL) ranges between 60 hours (Option B1) to 90 hours (Option D3).

Terrestrial ecology

The potentially affected upstream area includes some threatened ecological communities. The duration of upstream inundation is relatively short and is not expected to cause significant tree dieback, although grasses would be unlikely to survive. Ground-dwelling animals would be expected to have sufficient time to move to higher ground; however, some animals could be affected by being isolated or possibly drowning, temporary loss of habitat, and increased exposure to predators due to temporary displacement. Option D3 would have the greatest impact and Option B1 the least impact.

Aquatic ecology

The increase in upstream inundation from all options would temporarily affect aquatic habitats by creating new aquatic habitats but at the same time reducing riverine habitats. Overall, no significant net effects are expected, however some redistribution of habitats would occur. Option D3 would have the greatest impact and Option B1 the least impact.

Non-Indigenous Heritage

One non-Indigenous heritage site already affected by inundation from the existing dam would be subject to longer periods of inundation, with Option D3 having the greatest impact and Option B1 the least impact.

Indigenous Heritage

Temporary upstream inundation resulting from Option D3 would affect one additional Indigenous heritage site. Three Indigenous heritage sites already affected by inundation from the dam would be subject to longer periods of inundation, with Option D3 having the greatest impact and Option B1 the least impact. The majority of the area to be impacted has a relatively low archaeological potential.

Social

The operation of the proposal would result in the temporary inundation of properties and infrastructure located on the foreshore of Lake Keepit during large to extreme flood events. Subject to detailed survey, the proposal would potentially result in temporary inundation of areas of the Manilla Ski Gardens Caravan Park, the Lake Keepit Sport and Recreation Centre, Lake Keepit State Park, and a number of privately-owned farming properties. The rise of floodwaters on these properties would allow sufficient time for evacuation (if necessary). The effects of inundation on particular facilities is not expected to be substantial (given the slow rise in water level), although there may be potential for wave action and settlement to occur. Option B1 would have less impact on upstream properties than Options D2 and D3.

Environmental improvement measures

The multi-level offtake and fish passage concept designs currently being progressed by State Water to improve the environmental performance of the dam represent concepts that have been successfully implemented on other dams in Australia. However, their adaptation to Keepit Dam requires innovative engineering design to suit specific fish migration needs.

Preliminary modelling undertaken for the multi-level offtake demonstrates that the temperature of water released from the dam can attain the temperatures required for spawning by several native fish species including Murray Cod, Golden and Silver Perch and Catfish. However, the level of effectiveness varies with the water release demand. More detailed work needs to be undertaken to confirm the feasibility of the concept design and that the modelling assumptions being used address the majority of expected operating conditions. This work is ongoing and is being conducted in conjunction with the Department of Primary Industries (Fisheries).

The Environmental Assessment also includes a concept design for achieving fish passage at the main dam wall. Similar to the multi-level offtake, ongoing assessment of the concept is being undertaken jointly by State Water and the NSW Department of Primary Industries (Fisheries). An effect on the existing hydropower plant operation would result since the attraction flow for the fish passage would utilise water (estimated at 5% on average) that would otherwise be used to power the hydropower plant.

A final decision on the feasibility of the fish passage and multi-level offtake will be made by State Water and the Department of Primary Industries (Fisheries) prior to these components being implemented and subject to availability of funding.

1.2.6 Conclusions of the Environmental Assessment

The Environmental Assessment concludes that any of the proposed dam safety upgrade options would meet the safety requirements of the NSW Dams Safety Committee for extreme consequence dams. No change to the full supply level of the dam is proposed and no change to the operation of the dam would occur for storms up to 1 chance in 2,400 each year on average.

The Environmental Assessment has investigated the environmental, economic and social issues associated with the proposal and concluded that:

- implementation of the proposal would result in a range of environmental and social benefits and impacts
- the justification for the proposal is founded upon the avoidance of approximately $1.7 billion (2002 estimate) of potential direct damages to downstream areas and significant loss of human life should a PMF occur. These benefits outweigh the predicted environmental impacts
- construction impacts are likely to be manageable given the implementation of the mitigation measures proposed by State Water
- the operational impacts would occur very rarely, if at all within the 200 year lifetime of the dam
- Option B1 is considered to best meet the project objectives and is superior in relation to construction impacts and capital cost
- the proposed multi-level offtake and fish passage are likely to result in benefits to the environment. However, these are subject to further studies of cost-effectiveness and their implementation would be subject to availability of funding.

The Environmental Assessment concludes that the environmental benefits of the proposal substantially outweigh the environmental impacts.

1.3 Preferred dam safety option

Based on the information contained in the Environmental Assessment, State Water considered that the preferred dam safety upgrade option was Option B1. However the report also indicated that a final decision would be made following public exhibition and additional liaison with project stakeholders.

State Water's preferred dam safety option is outlined in Section 6 of this report. A request for approval for the project based on this option is contained in Section 7.

1.4 Additional information and project modifications

Concurrently with the exhibition of the Environmental Assessment, State Water have continued to progress the concept design of the three dam safety options and environmental improvements.

This has included a number of technical studies which were either ongoing at the time of exhibition or commenced in response to submissions received. Additionally, State Water have undertaken additional consultation with Government agencies and landholders.

The additional information and studies include:

- Results of geotechnical investigations of the proposed spillway and saddle dam areas (Section 5.1.1).
- Revised capital cost estimates (Section 5.1.2).
- Details of the concept design, construction activities and construction program and the requirement for a license under the *Protection of the Environment Operations Act* (Section 5.1.3).
- Construction air quality assessment (Section 5.1.4).
- Construction noise and vibration assessment (Section 5.1.5).
- A methodology to guide the development of the proposed biodiversity offset (Section 5.1.6).
- Information on construction traffic movements and routes (Section 5.1.7).

A number of modifications have also been made to the project during this period including:

- Removal of the proposal to construct a fish passage at the dam wall on advice from the Department of Primary Industries (Fisheries) (Section 5.2.1).
- A commitment to construct the multi-level offtake as part of the Keepit Dam Upgrade environmental improvements (Section 5.2.2).

- The proposal to acquire approximately 16 hectares from a private landowner to enable construction of the subsidiary dam wall. (Section 5.2.3).
- The proposed change of approval from Concept Plan to Project Approval (Section 5.2.4).
- Resolution of the footprint of the Caravan Park saddle dam and impacts on existing structures (Section 5.2.5).

The results of these studies, additional information arising and project modifications have been discussed with key project stakeholders during preparation of this report. A summary of the post-exhibition consultation conducted is provided in Table 5-1.

1.5 Structure of this report

This Submissions Report comprises the following chapters:

- Chapter 1: provides an introduction to the submissions report as well as an outline of the Environmental Assessment for the Keepit Dam Upgrade
- Chapter 2: details the consultation process undertaken during the exhibition of the Environmental Assessment
- Chapter 3: provides an overview of the number, format and source of submissions received as well as a summary of issues raised
- Chapter 4: provides a review of the submissions received in response to the exhibition of the Environmental Assessment and State Water's response to issues raised in the submissions
- Chapter 5: provides a summary of additional investigations and project modifications undertaken after the exhibition of the Environmental Assessment
- Chapter 6: outlines the preferred project including the preferred dam safety upgrade option
- Chapter 7: presents the conclusion of the report and documents the form of approval requested in accordance with the provisions of the Environmental Planning and Assessment Act, 1979
- Chapter 8: References
- Appendix A: Final Statement of Commitments
- Appendix B: Concept design drawings and preliminary construction program
- Appendix C: Air quality and noise and vibration reports
- Appendix D: Correspondence from the Department of Primary Industries
- Appendix E: Flood mapping figures
- Appendix F: NSW Treasury Circular 05/05.

2. Exhibition process

2.1 Consultation process

Community and stakeholder consultation for the dam safety upgrade options and environmental improvements has been ongoing since project commencement, principally through the project Community Reference Panel. This section provides details of the consultation undertaken during the exhibition of the Environmental Assessment.

2.1.1 Public notices

Advertisements outlining key details of the proposal and exhibition of the Environmental Assessment where placed in the North-West Magazine, the Northern Daily Leader and The Australian on the following dates:

- The North-West Magazine – 4 December 2007 and 17 January 2008
- The Northern Daily Leader – 5 December 2007 and 17 January 2008
- The Australian – 5 December and 17 January 2008.

These advertisements requested submissions on the Environmental Assessment from anyone with an interest in the project, including stakeholders and members of the community.

2.1.2 Exhibition period

The Environmental Assessment was placed on public exhibition for a period of 67 days (approximately 9 weeks) between 4 December 2007 and the 8 February 2008 at:

- Department of Planning information centre, Sydney
- Nature Conservation Council, Sydney
- Gunnedah Shire Council, Gunnedah
- Tamworth Regional Council, Parry House, Tamworth
- Tamworth Regional Council, Manilla Office, Manilla
- Lake Keepit State Park Office, Lake Keepit
- Lake Keepit State Park, Keepit Kiosk, Lake Keepit.

State Water representatives were present on Saturday 12 January 2008 at the Keepit kiosk.

2.1.3 Distribution of information

Copies of the Environmental Assessment were made available at each of the above locations for review (refer Table 2-1). Copies were also distributed to the stakeholders listed in Table 2-1.

Table 2-1 Number of copies of the Environmental Assessment provided to exhibition locations and stakeholders

	Number of hard copies	Number of electronic copies
Exhibition locations		
Nature Conservation Council	1	1
Lake Keepit State Park, Manager	1	1
The Kiosk, Lake Keepit State Park	1	1
Gunnedah Shire Council	2	2
Tamworth Regional Council	3	3
Stakeholders		
Administrative Support to Tamworth & Dubbo Regional Offices	1	0
Member for Tamworth	0	1
NSW Dams Safety Committee	1	1
Department of Environment and Climate Change	2	2
Department of Water and Energy	2	2
Department of Lands	1	1
Namoi Catchment Management Authority	1	1
Department of Primary Industries	2	2
Department of the Environment and Water Resources	1	1

Media releases pertaining to the availability of the documents for review were made by State Water on 4 December 2007 and 8 January 2008. A letter was also sent to the following stakeholders to advise of the exhibition of the Environmental Assessment:

- Gunida Gunyah Aboriginal Corporation
- Tamworth Local Aboriginal Land Council
- Red Chief Local Aboriginal Land Council
- Narrabri Shire Council
- Walgett Shire Council
- All adjoining landowners.

The Environmental Assessment was also made available on the Department of Planning website and cross-links were setup from the Sate Water website. The State Water website also contained selected extracts about the proposal, including:

- Executive summary
- Approvals process
- Technical overview
- Need for the upgrade
- 'Facts and stats'
- Conclusion
- Photomontages of the options.

2.1.4 Stakeholder meetings

A community information day was held on Saturday 12 January at Lake Keepit State Park. With approximately 20 people expressing interest at the information day, the following general categories of comments were received:

- Timing of construction?
- Impact on downstream landowners during a flood event?
- Impact and need to relocate caravans (during a flood, during construction??).

The State Water Project Manager also undertook the following meetings outlined in Table 2-2 during the exhibition period.

Table 2-2 Meetings undertaken during public exhibition

Stakeholder category	Date	Overview of feedback
Downstream landowner	▪ 12 December 2007	▸ impact on downstream landowners ▸ compensation
Community reference group	▪ 13 December 2007	▸ State Water's adoption of B1
Lake Keepit Sailing Club	▪ 12 January 2008	▸ preference for sailing club not to be moved

2.2 Receipt and management of submissions

Submissions from the general public, interested groups, organisations and public authorities were received by the Department of Planning. Copies of the submissions received were provided to State Water. Each submission received was allocated a number in chronological order. The submissions were reviewed to identify the key issues raised against a master list of issues mirroring the presentation of information in the Environmental Assessment. Additional categories were also created to address other issues.

Late submissions were accepted and accommodated using the same assessment process.

3. Overview of submissions

3.1 Number of submissions received

A total of 17 submissions were received including 7 late submissions received after the close of the public exhibition period.

3.2 Submission sources

A breakdown of the sources of submissions is provided in Table 3-1.

Table 3-1 Summary of submissions sources

Stakeholder category	Number	Approximate percentage (%)
Landholders	4	25
Community groups	2	12.5
Private organisations	1	6
Local Government	3	19
State Government	6	37.5
Total	**16**	**100**

3.2.1 Landholders

Four submissions were received from landholders. Landholders generally were concerned that the preferred Option B1 would result in irreversible damage to their properties and raised the issue of compensation from State Water. They also considered that the proposal created more uncertainty for their ongoing livelihood and businesses and thought that they would have difficultly obtaining insurance coverage in the future. Landholders generally objected to the preferred option.

3.2.2 Community groups

Two submissions were received from community groups. The community groups were divided on their support for the preferred option. The group that would be most affected by changes to the State Park supported the preferred option on a number of grounds but primarily that it minimised impacts on the facilities and to the overall functionality and amenity of the State Park.

The other community group submission did not support the preferred option and criticised the Environmental Assessment for failing to include a detailed account of the process leading up to selection of the community reference panel's preferred option (Option D3) and the reasons why the Community Reference Panel did not support the option preferred by State Water.

3.2.3 Private organisations

One submission was received from a private organisation which objected to the preferred option primarily on the grounds that it includes a design loss of storage should a very large to extreme flood occur. The submission also considered that the proposed transfer of floodwaters by the preferred option from one river valley into another during a very large to extreme flood event and the scale of erosion and sedimentation caused was environmentally unacceptable.

3.2.4 Local Government

Of the three council submissions received, one objected to the preferred option and two were either neutral or silent on State Water's preferred option. The grounds for objection were on the basis of the erosion risk posed by Option B1 and the scale and irreversibility of damage that would result. Two of the council submissions included a request for compensation for council assets should a very large to extreme flood event occur.

3.2.5 State Government

The state government submissions were generally silent on State Water's selection of a preferred option, although two submissions out rightly supported the preferred option. State Government submissions typically focussed on the technical studies included in the Environmental Assessment and either outlined support for information or commitments contained in the report or, in a number of cases, requested further information to be provided. This included details of the proposed biodiversity offset and additional information concerning potential air, noise and vibration impacts (refer Section 5).

3.3 Summary of issues raised

A summary of the issues raised from the public submissions is contained in the following table. Since each letter is able to raise more than one issue, there are many more issues identified that the total number of submissions received.

Table 3-2 Summary of issues raised

Issue	Number	Percentage
Approach to Environmental Assessment	6	8.6%
Statutory planning and policy context	2	2.9%
Proposal need and alternatives	1	1.4%
Options development and assessment process	4	5.7%
Construction issues	4	5.7%
Operational issues	10	14.3%
Other environmental issues	3	4.3%
Comparison of dam safety options	8	11.4%
Environmental improvements	4	5.7%
Compensation or insurance related	7	10.0%
Ecologically sustainable development	1	1.4%
Support proposal	5	7.1%
Object to preferred option	4	5.7%
Future decision making process	0	0%
Community consultation	1	1.4%
Funding	0	0%
Exhibition period	0	0%
Documentation	2	2.9%
Request for further consultation	3	4.3%
Mitigation measures	3	4.3%
Future landuse planning	2	2.9%
Other	0	0%
Total	**70**	**100%**

3.4 Frequently raised issues

The following general issues were raised in a number of submissions received. Responses to these and other issues raised are provided in Section 4.

- State Water is liable and should compensate councils, landowners (upstream and downstream), etc for the physical damage caused by floodwater releases and other effects such as economic losses during a very large to extreme storm event.
- State Water may choose not replace the release plugs once triggered thereby permanently lowering the full supply level of the dam in the future.
- The passing of the probable maximum flood down the Namoi valley under Options D2 or D3 would not result in catastrophic and irreparable changes to the river system or create a comparable level of impact on the Carroll floodplain as Option B1.
- That proceeding with the proposal (Option B1) would change the certainty of downstream landowners being able to obtain or maintain insurance, or that insurance premiums would change for their properties and infrastructure eg fences, sheds, pumps, stock, etc.
- The Environmental Assessment, in the comparison of dam safety options and selection of a preferred option, focussed overly on cost issues and did not consider the environment.
- Upstream flooding of the Peel River during a probable maximum flood would extend to Somerton.
- Questions the logic/ social equity/ environmental sustainability of discharging floodwater to the Peel River during a very large to extreme flood event.
- Support for the proposal.

4. Consideration and response to submissions

4.1 Responses to frequently raised issues

The following issues were frequently raised in submissions and are therefore answered below in a consolidated manner. More specific issues raised by individuals or organisations are addressed in Section 4.2.

1. **State Water is liable and should compensate Councils, landowners (upstream and downstream) and other parties for the physical damage caused by floodwater releases and other effects such as economic losses during a very large to extreme flood event.**

   The flood events that range from very large to extreme flood events relate to events from 1:12,000 (predicted failure of Keepit Dam do nothing option after the interim works) to 1:500,000 (the Keepit Dam Probable Maximum Flood or PMF) as illustrated in Figure 6-1 from Volume 1 in the Environmental Assessment.

   Under the *Water Management Act* 2000 (NSW), State Water is immune from any action, liability, claim or demand arising as a consequence of:

   a. the use in good faith of the dam, or
   b. the release in good faith of water from the dam,

   by the Minister, by State Water or by any person acting on behalf of the Minister or State Water, in the exercise of any functions under this Act or the *State Water Corporation Act* 2004 (NSW).

   Without limiting its protection under this immunity State Water may, on a case by case basis:

   a. compensate those upstream landholders for, and/or repair damage caused by, the inundation of those of the landholders' existing structures which are located between the current and proposed future surcharge level of the dam. Any such compensation will be provided. or repair work will be conducted, on an "event-incurred" basis – i.e. compensation and/or repair or rehabilitation work will be provided for actual damage or loss suffered following a very large(1:10,000 year) to extreme (1:500,000) flood event;
   b. provide compensation to landowners for, and/or rehabilitate or repair areas damaged by, the relocation of caravans and affected utilities and infrastructure resulting from construction within Lake Keepit State Park. These works will occur in advance of construction activities and according to a masterplan prepared by State Water and agreed with the Lake Keepit State Park Trust; and/or

c. compensate landowners for, and/or rehabilitate or repair, areas directly damaged during construction, including for damage (beyond normal wear and tear) to the roads proposed to be used for hauling materials and equipment to and from the construction sites, and to restore to pre-existing condition areas used for construction activities and by construction plant;

d. compensate landowners and/or repair damage on an event basis for properties located between the subsidiary dam wall and the Peel River directly damaged by the release of water from the proposed Option B1 subsidiary dam spillway.

State Water Corporation considers that any payments contemplated, beyond any legal liability to pay, could only be considered on an ex gratia basis. Consistent with Treasury Circular TC 05/05 (refer to Appendix F). State Water considers that ex gratia payments are entirely discretionary in nature and that it is entirely for State Water to determine those cases in which such payments will be made. There are no formal or mandatory criteria for determining when such payments should be made. Every case will be considered on its own facts and in its own context. State Water will apply the principles set out in TC 05/05 with respect to the consideration of ex gratia payments.

State Water proposes to acquire a portion of private property for construction purposes as outlined in the submissions report (refer to Section 5.2.3). Any such acquisition will be undertaken in accordance with the *Land Acquisition (Just Terms Compensation) Act* 1991 (NSW). The *Land Acquisition (Just Terms Compensation) Act* encourages the purchase of land by negotiation (similar to a private sale) and for State Water, the starting point is always through negotiation. However if these negotiations are unable to be concluded, or if the landowner objects, then State Water may acquire the land through compulsory acquisition.

Compulsory acquisition requires a recommendation from the Minister for Water and Energy. The amount of payment for land acquired either through negotiation or compulsory acquisition is based on the market value of the property, including any improvements, as if unaffected by the proposal. In case of acquisition either through negotiation or compulsory means, the payment for land would be assessed in accordance with the *Land Acquisition (Just Terms Compensation) Act* 1991. Any:

- payment of compensation (or promise thereof); or
- rehabilitation, repair or acquisition of land (or promise thereof).

by State Water to one landholder does not oblige it to pay compensation to, or rehabilitate, repair or acquire the land of, another landholder.

2. **State Water may choose not to replace the release plugs once triggered thereby permanently lowering the full supply level of the dam in the future.**

   The Environmental Assessment clearly states on p.141 Section 6.4.2 that following any release of water from the dam during a very large to extreme flood event, the release plugs would be reinstated within a period of 12 months. This is considered a realistic estimate of the time taken to plan and let a tender for the required works, to source the necessary materials and to mobilise plant to the site and complete the works. Notwithstanding, State Water Corporation will strive to complete these activities in as short as possible timeframe.

3. **The passing of the probable maximum flood down the Namoi river valley under Options D2 or D3 would not result in catastrophic and irreparable changes to the river system or create a comparable level of impact on the Carroll floodplain as Option B1.**

   This is not correct. The passing of a probable maximum flood down either river system would result in massive, catastrophic and irreversible geomorphic change to the river system - both locally and regionally. This is described in the Environmental Assessment on p.150 in Section 7.2.

   The exit velocity of spillways under all options is similar, around 9 metres per second, which is sufficiently high to cause scouring, soil instability and landslips, removal of mature trees and vegetation, dislodge rocks and movement of boulders, etc. While the Environmental Assessment recognises that soil conditions downstream of the subsidiary dam wall are more prone to erosion at these velocities and therefore a greater volume of erosion would occur locally, the increase in deposition on the Carroll floodplain was estimated to be only 2-5% greater compared with the sediment load that would occur if either Option D2 or D3 were implemented.

   In addition, one of the other findings of the expert panel which analysed erosion and sedimentation issues was that the dam would act as a “sink” for a sizeable proportion of sediment and debris mobilised from the upstream catchment. It is likely therefore that the marginal impact on the Carroll floodplain caused by the implementation of Option B1 is less that the sedimentation that would occur in a “no dam” situation ie an improvement compared with the no dam situation.

4. **Proceeding with the proposal (Option B1) would change the certainty of downstream landowners being able to obtain or maintain insurance, or that insurance premiums would change for their properties and infrastructure e.g. fences, sheds, pumps, stock, etc.**

   State Water is not in a position to advise on insurance-related matters. Landowners should check with their insurer regarding policy wording and flood coverage.

State Water will compensate landholders for any action, liability, claim or demand for insurance-related loss arising from the dam upgrade proposal or works only if it is legally obliged to do so and only if the statutory immunity contained in the *Water Management Act* 2000 (NSW) is not available in relation to any such actions, claim or demand.

An insurance related loss could include:

- a landholders inability to obtain insurance covering property and infrastructure (assuming that this was previously available and pre-existing flooding risks correctly disclosed)
- increased insurance premiums as a direct result of the upgrade works (where a contract of insurance already exists and pre-existing flooding risks correctly disclosed).

State Water may, in its complete discretion, elect to compensate landholders on a case by case basis for insurance-related loss.

State Water Corporation considers that any payments contemplated, beyond any legal liability to pay, could only be considered on an ex gratia basis. Consistent with Treasury Circular TC 05/05 (refer to Appendix F). State Water considers that ex gratia payments are entirely discretionary in nature and that it is entirely for State Water to determine those cases in which such payments will be made. There are no formal or mandatory criteria for determining when such payments should be made. Every case will be considered on its own facts and in its own context. State Water will apply the principles set out in TC 05/05 with respect to the consideration of ex gratia payments.

5. The Environmental Assessment, in the comparison of dam safety options and selection of a preferred option, focussed overly on cost issues and did not consider the environment.

This is not correct. The potential impacts on the environment were considered comprehensively both as a result of construction (refer Section 5) and operation (refer Section 6) of the proposal. Operational issues were also divided between upstream and downstream considerations. Environmental issues included heritage, visual, terrestrial and aquatic ecology and erosion and sedimentation.

Selection of the preferred option was based on consideration of the technical information (social, environmental and financial/ economic factors) presented in Table 7-1 of the Environmental Assessment. Other inputs to the decision-making process including the feedback from stakeholder and community consultation and the recommendation of the CRP.

Section 10 of the Environmental Assessment outlines the justification for the project and the preferred option relative to the project objectives which include “improving environmental outcomes”. All options were found to improve environmental outcomes relative to the case if the project did not proceed. Other project objectives included “Supporting regional sustainable development”. This was defined as:

- minimising impacts on social and community infrastructure
- achieving the most economic solution
- enhancing the recreational quality of Lake Keepit.

Construction issues were considered important by State Water as these would occur if the project proceeds. Option B1 would result in less clearance of the Box Woodland threatened species and also provide the greatest level of protection (during operation) for the threatened hakea species located on the banks of the Namoi River. Option B1 would also result in less disturbance to the State Park facilities during construction and maintain the recreational quality of Lake Keepit by reducing the need to relocate existing facilities which currently occupy ‘areas of choice’ for these types of facilities. Option B1 is also the most economic solution.

Operational issues were also considered important but are recognised as being far less likely to occur.

6. Upstream flooding of the Peel River during a probable maximum flood would extend to Somerton.

A probable maximum flood (PMF) is the largest flood which could possibly occur in a catchment. The Keepit Dam Upgrade has assessed the potential for a PMF in the Namoi River and recommends a preferred dam safety upgrade option to avoid dam failure which would result in massive social, economic and environmental consequences. The interconnected nature of the Peel River system required that potential flooding and the effect of dam failure also be investigated in the Peel River. The assessment indicates that:

- During a PMF in the Namoi River, the Peel River would also be experiencing very significant flooding (the relative frequency estimates for a 1:10,000 and 1:500,000 AEP flood in the Namoi River, are 1:300 and 1:1,400 AEP floods in the Peel river, respectively)
- Dam failure would result in a huge quantity of water being discharged down the Namoi river valley
- Dam failure would result in a back-up of water flows in the Peel river likely to include the village of Somerton
- The choice of a dam safety upgrade option has no effect on the flooding likely to be experienced at Somerton

These findings are supported by the Flood Mapping figure presented in Appendix E. In this figure, the green line indicates the extent of flooding associated with dam failure and the yellow, blue and red lines show the extent of flooding following implementation of the various dam safety upgrade options. As can be seen, all the dam safety upgrade options reduce upstream flooding in the Peel River upstream of the subsidiary dam wall relative to dam failure. The coalescing of all of the flood extent lines at the extremity of the map, which is several kilometres downstream of the town of Somerton, indicates that there is little discernable effect between the options at this location.

7. Questions the logic/ social equity/ environmental sustainability of discharging floodwater to the Peel River during a very large to extreme flood event.

State Water is a NSW Government state-owned corporation and is bound by the NSW Government's policies and guidelines for economic, social and environmental equity.

The development of the concept design for Option B1 has taken into consideration the technical requirements of the project as well as the environmental, social and financial/ economic factors. The justification for the project and Option B1 demonstrates that potential impacts on social, economic and environmental factors would be reduced compared with a 'do nothing' scenario. Water would only be discharged to the Peel River in the event of a rare flood event less frequent than 1:10,000 AEP on average. The assessment indicates that the Peel River would already be experiencing very significant flooding estimated to be equivalent to a 1:300 AEP event. The expected social impacts and economic damage which would occur during these events, if they occurred and without any influence of the dam, is expected to be significant such that environmental issues are likely to be secondary considerations.

Landowners along both the Namoi and Peel rivers would benefit from the proposal which would ensure the dam is safely able to withstand extreme consequence events such as flooding and earthquakes, compared to a 'do-nothing' approach. Sustainability issues are addressed in Table 10-1 of the Environmental Assessment.

8. Support for the proposal

Five submissions contained outright or qualified support for the project including State Water's preferred option. The qualifications generally centred around requests for compensation either in advance of, or as a result of, damage expected to be sustained during a very large to extreme flood event.

4.2 Responses to specific issues

Submission 1

9. References two dam safety options (A3 - now obsolete and B1) and requests that, if Option B1 is adopted, State Water repair any damage to the Keepit Dam access road and associated infrastructure following an extreme flood event.

Refer response No. 1.

Submission 2

10. The submission advises that it has no objection to the upgrade.

Noted.

Submission 3

11. The submission expresses support for dam upgrade.

Noted.

12. Expresses support for preferred Option B1 based on a number of aspects outlined in the submission including environmental acceptability, least cost, least impact on State Park, least visual impact and least impact on vegetation.

Noted.

13. Requests State Water compensate for damage to Sailing Club during upstream inundation events.

Refer response No.1.

14. Requests that State Water build a new boat ramp prior to construction commencing (Option B1).

The description of Option B1 in the Environmental Assessment does not propose the construction of a new boat ramp nor is it considered necessary by State Water. State Water commit to maintaining access to the boat ramp throughout the construction period unless otherwise arranged.

15. Supports the multi-level offtake based on cost-effectiveness and environmentally appropriate.

Noted.

16. Does not support fish-passage as the cost is extremely high and there is no evidence that it is essential from an environmental perspective.

Noted. Of the 55 species of native freshwater fish in New South Wales, 32 are known to be migratory and to require free passage to sustain populations. The contribution of fish to the health of aquatic ecosystems and catchments should not be underestimated, although it is acknowledged that

the benefits are hard to quantify in traditional terms. As a result of advice received from the Department of Primary Industries (Fisheries) (refer Appendix D), a fish passage will not be installed at Keepit Dam; instead other measures will be pursued at downstream weirs. Section 5.2.1 provides further information.

17. Does not support Options D2 or D3 and provides conditions to be met regarding the sailing club facilities if either of these two options is implemented.

Noted. It not State Water's intention to implement either of the two options referred to.

18. Requests opportunity to be part of Community Liaison Group during construction.

Following any approval, a formal process to empanel representatives onto the Community Liaison Group will be undertaken. State Water will contact the community and affected landholders again at this time.

Submission 4

19. Expresses support for preferred Option B1 (with qualifications below) based on least impact to recreational functionality of the park, least upstream impacts, least visual impact, least impact on biodiversity, community health and activity and least impact during the construction period.

Noted.

20. Notes that increased upstream inundation will affect a variety of key utilities including power, water, sewer and phone lines necessitating their relocation. In particular, emphasises potential impacts to the State Park sewerage system and the need for its relocation.

Refer response No. 1.

The State Park sewage treatment plant will be relocated if required to suit construction requirements.

21. Requests that in the event of auxiliary spillway releases, the release plugs are reinstated as soon as physically possible (especially the subsidiary dam wall) as well as roads and other critical park infrastructure to minimise financial loss.

Refer response No. 2.

Please note that the replacement of release plugs can only commence after floodwaters have stopped flowing through the spillway.

22. Requests that State Water provide compensation for any alterations to park facilities and infrastructure or adverse effects to trade and income earning capacity brought on by the dam for both the short and long term.

Refer response No. 1 for specific compensation commitments by State Water which do not extend to business or income losses.

State Water where possible has targeted the off-peak tourist period for construction to minimise potential losses as a result of any disruption caused by the works. There is also potential for some offset of any losses as a result of providing accommodation and supplies to workers over the 2.5 years of construction. State Water also note that adverse effects on trade and income losses can occur for a variety of reasons which may co-incide with construction e.g. drought and will not provide an unqualified commitment to compensation unless proven to be related to an act by State Water. The preferred option (B1) has the least impact on the operation of the State Park.

State Water are committed to conducting an inventory of existing infrastructure around the upstream rim of the dam and reaching agreement with the owners about repair (on an event incurred basis) or relocation or compensation as may be agreed. A masterplan specific to the preferred option would be developed in conjunction with the State Park to plan the relocation of affected structures with the aim of achieving at least an equivalent amenity.

It is unclear what is meant by 'long-term' however response No. 1 indicates that State Water is not liable for any losses as a result of the release in good faith of water from the dam.

23. Notes that implementation of Options D2 or D3 would result in greater impacts than Option B1 across a range of environmental issues and particularly the functionality and earning capacity of the State Park and the ability of the State Park to self-fund operations and maintain basic staffing levels. In addition, these other options would result in impacts inconsistent with NSW Government initiative regarding "active living". Notes therefore that maintaining the recreational functionality of the park is a particularly important criteria to be considered.

Noted, it not State Water's intention to implement either of these two other options.

24. Requests that State Water prepare and exhibit a plan and program to reinstate release plugs in the subsidiary dam wall following release to minimise water loss and effects on the community.

Refer response No. 2.

25. Requests that all critical park infrastructure including the Sewage Treatment Plant and access road be rectified immediately following a very large to extreme flood event and prior to construction of the spillway.

Refer response No. 1.

Given the low probability of damage, repair or replacement of the State Park Sewage Treatment Plant downstream of the subsidiary dam wall would be undertaken by State Water only if damaged following a release from the subsidiary dam wall (not in advance of construction as requested).

26. Notes that subsidiary dam wall operation will impact on revenue generating activities, require extensive construction to rectify and will affect the ability of workers, staff and public servants to undertake everyday tasks related to the community.

State Water note that in the event of a very large to extreme flood event sufficient to cause operation of the subsidiary dam wall (1:10,000 AEP storm or less frequent), these impacts would occur whether or not the dam existed and regardless of the option implemented. Such a storm would result in substantial and widespread economic, social and environmental impacts throughout the catchment. It is recognised that discharges from the subsidiary dam wall would contribute to this overall level of impact but misleading to suggest the impacts would occur only because of the implementation of the subsidiary dam wall spillway.

27. Requests State Water relocate caravans within the Gums Caravan Park only once to minimise damage and disruption to owners to a location agreed with the Lake Keepit State Park Trust. The relocation area must also be furnished with all necessary utilities to meet the requisite Government standards

Refer response No. 1. It is the intention of State Water to work with the Trust in the manner outlined. All adjustments required would be in accordance with the relevant standards or guidelines.

28. States that the boat ramp would be relocated under all options and that Option B1 provides the best alternative location for the boat ramp near the existing Sailing Club.

This is not correct. Option B1 does not propose relocation of the boat ramp. The existing boat ramp would not be affected by this option however the access road to the boat ramp would be upgraded to pass over the proposed saddle dam at the top of the ridge.

Refer also response No. 14.

29. Requests that State Water relocate the Sewage Treatment Works as part of the upgrade and prior to subsidiary dam spillway operation.

Refer response Nos. 1 and 25.

Submission 5

30. Queries the social equity of Option B1 releasing floodwaters into the adjacent Peel valley during a very large to extreme flood event.

Refer response No. 7.

31. Concerned about various socio-economic aspects if a very large to extreme flood event were to occur e.g. house, potable water well beside Peel river, future viability of farming practices, etc.

Construction and operation of the proposal would not change the likelihood of a probable maximum flood occurring in either the Namoi or Peel rivers. The potential damage that would be wrought by these extreme events existed before the dam was built and would be reduced by proceeding with the upgrade in comparison with the 'do nothing' scenario. Flood inundation modelling provided in the Environmental Assessment demonstrates that compared to dam failure, flood inundation in both the Namoi and Peel rivers would be reduced following implementation of the proposal.

State Water, on behalf of the NSW Government, is proposing to spend approximately $100 million on the upgrade (Option B1 – refer Section 5 of this report) which would directly benefit the downstream community by minimising damage resulting from a very rare flood. This is a direct response to existing safety concerns at the dam and the socio-economic effects of dam failure

32. Found it difficult to interpret or read flood modelling maps presented in the Environmental Assessment.

The scale of the project and the analysis of environmental effects upstream and downstream of the dam makes it challenging to present flood mapping data relevant to individual land parcels. Where necessary however, the Environmental Assessment did provide larger scale maps in particular areas of interest e.g. Figure 6-2 for areas immediately downstream of the subsidiary dam wall. State Water have also provided lot specific inundation maps to upstream landholders and would be happy to provide similar information to others if necessary. Appendix E provides addition flood mapping information.

33. Notes that a very large to extreme flood would result in catastrophic change to the existing river system.

Agreed. This is a characteristic of all rivers and watercourses and would occur whether or not the dam was originally built and whether or not the dam upgrade proceeds. Proceeding with the dam safety upgrade however will reduce the scale of damage estimated at $1.7 billion (2002 estimate) for dam failure and significant loss of human life.

34. Questioned whether insurance would cover items lost during a very large to extreme flood event including water supply infrastructure.

Refer response No. 4.

35. Requests State Water clarify how affected landowners would be compensated from the impacts following a very large to extreme flood event including loss of livelihood.

Refer response No. 1.

36. Noted that it is difficult to plan for the future now this uncertainty has arisen.

State Water has acted in good faith to make the community aware of the potential flooding risks associated with extreme events at Keepit Dam. As stated in the Environmental Assessment, the likelihood of such events occurring is very low or rare, however if they do occur, the consequences would be catastrophic.

The purpose of the dam safety upgrade is to avoid an estimated $1.7 billion (2002 estimate) in total direct damages and significant loss of human life. This is a considerable benefit which would be achieved if the project is approved and which would remove the uncertainty associated with the potential for dam failure.

37. Raises the issue of social equity of the upgrade option and possible compensation for impacts for the broader community benefit.

Refer response No. 1 for compensation related issues.

Refer response No. 7 for social equity considerations.

Submission 6

38. Objects to preferred Option B1 on the basis that it would present an unacceptable environmental burden on the lower Peel river valley and result in serious degradation of prime agricultural land.

Refer to response Nos. 7, 26 and 30.

It is noted that the land in question is subject to extensive inundation in events more frequent than those predicted to result in discharge from the subsidiary dam wall spillway.

39. Supports Option D3 on the basis that it would not result in loss of storage during a very large to extreme flood event, has a similar cost/benefit ratio as the other options and does not discharge floodwaters into the Peel river valley.

Noted that individuals may have differing opinions of the importance of various criteria used to assess the dam safety options. Information pertinent to each of these criteria is analysed and documented in the Environmental Assessment.

Refer response Nos. 7 and 30.

40. Questions the logic of discharging floodwaters from the Namoi River into the Peel River during a very large to extreme flood event.

Refer response No. 7.

41. Notes that the works should be carried out as soon as possible and states that the current situation is worse than if no interim works had been carried out.

State Water note that the interim works have reduced potential failure of the dam wall from approximately 1:2,800 to at least 1:30,000 AEP and this has significantly reduced the likelihood of sustaining an estimated $1.7 billion (2002 estimate) in total direct damages and significant loss of human life should a very large to extreme flood event occur. We agree however that a long-term solution that minimises the likelihood of dam failure should be implemented as soon as possible. State Water is taking steps to ensure that this occurs in the shortest possible timeframe.

42. Comments that the environment is largely overlooked in the Environmental Assessment and quotes from a document which was not included as part of the Environmental Assessment.

Refer response No. 5.

All documents referenced in Section 11 of the Environmental Assessment were used as input to the environmental assessment as considered appropriate. The information in the Environmental Assessment document takes precedence over that in any of the references provided.

43. Suggests that the selection of the preferred option was biased towards cost considerations because the upgrade is being fully funded by NSW Government.

Refer response No. 5.

44. Notes that the Keepit Dam Community Reference Panel almost unanimously recommended Option D3 as its preferred upgrade option. Also that the best outcome would have been to augment the storage by 100GL and use the additional water for the environment but because key environmental departments did not support this proposal, has difficultly in not concluding that the environment is being disregarded.

Noted that individuals, including the community reference panel, may have differing opinions of the importance of various criteria used to assess the dam safety options.

The storage augmentation option was fully considered by a sub-group of the CRP in conjunction with State Water and did not proceed because of the objection of various Government departments. State Water facilitated these investigations in good faith however cannot proceed without the support of those other Government departments who would have responsibility for the approval and management of this proposal.

45. States that the consequences of a probable maximum flood upon the property would be enormous including loss of income, crop and livestock and supporting infrastructure, housing.

Refer response Nos. 3 and 26.

Proceeding with the upgrade would reduce the severe social, environmental and economic impacts that would result from catastrophic failure of the dam which have been estimated at $1.7 billion (2002 estimate) in total direct damages and significant loss of human life. This is a substantial benefit for the downstream community. All options offer reduced downstream impacts compared with doing nothing.

46. States that the Environmental Assessment has placed little emphasis on investigating the value of the property both in its current state and as a result of potential future sub-division and use.

Refer response No. 45.

Any changes to permissible development is subject to Council consent.

47. States that proceeding with Option B1 would raise a lot of uncertainty about the continued use of the property since the damage during a very large to extreme flood would be catastrophic.

Refer response Nos. 3, 7, 26, 31 and 36.

48. Notes that no flood mitigation measures are in place to deal with the impact of a probable maximum flood on the property and that no consideration has been given to potential additional floodwaters from the Namoi River being diverted across the property.

The Probable Maximum Flood is the largest flood that could possibly occur in the catchment. Because the Probable Maximum Flood is a very rare event, the cost of providing protection against such a flood cannot generally be justified. As well, it is usually not cost-effective to build flood mitigation schemes to protect rural properties, because of the low density of development. However it is noted that the proposal would not increase the level or duration of flooding, compared with the 'do nothing' scenario.

49. States that the discharge of floodwater from the Namoi into the flooded Peel river would be catastrophic.

Refer response Nos. 3 and 31.

50. States that the Environmental Assessment fails to address increased upstream inundation on the Peel river which would extend to above Somerton and attaches information not presented in the Environmental Assessment.

Refer response No. 6.

51. Notes the uncertainty in relation to flood modelling and states that State Water should be prepared and provide for a scenario in which flooding is worse than expected. States that a minimum of 24 properties along the Peel River would be affected.

Noted. The probability of worst case scenarios occurring is low.

52. Requests State Water clarify how landholders along the Peel river would be affected by insurances.

Refer response No. 4.

53. Requests State Water clarify if the floodplains would be increased to allow for Keepit Dam.

Floodplain mapping is normally undertaken by local councils in urban areas, but not in rural areas. State Water is unaware of any official floodplain mapping in this area. Proceeding with the dam upgrade would reduce the risk of dam failure and, as shown in the Environmental Assessment, would reduce the level and extent of inundation that could occur across the floodplain.

54. Requests State Water clarify if landholders in affected areas would be allowed to develop and if so, who would wear the risk? Would insurance be able to be obtained? If development was subsequently not allowed, would compensation be provided?

Refer response Nos. 1 and 4.

Any development in the 'affected area' would be subject to consent by the local council. Flood-related development restrictions are generally only imposed in urban areas affected by the 100 year flood. However, because the proposed upgrade would not increase the severity of flooding (reduced compared to the do nothing scenario), there would likely be no change in regard to development restrictions, insurance or compensation.

55. Requests clarification on who would pay for damages to the affected properties and what would the timeframe be?

Refer response No. 1.

56. Notes that State Water has volunteered various means of compensation in certain circumstances in the Environmental Assessment but advises of a potential conflict in terms of information attached to the submission from Section 298 of the *Water Management Act*.

Noted. Refer response No. 1.

57. Requests clarification if *Just Terms Compensation Act* applies to the issues raised previously in the submission.

Refer response No. 1.

Submission 7

58. Questions why work is being conducted by the Catchment Management Authority to improve river conditions in the Peel river when Option B1 would result in this effort and money being wasted if a very large to extreme storm event occurred.

It is not known exactly what work by the Catchment Management Authority is being referred to, however the likelihood of events occurring described in the Environmental Assessment is very unlikely.

59. Identifies that the Environmental Assessment contains information on the erosion and sedimentation impacts of Option B1 which would cause enormous scouring and permanent change to the Peel river and property.

Noted. Refer to response 3, 31 & 33.

60. Questions the logic of discharging flood waters from the Namoi River into the Peel river as proposed by Option B1.

Refer response No. 7.

61. States that the Environmental Assessment does not adequately address the permanent environmental degradation which would result in the lower Peel valley nor is the cost of reinstating road infrastructure or financial restitution to downstream landowners.

Refer response Nos. 1, 26 and 69.

62. States that the upstream inundation caused by Option D3 would be of shorter duration, slower and not result in the erosion as the downstream impact of Option B1.

Incorrect. Table 7-1 of the Environmental Assessment indicates that the extent and duration of upstream inundation for Option D3 is significantly more than that for Options B1 and D2.

Refer response No. 3.

63. Notes that remediation of the area downstream of the subsidiary dam spillway would be absolutely impossible.

Noted. The environmental assessment outlines this would not be possible however the likelihood of this occurrence is estimated to be less frequent than 1:10,000 AEP on average.

64. Identifies the contradiction of this scouring occurring within close proximity to one of the State's biggest inland water recreation areas and questions the sustainability of this damage to future generations.

The potential construction and amenity impacts on Lake Keepit State Park was considered an important criteria by State Water. The preferred Option B1 would have the least impact on the existing facilities and amenity of the State Park and would therefore support the continued operation of this important recreational facility.

Refer response No. 7 regarding sustainability issues.

65. States that the Environmental Assessment was not clear and needs much more information. As well the flood inundation maps were very scaled down and not believable. The maps do not extend far enough upstream of the release point.

Refer response Nos. 6 and 32.

66. States that the Environmental Assessment does not adequately show the huge damage which would be caused in the lower Peel valley.

There is a paucity of literature regarding the damage which would accompany a very large to extreme flood event. The largest known storm events in Australia are estimated at 1:1,000 AEP (compared to the potential damage in the Peel river from Option B1 which would be caused by a storm less frequent than 1:10,000 AEP). There is no experience and therefore inherent difficulties in demonstrating the catastrophic nature of such storms beyond the use of words.

The Environmental Assessment clearly describes the potential scale of impact which would result during a probable maximum flood event, particularly regarding erosion issues by frequently using somewhat unconventional terminology such as "catastrophic, severe, irreversible, extreme, massive" etc. State Water does not agree therefore that this has been poorly communicated in the Environmental Assessment.

67. Expresses that information supplied in the Environmental Assessment was unbalanced, providing a lack of information on Option D3 and focusing only on Option B1.

Refer response No. 5.

All three options were considered consistently and equally across the areas of investigation. Option B1 was 'focussed upon' only in order to fully describe its differences relative to the other options. This included the erosion and sedimentation issue in particular.

68. Questions why the community reference panel preferred option was disregarded by State Water.

The CRP was setup as the principal advisory body to State Water during the options development and environmental assessment process. This advisory role was clearly communicated to the CRP members at commencement and incorporated in the CRP charter. It is therefore misleading to suggest that the recommendations of the CRP should be binding upon State Water.

State Water sought information about the social, economic and environmental effects of the proposal from a number of sources including the CRP, the wider community, from various levels and agencies of Government and from specialist consultants. From this pool of information, State Water determined a preferred option based on its own assessment of the information presented in the Environmental Assessment and the relative importance of the criteria including the likelihood of occurrence of impacts and the ability to mitigate them. Ultimately, State Water placed a high degree of importance on minimising impacts to existing social and community infrastructure at the dam, protection of threatened biodiversity species and value for money considerations.

69. States that the Environmental Assessment report is biased, thoroughly unbalanced and does not present the full picture with all attendant costs and benefits.

Refer response No. 5.

The costs presented in the Environmental Assessment include the infrastructure costs as well as allowance for economic loss and damages.

70. Requests clarification as to whether release plugs in Option B1 would be replaced, the timeframe in which this would be undertaken as well as who would pay.

Refer response No. 2.

71. Requests clarification on the impacts of Option B1 on insurance of affected properties, and whether such impacts have been discussed with insurance companies.

Refer response No. 4.

72. Requests clarification on the effect on insurance of Namoi water entering the Peel river. Would there be changes to the designation of flood prone land? Would infrastructure costs be covered by insurance? Have these costs been included in the costing of the dam upgrade options?

Refer response Nos. 1, 54 and 69.

73. Requests that State Water compensate landowners for the uncertainty caused by Option B1 and the future changes to the viability of businesses.

Refer response Nos. 1 and 36.

74. Raises the issue of social-equity of the upgrade and compensation for impacts to the small number of people who suffer impacts on behalf of the broader community benefits.

Refer response Nos. 1, 4 and 7.

Submission 8

75. Supports the surface water management principles outlined in Section 36.1 of the Draft Statement of Commitments and the proposal to prepare a Soil and Water Quality Management Sub-Plan as part of the Construction Environment Management Plan.

Noted.

76. Advises that because there is no proposal to change the availability of water in the dam below a 1 in 2,400 AEP event, it is not considered necessary to modify the Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Sources or licensing under the Water Act 1912.

Noted.

77. Advises that upstream inundation has the potential to impact on existing pump sites operated by water users. Requests State Water ensure that these users are identified in further detailed studies and develop mitigation measures for the identified impacts.

Refer to response no. 1.

State Water commits (refer Appendix A Item 38.3) to allow for consideration of compensation to include pump sites.

Submission 9

78. Provides a summary of the CRP involvement in the Keepit Dam Upgrade process including interim works and options assessment process and reviewing the Environmental Assessment material.

Agreed this is a fair summary of the process and the CRP involvement.

79. Identifies Option D3 as the panel's preferred option (after Option A3) based on the local benefits being considered to outweigh the additional cost – this being the initial recommendation to State Water which did not change following further more detailed technical studies after the initial recommendation was made.

Noted.

80. Supports the implementation of the multi-level offtake considering it to be cost effective.

Noted.

81. Other potential environmental improvements including fish passage, enhanced flood mitigation or regional sustainable development were either considered not cost-effective or not sufficiently supported by the department responsible for the implementation and ongoing management.

Noted.

82. Does not support Options B1 or D2 due to the temporary loss of storage and the devastating erosion and environmental impacts in the lower Peel valley despite these impacts only occurring in a very rare to extreme flood.

Noted.

83. Expresses that the Environmental Assessment:

- **Did not portray outcomes and reasoning of the extensive evaluations by the CRP and that this was supported by the release of an addendum after commencement of exhibition.**
- **Did not did not adequately rank the impacts of each of the options (in Table 7-1 of the Environmental Assessment) particularly in comparison with the extensive assessment undertaken by the CRP.**
- **Did not adequately convey the extent of damage Option B1 would create in the lower Peel River Valley. In particular, it is the only operational local impact which would not normally occur. Flooding back up towards Somerton has the potential to be more severe than modelled.**
- **Overemphasises upstream inundation which is of relatively short duration, low velocities and low impacts.**
- **While identifying all the construction impacts, could have indicated that the vast majority of impacts can be readily mitigated or offset.**
- **Did not adequately convey the potential risks associated with the release plugs and loss of storage issues, particularly, what guarantees that the release plugs would be reinstated after failure and how reliable the release plugs are to perform as designed.**
- **Emphasises that an alternative option could be implemented at less than 10% increase in cost.**

Refer response Nos. 86 (CRP process), 92, 97, 98 (comparison of impacts), 50 (reduced flooding at Somerton), 66 (extent of impact of Option B1), 2 (release plugs reinstatement).

It is not clear how the Environmental Assessment 'overemphasises' upstream impacts. The information was presented equally as for other potential impacts of the project and is relevant in relation to impacts on existing upstream facilities. Unlike the downstream river valleys, the upstream area has a clearly defined easement which co-incides with the current design flood level of the dam. Since State Water are proposing that this would increase, compensation on an event basis should apply to affected land owners.

Table 7-1 indicates that the construction issues are able to be offset however the fact that facilities could be relocated, does not necessarily mean that the same amenity can be created. For example, preliminary advice received by State Water in relation to a hypothetical need to relocate The Gums Caravan Park indicated that it would not be possible to achieve the same amenity as the existing facility anywhere else around the dam perimeter.

Fuse plugs spillways have been used throughout the world to provide a cost effective means of providing dams flood handling capability. Fuse plug spillways have been accepted by the Dam Safety Committee with recent examples in NSW including Warragamba and the Keepit interim upgrade.

Noted that the Environmental Assessment indicated that the marginal cost difference of the options was $14 million based on March 2007 pricing. Section 5 of this reports presents updated cost information which indicates that the cost differential has increased substantially.

84. Notes that private land inundated by the upgrade will reduce in value and the ability to secure insurance for the property will be affected. Recommends that this issue should be recognised by State Water and, where sought by landowners, provide adequate upfront compensation including easements and purchase and lease back arrangements for properties downstream of the subsidiary dam wall.

Refer response No. 1.

85. Requests State Water revise the option cost estimates to include the full costs of such upfront compensation.

Refer response No. 69.

86. Considers the Environmental Assessment did not adequately convey the evaluations and outcomes of the CRP's assessment of the options.

Agreed. This oversight is regrettable however State Water believe was resolved through the release of the Addendum on 14 December 2007 which closely followed commencement of the Environmental Assessment exhibition. The addendum was made available at all exhibition locations and also on the internet alongside the other project documents. A previous media release on 30 September 2005 also provided details on the option preferred by the CRP.

87. Requests a guarantee that the release plugs would be reinstated and quickly as possible to minimise temporary loss of storage as part of the Conditions of Approval for the project and upfront compensation for landowners concerned about loss of property value due to potential inundation and where the ability to obtain insurance coverage changes as a result of the upgrade.

Refer response Nos. 1, 2 and 4.

Submission 10

88. Suggests that the outcomes of the Environmental Assessment appear to be primarily based on cost.

Refer response No. 5.

89. Suggests that the environmental damage that would occur to a section of the Peel Valley from Option B1 appears to have been ignored given that the valley conditions in the Namoi River are more favourable to managing an extreme flood event.

Refer response No. 3.

90. Considers that the 30% loss of storage is of concern in a cost benefit sense. Suggests it would seem common sense to maximise storage capacity in an upgrade process as a community and environmental benefit.

The preferred option would result in a 30% loss of storage should a flood event less frequent than 1:2,400 AEP occur. The economic 'loss' which might be incurred by downstream properties was considered in the economic analysis. Potential impacts to properties between the dam wall and the confluence of the Peel and Namoi rivers was considered as well as the value of lost production resulting from loss of water storage at the dam. The results of the assessment concluded that the cost-benefit ratios of the options were similar with Option B1 having the lowest net present cost.

Refer also response No. 111.

91. Considers that the cost differential between Option B1 and D3 is not significant given the dam will be in place for up to another 150 years.

Noted that individuals may have different perceptions about the cost affordability of options. The Environmental Assessment indicates that the cost difference between Options B1 and D2/D3 was $12-14 million based on March 2007 prices. Section 5.1.2 provides updated information on the options costs and indicates that the cost differential has increased substantially.

92. Considers that the Environmental Assessment fails to clearly address the ranking of the relative differences between the three options and the relative importance of each category or criteria having regard to the risk level.

Table 7-1 in the Environmental Assessment clearly outlines the ranking of the options according to each criteria considered, the risk levels associated with each expressed in AEP and the mitigation potential of the impact.

Refer response No.68.

93. Is concerned that the processes used to judge environmental impact are inconsistent with methods employed for other development proposals under the *EP&A Act*.

The environmental impacts of the proposal were analysed and reported by specialist consultants in their respective fields. The level of analysis and processes used are considered appropriate to the nature of the development.

94. Considers that the transfer of floodwater from the Namoi into the Peel River during a very large to extreme flood event is contrary to good environmental practice.

Refer response Nos. 5 and 7.

95. Notes that the comparison of options (Section 7 of the Environmental Assessment) is reasonably comprehensive and enables a good understanding of the impacts as well as the ready identification of differences between the options.

Noted.

96. Questions the mechanisms used and the values to gauge performance and the relativity of the implications of the various issues.

Refer response Nos. 97 and 98.

97. States that the method used in Section 7.1 is extremely coarse and provides little or no allowance for weighting the assessment and ensuring that the rankings reflect all variables within the assessment process. Provides an alternative interpretation of the relative performance of the options.

A subjective assessment of the relative importance of each criteria and the likelihood, extent and potential for mitigation of environmental, economic and social impacts are provided in Table 7-1. This was one of a number of inputs to State Water's decision-making process. Other inputs were the feedback from community and stakeholder consultation and the preferred option recommendation of the CRP. It is noted that different individuals or groups may place a different importance on the project issues and impacts which may lead to different preferred options.

98. Suggests that the assessment process used by State Water was not as detailed as the process used by the CRP.

There is no substantiation for the claim made in the submission. Both processes used by the CRP and State Water were subjective assessment techniques based on the perceived relative importance of the assessment criteria. It is entirely possible that two different groups may place different importance on the assessment criteria resulting in different preferred option preferences.

99. Supports the CRPs preferred option D3.

Noted.

100. Requests the release plug activation level be maintained at 1:10,000 AEP if Option B1 is implemented and that any proposed change be subject to a revised environmental assessment.

It is the intention to maintain the activation level of the first release plug in the subsidiary dam wall at the 1:10,000 AEP threshold.

101. Requests that landowners of property affected by a flood event are compensated and that legal provisions are in place to ensure such flood events are not deemed as operational activities of the dam.

Refer response No. 1.

102. Requests that the NSW Government be responsible for replacement of council roads and other community infrastructure under Council's control and guaranteed reinstatement of release plugs following a release based on a timetable established prior to construction.

State Water are unable to make this commitment on behalf of the NSW Government.

Refer response No. 2.

Submission 11

103. Concerned that Option B1 would increase the flood risk to their property located between Gunnedah and Boggabri. Considers that Option D3 provides a higher degree of protection for Namoi floodplain dwellers despite higher capital cost.

It is not clear from the submission why it is believed that Option D3 would result in a higher degree of protection for the Namoi river. Hydraulic modelling conducted for the Environmental Assessment (p.150, Section 7.2) indicates that there is no observable difference between the options performance downstream of the confluence of the Namoi and Peel rivers.

Submission 12

104. Considers key upgrade issues are to cause as little disruption as possible to the amenity at Lake Keepit and the operational capacity of the storage.

State Water agrees that these are important issues and they are analysed and documented in the Environmental Assessment.

105. Supports Option A3 and to a lesser extent Option D3.

As outlined in Section 3.7 of the Environmental Assessment, Option A3 was removed from consideration because of its significant additional cost which was not considered commensurate with a net increase in environmental benefits.

106. Does not support preferred Option B1 based on loss of storage capacity, degradation of the lower Peel river and Carroll floodplain.

Noted. Refer response No. 3.

107. Considers Option B1 abrogates planning principles because of the proposed transfer of a large amount of water into an adjacent river valley and the associated impacts.

Refer response No. 3.

108. Considers that new pollution legislation is necessary to approve of potential effects of the subsidiary dam wall spillway and the deposition of silt on the floodplain. Also that compensation of landowners is necessary for the effects of scouring and siltation.

The NSW Minister for Planning will review the information provided in the Environmental Assessment (and any other information deemed relevant) and determine whether or not the proposal should proceed. Refer response No. 1 & 4 relating to matters of compensation.

109. Supports fish passage in principle, however believes that it should be 100% funded by the NSW Government.

Noted. Subsequent to recent advice received from the Department of Primary Industries (Fisheries), the fish passage will no longer form part of the project. Section 5.2.1 provides additional information about proposals to improve fish passage at downstream weirs.

110. Concerned Option B1 does not meet two of the Director-General's Requirements.

The DGRs are presented in tabular form in Appendices A and B of the Environmental Assessment which also identifies where each requirement is responded to in the document. The statements referred to in the submission reflect a recital of the project description by the Department of Planning and do not form part of the Director-General's Requirements for the project.

111. Questions why loss of storage is being considered as a feasible option.

Designing for a proportion of storage loss is a environmental and cost-effective method of allowing the dam to safely withstand a probable maximum flood event. Allowing for loss of storage reduces the height of dam wall raising required. Analysis by State Water indicates that the risk of water supply security being affected is relatively low given the bulk water also available upstream in Split Rock dam.

112. States that the economic damage after a very large to extreme flood will be huge when added to the financial impost at this time.

State Water agree that the economic damage following any large flood event will be significant and for a probable maximum flood event will be even larger but reiterates that such damages would be no worse than if the dam did not exist and that the damage following implementation of the proposal will be reduced compared with the “do nothing” scenario as outlined in the Environmental Assessment.

Submission 13

113. Agrees that all three of the proposed dam safety upgrade options will meet the requirements of the NSW Dams Safety Committee.

Noted.

114. Will continue to audit the dam and proposed improvement works under the *NSW Dams Safety Act 1978*.

Noted.

Submission 14

115. Would require additional detailed assessment of air quality, noise and vibration issues before project approval could be considered as there is no indication that the criteria proposed in the Draft Statement of Commitments can be met.

Noted. It is interpreted from this comment that further information is required to determine whether the relevant guidelines governing control of air quality and noise and vibration specified in the Statement of Commitments can realistically be achieved during construction. Section 5 presents the additional information requested.

116. Considers it likely that construction of the dam upgrade may trigger additional scheduled activities under the *Protection of the Environment and Operations Act 1997* such as extractive industry and crushing, grinding and separating works. More detailed information would be required to demonstrate compliance with relevant legislation before issuing Environmental Protection Licenses for these activities.

Noted. Section 2.5 of the Environmental Assessment indicates that additional legislative requirements may apply to the project, in particular the need for EPL licenses. Additional information is provided in Section 5.

117. Notes that the commitment to using Bio-banking tools to derive an appropriate biodiversity offset area prior to construction may not be achievable as the tools are still under development and calculations may be iterative.

Noted. The Statement of Commitments will be amended such that State Water will negotiate in good faith to agree the appropriate details of the offset without the need to conclude these discussions before construction commences. Further details of the approach to the biodiversity offset are provided in Section 5.

118. Recommends that in addition to the development of stormwater management plans (as part of the proposed Soil and Water Quality Management Sub-Plan), a rehabilitation plan for the soil/ extracted material permanent emplacement areas is developed.

Agreed. Where extracted material and permanent emplacement areas occur on the project site, these will be a specific area of focus within the Soil and Water Quality Management Sub-Plan. However State Water prefer not to create an additional sub-plan specifically for this purpose.

Submission 15

119. Advises that the statement of environmental benefit provided in the Environmental Assessment understates the potential benefits by limiting the beneficial outcomes to downstream environments and states that the environmental improvements presents potential benefits to migratory aquatic organisms that exist within the Namoi Catchment beyond the downstream environment of the site.

Noted. The multi-level offtake will provide downstream benefits while the fishway will not be proceeding based on recent advice from the Department of Primary Industries (refer Section 5.2.1).

120. Comments that the multi-level offtake and fishway will require further investigation into their feasibility in conjunction with State Water.

Noted and agreed.

121. Notes that the determination made in the Environmental Assessment that there will be no environmental benefit from providing a fishway without a multi-level offtake requires validation and further investigation which is being pursued by DPI in conjunction with State Water.

State Water proposes to implement the multi-level offtake as part of the upgrade of Keepit Dam. The cost effectiveness of the fish passage had been found to be less cost effective than construction of fishways on three downstream weirs (Mollee, Gunidgera and Weeta) as a suitable alternative to the proposed high level fishway on Keepit Dam as confirmed by the Department of Primary Industries in May 2008.

Submission 17

122. Supports preferred Option B1 as it would have the least impact on the facilities of the Lake Keepit State Park Trust and the Sailing Club.

Noted.