

# Googong township water cycle project

Environmental assessment  
Submissions report



May 2011

**cic**  
AUSTRALIA

*Manid's Roberts*



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# Executive summary

## The Googong township water cycle project

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The Googong township will be located south of Queanbeyan in NSW and is essential for meeting the growing housing and population needs of the Queanbeyan and Canberra region. With 5,550 dwellings, the township will provide 55 per cent of the 10,000 new dwellings required under the *Queanbeyan Residential and Economic Strategy 2031* and 22 per cent of those required under the *Sydney to Canberra Corridor Strategy 2031*.

The Googong township water cycle project (the Project) is an innovative water infrastructure scheme that will allow the 16,000 residents of the Googong township to use the same amount of drinking water that would traditionally sustain only about 6,000 people. The Project would deliver essential water and wastewater services needed for the township in a sustainable and best practice manner. Stage 1 of the Project would deliver these services to the first subdivision areas of the Googong township.

The key drivers of the Project are to:

- Provide the essential water and wastewater services to the Googong township.
- Achieve a substantial reduction in potable water demand in comparison to a traditional development.
- Be affordable, protect the Googong Dam and support the Googong township masterplan.

The Project comprises the following infrastructure:

- A water recycling plant.
- Reservoirs for recycled and potable water.
- Pumping stations for sewage, recycled water and potable water.
- Mains pipework (including rising and distribution mains) for sewage, recycled water and potable water throughout the township.

The proponent, CIC Australia (CIC) is seeking concept approval of the Project and project approval for Stage 1 of the Project from the former NSW Department of Planning (DoP), now the NSW Department of Planning and Infrastructure (DPI).

## Consultation and public exhibition

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Environmental assessment and consultation for the Project has been an ongoing process. In 2010, an environmental assessment (EA) was prepared under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This was based on almost a decade of planning, environmental assessment and design work.

In November 2010, the DPI placed the EA on public exhibition and called for submissions on the Project. The EA was available at the local library in Queanbeyan, at relevant NSW government offices, the NSW Nature Conservation Council and via the DPI website. The public exhibition period commenced on 17 November 2010 and submissions were due on 20 December 2010. During this time, CIC also undertook additional consultation with local stakeholders.



## Submissions received

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During and after following the public exhibition period, the DoP received a total of twelve (12) submissions. Four (4) were received from local residents, two (2) from ACT government agencies, five (5) from NSW government agencies and one (1) from Queanbeyan City Council. Government submissions were supportive or neutral regarding the project, while community submissions raised some concerns, including some that objected to aspects of the Project.

In summary, comments contained in submissions were:

- That more information should be provided regarding aquatic ecology and stormwater.
- That minor amendments or refinements should be made to the proposal to improve environmental outcomes and/or operational needs regarding the potable water supply.
- That further clarity regarding certain environmental or design aspects should be provided.
- That the riparian rights of users who extract water from the Queanbeyan River may be affected by the discharge of excess recycled water into the stormwater management system.

Several submissions also included comments that are related to the Googong township as a whole or were otherwise not relevant to the EA for the Project. This report has addressed the issues raised in the submissions that are related to the Project, as more general issues associated with other aspects of the Googong township are assessed elsewhere, such as within the previously approved rezoning (under the *Queanbeyan Local Environment Plan (Googong) 2009*), or the separate (and future) subdivision development applications (DAs) under Part 4 of the EP&A Act.

## Response to submissions

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This report responds to the submissions received by the DPI in relation to of the EA for the Project. It details that:

- All comments and issues contained within the submissions have been addressed with reference to previous assessments or to additional information – Sections 2 and 3, respectively.
- Refinements to the Project proposed in response to certain submissions would not materially change the predicted environmental impacts – Section 4.
- The draft statement of commitments provided in the EA that was placed on public exhibition is appropriate and required only minor amendment – Section 5.

## Conclusion

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The Project would provide the necessary water and wastewater infrastructure for the Googong township in a manner that is consistent with government and community expectations. The EA and this submissions report conclude that potential environmental impacts of the Project have been, and would continue to be, avoided, managed and mitigated during construction and operation.

CIC seeks approval from the NSW Planning Assessment Commission for the concept plan for the Project and the project application for Stage 1 of the Project.



# 1 Introduction

This chapter introduces this Submission Report. It provides a brief description of the Googong township, the need for the Project and the Project itself. It outlines the environmental assessment and approvals process and public consultation program undertaken by CIC.

The Googong township water cycle project (the Project) is an innovative water infrastructure scheme that will allow the 16,000 residents of the Googong township to use the same amount of drinking water that would traditionally sustain only about 6,000 people.

The NSW Department of Planning (now the Department of Planning and Infrastructure, DPI)<sup>1</sup> placed the environmental assessment (EA) for the Project on public exhibition from 17 November to 20 December 2010. During and after following the public exhibition period, the DPI received a total of twelve (12) submissions. Four (4) were received from local residents, two (2) from ACT government agencies, five (5) from NSW government agencies and one (1) from Queanbeyan City Council (QCC). Government submissions were supportive or neutral regarding the project, while community submissions raised some concerns, including some that objected to aspects of the Project.

This report responds to the submissions received from these stakeholders. It also describes the minor refinements that have been made to the Project, as a result of these submissions and further consultation undertaken with stakeholders.

This report has been prepared to satisfy the requirements of Section 75H of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and in accordance with the request by the DPI to prepare a submissions report, as contained within their correspondence dated 24 December 2010.

CIC Australia (CIC) is seeking approval for the Project under Part 3A of the EP&A Act.

It is anticipated that the NSW Planning Assessment Commission will determine the Project in June 2011.

## 1.1 Structure of this report

This submissions report is structured as follows:

- **Chapter 1** – provides an introduction to the project and the environmental assessment process, as well as a summary of the consultation undertaken to date.
- **Chapter 2** – responds to the submissions received by the DPI.
- **Chapter 3** – provides additional information regarding aquatic ecology and stormwater management, to further respond to key issues contained within certain submissions.

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<sup>1</sup> Note, for simplicity, the former Department of Planning is referred to as the DPI throughout the rest of this document regardless of whether the actions referred to occurred before or after the change in the department's name.

- **Chapter 4** – describes the minor refinements made to the Project, as a result of the submissions and further consultation, and represents the preferred project report for the Project.
- **Chapter 5** – outlines the final Statement of Commitments (SoCs) for the Project.
- **Chapter 6** – conclusion.

## 1.2 The Googong township

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The Googong township (to be developed by CIC Australia, [www.cicaustralia.com.au](http://www.cicaustralia.com.au)) will be located in the Canberra region, seven (7) kilometres south of Queanbeyan in NSW. It has been designed to be one of the first purpose-built, large-scale water efficient communities in Australia, where the residents would use over 60% less water than those in a traditional development.

The Googong township will be home to about 16,000 people and will be developed over the next 25 years. The total area of the township is about 780ha, within which about 25 percent will be dedicated to public open space. Googong will include schools, commercial areas, retail, community facilities and a large recreational space in the centre of the township, known as the Googong Common.

Googong is essential for meeting the growing housing and population needs of the Queanbeyan and Canberra region. With 5,550 dwellings, the township will provide 55 percent of the 10,000 new dwellings required under the *Queanbeyan Residential and Economic Strategy 2031* and 22 percent of those required under the Sydney to Canberra Corridor Strategy 2031 (refer to Section 2.1 of the EA).

The land for the Googong township was rezoned for urban development by the NSW Government in December 2009, following almost eight years of specialist planning and assessment.

Further detail regarding the strategic context of the Project, including the *Sydney-Canberra Corridor Regional Strategy*, the *Queanbeyan Residential and Economic Strategy 2031* and the *Queanbeyan Local Environmental Plan (Googong) 2009* are provided in Chapter 2 of the EA and also on the project website ([www.googong.net](http://www.googong.net)).

## 1.3 Need for the Project

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The Googong township water cycle project (the Project) is required to provide the essential water and wastewater services. Further, the township was required by the NSW Government to meet best practice water conservation outcomes, which lead to the specific design of the water cycle system and infrastructure that comprises the Project, as described in the EA.

The scale of the Googong township requires a modern water and wastewater system to service residents. These services are essential to urban development and to ensure that relevant environmental and human health standards are achieved. The existing wastewater treatment facilities in the region are some decades old, remote from the site and do not have the capacity for the additional 16,000 residents, nor was it considered that upgrading the existing local facilities would produce a suitable environmental or human health outcome. Therefore, a new wastewater treatment facility was required for Googong.

As part of the rezoning of the land, Googong is required to meet objectives for potable water conservation. To achieve this, several options were explored. The conclusion was that an integrated water cycle system was required, including upgrading the proposed wastewater treatment facility to a water recycling plant (WRP) to provide recycled water within the township for non-potable purposes.

The Project, as summarised below, meets the combined needs of providing essential water and wastewater services, and achieving the required reduction in potable water use.

## 1.4 Project description

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The Project would provide all necessary infrastructure to deliver potable water to a distribution system together with a sewage collection network to transfer waste flows to a WRP. The recycled water system would store recycled water and allow for reuse for non-potable purposes. The recycled water system would be supplemented by collected rainwater at households and, when necessary, potable water. Figure 1 outlines how the Project would integrate with the development of the township and the stormwater management system.

The Project comprises the following infrastructure:

- A WRP.
- Reservoirs for recycled and potable water.
- Pumping stations for sewage, recycled water and potable water.
- Mains pipework (including rising and distribution mains) for sewage, recycled water and potable water throughout the township.
- Connection to the stormwater management system.

Detailed information about the Project is provided in Chapter 5 of the EA.

## 1.5 Environmental assessment and planning approvals process

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### 1.5.1 Application of Part 3A

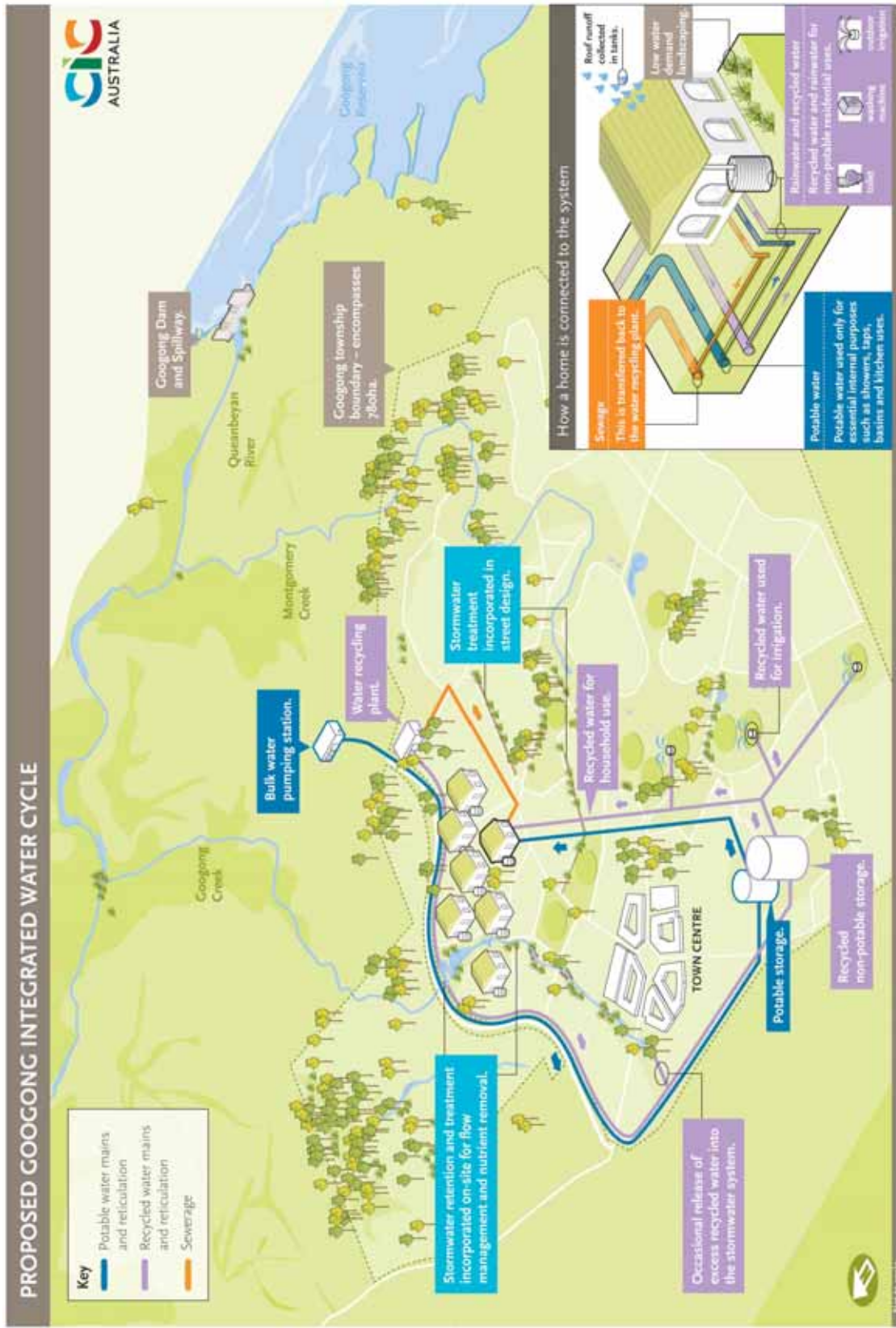
The project is considered a major project in accordance with the requirements of the *State Environmental Planning Policy (Major Projects) 2005*, and therefore follows the assessment and approval regime of a Part 3A project.

CIC, the proponent, submitted a major project application accompanied by a preliminary environmental assessment (PEA) to the DPI on 13 November 2008 and a request to the Minister for Planning for authorisation to prepare a:

- Concept plan for a Project – the Project being the development of the water cycle infrastructure for Googong township.
- Project plan to carry out part of that Project – that is, the water cycle infrastructure required for the first neighbourhood (neighbourhood 1A, approximately 1,200 dwellings) of the Googong township development.

These approvals are being sought concurrently.

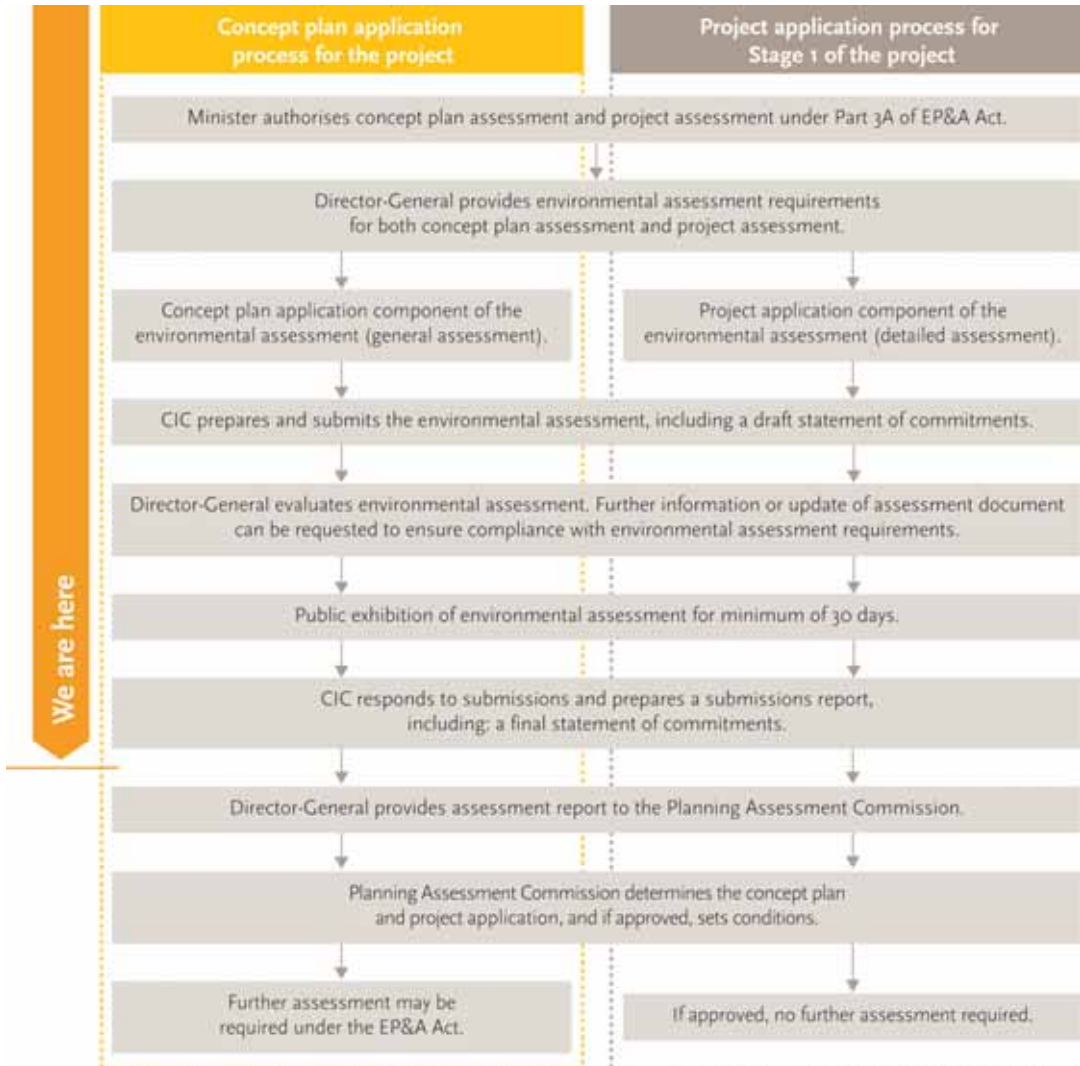
Figure 1 Key elements of the Project



### 1.5.2 Part 3A Approvals process

The process for concept plan and project approvals is provided in Figure 2. This process has been confirmed with the DPI following the recent change of government in NSW and the likely changes to the operation of Part 3A of the EP&A Act. As shown in Figure 2, the NSW Planning Assessment Commission will determine both the concept plan application and project application.

**Figure 2** Concept and project application process



### 1.5.3 Activities following Part 3A determination

If the Project is approved, a range of activities would occur following the determination, including:

- Notification of the approval on the DPI website, Googong website and letters to individual stakeholders.
- Ongoing project development, including detailed design, safety studies, and development of the Construction environmental management plan (CEMP).
- Ongoing consultation with stakeholders and the provision of information to affected individuals and other stakeholders.



- Establishment of a monitoring station at the confluence of Googong Creek and the Queanbeyan River, and monitoring of water quality and flow data.
- Further groundwater assessment and other assessments/activities noted in the Statement of Commitments (Chapter 5).
- Construction of the water cycle infrastructure.
- Construction-related communications and stakeholder engagement.
- Development of the Operational environmental management plan (OEMP) and the environment protection licence for the WRP.

#### **1.5.4 Part 4 approvals process**

The Googong township, and its infrastructure components that are not being assessed under Part 3A of the EP&A Act, are assessed under Part 4 of the EP&A Act. The following components are currently being assessed under Part 4 of the EP&A Act or will be assessed under Part 4 in the future:

- The subdivision stages (within the neighbourhood areas) of the township.
- Water-related reticulation (ie the sewerage, potable and recycled water pipework).
- Stormwater and irrigation infrastructure.
- Open space.
- Other services and utilities for the township (ie roads, civil works, communications, gas, electricity, etc).

A development application (DA) has been submitted by CIC to QCC for Stages 1 and 2 (337 lots) of the first neighbourhood to be developed (Neighbourhood 1A, approximately 1,200 lots).

Sections 1.7.2 and 1.7.3 and Figure 1.5 of the EA provide a detailed description of the individual components of the infrastructure to be assessed under both Part 3A and Part 4 of the EP&A Act.

## **1.6 The public consultation program**

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### **1.6.1 Consultation prior to public exhibition**

Consultation for the township has been ongoing for almost a decade. The stakeholder consultation process for the Part 3A assessment and approvals process commenced in May 2007. The program of consultation activities and outcomes of stakeholder engagement up until the finalisation of the EA are documented in Chapter 16 of the EA.

### **1.6.2 Consultation during the public exhibition**

#### *Public notification*

The DPI advertised the EA exhibition in the Queanbeyan Chronicle and the Canberra Times on 16 November 2010. The Chronicle is distributed to the immediate local area and the Times is available in the entire ACT and the south-east NSW region. This allowed both local and regional members of the public to be informed of the exhibition locations and website details.

### *Exhibition locations*

Complete hard copies of the EA were exhibited and available for public viewing in four locations from 17 November 2010 to 20 December 2010. Two locations were in the Queanbeyan area, including the local library and the NSW government offices. The other two locations were in Sydney, which were the DPI information centre and the NSW Nature Conservation Council office.

On 1 December 2010, the hard copy version of the EA that was provided to the Queanbeyan Library was removed by an unknown person(s). CIC provided a replacement copy within two (2) days to ensure that other members of the public could continue to view the document at the advertised location.

### *Department of Planning and Infrastructure website*

The complete environmental assessment was available for download throughout the exhibition period from the DPI website at [www.majorprojects.planning.nsw.gov.au](http://www.majorprojects.planning.nsw.gov.au).

Submissions and other project documentation are also available via the website.

### *Government agencies*

As part of the exhibition process, DPI sent copies of the EA to several government agencies for their information and invited them to comment on the Project. Copies of the EA were sent to:

- The former NSW Department of Planning (Heritage Branch) – Sydney (now part of the NSW Office of Environment and Heritage, OEH).
- The DPI (Regional Office) – Queanbeyan.
- The former NSW Department of Environment, Climate Change and Water (DECCW, now the OEH) – Queanbeyan.
- NSW Office of Water (NOW, formerly part of DECCW) – Dubbo.
- The former NSW Roads and Traffic Authority – Wollongong (now the NSW Transport – Roads and Traffic Authority, RTA).
- NSW Health (Greater Southern Area Health Service) – Queanbeyan.
- The former NSW Department of Industry and Investment – Nelson Bay (now the NSW Department of Trade and Investment, Regional Infrastructure and Services – DTIRIS).
- QCC.
- Palerang Council.
- ActewAGL – Canberra.
- ACT Department of Environment, Climate Change, Energy and Water (DECCEW) – Canberra.

Of the above listed Government agencies, submissions were received from all, except Palerang Council.

### *State and federal parliamentarians*

CIC contacted the offices of the (then) NSW and Commonwealth local members of parliament (Steve Whan and Mike Kelly, respectively) to offer a briefing regarding the project. Neither office took up the offer of a briefing.



#### *Meeting with Queanbeyan City Council representatives*

A meeting was held on 30 November 2010 with the Mayor of Queanbeyan, certain Councillors and Council officers. This meeting included a detailed presentation of the technical aspects of the Project and provided an opportunity for the Council representatives to ask the project team questions about the Project and the planning process.

#### *Meeting with residents of Wickerslack Lane, Queanbeyan*

A two-hour meeting was held on 13 December 2010 with about 10 residents of Wickerslack Lane, Queanbeyan, which is located north of the Googong township. This meeting was offered to these residents, as they have been involved in earlier consultation and had previously expressed an interest in being updated on the Project. This meeting included a presentation from the project team and a question-and-answer information session.

#### *Summary paper and frequently asked questions paper*

CIC prepared a short article regarding the public exhibition, which was placed on the news page of the Googong township website ([www.googong.net/news.html](http://www.googong.net/news.html)). This was accompanied by a summary paper and answers to frequently asked questions about the Project. These two papers were also provided at the meeting with QCC representatives and Wickerslack Lane residents.

#### *Telephone and email*

Email addresses and telephone numbers were provided on the Googong township website and directly to attendees at meetings, so that the project team could be contacted to clarify any points or answer any questions regarding the project. During the exhibition period, only one phone call and no emails were received.

### **1.6.3 Consultation during preparation of the submissions report**

Following the receipt of submissions, consultation with government agencies has continued in parallel with the preparation of this Submission Report.

Both the OEH and NOW were consulted during the preparation of this Submissions Report due to the refinements made to the project.

The information presented in the OEH submission (dated 21 December 2010) was discussed with Julian Thompson on several occasions, including the additional information to be provided in this report. A meeting was offered to OEH to discuss any issues, but they considered that a meeting was not required. The outcomes of this consultation, such as the changes to Statement of Commitments H1 and H2 in relation to Aboriginal heritage, have been included in this report (Section 5.1). Section 4.3 of this report details that the identification of two feasible options to meet the discharge requirements of the OEH would be undertaken during the detailed design of the bulk water pumping station.

Discussions were held with NOW regarding the information presented in their submission (dated 6 January 2011). The outcomes of this consultation resulted in the addition of a new commitment, the Statement of Commitment G8 (Section 5.2 of this report). This statement of commitment addresses the timing of the groundwater assessment as part of an overall program of further monitoring and assessment in terms of the staging of construction

Both OEH and NOW have stated that they would like to receive a copy of the final Submissions report and one will be submitted to them after finalisation.

Ongoing liaison with DPI regarding the preparation of this report has also been undertaken.

#### **1.6.4 Ongoing and post-exhibition consultation**

Stakeholder engagement will continue following approval of the Project.

Ongoing consultation with government agencies, statutory bodies, Aboriginal stakeholders, local councils, utilities and other identified stakeholders will continue to form a key part of project delivery during the approval process through to construction and operation.

##### *Googong township-foreshores interface working group*

As part of the EPBC referral for the township, a Googong foreshores-township interface working group was formed in mid-2010 to undertake alignment between the commitments that were being proposed in the various planning approval documents and the Googong Foreshores Plan of Management. Parties represented on the working group are:

- CIC Australia.
- Commonwealth Department of Finance and Deregulation.
- Commonwealth Department of Sustainability, Environment, Water, Population and Communities (formerly the Department of Water, Heritage and the Arts).
- ACT Territory and Municipal Services.
- ACTEW Corporation/ActewAGL.
- QCC.

# 2 Submissions

This chapter contains an analysis of the submissions received during the public exhibition of the Googong township water cycle project environmental assessment:

- Section 2.1 contains a summary of the submissions received.
- Section 2.2 discusses the submissions in relation to the scope of the Part 3A environmental assessment.
- Section 2.3 contains responses to submissions from government agencies. It references the relevant Statement of Commitment and whether or not it has been amended, or where the comment is addressed in the EA or this report.
- Section 2.4 contains comments raised by stakeholders other than government agencies. It also references where the comment is addressed in the EA or this report.

## 2.1 Submissions received

A total of twelve (12) submissions were received. Four (4) were received from local residents, two (2) from ACT government agencies, five (5) from NSW government agencies and one (1) from QCC. Government submissions were supportive or neutral regarding the project, while community submissions raised some concerns, including some that objected to aspects of the Project.

Seven (7) submissions were received by the due date (20 December 2010), with three (3) received by DPI between 21 December 2010 and 6 January 2011. An additional two (2) submissions were received in early April 2011.

In addition to the submissions, the Major Projects and Heritage branches of the DPI (the Heritage Branch is now within the NSW Office of Environment and Heritage – OEH) sought clarification of certain aspects of the EA. As requested by DPI, separate responses to those queries have been prepared and were submitted to DPI on 29 March 2011 and 27 April 2011, respectively.

Table 1 below, summarises the submissions received by the DPI and the full submissions are provided in Appendix E.

**Table 1** Summary of the submissions received

Number	Organisation/stakeholder	Date received by DPI	Key issues raised in the submission
1	NSW Transport – Roads and Traffic Authority (the former NSW Roads and Traffic Authority)	9/12/2010	No issues were raised.
2	Greater Southern Area Health Service (NSW Health)	13/12/2010	<ul style="list-style-type: none"><li>• Adherence to guidelines for drinking and recycled water.</li><li>• Emergency management planning.</li></ul>

Number	Organisation/stakeholder	Date received by DPI	Key issues raised in the submission
3	NSW Department of Trade and Investment, Regional Infrastructure and Services (formerly the NSW Department of Industry and Investment)	17/12/2010	<ul style="list-style-type: none"> <li>Management of waterways and aquatic ecology.</li> </ul>
4	ACT Department of Environment, Climate Change, Energy and Water (DECCEW)	17/12/2010	<ul style="list-style-type: none"> <li>Protection of the Pink-tailed Worm Lizard and its habitat.</li> </ul>
5	Wickerslack Lane Resident #1	20/12/2010	<ul style="list-style-type: none"> <li>Level of assessment of geology and geomorphology.</li> <li>Level of information provided regarding, aquatic ecology, surface and groundwater quality.</li> </ul>
6	Wickerslack Lane Resident #2	20/12/2010	<ul style="list-style-type: none"> <li>Level of information, clarity and reliability of data and monitoring of aquatic ecology.</li> <li>Water quality in the Queanbeyan River.</li> <li>Role of QCC in management of the WRP.</li> <li>Emergency management planning.</li> </ul>
7	ActewAGL	20/12/2010	<ul style="list-style-type: none"> <li>Clarification of the (revised) bulk water pumping station location.</li> </ul>
8	NSW Office of Environment and Heritage (formerly the Department of Environment, Climate Change and Water – DECCW)	21/12/2010	<ul style="list-style-type: none"> <li>Water quality regarding the discharge of excess recycled water.</li> <li>Protection of the Pink-tailed worm lizard, and its habitat.</li> <li>Protection of Aboriginal cultural heritage site(s).</li> </ul>
9	Queanbeyan City Council	23/12/2010	<ul style="list-style-type: none"> <li>Details of the construction and operation of water cycle infrastructure.</li> <li>Construction and operation environmental management planning.</li> <li>Adherence to relevant guidelines.</li> </ul>
10	NSW Office of Water (formerly part of DECCW)	6/1/2011	<ul style="list-style-type: none"> <li>Level of assessment of the ecological impacts of changes to flow regimes.</li> <li>Identification and assessment of impacts to downstream water users.</li> <li>Changes in the recharge regime and groundwater levels.</li> </ul>
11	Wickerslack Lane Resident #3	1/4/2011	<ul style="list-style-type: none"> <li>Water quality of the excess recycled water.</li> <li>Water quality in the Queanbeyan River.</li> <li>Emergency management planning.</li> </ul>
12	Wickerslack Lane Resident #4	4/4/2011	<ul style="list-style-type: none"> <li>Water quality in the Queanbeyan River.</li> <li>Emergency management planning.</li> <li>Stormwater management.</li> <li>Ecology and sediments in Googong Creek.</li> </ul>

## 2.2 Scope of the Part 3A environmental assessment

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Many of the submissions received provide general recommendations or comments that are not (wholly or partially) related to the scope of the Part 3A environmental assessment (EA). It is important to revisit the scope of the environmental assessment to provide context for the responses to the submissions presented in the remainder of this chapter. In particular, the EA must be considered within the context of the urban (residential) zoning that now applies to the majority of the Googong township site, which was approved by the NSW Government in their rezoning of the land in December 2009.

The Part 3A EA relates solely to the water cycle infrastructure that forms the Googong township water cycle project, which includes:

- A WRP.
- Reservoirs for recycled and potable water.
- Pumping stations for sewage, recycled water and potable water.
- Mains pipework (including rising and distribution mains) for sewage, recycled water and potable water throughout the township.
- Connection to the stormwater management system.

Examples of comments contained within the submissions received that are outside the scope of the EA are:

- Aspects of the stormwater management system that are not related to the discharge of excess recycled water into the stormwater system. These will be assessed separately under Part 4 of the EP&A Act.
- Aspects of the Googong township that are not related to water cycle infrastructure, such as roads and the subdivision of land. These will be assessed separately under Part 4 of the EP&A Act.
- Management of the Queanbeyan River catchment outside of the Googong township. The proponent is only able to directly manage the development of Googong township (assessed under Part 4 of the EP&A Act) and the associated water cycle infrastructure (the Project being assessed under Part 3A of the EP&A Act), as well as any downstream environmental impacts. The studies undertaken as part of the EA have assessed the impacts of the Project on the Queanbeyan River catchment and measures to mitigate the predicted impacts will be implemented.
- Commercial aspects related to the likely transfer of ownership of water cycle infrastructure to QCC. These are part of ongoing negotiations between CIC Australia and QCC, regarding the Voluntary Planning Agreement for Googong.

The following Sections (Sections 2.3, 2.4 and 2.5 of this report) provide responses to the submissions received by the DPI from agencies and the community, respectively. Each comment related to the scope of the EA is summarised and noted with a unique identification number. A response to each comment is then provided, with reference to where further information can be obtained from the EA or other sections of this report. The final column of each table provides a guide for cross-referencing between the relevant documents.

## 2.3 Response to agency submissions

**Table 2** Response to agency submissions received by DPI

ID	Comment	Response	Reference
<b>NSW Transport – Roads and Traffic Authority (former NSW Roads and Traffic Authority)</b>			
1A	Consider any likely impacts to the natural or built environment in the road reserve fronting the proposed development. Consider traffic noise impacts on adjacent residences, impacts on indigenous or non-indigenous heritage items or threatened species.	<ul style="list-style-type: none"> <li>As mentioned in the introduction, the EA only assesses the Googong Water Cycle Project, with the development of the Googong township being assessed under Part 4 of the EP&amp;A Act. Section 1.5.4 of this report provides a description of the infrastructure components being assessed under Part 4 of the EP&amp;A Act. Impacts of the development of the township on public amenity, heritage and threatened species have been assessed in documents supporting the development application (DA). QCC is currently assessing the DA submitted under Part 4 for Stages 1 and 2 (337 lots) of the first neighbourhood of the Googong township.</li> <li>The EA assesses all likely impacts of the water cycle infrastructure to the natural or built environment in the road reserve fronting the proposed Googong township.</li> <li>Statement of Commitments T1-T5 address management of traffic impacts for construction and operation.</li> <li>Statement of Commitments H1, H2 and NH1-NH3 address indigenous (Aboriginal) or non-indigenous heritage items.</li> <li>Statement of Commitment F2 addresses the protection of threatened species.</li> </ul>	<ul style="list-style-type: none"> <li>Section 1.5.4 of this report.</li> <li>Statement of Commitments T1–T5.</li> <li>Statement of Commitments H1 and H2.</li> <li>Statement of Commitments NH1–NH3.</li> <li>Statement of Commitment F2.</li> </ul>
<b>Greater Southern Area Health Service (NSW Health)</b>			
2A	Water provided as drinking water is to comply with the <i>Australian Drinking Water Guidelines 2004</i> . Ongoing management and monitoring of the supply is to form part of the <i>NSW Drinking Water Monitoring Program</i> .	<ul style="list-style-type: none"> <li>Drinking water for the Googong township will be sourced from the existing water supply network, which supplies the Canberra and Queanbeyan areas. This water supply network is managed by the ACTEW Corporation and QCC, under a service level agreement between the two organisations, to ensure that the drinking water complies with the Australian Drinking Water Guidelines.</li> <li>As the agency responsible for potable (drinking) water supply, QCC would undertake ongoing management and monitoring of the supply, which will form part of the NSW Drinking Water Monitoring Program.</li> <li>It is noted that recycled water would only be used for non-potable uses throughout the Googong township.</li> </ul>	<ul style="list-style-type: none"> <li>Section 5.3 of the EA.</li> </ul>

ID	Comment	Response	Reference
2B	<p>Consider the <i>Australian Guidelines for Water Recycling</i> and the <i>Interim NSW Guidelines for Management of Private Recycled Water Schemes 2008</i>.</p>	<ul style="list-style-type: none"> <li>Statement of Commitment HH1 states that recycled water produced by the WRP will meet all guidelines, particularly the requirements for unrestricted non-potable use as defined in the <i>Australian Guidelines for Water Recycling: Managing Health and Environmental Risks</i> and the requirements of the <i>Interim NSW Guidelines for Management of Private Recycled Water Schemes 2008</i>.</li> <li>The design and the operation of the water recycling infrastructure has been and will be undertaken in accordance with the <i>Australian Guidelines for Water Recycling: Managing Health and Environmental Risks</i>. These guidelines provide a 12-element framework for the management of human health and environmental risks. As part of the design of the WRP, two forms of disinfection of the recycled water will be undertaken to ensure the removal of human pathogens and to ensure the water is suitable for recycling and release to the environment (Sections 5.3.3, 5.3.4, 5.5.5, 8.2 and 8.3 of the EA).</li> <li>This guideline framework will be used in the development of the Recycled Water Risk Management Plan (RWRMP) and the implementation of risk management practices for the operation of the Project (refer to Sections 8.2 and 8.5 of the EA). The RWRMP will be prepared in consultation with the relevant government agencies (refer to Statement of Commitments HH1, HH2 and HH3).</li> <li>This national framework has also been adopted within a State (NSW) set of guidelines titled the <i>Interim NSW Guidelines for the Management of Private Recycled Water Schemes 2008</i>. These guidelines will also be followed in the development of the RWRMP for the operation of the Project (Section 8.3 of the EA).</li> </ul>	<ul style="list-style-type: none"> <li>Sections 5.3.3, 5.3.4, 5.5.5, 8.2, 8.3 and 8.5 of the EA.</li> <li>Statement of Commitments HH1-HH3.</li> </ul>



ID	Comment	Response	Reference
2C	<p>Recommends that the stormwater management strategy considers the impact of WRP emergency overflows. It should consider both quantity and quality of recycled water being received into the stormwater system and subsequent impact on receiving watercourses.</p>	<ul style="list-style-type: none"> <li>The WRP has been designed to accommodate all wet weather sewage flows from the township. There is also the space allocated at the WRP site for a flow control facility to be constructed if required, to accommodate additional flows for a period of time before passing those additional flows through the plant for treatment. Section 5.3.3 of the EA provides a detailed description of the design of the WRP.</li> <li>Appendix D of this report provides a letter prepared by Brown Consulting (dated 13 April 2011), which provides further information on the modelling (hydrological, hydraulic and water quality) and analytical approach undertaken as part of the EA. The outcome of the assessment was that with or without recycled water flows, the stormwater quality leaving the Googong township site below the Googong Dam Road will meet all the applicable water quality targets. Further, the assessment concluded that emergency overflows from the WRP would not result in a detrimental impact to the receiving environment. Appendix M of the EA (Stormwater management and drainage analysis design report) includes the full report of the assessment undertaken by Brown Consulting during the preparation of the EA.</li> <li>In addition, the stormwater management system includes a drainage reserve immediately adjacent to the WRP, which would be designed with consideration of any emergency flows from the plant (refer to Section 5.3.3 of the EA and Appendix M of the EA). It is noted that the stormwater management system is primarily part of the subdivision design and is being assessed under Part 4 of the EP&amp;A Act.</li> </ul>	<ul style="list-style-type: none"> <li>Section 5.3.3 of the EA.</li> <li>Appendix D of this report.</li> <li>Appendix M of the EA.</li> </ul>
2D	<p>Open water bodies located within the development should receive consideration in relation to mosquito control and the incidence of algal blooms.</p>	<ul style="list-style-type: none"> <li>It is noted that this comment is generally related to the stormwater management system, which is generally assessed separately under Part 4 of the EP&amp;A Act.</li> <li>To respond further, however, CIC will ensure that open water bodies within the development will be managed through the RWRMP, based on the risk management framework outlined in <i>Australian National Guidelines for Water Recycling – Managing Health and Environmental Risks</i> (2006). Importantly, the RWRMP will be developed through hazard identification, and identification of significant human and environmental risks, such as mosquito control and algal blooms.</li> <li>Refer to Statement of Commitment HH2.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment HH2.</li> </ul>

ID	Comment	Response	Reference
2E	<p>Appropriate management measures should be considered to address any negative impact of the increase in the population in the Googong area on the water catchment area, the foreshore environment and water quality of Googong Reservoir.</p>	<ul style="list-style-type: none"> <li>• As shown on Figures 7.2 and 7.3 of the EA no components of the Project will be located in the hydrological catchment of Googong Reservoir. Therefore no direct impacts on the reservoir are predicted.</li> <li>• The indirect impacts of increased patronage and use of the areas surrounding the Googong Reservoir has been assessed in the referral submitted to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC) under the EPBC Act. The referral was submitted in February 2011. The trigger for the referral was that the land surrounding the Googong Foreshores is owned by the Commonwealth Department of Finance and Deregulation and assessment of impact is required under the EPBC Act for actions affecting this land.</li> <li>• The referral concluded that the impact of the Project on Googong Reservoir and its catchment would not be significant. It is possible that the patronage of the northern Googong Foreshores area and facilities will significantly increase due to the increased local population. The potential impacts of increased patronage were assessed against the objectives detailed in the <i>Googong Foreshores Plan of Management 2010</i> (prepared by the ACT Department of Territory and Municipal Services).</li> <li>• Activities that could impact on the achievement of the objectives include: <ul style="list-style-type: none"> <li>• Illegal use of motorised watercraft on the reservoir.</li> <li>• Illegal use of the reservoir for swimming.</li> <li>• Illegal intrusion of domestic pets.</li> <li>• Illegal use of motorised vehicles, such as trail bikes, in prohibited off-road areas.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Figures 7.2 and 7.3 of the EA.</li> </ul>

ID	Comment	Response	Reference
		<ul style="list-style-type: none"> <li>• Several factors, however, suggest that the extent and nature of impact is likely to not be significant: <ul style="list-style-type: none"> <li>• The Googong development provides high levels of recreational self-containment by providing a rich array of open spaces (about 25 percent of the Googong township area) and facilities.</li> <li>• For residents who choose to utilise the Googong Foreshores for recreation, it is the current role of the ACT Department of Territory and Municipal Services to provide the necessary supervision to mitigate any negative impacts as part of its land management function.</li> <li>• Public access to the Googong Dam and Foreshores Area would continue to be managed through the access gate on Googong Dam Road and other existing access points, and a new fence would be constructed along the township-foreshores boundary.</li> <li>• Education programs for Googong township residents will be developed to raise awareness of the water quality and environmental sensitivity of the Googong Foreshores area to foster a stewardship approach.</li> <li>• As described in the referral, the proponent has committed to supporting the ongoing management of the foreshore area, including making a significant financial contribution to TAMS - ACT Parks, Conservation and Lands.</li> </ul> </li> </ul>	
2F	Consider the emergency management procedures (ingress and egress, as well as points of evacuation) during construction and operation.	<ul style="list-style-type: none"> <li>• The Construction environmental management plan (CEMP), Operational environmental management plan (OEMP) and the Recycled water risk management plan (RWRMP) would outline the management of emergency situations for all key water cycle infrastructure.</li> <li>• Refer to the Statement of Commitment R2 (Chapter 5 of this report).</li> </ul>	<ul style="list-style-type: none"> <li>• Statement of Commitment R2.</li> <li>• Chapter 5 of this report.</li> </ul>

ID	Comment	Response	Reference
<b>NSW Department of Trade and Investment, Regional Infrastructure and Services (formerly the NSW Department of Industry and Investment)</b>			
3A	<p>Ensure that the development complies with the requirements of the <i>Fisheries Management Act 1994</i> and the associated Policy and Guidelines for <i>Aquatic Habitat Management and Fish Conservation (1999)</i>.</p>	<ul style="list-style-type: none"> <li>Section 11.2.2 of the EA outlines the process undertaken to ensure that the NSW Fisheries <i>Management Act 1994</i> was complied with. NSW Fisheries (now part of the Department of Trade and Investment, Regional Infrastructure and Services) was consulted pursuant to Section 34A of the EP&amp;A Act prior to preparation of the <i>Googong Local Environmental Study (LES)</i>. They also provided comment on the draft EA in February 2010.</li> <li>The department has advised that the Queanbeyan River was once a known habitat for Macquarie Perch (<i>Macquaria australasica</i>), which is listed as a vulnerable species. NSW Fisheries (now part of the Department of Trade and Investment, Regional Infrastructure and Services) has advised that any draft local environmental plan prepared for the study area should make reference to the fact that Macquarie Perch were once known to live in the Queanbeyan River and that the precautionary principle should be adopted when preparing design requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Section 11.2.2 of the EA.</li> </ul>
3B	<p>Recommends that any proposed new or upgraded road crossings of Googong and Montgomery Creeks should be designed and constructed in accordance with the Department's <i>Policy and Guidelines for Fish Friendly Waterway Crossings (2004)</i> and <i>Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (2004)</i>. The design of any road crossings of these waterways should be submitted to the Department of Trade and Investment, Regional Infrastructure and Services for approval prior to construction.</p>	<ul style="list-style-type: none"> <li>The only roads subject to Part 3A of the EP&amp;A Act are the access roads required for the construction and operation of the infrastructure components of the Project (ie the WRP, pumping stations, pipelines and reservoirs as discussed in Section 5.5.3 of the EA). The location of these infrastructure components are shown in Figure 5.16 of the EA and for the bulk water pumping station in Figure 5 of this report. It is noted that these roads will not cross either Googong or Montgomery Creeks.</li> <li>All other roads are subject to assessment under Part 4 of the EP&amp;A Act as part of the Googong township and subdivision components (Section 1.7.3 of the EA).</li> <li>CIC will design and construct any new road crossings of the Googong and Montgomery Creeks that are to be approved under Part 4 of the EP&amp;A Act in accordance with the Department's <i>Policy and Guidelines for Fish Friendly Waterway Crossings (2004)</i> and <i>Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (2004)</i>.</li> <li>CIC will also consult with the Department of Trade and Investment, Regional Infrastructure and Services regarding the design of any new road crossings of Googong and Montgomery Creeks prior to construction.</li> </ul>	<ul style="list-style-type: none"> <li>Sections 1.7.3, 5.5.3 and Figure 5.16 of the EA.</li> <li>Figure 5 of this report.</li> </ul>

ID	Comment	Response	Reference
3C	<p>Recommends the development be reviewed against the NSW Department of Trade and Investment, Regional Infrastructure and Services Guideline <i>Infrastructure proposals on rural lands</i>.</p>	<ul style="list-style-type: none"> <li>The guideline was developed in October 2010. It provides guidance to consent authorities for use when assessing infrastructure proposals affecting rural resource lands. The guideline aims to maintain sustainable primary production and development opportunities and minimise land use conflict. The specific objectives of the guideline are listed below with an assessment of the Project against these objectives.</li> <li>To minimise impacts on agricultural resources from projects: <ul style="list-style-type: none"> <li>The Project has been designed and assessed in accordance with the requirements of the DGR's and the requirements of the EP&amp;A Act. The Project has also been justified in a local and regional context (in accordance with the <i>Sydney-Canberra Corridor Regional Strategy 2006-31</i> and the <i>Queanbeyan Residential and Economic Strategy 2031</i>) for suitability. Sections 2.1 – 2.3 of the EA provides further detail.</li> <li>The Project will not impact on agricultural lands as the land on which the Project is situated is zoned for general residential or infrastructure (Figure 2.2 of the EA). Sections 2.2 and 2.3 of the EA provide further detail.</li> <li>Where possible, Project infrastructure has been located within existing infrastructure corridors (ie road corridors) to minimise conflict with other current and future land uses. Section 4.2 of this report provides further details regarding the bulk water pumping station and associated infrastructure.</li> </ul> </li> <li>To minimise resource losses and fragmentation and impacts on farm productivity and livestock: <ul style="list-style-type: none"> <li>The Project will support the development of the Googong township as a residential area in accordance with the current land use zonings for the area (Figure 2.2 of the EA). As the components of the project are not located on agricultural land, it will not result in resource losses or fragmentation and impacts on farm productivity or livestock.</li> </ul> </li> <li>To minimise biosecurity, pest and weed risks and impacts on livestock: <ul style="list-style-type: none"> <li>The Project will not impact on any agricultural lands and will not increase biosecurity, pest or weed risks or have impacts on livestock. The management and control of weeds during construction activities will reduce weed impacts in the area. Weeds will be managed under the Flora and fauna management plan (required by Statement of Commitment F1). Section 11.1.4 details this requirement in the EA.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Sections 2.1-2.3 and 11.1.4 and Figure 2.2 of the EA.</li> <li>Sections 1.6, 4.2 of this report.</li> <li>Statement of Commitments C1, CS1-CS3 and F1.</li> </ul>

ID	Comment	Response	Reference
		<ul style="list-style-type: none"> <li>To undertake rehabilitation activities in consultation with landholders and relevant agencies, where applicable: <ul style="list-style-type: none"> <li>Rehabilitation activities will be undertaken for the Project and will be detailed in the Construction environmental management plan (CEMP) for the Project (required by Statement of Commitment C1). The CEMP will be prepared in consultation with the relevant agencies.</li> </ul> </li> <li>To undertake consultation with relevant authorities on the design, construction and operation of a project: <ul style="list-style-type: none"> <li>Consultation with relevant authorities has been undertaken as part of the development of the EA. Section 1.6 of this report provides further information. Consultation will continue to be undertaken, as required, throughout the Project stages and will be detailed in the consultation strategy to be prepared for the Project. Statement of Commitments CS1-CS3 details these commitments.</li> </ul> </li> </ul>	
<b>ACT Department of Environment, Climate Change, Energy and Water (DECCEW)</b>			
4A	Notes that the Pink-tailed Worm Lizard is a declared species in the ACT and recommends that any regional impact on ACT populations should be considered. Recommends that clearance of habitat should be avoided and that the development should include consideration of cumulative impacts on the species.	<ul style="list-style-type: none"> <li>The Pink-tailed Worm Lizard (<i>Aprasia parapuchella</i>) has been subject to further and more detailed ecological study (as part of the Googong township's EPBC referral documentation) since the EA has been placed on public exhibition. Biosis Research undertook the studies in late 2010.</li> <li>CIC Australia now proposes to dedicate an <i>Aprasia</i> Conservation Area of about 52ha to QCC (or another suitable land manager) and undertake regeneration works to provide for a positive conservation outcome for this species. This area is detailed in Section 4.4 and shown in Figure 6 of this report.</li> <li>It is noted that while the Project does not impact on any ACT land, the Pink-tailed Worm Lizard is a declared species in the ACT. The regional or cumulative impacts on the listed ACT populations of the Pink-tailed Worm Lizard and on the Hoary Sunray habitat were assessed in the flora and fauna assessment reports prepared by Ecowise Environmental and Biosis Research for the Project (Appendices F and P of the EA, respectively). As described in Section 11.1.6 of the EA, the reports conclude that the design of the Project has led to the avoidance of the habitat for the Pink-tailed Worm Lizard (and the Hoary Sunray) populations. Therefore, regional or cumulative impacts on the ACT populations of these species are not predicted.</li> </ul>	<ul style="list-style-type: none"> <li>Section 4.4 and Figure 6 of this report.</li> <li>Section 11.1.6 of the EA</li> <li>Appendices F and P of the EA.</li> </ul>



ID	Comment	Response	Reference
4B	Comments that older surveys have been used to determine vegetation data for the subject site. Resurveying the area now may provide different results as the vegetation may well be in better condition than previous, particularly if land use has changed.	<ul style="list-style-type: none"> <li>Flora surveys were conducted for the Project between late October 2008 and January 2009, with the ecological assessment being finalised in December 2009 (refer to Appendix F of the EA). Due to the continued agricultural land use of the site, it is not expected that vegetation conditions would have changed substantially in the intervening period.</li> <li>Furthermore, an updated flora and fauna assessment was carried out in late 2010 for the revised bulk water pumping station location as part of this report (refer to Appendix A). Also, as noted above in item ID 4A and discussed in Section 4.4 of this report, habitat surveys for the Pink-tailed Worm Lizard were undertaken in late 2010, which confirmed the vegetation condition in the relevant areas of the site.</li> </ul>	<ul style="list-style-type: none"> <li>Appendix F of the EA.</li> <li>Section 4.4 of this report.</li> <li>ID 4A of this report.</li> <li>Appendix A of this report.</li> </ul>
<b>ActewAGL</b>			
7A	Clarification of new bulk water pumping station location, as agreed between ACTEW Corporation and the developer (since submission of EA).	<ul style="list-style-type: none"> <li>Through consultation with ACTEW, the ACT, and QCC, it has been agreed that the bulk water pumping station (located to the east of the ACTEW owned water main) shown in the EA will be moved to the west of the ACTEW owned water main, with the delivery main passing outside the Googong water treatment plant. This change has been driven by operational matters.</li> <li>Section 4.2 of this report addresses all environmental impacts associated the change of location, as well as provide relevant maps and information regarding the minor change to project design.</li> </ul>	<ul style="list-style-type: none"> <li>Section 4.2 of this report.</li> </ul>
<b>NSW Office of Environment and Heritage (OEH) (formerly the Department of Environment, Climate Change and Water (DECCW))</b>			
8A	The OEH recommends that the Risk management plan be drafted to comply with the requirements of the <i>Environmental Guidelines: Use of Effluent by Irrigation, DEC, 2004</i> .	<ul style="list-style-type: none"> <li>Statement of Commitment HH1 states that recycled water will meet all relevant guidelines. This includes the <i>Environmental Guidelines: Use of Effluent by Irrigation, DEC, 2004</i>.</li> <li>Statement of Commitment HH2 states that the Recycled water risk management plan (RWRMP) will be prepared in accordance with the <i>Australian National Guidelines for Water Recycling – Managing Health and Environmental Risks (2006)</i> and other relevant national and state guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitments HH1-HH2.</li> </ul>



ID	Comment	Response	Reference
8B	Concerned that adverse impact on the Pink-tailed Worm Lizard, and its habitat, could be caused by overflows from the sewage pumping station. The OEH recommends that any potential overflow of SPS2 be eliminated.	<ul style="list-style-type: none"> <li>Sections 11.1.4, 11.1.5 and 11.1.6 of the EA conclude that there will not be adverse impacts on the Pink-tailed Worm Lizard due to the Project.</li> <li>In addition: <ul style="list-style-type: none"> <li>Further survey and assessment has been undertaken for the species in late 2010 undertaken by Biosis Research (as part of the township's EPBC referral) since the EA was finalised. This has resulted in the proposal to create an <i>Aprasia</i> Conservation Area in the lower Montgomery Creek area for the long-term protection of this species. Experts in this species support this plan and have concluded that the proposal will result in a long-term benefit for the Pink-tailed Worm Lizard. Further detail is provided in Section 4.4 and also ID 4A of this report.</li> <li>As discussed in Section 5.3.2 of the MWH concept design report (Appendix B of the EA), sewage pumping station 2 (SPS2) will include an emergency storage of 560m<sup>3</sup>. This is in accordance with relevant guidelines (<i>Water Services Association of Australia Sewerage Code of Australia WSA02-2002</i>).</li> <li>Any overflows would be directed into the stormwater management system and then into the drainage lines. Drainage lines do not form suitable habitat for the Pink-tailed Worm Lizard, as discussed in Section 4.4 of this report, as they require drier environments, such as north-facing slopes.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Sections 11.1.4, 11.1.5 and 11.1.6 of the EA.</li> <li>Section 4.4 of this report.</li> <li>ID 4A of this report.</li> <li>Section 5.3.2 of Appendix B of the EA.</li> </ul>
8C	Notes that amendments of the Statement of Commitments in relation to Aboriginal Cultural Heritage (H1 and H2) are required.	<ul style="list-style-type: none"> <li>Statement of Commitments H1 and H2 have been amended in accordance with the OEH comments.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitments H1-H2.</li> </ul>
8D	Requests clarity around the submission of Aboriginal site recording forms.	<ul style="list-style-type: none"> <li>The Aboriginal site recording forms were submitted to the OEH (former DECCW) by Navin Officer Heritage Consultants in 2003 and 2010. Updated forms following the completion of the Aboriginal heritage assessment and report undertaken as part of the EA were submitted to the OEH on 15 March 2011 (copies have not been appended to this report, however, are available on request). These included updated forms for the previously known Aboriginal heritage items and also the four (4) new Aboriginal heritage items identified during the EA (GWTP1-GWTP4 as detailed in Table 12.1 of the EA).</li> </ul>	<ul style="list-style-type: none"> <li>Table 12.1 of the EA.</li> </ul>
8E	Requests that the Statement of Commitments refer to the four heritage sites and that these sites be avoided and protected from impact.	<ul style="list-style-type: none"> <li>Statement of Commitment H1 has been amended in accordance with this OEH comment.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment H1.</li> </ul>

ID	Comment	Response	Reference
8F	The OEH recommends the noise mitigation measures suggested in the EA be incorporated into any consent conditions for the project (eg via a Construction Environmental Management Plan).	<ul style="list-style-type: none"> <li>The noise mitigation and management measures outlined in Sections 13.4.4 (for construction) and 13.4.5 (for operation) of the EA and would be incorporated into a CEMP and/or OEMP for the Project, where appropriate.</li> <li>The Statement of Commitments N1, N1A and N2, detail the specific measures to be undertaken for the management of noise (and vibration) during the construction and operation of the Project.</li> </ul>	<ul style="list-style-type: none"> <li>Sections 13.4.4 and 13.4.5 of the EA.</li> <li>Statement of Commitment N1, N1A and N2.</li> </ul>
<b>Queanbeyan City Council (QCC)</b>			
9A	Draws attention to the QCC Tree Preservation Order.	<ul style="list-style-type: none"> <li>The QCC Tree Preservation Order requirements are not applicable under a Part 3A of the EP&amp;A Act assessment. As such, they are not relevant to areas subject to the Project.</li> <li>However, trees (particularly hollow-bearing trees, which are important for biodiversity reasons) would be retained, unless they are required to be removed for essential infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment F1.</li> </ul>
9B	Recommends that all construction and operational activities associated with Googong's water supply system and sewerage system follow the Council's <i>Development Specification – Googong</i> .	<ul style="list-style-type: none"> <li>The Project will comply with QCC's <i>Development Specification – Googong</i>.</li> <li>A new Statement of Commitment has been included as D3.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment D3.</li> </ul>
9C	Requests that management plans are prepared prior to construction.	<ul style="list-style-type: none"> <li>A CEMP would be prepared for the Project and would be finalised prior to commencement of construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment C1.</li> </ul>
9D	Requests submission for compliance certificate (water and sewer) under section 307 of the <i>NSW Water Management Act 2000</i> .	<ul style="list-style-type: none"> <li>The Project will comply with QCC's <i>Development Specification – Googong</i>. Compliance with this commitment will require the submission of an application for a Compliance Certificate under Section 307 of the <i>NSW Water Management Act 2000</i> to the water and wastewater authority (QCC).</li> </ul>	<ul style="list-style-type: none"> <li>Section 3.2 of the EA.</li> <li>Statement of Commitment D3.</li> </ul>

ID	Comment	Response	Reference
9E	Requests an acoustic report to determine that noise levels will not exceed the levels specified in the NSW Industrial Noise Policy 2000.	<ul style="list-style-type: none"> <li>An acoustic report prepared in accordance with the relevant NSW guidelines is included as Appendix J of the EA.</li> <li>This noise assessment concluded that the noise levels would not exceed the levels specified in the <i>NSW Industrial Noise Policy 2000</i>.</li> <li>Noise mitigation measures at the WRP include the placement of infrastructure away from receivers and enclosing noisy machinery in buildings.</li> </ul>	<ul style="list-style-type: none"> <li>Appendix J of the EA.</li> </ul>
9F	Requests a number of conditions and controls for site management and landscaping.	<ul style="list-style-type: none"> <li>Site management and landscaping measures to manage construction and operational impacts to soils would be included within the CEMP and OEMP.</li> </ul>	<ul style="list-style-type: none"> <li>Section 9.4 and 9.5 of the EA.</li> </ul>
9G	Requests that all measures are implemented to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development. This includes noise, hazardous and toxic materials.	<ul style="list-style-type: none"> <li>The CEMP and OEMP will include management and mitigation measures to be implemented during construction and operation activities to prevent and/or minimise environmental harm.</li> <li>Statement of Commitments C1, N1, R1 and R2 address these issues.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment C1, N1, R1 and R2.</li> </ul>
9H	Requests that all plumbing and drainage be carried out in accordance with the NSW <i>Local Government (General) Regulations 2005</i> .	<ul style="list-style-type: none"> <li>All plumbing and drainage would be carried out in accordance with the <i>NSW Local Government (General) Regulations 2005</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Section 5.3 of the EA.</li> </ul>
9I	Requests that title restrictions are pursuant to Section 88B of the NSW <i>Conveyancing Act 1919</i> .	<ul style="list-style-type: none"> <li>Where relevant, title restrictions would be pursuant to Section 88B of the NSW <i>Conveyancing Act 1919</i>. It is important to note that there would also be by-laws and precinct/community management statements applicable to Googong, which may be used where section 88B instruments were traditionally applied.</li> </ul>	<ul style="list-style-type: none"> <li>Section 2.3 of the EA.</li> </ul>

ID	Comment	Response	Reference
9J	Requests that QCC own and manage the utility services – WRP site, the sewerage pump station sites, the bulk water pump station site, and the water reservoir site – after the initial period of ownership and management by the proponent.	<ul style="list-style-type: none"> <li>Whilst ownership of the project falls outside the EA, the proponent can advise that CIC and QCC have now negotiated that the water cycle infrastructure will be gifted to QCC upon commissioning, under the provisions of the township's Voluntary Planning Agreement (VPA), which was adopted by QCC on 23 March 2011.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitments C1 and OP3.</li> </ul>
9K	Requests that all environmental risks be managed appropriately.	<ul style="list-style-type: none"> <li>Statement of Commitments R1 and R2 address the management of environmental risks during construction and operation.</li> <li>A further risk assessment will be undertaken during the development of the CEMP and OEMP.</li> <li>The CEMP and OEMP will include measures to manage environmental risks.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitments R1-R2.</li> </ul>
9L	Requests that the bulk water pump station be designed and constructed to the requirements of ActewAGL and must provide for supply from Googong or the Stromlo water treatment plants.	<ul style="list-style-type: none"> <li>The bulk water pumping station and the connection to the Googong to Stromlo water supply pipeline have been designed in consultation with ActewAGL.</li> <li>The designs shown in Appendix B of the EA identify that supply can be provided from either Googong or the Mt Stromlo water treatment plants.</li> <li>Section 4.2 of this report provides updated information regarding the bulk water pumping station.</li> </ul>	<ul style="list-style-type: none"> <li>Appendix B of the EA.</li> <li>Section 4.2 of this report.</li> </ul>

ID	Comment	Response	Reference
<b>NSW Office of Water</b>			
10A	Requests further assessment of the existing ecological value of the Googong Creek and its supporting riparian zone within the project site and downstream to the confluence with the Queanbeyan River.	<ul style="list-style-type: none"> <li>• Ecwise Environmental undertook an aquatic ecology assessment of Googong Creek and Queanbeyan River in 2008. This assessment related to a previous proposal for the discharge of excess recycled water, which involved constructing a pipeline directly into the lower Googong Creek. Further detail from this 2008 assessment is provided in Section 3.2 of this report.</li> <li>• Following this assessment, in consultation with the DPI and OEI and the Murrumbidgee Catchment Management Authority, and in accordance with the relevant NSW government guidelines, it was determined that the discharge of excess recycled water should be moved to the upper Googong Creek area.</li> <li>• This resulted in the following environmental benefits: <ul style="list-style-type: none"> <li>• Increased dilution of the excess recycled water.</li> <li>• Increased treatment of residual nutrients in the excess recycled water within the stormwater management system prior to leaving the site.</li> <li>• Increased ability to moderate flows, through discharging excess recycled water into the stormwater management system.</li> </ul> </li> <li>• Sections 3.2 and 3.3 of this report provide further assessment of aquatic ecology, considering the previous assessments undertaken and the stormwater management strategy.</li> <li>• Importantly, it should be reiterated here that the Part 3A EA is solely concerned with the excess recycled water component of the flows leaving the site through the stormwater management system.</li> </ul>	<ul style="list-style-type: none"> <li>• Sections 3.2 and 3.3 of this report.</li> </ul>
10B	Request further assessment of the ecological impacts due to the proposed modification to flows in Googong Creek.	<ul style="list-style-type: none"> <li>• As noted in ID 10A above, the Part 3A EA examines the excess recycled water component of the flows leaving the site through the stormwater management system.</li> <li>• Section 11.2 of the EA provides an assessment of the changes to water flow on the aquatic ecology of Googong Creek. This concludes that the changes to water flow as a result of the Project are unlikely to have a significant impact on aquatic ecology.</li> <li>• Sections 1.5.4 and 3.3 of this report discuss the stormwater management system that is assessed under Part 4 of the EP&amp;A Act.</li> </ul>	<ul style="list-style-type: none"> <li>• Sections 1.5.4 and 3.3 of this report.</li> <li>• Section 11.2 of the EA.</li> </ul>

ID	Comment	Response	Reference
10C	<p>Recommends that the impact on the Queanbeyan River be assessed in terms of flow regime (a range of percentile flows) and the associated ecological response.</p>	<ul style="list-style-type: none"> <li>The impacts for a range of percentile flows and the associated ecological impact for the Googong Creek and the Queanbeyan River were assessed in Sections 7.5.4 and 11.2 of the EA, respectively.</li> <li>The changes to the flow regime of the Queanbeyan River due to the predicted modification to the flows within Googong Creek has been assessed and detailed in Section 7.5.4 of the EA. Table 7.8 of the EA provides a summary of the predicted changes to the flow in Googong Creek at the completion of Stage 1 of the Project (ie the approval being sought for the Project under Part 3A of the EP&amp;A Act) and at ultimate development. The main impact to the existing flow of the Googong Creek would be an increased seasonal variation between the 50<sup>th</sup> and 80<sup>th</sup> percentile flows.</li> <li>Table 7.9 of the EA compares 50<sup>th</sup> percentile flow in the Queanbeyan River with the modelled existing and future (Stage 1 of the Project) flows in Googong Creek. Given the minor contribution of the 50<sup>th</sup> percentile flows from Googong Creek to the flows in the Queanbeyan River (less than 1 percent both pre- and post-development) assessment of impacts at other percentile flows was not undertaken.</li> <li>Water flow and water quality parameters would be managed and maintained via the monitoring and adaptive management program of the Queanbeyan River detailed in Section 7.3 of the EA and Statement of Commitment WQ4.</li> <li>The impacts of higher flows and flow variability on aquatic ecology in the Queanbeyan River due to the Project are assessed in Section 11.2 of the EA. In particular, Section 11.2.4, states that the assessment undertaken considered the following key issues: <ul style="list-style-type: none"> <li>Impacts of increased water flow on aquatic flora and fauna in the Queanbeyan River.</li> <li>Impacts of any changes in water quality on aquatic flora and fauna in the Queanbeyan River.</li> </ul> </li> <li>Given the available data a qualitative assessment of the impacts on aquatic ecology was undertaken. Regular monitoring at the confluence of Googong Creek and the Queanbeyan River will be undertaken throughout the Project to determine any impacts on aquatic ecology (Statement of Commitment A1).</li> </ul>	<ul style="list-style-type: none"> <li>Sections 7.3, 7.5.4, 11.2 and 11.2.4 and Tables 7.8 and 7.9 of the EA.</li> <li>Appendix D of this report.</li> <li>Statement of Commitments WQ4 and A1.</li> </ul>
		<ul style="list-style-type: none"> <li>In addition, Appendix D of this report provides a letter prepared by Brown Consulting, which states that whilst there will be modification to the hydrological regime of Googong Creek with more regular flows, these flows will contribute to improving the health of the downstream waterways including the Murrumbidgee and Murray Darling Basin.</li> </ul>	



ID	Comment	Response	Reference
10D	Requests that appropriate mitigating, monitoring and contingency measures be outlined.	<ul style="list-style-type: none"> <li>The EA details the monitoring activities and adaptive management approach that is proposed for the Project (refer to Section 7.3 of the EA). In particular, detailed monitoring will be undertaken for the first five (5) years of operation (that is, during Stage 1 of the Project), to inform the ultimate stage of the Project.</li> <li>Regular monitoring will include water quality and flows at several locations. This is likely to include: <ul style="list-style-type: none"> <li>At the outlet of the WRP.</li> <li>At Googong Dam Road (ie where stormwater flows leave the site).</li> <li>At the confluence of Googong Creek and the Queanbeyan River.</li> </ul> </li> <li>The EA details mitigation and contingency measures that would be informed by the monitoring noted above. These would be included and further elaborated in the CEMP and OEMP for the Project, which would be developed during the detailed design phase (refer to the Statement of Commitment WQ4).</li> </ul>	<ul style="list-style-type: none"> <li>Section 7.3 of the EA.</li> <li>Statement of Commitment WQ4.</li> </ul>
10E	Consider the impacts to the flow regime and ecology of Montgomery Creek. Confirmation is requested as to why this has not been addressed within the EA in consideration of the concept plan status and overall proposed assessment of the Googong Township development.	<ul style="list-style-type: none"> <li>Impacts of the discharge of excess recycled water on the flow regime and ecology of Montgomery Creek due to the Project being assessed under Part 3A of the EP&amp;A Act are not possible. All these discharges from the WRP will be to the Googong Creek catchment (as shown in Figure 4 of this report), which flows directly to the Queanbeyan River. No flows will be discharged to the catchment of Montgomery Creek.</li> <li>Impacts on Montgomery Creek have been considered and assessed separately under Part 4 of the EP&amp;A Act, as part of the assessment of the stormwater management strategy.</li> <li>The masterplan for the Googong township has considered the Montgomery Creek corridor in detail and includes the restoration of the original 'chain of ponds' creek form, which has been altered by the installation of farm dams during the past agricultural uses of the site.</li> </ul>	<ul style="list-style-type: none"> <li>Figure 4 of this report.</li> </ul>



ID	Comment	Response	Reference
10F	Consider the existence of and potential impact to any water users who may extract water from Googong Creek or the Queanbeyan River.	<ul style="list-style-type: none"> <li>As noted in ID 10A above, the Part 3A EA is solely concerned with the excess recycled water component of the flows leaving the site through the stormwater management system.</li> <li>There are no existing licenced water users who extract water from Googong Creek or the Queanbeyan River. However, there are existing (riparian rights) users of surface water from the Queanbeyan River downstream of the Googong township. These users are generally rural properties located on the western side of the river on Wickerslack Lane.</li> <li>The EA concluded (Sections 7.5.3 and 7.5.4) that the water quality in the Queanbeyan River would be maintained or improved throughout the operation of the Project. Further clarification of the modelling and analytical assessment undertaken by Brown Consulting (Appendix D of this report) supports this conclusion.</li> <li>Furthermore, any potential human health risks associated with the discharge of excess recycled water and the use of recycled water within the Googong township will be assessed further as part of the Recycled Water Risk Management Plan (RWRMP) that will be prepared during the detailed design phase (refer to Statement of Commitment HH2).</li> </ul>	<ul style="list-style-type: none"> <li>Sections 7.5.3 and 7.5.4 of the EA.</li> <li>Appendix D of this report.</li> <li>Statement of Commitment HH2.</li> <li>ID 10A of this report.</li> </ul>

ID	Comment	Response	Reference
10G	<p>Supports the recommended further groundwater assessment items noted in Table E1 of the Appendix E (of the EA). However, the NSW Office of Water (NOW) highlights a risk associated with delaying further assessment.</p>	<ul style="list-style-type: none"> <li>• The recommendations noted in Table E1 of Appendix E of the EA have been developed in consultation with NSW Office of Water (Tim Baker). This includes the proposed timing of activities.</li> <li>• The EA (Chapter 10) assessed the impacts of the Project on groundwater during both construction and operation and concluded that these impacts would be minor. The groundwater related risks are: <ul style="list-style-type: none"> <li>• Isolated water logging of soils.</li> <li>• Changes to the groundwater regime.</li> <li>• Groundwater salinity risks, such as the lateral migration of salts in the shallow zone, accumulation of mobile salts at waterways and the discharge of saline water into streams.</li> <li>• The decline in recharge of groundwater, such as the drying of perched water tables beneath developed portions of the site, lowering of the water table and possible drying up of shallow bores in the area and a potential increase in the total dissolved solids content of the groundwater.</li> </ul> </li> <li>• It is considered that the risks (or impacts) associated with approving Stage 1 of the Project with the current level of groundwater assessment are minimal due to: <ul style="list-style-type: none"> <li>• Changes to infiltration and groundwater recharge regime are likely to occur as a result of the approved Googong township – that is, changing the land use from agricultural to urban, which the NSW Government approved in the 2009 rezoning.</li> <li>• Changes to groundwater recharge are going to be a balance of reduced permeability of the landscape (likely decrease in recharge) and increased irrigation of areas of the township (likely increase in recharge). This can only be established when people are living in the township.</li> <li>• The timing of further groundwater assessment is part of an overall program of further monitoring and assessment, which is coordinated with the staging of the construction of the township.</li> <li>• The groundwater assessment results will need to be considered in conjunction with measured (rather than modelled) water cycle parameters, which can only be collected after residents are living in the township.</li> <li>• The staging of the project allows for the incorporation of monitoring results and consequent recommendations into future stages, and overall IWC operation.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 10, Sections 10.7 and 10.8 of the EA.</li> <li>• Table 12 of this report.</li> <li>• Table E1 of Appendix E of the EA.</li> <li>• Statement of Commitments G3, G6, G7 and G8.</li> </ul>

ID	Comment	Response	Reference
		<ul style="list-style-type: none"> <li>The proposed monitoring and adaptive management program (detailed in Section 10.7 of the EA and Table 12 of this report) has been developed to allow base levels to be established and, as a result, targets for the Project to be determined. Given the impacts are likely to be minor (as Section 10.8 of the EA concludes), this monitoring and adaptation approach is considered appropriate and will promote best practice water management. The timing for the program will commence as soon as the Project is approved and will continue through operations. Statement of Commitments G3, G6, G7 and G8 detail the monitoring to be undertaken for the Project.</li> <li>Statement of Commitment G8 provides that the further groundwater assessment as discussed in the EA (Section 10.7 and the timing of which is specified in Table 12 of this report) should be included within any conditions of approval for the Project.</li> </ul>	

## 2.4 Response to community submissions

**Table 3** Response to community submissions received by the DPI in December 2010

ID	Comment	Response	Reference
<b>Wickerslack Lane resident #1</b>			
5A	Recommends that greater attention should be given to the details of stormwater management, as the Project is intimately associated with the proposals for stormwater management.	<ul style="list-style-type: none"> <li>Further information and detail on stormwater management is provided in Section 3.3 of this report.</li> <li>It is noted, however, that the stormwater management system is assessed and approved under Part 4 of the EP&amp;A Act.</li> </ul>	<ul style="list-style-type: none"> <li>Section 3.3 of this report.</li> </ul>
5B	Notes that the geological and geomorphological assessments for the EA are literature reviews, and that no detailed surveys appear to have been done to identify special aspects that may have important implications for this proposal.	<ul style="list-style-type: none"> <li>A Recycled water irrigation land capability assessment (refer to Appendix D of the EA) was undertaken by Agsol and a Groundwater assessment (Appendix E of the EA) was undertaken by CMJA. Both reports discussed soils, geology and geomorphology in detail and assessed the potential impacts relating to the Project.</li> <li>Agsol undertook a field soil survey and soil testing and analysis in 2009 (refer to Chapter 6 of Appendix D of the EA). These detailed results lead to the conclusion that the site was suitable for recycled water application.</li> <li>The CMJA report (refer to Appendix E of the EA) summarised the geological landscape of the area and included field verification of desktop information.</li> <li>It is noted that further geotechnical investigations will be undertaken prior to construction of pipelines and other permanent infrastructure. Further groundwater studies (refer to Table 12 of this report) will also identify more detailed geological and geomorphological information.</li> </ul>	<ul style="list-style-type: none"> <li>Appendix E of the EA.</li> <li>Chapter 6 of Appendix D of the EA.</li> <li>Table 12 of this report.</li> <li>Statement of Commitment G3.</li> </ul>

ID	Comment	Response	Reference
5C	<p>Notes that the aquatic ecology assessment is extremely important to the impact of the discharges on the Queanbeyan River. No detailed monitoring of the river ecology appears to have been undertaken and to be proposed for the future.</p>	<ul style="list-style-type: none"> <li>Statement of Commitment A1 ensures that a detailed water quality and aquatic ecology monitoring program will be developed and implemented. The monitoring program will include siting of an aquatic ecology monitoring station at the junction of Googong Creek and the Queanbeyan River (refer to Figure 7.3 of the EA) to ensure viable comparison with historical and other recent river ecology data.</li> <li>Further detail regarding the preliminary aquatic ecology assessment conducted by Ecowise Environmental in 2008 is summarised in Section 3.2 of this report. This preliminary assessment concluded that there were potential ecological risks associated with the discharge of excess recycled water directly into Queanbeyan River. As a result of this conclusion and considering the relevant NSW guidelines, the discharge point was re-located to within the township, so that further mitigation of potential impacts could occur through discharge into the stormwater management system. Additional mitigation would occur through the attenuation of flows through the stormwater management system and Googong Creek before they reach the Queanbeyan River. It is noted (in Sections 7.5.3 and 7.6 of the EA) that the Project would result in water quality with similar nutrient levels and lower suspended solids levels than the ambient conditions in the Queanbeyan River. With or without excess recycled water flows, the stormwater quality leaving the Googong township site below the Googong Dam Road will meet all the applicable water quality targets (as described by Brown Consulting in Appendix D of this report).</li> <li>As described in Section 3.2.7 of this report a monitoring and adaptive management regime is proposed. A water quality and aquatic ecology monitoring program to monitor Googong Creek and the Queanbeyan River will be established prior to construction, and will be maintained throughout construction and operation to ensure that the existing ecological health of both watercourses is maintained. Statement of Commitments OP1 and WQ4 relate to this monitoring program.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitments A1, OP1 and WQ4.</li> <li>Sections 7.5.3 and 7.5 and Figure 7.3 of the EA.</li> <li>Section 3.2 of this report.</li> <li>Appendix D of this report.</li> </ul>

ID	Comment	Response	Reference
5D	Notes that there is a need to ensure that the discharge from Googong does not further degrade the Queanbeyan River ecosystem, and to ensure that relative impacts from Googong Dam discharge and Googong Township discharge can be distinguished in the monitoring program.	<ul style="list-style-type: none"> <li>Statement of Commitment A1 ensures that a detailed water quality and aquatic ecology monitoring program will be developed and implemented at the confluence of Googong Creek and the Queanbeyan River.</li> <li>The proposed monitoring at the confluence of Googong Creek and the Queanbeyan River, combined with the existing monitoring locations upstream and downstream of this confluence, will enable the flows and water quality from Googong Creek and Googong Dam discharge to be distinguished.</li> <li>As requested by NSW government agencies, the ambient water quality would be maintained or improved.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment A1.</li> </ul>
5E	Comments on the lack of surface and groundwater flow to underpin the hydrological modelling, which seems to be entirely computer based. Specifically there is no study of current discharges from Googong Creek, and the impacts of increased discharges through the creek as a consequence of the Googong Township Development.	<ul style="list-style-type: none"> <li>The assessment of current and predicted flow in Googong Creek is presented in Section 7.5 of the EA. It relies on historical rainfall data and MUSIC model scenarios.</li> <li>It is noted in the EA that due to limited existing data on surface water flow in the Queanbeyan River and Googong Creek, it is important that monitoring commences 12 months prior to commissioning of the WRP.</li> <li>Site specific data and current flows of the Googong Creek will be collected under the proposed monitoring program (Statement of Commitment A1).</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment A1.</li> <li>Section 7.5 of the EA.</li> </ul>

ID	Comment	Response	Reference
5F	<p>Raises concern that important groundwater/surface water studies have been undertaken in a time of drought. The recent rains and flooding have underscored the importance of groundwater recharge and discharge from surface aquifers dominated by fracture porosity, and flash flood regimes in both the creeks and the Queanbeyan River. These situations do not seem to have been adequately considered in the proposal.</p>	<ul style="list-style-type: none"> <li>• A Groundwater impact assessment (detailed in Section 10.2 of the EA) was undertaken to determine the impact of the project on the following groundwater-related risks: <ul style="list-style-type: none"> <li>• Isolated water logging of soils.</li> <li>• Changes to the groundwater regime.</li> <li>• Groundwater salinity risks, such as the lateral migration of salts in the shallow zone, accumulation of mobile salts at waterways and the discharge of saline water into streams.</li> <li>• The decline in recharge of groundwater, such as the drying of perched water tables beneath developed portions of the site, lowering of the water table and possible drying up of shallow bores in the area and a potential increase in the total dissolved solids content of the groundwater.</li> </ul> </li> <li>• Sections 10.4 and 10.5 of the EA considers that the risks (or impacts) associated with approving Stage 1 of the Project with the current level of groundwater assessment are low due to: <ul style="list-style-type: none"> <li>• Changes to infiltration and groundwater recharge regime are likely to occur as a result of the approved Googong township – that is, changing the land use from agricultural to urban, which the NSW Government approved in the 2009 rezoning.</li> <li>• Changes to groundwater recharge are going to be a balance of reduced permeability of the landscape (likely decrease in recharge) and increased irrigation of areas of the township (likely increase in recharge). This can only be established when people are living in the township.</li> <li>• The timing of further groundwater assessment is part of an overall program of further monitoring and assessment, which is coordinated with the staging of the construction of the township. Table 12 of this report provides the updated timing of the additional groundwater studies to be undertaken.</li> <li>• The groundwater assessment results will need to be considered in conjunction with measured (rather than modelled) water cycle parameters, which can only be collected after residents are living in the township.</li> <li>• The staging of the project over 25 years allows for the incorporation of monitoring results and consequent recommendations into future stages, and overall integrated water cycle operation.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Sections 10.2, 10.4 and 10.5 of the EA.</li> <li>• Section 1.5.4 and Table 12 of this report.</li> <li>• Statement of Commitments G1–G8.</li> </ul>



ID	Comment	Response	Reference
		<ul style="list-style-type: none"> <li>Statement of Commitments G1-G8 provide that groundwater quality will be closely monitored as part of the proposed monitoring and adaptive management program (specified in Statement of Commitment G8) to ensure that adverse impacts are minimised. These commitments cover groundwater recharge, contamination, water quality, drainage, mounding, waterlogging and salinity (particularly related to impacts on soil and plant growth). The groundwater monitoring and adaptive management program would be undertaken prior to and during construction and operation of the Project to further investigate the groundwater environment, potential changes to recharge, and the likelihood of long-term impacts.</li> <li>In response to flash flooding and other surface water aspects of the township, these are assessed separately under Part 4 of the EP&amp;A Act (refer to Section 1.5.4 of this report).</li> </ul>	
5G	<p>Raises concern that the leakage of raw sewage will degrade water quality in the Queanbeyan River during times of high flow through the system.</p>	<ul style="list-style-type: none"> <li>The Project assessed under Part 3A of the EP&amp;A Act includes the sewage pumping stations and rising mains and the WRP described in Section 5.3.2 and 5.3.3 of the EA, respectively. Other components of the sewerage system (ie the reticulation mains) are being assessed under Part 4 of the EP&amp;A Act.</li> <li>The risk of leakage of raw sewage into the catchment of the Queanbeyan River due to the operation of the Project is considered to be very low. The system is designed as a reduced infiltration sewerage system so leakage of raw sewage during dry weather is unlikely. The pumping stations and the WRP have been designed to operate effectively during wet weather and emergency events (such as power failures). For example, they will include capacity for emergency storage of sewage in accordance with agency requirements.</li> <li>The proposed monitoring and adaptive management program (Statement of Commitment G8 and WQ4) during the construction and operation of the Project will ensure water quality in the Queanbeyan River is maintained.</li> </ul>	<ul style="list-style-type: none"> <li>Sections 5.3.2 and 5.3.3 and of the EA.</li> <li>Statement of Commitments G8 and WQ4.</li> </ul>

ID	Comment	Response	Reference
<b>Wickerslack Lane resident(s) #2</b>			
6A	Seeks clarification as to why the 75 <sup>th</sup> percentile and maximum faecal coliform concentrations presented in Table 7.2 of the EA for the Wickerslack Lane monitoring site are the same.	<ul style="list-style-type: none"> <li>Table 7.2 of the EA provides water quality information for the three (3) monitoring sites (QBN 704, QBN 703 and QBN 769) on the Queanbeyan River. These sites are shown in Figure 3 of this report. This water quality information was obtained from extracted data prepared by Ecowise Environmental (as part of the preliminary assessment report undertaken in 2008) for the period 1994 – 2008 for ACTEW Corporation. Only one (1) faecal coliform sample was taken at that site during the sampling period. Therefore, the 75<sup>th</sup> percentile and maximum values are the same.</li> </ul>	<ul style="list-style-type: none"> <li>Table 7.2 of the EA.</li> <li>Figure 3 of this report.</li> </ul>
6B	Seeks clarification regarding the data presented in the EA relating to aquatic ecology – specifically, seeking information about macro invertebrates (such as their composition) that was not provided in the EA.	<ul style="list-style-type: none"> <li>Section 3.2 of this report provides further information on the macro invertebrate analysis that was undertaken during the assessment for the Project. It includes information on the outcomes of the aquatic health and habitat assessments for the Queanbeyan River.</li> <li>Macro invertebrate ecology is the most appropriate indicator to measure the ecological health of the river and was used as a basis of the assessment. This is in accordance with industry standards for measuring river health. Macro invertebrate ecology is measured through the observed/ expected (O/E) ratio of macro invertebrate composition and abundance. It is assessed using the Rapid Bio-assessment protocols defined in the <i>Australian River Assessment System</i> (referred to as the AusRivas), <i>Sampling and Processing Manual</i>. This is a standard method for assessing the ecological health of freshwaters through biological monitoring and habitat assessment. The model predicted the macro invertebrates expected to occur at the test site on the basis of its environmental attributes. When a test site is sampled, the observations are compared to the model's expectations for that habitat and the resulting O/E ratio is regarded as the integrated indicator of river health. The score is then used to categorise rivers into bands to describe the overall condition and severity of the disturbance.</li> <li>The results of the assessment are presented in Section 3.2.3 of this report.</li> </ul>	<ul style="list-style-type: none"> <li>Sections 3.2 and 3.2.3 of this report.</li> </ul>

ID	Comment	Response	Reference
6C	Considers that Tables 11.4 and 11.5 in the EA do not provide adequate baseline data.	<ul style="list-style-type: none"> <li>Section 11.2 of the EA provides information on the aquatic ecology assessment undertaken during the preparation of the EA. Tables 11.4 and 11.5 use the AusRivas modelling to provide the observed over the expected ratios. These ratios have been used to describe the baseline health of the Queanbeyan River.</li> <li>Table 11.4 has been updated as Table 7 in Section 3.2 of this report. This section provides further clarification of the aquatic ecology assessment undertaken for the EA. It concludes that the Project, as also detailed in Section 11.2.4 of the EA, will not significantly impact on the aquatic ecology of the Queanbeyan River.</li> <li>A detailed monitoring program will be undertaken to assess the potential impacts of the Project in the Queanbeyan River (including water quality, flow, fish migration, macrophytes and macro invertebrate communities) prior to and during construction and operation of the Project. This program will enhance the available baseline data and is addressed by the Statement of Commitment WQ4.</li> </ul>	<ul style="list-style-type: none"> <li>Section 11.2, Tables 11.4 and 11.5 of the EA.</li> <li>Section 3.2 and Table 7 of this report.</li> <li>Statement of Commitment WQ4.</li> </ul>
6D	Comments that over 40 years there has been a shift in the ecology since construction of the Googong Dam. Comments that the water released from the Dam has been free of faecal and urban stormwater contamination.	<ul style="list-style-type: none"> <li>Water released from the Googong Dam has been monitored at Site QBN 704 (refer to Figure 7.3 of the EA). Table 7.2 of the EA provides that faecal coliforms at this site, and further downstream at the Wickerslack Lane Site (QBN 703) are low.</li> <li>As required by the NSW Government, the ambient water quality in the Queanbeyan River will be maintained throughout the construction and operation of the Project. As noted in Sections 3.2 and 3.3 of this report, and in Appendix D of this report, for some parameters it is likely that the water quality downstream of the site would be improved during operation of the Project.</li> </ul>	<ul style="list-style-type: none"> <li>Figure 7.3 and Table 7.2 of the EA.</li> <li>Sections 3.2 and 3.3 of this report.</li> <li>Appendix D of this report</li> </ul>
6E	Seeks clarification about the specific data (parameters) to be collected at the proposed monitoring station at the junction of Googong Creek and Queanbeyan River and the timing of commencement of monitoring.	<ul style="list-style-type: none"> <li>The new monitoring station will commence collection of relevant water quality and flow data 12 months prior to commissioning of the WRP (Statement of Commitment WQ4).</li> <li>Data proposed to be collected includes: biological oxygen demand, total suspended solids (turbidity), total nitrogen, ammonia, total phosphorus, total dissolved solids (salts), faecal coliforms, pH, free chlorine (residual) and oil/grease. These parameters would be confirmed with OEH during the detailed design phase of the Project.</li> <li>Data collection would be undertaken by a suitably qualified specialist under contract to the operator of the WRP (initially under the direction of CIC and then QCC).</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment WQ4.</li> </ul>

ID	Comment	Response	Reference
6F	Seeks clarification regarding whether the Project is likely to increase the spread of weeds downstream of the site and, if so, what mitigation measures are proposed and who would undertake them.	<ul style="list-style-type: none"> <li>In relation to the water cycle project infrastructure construction and operation, weed management will be undertaken and detailed in the CEMP and OEMP. This will ensure that weeds are both managed within the areas subject to the Project and prevented, as practically as possible, from leaving the infrastructure sites.</li> </ul>	<ul style="list-style-type: none"> <li>Appendix F of the EA.</li> <li>Statement of Commitment F1.</li> </ul>
6G	Seeks confirmation that there will be adequate funding available to complete the construction of all stages of the WRP and to operate the system.	<ul style="list-style-type: none"> <li>The staging of the WRP is discussed in Section 5.3.3 of the EA (in particular, refer to pages 68 and 69, Table 5.4 and Figure 5.12). Operation of the WRP is discussed in Section 5.5.5 of the EA.</li> <li>Detailed information regarding the design, staging and operation of the WRP is provided in the Concept Design Report prepared by MWH (Appendix B of the EA – refer to Sections 1.6, 2.5, 6.2 and 6.14).</li> <li>The WRP (as well as other water cycle infrastructure) will be staged in accordance with the growth of the township. This allows the costs for the infrastructure to be spread over several years.</li> <li>The business case for the Project has been prepared and it is expected to be funded through standard financial mechanisms available to developers. The costs of the Project are incorporated into the Voluntary Planning Agreement for the township, which has been recently accepted by QCC.</li> </ul>	<ul style="list-style-type: none"> <li>Sections 5.3.3 and 5.5.5, Table 5.4 and Figure 5.12 of the EA.</li> <li>Appendix B of the EA.</li> </ul>
6H	Seeks confirmation that adequate management and funding will be available with regards to emergency management for the WRP and system.	<ul style="list-style-type: none"> <li>Statement of Commitment R2 addresses this comment.</li> <li>Emergency management plans would be prepared for all aspects relating to emergency and incident management and response, and would be included in the preparation of the CEMP and OEMP for the Project.</li> </ul>	<ul style="list-style-type: none"> <li>Statement of Commitment R2.</li> </ul>

ID	Comment	Response	Reference
61	<p>Seeks confirmation that adequate treatment, management and monitoring would be undertaken with regards to potential levels of pathogens and chemicals in stormwater (including excess recycled water) entering the Googong Creek and Queanbeyan River.</p>	<ul style="list-style-type: none"> <li>A recycled water discharge licence will be sought for the Project and would be issued and administered by NSW Office of Environment and Heritage (OEH) (the former Department of Environment, Climate Change and Water). It would provide 90th percentile concentration limits for all pathogens and chemicals leaving the WRP.</li> <li>MWH have confirmed that the WRP treatment process will achieve the OEH's proposed licence limits (refer to Appendix B of this report).</li> <li>In addition, the OEH also proposes to establish maximum concentration limits (on recycled water quality) after suitably reliable performance data for the WRP is available after commissioning.</li> <li>The future operator of the WRP (QCC) would be required to monitor the water quality and ensure that these licence conditions are met.</li> <li>Risks from the operation of the Project would be mitigated through the preparation of a Recycled Water Risk Management Plan (Statement of Commitment HH2). The plan would be prepared in accordance with the <i>Australian National Guidelines for Water Recycling – Managing Health and Environmental Risks 2006</i> and will identify the significant human and environmental health risks and require validation, operational and verification monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Appendix B of this report.</li> <li>Statement of Commitment HH2.</li> </ul>

ID	Comment	Response	Reference
6J	Requested clarification on who will be responsible for the storage of chemicals at the WRP and ensuring that staff are trained to respond to emergency situations (eg bushfire or severe storm events).	<ul style="list-style-type: none"> <li>• QCC will be responsible for the long-term operation of the WRP. This will include the management of chemicals stored on-site and the training of staff in chemical storage and handling and emergency response.</li> <li>• Section 13.5.5 of the EA assesses the chemicals to be used during the operation of the WRP. Potential hazards and risks associated with the use of chemicals at the WRP are associated with spillage of chemicals during operations and maintenance activities or during emergency situations.</li> <li>• As required by Statement of Commitment R1, measures to mitigate these risks are: <ul style="list-style-type: none"> <li>• The storing of quantities on the site within the relevant thresholds.</li> <li>• Undertaking activities in accordance with the relevant Material Safety Data Sheets.</li> <li>• Installing bunded areas for the storage and delivery of chemicals in accordance with Australian Standards and the relevant Material Safety Data Sheets.</li> <li>• Developing and implementing appropriate procedures for delivering, handling and accidental spills of chemicals.</li> </ul> </li> <li>• Furthermore, Statement of Commitment R2 requires the preparation of the OEMP and the Recycled Water Risk Management Plan. These documents will outline the management of emergency situations for all key water cycle infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• Section 13.5.5 of the EA.</li> <li>• Statement of Commitments R1 and R2.</li> </ul>
6K	Seeks confirmation that the data used in the water flow modelling was the most appropriate for the site and would adequately account for storm events.	<ul style="list-style-type: none"> <li>• Water quality and flow modelling for Googong Creek and Queanbeyan River is based on 40 years of rainfall data sourced from the Bureau of Meteorology. The Recycled Water Irrigation Land Capability Assessment (Appendix D of the EA) and the Stormwater Strategy (Appendix M of the EA) have been modelled using the same set of rainfall data. This ensures that all modelling takes into account a range of weather conditions and patterns.</li> <li>• As noted in Appendix D of this report, relevant standards and guidelines have been used in the stormwater modelling, as well as CSIRO information to take into account the potential effects of climate change.</li> </ul>	<ul style="list-style-type: none"> <li>• Appendix D of the EA.</li> <li>• Appendix M of the EA.</li> <li>• Appendix D of this report.</li> </ul>



ID	Comment	Response	Reference
6L	Raised concerns that the Project could result in increased erosion and sedimentation during construction, resulting in potential impacts downstream on Queanbeyan River.	<ul style="list-style-type: none"> <li>Sections 9.4 and 9.5 of the EA relate to the management of soil erosion and sedimentation risks during construction and operation.</li> <li>The CEMP and OEMP will include detailed management measures related to sediment and erosion control.</li> <li>The EA concludes that the construction of the Project is unlikely to result in any erosion or sedimentation impacts.</li> <li>As identified in Appendix D of this report, modelling shows that the stormwater management system would meet applicable turbidity targets.</li> </ul>	<ul style="list-style-type: none"> <li>Sections 9.4 and 9.5 of the EA.</li> <li>Statement of Commitments WQ3 and WQ5.</li> <li>Appendix D of this report.</li> </ul>
6M	Seeks clarification regarding the risk assessment for water quality (during the operation phase) in the EA.	<ul style="list-style-type: none"> <li>The risk assessment undertaken as part of the EA (Table 15.1) indicates that changes in water quality during the operation phase after mitigation are unlikely or rare, with an overall rating of moderate or low.</li> </ul>	<ul style="list-style-type: none"> <li>Table 15.1 of the EA.</li> </ul>
6N	Seeks clarification regarding whether the Queanbeyan River would become unsuitable for household and recreational use as a result of the Project.	<ul style="list-style-type: none"> <li>In accordance with NSW Government requirements, the ambient water quality of the Queanbeyan River will be maintained and there will be no negative impact to the ambient conditions of the river as a result of the Project.</li> <li>It should be noted that the existing water in the Queanbeyan River at Wickerstack Lane is not currently treated and potentially includes water from the entire catchment (about 90,000ha), which includes a wide range of land uses.</li> <li>The stormwater from the Googong township (about 780ha or 0.87% of the total 90,000ha Queanbeyan River catchment), including excess recycled water (which is treated to a very high standard in the WRP), will be treated using a series of stormwater management measures, such as swales and ponds prior to leaving the site in a controlled manner. The stormwater and recycled water quality will be required to meet relevant guidelines and licences.</li> </ul>	<ul style="list-style-type: none"> <li>Section 7.5 of the EA.</li> </ul>
6O	Recommends that the objectives for water quality and environmental flows (Under section 4 of the Management Plan of the Queanbeyan River Corridor published in 1999) are followed as a part of the Googong Township.	<ul style="list-style-type: none"> <li>QCC are currently seeking to engage a consultant to revise the <i>Queanbeyan River Corridor Plan of Management</i>. QCC propose to release a draft for public comment in October 2011.</li> <li>It is recommended that, in revising this Plan of Management, QCC work with CIC and ACTEW Corporation in developing appropriate future water quality and environmental flow objectives for the Queanbeyan River downstream of the Googong Dam. This should consider that both the Googong Dam and the Googong township stormwater management system are able to manage flows.</li> </ul>	<ul style="list-style-type: none"> <li>Section 16.2.1 of the EA.</li> </ul>

## 2.5 Response to submissions received in April 2011

**Table 4** Response to the additional community submissions received through DPI in April 2011

ID	Comment	Response	Reference
<b>Wickerslack Lane Resident #3</b>			
11A	Seeks clarification regarding the use of a membrane bioreactor (MBR) treatment system with chlorination and ultraviolet treatment, rather than using a reverse osmosis system.	<p>An extensive planning and concept design process was undertaken to select the treatment process presented in the Part 3A EA. The five-stage membrane bioreactor (MBR) treatment system was selected over other options because:</p> <ul style="list-style-type: none"> <li>The MBR process was able to meet the water quality requirements to enable unrestricted non-potable recycled water use within the Googong township and discharge to the environment.</li> <li>The MBR process would not create waste products that are difficult to dispose of, such as a saline solution that is produced by a reverse osmosis system.</li> </ul> <p>Sections 4.3.1, 4.5.1 and 4.6 of the EA discuss the alternatives considered and the reasons behind the selection of the proposed system in more detail.</p>	<ul style="list-style-type: none"> <li>Sections 4.3.1, 4.5.1 and 4.6 of the EA.</li> </ul>
11B	Seeks confirmation that the excess recycled water discharged into the stormwater management system (and then into Googong Creek and Queanbeyan River) is of suitable water quality to meet human health standards.	<p>The excess recycled water that would be discharged into the stormwater management system within the Googong Creek catchment is the same recycled water that would be used throughout the Googong township (except that it would not be chlorinated).</p> <p>It will be classed as 'unrestricted non-potable re-use', which is the highest category of recycled water quality and means that it must meet relevant human health standards. For example, it can be used for outdoor irrigation, toilet flushing and clothes washing.</p> <p>The discharge from the WRP will be closely monitored to ensure that it is meeting human health and environmental standards.</p>	<ul style="list-style-type: none"> <li>Section 4.3 of this report.</li> <li>Chapter 8 of the EA.</li> </ul>

ID	Comment	Response	Reference
11C	<p>Proposes that, if the discharge of excess recycled water is likely to result in human health impacts downstream, a source of potable water or rainwater should be supplied to Wickerslack Lane residents who currently extract water from the Queanbeyan River.</p>	<p>It is understood from their submission that this Wickerslack Lane resident, who extracts water from the Queanbeyan River, currently uses the river water for cooking, washing dishes, bathing and teeth cleaning (potable uses), and that they are concerned that their riparian rights to draw water for domestic and stock uses will be affected as a result of Googong's treatment plant and excess recycled water discharges via the township's stormwater system.</p> <p>In terms of the current suitable uses of water from the Queanbeyan River below the Googong Dam; ACTEW notes that: '<i>... Googong dam is in an occupied rural catchment which includes farmlands and small communities, the water quality from this catchment can be variable and requires extensive treatment</i>' (<a href="http://www.actewagl.com.au/water/treatment">www.actewagl.com.au/water/treatment</a>). To that end, ACTEW operates a treatment plant immediately below the Googong Dam to treat water to potable standard prior to regional distribution via the mains pipe network. The water in the River below the dam does not go through this treatment process.</p> <p>The NSW Government and Queanbeyan City Council stipulate that the ambient (non-potable) water quality in the Queanbeyan River must be maintained. This is the overarching design requirement for the project to meet, which indirectly also protects the riparian rights of this resident, as well as other residents (as noted in Submission 12) who use the water for non-potable applications.</p> <p>Googong's water treatment and recycling plant meets the highest health, safety and environmental standards, and stormwater releases are also subject to strict regulations. Any water discharged from the plant into the Queanbeyan River will be treated to a Class A standard (in accordance with federal and NSW government regulations), which is designed for unrestricted household non-potable use and human contact (refer to response in ID 11B).</p> <p>The water will also be used as a non-potable domestic water source throughout the Googong township.</p> <p>Given the overarching requirement for the health of the river system to be maintained, the riparian rights of residents will not be impinged by any excess recycled water discharges from the Googong township.</p> <p>Therefore, the proponent does not need to provide an additional source of potable water for residents of Wickerslack Lane.</p>	<ul style="list-style-type: none"> <li>• Chapter 8 of the EA.</li> <li>• Section 3.3 of this report.</li> </ul>

ID	Comment	Response	Reference
11D	Recommends that outflow and environmental flows from Googong Dam continue, and that further flows are released from the Dam if required.	The proponent will consult with ACTEW and ActewAGL regarding long-term environmental flows in the Queanbeyan River (refer to Statement of Commitment CS1). It is agreed that a coordinated approach to flow management, where the presence of Googong Dam and the township are both considered. However, the environmental flows from the Googong Dam are ultimately outside of the scope of the Part 3A environmental assessment and approval process. This is the responsibility of ACTEW Corporation and ActewAGL in consultation with the NSW Government authorities.	<ul style="list-style-type: none"> <li>Statement of Commitment CS1.</li> </ul>
11E	Seeks confirmation about the stormwater management system proposed for Googong Creek, specifically regarding the potential for turbidity to occur downstream during periods of high flow.	<p>The occurrence of increased turbidity in Googong Creek during periods of high flow is unlikely due to:</p> <ul style="list-style-type: none"> <li>The stormwater management system has been designed to minimise the risk of environmental impacts downstream.</li> <li>The stormwater management system proposed for Googong Creek is likely to decrease the levels of turbidity, compared to the existing situation. Modelling also confirmed that the proposed water sensitive urban design measures contained as part of the stormwater management system would be very effective in reducing turbidity (total suspended solids).</li> <li>The stormwater management system has been designed in accordance with the relevant government and industry guidelines, which mandate that peak flows must be the same pre- and post-development. Therefore, periods of high flow (those most likely to result in erosion and turbidity) downstream of the site would be equivalent to the current situation.</li> </ul> <p>Section 3.3 and Appendix D of this report discuss this in more detail.</p>	<ul style="list-style-type: none"> <li>Section 3.3 of this report.</li> <li>Appendix D of this report.</li> <li>Appendix M of the EA.</li> </ul>

ID	Comment	Response	Reference
12A	<p>Wickerslack Lane Resident #4</p> <p>Seeks confirmation that any risks of emergency sewage overflows into the Queanbeyan River have been adequately considered and assessed.</p>	<p>Environmental risk assessment was undertaken during the preparation of the EA and the approach and outcomes presented in Chapters 6 and 15 of the EA. The risk of an emergency sewage overflow into the Queanbeyan River was considered and detailed in Table 15.1 of the EA. Specifically, the risk rating of the “failure in treatment system, leading to overflow and reduced receiving water quality (quantity related)” was assessed as ‘low’ following the application of the management measures proposed. These are discussed below.</p> <p>This risk was considered during the design of the infrastructure for the WRP and the sewage pumping stations. The emergency management measures and storage of sewage flows during emergencies (such as power outages) have been designed at concept level at this stage as part of the Project, and would be developed further during detailed design. Appropriate guidelines from Water Services Australia have been used for this purpose. These are specified in Sections 5.3.2, 5.3.3 and 7.5.2 and in Section 6.7 of Appendix B of the EA.</p> <p>These emergency and storage management measures include:</p> <ul style="list-style-type: none"> <li>• Ability to treat up to 3.5 times the average dry weather flows at the WRP.</li> <li>• Appropriately sized storages at sewage pumping stations and WRP.</li> <li>• Emergency generator connection points at the WRP and sewage pumping stations.</li> <li>• Space to install an additional storage tank at the WRP to contain (and then treat) additional flows if monitoring of the system indicates that it would be required.</li> <li>• Advanced monitoring and telemetry of the system.</li> <li>• Development of a Recycled Water Risk Management Plan, as part of the OEMP for the system.</li> </ul> <p>In addition, the WRP has been designed to accommodate and includes an emergency bypass system with an emergency overflow facility that would, when the tank is full, discharge the overflow into the stormwater management system into the drainage reserve and which flows to Montgomery Creek and then to the Queanbeyan River. Given the measures outlined above, the operation of this emergency overflow facility is expected to operate only in worse case situations (eg extended power outages in periods of high flow and generators unable to be deployed).</p>	<ul style="list-style-type: none"> <li>• Chapters 6 and 15 of the EA.</li> <li>• Sections 5.3.2, 5.3.3 and 7.5.2 of the EA.</li> <li>• Section 6.7 of Appendix B of the EA.</li> <li>• Statement of Commitments G8 and WQ4.</li> </ul>

ID	Comment	Response	Reference
		<p>The proposed monitoring and adaptive management program (Statement of Commitments G8 and WQ4) during the construction and operation of the Project will help ensure water quality in the Queanbeyan River is maintained.</p> <p>It is concluded that the EA adequately considers and assesses emergency management and storage measures for the Project. Further, it is concluded that given these measures, there is a low risk of significant impacts.</p>	<ul style="list-style-type: none"> <li>•</li> </ul>
12B	<p>Seeks confirmation the that the stormwater management system proposed for the Googong Creek catchment has been designed appropriately to consider a range of climatic variables and climate change, specifically regarding the potential for turbidity to occur downstream during periods of high flow.</p>	<p>The stormwater management system has been designed in accordance with the relevant government and industry guidelines, which mandate that peak flows must be the same pre- and post-development. Therefore, periods of high flow (those most likely to result in erosion and turbidity) downstream of the site would be equivalent to the current situation.</p> <p>Further, the design of the stormwater management system has been undertaken in accordance with relevant government and industry standards, which include potential changes due to climatic variance. The modelling used to develop the stormwater strategy uses a 40-years dataset and includes inherent consideration of potential variations in rainfall.</p> <p>Section 3.3 and Appendix D of this report provide further clarification from Brown Consulting that the design of the stormwater management strategy has considered the issues of climate change and the potential impacts on temperature, evaporation, soil moisture content, rainfall patterns during the hydrological modelling undertaken for the Project. As stated, in excess of 40 years of rainfall data as identified in the QCC stormwater design standards were used to assess the potential impact of climate change on the hydrological models. The approach undertaken for this strategy is in accordance with the current standards employed by the water industry and the Australian Institution of Engineers. This supports the information provided in Section 5.3 of Appendix A of Appendix M of the EA, which discusses the climate change considerations that were incorporated into the flow modelling undertaken for the stormwater management strategy.</p> <p>Refer to the response in ID 11E above for a discussion of the potential for turbidity to occur downstream during periods of high flow.</p> <p>Further details of the of the stormwater management system developed as part of the Project is provided in Section 3.3 of this report.</p>	<ul style="list-style-type: none"> <li>• Section 3.3 of this report.</li> <li>• Appendix D of this report.</li> <li>• Section 5.3 of Appendix A of Appendix M of the EA.</li> <li>• ID 11E of this report.</li> </ul>



ID	Comment	Response	Reference
12C	<p>Proposes that further assessment of flows and water quality be undertaken prior to approval of the Project, rather than implementing the monitoring and adaptive management process proposed in the EA.</p>	<p>The monitoring and adaptive management process proposed in the EA (and Statement of Commitment WQ4) is considered the most appropriate approach, due to:</p> <ul style="list-style-type: none"> <li>• The staged nature of the Project, both in terms of: <ul style="list-style-type: none"> <li>• Very low risk of any impacts during the early phases of the Project.</li> <li>• Ability to monitor early phases and modify subsequent stages of the Project.</li> </ul> </li> <li>• The monitoring that would be undertaken at Googong Creek and the Queanbeyan River for at least 12 months before the commissioning of the WRP.</li> <li>• The need to collect data from the township once residents are present, to allow for calibration of the modelled development scenarios. This approach has been discussed at length with the relevant agencies.</li> </ul> <p>Therefore, it is not considered that further assessment of flows and water quality would be beneficial at this time.</p>	<ul style="list-style-type: none"> <li>• Statement of Commitment WQ4.</li> </ul>
12D	<p>If the Project is approved by the DPI, proposes that:</p> <ul style="list-style-type: none"> <li>• ACTEW consider the presence of the flows released from Googong Dam.</li> <li>• Water quality monitoring is undertaken at the junction of Googong Creek and the Queanbeyan River.</li> <li>• QCC be responsible for notifying residents of any immediate health risks associated with using water from the river.</li> <li>• A source of potable water or rainwater be supplied to Wickerslack Lane residents who currently extract water from the Queanbeyan River.</li> </ul>	<ul style="list-style-type: none"> <li>• As discussed at item ID 11D above, the proponent would consult with ACTEW and ActewAGL regarding environmental flows and management of Googong Dam releases. However, ultimately this is an issue for ACTEW Corporation and ActewAGL to address.</li> <li>• Water quality monitoring would be undertaken at the junction of Googong Creek and the Queanbeyan River (refer to the response at ID 6C above for details of the likely monitoring parameters).</li> <li>• During operation, QCC would be responsible for notifying residents of any health risks.</li> <li>• As discussed at item ID 11C above, the ambient water quality in the Queanbeyan River is required by the NSW Government to be maintained. Therefore, an additional source of potable water is not required for residents of Wickerslack Lane.</li> </ul>	<ul style="list-style-type: none"> <li>• Statement of Commitments CS1 and WQ4.</li> <li>• ID 6C, ID 11C and ID 11D of this report.</li> </ul>

# 3 Further clarifications

This chapter provides further clarifications on information regarding aquatic ecology and the stormwater management system, which was either not contained in the EA or was contained primarily in the appendices of the EA. This responds to requests for further information or clarification contained within several submissions received, in particular, Submissions 2 (Greater Southern Area Health Service), 3 (the Department of Trade and Investment, Regional Infrastructure and Services), 5, 6, 11, 12 (Wickerslack Lane residents) and 10 (NSW Office of Water).

## 3.1 Introduction

The information below is provided in response to submissions as they relate to the scope of the EA, as outlined in Section 2.2. It should be noted that some submissions received provided only general comments and recommendations that may not have been wholly related to the project that is the subject of the EA.

## 3.2 Aquatic ecology

### 3.2.1 Introduction and summary of the issue

A key issue raised in several submissions was a request for clarification of information regarding the existing ecological value of Queanbeyan River and Googong Creek (Submissions 2, 3, 5, 6, 10, 11 and 12).

It is noted that there is a lack of comprehensive historical monitoring data available from the existing Queanbeyan River monitoring stations and there is no historical data available for Googong Creek. This is, in part, due to Googong Creek being ephemeral. To supplement this lack of historical data, XP-Rafts modelling was undertaken to predict the likely flows Queanbeyan River and Googong Creek would experience under different weather and climatic conditions. This modelling was also required to assess the flow characteristics of the catchment noting that natural flows have been affected substantially over time due to the changes in land use to agricultural uses and impacts associated with Googong Dam and several farm dams.

The information contained in this section has been provided to clarify the data sets used, methodology and conclusions made from the aquatic ecology assessment that was undertaken as part of the EA. The purpose of providing this clarification is to further inform concerned residents and relevant government agencies that there has been adequate assessment of aquatic ecology at this stage of the Project and there are adequate mitigation measures in place to ensure there is no significant impact.

The information provided only relates to the water cycle project, which is the subject of the EA prepared under Part 3A of the EP&A Act, and does not include impacts of the stormwater system, which are subject to separate approvals under Part 4 of the EP&A Act.

A preliminary aquatic ecology assessment, conducted in 2008 by Ecowise Environmental, assessed the current status of ecological health in the Queanbeyan River and Googong Creek in the vicinity of the Project. From this, a number of conclusions and recommendations were made to shape the direction of the Project, ensuring the best environmental outcomes for the Queanbeyan River and Googong Creek.

### 3.2.2 Further information and data sets used

To clarify information regarding the existing ecological value of the Queanbeyan River and Googong Creek, this section will draw on additional information, including:

- The existing ACTEW operating licence and monitoring program, including the performance indicators for aquatic health assessment.
- XP-Rafts Modelling (Brown Consulting 2010).
- Findings of the aquatic health assessment for Queanbeyan River (Ecowise Environmental 2008).
- Physical aquatic habitat assessment for Queanbeyan River (Ecowise Environmental 2008).
- Physical aquatic habitat assessment for Googong Creek (Ecowise Environmental 2008).

### 3.2.3 Existing environment – Queanbeyan River

#### *Context*

The section of the Queanbeyan River that is being assessed flows north from Googong Reservoir to Queanbeyan. It is located to the east of the proposed Googong township. This is shown in Figure 3. The surrounding land use is principally agricultural.

The natural state of the Queanbeyan River has been altered by the damming at Googong Reservoir disrupting the natural flow regime, and the surrounding agricultural land uses impacting water quality.

#### *Ecological health – Assessment methods*

The main parameters monitored as *performance indicators* to assess the environmental flows and the impacts of water abstractions are:

- Fish ecology.
- Aquatic vegetation.
- Macro invertebrate ecology.
- Secondary production (this is the generation of biomass of consumer organisms in a system).
- Channel vegetation encroachment.
- Channel bed habitat.

Ecowise Environmental determined that macro-invertebrate ecology is the most appropriate indicator to measure ecological health for their 2008 assessment, as it is an accepted industry standard for measuring river health.

The observed/expected (O/E) ratio on macro-invertebrate composition and abundance is how this indicator is measured. It is assessed using the Rapid Bio-assessment protocols defined in the Australian River Assessment System (AusRivas), Sampling and Processing Manual (Nichols et al. 2000).

AusRivas is a rapid, standard method for assessing the ecological health of freshwaters through biological monitoring and habitat assessment. The AusRivas model predicts the fauna (macro invertebrates) expected to occur at a test site on the basis of its environmental attributes.

When a test site is sampled, the fauna observed are compared to the model's expectations for that habitat, and the resulting (O/E) score is regarded as an integrated indicator of river health.

The O/E score is used to categorise rivers into bands to measure the overall condition and severity of disturbance. The AusRivas O/E score is responsive to a variety of environmental effects, including water quality, habitat conditions, and changes in flow regime. Table 5 provides the AusRivas banding of ecological health of assessed sites on the basis of macro-invertebrate taxa collected.

**Table 5** AusRivas banding scheme

Band	Description	O/E Taxa O/E	Taxa interpretations
X	More biologically diverse than Reference	O/E greater than 90th percentile of reference sites used to create the model. ( $> 1.12$ )	More families found than expected. Potential biodiversity 'hot-spot' or mild organic enrichment. Continuous irrigation flow in a normally intermittent stream.
A	Similar to Reference	O/E within range of central 80% of reference sites used to create the model. ( $0.87 - 1.12$ )	Expected number of families within the range found at 80% of the reference sites
B	Significantly Impaired	O/E below 10th percentile of reference sites used to create the model. Same width as Band A. ( $0.63 - 0.87$ )	Fewer families than expected. Potential impact either on water and/or habitat quality resulting in a loss of families.
C	Severely Impaired	O/E below Band B. Same width as band A. ( $0.39 - 0.63$ )	Many fewer families than expected. Loss of families from substantial impairment of expected biota caused by water and/or habitat quality.
D	Extremely Impaired	O/E below Band C down to zero. ( $< 0.39$ )	Few of the expected families and only the hardy, pollution tolerant families remain. Severe impairment.

#### *Ecological health – ACTEW licence conditions*

ACTEW Corporation is licensed by Environment ACT to '...take water from the Cotter River and Queanbeyan River catchments for the purposes of urban water supply to the residents of the ACT and Queanbeyan...' (Licence No. WU67, dated 10 December 2003).

ACTEW Corporation's annual Ecological Health Monitoring Program has the following objectives:

- To determine the effectiveness of the environmental flows and gather annual information; and
- To determine the impact of increases in water use from each of the water supply catchments covered by the Licence No. WU67.

The ACTEW Corporation monitoring program and assessment methodology interprets the AusRivas methodology discussed above, so that a more specific and relevant (but still consistent) assessment can be used for the Queanbeyan River below Googong Dam. Table 6 shows how the ACTEW Corporation Licence interprets the AusRivas methodology for this local purpose.

**Table 6** AusRivas (macro invertebrate) based rating of Ecological Health, as presented in ACTEW Corporation Licence No. WU67

Rating	Observed/Expected (O/E) Ratio
Equivalent to reference condition	$> 0.85$
Slightly impaired compared to reference conditions	$0.6 - 0.85$
Moderately to highly impaired compared to reference condition	$< 0.6$

The short-to-medium term performance objective for the Queanbeyan River in the ACTEW Corporation Licence is not to impair the 'Ecological Health' from its current status.

The performance expectation of the river downstream of the Googong Reservoir is summarised in Table 7. The performance indicator descriptor of 'slightly to moderately impaired' noted in this table reflects that a AusRivas ecological health rating of 0.6 is on the boundary of 'slightly impaired' and 'moderately to highly impaired'. Hence, a range of 0.6 to 0.85 is appropriate to be described as 'slightly to moderately impaired'.

**Table 7** Performance criteria for sampling sites used in the Environmental Flows Monitoring Program as defined in License WU67

Site code	Site location	AusRivas rating of Ecological Health	Performance indicator
QBN 704	1km downstream Googong Dam	0.6 – 0.85	Slightly to moderately impaired
QBN 703	Wickerslack Lane, downstream Googong Dam	0.6 – 0.85	Slightly to moderately impaired

Considering the above, it is most appropriate that monitoring of ecological health be consistent with the approach contained within Licence WU67 described above.

#### *Ecological health – observations*

The current ecological state of the Queanbeyan River is described in the ACTEW Corporation Licence as follows:

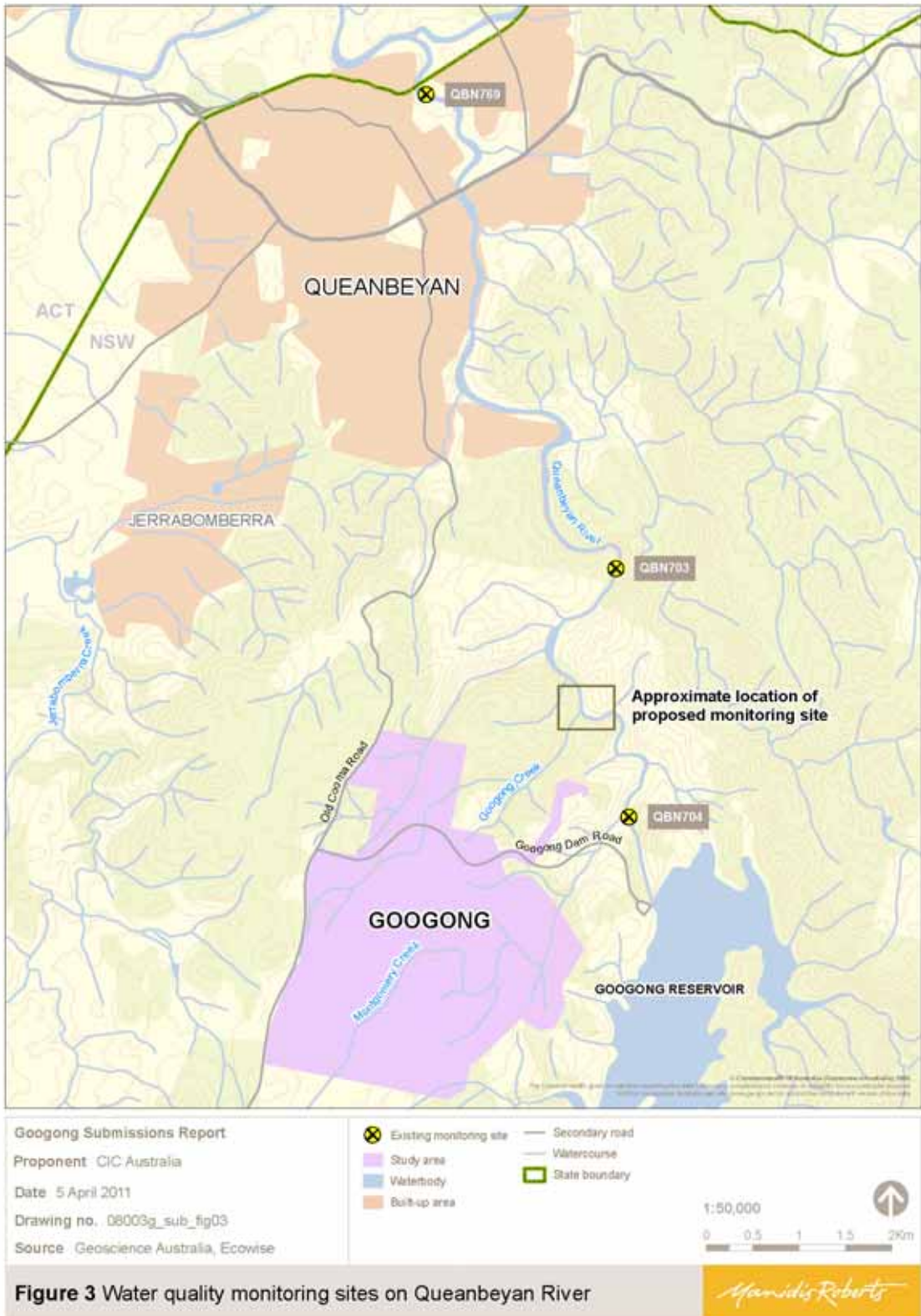
“...Macro invertebrate O/E ratios for all sites on Queanbeyan below Googong [dam] within 'slightly to moderately' impaired condition...” as described in Table 7, that is, an O/E ratio of 0.6-0.85.

This is consistent with results from the existing monitoring locations (as shown in Figure 3), namely, 1km downstream of Googong Dam (QBN 704) and the downstream stretch of the river (ie Wickerslack Lane, QBN 703). QBN 703 is located on the Queanbeyan River below its confluence with Googong Creek, which will receive discharges from the Project via the stormwater management system.

The collective results of several sampling events over the past few years, summarised in Table 8, shows that the QBN 704 and QBN 703 sites are recording 'A', 'B' and 'C' level AusRivas bands. Whilst a C banding would generally indicate that the river has been severely impaired, when the O/E results are compared to the Queanbeyan River's reference conditions outlined in the licence (Table 6 and Table 7) we note that the river generally falls into the 'slightly to moderately impaired' category.



**Figure 3** Water quality monitoring sites on the Queanbeyan River





**Table 8** Summary results of ecological health monitoring of relevant Queanbeyan River relevant to planning of future discharges upstream of Wickerslack Lane

Site code and location	Autumn 2003		Autumn 2004		Autumn 2005		Autumn 2006	
	O/E Ratio	AusRivas Band	O/E Ratio	AusRivas Band	O/E Ratio	AusRivas Band	O/E Ratio	AusRivas Band
QBN 704 Downstream Googong Dam	0.54	C	0.7	B	0.61	C	0.64	B
QBN 703 Wickerslack Lane	OEM	–	OEM	–	1.03	A	0.96	A

*OEM – Outside the experience model. In 2003 and 2004 the data collected regarding the sampling site did not allow a reference site to be selected from the AusRivas model for comparison with the observed data.*

#### *Physical aquatic habitat assessment – assessment methods*

The AusRivas ecological health monitoring also requires a ‘Physical Habitat Assessment’ to be conducted, which takes into consideration other site characteristics that indicate ‘ecological health’. This assessment examines several key indicators for riverine health including:

- Riparian vegetation, including bank width.
- Vegetation type and percentage of cover.
- Presence of macrophytes.

#### *Physical aquatic habitat assessment – observations*

The key results of the physical aquatic habitat assessment are summarised in Table 9.

These results in Table 9 are indicative of relatively healthy macrophytes and native tree cover both upstream and downstream of the confluence of Googong Creek and the Queanbeyan River.

**Table 9** Status of Riparian vegetation at Queanbeyan River Sites

	2005	2006	2005	2006
	QBN 704 (1km downstream Googong Dam)	QBN 704 (1km downstream Googong Dam)	QBN 703 (Wickerslack Lane, downstream Googong Dam)	QBN 703 (Wickerslack Lane, downstream Googong Dam)
<b>Riparian vegetation</b>				
Left bank width (m)	3	20	10	20
Right bank width (m)	10	15	2	5
<b>Vegetation type % cover of riparian zone</b>				
Trees (>10M)	10	5	10	10
Trees (<10M)	40	35	85	60
Shrubs	5	10	5	40
Grasses/Ferns/ Sedges	60	40	40	40
Shading of river %	6-25	6-25	6-25	6-25
Native vegetation %	60	75	90	90

	2005	2006	2005	2006
	QBN 704 (1km downstream Googong Dam)	QBN 704 (1km downstream Googong Dam)	QBN 703 (Wickerslack Lane, downstream Googong Dam)	QBN 703 (Wickerslack Lane, downstream Googong Dam)
Bare ground above water mark, left bank %	40	10	10	5
Bare ground above water mark, right bank %	40	30	5	10
<b>% Reach covered by</b>				
Periphyton %	<10	35-65	<10	<10
Moss %	<10	<10	<10	<10
Filamentous algae %	<10	<10	<10	<10
Macrophytes %	65 – 90	65 – 95	<10	<10
<b>Macrophytes</b>				
Submerged/floating	<i>Potamogeton</i>	<i>Potamogeton</i>	–	–
Emergent (genus)	<i>Typha</i>	<i>Elocharis, Juncus, Typha</i>	<i>Cyperus, Juncus, Typha, Schaenoplectus</i>	<i>Cyperus, Typha, Persicaria</i>

Although this information is somewhat variable and dependent on 'site-specific' features (pool and riffle zones, sand bars, etc.), they provide some indication of health and are useful as 'baseline' measurements for any future monitoring of potential impacts of the discharges to the Queanbeyan River at the proposed site.

### Conclusions

The observations above indicate that whilst river health and habitat has been improving, the river is still being impacted by agricultural and water storage activities in the catchment. As such, it is considered that the river is still 'impaired' near the proposed monitoring site (at the confluence of Googong Creek and the Queanbeyan River).

### 3.2.4 Existing environment – Googong Creek

#### Context

Googong Creek is an ephemeral creek located approximately four (4) kilometres south of Queanbeyan. It flows through agricultural land and discharges into the Queanbeyan River approximately two (2) kilometres north of the Googong Reservoir.

The surrounding agricultural land use and the damming on agricultural land has altered the creek's natural flow regime and aquatic ecology.

#### Ecological health – assessment methods

There is no historical data on which to base the ecological health assessment of Googong Creek. As the creek is ephemeral in nature, this limited the ability to collect meaningful data in the short term. Therefore, theoretical modelling using XP-Rafts software was considered appropriate. The XP-Rafts model was used for hydrological analysis of the existing catchment to obtain pre-development flows and to model various potential development scenarios. The model integrates the various stormwater detention basins proposed for the township. Appendix D discusses the basis for stormwater modelling.

### *Ecological health – modelling outcomes*

The modelling confirmed that Googong Creek is naturally ephemeral. The modelling cannot completely account for all elements of the existing situation, most notably the intermittent damming by farmers of the creek. This damming has further affected the natural flow regime that would have been present prior to settlement.

As shown in Table 7.4 of the EA, the annual flows of Googong Creek at Googong Dam Road and at the confluence of with the Queanbeyan River are modelled to be 179 and 329 ML/year. Section 7.5.4 of the EA provides more detail of the modelled existing flow regimes of Googong Creek, including seasonal variation. For example, existing flows in Googong Creek average (50<sup>th</sup> percentile) 14.46 to 15.55 kL/day in summer and autumn, whereas in winter and spring, the averages are 28.51 to 32.83 kL/day (refer to Table 7.8 of the EA). In comparison, these flows are substantially lower than the Queanbeyan River, which averages 4,700 to 15,000 kL/day (refer to Table 7.9 of the EA).

Overall, due to the ephemeral nature of Googong Creek, the agricultural land use of the catchment, damming of the drainage lines and other land use impacts, the ecological health of Googong Creek is concluded to be somewhat degraded.

### *Physical aquatic habitat assessment – assessment methods*

The main assessment method for the physical environment of Googong Creek was a desktop review of ecological literature for the area. This included:

- Environmental Assessment – Googong Urban Investigation Area (2004) – conducted by the Johnstone Centre, Charles Sturt University for Willana Associates.
- State of the Environment Report of Queanbeyan City Council (2005-2006).
- Think Water, Act Water – Volume 3: State of the ACT's water resources and catchments (2004), Environment ACT, Department of Urban Services.
- Cotter Environmental Flows Program – Macro-invertebrate Monitoring, Seasonal Reports 2004-2006 conducted by Ecowise Environmental for ActewAGL.
- Various publications and documents available on QCC website ([www.qcc.nsw.gov.au](http://www.qcc.nsw.gov.au)) and Murrumbidgee Catchment Management Authority (CMA) website ([www.murrumbidgee.cma.nsw.gov.au](http://www.murrumbidgee.cma.nsw.gov.au)).
- Extractions of analytical data for water quality monitoring of selected sites undertaken for ACTEW and the ACT government.

Ecowise Environmental also undertook a site inspection on the 15 April 2008 to ground truth the findings of the desktop literature review. Googong Creek was assessed by a walk-through survey covering the distance from the Googong Dam Road to the confluence the Queanbeyan River.

### *Physical aquatic habitat assessment – observations*

The physical habitat assessment of Googong Creek revealed that the creek's most upstream section gently slopes to a previously constructed farm dam, which has a reasonably intact earthen bund. The landscape abutting these upstream sections of the creek continues to gently slope within the first 300m of the creek, before the creek narrows into a series of sharply winding gullies, which head down to the river.

At the time of inspection the entire length of the creek was dry. Given the steep gradient in the creek, from the top most section at the Googong Dam Road down to the Queanbeyan River, flows in the creek during wet weather could be expected to be fast. The formation of deeply incised channel and gullies along the length supports this conclusion.

Whilst there are a small number of native trees, the majority of the vegetation in the area is degraded grassland. In the long, middle gully sections of the creek, there are stretches of varying length, which are moderately weed infested. Many areas have dense growth of various native scrub.

Human caused disturbances, such as construction of access tracks, movement of vehicles and dumping of litter and rubbish appear to be having on-going impacts on the area. There are areas where litter and rubbish has been dumped in sections associated with the creek, as well as on the upper riparian areas.

The understorey native vegetation in the middle sections of the terrain is dominated by Burgan (*Kunzea ericoides*), which overhangs the creek bed in many stretches.

The downstream vegetation of the creek varies from relatively undisturbed native bushland and vegetation communities to well-maintained access tracks in the lower-middle section of the creek.

The topography in the area is variable, with steep gullies and evidence of erosion in some areas and gentle slopes and flat ground in others. Those areas experiencing erosion may require stabilisation and fortification by rock batter if monitoring identifies that such measures are required.

### *Conclusions*

The observations above indicate that the health and physical habitat of the ephemeral Googong Creek has been impacted by agricultural activities over a long period of time. Regular flow regimes have been disrupted by damming and agricultural runoff has likely impacted the water quality. As such, it is considered that the creek is 'impaired'.

## **3.2.5 Likely impacts of the Project**

### *Construction impacts*

The potential impacts on surface water quality, flow regimes or to the aquatic health of Googong Creek and Queanbeyan River due to the construction of the Project are assessed in Sections 7.4 and 11.2.3 of the EA. The direct impacts principally related to civil works and include:

- Laying pipelines across or near watercourses, specifically trenching, vegetation clearing and the stockpiling of excavated (spoil) material. These activities have the potential to impact on water quality due to:
  - The transferring increased quantities of fine sediment to receiving streams, which may interfere with the gill function of fish and filter feeding organisms.
  - A reduction in the euphotic zone and retardation of aquatic plant function.
  - Increased turbidity, which interferes with visual feeding.
  - Siltation and a reduction in stream habitat and removal of water sources for riparian fauna.
  - Increased nutrient loads, causing algal blooms.
- Vegetation clearance and soil disturbance. Changes in the waterway channel or bank form may result from loss of riparian vegetation and leave to increased erosion potential or geomorphological impacts. This would be evident in areas of good, intact native vegetation. This would also be dependent on the bank and stream bed material, flow velocity and the existing vegetation and also the proximity of construction activities to waterways.
- Accidental spills of fuels and chemicals. The pollution of streams with fuel or chemicals used during construction activities can affect aquatic ecology should the spills reach water bodies via run off. Depending on the severity of the spill, these have the potential to have acute effects or longer term, chronic effects on aquatic environments.

Indirect impacts could also occur due to run-off and soil erosion if appropriate sediment and erosion control measures are not implemented.

#### *Operational impacts*

The potential operational impacts of the Project on aquatic ecology are assessed in Section 11.2.4 of the EA. The potential operational impacts on the aquatic environments of Googong Creek and the Queanbeyan River identified were:

- Impacts of any changes in flow regimes on aquatic flora and fauna.
- Impacts of any changes in water quality on aquatic flora and fauna.
- The potential for weeds to spread downstream.

### **3.2.6 Proposed management measures**

To ensure that this project does not significantly impact the aquatic ecology of the Queanbeyan River and Googong Creek during construction or operation, a range of mitigation measures are proposed. These include:

- Soil and water management plans, to be developed and implemented for the construction phase (including sediment and erosion control measures).
- Spill management and response procedures will be developed in the CEMP for the construction phase of the Project.
- The CEMP will incorporate measures to ensure that any creek banks affected by construction are stabilised.
- The OEMP will outline erosion and sediment control measures to protect buffer and riparian vegetation zones.
- Ongoing monitoring of downstream environment.

In addition, the stormwater management system is designed to minimise downstream environmental impacts (see Section 3.3 and Appendix D of this report). This includes ensuring that flow regimes, particularly peak flows, mimic the existing situation, as required by QCC. This will be achieved through regulating flows particularly at Basin 1 (refer to Figure 4 of this report), immediately south of Googong Dam Road, ensuring there are times of no-flow (as is currently experienced).

### **3.2.7 Monitoring program and adaptive management**

Further to the above management measures a monitoring and adaptive management regime is proposed. A water quality and aquatic ecology monitoring program to monitor Googong Creek and the Queanbeyan River will be established prior to construction, and will be maintained throughout construction and operation to ensure that the existing ecological health of both watercourses is maintained. Statement of Commitments OP1 and WQ4 relate to this monitoring program. Staging of the Project and the township as a whole allows for adaptive management of relevant aspects of the system depending on the outcomes of monitoring throughout the early years of the township.

### **3.2.8 Conclusion**

The ecological assessments carried out to date indicate that the Queanbeyan River and Googong Creek catchments have been somewhat impacted by past human activities, with the ecological state being slightly to moderately impaired when compared with the reference condition. This has been attributed to agricultural activities and, in the case of Googong Creek, intermittent damming along the length of the

creek. It is concluded that the project will be unlikely to result in significant impacts to the aquatic ecology of Googong Creek or the Queanbeyan River.

### 3.3 Stormwater management system

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#### 3.3.1 Background

Brown Consulting was engaged by CIC to provide a design report for the stormwater drainage and management of the Googong township (Neighbourhood 1A: Stages 1 and 2). The report was prepared to support the development application (under Part 4 of the EP&A Act) for the development of Stages 1 and 2 (337 dwellings) of Neighbourhood 1A (1,228 dwellings).

#### 3.3.2 The purpose of the stormwater management system

The stormwater management system is an important link between the Project and the township as a whole, so that the most efficient and effective system can be formed. It seeks to achieve the best possible outcomes for the environment, protecting downstream receiving waters from water quality degradation and flooding. It has been designed to meet stormwater targets identified within the Queanbeyan Development Control Plans for both water quality and quantity.

#### 3.3.3 Summary of the proposed stormwater management system within the Googong Creek catchment

The stormwater management strategy provides for specific measures within the catchment area of Googong Creek to ensure that flow and water quality objectives are achieved. Figure 7.2 of the EA shows the extent of Googong Creek catchment within the study area.

The stormwater detention and peak flow attenuation strategy has been developed through a series of models undertaken by Brown Consulting (Appendix A of Appendix M of the EA). Key elements of the strategy include (see Figure 4 of this report):

- Basin 1 (Local park 1): Is central to Neighbourhood 1A of the Googong township, achieving a number of essential functions (stormwater detention basin, stormwater quality control and improvement site, urban park, recreational functions, environmental and biodiversity values conservation, and significant amenity value for the whole area).
- Basin 2: this sporting oval/recreational reserve also represents a major stormwater detention basin, which attenuates flow from a large part of the Googong catchment.
- Basin 3 and 4: will be designed to provide significant attenuation of the peak flows generated by the northern part of the Googong Creek Catchment (part of Neighbourhood 2).
- A network of stormwater drainage providing stormwater attenuation benefits.

The locations of these basins are shown in Figure 4 of this report, which also shows the approximate location of discharge of excess recycled water into the stormwater management system.

In addition to the key basins discussed above, measures to be implemented in the strategy include minor and major flow management methods, gross pollutant traps, swales, bioretention basins, raingardens, and soil erosion control measures. These measures will treat stormwater and assist in regulating flows.

### **3.3.4 Recycled water in the stormwater management system**

High quality excess recycled water would be released into the stormwater management system upstream of Basin 4 (refer to Figure 4 of this report). The Stormwater Management Strategy has considered the release of excess recycled water into the system in a similar way as it considers the flow and water quality of other input into the catchment from upstream and offsite on the western side of Old Cooma Road (ie as part of the overall management of the system). This has been determined as the most efficient and effective method to achieve high environmental outcomes of water quality and stream health. It should be noted that the recycled water that will be discharged is treated to be suitable for non-potable uses and human contact. However, as requested by the OEH, it would not be chlorinated (refer to Section 4.2 of this report).

Section 7.5.4 of the EA discusses the proportion of recycled water in relation to the total stormwater flows at various times of the year, based on the stormwater modelling discussed in Appendix D of this report. As rainfall and the demand for recycled water varies substantially throughout the year, the proportion of excess recycled water discharged into the stormwater management system is consequentially varied, as shown in Figure 7.5 of the EA.

### **3.3.5 The stormwater management system (in relation to Part 3A and Part 4)**

Release of excess recycled water and the impacts thereof are included as part of the Part 3A application and have been considered in the EA for the Project.

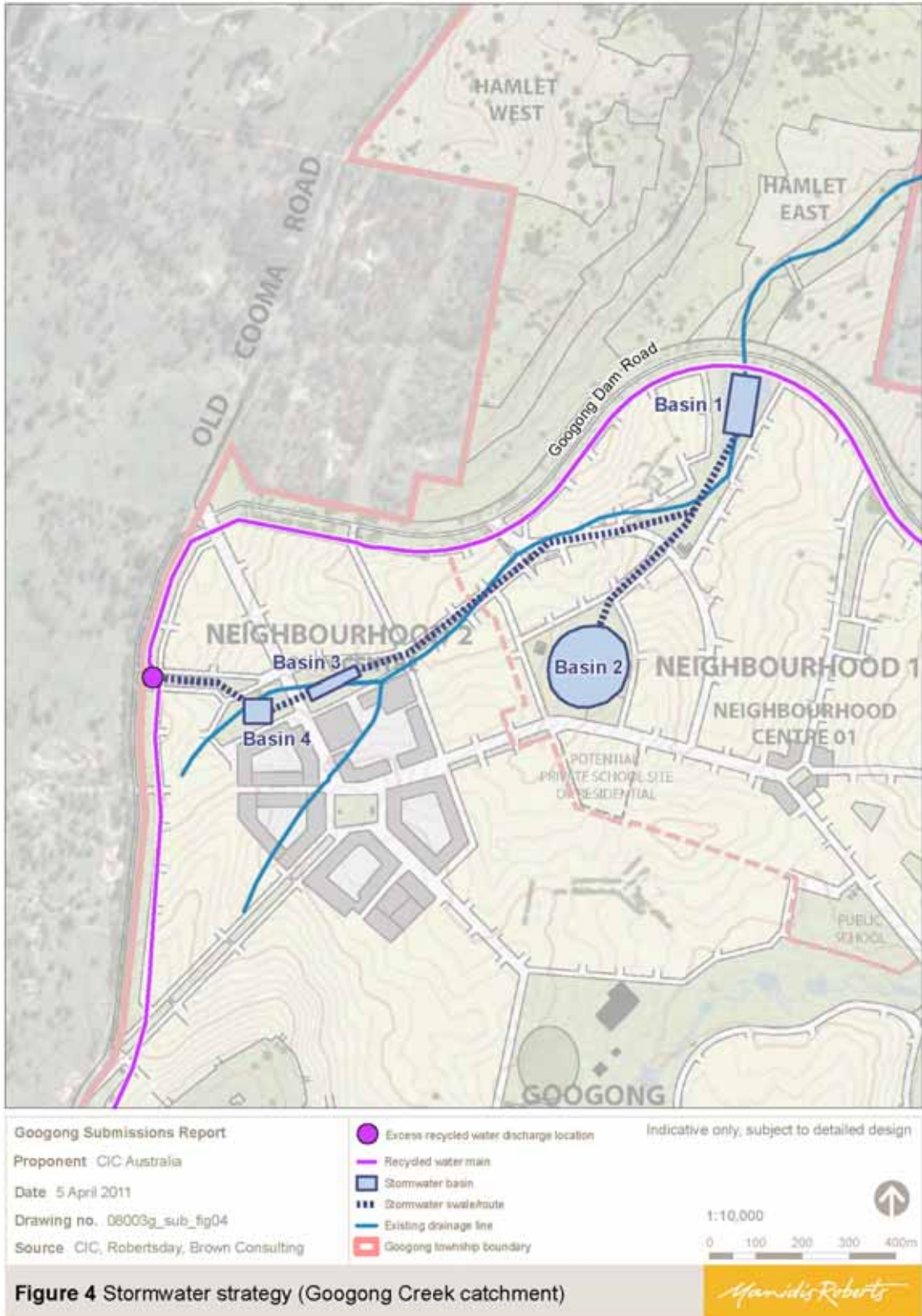
The management and mitigation measures proposed for the management of flows and water quality in stormwater (which includes the excess recycled water) are stormwater management measures (including water sensitive urban design), and as such approval for these water sensitive urban design components is part of a separate development application (under Part 4 of the EP&A Act).

In summary, the potential impacts of the discharge of excess recycled water are managed and mitigated through the combination of:

- The treatment measures in the WRP and the use of recycled water throughout the township (assessed under Part 3A).
- The treatment and flow control measures in the stormwater management system (assessed under Part 4). For further information, please refer to Appendix D of this report.



**Figure 4** Basin locations



### 3.3.6 Conclusion

As discussed in Appendix D, the stormwater management system designed by Brown Consulting meets the requirements of the NSW Government and QCC by:

- Ensuring that post-development peak flows mimic pre-development peak flows.
- Ensuring that; through managing nutrients, pollutants and flows, downstream environments are not adversely affected by the development of the township.

The discharge of excess recycled water into the stormwater management system at the most practical upstream location within the township is in accordance with NSW Government guidelines and policies. This excess recycled water would be of the same very high quality that will be used by residents throughout the township as an unrestricted non-potable domestic water source (noting that discharged recycled water would not be chlorinated).

Modelling of the proposed stormwater management system has taken into account the water quality and flow characteristics of the excess recycled water that would be discharged into the system. This modelling has shown that the stormwater management system will adequately manage both the inputs from the township and the discharge of excess recycled water.

The proposed stormwater management system, combined with the water quality discharge requirements for the recycled water, will ensure that the water quality within the Queanbeyan River during operation of the Project will meet the ambient water quality in the river, as required by the NSW government.

Therefore, it is concluded that no detrimental downstream environmental or human health impacts would result from the discharge of excess recycled water into the stormwater management system. As a result, and as detailed in Sections 2.4 and 2.5 of this report (refer to the response provided in ID 11D), the Project would not affect the users of the Queanbeyan River, in particular, those users who exercise riparian rights to extract of water from the river for domestic and stock purposes.

# 4 Refinements to the Project – Preferred project report

This chapter provides information regarding the minor refinements to the Project, as well as providing further detail of the management and mitigation measures in place to ensure environmental impacts are minimised. It represents the preferred project report for the Project.

## 4.1 Minor refinements to the Project

Minor amendments and refinements of the Project have been made in response to several submissions and following discussion and agreement between CIC and the interested parties. These refinements are:

- Relocation of the bulk water pumping station and associated infrastructure. This responds to Submission 7 (ActewAGL) and other consultation undertaken with ACTEW Corporation, ActewAGL and QCC. This refinement has been agreed by CIC to address operational issues related to the ACTEW Googong Water Treatment Plant.
- Potential alterations to the WRP as a result of revised discharge limits. This responds to Submission 8 (OEH).
- The inclusion of an *Aprasia* Conservation Area, responding to Submissions 4 (ACT Department of Environment, Climate Change, Energy and Water) and 8 (OEH). This change could allow the relocation of a pumping station during the detailed design for engineering purposes, if required.

It is noted that these refinements to the Project have not been proposed to minimise the environmental impact of the Project. As described below, they are generally consistent with the Project described in the EA and will not materially change the environmental impacts predicted for the Project in the EA.

The following sections provide further detailed information on the refinements made to the Project and consider changes to the predicted environmental impacts and mitigation measures from those described in the EA.

## 4.2 Bulk water pumping station and associated infrastructure

### 4.2.1 Introduction

The bulk water pumping station (BWPS) and associated pipelines are essential water supply infrastructure for the Googong township. Potable water will be supplied to Googong from the existing water supply for the ACT and Queanbeyan, which is managed primarily by ACTEW Corporation. The design of the BWPS, associated access road and rising mains, staging and other details are provided in Section 5.3.1 of the EA and Sections 3.2, 3.3 and 3.4 of the MWH Concept Design Report (Appendix B of the EA). As a result of submissions and the recommendations discussed below, it is proposed to alter

the location of the BWPS and associated infrastructure. No other changes to the potable water system are proposed.

#### **4.2.2 ACTEW Corporation and ActewAGL recommendations**

Through ongoing consultation with ACTEW Corporation, ActewAGL and QCC it was recommended that:

- The potable water pipelines (rising mains) connecting the BWPS to the Googong township should not traverse the existing ACTEW Googong Water Treatment Plant. This was to allow for further flexibility in any future upgrades of the water treatment plant.
- The potable water pipelines not traverse the existing ACTEW Corporation 1800mm diameter bulk water pipeline for operational reasons.

#### **4.2.3 Revised location of the bulk water pumping station, access and pipelines**

As a result of the first recommendation noted above in Section 4.2.2, it was determined that the optimal route for the potable water pipelines and access would be to the west of the existing Googong water treatment plant. This access route could, as much as practical, utilise an existing access track and disturbed area. Therefore, and considering the second recommendation, the BWPS should be moved from the eastern to the western side of the existing 1800mm diameter bulk water pipeline. This represents a move of approximately 50 metres to the west. Figure 5 of this report shows the revised infrastructure locations (blue), in comparison to those shown in the EA (pink).

The relocated BPWS and associated infrastructure is situated the same parcel of land (Lot 7, DP 592796) within the Googong Dam and Foreshores Area. The ownership of the site remains with the Commonwealth Department of Finance and Deregulation. Consultation with the Department has been undertaken in relation to the revised location of the BPWS and associated infrastructure. The Department is also a member of the Googong township-interface working group (refer to Section 1.6.4 of this report).

#### **4.2.4 Comparative assessment of the environmental impacts of the original and the amended location of the bulk water pumping station**

Within the context of the entire Project, the relocation of the BWPS and the associated infrastructure is considered to be a minor refinement to the Project. Nonetheless, Table 10 of this report has been prepared to provide a comparison of the environmental impacts associated with the changes to the location of the BWPS site and associated infrastructure. The table assesses each environmental aspect listed in Table 15.1 of the EA, which the residual environmental risk assessment for the Project. Of the environmental aspects assessed, the construction of the relocated BPWS and associated infrastructure has the potential to impact on terrestrial ecology in areas of not previously surveyed as part of the assessments undertaken during the preparation of the EA.

A terrestrial ecological assessment was undertaken in late 2010 by Biosis Research to determine the potential impacts of the relocation of the BWPS and associated infrastructure on terrestrial ecology. Further details are provided in Section 4.2.5 and a copy of the report is provided in Appendix A.



**Figure 5** BWPS site – amended location



**Table 10** Potential changes to environmental impacts due to relocation of bulk water pumping station (BPWS) and associated infrastructure

Environmental aspect	Potential change in environmental impact	Requirement for further assessment
Water quality	<p>Impacts on surface water quality during the construction of the relocated BPWS and associated infrastructure (sediment runoff, chemical spills, etc) will be managed under the CEMP. The relocation is in similar terrain and any impacts are expected to be of a similar nature and intensity.</p> <p>There will be no changes to impacts of the Project on water quality during operation, as the BPWS operation will not change.</p>	None
Hydrology	<p>No changes to impacts on flows in receiving waters, the geomorphology of the beds of waterways and groundwater flows are expected due to the construction and operation of the relocated BPWS and associated infrastructure.</p>	None
Heritage	<p>Navin Officer Heritage Consultants surveyed and assessed the Googong Township area and the Project as part of the cultural heritage studies undertaken in 2003 for the Googong local environment study (LES) and in 2009 as part of the EA (Appendix G). The four (4) Aboriginal heritage sites identified in the vicinity of the Project during the latter study were considered to be of low significance and it was recommended that they be managed by re-positioning these artefacts if impacts were anticipated during construction.</p> <p>The BPWS and associated infrastructure will now be located in disturbed areas and access tracks on the other side of the existing Googong water treatment plant pipeline, within the same parcel of land. Disturbance occurred during the construction of the Googong water treatment plant and associated infrastructure, and the access tracks are subject to ongoing use relating to the management of the Googong Dam and its foreshores. Although no site-specific survey of these disturbed areas has been undertaken, the same management measures are proposed to be undertaken in the event that heritage items are discovered during the construction of the BWPS and associated infrastructure.</p> <p>Therefore, no change in the predicted impacts is expected. Impacts on unknown heritage items that are discovered during construction will be managed under the CEMP.</p>	None
Geology and soils	<p>Impacts on soil stability, soil erosion and soil contamination are expected to be of a similar for the relocated BWPS and associated infrastructure. The relocation is in similar terrain and the same soils landscapes (ie Round Hill, Anembo and Burra – see Table 9.1 of the EA). These soils are generally acidic, low fertility and have low water-holding capacity.</p> <p>Therefore, any impacts are expected to be of a similar nature and intensity. Any potential impacts will continue to be managed under the measures to be provided in the CEMP and OEMP.</p>	None



Environmental aspect	Potential change in environmental impact	Requirement for further assessment
Air quality	<p>Potential dust generation during the construction of the relocated BPWS and associated infrastructure will continue to be managed under the CEMP. The relocation is in similar terrain and any impacts are expected to be of a similar nature and intensity.</p> <p>The operation of the relocated of the BPWS and associated infrastructure will not change the predicted impacts regarding greenhouse gases and odours.</p>	None
Ecology	<p>The construction of the relocated BPWS and associated infrastructure has the potential to impact on terrestrial flora and fauna inhabiting areas not surveyed in detail previously.</p> <p>The operation of the relocated BPWS and associated infrastructure will not change the predicted biodiversity impacts.</p>	Assessment of potential impacts on terrestrial ecology
Traffic and access	<p>As the access road to the BPWS is now planned to be separate from the access road to the ACTEW Corporation's Googong Water Treatment Plant, interaction of vehicles on the existing access road during construction and operation will be reduced. Otherwise the relocated pumping station and associated infrastructure is not expected to change predicted traffic and access impacts.</p>	None
Visual amenity and landscape/urban design	<p>The relocated BPWS and associated infrastructure would not be visible from Googong Dam Road so no change to the impacts on visual amenity is expected. Rehabilitation of the pipeline post-construction would be undertaken in conjunction with the final construction of the all weather access road.</p>	None
Noise and vibration	<p>The noise and vibration impacts during construction and operation are expected to be similar for the relocated BPWS and associated infrastructure.</p> <p>The change in the distance to the nearest sensitive receiver (ie the 'Talpa' residence) due to the relocation of the BWPS has been marginal. The new location is approximately 50 metres closer to the residence, but still in excess of 600 metres away. The other sensitive receivers identified remain over 1 kilometre from the BWPS. No additional receivers have been identified due to the relocation.</p> <p>The temporary noise and vibration impacts during construction of the BPWS and associated infrastructure will be similar to that assessed in Section 13.4.4 of the EA. The noise impacts from the construction activities were predicted to exceed the guideline levels and are still predicted to exceed these levels. These impacts will be managed under the measures to be provided in the CEMP.</p> <p>During operations, the 600 metre distance between the BPWS and the nearest residence will be maintained. This will ensure that the noise and vibration impacts during operation of the relocated BPWS and associated infrastructure are consistent to those described in Section 13.4.5 of the EA. Any potential impacts will continue to be managed under the measures to be provided in the OEMP.</p>	None

Environmental aspect	Potential change in environmental impact	Requirement for further assessment
Utilities and services	The BPWS and associated infrastructure have been relocated to avoid the existing ACTEW infrastructure associated with the Googong water treatment plant. Any future interactions have, therefore, been avoided and therefore potential impacts have been reduced. These potential impacts are: <ul style="list-style-type: none"> <li>• Limitation of potential future augmentation or upgrade of the plant.</li> <li>• Restriction of access to the infrastructure (in particular the existing bulk water pipeline) for operations and maintenance purposes.</li> </ul>	None
Waste	Waste generated during the construction and operation of the relocated BPWS and associated infrastructure are not expected to be materially different. Waste generated will continue to be managed under the CEMP and OEMP.	None
Socio-economic	Impacts on recreational use of nearby sites during construction and operation are expected to be similar for the relocated BPWS and associated infrastructure. The BPWS and associated infrastructure will still be located away from these sites.	None
Hazards and risk (including human health)	The hazards and risks due to the construction of the BPWS and associated infrastructure (eg trench collapse, traffic, bushfire, personal safety and security) will not be materially different due to the relocation and will be managed under the CEMP. Risk associated with working in close proximity to ACTEW assets have been reduced due to the relocation.  The hazards and risks due to the operation of the BPWS and associated infrastructure will not change due to its relocation and the operation will not change.	None

#### 4.2.5 Ecological assessment of the revised design

In early 2011, CIC commissioned an ecological assessment of the revised location of the BWPS and associated infrastructure. Biosis Research undertook this assessment in January and February 2011, and their report can be found in full in Appendix A.

The Biosis assessment found that the area is highly disturbed, with a high number of weed species. This disturbance is primarily associated with the construction of the ACTEW Googong water treatment plant, associated infrastructure and access tracks.

Nevertheless, ecological features identified during surveys were:

- Hollow-bearing trees, which provide habitat for native fauna species.
- Threatened fauna species – a bird, the Speckled Warbler (*Chthonicola sagittata*) and a micro-bat, the Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*). While both of these species may use this site from time to time, the site does not contain important habitat features for either species.
- A small area (1,210m<sup>2</sup>) classified as a listed ecological community. While technically meeting the criteria for this community, this patch is isolated and within a disturbed landscape.

As a result, assessments of significance for the above and for other relevant species were undertaken in accordance with the NSW *Threatened Species Conservation Act 1995* and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*. These assessments considered that:

- Appropriate management and mitigation measures contained within the Part 3A EA were applicable and would generally avoid any impacts on the ecological features of the site. These measures would be detailed in the CEMP for the Project and would include:
  - Hollow-bearing tree removal guidelines.
  - Erosion, sedimentation and stormwater management controls.
  - Implementation of exclusion zones prior to construction.
  - Weed control and management measures.
- No new Hoary Sunray (*Leucochrysum albicans* var. *tricolor*) individuals or populations were found, and the proposed altered location of the access road is located further from the previously identified populations of the species.
- The alignment of the potable water pipelines and access road is flexible and would be designed to avoid the listed ecological community and avoid the removal of most of the identified hollow bearing trees.

The Biosis Research assessment concluded that:

- There would be no impacts upon threatened species or communities as a result of the construction or operation of the Project.
- Appropriate avoidance, management and mitigation measures as proposed in the EA and this submissions report should be implemented.
- No further assessment or referral under the EPBC Act is required.

#### **4.2.6 Conclusion**

The location of the BWPS and associated infrastructure, which has been altered due to the operational requirements of the ACTEW Googong Water Treatment Plant, is generally consistent with the design as originally proposed in the Part 3A EA. Within the context of the entire Project, this change is considered to be minimal. The revised location would not result in any materially different environmental impacts, although the infrastructure would be located further away from previously identified Hoary Sunray populations. The amended location responds to Submission 7 (ActewAGL) and further consultation with ACTEW Corporation, ActewAGL and QCC.

### **4.3 Changes related to proposed discharge limits**

This section discusses the likely changes to the water treatment process and related infrastructure expected as a result of OEH's recommended discharge limits (refer to Submission 8). MWH has produced a technical memorandum (Appendix B of this report) that concludes all discharge conditions proposed by OEH are achievable by the treatment process within the WRP. The potential minor changes to infrastructure as a result are discussed in Section 4.2.2.

#### **4.3.1 Office of Environment and Heritage recommendations**

The OEH's recommendations for final effluent quality are slightly different to those suggested in the EA and are outlined in Table 11 below.

**Table 11** Discharge limits proposed by OEH (Submission 8)

Parameter	OEH proposed discharge limits to environment (90 <sup>th</sup> percentile)	Proponent's proposed limit (90 <sup>th</sup> percentile) from Table 5.8 of the EA
Biological oxygen demand	10 mg/L	10 mg/L
Suspended solids	10 mg/L	20 mg/L
Total nitrogen	10 mg/L	15 mg/L
Total phosphorus	0.5 mg/L	0.5 mg/L
Total dissolved solids (salts)	700 mg/L	700 mg/L
Faecal Coliforms	200 cfu/100mL	No limit proposed
pH	6.5-8.5	No limit proposed
Free Chlorine (residual)	0.1 mg/L	No limit proposed
Nitrogen – Ammonia	2 mg/L	No limit proposed
Oil and Grease	2 mg/L	No limit proposed

### 4.3.2 Changes to infrastructure

As a result of the changes to water quality parameters documented above, two minor changes to the water cycle infrastructure would be required:

- Minor amendments to the WRP treatment process during operation.
- De-chlorination of excess recycled water prior to discharge.

#### *Minor amendments to the WRP process*

For total nitrogen (TN), the following minor amendments to the WRP, which would be considered during the detailed design of the plant, would ensure that the treatment system achieves the recommended discharge parameters:

- Ensuring that experienced operational staff are trained and engaged to achieving the minimum possible output TN concentration.
- In order to improve the TN performance, higher levels of 'carbon dosing' may be required. This additional carbon will enter the system as acetic acid dosing.

This change in the operation of the WRP would not result in materially different environmental impacts. The frequency of chemical deliveries to the plant may increase slightly, but this is the only change to the environmental impacts predicted in the EA.

#### *De-chlorination of excess recycled water*

The environmental water release strategy must be reviewed during detailed design in order to achieve the OEH recommendation of 0.1 mg/L free chlorine residual. Two options would be considered:

- De-chlorination using sodium bisulphite. This option would involve the design and construction of a chemical dosing facility at the excess recycled water discharge location (at or upstream of stormwater Basin 4 – refer to Figure 4 of this report).
- Removal of the chlorination stage of the treatment process for the excess recycled water discharge. For this option, the treatment may be split to two streams at the final stage, one for the recycled water system (with chlorination), and the other for environmental releases (with the chlorination stage

removed). This approach will require the physical separation of flows by constructing a second pipeline between the WRP and the discharge location.

At this stage, both options are considered feasible and neither represents a major change to the Project. The final option would be selected during detailed design. The environmental impacts of both options are not expected to be materially different from those assessed in the EA for the Project. In both cases additional infrastructure would be provided in locations already proposed to be occupied by water cycle infrastructure associated with the Project.

#### **4.3.3 Conclusion**

The water quality parameters proposed by OEH in Submission 8 are achievable with only minor alterations to the proposed water cycle infrastructure, as discussed above. It is recommended that the OEH water quality parameters noted in Table 11 of this report be adopted in the environmental protection licence for the Project. These project refinements are not expected to materially change the environmental impacts of the Project predicted in the EA.

### **4.4 *Aprasia* conservation area**

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#### **4.4.1 Background**

The threatened species, Pink-tailed Worm Lizard (*Aprasia parapulchella*), was identified in the lower Montgomery Creek area of the Googong township. This species is listed as vulnerable in the NSW, ACT and at Commonwealth levels. During ecological surveys undertaken by Biosis Research for the EA, this species was found in the vicinity of one component of the Project, namely sewage pumping station 2 (SPS2). As a result, the sewage pumping station was moved upslope, away from this threatened species habitat and appropriate conservation measures proposed. The EA demonstrated that Stage 1 of the Project would not affect the species and committed to undertake further studies.

Since the finalisation of the EA, further studies for *Aprasia* have been undertaken as part of the EPBC Act referral for the township, and associated Googong township-foreshores working group process. These detailed surveys have resulted in the creation of an *Aprasia* Conservation Area being proposed within the lower Montgomery Creek area. This section discusses the recent study and the proposed conservation area.

#### **4.4.2 Detailed additional *Aprasia* study**

Biosis Research were engaged to prepare an assessment of the impacts of the Googong township upon known *Aprasia* habitat occurring within the proposed Googong township area (see Appendix C of this report). Targeted field surveys were undertaken in late 2010 during the appropriate survey season to confirm information obtained during a desktop review and any previous field studies. This information was then used to assess the quality of the habitat throughout the study area. The results of the survey and habitat value mapping were also used to inform the preparation of an 'Assessment of Significance' and to make recommendations for the design and ongoing management of a proposed *Aprasia* Conservation Area.

#### **4.4.3 Peer review and expert input**

Further reviews of the Biosis Research assessment were undertaken by Dr Will Osborne of the University of Canberra's Institute of Applied Ecology and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC). Dr Osborne is a known local expert on *Aprasia parapulchella* and was engaged to review the Biosis Research assessment and

provide further advice regarding the protection of the species and the long-term management of the conservation area. The proposed *Aprasia* Conservation Area was revised as a result. The *Aprasia* Conservation Area was further revised following an additional review undertaken by DSEWPAC.

#### **4.4.4 Proposed *Aprasia* conservation area**

There is currently about 34ha of high to very high quality *Aprasia* habitat located in the lower Montgomery Creek area of the Googong township. CIC proposed to provide an *Aprasia* Conservation Area totalling about 52ha and containing up to 45ha of high quality habitat to support the long-term conservation of this species.

Thirteen (13) hectares of the proposed *Aprasia* Conservation Area is already being dedicated to QCC as part of the lower Montgomery Creek riparian corridor which is zoned the E2 – Environmental Conservation under the *Queanbeyan Local Environment Plan (Googong) 2009*. Therefore, a further 39ha of land (primarily zoned R5 – Large Lot Residential), would be added to create the 52ha *Aprasia* Conservation Area. Figure 6 of this report shows the extent of the *Aprasia* Conservation Area in relation to the masterplan for the township.

#### **4.4.5 Long term ownership and management**

In the long term, the Conservation Area would be owned by QCC and a plan of management would be prepared for the land consistent with the requirements of the NSW *Local Government Act 1993*.

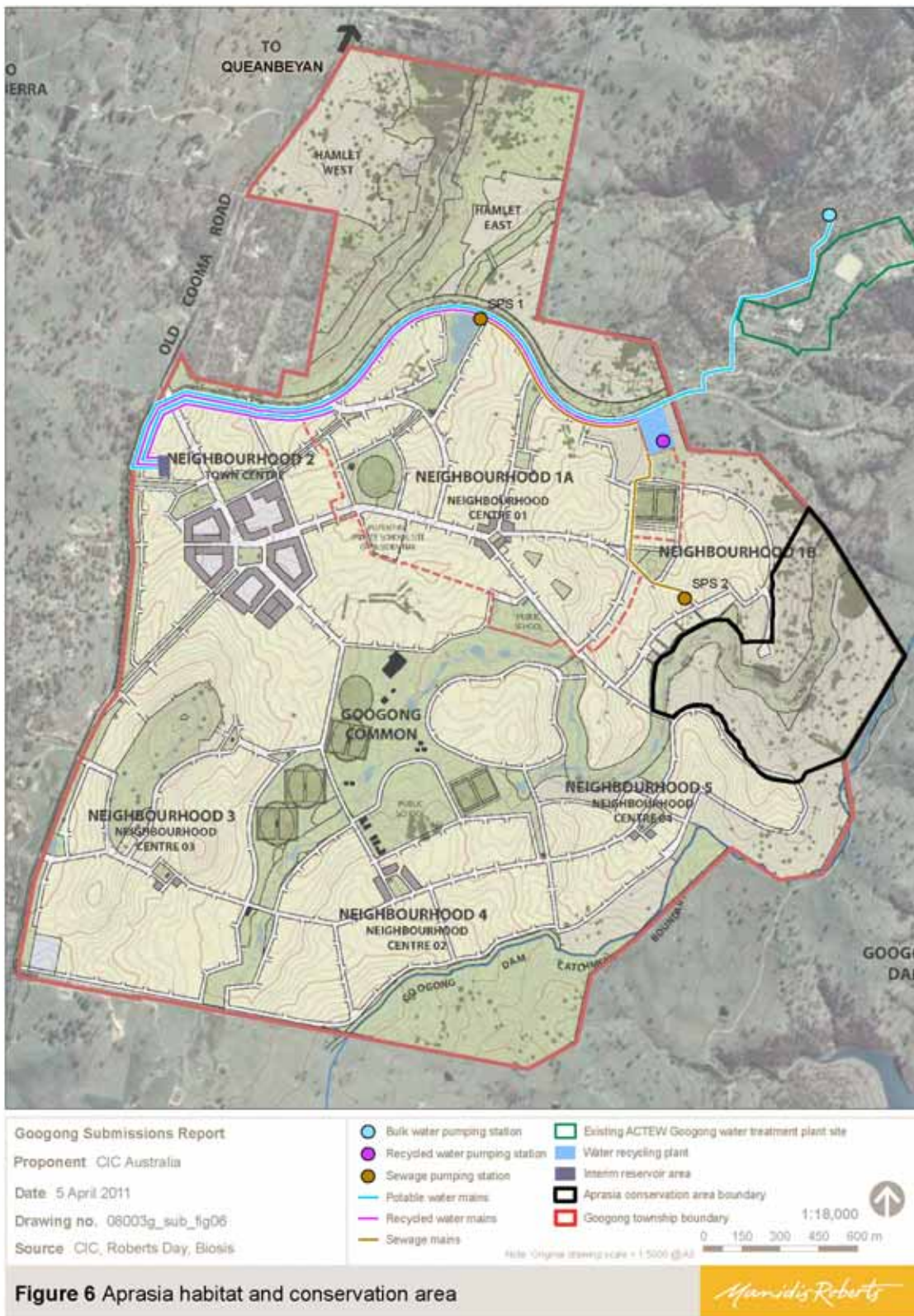
This plan of management would include the primary objectives of:

- Restoration and protection of the riparian zone of the Montgomery's Creek corridor.
- Restoration and protection of habitat for the *Aprasia* throughout the entire area.
- Maintenance of the area for bushfire asset protection purposes.

CIC will work with QCC to determine the bush regeneration and other measures that would be undertaken by CIC prior to dedication of the land.



Figure 6 Proposed Aprasia Conservation Area



As the final survey and detailed urban layout is not finalised for Neighbourhoods 1B and 5, it is required that there is some flexibility in the final boundary of the conservation area, while not decreasing the total size of the area.

The *Aprasia* Conservation Area would be divided into three management zones (refer to Figure 7 of this report):

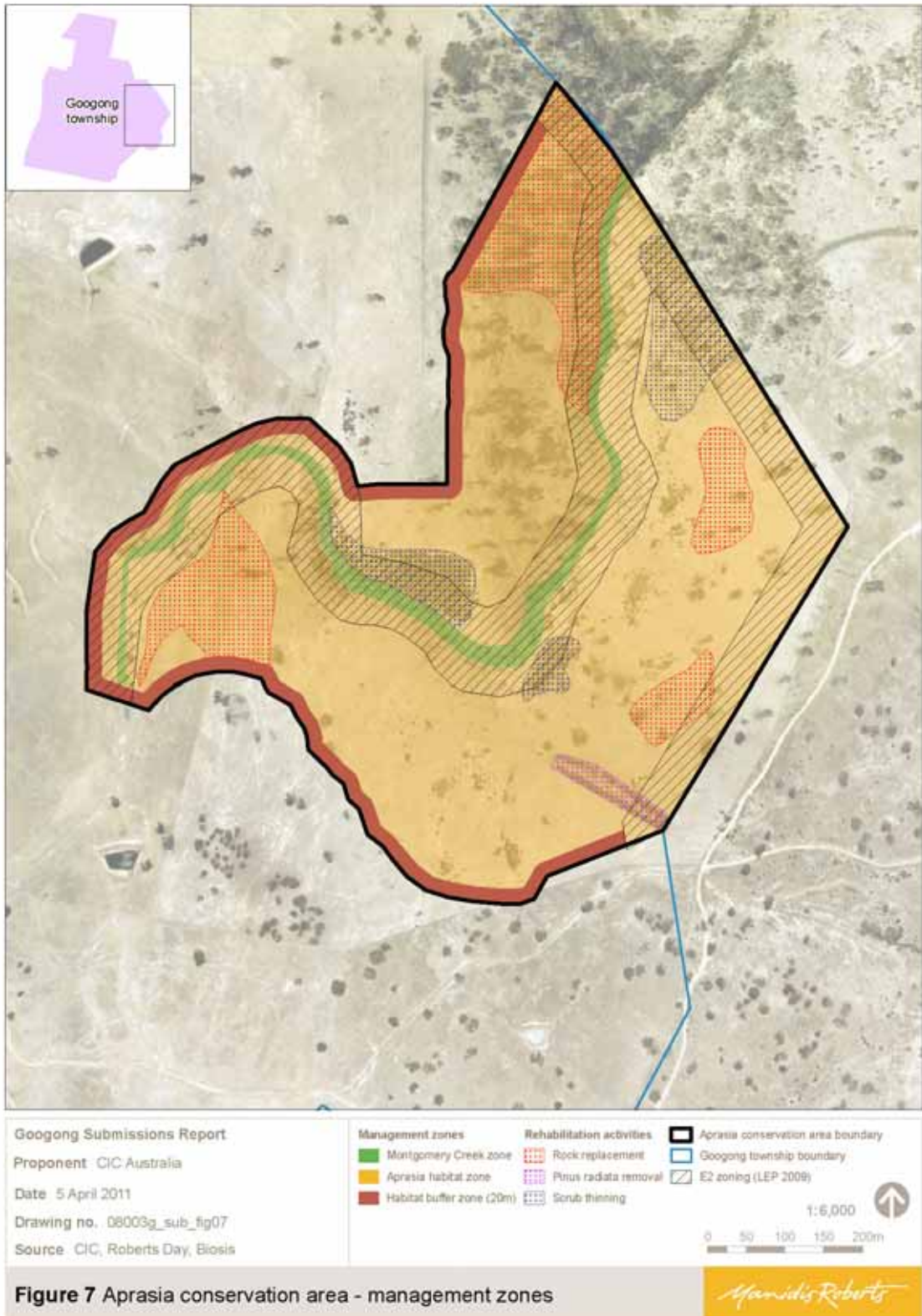
- *Aprasia* habitat zone – this is the majority of the *Aprasia* Conservation Area (45ha) and would be managed with the primary aim of maintaining and improving *Aprasia* habitat features.
- Habitat buffer zone – this is a 20m zone at the urban interface (4.2ha) and would be managed primarily to minimise edge effects.
- Montgomery Creek zone – this is the area immediately adjacent to, and including, the creekline (2.6ha), to be managed differently, as this does not represent suitable habitat for the species.

In accordance with the advice from Biosis Research and Dr Will Osborne, specific management and mitigation measures would include:

- Bush regeneration works and weed control:
  - The removal of the exotic woody vegetation such as Radiata Pine (*Pinus radiata*), Hawthorn (*Crataegus* sp.), African Boxthorn (*Lycium ferocissimum*), etc.
  - The targeted removal of the weed species Serrated Tussock (*Nassella trichotoma*) (approximately 50 plants) located within the Montgomery Creek riparian zone.
  - The translocation of suitable rocks (and translocation of any *Aprasia* individuals found) from areas of *Aprasia* habitat to be removed into the *Aprasia* Conservation Area.
  - Targeted revegetation and regeneration of selected areas with suitable native grasses (notably Kangaroo Grass (*Themeda triandra*) and Redleg Grass (*Bothriocloa macra*), where they are not currently the dominant species.
- Boundary treatment and minimisation of 'edge effects':
  - The design of the conservation area has resulted in a consolidated and connected area, which reduces the length of the boundary, resulting in a reduced potential for edge effects.
  - As advised by Dr Will Osborne and Biosis Research, a 20m wide habitat buffer zone has been provided along the urban interface (refer to Figure 7). This zone would be managed specifically to reduce the potential for edge effects.
  - Rural type fencing (without barbed wire) would delineate the boundary of the *Aprasia* Conservation Area along the urban interface.
  - Sealed roads/streets would be constructed around the boundary of the *Aprasia* Conservation Area, with residential lots located on the opposite side of the road/street. Biosis and Dr Will Osborne advise that the placement of roads in this manner is effective in discouraging the dumping of rubbish and spreading lawn clippings 'over the back fence' of private property.
- Community education program:
  - A community education program would be implemented at Googong at the point of sale of the residential properties and ongoing, which would include specifics regarding the conservation of the *Aprasia*. The details of the information and communication methods would be developed in consultation with experts in the field and relevant government agencies.



**Figure 7** Aprasia Conservation Area Management Zones



#### 4.4.6 Implications for the water cycle project

The main implication for the Project is that sewage pumping station 2 (SPS2) is likely to be able to be moved further downslope (if required for engineering purposes) without resulting in any impacts on this species. It is not proposed to move SPS2 at this stage, however this flexibility in the design will be considered at detailed design stage. If SPS2 is required to be moved downslope, a buffer zone of at least 20m wide would still be provided between SPS2 and the *Aprasia* Conservation Area. The environmental impacts of the relocation of SPS2 are not expected to be materially different to those predicted for the Project in the EA.

#### 4.4.7 Conclusion

The Project assessed under Part 3A of the EP&A Act would not result in any impacts upon the Pink-tailed Worm Lizard.

In terms of the township as a whole, it has been determined that the proposed location and extent of the conservation area will result in a qualitative and quantitative long-term benefit to *Aprasia* habitat within the locality. Thus, the proposed approach will ensure that the proposed development of the Googong township is unlikely to have a significant impact on *Aprasia parapulchella*.

This approach would also allow the relocation of SPS2 further downstream, if considered necessary, to improve engineering outcomes for the water cycle infrastructure. This would be considered during the detailed design stage.

### 4.5 Conclusions

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The submissions and ongoing consultation with stakeholders identified refinements that could be made to the Project. The following requested refinements to the Project are proposed:

- A change to the location of the bulk water pumping station and associated infrastructure, to meet the operational requirements of the ACTEW Googong Water Treatment Plant.
- Alterations to meet the discharge requirements of the OEH regarding the total nitrogen (TN) and residual chlorine concentration in excess recycled water to be discharged into the stormwater management system. Minor amendment to the WRP process is required to meet the TN requirement. Two feasible options have been identified to meet the residual chlorine requirement: de-chlorination at the discharge point; or a separate non-chlorinated recycled water pipeline for discharge. The final option would be selected during detailed design of the Project.
- The inclusion of an *Aprasia* Conservation Area as part of the township will result in an improved environmental outcome for this species. It would also allow small changes to the location of some of the Project's sewage infrastructure to be made for engineering reasons, if required.

It is noted that these refinements to the Project have not been proposed to minimise the environmental impact of the Project. As described, they are generally consistent with the Project described in the EA and within the context of the entire Project, these refinements are considered to be minor. They will not materially change the environmental impacts predicted for the Project in the EA.

# 5 Revised statement of commitments

This chapter provides the Statement of commitments, which has been revised based on the submissions received for the Project. Certain submissions suggested specific changes to a commitment, while other commitments have been altered to reflect aspects of a submission.

## 5.1 Summary of changes to the statement of commitments

As a result of the submissions received, the following three commitments have been revised, with two additional commitments being added.

- **Commitment H1 (page 91)** has been amended in accordance with Submission 8. Originally the commitment read that the avoidance, relocation or disturbance of any Aboriginal heritage sites and PADs will be in accordance with OEH guidelines and permits. In Submission 8, it was raised that as this development is being assessed under Part 3A of the EP&A Act, there will be no requirement for any OEH Aboriginal Heritage Impact Permits. This is only a minor change.
- **Commitment H2 (page 91)** has been amended in accordance with Submission 8. The request was made by OEH for clarification of how unknown Indigenous heritage items will be located and identified during construction and by whom. Further information has been added to the Commitment to clarify the questions raised by OEH. Specifically, the site environmental officer would identify the issue and all works in the vicinity of the find would cease until specialist heritage advice occurs.
- **Commitment NH3 (page 91)** has been amended to include the request (submission not included in this report) made by the Heritage Branch of the NSW Department of Planning (now part of OEH). This Commitment has been amended to note that the OEH would be notified and that works in the vicinity of the find would cease until specialist heritage advice has been obtained.
- A new **Commitment D3 (page 79)** has been added following Submission 9 from QCC. Submission 9 recommends that all construction and operational activities associated with Googong's water supply system and sewerage system follow the Council's *Development Specification – Googong*. Commitment D3 recognises the importance of this recommendation, and has committed to compliance with this specification for the Project.
- A new **Commitment G8 (page 89)** has been added following Submission 10 from NSW Office of Water (NOW), regarding the timing of groundwater assessment as part of an overall program of further monitoring and assessment in terms of the staging of construction works. The groundwater monitoring program is to be undertaken as outlined in Table 12 of this report.

## 5.2 Revised Statement of commitments

The table below provides the revised Statement of commitments for the Project.

Objective	Ref. no.	Commitment	Timing	References
<b>Project detailed design</b>				
Ensure final location and design of all water cycle infrastructure minimise impacts on natural environment and human health.	D1	Any location and/or design changes will be subject to a consistency assessment, informed through a desktop analysis of each of the environmental issues addressed in this EA.	Prior to construction	Chapter 5 and Part B of the EA.
	D2	Where any final location and/or design changes are not generally consistent with the Part 3A approval of the Project, the proponent will apply for modification under Section 75W of the EP&A Act.	Prior to construction	Chapters 3, 5 and Part B of the EA.
	D3	The construction and operation of the Project will comply with Queanbeyan City Council's <i>Development Specification – Googong</i> .	Construction and operation	Submission 9.
<b>Construction management</b>				
Put management systems in place for protection of the environment.	C1	A construction environmental management plan (CEMP) will be developed in consultation with relevant agencies to manage the environmental issues assessed in this EA and implement the identified mitigation and management measures where required.	Prior to construction	Chapters 6 and Part B of the EA.
Minimise impacts on human amenity as a result of construction hours.	C2	Construction work will generally be undertaken between the hours of 6.00am and 7.00pm Monday to Friday, and 8.00am to 1.00pm Saturdays. At all other times, construction noise levels will be as agreed with the relevant receiver(s).	Construction	Chapter 5, Section 13.4 and Appendix J of the EA.
<b>Operational management</b>				
Ensure comprehensive monitoring of operation of the water cycle.	OP1	<p>Establishment and location details for monitoring sites will be in accordance with WQ4. Results of all monitoring programs that form part of these Statement of Commitments will be considered in terms of overall environmental impact on a regular basis, including:</p> <ul style="list-style-type: none"> <li>The trade-off between potable water savings, reduction in stormwater discharges and increased recycled water discharges.</li> <li>Relative impacts of excess recycled water discharges compared to impacts on soil and groundwater from recycled water uses.</li> <li>The timeframe for relative comparisons of impacts of components of the water cycle will be determined in consultation with the relevant government agencies.</li> <li>The ability to feedback results for further stages of Googong</li> </ul>	Operation	Chapters 5 and 7 of the EA.



Objective	Ref. no.	Commitment	Timing	References
Ensure comprehensive monitoring of operation of the water cycle.	OP1	<p>Establishment and location details for monitoring sites will be in accordance with WQ4. Results of all monitoring programs that form part of these Statement of Commitments will be considered in terms of overall environmental impact on a regular basis, including:</p> <ul style="list-style-type: none"> <li>The trade-off between potable water savings, reduction in stormwater discharges and increased recycled water discharges.</li> <li>Relative impacts of excess recycled water discharges compared to impacts on soil and groundwater from recycled water uses.</li> <li>The timeframe for relative comparisons of impacts of components of the water cycle will be determined in consultation with the relevant government agencies.</li> <li>The ability to feedback results for further stages of Googong township.</li> </ul>	Operation	Chapters 5 and 7 of the EA.
	OP2	Telemetry will be installed on all major water cycle infrastructure to gather operational data.	Operation	Chapter 5 of the EA.
	OP3	<p>Management plans will be reviewed with consideration of the outcomes of monitoring programs:</p> <ul style="list-style-type: none"> <li>Additional management and mitigation measures will be implemented, should monitoring identify that the water cycle system is operating outside of modelled or expected parameters.</li> </ul>	Operation	Chapter 6 of the EA.
	<b>Community and stakeholder consultation</b>			
Ensure effective consultation with community and other stakeholders is continued.	CS1	A combined consultation strategy for community stakeholders and key government agencies will continue to be implemented throughout the Project. The outcomes of ongoing consultation will continue to influence the Project.	Prior to and during construction and operation	Chapter 16 of the EA.
Ensure all affected stakeholders are kept informed of the construction schedule.	CS2	During construction, affected communities will be informed prior to the start of any works in their area and will be notified at regular intervals throughout the construction process according to a project-specific community engagement and stakeholder management plan.	Construction	Chapter 16 of the EA.
Ensure coverage of water cycle issues in the broad community education strategy for the Googong township.	CS3	A community education strategy will be developed, which will focus on minimising environmental and human health risks associated with the use of recycled water.	Prior to and during construction and operation	Chapters 8 and 16 of the EA.

Objective	Ref. no.	Commitment	Timing	References
<b>Water quality and hydrology</b>				
Implement water quality and hydrology management procedures.	WQ1	To reduce risks associated with water quality, soil and water management plans will be developed and implemented for the construction phase, via the CEMP, in accordance with <i>Managing urban stormwater: soils and construction, Volume 1</i> (the Blue book).	Prior to and during construction	Chapter 7 of the EA.
Minimise the risk of surface water contamination.	WQ2	<p>A spill management and response procedures will be developed in the CEMP for the construction phase of the Project. These will specify that:</p> <ul style="list-style-type: none"> <li>Any fuels and chemicals will be stored to meet relevant standards in banded or contained areas and a spill kit will be provided at all locations where fuels and/or chemicals are used.</li> <li>Fuel and chemical storage sites will not be located in the vicinity of any permanent and/or flowing waterway.</li> <li>The maintenance or refuelling of equipment will not be undertaken within the vicinity (within 150m) of any waterway.</li> </ul>	Construction	Chapter 7 of the EA.
Ensure bank stabilisation in construction sites.	WQ3	<p>The CEMP will incorporate measures to ensure that creek banks are stabilised during the construction phase, such as:</p> <ul style="list-style-type: none"> <li>Stabilising where required by establishing rocks, sandbags/matting to prevent scouring, ensuring that they are placed to conform as far as possible with existing contours.</li> <li>Respreading topsoil over the area from where it was removed.</li> </ul>	Construction	Chapter 7 of the EA.

Objective	Ref. no.	Commitment	Timing	References
Monitor impacts on waterways.	WQ4	<p>A monitoring program to assess the potential impacts of the Project on the Queanbeyan River (including water quality, flow, fish migration, macrophytes and macro invertebrate communities) will be undertaken.</p> <ul style="list-style-type: none"> <li>• Details of the monitoring program will be determined in consultation with relevant government authorities/stakeholders (including the OEH, DPI and, potentially, ACTEW Corporation). Such consultation will ensure the sharing of available data for the Queanbeyan River for comparative and impact assessment purposes.</li> <li>• A new monitoring site within the Queanbeyan River is proposed to measure water quality and aquatic ecology impacts over the medium term. This site will be located near the confluence of Googong Creek and Queanbeyan River (and will be sited to enable comparison with data collected from upstream and downstream sites).</li> <li>• Monitoring will commence approximately 12 months prior to commissioning the water recycling plant.</li> </ul>	Prior to and during construction, and during operation	Chapter 7 and Section 11.2 of the EA.
	WQ5	<p>The operation environmental management plan (OEMP) will outline erosion and sediment control measures to protect buffer and riparian vegetation zones, in general accordance with Statement of Commitment WQ3.</p>	Operation	Chapter 7 of the EA.

Objective	Ref. no.	Commitment	Timing	References
Human health Ensure recycled water meets all relevant guidelines.	HH1	Recycled water will meet the requirements for non-potable domestic use as defined in the <i>Australian Guidelines for Water Recycling: Managing Health and Environmental Risks</i> (NRMHC, EPHC & AHMC, 2006). Recycled water will be appropriately planned and industry accepted management systems put in place to assure appropriate product quality.	Operation	Chapter 8 of the EA.
	HH2	A Recycled Water Risk Management Plan (RWRMP) will be prepared based on the risk management framework outlined in <i>Australian National Guidelines for Water Recycling – Managing Health and Environmental Risks</i> (2006). This RWRMP will be a living document that will be refined throughout operation of the recycled water scheme. It will involve: <ul style="list-style-type: none"> <li>Developing the RWRMP through hazard identification (for the operation of the recycled water system and use of recycled water).</li> <li>Identifying the significant human and environmental health risks.</li> <li>Conducting validation, operational and verification monitoring to determine the success of the following respective components of the scheme: the risk management system, preventative measures, and the achievement of safe and sustainable water recycling.</li> </ul>	Prior to operation and during operation	Chapter 8 of the EA.

Objective	Ref. no.	Commitment	Timing	References
Reduce risks associated with exposure to recycled water.	HH3	<p>The Proponent will apply the following risk management practices to limit exposures to recycled water:</p> <ul style="list-style-type: none"> <li>• Installation regulations and codes of practice that include systematic processes to reduce the probability of cross-connections.</li> <li>• Materials codes and regulations that easily discriminate drinking and recycled water plumbing.</li> <li>• Regulations that limit the legal installation and modification of plumbing systems to licensed individuals.</li> <li>• Education on recycled water use and the need to avoid creating cross-connections.</li> <li>• Installation of backflow prevention.</li> <li>• Operational checking (that is, testing of recycled effluent quality following treatment) and connection auditing.</li> <li>• Continue to liaise with relevant stakeholders to ensure awareness and understanding of the Project (including discharges of excess recycled water to the environment) and to address arising issues.</li> </ul>	Construction and operation	Chapter 8 of the EA.
<b>Soil</b>				
Ensure proper management of soils.	S1	<p>Soil and water management plans will be developed and implemented for the construction phase, via the CEMP, in accordance with <i>Managing urban stormwater: soils and construction, Volume 1</i> (the 'Blue book').</p> <p>Soil types will be identified and delineated within the study area. Soil management measures will be developed according to soil type and be documented in the CEMP.</p>	Prior to construction	Chapter 9 of the EA.

Objective	Ref. no.	Commitment	Timing	References
Prevent soil erosion and minimise loss of topsoil.	S2	<p>The CEMP will detail erosion and sedimentation control measures, to maintain surface and soil stability at all times during cut and fill excavation activities (also necessary to ensure site safety).</p> <p>Graded soil will be stockpiled separately so that local soils can be recovered for respreading. During restoration and cleanup, the following will be applied in relation to stabilisation of soils:</p> <ul style="list-style-type: none"> <li>• Reproffing of the site to achieve soil stability and congruity with the surrounding landscape. This will be done in consideration of the landscape and open space strategy (LOSS) for the Googong township.</li> <li>• Reseeding and the use of geotextile materials as required.</li> <li>• Backfilling of trenches in layers with compaction.</li> <li>• Management and exclusion of site access to assist with site recovery.</li> </ul>	Construction	Chapter 9 of the EA
Prevent and manage spills.	S3	<p>To prevent and manage spills, the proponent will:</p> <ul style="list-style-type: none"> <li>• Implement chemical transport, storage, handling and disposal procedures, in accordance with requirements for dangerous goods, of environmental legislation and industry standards.</li> <li>• Ensure spill response procedures and equipment for containment and recovery are available on site.</li> <li>• Conduct workforce training on the transport, storage, handling and disposal procedures relating to chemicals.</li> </ul>	Construction and operation	Chapter 9 of the EA



Objective	Ref. no.	Commitment	Timing	References
Manage potential and/or real soil contamination on site.	S4	<p>To manage soil contamination, the proponent will:</p> <ul style="list-style-type: none"> <li>• Manage contaminated soil disposal or removal from site in accordance with <i>OEH Waste Classification Guidelines</i>.</li> <li>• Conduct further investigations at the newly identified area of concern (AEC – identified as Site 3 in Section 9.3.5 of the EA) prior to construction. An OEH accredited site auditor will provide advice on the need for further investigations at AEC3, if it is to be disturbed by the Project.</li> <li>• Develop a sampling strategy for AEC2 (shown in Section 9.3.5 of the EA) as soon as the existing uses at the site cease, in consultation with a OEH accredited site auditor. If potential or actual contamination is found during earthworks, stop all work in the affected area until a suitably qualified person has inspected the site, the hazard has been assessed and appropriate action has been taken (including delineating areas of concern as required until earthworks can resume safely).</li> </ul>	Prior to and during construction	Section 9.3.5 of the EA.

Objective	Ref. no.	Commitment	Timing	References
<p>Ensure minimal impact on soil salinity and groundwater quality</p>	<p>S5</p>	<p>Ensure that appropriate materials are used to mitigate against the corrosive impacts of high salinity.</p> <p>Design, where possible, the salt sensitive urban stormwater drainage system to direct potential saline runoff to a water body that is able to assimilate the expected salt load being applied to the landscape, without adverse impacts on aquatic and riparian ecosystems. Place and design built structures in consideration of existing and potential soil salinity levels.</p> <p>The proposed WRP should be designed to minimise the need for additions of chemicals for phosphorus removal, to minimise salt loading. The Proponent will explore options to switch off the phosphorus removal process during peak irrigation demand periods in accordance with Statement of Commitment OP1.</p> <p>Early stages of Googong township will be used as a trial to better understand the movement of salt in the landscape. It will involve the installation of carefully located piezometers and the monitoring of results, as well as monitoring the effectiveness of pre-emptive measures such as any subsurface drainage system. The results will be used to improve strategies for ensuing stages.</p> <p>Recycled water users will be informed of the specific risks associated with irrigation with recycled water, in the context of developing a complete awareness of the Project and its environmental trade-offs. This will include:</p> <ul style="list-style-type: none"> <li>• Education on salinity impacts on soil and plant damage and regrowth.</li> <li>• Encouragement to grow salt-tolerant species, particularly in areas considered to be of high risk.</li> </ul> <p>Householders will be educated on the benefits of using detergents that are low in phosphorus, sodium and salt – in terms of the impact on recycled water quality. This will form part of the broad community education program.</p>	<p>Prior to and during construction and during operation</p>	<p>Chapter 9 of the EA.</p>

Objective	Ref. no.	Commitment	Timing	References
<b>Groundwater</b>				
Prevent impacts to groundwater recharge.	G1	Timing of trench construction will be monitored and planned to ensure, where practical, the time the trench is open is reduced and during periods of low rainfall.	Construction	Chapter 10 of the EA and Appendix E of the EA.
Minimise groundwater contamination.	G2	<p>Site environmental management measures will be developed and outlined in the CEMP with the purpose of minimising the potential for spills to occur and implementing remedial actions (refer to SG1). These will include:</p> <ul style="list-style-type: none"> <li>• Mapping unregistered nearby groundwater bores, if identified.</li> <li>• Ensuring that all refuelling, where possible, occurs at designated fuel distribution points. These points will be underlain by compacted earth to prevent the significant loss of fuel to the ground during a spill and will be banded to contain large spills.</li> </ul>	Prior to and during construction	Chapter 10 of the EA and Appendix E of the EA.
Monitor groundwater quality to minimise adverse impacts.	G3	<p>Develop a groundwater monitoring program for the Project in consultation with relevant stakeholders. This program will address the following:</p> <ul style="list-style-type: none"> <li>• The salt levels in groundwater will be regularly monitored during and after Stage 1 of the Project.</li> <li>• Groundwater samples will be collected from both the shallow and regional aquifers, and soil conductivity (that is, salt) mapping will be carried out where possible in areas of inferred impact.</li> <li>• The monitoring of salt levels in the receiving waters will be indicative of the effectiveness of the stormwater system (refer below).</li> </ul>	Operation	Chapter 10 of the EA and Appendix E of the EA. Table 12 of this report.
Minimise impact on drainage.	G4	Develop the layout of infrastructure to reduce the impact on natural surface and subsoil drainage.	Prior to construction	Chapter 10 of the EA and Appendix E of the EA.
Minimise the potential for groundwater mounding.	G5	Construct in accordance with the approved materials and provisions of water supply code (WSA) 03-2002 to minimise leakage from water cycle infrastructure.	Construction	Chapter 10 of the EA and Appendix E of the EA.
Minimise the potential for waterlogging.	G6	The risks associated with waterlogging will be considered and accommodated through the design of the drainage system. Irrigation systems will be designed and scheduled to avoid overwatering.	Prior to construction (for operation)	Chapter 10 of the EA and Appendix E of the EA.

Objective	Ref. no.	Commitment	Timing	References
Minimise salinity impacts on soil and plant growth.	G7	Soil monitoring in low-lying areas, where salt is likely to accumulate, will be undertaken. If salt levels were shown to be increasing, engineered drainage structures to nearby creek lines will be constructed. As a preventative measure, to avoid future bare soil patches and erosion, salt-tolerant landscaping will be used in low-lying areas.	Operation	Chapter 10 of the EA and Appendix E of the EA.
Further investigate the groundwater environment, potential changes to recharge, and likelihood of long-term impacts.	G8	Undertake the groundwater monitoring program as outlined in Table 12 of this report.	Prior to and during construction and operation	Chapter 10 of the EA. Appendix E of the EA. Table 12 of this report.
<b>Terrestrial flora and fauna</b>				
Protect native flora and fauna.	F1	A flora and fauna management plan will be prepared prior to construction as part of the CEMP. All feasible and reasonable measures will be undertaken to minimise the impact of construction on native vegetation and fauna including: <ul style="list-style-type: none"> <li>• Minimising the disturbance of native flora and hollow-bearing trees.</li> <li>• Implementing weed control measures.</li> <li>• Revegetating with endemic species.</li> <li>• Minimising soil disturbance.</li> <li>• Implementing clearing protocols to protect flora and fauna.</li> </ul>	Prior to and during construction	Chapter 11 of the EA and Appendix F of the EA.

Objective	Ref. no.	Commitment	Timing	References
Protect threatened flora and fauna.	F2	<p>The Flora and fauna management plan (within the CEMP) will contain specific additional measures for threatened species, including:</p> <ul style="list-style-type: none"> <li>Only approved works will be undertaken within 5m of a threatened species and exclusion fencing will be erected around threatened flora species and threatened fauna habitats and maintained in place until such time as construction works are completed, unless otherwise approved by OEH.</li> <li>Site-specific management measures will be implemented for the protection of the Pink-Tailed Worm Lizard near the site proposed for SPS2 and at Hill 800, and for the Hoary Sunray near the BWPS site, including exclusion zones, signage and pre-construction surveys. These works will be undertaken under the supervision of an appropriately qualified ecologist.</li> </ul>	Prior to and during construction	Section 11.1 of the EA and Appendices F and P of the EA.
Protect terrestrial flora and fauna.	F3	An Operational environmental management plan (OEMP) will be prepared for the Project, and implemented. This will detail emergency, spill and maintenance procedures as well as monitoring and reporting regimes as they relate to the protection of terrestrial and aquatic ecology.	Operation	Chapter 11 of the EA and Appendix F of the EA.
<b>Aquatic ecology</b>				
Avoid impacts on and monitor changes to aquatic ecology.	A1	<p>Aquatic ecology impacts are considered under WQ4.</p> <p>A water quality and aquatic ecology monitoring program will be developed to monitor construction and operation impacts of the Project on waterways (refer to WQ4 for further details). The monitoring program will include siting of the aquatic ecology monitoring location to ensure viable comparison with historical and other recent river ecology data.</p> <p>Riparian vegetation, weeds and invasive scrub will be managed within the Googong township site. This will include surveying, mapping and managing invasive species.</p>	Prior to and during construction, and during operation	Chapter 7 and Section 11.2 of the EA.
Minimise impacts on aquatic habitats.	A2	Riparian zones within the Googong township site will be revegetated with species of local provenance to increase stability. Further measures to ensure minimal impact on aquatic habitats are addressed in Statement of Commitments WQ1-WQ5.	Construction	Chapter 7 and Section 11.2 of the EA.

Objective	Ref. no.	Commitment	Timing	References
<b>Indigenous (Aboriginal) and non-indigenous cultural heritage</b>				
<b>Indigenous heritage</b>				
Avoid and/or minimise impacts on indigenous heritage.	H1	Generally, indigenous heritage on the site will be managed in accordance with Appendix G of the EA, including the four identified indigenous heritage sites. The avoidance, relocation or disturbance of any Aboriginal heritage sites and PADs will be in accordance with relevant guidelines and permits. An archaeologist and representatives of the local Aboriginal community will conduct any relocation works.	Prior to and during construction	Chapter 12 of the EA and Appendix G of the EA.
Protect unknown indigenous heritage	H2	Should any unknown indigenous heritage items be located during the proposed works by the site environmental officer or any other construction staff, all work will cease in the vicinity of the find until specialist indigenous heritage advice is received.	Construction	Chapter 12 of the EA and Appendix G of the EA.
<b>Non-indigenous heritage</b>				
Avoid and/or minimise impacts on non-indigenous heritage.	NH1	Generally, non-indigenous heritage on the site will be managed in accordance with Appendix G of the EA. Construction and maintenance activities will be managed to avoid structural damage on heritage items as a result of vibration. Construction activities will be excluded from the identified heritage sites. However, if impacts are unavoidable then a further heritage assessment of the impacted site(s) will be conducted.	Prior to and during construction	Chapter 12 of the EA and Appendix G of the EA.
Continue to investigate heritage values of site GH14 (refer to Section 7.3 of Appendix G of the EA).	NH2	Investigation into the value of site GH14 is continuing. The results of this study will inform the approach to mitigation of impacts to non-indigenous heritage.	Prior to construction	Chapter 12 of the EA and Appendix G of the EA.
Protect unknown non-indigenous heritage items.	NH3	If any material of potential archaeological significance is unearthed, work will cease in the vicinity of the find until specialist heritage advice has been obtained. The NSW Heritage Council will be notified of the discovery of any relics.	Construction	Chapter 12 of the EA and Appendix G of the EA.



Objective	Ref. no.	Commitment	Timing	References
<b>Traffic, transportation and access</b>				
Minimise disturbance to local traffic and amenity during construction.	T1	<p>A traffic management plan will be prepared prior to the commencement of construction. It will detail traffic arrangements for the construction phase of the Project. This will include:</p> <ul style="list-style-type: none"> <li>• The use of standard mitigation and management controls.</li> <li>• Planning of vehicle use to maximise efficiency and reduce vehicle trips.</li> <li>• An education program for construction personnel in relation to local traffic arrangements (as per the plan) and local conditions (such as the intersection of Googong Dam Road and Old Cooma Road).</li> <li>• Access to properties and provisions for temporary access.</li> </ul> <p>A traffic control contractor will be engaged to implement the traffic management plan (such as partial road closures), where necessary specialist advice is required.</p>	Prior to and during construction	Section 13.1 of the EA and Appendix H of the EA.
Manage traffic, transportation and access with local authorities.	T2	<p>Traffic, transportation and access will be managed in consultation with relevant stakeholders, including Queanbeyan City Council and the RTA, including impact mitigation and management measures to address partial road closures, access to properties and provisions for temporary access and re-instatement.</p>	Prior to and during construction	Section 13.1 of the EA and Appendix H of the EA.
Minimise the impact of transportation.	T3	<p>Any oversized or overweight loads will be transported in accordance with RTA guidelines and requirements.</p>	Construction	Section 13.1 of the EA and Appendix H of the EA.
Minimise impact of traffic and access on stakeholders and the local community.	T4	<p>Councils, property owners and local community members will be informed of any potential loss of or disruption to access to properties, roads and/or pathways. Appropriate temporary measures to either provide alternative access or to reinstate access at the end of each workday will be negotiated with relevant parties.</p>	Construction	Section 13.1 of the EA and Appendix H of the EA.
Manage operational traffic, transportation and access to minimise impacts on local conditions.	T5	<p>A Traffic management plan will be prepared for the operation and maintenance of key water cycle infrastructure, which will include:</p> <ul style="list-style-type: none"> <li>• Standard management and mitigation measures for managing vehicle movements at water cycle infrastructure sites.</li> <li>• Timing of truck movements for deliveries and disposal, and parking arrangements.</li> </ul>	Operation	Section 13.1 of the EA and Appendix H of the EA.

Objective	Ref. no.	Commitment	Timing	References
<b>Waste generation and management</b>				
Practice responsible resource management during construction.	W1	<p>The CEMP will address the principles of the resource management hierarchy (avoidance, resource recovery and disposal in that order) and disposal will be to a licensed waste facility. The CEMP will include the following:</p> <ul style="list-style-type: none"> <li>• Procedures to classify waste types in accordance with the Waste Classification Guidelines and NSW legislative requirements.</li> <li>• Resource recovery and re-use strategies for each waste type.</li> <li>• Details of treatment and storage of on-site waste.</li> <li>• Procedures and disposal arrangements for relevant materials.</li> <li>• Reporting and recording requirements for all waste movements, allowing determination of recycling and re-use levels achieved.</li> </ul>	Construction	Section 13.2 of the EA.
Practice responsible resource management during operation.	W2	<p>Operational management of wastes will be incorporated into the OEMP for the key sites. Some inclusions are procedures for:</p> <ul style="list-style-type: none"> <li>• The collection and transportation of grit and screenings from the WRP to an appropriately licensed facility.</li> <li>• Treatment and handling of biosolids, suitable for use in agriculture, forestry, soil and site rehabilitation (Grade B), in accordance with OEH's <i>Environmental Guidelines on the Use and Disposal of Biosolids Products</i> (2007).</li> <li>• Management and monitoring of the discharge of treated effluent (recycled water) during commissioning and verification phases of the WRP operation.</li> <li>• Waste management for putrescible and recyclable wastes generated from the WRP and other water cycle infrastructure.</li> <li>• Procedures for the collection and dewatering of any solid matter removed through maintenance activities of water cycle infrastructure, and transportation and disposal off site.</li> <li>• Vehicle routes, and the timing of trips, associated with waste management, in consideration of the traffic management plan.</li> </ul>	Operation	Section 13.2 of the EA and Appendix B of the EA.

Objective	Ref. no.	Commitment	Timing	References
<b>Air quality</b>				
Ensure detailed design and urban layout of the Googong township meet air quality requirements for odour.	AQ1	<p>The dispersion modelling undertaken as part of the Googong New Town WRP Odour Impact Assessment will be validated at a later stage in the design, for the ultimate development. This will include consideration of:</p> <ul style="list-style-type: none"> <li>• Site-specific meteorological data, collected at the WRP site for at least 12 months prior to commissioning.</li> <li>• Site specific odour data collected during and following commissioning, prior to the residential development of the immediate area west of the WRP.</li> </ul>	Prior to and during construction, and during operation of Stage 1 of the Project.	Section 13.3 of the EA and Appendix I of the EA.
Minimise odour impacts of WRP and SPS at nearby receivers.	AQ2	Odour control facilities at the SPSs and the WRP will be installed as detailed in the EA (refer to Sections 4.4.2 and 5.1.3 of Appendix B).	Construction	Section 13.3 of the EA and Appendices B and I of the EA.
Monitor, verify then act on odour complaints.	AQ3	Odour complaints will be registered and investigated. Verified odour issues will be addressed with engineering, operational or other mitigation and management measures.	Operation	Section 13.3 of the EA.
Minimise the impact of construction activities on dust generation.	AQ4	<p>The CEMP will include typical dust suppression measures. Nuisance dust will be minimised by:</p> <ul style="list-style-type: none"> <li>• Reducing speed limits during high dust conditions.</li> <li>• Clearing vegetation and topsoil only within the designated footprint.</li> <li>• Progressive reinstatement of disturbed areas.</li> <li>• Employment of water trucks to reduce dust in dry, windy conditions.</li> </ul>	Construction	Section 13.3 of the EA.
Minimise dust generated by construction activities such as blasting.	AQ5	Blasting will be conducted at appropriate times, with consideration of site conditions and sensitive receivers.	Construction	Section 13.3 of the EA.
Manage construction activities according to weather conditions to minimise the potential for dust storms.	AQ6	Working practices will be modified during periods of high winds by limiting the use of some machinery, particularly when in close proximity to dwellings, and reducing vehicle travel speeds.	Construction	Section 13.3 of the EA.
Avoid adverse impacts on air quality due to smoke.	AQ7	The burning of material on site will be prohibited, except under the instruction of fire services.	Construction	Section 13.3 of the EA.

Objective	Ref. no.	Commitment	Timing	References
Minimise emissions from vehicle use.	AQ8	Vehicles will be well maintained to ensure emissions are kept to the minimum practicable.	Construction	Section 13.3 of the EA.
<b>Noise and vibration</b>				
Minimise the noise impact associated with construction.	N1	<p>Construction noise and vibration management strategies will be outlined in the CEMP. Measures will include the overall construction times (refer to C2) as well as the following:</p> <ul style="list-style-type: none"> <li>• Construction noise goals.</li> <li>• Liaising with community to advise on likely timing and duration of noisy activities.</li> <li>• Procedures for resolving complaints received from residents and landowners and dealing with exceedances (including the appointment of a liaison person to maintain relationships between the community and the construction contractors in accordance with AS 2436:1981 <i>Guide to noise control on construction, maintenance and demolition sites</i>).</li> <li>• Using noise abatement measures (physical and managerial) where reasonable and feasible.</li> <li>• Procedures for liaising with the relevant agencies to discuss the need to construct outside of regular hours, for specific cases.</li> </ul>	Construction	Section 13.4 of the EA and Appendix J of the EA.
Assess the potential for vibration impacts should blasting be required.	N1A	Should blasting at the WRP or SPS sites be necessary based on geotechnical information and construction methodology, a construction vibration assessment will be undertaken in accordance with <i>Assessing Vibration: A Technical Guideline</i> (DECC, 2006) to determine any additional management measures required for blasting activities.	Construction	Section 13.4 of the EA and Appendix J of the EA.
Meet noise requirements near the WRP site boundary during operations.	N2	The acoustic treatments specified for the WRP components, as outlined in Appendix J, will be implemented and then reviewed for effectiveness following noise measurement verification.	Construction and operation	Section 13.4 of the EA and Appendix J of the EA.

Objective	Ref. no.	Commitment	Timing	References
<p><b>Hazards and risks</b></p> <p>Manage the operational risks associated with storage and delivery of chemicals.</p>	R1	<p>Measures typical of facilities of the nature and size of the Project will include:</p> <ul style="list-style-type: none"> <li>• Storing relevant chemicals below threshold quantity levels.</li> <li>• Undertaking activities in accordance with relevant MSDS's.</li> <li>• Installing bunded areas for the storage and delivery of chemicals in accordance with AS 3780:2008 <i>The storage and handling of corrosive substances</i> and the relevant MSDS's.</li> <li>• Developing and implementing appropriate procedures for delivery, handling and accidental spills of chemicals.</li> </ul>	Operation	Section 13.5 of the EA and Appendix K of the EA.
<p>Manage risks in emergency and/or maintenance situations at the key infrastructure.</p>	R2	<p>The OEMP and RWRMP will outline the management of emergency situations for all key water cycle infrastructure. For emergency or maintenance events associated with the WRP, the following will be implemented/installed, and will include measures such as:</p> <ul style="list-style-type: none"> <li>• Telemetry at all key infrastructure (eg SCADA).</li> <li>• An alarm system.</li> <li>• Backup procedures should the power to infrastructure be interrupted.</li> <li>• First flush tank at the WRP and wet well emergency storage at the SPS's.</li> <li>• Overflows at the WRP and the SPS's.</li> </ul>	Operation	Section 13.5 of the EA.

Objective	Ref. no.	Commitment	Timing	References
<b>Visual amenity</b>				
Minimise visual impact by maintaining existing vegetation where practical.	V1	At relevant sites, existing vegetation will be maintained where practical and where appropriate. Additional vegetation will be planted along site boundaries to obscure views of infrastructure from sensitive receivers.	Construction and operation	Section 13.6 of the EA and Appendix L of the EA.
Minimise the visual impact of the reservoirs and access road (located on Hill 800).	V2	Visual impact of the reservoirs will be minimised through painting the structures a colour that will be chosen as the most compatible and/or appropriate with the surrounding environment and proposed Googong township. The landscaping approach for the reservoirs and associated access road will ensure minimal visual impact by: <ul style="list-style-type: none"> <li>• Achieving the most appropriate finished landform profile of the top of the hill that integrates the reservoirs.</li> <li>• Detailing siting and design of any elements over and above the reservoirs to minimise visibility (eg plant equipment, fencing, signage and lighting).</li> <li>• Ensure the access road alignment is a careful balance of limited visible road profile and minimised cutting/embankment visibility where following contours.</li> <li>• Considering the location and extent of tree groups to best mitigate visual impacts.</li> <li>• Considering soil and microclimate factors and amelioration to ensure healthy and rapid tree growth.</li> </ul>	Construction and operation	Section 13.6 of the EA and Appendix L of the EA.



## 5.3 Confirmation of timing of additional groundwater studies

Table 12 below clarifies the proposed timing of the additional groundwater studies identified in Statement of Commitment G3 above and in response to Submission 10 (NSW Office of Water). This table replaces Table 10.1 of the EA, which contained some statements about timing that needed to be clarified.

**Table 12** Recommended scope of works and timing for future groundwater monitoring program

Item	Task	Recommended scope of works	Timing
1	Obtain further site-specific baseline data on aquifer characteristics, groundwater levels and groundwater qualities, to monitor trends in groundwater levels and quality, and model the impact of long-term development of the site on groundwater resources.	Carry out groundwater drilling and hydraulic testing across entire study area, aimed at identifying the depth and morphology of the water table, as well as the hydraulic properties and groundwater chemistry of: <ul style="list-style-type: none"> <li>The Colinton Volcanics.</li> <li>The Googong Adamellite.</li> <li>Any soil horizons and/or discontinuities of interest.</li> </ul>	To commence as soon as practical after approval of the Project.
2	Obtain quantitative predictive modelling for parameters across the study area to quantify the impacts of the Project.	Once baseline data have been obtained, a computer model of the area should be compiled using the modular finite-difference flow model package MODFLOW, and the impacts of the development on groundwater levels and water table morphology should be assessed.  At this stage, it is recommended that MODFLOW be used to simulate a range of potential climatic conditions (including reduced rainfall at the site as a result of global warming), and a conservative estimate of the changes in the groundwater table depth and morphology be assessed. From this, the impacts on local groundwater users and groundwater-dependent ecosystems can be further assessed, with this information passed on to the ecological consultants involved in assisting with issue 3 below.	After the completion of Item 1.
3	Clarify the position of the groundwater divide, and the effect of recharge changes due to the Googong township on the position of the divide. This is necessary to ensure that recycled water is not applied to groundwater sources for the Googong Dam Reservoir.	Carry out a groundwater drilling and hydraulic testing program aimed at identifying the depth and morphology of the water table in the south-eastern corner of the site, as well as the hydraulic properties of the Colinton Volcanics, and possibly Silurian intrusions, in this area. Once these data have been obtained, the MODFLOW groundwater flow can be used to predict the effect of recharge changes on the position of the divide.	Concurrently with items 1 and 2.
4	Clarify the long-term effects of the Googong township development and climate change. This is necessary so that changes to planning and management of later stages can be introduced if required.	Establish groundwater level and salinity monitoring program, including installation of water-level loggers in monitoring wells, and periodic measurement of salinity in groundwater and in surface watercourses. Also establish a soil salinity monitoring program, using EM31.	Commence once monitoring wells installed. Review results annually.

# 6 Conclusion

This report responds to the submissions made on the Part 3A EA during and following the public exhibition phase for the Project, which occurred in November and December 2010.

A relatively small number of submissions (12) were received through the DPI. The number and content of submissions showed that there is general support for the Project from government agencies, while small numbers of local community members raised concerns about specific aspects of the operation of the Project, specifically the quality of the Queanbeyan River as a result of the proposed discharge of excess recycled water via the Googong township's stormwater system.

This report concludes that the Googong township water cycle project (the Project) is justified and should be approved, as it has many direct and indirect benefits, while having minimal potential impacts.

## 6.1 The Googong township

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As discussed in Sections 1.2 and 1.3 of this report, the Googong township is necessary in order to meet the growing population demands of Queanbeyan, Canberra and the greater Sydney-Canberra corridor region. The Googong township will deliver 55 percent of the 10,000 dwellings planned for Queanbeyan, and 22 percent of the dwellings planned for the Sydney-Canberra Corridor, under the areas' respective 25 year strategies. The Project will meet the water and wastewater infrastructure needs of the Googong township in a sustainable manner, enabling the 16,000 residents of Googong to use the same amount of water that traditionally sustains only 6,000 people.

## 6.2 Submissions on the environmental assessment

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Chapter 2 of this report discussed the nature and content of submissions received regarding the environmental assessment prepared for the Project. The submissions reflected the lengthy, comprehensive and ongoing design and consultation process that has occurred for the Project, which has resulted in an optimum outcome in terms of technical design and government agency expectations.

The key issues contained in the submissions were:

- That more information should be provided regarding aquatic ecology and stormwater.
- That minor amendments or refinements should be made to the proposal to address infrastructure operational requirements or to respond to different discharge requirements.
- That further clarity regarding certain environmental or design aspects should be provided.
- That the riparian rights of certain Wickerslack Lane residents, who extract water from the river for domestic and stock purposes, may be affected by the discharge of excess recycled water into the stormwater management system.

This report shows that the issues raised by government agencies and the community within their submissions have been fully considered and addressed. As discussed in Section 2.2, several submissions included comments that are related to the Googong township as a whole, or are otherwise

not relevant to the Part 3A water cycle infrastructure (the Project). This report has addressed the issues raised in the submissions that are related to the Project, as more general issues associated with other aspects of the township are assessed elsewhere, such as within the approved rezoning of Googong or the Part 4 of the EP&A Act subdivision development application.

### 6.3 Response to the issues raised

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Sections 2.3, 2.4 and 2.5 of this report detailed the response to the issues raised in each submission. These sections identified where in the environmental assessment or other documentation the particular issue is addressed, or where in this submissions report further clarifications or information is provided. These sections provided specific responses to the comments within each submission.

Chapter 3 responded further to specific comments contained within several submissions. This chapter provided further clarification of issues associated with potential impacts to downstream environments and communities, in terms of water quality, aquatic ecology and the proposed stormwater management strategy for the Googong township.

As discussed throughout this report, the overarching design philosophy is based on the NSW Government requirement that the ambient water quality in the Queanbeyan River is maintained post-development. Therefore:

- The Project is unlikely to result in significant impacts upon the downstream environment.
- The Project will not affect the riparian water rights of downstream users.

Further, the extensive water quality monitoring program that would be implemented would ensure that any potential issues that arise are identified early and managed accordingly.

### 6.4 Refinements to the Project

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As a result of certain submissions and ongoing stakeholder consultation, some refinements to the Project have been proposed, which are detailed in Chapter 4 of this report – the preferred project report. These were:

- A change to the location of the bulk water pumping station, to meet the operational requirements of the ACTEW Googong Water Treatment Plant.
- Identification of minor operational changes and two feasible options to meet the discharge requirements of the OEH. The final option would be selected during detailed design.
- The inclusion of an *Aprasia* Conservation Area as part of the township, which may enable small changes to the location of sewage infrastructure in the future to improve engineering outcomes.

These refinements are considered minor, generally consistent with the Project described in the EA that was placed on exhibition, and would not result in materially different environmental impacts.

## 6.5 Conclusion

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This submissions report concludes that the Project would provide the necessary water and wastewater infrastructure for the Googong township in a manner that is sustainable, and suitable for the characteristics of the site and the local area. Potential environmental impacts of the Project have been, and would continue to be, avoided, managed and mitigated during construction and operation.

Therefore, it is recommended that:

- The concept plan for the Project and the project application for Stage 1 of the Project be approved.
- The revised statement of commitments provided in Chapter 5 of this report be adopted as conditions of approval for the Project.