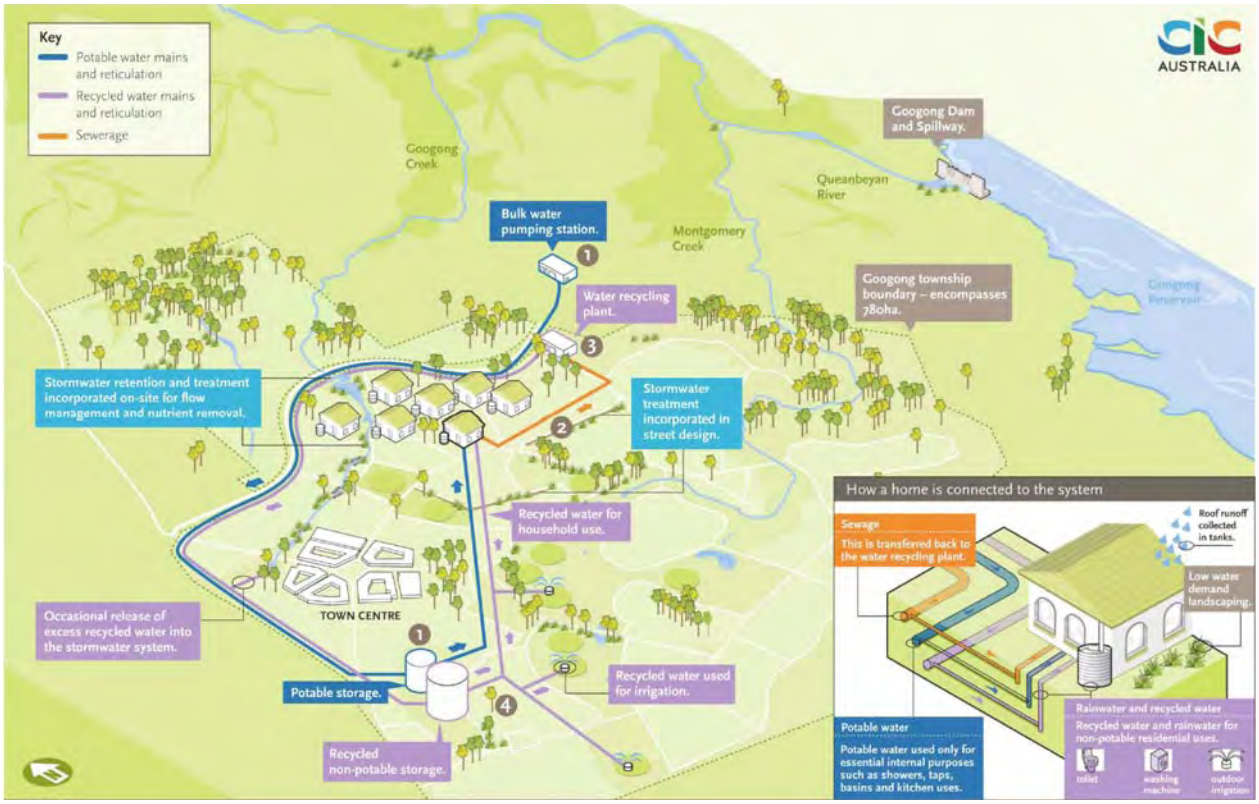
MAJOR PROJECT ASSESSMENT: Googong Township Water Cycle Project (MP08_0236)



Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

November 2011

ABBREVIATIONS

CIV	Capital Investment Value
Department	Department of Planning and Infrastructure
DGRs	Director-General's Requirements
Director-General	Director-General of the Department of Planning
EA	Environmental Assessment
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPI	Environmental Planning Instrument
kL/d	kilolitres per day
LES	Local Environment Study
MD SEPP	State Environmental Planning Policy (Major Development) 2005
mg/L	milligrams per litre
Minister	Minister for Planning and Infrastructure
PAC	Planning Assessment Commission
Part 3A	Part 3A of the *Environmental Planning and Assessment Act 1979*
PEA	Preliminary Environmental Assessment
PFM	Planning Focus Meeting
PPR	Preferred Project Report
Proponent	CIC Australia Limited
RtS	Response to Submissions
SEPP	State Environmental Planning Policy
WRP	Water Recycling Plant

Cover Image: Schematic Layout of the Proposal. (Source: Googong Township Water Cycle Project Environmental Assessment, November 2010)

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NSW Government
Department of Planning & Infrastructure

EXECUTIVE SUMMARY

CIC Australia Limited (CIC, the proponent) proposes to construct and operate water-related infrastructure to service the proposed Googong Township, approximately 5 kilometres south of Queanbeyan.

The project, known as the Googong Township Water Cycle Project – includes the construction of drinking water, recycled water and wastewater infrastructure. CIC is seeking concept plan approval for water-related services for the township, including:

- a potable water storage and distribution system;
- a sewage collection network to transfer waste flows to a water recycling plant; and
- a recycled water storage and distribution system for non-potable reuse within the township, which would be supplemented by collected rainwater at households and, when necessary, potable water.

CIC is also seeking project approval to construct and operate water-related infrastructure to service the first stage of the proposed Township (Neighbourhood 1A). Stage 1 does not include pipework or reticulation within NH1A, as this is subject to a separate determination by Queanbeyan City Council, under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the proposed township.

The entire project has a capital investment value (CIV) of $71.5 million, and would generate an estimated 294 jobs per year during construction and up to 5 jobs per year during operation. Stage 1 of the project has a CIV of $36.5 million and would generate the same number of construction and operational jobs as the entire project, on an annual basis.

The project constitutes a "major project" under Part 3A of the EP&A Act, and consequently the Minister is the approval authority for project. However, under the Minister's delegation the project is to be determined by the Planning Assessment Commission, as CIC has made reportable political donations. The subdivision and development applications are subject to a separate assessment under Part 4 of the EP&A Act, to be determined by Queanbeyan City Council or the relevant Joint Regional Planning Panel.

The Department exhibited the Environmental Assessment (EA) for the project from 17 November to 20 December 2010. The Department received a total of 13 submissions, including 8 from public authorities, 1 from ACTEWAGL Distribution and 4 from the general public. Submissions from the public authorities and ACTEWAGL did not object to the project and raised matters for the Department's consideration. Of the four public submissions, three objected to the project and one stated general support, but also raised concerns. The main concerns and grounds for objection to the project were based on water quality and stream health impacts, health impacts of downstream water users, ecological impacts and operational management of the scheme, including ongoing monitoring.

The Department has assessed the project application, EA, submissions on the project, CIC's response to submissions and preferred project report, in accordance with the objects of the EP&A Act and the principles of ecologically sustainable development.

This assessment has found that the operation of the project would potentially alter the flow regime of Googong Creek and the Queanbeyan River, with the changes likely to be more noticeable in Googong Creek. Additionally, the operation of the project, particularly the discharge of treated effluent, could potentially impact water quality in receiving waters and result in localised impacts on groundwater. Both the changed flow regime and water quality impacts may impact aquatic habitat and bank stability of Googong Creek and the Queanbeyan River, and would require ongoing monitoring and management.

The project would be designed and constructed in accordance with the relevant industry standards and guidelines, and water treatment would utilise UV and chlorine disinfection to produce highly treated water suitable for non-potable reuse within the township.

The assessment has also found that the project would not result in significant ecological, heritage or amenity impacts (traffic, noise, air quality and visual).

Construction of the project is likely to result in impacts typical of any infrastructure construction activity, including vegetation clearing, fuel spills, erosion and sedimentation, noise, and traffic impacts.

The Department is satisfied that these impacts can be adequately mitigated, managed, and/or compensated through implementation of a number of commitments made by CIC and conditions recommended by the Department. These include:

- the implementation of a comprehensive water management plan which would include baseline and ongoing monitoring of water quality, aquatic habitat, flows and groundwater, adaptive management, a flow release protocol and irrigation management;
- the establishment of a conservation area for the Pink-tailed Legless Lizard;
- stringent performance criteria for construction and operation activities; and
- the preparation of a comprehensive Construction Environmental Management Plan.

The Department considers that further assessment is required for subsequent stages of the proposal that are subject to the concept plan. The Department therefore recommends concept approval for the entire scheme, with the inclusion of further assessment requirements (refer to section 5 and Appendix F).

On balance, the Department considers the concept plan and Stage 1 project is in the public interest and should be approved, subject to conditions.

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1. BACKGROUND

1.1 Project Background

CIC Australia Limited (the Proponent) proposes to construct and operate the Googong Township Water Cycle Project, approximately 5 kilometres south of Queanbeyan in the Queanbeyan and Palerang local government areas (see Figure 1).

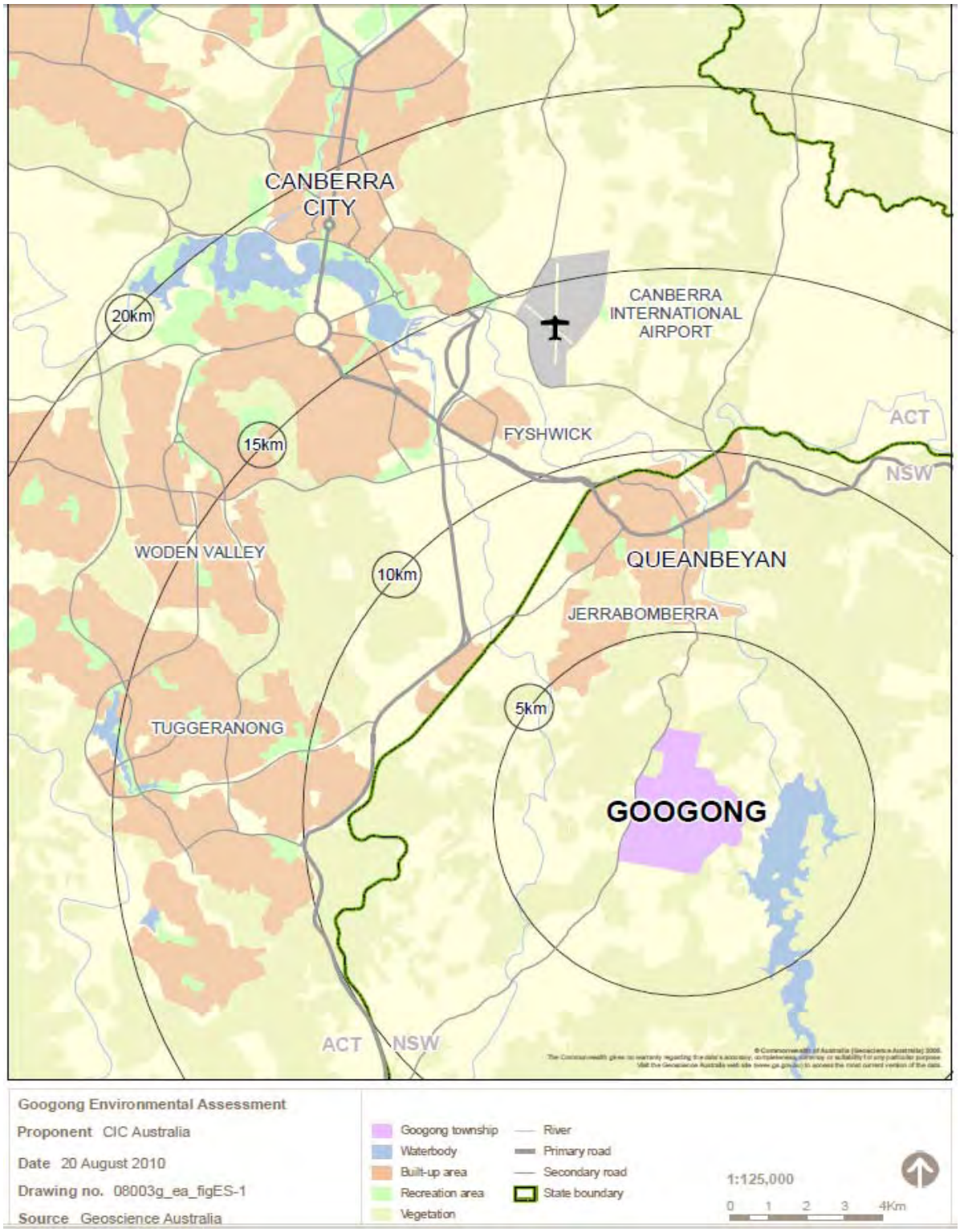


Figure 1: Project Location

Googong Township

The project would provide water-related services for the proposed Googong township, which is to comprise approximately 5,500 dwellings and be home to an estimated 16,000 people. The new township would be established in stages over a 25-year period.

Queanbeyan City Council or the Joint Regional Planning Panel is the consent authority for the separate subdivision and development applications for the proposed township under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), which includes the following components:

- the subdivision stages (the neighbourhood areas) of the township;
- water-related reticulation (sewerage, potable and recycled water) and connections to the trunk infrastructure subject of this assessment;
- stormwater and irrigation infrastructure;
- open space areas; and
- other service and utilities for the new township (such as civil works, communications and electricity).

CIC Australia Limited is also the applicant of the township development and has lodged a development application with Queanbeyan City Council for the first neighbourhood (Neighbourhood 1A).

The concept plan and project applications subject of this assessment deal only with the water and wastewater infrastructure to service the township.

1.2 Project Setting

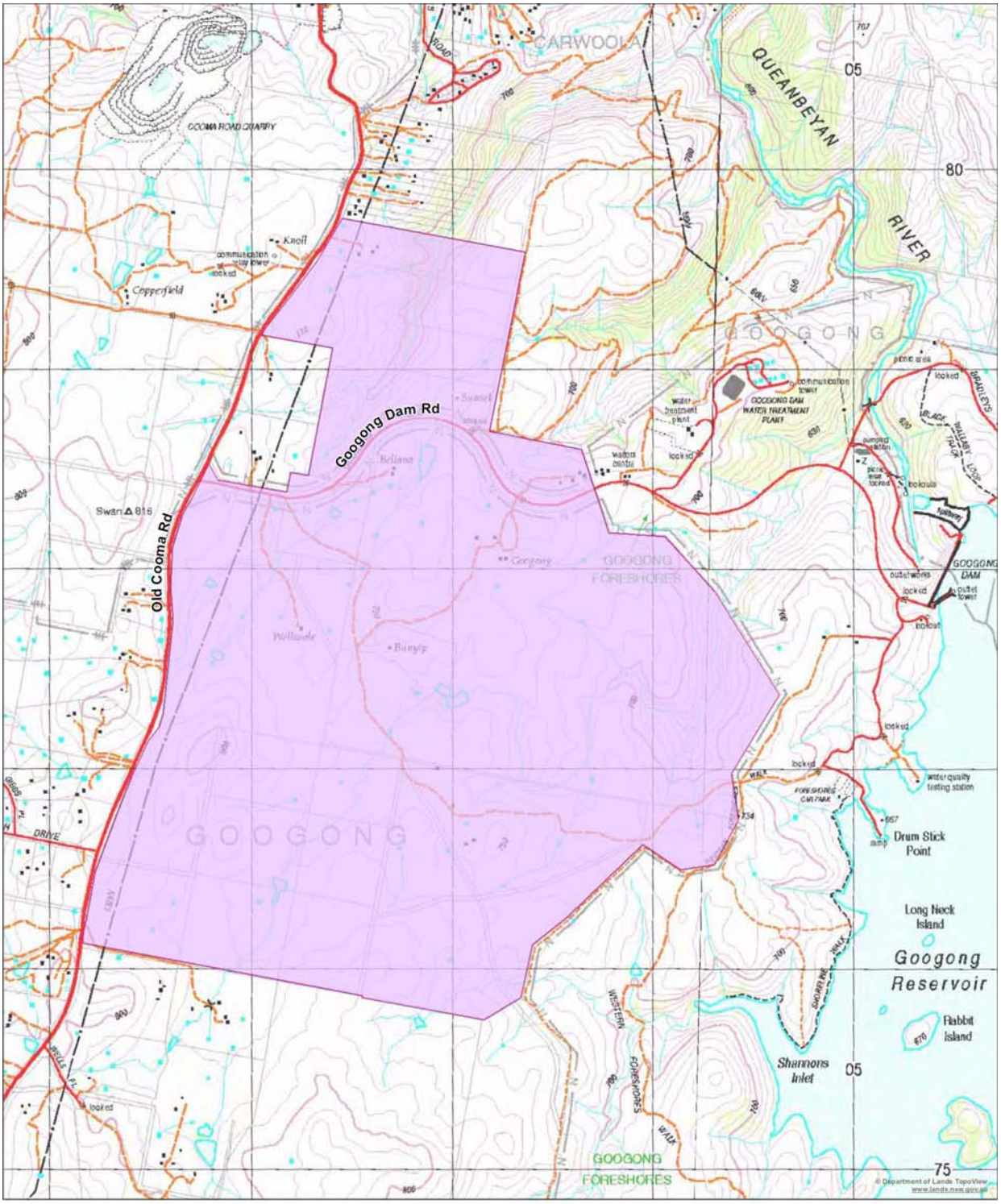
The township site comprises approximately 780 hectares of former grazing land. Old Cooma Road extends north-south along the western border of the project site, and Googong Dam Road forms the northern boundary for the core of the project site. The Commonwealth-owned Googong Dam Area (including the reservoir and foreshores) forms the eastern boundary of the project site. Refer to Figure 2 for the site context.

The land uses surrounding the project site are predominantly agricultural (including low-intensity cattle grazing, orchards, vineyards) and rural-residential, with the exception of the Cooma Road Quarry approximately 2 km to the north and Googong Dam to the east.

The majority of the project site is part of a dissected plateau known as the Mt Campbell uplands which has generally undulating topography. The project site is traversed by a number of small ephemeral and semi-permanent creeks, farm dams and depressions.

The majority of the land within the project site drains to the Queanbeyan River, below Googong Dam. The Queanbeyan River is 70 kilometres in length and is a tributary of the Molongolo River north of the existing Queanbeyan urban area, which eventually flows to Lake Burley Griffin in the ACT. A small area in the far south of the township area is within the catchment of the Googong Reservoir, however activities related to the concept plan and project applications are wholly within the Queanbeyan River catchment.

Water services in the Queanbeyan area are provided by Queanbeyan City Council, which purchases potable water in bulk from ACTEW Corporation. The Googong Township would also obtain its potable water supply from ACTEW Corporation and would connect to the existing bulk water network via the existing ACTEW main pipeline, which connects to both the Stromlo and Googong water treatment plants.



Googong Environmental Assessment
Proponent CIC Australia
Date 20 August 2010
Drawing no. 08003g_ea_fig01-2
Source Brown Consulting, NSW LPMA

Figure 2: Site Context

2. PROPOSED PROJECT

2.1. Project Description

CIC is seeking concept plan approval for water-related services for the proposed Googong Township, including:

- a potable water storage and distribution system;
- a sewage collection network to transfer waste flows to a water recycling plant; and
- a recycled water storage and distribution system for non-potable reuse within the township, which would be supplemented by collected rainwater at households and, when necessary, potable water.

CIC is also seeking project approval to construct and operate water-related infrastructure to service the first stage of the township (Neighbourhood 1A – NH1A). Stage 1 does not include pipework or reticulation within NH1A, as this is subject to a separate determination under Part 4 of the EP&A Act.

The major components of the project are summarised in Table 1, and the layout of the concept plan application and the project application are shown in Figures 3 and 4 respectively.

Table 1: Key Concept Plan Components

Aspect	***Description***
Summary	***The construction and operation of water-related infrastructure to service the proposed Googong Township (up to 16,000 people).***
Water Recycling Plant (WRP)	The WRP would be located within the north-east corner of the project site and separate to the proposed residential areas. The WRP would consist of membrane bioreactors, UV filtration and chlorination to treat sewage to a standard suitable for non-potable urban re-use (toilet flushing, washing machines and irrigation) and discharge to the environment.
Pumping Stations	• One bulk water pumping station for potable water, adjacent to ACTEW's existing Water Treatment Plant within the north-east corner of the project site. • Four sewage pumping stations located in the north (SPS1), west (SPS3) and east (SPS2 and SPS4) of the project site. • One recycled water pumping station, to be located within the proposed Water Recycling Plant site.
Reservoirs	*Long-Term* Two recycled water reservoirs (9.3 megalitre (ML) and 0.45 ML) and three potable water reservoirs (4.7 ML, 0.45 ML and 1.7 ML). These reservoirs are to be located in the south western corner of the project site. *Temporary* Two reservoirs (10 metres in height) and two elevated water tanks (20 to 25 metres in height) for potable and recycled water would be located adjacent to Old Cooma Road, close to the first subdivision stages of the Googong Township.
Rising and distribution mains	Three separate pipelines totalling 29 km: • Potable Water – a rising main from the bulk water pumping station to the reservoirs. • Sewerage – to transfer (pumped or gravity flow) wastewater collected from the Googong Township to the WRP. • Recycled (Non-potable) Water – from the proposed WRP to reservoirs for distribution within the Googong Township.
CIV	$71,534,000

Aspect	***Description***
Employment	Up to 294 full-time jobs per year during construction. Between 2 and 5 full-time positions per year during operation.
Construction	The construction of the entire project is expected to be completed by 2025.

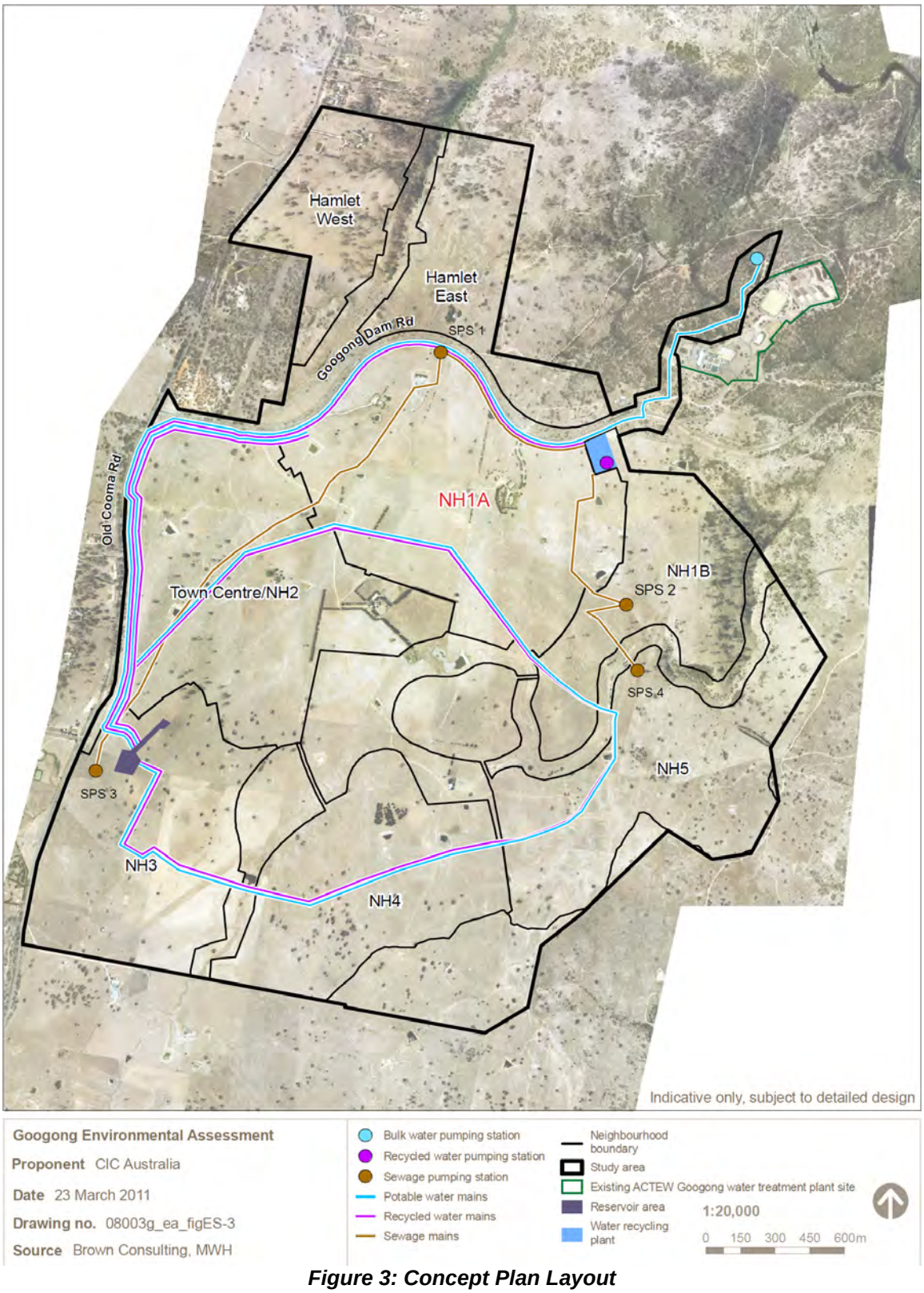


Figure 3: Concept Plan Layout

Table 2: Key Project Components

Aspect	***Description***
Project Summary	**The Project Application for Stage 1 would service the first subdivision areas of the Googong Township – Neighbourhood 1A (NH1A) – of approximately 1,200 lots and an 'equivalent population' (EP) of 3,600.** **Development of the project would occur in two stages (Stages 1a and 1b) based on the progressive development of the township. The key project components that would be influenced by the staged development are wastewater collection, distribution and treatment, as discussed below, due to the increasing production of wastewater.**
Bulk Water Pumping Station	The bulk water pumping station would connect to the existing ACTEW water pipeline and would be located adjacent to the existing Googong water treatment plant, located north-east of the project site. Access to the pumping station would be to the west of the existing water treatment plant, via an existing access track and disturbed area.
Sewage Pumping Stations	Two sewage pumping stations would be constructed to collect flows from NH1A, with the capacity to collect flows from all future stages of the project (entire concept plan): • SPS 1 within the northern part of the project site, adjacent to Googong Dam Road; and • SPS 2 within the eastern part of the project site to be constructed as part of Stage 1b.
Water Recycling Plant (WRP) and Pumping Station	Construction of the WRP would be staged in line with the growth of the township. • State 1a – to service an EP of up to 1,900; and • Stage 1b – to service an EP of 1,901 to 3,600. Sewage transferred to SPS1 would be initially transported off site by tankers, until the EP reaches a point at which treatment becomes feasible. After this point, sewage would be transferred to the WRP where the treatment of sewage and production of recycled water would commence, to be pumped to the recycled water reservoir.
Stage 1 rising and distribution mains	For sewage, recycled water and potable water to connect to NH1A. • Potable Water – approximately 4,950 metres long. • Recycled Water – approximately 3,600 metres long. • Sewerage – approximately 1,500 metres long.
Temporary Reservoirs	Refer to Table 1 above. The temporary reservoir site would be decommissioned once the permanent reservoir site is established for the subsequent stages of the project that are currently subject to the concept plan application.
CIV	$36,513,666
Construction	Construction of Stage 1 is expected to commence in early 2012 and be completed by late 2015 (noting that stage 1a is envisaged to be completed by the end of 2012). Construction would involve vegetation clearing, topsoil removal and the establishment of access roads, a site construction compound on Googong Dam Rd and fencing. Bulk excavation including some rock breaking and/or blasting would be undertaken to create level platforms for the potable, sewage and recycled water structures. Pipeline construction would occur in a 20 metre wide corridor.

Aspect	***Description***
Employment	Approximately 294 full-time jobs per year during construction. Between 2 and 5 full-time positions per year during operation.

Figure 4: Stage 1 Project Layout

2.2. Amendments to the Proposal

Following exhibition of the EA, CIC amended aspects of the project as outlined in its Preferred Project Report (Appendix C) and outlined below:

1) **Revised location of the bulk water pumping station** – including the associated access road and potable water mains. The infrastructure would be located to the west of the existing Googong Water Treatment Plant (WTP), as ACTEW advised that locating it to the east would potentially restrict future upgrades of the existing plant;
2) **Operational processes of the Water Recycling Plant (WRP)** – to address the requirements of the Office of Environment and Heritage for more stringent environmental release criteria. Specifically, the WRP would use higher levels of carbon dosing during secondary treatment of the wastewater and the de-chlorination of excess recycled water prior to its discharge; and
3) **Pink-tailed Worm Lizard (*Aprasia parapulchella*)** – following surveys as part of its EPBC Act referral for the proposed township, CIC proposed a conservation area to avoid an area in which the Pink-tailed Worm Lizard (*Aprasia parapulchella*) – listed as Vulnerable in NSW, ACT and Commonwealth legislation – was identified. Consequently, the project layout was also amended. CIC has also committed to implement site-specific management measures during construction to protect the species.

2.3. Project Need and Justification

The project site is located within the Sydney-Canberra Corridor, under the *Sydney-Canberra Regional Strategy 2006-2031* ('Regional Strategy', dated 2008). The Regional Strategy recognises the challenge of ensuring demand for urban growth is directed to Queanbeyan and other major regional centres, and the need to ensure an adequate supply of land to support at least 27 800 new regional jobs. It also recognises the need for sustainable water supplies to cater for the expected development of the Region.

The *Queanbeyan Residential and Economic Strategy 2031* (dated April 2007 and addendum dated December 2008) identifies the need for 10,000 new homes within the Queanbeyan local government area to accommodate the predicted population growth by 2031. Queanbeyan City Council has identified the Googong urban development area (being the subject site) as contributing 5,500 new homes towards this target.

The 2007 Strategy concluded that a cross-border settlement strategy is required to secure water supply from the ACT to future developments in Queanbeyan. The Queanbeyan Water Supply Agreement was endorsed by the Commonwealth, NSW and ACT Governments on 16 September 2008. The Agreement secures water supply for future developments in Queanbeyan. Water services in Queanbeyan are provided by Queanbeyan City Council, which purchases potable water in bulk from the ACTEW Corporation. A similar arrangement has been made between ACTEW Corporation and CIC, whereby potable water for the Googong township residents would be sourced from ACTEW Corporation's existing water supply system at Googong.

The proposed Googong Township would assist in catering for the predicted 22 per cent population growth in the Sydney-Canberra corridor region by 2031 and would provide 55 per cent of the new houses required in the Queanbeyan area over that period.

On 1 July 2004, the State Government introduced BASIX into the development planning system to ensure the efficient use of household water and energy. As part of the rezoning process for the Googong township, the Department required a commitment to achieve the minimum water targets in BASIX (40 per cent potable water saving) and the higher potable water savings of up to 70 per cent, in accordance with the requirements of the *Queanbeyan Residential and Economic Strategy* (dated April 2007). These requirements are part of a draft voluntary planning agreement being established between CIC and Queanbeyan City Council.

In order to meet the abovementioned requirements, CIC seeks approval for the concept plan and Project Applications for the Googong Water Cycle Project, which comprises the water and wastewater service infrastructure component of the works associated with the proposed Googong Township.

The project is designed to be a self-contained integrated water cycle management system, to achieve a reduction in potable water demand of 60 per cent compared to traditional residential developments. It would therefore meet the minimum water targets in BASIX and the higher potable water savings that were identified in the *Queanbeyan Residential and Economic Strategy*.

The Department is satisfied that the proposal addresses the challenges and needs for the Sydney-Canberra region, as identified under the Regional Strategy. The Department also considers that the proposed water and wastewater infrastructure is justified as it addresses the identified requirements of the Regional Strategy and the water conservation design requirements set by the Department during the rezoning stage of the project site.

3. STATUTORY CONTEXT

3.1. Part 3A

CIC is seeking concept plan approval for the entire project and project approval for the water related infrastructure to service Neighbourhood 1A (stage 1 of the project).

Major Project

The concept plan and Stage 1 of the proposal are classified as major projects under Part 3A of the EP&A Act, because they are development for the purpose of sewage and related waste water treatment plants, or the reticulation of treated water, with a capital investment value of more than $30 million, and therefore trigger the criteria in clause 26 of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005.* Consequently the Minister for Planning and Infrastructure is the approval authority for the project.

Concept Plan

On 8 December 2008, the then Minister for Planning authorised the submission of a concept plan for the project pursuant to Section 75M of the EP&A Act. CIC has applied for concept plan approval to develop the Googong Water Cycle Project in stages with respect to subdivision of the land and provision of associated infrastructure.

Continuing operation of Part 3A

Part 3A of the EP&A Act, as in force immediately before its repeal on 1 October 2011 and as modified by Schedule 6A to the Act, continues to apply to transitional Part 3A projects. Director-General's environmental assessment requirements (DGRs) have been issued in respect of the subject concept plan and project application and the environmental assessment report was lodged prior to 1 October 2011. The project is therefore a transitional Part 3A project.

Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated regulations, and the Minister (or his delegate) may approve or disapprove of the carrying out of the project under section 75J of the Act.

In determining the concept plan application, the Minister has the power to specify assessment and approval steps for subsequent stages under the concept plan. However, following the repeal of Part 3A, future stages under a concept plan approval will not be assessed as major projects under Part 3A, and would be considered under the relevant part of the EP&A Act at the time of assessment.

The Department's assessment of the concept plan and project application is detailed in section 5 of this report.

3.2. Planning Assessment Commission

On 14 September 2011, the Minister for Planning and Infrastructure delegated his approval functions under Sections 75J and 75O of the EP&A Act to the Planning Assessment Commission (PAC) in the cases where applications have been made by private companies or by local authorities (including reportable political donation applications).

CIC is a private company which has made the subject applications on behalf of Queanbeyan City Council. CIC has also provided a statement indicating it has made a reportable political donation (refer to Appendix D). Consequently, the project and concept plan applications are subject to determination by the PAC.

3.3. Permissibility

The proposal is located on land within the Queanbeyan and Palerang local government areas. In the absence of a Palerang local environmental plan, the provisions of the Yarrowlumla Local Environmental Plan (LEP) 2002, which is the local planning instrument that prevailed over the land prior to the amalgamation into Palerang Council, apply.

As shown in Table 3 below, the proposal is partially permissible and partially prohibited in the various zones that apply, under the local environmental plans.

Table 3: Queanbeyan LEP (Googong) 2009 and Yarrowlumla LEP 2002

Component of Proposal	Zoning	Permissibility
Queanbeyan Local Environmental Plan (Googong) 2009		
Recycling plant, sewage pumping station 1 and associated potable water, recycled water and sewage mains.	SP2 Infrastructure	Permissible with consent
Sewage pumping stations 2 and 3, reservoir area and majority of the area on which the associated potable water, recycled water and sewage mains are to be located.	R1, General Residential	Sewage reticulation systems are permissible with consent. Potable water main is prohibited.
Other sections of potable water, recycled water and sewage mains	B2, Local Centre	Prohibited
Other sections of potable water and recycled water mains	E2, Environmental Conservation	Prohibited
Remaining sections of potable water and recycled water mains	RE1, Public Recreation	Prohibited
Sewage pumping station 4	R5, Large Lot Residential	Permissible with consent
Yarrowlumla Local Environmental Plan 2002		
Bulk water pumping station and associated potable water main	5(a) Water Catchment	Permitted with consent

Notwithstanding the LEP provisions, *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) applies to the project. Division 18 of the Infrastructure SEPP relates to sewerage systems, with Clause 3 stating that development for the purpose of sewage reticulation systems may be carried out by or on behalf of a public authority without consent on any land or by any other person with consent on any land. Division 24 of the Infrastructure SEPP relates to water supply systems, with Clause 125 stating that

development for the purpose of water reticulation systems may be carried out by or on behalf of a public authority without consent on any land.

Although CIC is a private company, it has entered into a Voluntary Planning Agreement (VPA) with Queanbeyan City Council for the proposed Googong Township. The VPA provides for the construction of the project infrastructure and its dedication to Council after an interim period of commissioning and licence proving. Therefore the Department is satisfied the project would be undertaken on behalf of Queanbeyan City Council, a public authority, and the project is permissible within all zones.

Furthermore, the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) permits the approval of a project in cases where the project is outside of an environmentally sensitive area of State significance (Clause 8N of the EP&A Regulation) and where a concept plan has been authorised for the project, pursuant to Section 75M of the EP&A Act (Clause 8O of the EP&A Regulation). The project is not within an environmentally sensitive area of State significance and a concept plan has been authorised for the project (refer to section 2.4 of this report). Consequently, the project is permissible pursuant to Clauses 8N and 8O of the EP&A Regulation.

3.4. Other Approvals

Under Section 75U of the EP&A Act, a number of other approvals have been integrated into the Part 3A approval process and are not required to be separately obtained for the project. These include:

- heritage-related approvals under the *Heritage Act 1977* and *National Parks and Wildlife Act 1974*; and
- some water-related approvals under the *Rivers and Foreshores Improvement Act 1948* and *Water Management Act 2000*.

Under Section 75V of the EP&A Act, a number of further approvals are required to be obtained, but must be approved in a manner that is consistent with any Part 3A approval for the project. These include

- an environment protection licence under the *Protection of the Environment Operations Act 1997*; and
- a consent under the *Roads Act 1993*.

On 19 May 2011, CIC received approval from the Commonwealth Minister for Sustainability, Environment, Water, Populations and Communities under the *Environment Protection and Biodiversity Conservation Act 1999*. It is a controlled action due to potential impacts on the Pink Tailed Worm Lizard (considered in section 5.2 of this assessment) and a component of the project (BWPS) is situated on Commonwealth land.

The Department has consulted with the relevant government authorities responsible for these other approvals (see Section 4.2), and considered the relevant issues relating to these approvals in its assessment of the project (see Section 5). None of these authorities object to the project on grounds related to these other approvals.

3.5. Environmental Planning Instruments

Under Section 75I of the EP&A Act, the Director-General's report is required to include a copy of, or reference to, the provisions of environmental planning instruments that substantially govern the carrying out of the project.

The Department has considered the project against the relevant provisions of several State Environmental Planning Policies (SEPPs) (see Appendix B) as well as CIC's consideration of these issues (see section 3.2.5 of the EA), and is satisfied that none of these instruments substantially govern the carrying out of the project.

3.6. Objects of the EP&A Act

Decisions made under the EP&A Act must have regard to the objects of the Act, as set out in Section 5 of the Act. The objects of most relevance to the decision maker on whether or not to approve the proposal are found in sections 5(a)(i), (iii), (vi) and (vii). They are:

(a) to encourage:
- *(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
- *(iii) the protection, provision and co-ordination of communication and utility services,*
- *(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
- *(vii) ecologically sustainable development, and*

The Department is satisfied that the project encourages the conservation of natural resources (Object 5(a)(i)), through the design of an efficient water cycle system which would use at least 60 per cent less potable water compared with a traditional township development. CIC estimates the Googong Township of about 16,000 people would use only as much water as that which is traditionally used by approximately 6,000 people.

In relation to the protection and provision of utility services (Object 5(a)(iii)), CIC has committed to implement an ongoing communication and consultation program, to ensure that local service providers and utilities (such as ACTEW, which owns and operates the existing Googong Water Treatment Plant) are involved in key stages of the planning, construction and operational stages of the project.

Consideration of environmental protection (Object 5(a)(vi)) is provided in Section 5 of this report. Following its consideration, the Department is satisfied that the project is able to be undertaken in a manner that would maintain and potentially improve biodiversity values of the locality in the medium to long term.

The Department has considered the encouragement of ESD (Object 5(a)(vii)) in its assessment of the project application. This assessment integrates all significant economic and environmental considerations and seeks to avoid any potential serious or irreversible damage to the environment, based on an assessment of risk-weighted consequences. Based on this consideration, the Department is satisfied that the project can be carried out in a manner that is consistent with the principles of ESD.

3.7. Statement of Compliance

In accordance with Section 75I of the EP&A Act, the Department is satisfied that the Director-General's environmental assessment requirements have been complied with.

4. CONSULTATION AND SUBMISSIONS

4.1. Exhibition

Under Section 75H(3) of the EP&A Act, the Director-General is required to make the environmental assessment (EA) of an application publicly available for at least 30 days. After accepting the EA, the Department publicly exhibited it from 17 November 2010 until 20 December 2010 (33 days):

- on the Department's website; and
- at the Department's offices in Sydney and Queanbeyan, Queanbeyan City Library and the Nature Conservation Council of NSW.

The Department also advertised the public exhibition in the *Canberra Times* and the *Queanbeyan Chronicle* on 16 November 2010. Relevant state and local government authorities were notified of the exhibition in writing.

Following exhibition of the EA, the Department received a total of 13 submissions, including:

- 8 from public authorities;
- 1 from ACTEWAGL Distribution; and
- 4 from the general public, including 2 received after the exhibition period.

A summary of the issues raised in submissions is provided below.

4.2. Agency Submissions

None of the government submissions objected to the project. The key comments and recommendations made related to:

- the management (and avoidance) of water quality and ecological impacts on Googong Creek and Queanbeyan River;
- water quality limits for the proposed treatment of sewage; and
- avoiding impacts to the Pink-tailed Legless Lizard (*Aprasia parapulchella*).

The specific key issues raised are summarised below.

The **NSW Office of Water (NOW)** raised concerns with the level of assessment of potential impacts on receiving waterways (including modifications to flows and the associated ecological impacts), particularly the lack of baseline information to enable the assessment of those impacts and of proposed measures to mitigate those impacts.

Queanbeyan City Council (QCC) did not object to the project, however recommended detailed conditions relating to design specifications, construction management and post-construction site management, and for the completed assets to be handed over to QCC. QCC also stated that ongoing maintenance and monitoring should only become the responsibility of QCC once the water cycle system performance for each stage has been verified.

The **Office of Environment and Heritage (OEH)** (formerly Department of Environment, Climate Change and Water) supported the proposal to use modern sewage treatment technology to achieve good effluent quality and enable partial reuse of treated effluent, in preference to discharge to waters. OEH raised concerns about the potential impacts on the Vulnerable Pink-tailed Worm Lizard (*Aprasia parapulchella*) and its habitat, which is located in the vicinity of the proposed SPS 2.

OEH also recommended:

- more stringent effluent discharge limits compared with those proposed in the EA;

- the development of a Recycled Water Risk Management Plan in accordance with the requirements of the *Environmental Guidelines: Use of Effluent by Irrigation* (DEC, 2004);
- that the proponent amend its commitments to include avoiding and protecting significant Aboriginal sites, and include monitoring by archaeologist/s and Aboriginal representative/s during construction; and
- the construction noise mitigation measures in the EA be incorporated as conditions, given the potential exceedances of construction noise goals.

The **ACT Department of the Environment, Climate Change, Energy and Water** did not state a clear position on the project. However, it stated that any regional impacts (including cumulative impacts) on ACT populations of the Pink-tailed Worm Lizard (*Aprasia parapulchella*) - a declared species in the ACT - should be considered, including the provision of offsets for the impact where avoidance is not possible.

Industry and Investment NSW (now part of the **Department of Trade and Investment, Regional Infrastructure and Services - DTIRIS**) did not object to the project. The Fisheries division raised concerns regarding the potential impact of the project on water quality and aquatic habitats in Googong Creek, Montgomery Creek and downstream in the Queanbeyan River, and recommended the use of relevant guidelines for the design of waterway crossings.

Greater Southern Area Health Service – NSW Health commented on the following:

- the design and operation of the system would need to take into account relevant water quality objectives for drinking water, recycled water use and discharge, including state and national guidelines;
- the ongoing management and monitoring of the potable water supply is to form part of the NSW Drinking Water Monitoring Program;
- water quality considerations including stormwater, recycled water and water recycling plant emergency overflows and potential impacts of the project on the adjacent Googong Dam catchment;
- the need to consider mosquito control and the potential incidence of algal blooms; and
- emergency management considerations.

The **Heritage Branch** of the Department (now part of OEH) agreed with the proposed mitigation measures for historic heritage and recommended amendments to the statement of commitments to reflect current legislative requirements.

Roads and Traffic Authority (RTA) does not object to the proposal, and considered the Old Cooma Road and Googong Dam Road intersection would be adequate to cater for project-related traffic.

4.3. ACTEWAGL Submission

ACTEWAGL supported the project, however it recommended a different site for the proposed bulk water pumping station to avoid potential constraints on the expansion of its water treatment plant, and clarified the location of a proposed connection to its potable water supply assets.

4.4. Public Submissions

All four public submissions were from residents on Wickerslack Lane, located adjacent to the Queanbeyan River approximately 2.7 kilometres downstream of the project site. Three submissions objected and one stated general support for the project, but also raised concerns.

The main concerns and grounds for objection were (in decreasing order of mention):

- water quality and stream health impacts, including potential scouring, sedimentation and erosion, sewer overflows, chemical storage and use, stormwater runoff and the quality of treated water discharge;
- potential impacts to the health of downstream water users due to discharge of treated effluent and potential sewage overflows;
- ecological impacts, particularly riparian flora and fauna and weeds; and
- operational management of the scheme, including ongoing monitoring.

The Department has fully considered the issues raised in these submissions in its assessment of the project.

4.5. Proponent's Response to Submissions

CIC provided a response to the issues raised in submissions (see Appendix C). The response included a Preferred Project Report which includes proposed changes to the project (as noted in section 2.2 of this report).

5. ASSESSMENT

After considering the Environmental Assessment, submissions, Submissions Report and Preferred Project Report and the Statement of Commitments, the Department has identified the following key environmental issues associated with the project:

- soil and water;
- flora and fauna;
- noise and vibration;
- visual amenity; and
- construction traffic.

All other issues are considered to be adequately addressed by the Statement of Commitments.

5.1. Soil and Water

The key water-related issues of the proposal include potential impacts on the quality of receiving waters in the catchment, changes to the flow regime of receiving waters, and potential impacts of reusing treated effluent, including changes in soil chemistry and groundwater levels.

The Department notes that stormwater issues - other than potential sewer overflows, irrigation and erosion and sedimentation during construction - relate to the operation of the township, and are the subject of separate assessment under Part 4 by Queanbeyan City Council.

5.1.1 Water Quality

Issue

The project has the potential to affect water quality in the Queanbeyan River catchment through the use of treated effluent within the township and for irrigation, or its discharge into the creek system when demand for recycled water is less than supply. Other potential impacts include sewage overflow, fuel and chemical spills, and sedimentation of waterways due to erosion.

Consideration

The EA included an assessment of the potential water quality impacts of the project, including a comparison of existing conditions in receiving waters with the predicted changes to water quality as a result of the project.

The existing water quality of the Queanbeyan River was determined based on monitoring undertaken by ACTEW between 1994 and 2008 at three monitoring locations (see Figure 5), being:

- the upstream site (QBN 704), two kilometres upstream of the confluence of the Googong Creek and Queanbeyan River;
- the Wickerslack Lane site (QBN 703), four kilometres downstream of where the proposed recycled water discharges would meet the Queanbeyan River via Googong Creek; and
- the downstream site (QBN 769), located at the ACT border, approximately 7 kilometres downstream of the confluence of the Googong Creek and Queanbeyan River.

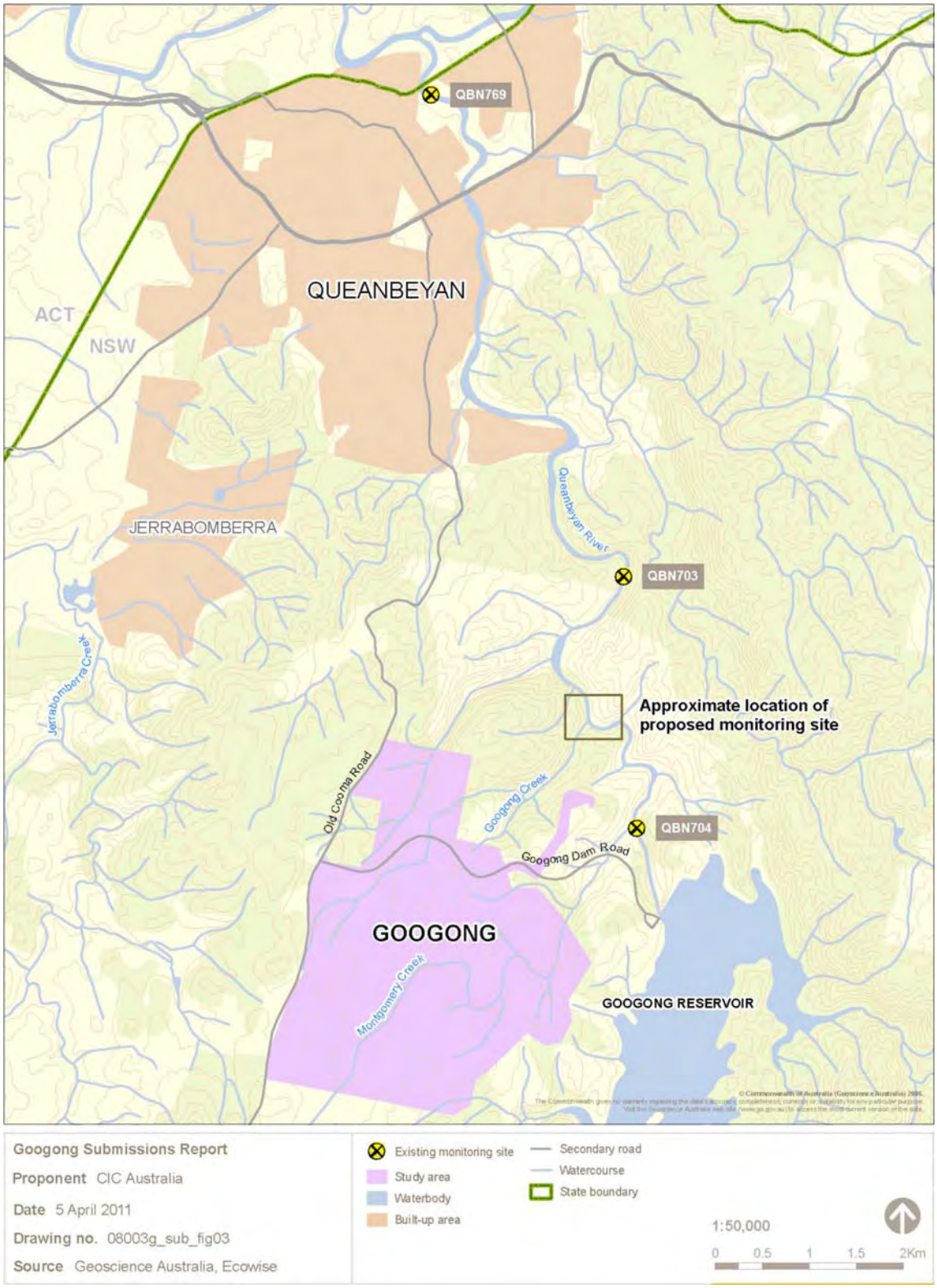


Figure 5: Location of Existing and Proposed Water Quality Monitoring Sites

The results of this monitoring indicate that the majority of nutrients, physio-chemical parameters, microbiological organisms and algae indicators are above or outside the recommended ranges of the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC Guidelines), with poorer water quality found downstream. This is considered primarily due to the surrounding agricultural land uses and the regulation of flows as a result of the Googong Dam on Queanbeyan River.

Treated Effluent and Water Recycling
The Water Recycling Plant (WRP) would be designed and constructed in accordance with industry standards and utilise advanced tertiary treatment technology, including UV and chlorine disinfection to produce water suitable for non-potable reuse within the township.

The WRP would be designed to produce treated water which meets the relevant criteria set by the *National Water Quality Management Strategy - Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Natural Resource Management Ministerial Council, Environment Protection and Heritage Council and Australian Health Ministers' Conference, 2006)*. The Department has therefore recommended a condition of approval requiring this standard be adopted for recycled water use.

Alternate water quality criteria are proposed for treated effluent to be released into the environment, which would be of a lower standard than that produced for recycled use within the township.

To determine the likely impacts on receiving water quality, modelling of the predicted pollutant loads for key water quality parameters (phosphorous, nitrogen and suspended solids) was undertaken at two locations: in Googong Creek; and the Queanbeyan River downstream of the Googong Creek junction. The modelling of pollutant loads in the Queanbeyan River included predicted dilution of Googong Creek flow once it enters the river, assuming a complete mixing of flows. The results of this modelling, undertaken for the Stage 1 project and for the ultimate development, are shown in Tables 4 and 5.

Table 4: Modelled pollutant mass balances in Queanbeyan River

Water Quality Parameter (mg/L)	ANZECC Guidelines	River observations		Stage 1 project		Entire proposal	
		80th %	Max	80th %	Max	80th %	Max
Total Suspended Solids (TSS)	-	5.7	15.0	50.2	114.8	19.6	62.6
Total Nitrogen (TN)	0.25	0.7	1.7	0.7	2.6	0.8	1.3
Total Phosphorous (TP)	0.02	0.03	0.18	0.04	0.17	0.05	0.14
TN:TP Ratio	-	35.2	66.0	34.1	65.0	31.4	55.2

The increase in predicted pollutant mass balances in Googong Creek without water sensitive urban design (WSUD) is roughly equivalent to the increase in flow, with a significant reduction in pollutant mass balance predicted with the introduction of WSUD. The predicted water quality in Queanbeyan River due to the project is comparable with existing levels, with the exception of an increase in suspended solids and maximum nitrogen concentrations.

The operation of the WRP and discharge of treated effluent into the environment would be regulated by an environmental protection licence administered by the OEH under the *Protection of the Environment Operations Act 1997*. The OEH proposed more stringent limits for some parameters compared with those put forward in the EA, along with criteria for additional parameters, namely faecal coliforms, ammonia nitrogen, free chlorine, pH and oils and grease.

Table 5: Modelled pollutant concentrations in Googong Creek – Ultimate Development

Water Quality Parameter	Existing environment (modelled)	Development without WSUD	Development with WSUD and integrated water cycle
Googong Creek (at Googong Dam Road)			
TSS (kg/year)	37,800	171,000	9,500
TP (kg/year)	43	150	71
TN (kg/year)	738	2,030	897
Gross pollutants (kg/year)	1,950	24,800	0
Annual flow (ML/year)	179	680	908
Googong Creek (at confluence with Queanbeyan River)			
TSS (kg/year)	64,300	202,000	41,100
TP (kg/year)	72	184	105
TN (kg/year)	1,193	2,580	1,640
Gross pollutants (kg/year)	4,750	29,200	4,390
Annual flow (ML/year)	329	851	1,080

The Department has adopted the proposed OEH criteria in a recommended condition of approval, with the exception of faecal coliforms and pH, as shown in Table 6. The criterion for faecal coliforms is based on the ANZECC Guidelines for primary contact, and pH based on the ANZECC Guidelines for upland rivers in South East Australia, as these are the relevant criteria for the receiving waters. Under these circumstances, the Department considers that the discharge criteria are acceptable and will ensure the receiving waters are not adversely affected by discharge associated with the project.

Table 6: Treated effluent quality (90 percentile) for discharge to the environment

Parameter	Proposed limits in EA	OEH discharge limits	Department proposed discharge limits
BOD	10 mg/L	10 mg/L	10 mg/L
Suspended Solids	20 mg/L	10 mg/L	10 mg/L
TN	15 mg/L	10 mg/L	10 mg/L
TP	0.5 mg/L	0.5 mg/L	0.5 mg/L
TDS	700 mg/L	700 mg/L	700 mg/L
Faecal Coliforms	No limit proposed	200 cfu/100mL	150 cfu/100mL
pH	No limit proposed	6.5-8.5	6.5-8.0
Free Chlorine (residual)	No limit proposed	0.1 mg/L	0.1 mg/L
Nitrogen – Ammonia	No limit proposed	2 mg/L	2 mg/L
Oil & Grease	No limit proposed	2 mg/L	2 mg/L

Furthermore CIC has committed to an overarching objective that the project does not detrimentally impact the ambient water quality of the Queanbeyan River. Notwithstanding, the Department has recommended a condition of approval that if monitoring (discussed below) indicates ambient water quality is being adversely affected by the project, that it be adjusted to reduce the concentration of the relevant parameter in the effluent to be released.

CIC has committed to monitor and manage the potential impacts of the project on Googong Creek and the Queanbeyan River through the implementation of a water quality monitoring program and adaptive management. As part of this program, a new monitoring site within the Queanbeyan River would be established near the confluence of Googong Creek and Queanbeyan River (see Figure 5). CIC has also committed to commence baseline monitoring in both Googong Creek and Queanbeyan River approximately 12 months prior to the commissioning of the WRP, and to implement an adaptive management approach, in

other words to adjust the project based on the results of monitoring to ensure ambient water quality is maintained.

The Department is satisfied that enough time would be available for CIC to obtain sufficient baseline data before the recycled water discharge commences. With the use of an adaptive approach as proposed in the EA, the Department is satisfied that CIC would be able to adjust the project if necessary to ensure it does not result in a detrimental change in water quality characteristics in receiving waters.

The Department has therefore recommended a condition of the project approval requiring the preparation and implementation of such a monitoring program in consultation with OEH, Council, DTIRIS (Fisheries), NOW and NSW Health, which includes the establishment of baseline data and impact assessment criteria, and surface water quality monitoring parameters for waterways potentially impacted by the project.

The EA proposes that construction-related water quality risks of the project, such as fuel and chemical spills, construction across creeks and erosion and sedimentation would be managed through standard practice measures incorporated in a CEMP.

The Department also recommends further assessment of the potential water quality impacts of remaining stages of the project under the concept plan approval. This assessment would be informed by the results of the water quality monitoring undertaken as part of the Stage 1 project.

Other water quality impacts

Other potential water quality impacts of the project would generally be mitigated through the design of the project in accordance with industry standards, the adoption of standard fuel and chemical management practices, and the implementation of a proposed Recycled Water Risk Management Plan (RWRMP).

Potential causes of sewage overflow include power failures, extended periods of wet weather flows, and other failures in the sewage and recycled water transfer infrastructure such as pipe failure and pump station malfunction.

The project design incorporates a reduced infiltration sewerage system which reduces the likelihood of raw sewage leaking during dry weather. The proposed pumping stations and water recycling plant have also been designed to operate effectively during wet weather and emergency events, such as additional capacity for emergency storage of wastewater. The Department therefore considers that the likelihood of raw sewage overflow into the catchment during normal operation of the project is acceptably low.

The RWRMP would be prepared in accordance with the 2006 Natural Resource Management Ministerial Council Guidelines and include identification, validation and verification monitoring of significant human (and environmental) health risks prior to and during operation. The Department supports this approach and recommends these procedures are included in the Operation Environmental Management Plan for the project.

The Department has recommended a condition of project approval requiring the preparation of a Surface Water and Groundwater Response Plan (SWGRP) which establishes response protocols and measures to monitor, mitigate and/or offset adverse impacts on the receiving environment.

The Department also acknowledges that the public submissions indicate a number of properties draw water from the Queanbeyan river downstream of the Googong Creek confluence. Concerns have been raised in these submissions that their ability to use water from the river may be impeded due to pollution caused by the project. In normal operating

circumstances, the maintenance of ambient water quality would not impact these downstream users.

Given the low likelihood of catastrophic failure, the implementation of the SWGRP and the distance between discharge points and the offtake points, the Department is satisfied that the likelihood of a major overflow event is low. Notwithstanding, the Department has recommended a condition under the Stage 1 Project Approval that requires the provision of a compensatory water supply to any landowner whose entitlements are adversely impacted as a result of the project, or reasonable compensation, is provided in consultation with the affected landowner.

The compensatory water supply would be provided for the duration of the impact attributed to the project and would not necessarily need to meet drinking water standards, rather it should be of equal or better quality than the water in the river.

The Surface Water Monitoring Program to be prepared under the project approval, would establish the criteria which would determine when the above response measures are to be implemented.

The Department is satisfied that, in the unlikely event that the water quality of the Queanbeyan River is significantly degraded due to the project, the implementation of the response protocol and provision of compensatory supplies would ensure that downstream land owners are not significantly impacted by the project.

Conclusion
The Department is satisfied that, subject to the implementation of the proposed mitigation measures and recommended conditions, the project would not significantly impact on the water quality of receiving waters, and the impacts of future stages would be further considered in the corresponding assessments.

5.1.2 Hydrology

Issue
The key potential impacts relate to flow regime changes in Googong Creek and the Queanbeyan River, which may alter aquatic and riparian habitat, affect bank stability and cause erosion and associated downstream deposition of sediment.

Consideration
The EA included an assessment of the likely volume and frequency of discharges from the project to Googong Creek and Queanbeyan River, based on water balance modelling.

The assessment modelled daily water demand of the township and predicted creek/river flows during dry and wet climatic conditions. A combination of recycled water discharge and stormwater flows was used to calculate predicted flows based on the assumption that water sensitive urban design would be used for the project.

Two scenarios were applied for predicting recycled water use, both in the Stage 1 project and for the entire scheme:

1. the combined use of rainwater tanks and recycled water:
    - rainwater tanks on residential properties connected to cold water for washing machines and outdoor use; and
    - recycled water used for all public open space irrigation and toilet flushing (residential and non-residential); and
2. recycled water only:
    - recycled water used on residential properties for toilet flushing, cold water for washing machines and all outdoor use; and

- recycled water used for all public open space irrigation and non-residential toilet flushing.

Googong Creek and Queanbeyan River

Googong Creek is ephemeral – its flow regime characterised by intermittent flows with numerous and prolonged periods of low to zero flow. At the time of undertaking the assessment for the project the creek had very low to zero flow. Consequently, the baseline (existing) seasonal flows in Googong Creek are modelled, rather than monitored flows.

The actual amount of water discharged to the creek on a daily basis would be dependent on water demand, the types of water used (i.e. potable water, rainwater tanks and recycled water) and the time of year. Modelling predicted a higher level of recycled water and stormwater reuse in the township (such as irrigation and watering of gardens) during the warmer seasons. Consequently, discharge during these times would be lower, leading to possible decreased flows in receiving waterways, with the EA predicting the creek would remain mostly dry in the summer. Conversely, lower recycled water demand in cooler weather would result in increased volumes of water discharged to the environment.

It is also noted that the excess treated effluent discharged from the project would enter Googong Creek via stormwater drainage lines and basins to be established as part of the township development (an application which is subject to a Part 4 determination, see Figure 6). This may provide some attenuation and delay of the discharge flows, although when the stormwater system is at full capacity, the discharge into Googong Creek would be roughly equivalent to the rate of discharge from the recycled water discharge point.

At full operation of the entire project, up to 5,950 kilolitres per day (kL/day) of recycled water and stormwater is predicted to enter Googong Creek from the stormwater discharge point, with an average discharge of 1,183 kL/day. Stage 1 of the project would discharge up to 1,245 kL/day, with an average discharge of 227 kL/day.

The predicted changes in seasonal flows in Googong Creek (at its confluence with the Queanbeyan River) due to the Stage 1 project are shown in Table 7, for 50th percentile and 80th percentile flows.

Table 7: Modelled flows in Googong Creek for the Stage 1 Project

	Existing Flows (kL/d)		**Stage 1 Project (kL/d)**		**Change (kL/d)**	
Season	**50%**	**80%**	**50%**	**80%**	**50%**	**80%**
Summer	14.46	174.53	0	0.7	-14.46 (100%)	-173.83 (99%)
Autumn	15.55	185.76	6.05	279.93	-9.5 (61%)	94.17 (51%)
Winter	28.51	463.10	38.88	705.02	10.37 (36%)	241.92 (52%)
Spring	32.83	492.48	18.14	895.97	14.69 (45%)	403.99 (82%)

The modelling indicates potentially significant variations in the 80th percentile flow regime (close to doubling of flows in spring), which may result in permanent changes to the creek system, particularly the increased flows during cooler weather. Despite this, the ephemeral nature of the creek would be maintained given it would still experience periods of low to zero flow, however the range between minimum and maximum flows is greater.

Indicative seasonal flow predictions, including combined recycled water and stormwater discharge, for the ultimate development compared with Stage 1 is shown in Figure 7.

Figure 6: Proposed treated effluent discharge and stormwater system

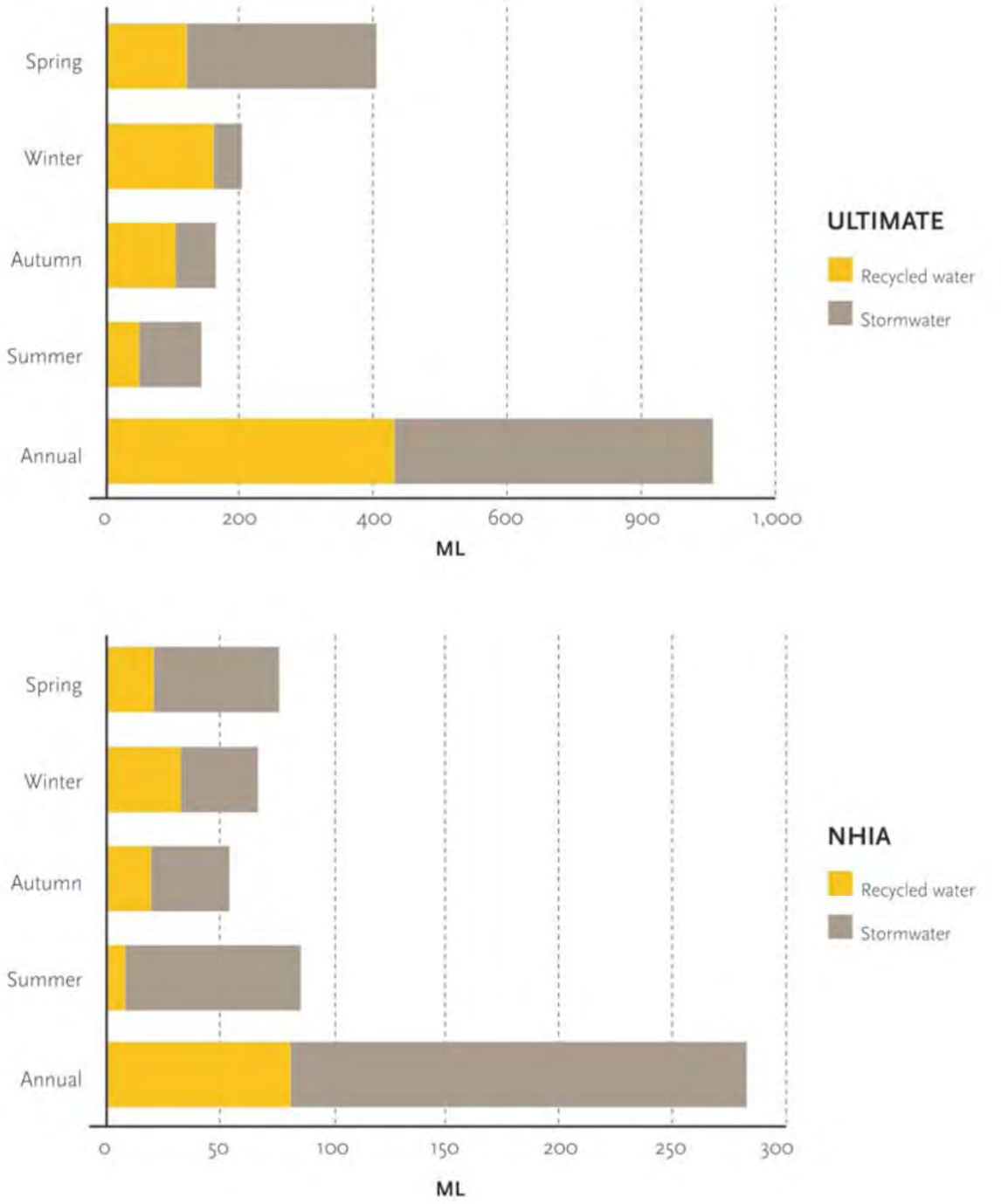


Figure 7: Indicative total and seasonal discharge – Stage 1 and ultimate development

As the township population increases, the discharge flows in Googong Creek would also increase. As noted in Figure 7, the flows as a result of the ultimate development would be significantly greater than Stage 1. The Department notes that the increase in discharge flows would be gradual over an approximate 25-year timeframe, and each staged increase would be subject to further assessment as part of each application for the subsequent stages.

Flows in the Queanbeyan River, measured downstream of its confluence with Googong Creek (QBN 703, see Figure 5), are typically between 4,700 kL/day and 15,900 kL/day (50th percentile flows). The maximum predicted discharge for the Stage 1 project (1,245 kL/day) is within this range, whereas the maximum predicted discharge under the entire project (up to 5,950 kL/day) is within the 50th percentile maximum flows (15,900 kL/day), although above the lowest value (4,700 kL/day).

The Department acknowledges that whilst there would be a modification to the hydrological regime of receiving waterways (particularly Googong Creek), the introduction of additional water may improve the health of these waterways if managed appropriately.

To mitigate the potential impacts of a changed flow regime and the introduction of increased flows on receiving waterways, CIC proposes to monitor stream bank vulnerability and implement bank stabilisation measures where required, and the establishment of a strategy to monitor and manage the interactions between stormwater, rainfall and recycled water use during operation of the project.

CIC has also committed to undertake baseline monitoring and implement an adaptive management approach, as discussed in section 5.1.1, which would include existing flow characteristics of receiving waters.

As with water quality, the Department is satisfied that enough time would be available for CIC to obtain sufficient baseline flow data before the recycled water discharge commences. With the use of an adaptive approach, the Department is satisfied that CIC would be able to adjust the project if necessary to ensure the change in flow characteristics in receiving waters is appropriate. Furthermore, this information would be used for the assessment of subsequent stages of the development.

The Department has recommended a condition of project approval requiring this monitoring program be prepared under a comprehensive water management plan in consultation with OEH, NOW and DTIRIS (Fisheries), and to include monitoring of water flows (and quality), channel stability, stream health and aquatic habitat. This would include monitoring of potential changes in bank formations, natural ponds and adjacent riparian vegetation.

The Department also recommends a condition of approval requiring the preparation of a recycled water flow release protocol, based on the results of baseline monitoring and monitoring conditions. The protocol would include details of the design and operation of the discharge structures and procedures for the review and amendment of the release protocol based on the outcomes of ongoing monitoring.

Furthermore, the water management plan would include a response plan which would incorporate mechanisms to manage and mitigate potential impacts on the waterways as a result of significant changes to the flows of Googong Creek and Queanbeyan River. This may include engineered bank stabilisation or cessation of flows.

The Department also recommends a detailed surface water assessment for the remaining stages of the project subject to the concept plan. This further assessment is to be informed by the results of the surface flow monitoring required under the Stage 1 Project Approval.

Conclusion

Subject to the implementation of the above measures, the Department is satisfied that the project can be managed to ensure there are no significant impacts on receiving waterways due to changes in the flow regime.

5.1.3 Soil

Issue

The key potential impacts to the soil landscape during construction of the project relate to erosion and contamination, whereas during operation the potential impacts relate to salinity and waterlogging as a consequence of irrigation with recycled water.

Consideration

An assessment of the soil landscape and potential impacts of the proposal on this landscape, including the capability of the areas to be irrigated with recycled water, was undertaken.

Erosion

The assessment found the soil landscapes within the project have a moderate to high erosion potential. To mitigate the risks of erosion during construction of the project, soil and water management plans would be developed and implemented in accordance with *Managing Urban Stormwater: Soils and Construction, Volume 1* (Landcom, 2004), which would include standard erosion and sediment control measures, progressive restoration, and the installation of trench plugs during construction of pipelines to control flows along the trench. The Department concurs with the proposed measures and has included a condition of approval requiring that these be detailed in a Construction Environment Management Plan (CEMP).

The Department also recommends a condition of the concept plan approval that requires an assessment of the potential erosion and sedimentation impacts during construction of subsequent stages of the project.

Contamination

A soil contamination investigation was undertaken as part of the Googong Local Environmental Study (LES), which identified seven potentially contaminated areas as a result of farming activities within the development site. These areas comprise farm storage and work sheds, a sheep-dip site, fuel and chemical storage (underground and above ground), storage of car batteries and a waste dump.

Two of these are within the area in which Stage 1 of the project is to be situated, one of which, a waste dump site (referred to as AEC3), is within close proximity to an area to be disturbed during construction of the project (see Figure 8). Additional detailed investigations of these two sites were undertaken by Agsol as part of its assessment.

The waste dump site was found to potentially contain material such as asphalt and garden waste along with chemicals of concern such as organochlorine pesticides, polycyclic aromatic hydrocarbons (PAH) and poly chlorinated by-phenyls (PCB). The AEC3 site has since been capped and a more detailed investigation of the area around AEC3 found no evidence of contamination in the wet soil immediately downslope.

Investigation of random areas within the project site did not identify further potentially contaminated sites.

Accordingly, the Department considers that no further action is required in relation to Stage 1, but has recommended that the concept plan approval requires a project-level assessment of potential impacts on the soil landscape, including the potential for disturbing areas which may contain contaminated soil, for future project applications.

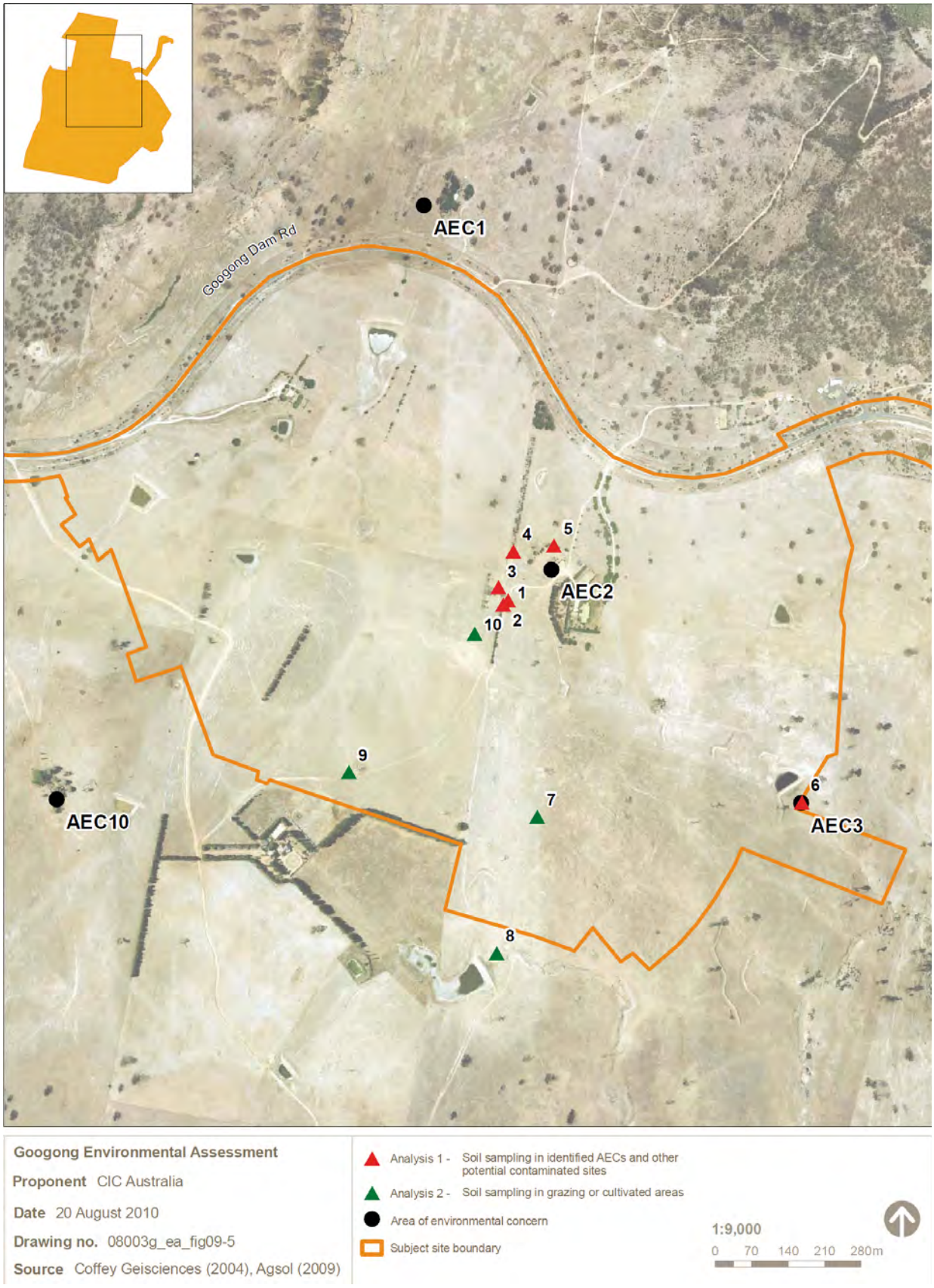


Figure 8: Soil contamination survey locations

Irrigation
The suitability of soils on the site for irrigation was assessed in accordance with *Environmental Guidelines, Use of Effluent by Irrigation (*DEC 2004). The recycled water is predicted to have a low salinity rating under the DEC Guidelines.

Laboratory analysis undertaken for the assessment indicated the soils on site are well drained at depth, not saline or sodic, and characterised by good water and nutrient holding capacity (with a high capacity to absorb phosphorous) to about 50 cm below the surface. The assessment concluded that there are no significant limitations to irrigating soils on the site with recycled water.

Waterlogging is considered to be a low risk given the deep groundwater table and the drainage characteristics of the soils.

The potential risks of irrigation with the recycled water on saline-sensitive plant species was also considered, with the most likely impacts being the possibility of foliage burn on leaves. To mitigate this risk, precautionary measures were recommended, including:
- subsurface or surface drip irrigation;
- avoiding watering during hot, daylight hours; and
- rinsing plant foliage with potable water at the conclusion of watering.

Notwithstanding these findings, the assessment identified a suite of measures to reduce the likelihood of salinity becoming a problem during operation of the project. These include managing the treatment process, design of the WRP and associated reticulation infrastructure to reduce salt levels, providing education programs for end users, adopting salt tolerant design for buildings and monitoring in irrigation areas and downslope. An adaptive approach was also identified, which may include adjustments to the irrigation process or drainage of irrigated areas if monitoring shows an increase in salinity.

Conclusion
The Department considers these measures are appropriate, and would reduce the salinity risk associated with the proposal, and has recommended a condition of the project approval which requires the implementation of an Irrigation Management Plan, which incorporates the above measures and is to:
- include detailed baseline data of the soil properties of the proposed irrigation areas,
- identify and manage potential off-site risks,
- outline application rates and restrictions on irrigation and
- include a program to monitor irrigation areas.

The Department has recommended further soil impact assessment under the concept plan approval (refer to above section). This assessment would be informed by the results of the monitoring undertaken as part of the Stage 1 project approval.

With the implementation of the above measures, the Department is satisfied that the potential impacts of the project on soils can be adequately managed.

5.1.4 Groundwater
Issue
The potential impacts of the project on groundwater include dewatering and contamination during construction, and changes in groundwater quality and mounding due to irrigation and system leakage.

Consideration
The groundwater within the majority of the proposal area flows in a northerly direction towards the Queanbeyan River below Googong Dam. Modelling predicts a groundwater

divide within the south-east corner of the township site. Groundwater in this area is likely to flow towards Googong Dam (see Figure 9).

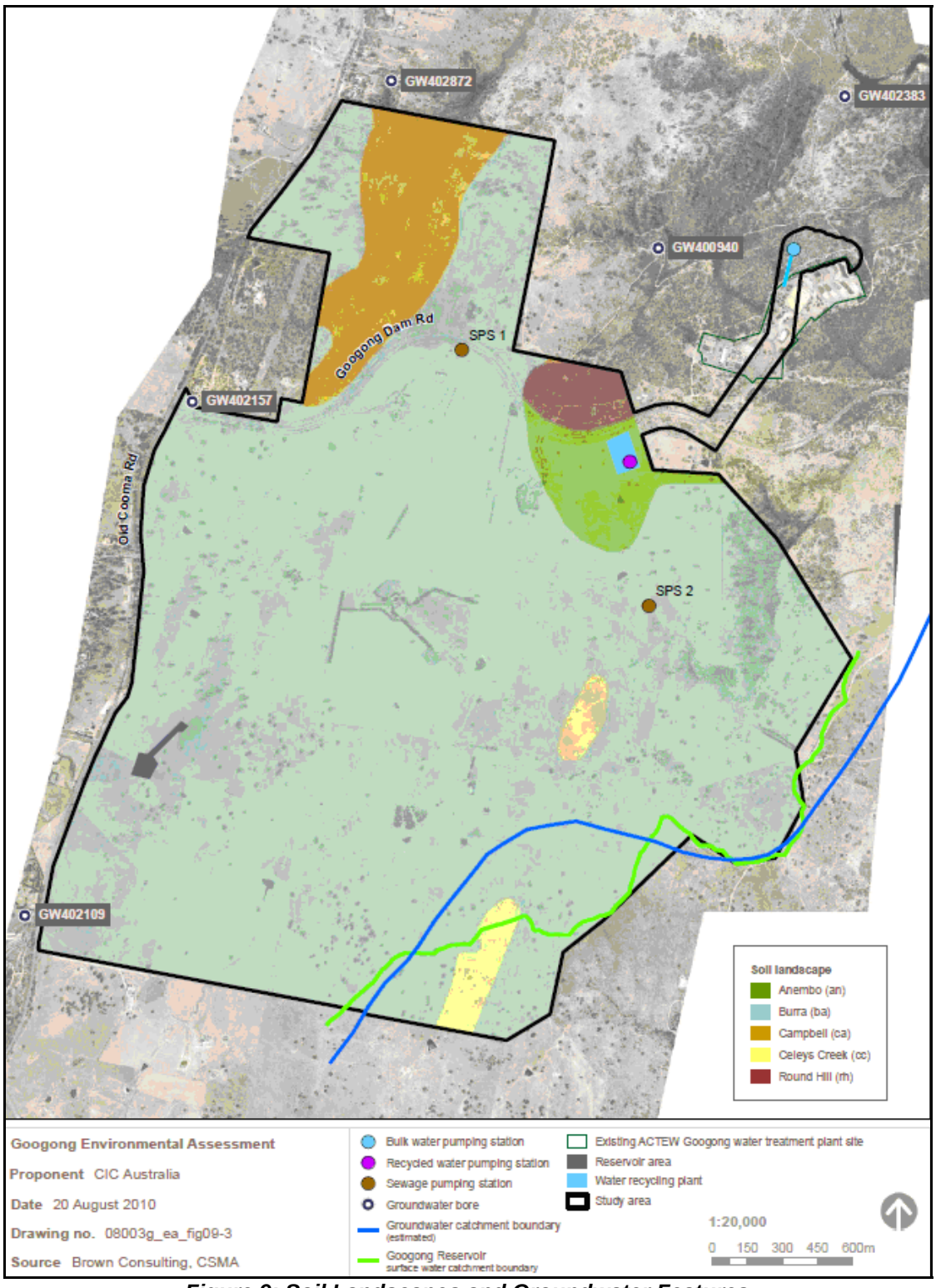


Figure 9: Soil Landscapes and Groundwater Features

Data obtained from groundwater bores within a six-kilometre radius of the project site indicates the standing water level ranges between 11 to 31 metres and slightly deeper on ridgelines or hill slopes. The groundwater within the project area is predicted to be generally between 10 and 30 metres below ground level. No bores exist within the proposal site (refer

to Figure 9). Consequently, the likelihood of encountering groundwater during construction, particularly excavation of trenches (which would be a maximum 5 metres deep) is very low.

Fuel and chemical handling and storage measures are proposed to minimise the risk of spills which may migrate into groundwater, and would be outlined in a CEMP. No activities are proposed within the groundwater catchment of Googong Dam, therefore the Department considers the risk of contaminated groundwater entering the reservoir to be negligible.

Localised groundwater mounding may occur due to excessive irrigation or leakage from the pipelines and other infrastructure associated with the scheme (such as reservoirs and the water recycling plant). As noted above, groundwater would easily move through the soil landscape, and the soils are not susceptible to salinity impact or waterlogging. The Department therefore considers that the potential for waterlogging is low, and would be further reduced through the design of the stormwater system and the irrigation scheme for the Googong Township, which is subject to a separate assessment and approval process under Part 4 of the EP&A Act.

As noted in sections 5.1.1 and 5.1.3, the EA proposes measures to manage irrigation which is reflected in a management plan of the project approval to ensure the potential mounding of groundwater is avoided and managed.

The project would also be designed and constructed in accordance with relevant industry standards to minimise leakage from the water cycle infrastructure, and a regular maintenance and inspection regime would be employed during operation.

Conclusion

The Department notes that the township, once constructed, would likely alter natural rainwater infiltration patterns due to rainwater capture and hardstand areas such as roads and footpaths diverting flows into the constructed stormwater system. This element is not subject to the Part 3A application, however it is likely that this would further minimise the potential for mounding of groundwater.

CIC has committed to commence groundwater monitoring as soon as practical after approval of the subject application has been granted. The Department has therefore recommended a condition of approval that requires the preparation and implementation of a groundwater monitoring program as part of the water management plan for the project. The plan is to include baseline data of groundwater levels, yield and quality in privately-owned groundwater bores that could be affected by the project and a program to monitor and assess the impacts on the groundwater supply of potentially affected landowners. The plan is to also include impact assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts.

The Department also notes that the proposed staging of the project, plus the proposed groundwater monitoring program as part of an overall adaptive management program, would allow the results of the monitoring to inform the planning and design of the future stages of the project.

The Department has also recommended that the concept plan approval require a detailed groundwater impact assessment for the remaining stages of the project. This further assessment would be informed by the monitoring implemented as part of Stage 1 of the project.

The Department is satisfied that the construction and operation of the project is unlikely to significantly impact on the groundwater system.

5.2. Biodiversity

Issue

The proposal as a whole (i.e. the ultimate development) would disturb approximately 64 hectares (ha) of land, including:

- 58 ha for pipelines and sewage pump station sites;
- 3 ha for the Bulk Water Pumping Station, pipeline and access road;
- 1.5 ha for temporary and permanent reservoirs; and
- 1.6 ha for the Water Recycling Plant.

The Stage 1 project would disturb approximately 25 ha, including approximately 20 ha of pipeline corridor, plus the Bulk Water Pumping Station, Water Recycling Plant and temporary reservoirs.

Consideration

Terrestrial and aquatic flora and fauna impact assessments were undertaken which draw on previous studies undertaken as part of the LES, and additional field surveys of the project site in Spring and Summer. The aquatic ecology impact assessment was undertaken as part of a review of options for the scheme in 2008.

5.2.1 Flora

The flora assessment for the LES identified four vegetation types in the project area (see Figure 10):

- Grasslands – comprising exotic and native pasture (30-40% of which is bare) with scattered trees;
- Disturbed and rehabilitated land – associated with the existing ACTEW water treatment plant;
- Woodlands associated with Googong Creek; and
- Roadside vegetation.

The proposal would be primarily situated in the grassland and roadside vegetation types, although the BWPS and access road would occur in woodland adjacent to the ACTEW WTP and Googong Creek.

Flora surveys for the revised BWPS identified a 1,210 m2 area of vegetation which is classified as the White Box/Yellow Box/Blakely's Red Gum Endangered Ecological Community (EEC) under the *Threatened Species Conservation Act 1995* (TSC Act) and the White Box/Yellow Box/Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands Critically Endangered Ecological Community (CEEC) under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This vegetation community is located along the proposed access road and pipeline route to the BWPS.

The assessments found that no critical flora habitat would be impacted by the project.

One threatened flora species, the Hoary Sunray, was recorded in the vicinity of the original BWPS, however targeted surveys did not locate any individuals in the revised BWPS area.

Tests of significance were undertaken for the threatened species likely to occur in the vicinity of the project, with the assessments concluding that no threatened species would be significantly impacted.

The assessment noted that the EEC/CEEC is fragmented by an existing access track, which would form the basis of the access and pipeline corridor to the BWPS. The flora assessment takes into account the intended measures to avoid this community through the design of the road and pipeline corridor, along with construction and operation management measures, and concluded that the proposal is unlikely to significantly impact the EEC/CEEC.

The Department acknowledges that the community is limited in extent, adjacent to the ACTEW WTP and already fragmented by an existing access track. The Department is satisfied that adherence to the proposed mitigation measures, particularly design to avoid disturbance, exclusion fencing during construction and ongoing weed management during operation, would minimise the potential impacts on the EEC/CEEC. The Department also notes that stabilisation of the access track, through the construction of an all-weather access, has the potential to reduce the risk of erosion and sedimentation of the EEC downslope of the track.

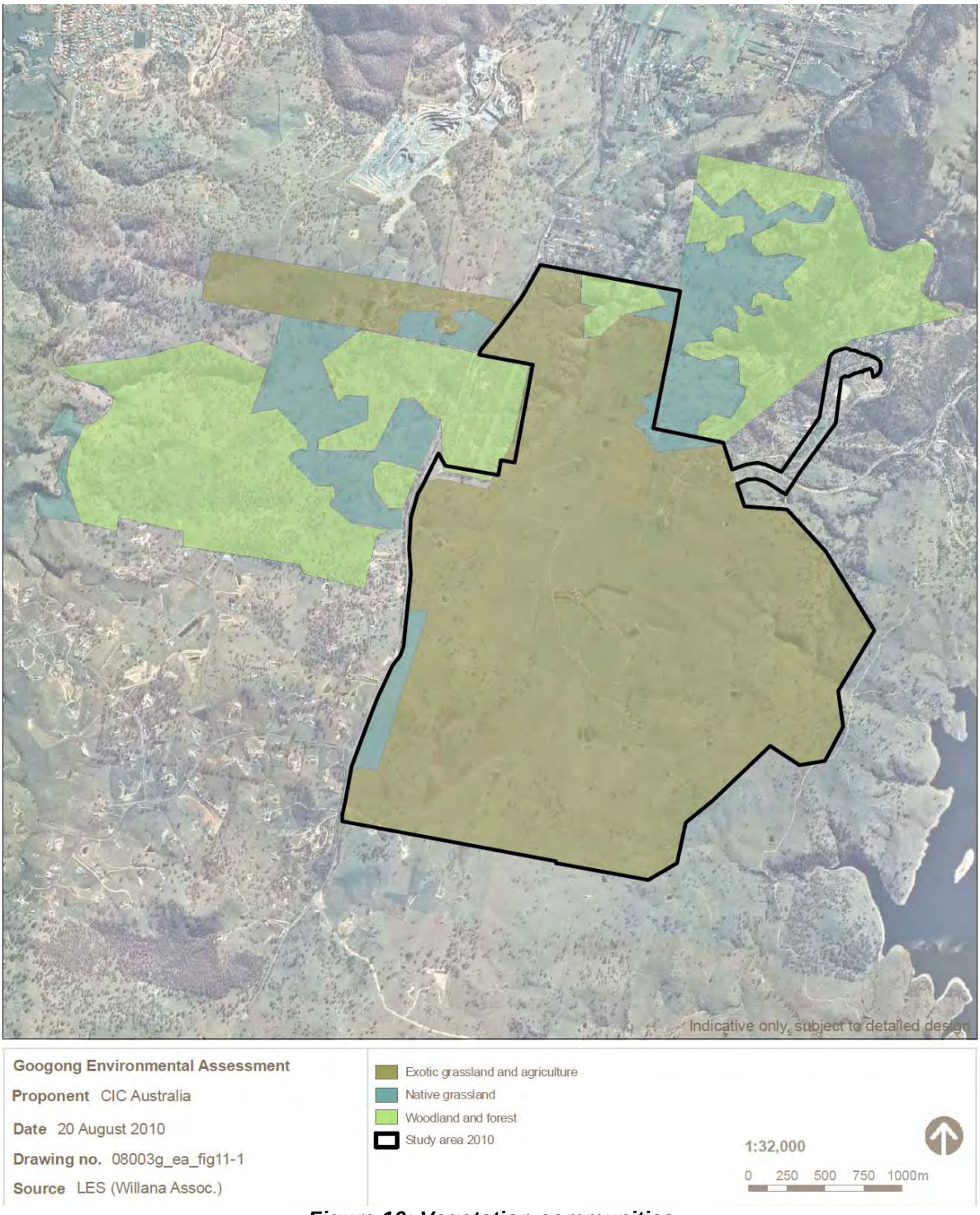


Figure 10: Vegetation communities

Another potential impact on native vegetation is the alteration of natural flow regimes, a Key Threatening Process listed under the TSC Act. However, the existing flow regime of Googong Creek has been substantially modified due to previous land uses including farm dams. As noted in section 5.1.2, the Department proposes conditions of approval which include measures to monitor and manage flows as well as stream health and habitat. With the implementation of these, the Department is satisfied the potential impacts of a changed flow regime can be adequately monitored and managed.

The flora assessments identified 15 noxious weeds and a further 10 exotic species listed as 'problematic' under the Yarrolumla LEP, a consequence of the disturbed nature of the project site. Without proper management, activities associated with the proposal, may result in the spread of weeds into native vegetation areas, including increased discharge in Googong Creek spreading riparian weeds. Mitigation measures including identification of infested areas, weed management during construction and ongoing control throughout the operation of the project, have been proposed.

The Department and OEH are satisfied that the project is unlikely to have a significant impact on these species and communities, subject to the implementation of measures to avoid and mitigate those impacts.

5.2.2 Fauna

Fauna surveys within and adjacent to the project site recorded 63 native vertebrate species and 7 introduced species. No critical habitat or endangered fauna populations were found to occur within the project area.

Three threatened species – listed as Vulnerable under the TSC Act – were identified, namely:

- Pink-tailed Legless Lizard;
- Eastern Bentwing-bat; and
- Speckled Warbler.

The Pink-tailed Legless Lizard is also listed as Vulnerable under the EPBC Act.

Given potential habitat for the Golden Sun Moth (listed as Endangered under both the TSC Act and EPBC Act) was identified on the site and the species was previously recorded in the vicinity, additional surveys were undertaken during the flying season. These additional surveys did not record any individuals or pupae casings. Consequently the EA concluded that the species does not occur within the study area.

Tests of significance were undertaken for these species as well as other species previously recorded or with potential habitat in the area. These assessments conclude that no threatened species would be significantly impacted by the proposal.

The Pink tailed Legless Lizard (PTLL) was recorded in the east of the project site, within the lower Montgomery Creek corridor. Further assessments identified approximately 34 ha of 'high to very high quality' habitat in this area. The proposed sewage pumping stations SPS 2 and SPS 4 would be located in the vicinity of this habitat, with SPS 2 part of the proposed Stage 1 project.

OEH initially raised concerns with the proximity of SPS 2 to the PTLL habitat, both in terms of construction-related disturbance and potential overflow impacts. Mitigation measures to avoid and/or minimise construction-related impacts on the PTLL include pre-construction surveys and the installation of exclusion fencing. With regard to potential operational impacts, the design of SPS 2 would meet the relevant Australian design guidelines and

incorporate an emergency storage capacity of up to 4 hours. Also, any eventual discharge would be directed into drainage lines, which do not form the preferred habitat for the PTLL.

Although the exact location of SPS 4 has not yet been chosen, the Department has recommended that the detailed design of this pumping station take into account the PTLL habitat, with the project environmental assessment for the relevant stage to also specifically consider the potential impacts on the PTLL.

A proposed mitigation measure includes establishing a conservation area of approximately 54 ha for this species (Figure 11), which includes approximately 45 ha of 'high quality' habitat, 13 ha of which is zoned E2 – Environmental Conservation under the Googong LEP. Long-term management of the conservation area would be governed by a management plan and would include measures such as habitat restoration, removal of exotic flora and bushfire protection.

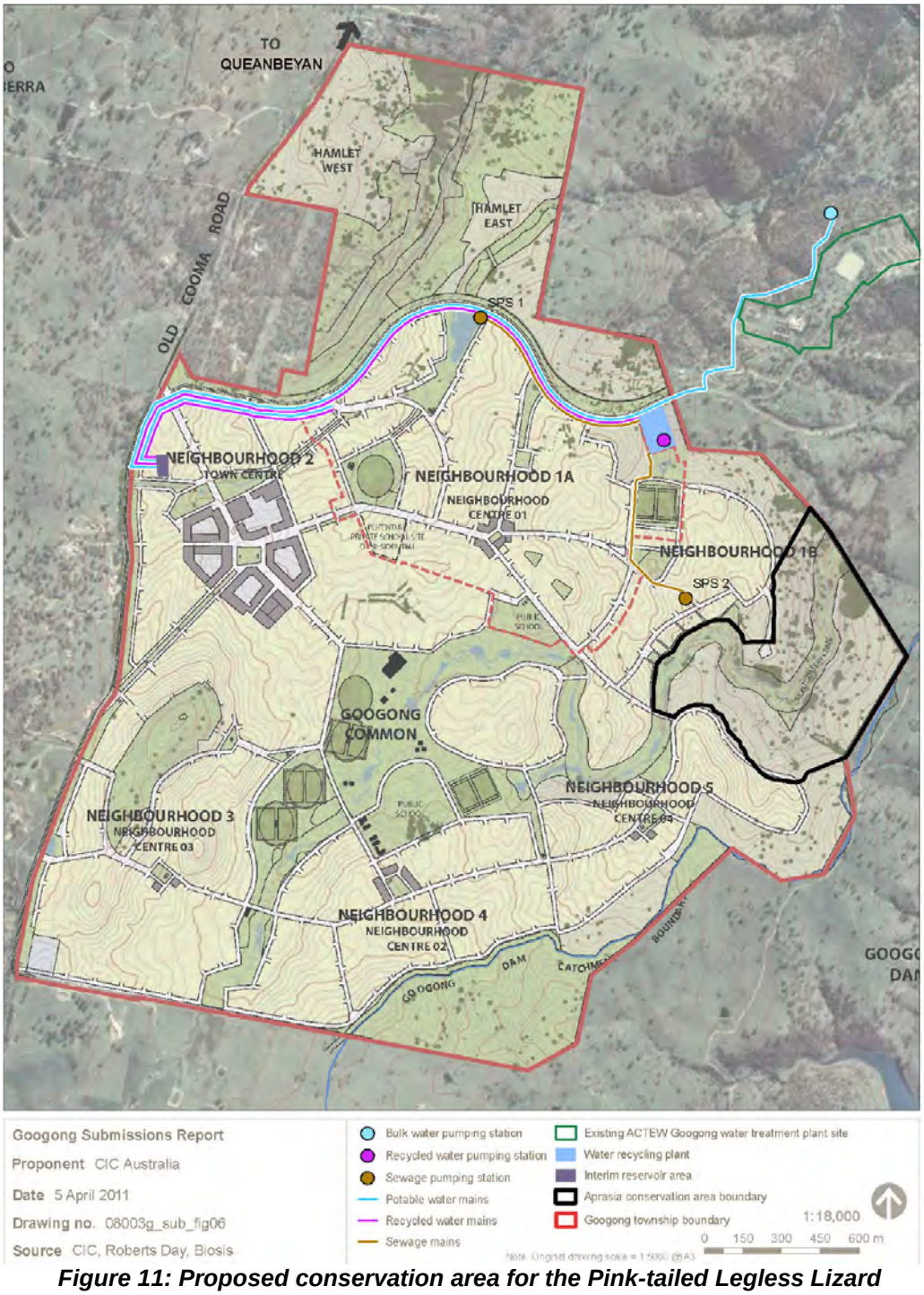


Figure 11: Proposed conservation area for the Pink-tailed Legless Lizard

The OEH indicated its support for the conservation area and the preparation of a management plan and noted that indirect impacts to the PTLL from SPS 2 can be avoided or significantly reduced by implementing the proposed mitigation measures. The Department has therefore recommended conditions requiring the establishment of a conservation area and the preparation of a PTLL Management Plan, along with the implementation of avoidance and mitigation measures during construction of the project in a Construction Environmental Management Plan.

Although the Eastern Bentwing Bat was recorded in the project site, the fauna assessments noted that the species is unlikely to utilise the project site for roosting due to the lack of suitable habitat features. Similarly, whilst the Speckled Warbler was recorded during surveys for the revised BWPS site, the site does not contain suitable habitat.

The Department considers that the proposal is unlikely to impact habitat for these two species, particularly given the BWPS and access road would primarily be located adjacent to the ACTEWAGL WTP and use existing cleared areas where possible.

Notwithstanding, the OEH and the Department consider that pre-clearing surveys should be undertaken to confirm whether or not habitat for these species would be impacted, particularly the identification of nests for the Speckled Warbler. The OEH has recommended avoiding clearing during the Speckled Warbler breeding season (August to January). However, if this is unavoidable, and if nests are found with young, OEH has recommended not disturbing the area until the young have fledged. The Department has therefore recommended conditions requiring these measures to be incorporated into a Flora and Fauna Management Plan as part of the CEMP.

Aquatic Habitat

The aquatic habitat of Googong Creek and Queanbeyan River was assessed and it is noted that the Queanbeyan River was once a known habitat for the vulnerable Macquarie Perch (*Macquaria australasica*) and that a precautionary approach is recommended for proposals which may impact the river.

The assessment notes the lack of detailed baseline data available on aquatic habitat for these waterways. Modelling was undertaken based on information from monitoring undertaken on the Queanbeyan River by or on behalf of ACTEWAGL. Under the AusRivas model, the Queanbeyan River is rated as slightly to moderately impaired. A qualitative assessment of Googong Creek rates it as degraded.

The likely key risks of the project on aquatic habitat stem from potential water quality and flow changes, which are considered in section 5.1. The Department notes that the baseline monitoring and the proposed adaptive management strategy includes consideration of aquatic habitat, which would be prepared and undertaken in consultation with NOW and DTIRIS (Fisheries).

The Department is satisfied that the implementation of this strategy, reflected in proposed conditions of the project approval, is an acceptable precautionary approach which would adequately monitor and manage potential impacts of the project on the aquatic ecosystem.

Conclusion

The Department is satisfied that, subject to the implementation of mitigation measures as discussed above, the project is unlikely to have a significant impact on biodiversity values.

5.3. Noise and Blasting

Issue

The project has the potential to generate construction and operational noise impacts.

Consideration

The noise assessment of the project was undertaken in accordance with relevant guidelines including the *NSW Industrial Noise Policy*, the *Environmental Noise Control Manual* (ENCM, now superseded by the *Interim Construction Noise Guidelines*) and *Environmental Criteria for Road Traffic Noise* (ECRTN). A supplementary assessment for the revised water recycling plant was undertaken in accordance with the INP, ECRTN and the *Interim Construction Noise Guidelines*.

Construction Noise

The construction-related activities likely to generate the most noise are the construction of the water recycling plant, potable water pumping station and pipelines. The assessments predict that noise generated during construction of the Stage 1 project without the incorporation of mitigation measures would be within the *noise affected level* ($L_{Aeq(15\ minute)}$ of 40–75 dB(A)) at 3 locations around the project area, two of which are owned by or under agreement with CIC. The predicted $L_{Aeq(15\ minute)}$ noise level during construction is between 33 and 59 dB(A), which includes a 3dB(A) reduction on $L_{A10(15\ minute)}$ noise levels predicted in accordance with the ENCM.

Proposed mitigation measures include the use of acoustic barriers (earth mounds and temporary or permanent noise barriers), acoustic enclosures (e.g. engine casing covered with acoustic insulation and plywood), using residential class mufflers to reduce noise from engines and using alternative equipment such as electric motors rather than diesel or petrol. Consultation with potentially affected landowners is also proposed.

The Department is satisfied that these measures are reasonable and feasible for construction activities, and that this is consistent with the *Interim Construction Noise Guidelines*.

Construction vehicles would use Old Cooma Road and Googong Dam Road to access the project site. For these roads, the relevant noise criteria provided by the ECRTN is 60 dB(A) $L_{Aeq(15hr)}$ during day-time (7am to 10pm) and 55 dB(A) $L_{Aeq(9hr)}$ during night time (10pm to 7am). The construction traffic is not predicted to exceed the ECRTN criteria on Old Cooma Road or Googong Dam Road.

Blasting and Vibration

Although a detailed geotechnical assessment was not undertaken, blasting at the proposed water recycling plant and pumping stations may be required. Heavy equipment, such as rock breakers and vibratory rollers, may also be required. Therefore the project has the potential to generate associated noise and vibration impacts.

The criteria recommended by the Australian and New Zealand Environment Council (ANZECC) to minimise annoyance and discomfort at residences are presented in Table 8.

Table 8: Recommended Blast Criteria Modelled flows in Googong Creek

Blast Impact	*Amenity Criteria**	*Structural Damage Criteria***
Airblast Overpressure	115 dB (Lin) for 95% of blasts in any year 120 dB (Lin) for 100% of blasts	133 dB (Lin)
Ground Vibration	5 mm/sec for 95% of blasts in any year 10 mm/sec for 100% of blasts	10 mm/sec

* ANZECC *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration*
** Australian *Standard AS2187.2-2006 Explosives – Storage, Transport and Use (houses and low-rise residential buildings).*

If blasting is required during construction, a detailed blasting assessment would be undertaken to determine the likely air blast overpressure and vibration levels caused by

blasting and mitigation measures to ensure blasting does not exceed the ANZECC criteria and the preparation of a blast management plan.

The Department has recommended conditions of approval which require the implementation of reasonable and feasible noise mitigation measures, and development of a construction noise and vibration management plan as part of the CEMP. The management plan shall include construction noise and vibration goals for the project and monitoring procedures, details of mitigation measures, and procedures for notifying sensitive receivers of any construction activities that are likely to affect their noise amenity.

The Department has also recommended, as part of the Noise and Vibration Management Plan, an assessment requirement that must calculate the maximum instantaneous charge to be used to meet the relevant amenity-based ground vibration and overpressure criteria at sensitive receiver locations.

Subsequent Stages Construction Noise
Future residents of the Googong Township could potentially be exposed to noise during construction of the future stages of the project. The Department considers that these noise levels are likely to be below those predicted for the Stage 1 project, given the water recycling plant and a majority of the infrastructure for the project would be constructed as part of the Stage 1 project.

Notwithstanding, the Department has recommended that the assessment of future stages under the concept approval include consideration of noise and vibration impacts.

Operational Noise
Key elements of the project that may generate noise during operation of the project include the water recycling plant and pump stations. The assessment concluded that operation of the project is predicted to comply with the relevant noise and vibration criteria at the surrounding receivers at all times (day and night).

The Department also notes that the township would be designed with appropriate buffer zones to ensure noise from these elements does not become a problem. Therefore the Department is satisfied that the project would not result in unacceptable operational noise impacts.

Conclusion
The Department and OEH are satisfied that the mitigation measures proposed in the EA are reasonable and feasible, and can minimise the construction noise and vibration impacts on surrounding receivers.

5.4. Visual Amenity

Issue
The aboveground infrastructure for the project has the potential to impact on the visual amenity of existing and future receivers of the Googong area. The proposed structures which may be visible include the temporary and permanent reservoirs, the pumping stations and the water recycling plant. Installation of underground pipelines may also modify the visual environment due to tree removal as well as construction lighting during darker periods (eg winter afternoons).

Consideration
An assessment of the potential visual impacts of the project considered potential visibility of the project from twenty receptor locations around the development site, including 8 residential and 12 road receptors (see Figure 12), and included a number of photomontages to demonstrate the extent of visual impact associated with the project.

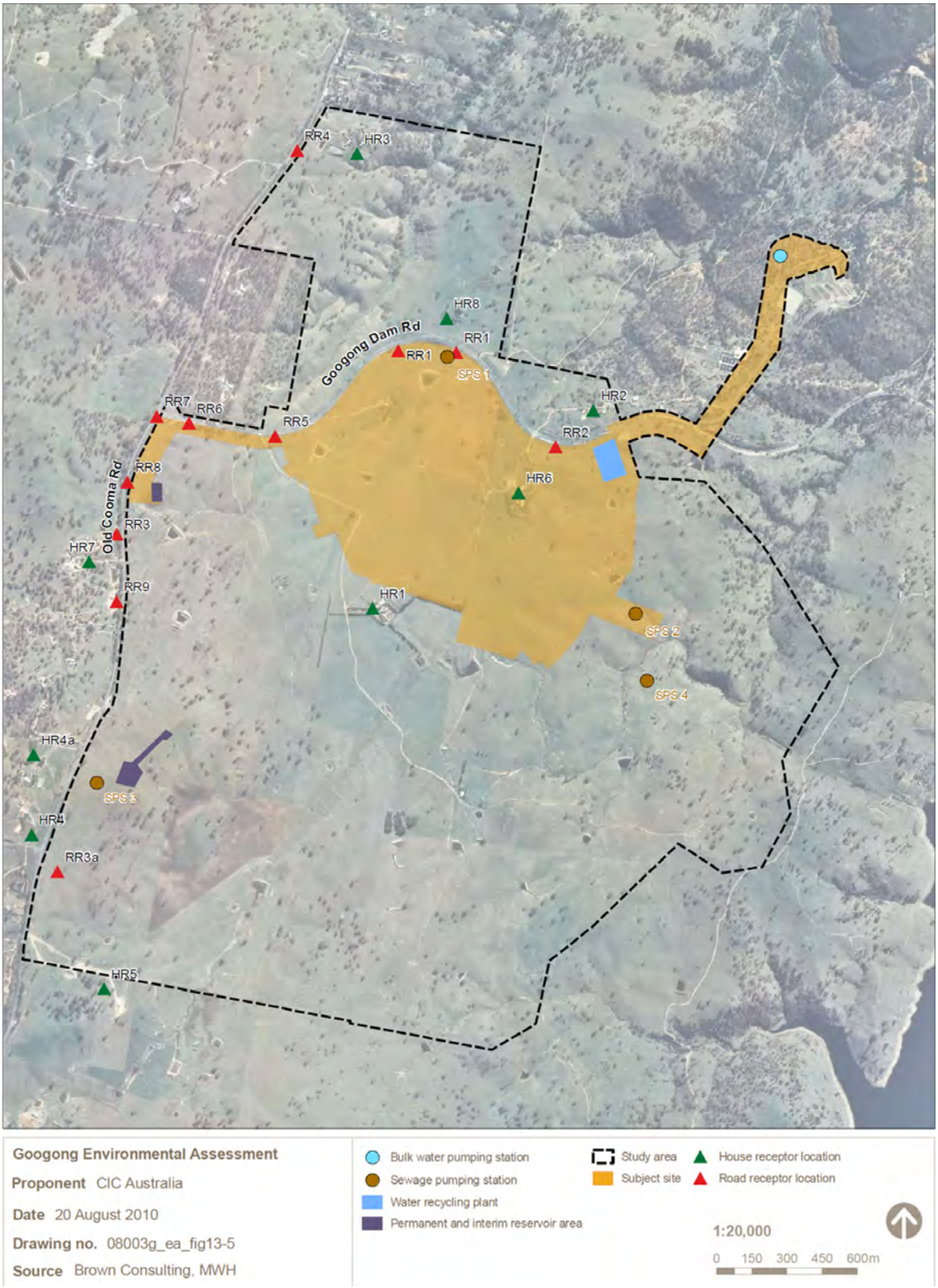


Figure 12: Visual receptor locations

Given the topography of the area and location of existing receivers outside the township site, the potential visibility of the reservoirs was considered to be of most significance. Some elements of other infrastructure may be visible, such as the ventilation stacks of the WRP and pumping stations, however the assessment concluded that the visual impact of these elements to be of less significance. A summary of the visual assessment is provided in Table 9.

Stage 1 Project Elements

While the interim reservoir site would be temporary, it may be in place for five to seven years, depending on the timing of future subdivision and construction of subsequent stages. The assessment identified one existing property on Old Cooma Road that would be moderately affected by the temporary reservoirs, although it considered that views would be limited due to existing vegetation and predicted only moderate to low impacts on views from the residence.

Table 9: Predicted visual impacts of the project

Level of impact	Views affected
High	• Views of the permanent reservoirs on Hill 800 from the residences immediately to the west of Old Cooma Road (house receptor HR4). • Views of the temporary reservoirs from Old Cooma Road, south of the Googong Dam Road (road receptor RR8).
Moderate to high	• Views of the permanent reservoirs on Hill 800 from Old Cooma Road, immediately to the west of the hill driving south and north (road receptors RR3 and RR3). • View to Hill 800 from house receptor HR1 and house receptors to the north of Fernleigh Drive HR4a. • Depending on exact alignment of the pipeworks along Old Cooma Road (resulting in removal or retention of trees), impacts could be moderate to high for receptors using the road south of Googong Dam Road junction at road receptor RR3. • Views of the temporary reservoirs on Old Cooma Road from immediately north and south of Hill 765.
Moderate	• Views of temporary reservoirs from 904 Old Cooma Road.
Moderate to low	• View to WRP stack (potential, subject to exact final location of stack) from house receptor HR2. • View to Hill 800 from house receptors HR3 and HR5. • View to Hill 800 from house receptor HR6 - buildings would be removed when NH1A is built. • View to SPS1 from Googong Dam Road, near road receptor RR1. • View to WRP from road receptor RR5. • View to northern pumping station stack (potential, subject to exact final location of stack) from upper levels of house receptor HR8. • Views of temporary reservoirs from the residence at 904 Old Cooma Road.
Low	• All other listed receptors.

The two existing residences within the township area would also have views of the temporary reservoirs, which would also be clearly visible from the road, with high visibility when travelling south from the intersection of Old Cooma Road and Googong Dam Road (see Figure 13).

To reduce the visual impacts of the temporary reservoirs, the EA proposes mitigation measures including scattered vegetation planting between the road and the reservoirs, and painting the reservoirs with appropriate muted colours.

The Department notes that the existing views of the area would also substantially change (from rural to residential) as a result of the township development, which is subject to a separate assessment under Part 4 of the EP&A Act.

To address the potential visual impacts, the Department has recommended a condition of project approval requiring the preparation and implementation of a landscape management plan for the project, to detail mitigation measures.

Concept Plan Elements

Six existing house receptors would have views of the permanent reservoir site at Hill 800. The assessment found one house receptor would have a direct view of the permanent

reservoir which would be approximately 750 metres away. Given the direct views of the permanent reservoir site, the assessment considered the potential visual impact at this receptor to be high. The assessment found that the remaining houses would have oblique or highly filtered views of the permanent reservoir site due to the topography or existing vegetation. The overall potential visual impact at these remaining houses is assessed as medium to high.

Figure 13: View from Old Cooma Road, south of Googong Dam Road.

A number of options to mitigate the potential visual impacts of the permanent reservoirs were considered, including:

- planting native trees;
- painting the reservoirs either in strong colours or with artwork in consultation with the community;
- applying architectural treatments to the reservoirs; or
- excavate more deeply into the hilltop to create a lower platform for the reservoirs.

The Department acknowledges that reservoirs by their nature need to be situated in elevated locations and is satisfied that these measures are appropriate to reduce the potential visual impacts of the project.

The Department has therefore recommended that the concept plan approval require an assessment of potential visual impacts for subsequent stages of the project on existing and future receptors, including the permanent reservoirs on Hill 800.

Conclusion

The Department is satisfied that, subject to the implementation of the recommended conditions and proposed mitigation measures, potential visual impacts of the project infrastructure can be minimised.

5.5. Traffic and Transport

Issue

Construction of the project would generate increased traffic on roads leading to the site. Minor traffic volumes would be generated during the operation of the project, mostly employee commuting and deliveries, with the occasional heavy vehicle movement during maintenance.

Consideration

The traffic assessment compared predicted traffic increases due to the project with existing conditions. Existing traffic levels on roads to be used by construction vehicles are shown in Table 10.

Table 10: Existing traffic conditions

Location	Average weekday (total vehicles)	Peak two-way traffic flow (vehicles/hr)	Heavy Vehicles
Old Cooma Road (north of Googong Dam Road)	2,537	265	145 (5.7%)
Old Cooma Road (south of Googong Dam Road)	2,120	244	121 (5.7%)
Googong Dam Rd	260	29	25 (9.5%)

The assessment found that the Old Cooma Road and Googong Dam Road intersection is operating within capacity, with level of service (LoS) ratings for various directions of A to B.

The assessment conservatively predicts a maximum peak of 222 truck movements and 116 light vehicle movements per day during construction of the Stage 1 project. This estimate predicts traffic volumes for simultaneous construction of all infrastructure for the project, including all four sewage pumping stations, rather than pumping stations 1 and 2 which are to be constructed during Stage 1.

The assessment considers the potential cumulative impacts with other activities in the area, including the development of NH1A, upgrade of Googong Dam spillway (completed in December 2010) and an upgrade of Old Cooma Road. The EA estimates these activities in combination with the project would increase vehicle movements on Old Cooma Road north of Googong Dam Road – the route predicted to be the most heavily trafficked during construction – by 698 (including 298 heavy vehicles) to 3,235 with approximately 17% heavy vehicles.

With this increase, the assessment predicts the intersection performances (LoS) would range from A to C, which it considers acceptable. Similarly, the capacity of Old Cooma Road north of Googong Dam Road is predicted to result in a LoS of C, also considered acceptable. South of Googong Dam Road, Old Cooma Road would remain LoS A. Given the low existing traffic levels on Googong Dam Road, the assessment found that the project would not result in significant traffic impacts, even with the predicted significant increase as noted

above. The assessment therefore found that the potential traffic impacts of the project, in combination with other nearby projects, would be acceptable.

Notwithstanding, a number of mitigation measures to ensure construction traffic impacts are minimised were proposed, including:

- consultation with potentially affected landowners and road authorities,
- the preparation and implementation of a traffic management plan, including consideration of other works occurring at the time;
- implementation of traffic controls where appropriate;
- driver awareness education; and
- planning the use of vehicles to minimise numbers.

The Department considers that the traffic impacts are acceptable and that the proposed mitigation measures are appropriate and has recommended conditions under the Stage 1 project approval requiring the development of a traffic management protocol in consultation with the Councils and the RTA. This protocol would detail the management of potential traffic impacts (and where required road restoration requirements) during and following construction, including:

- pre-construction road condition surveys;
- details of how construction traffic will be managed in proximity to local and regional roads and sensitive receivers;
- measures to ensure traffic volume, acoustic and amenity impacts along the heavy vehicle routes are minimised; and
- the restoration of roads to be undertaken to the satisfaction of the relevant road authority and at the full expense of the Proponent.

The Department has also recommended that the OEMP as part of the project approval include measures to address potential operational traffic impacts, and procedures to restore any damage attributable to the project during the operation phase.

Although the total traffic volumes for the subsequent stages of the project are yet to be predicted (apart from the sewage pumping stations 3 and 4), the construction traffic is likely to be less intense than Stage 1, given the bulk of the water cycle infrastructure required for the project would be constructed during Stage 1. Notwithstanding, the Department has recommended that the concept plan approval require an assessment of potential traffic impacts during the construction and operation of the subsequent stages of the project.

The Department is satisfied that the construction and operation traffic impacts of the project can be appropriately managed and are likely to be minor.

5.6. Other Issues

The assessment raised other key issues that are addressed in Table 11 below.

Table 11: Department's consideration of other issues

Key Issue	Department's Consideration
Heritage	An Aboriginal and historic heritage assessment was undertaken based on earlier studies undertaken for the LES. The assessment identified 13 Aboriginal sites, 3 potential archaeological deposits (PAD) and 2 historic heritage sites within the project area. Of the identified Aboriginal sites, 6 are within the area potentially affected by the Stage 1 project. Two of these are considered to be of low-moderate local significance with the remainder being of low local significance. All sites are considered to have low regional significance. The PADs identified during the LES surveys have since been subject to

	subsurface investigations. Although the results of these investigations were pending at the time of assessment, based on initial findings further subsurface excavation of these sites is not considered necessary. The project has been designed to avoid disturbing identified sites, although some are in close proximity to construction activities and may be disturbed if not adequately managed. If sites are to be disturbed, the EA proposes relocation of these in consultation with the relevant stakeholders. Of the identified historic heritage items, none are predicted to be directly impacted by the project. The Department has recommended a condition of project approval requiring the preparation and implementation of a heritage management plan. This plan would ensure measures are in place to demark sites and avoid disturbance, along with procedures to respond to the discovery of new sites or relocation of existing sites. The Department is satisfied that the project is unlikely to impact upon items of heritage significance, and that suitable measures would be in place to minimise potential impacts on sites within proximity to the project activities.
Air Quality and Odour	The project has the potential to impact upon local air quality due to dust generated during construction activities and odour emitted during operation of the proposed sewage pumping stations and the water recycling plant. A range of measures to reduce the amount of dust generated during construction activities are proposed, such as minimising disturbance, progressive rehabilitation of disturbed areas, restricting or modifying activities during windy periods and suppression of dust using water carts. With these measures, the assessment concludes that the construction of the project would result in minimal impacts on air quality. The Department is satisfied that the implementation of these measures would satisfactorily reduce dust generated during construction. Accordingly, it has recommended conditions in the project approval for the implementation of best practice dust management measures in the CEMP. <u>*Odour*</u> An odour assessment was undertaken in accordance with the requirements of the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005 – The Approved Methods), *Assessment and Management of Odour from Stationary Sources* in NSW (DECC, 2001) and *Technical Notes: Draft Policy: Assessment and Management of Odour from Stationary Sources in NSW* (DECC, 2001). The Approved Methods set impact assessment criteria (odour units - ou) based on the population density and land uses (eg schools) of an affected community. The most conservative odour criterion of 2 ou was adopted by the assessment given the likely mix in land uses applicable to the project. Odour emissions from the Stage 1 sewage pumping stations (SPS1 and SPS2) and the water recycling plant (both at Stage 1 and at the subsequent stage development) were modelled. Odour from the sewage pumping stations proposed in subsequent stages of the project (SPS3 and SPS4) were not modelled as the precise locations and design requirements are yet to be determined. The modelling for the WRP includes a baseline with no odour controls, which predicts non-compliance with the 2 ou criterion outside the boundary of the WRP site.

	Mitigation measures to be included as part of the project design include activated carbon control on pump station vents and an odour control facility at the WRP, which would draw air from covered areas of the plant to be discharged via an exhaust stack following filtration. The modelling of the Stage 1 elements, with the installation of odour controls, predicts that the 2 ou criterion would not be exceeded beyond the boundary of the WRP or pumping stations. The EA predicts compliance with the odour impact criteria during Stage 1 of the project. Modelling of the WRP at ultimate development (subsequent stages), predicts an exceedance of the odour criterion (2.2 ou) outside the plant boundary. This exceedance is predicted for a small area to the north of the WRP, across Googong Dam Road. As a consequence, the design of the township would take potential odour impacts into account, including larger lots sizes and proximity of dwellings to the WRP, along with vegetation screening at the boundary of the WRP. CIC has also committed to meteorological and odour monitoring during Stage 1 (and ultimate scenarios), incorporating site-specific baseline data. Results of monitoring would influence the layout of the urban area adjacent to the plant and any necessary additional odour controls at the WRP. The Department has recommended a condition of project approval requiring the preparation and implementation of an Operation Environment Management Plan (OEMP), which is to establish standards and performance measures for odour management, and include actions to be taken in response to an exceedance of criteria. With regards to the subsequent stages of the project (ultimate development), the Department is satisfied that the predicted exceedance can be mitigated through the proposed monitoring and mitigation measures. The Department has therefore recommended a condition under the concept plan approval that requires an assessment of potential air quality impacts for the subsequent stages, taking into account the results of the further dispersion modelling to be undertaken for the water recycling plant. With the implementation of the proposed mitigation measures, the Department is satisfied that the potential air quality and odour impacts of the proposal would be minor.
Hazard and Risk	A risk and hazard assessment was undertaken in accordance with *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* (SEPP 33). The only dangerous goods to be used in significant quantity are acetic acid and sodium hypochlorite (as part of the operation of the water recycling plant). The Major Hazards Unit of the Department has reviewed this assessment and found that in both cases, the storage quantities are relatively small and are not sufficient to classify the project as being potentially hazardous. The project may be offensive due to other impacts such as noise and odour if not managed adequately. However, as considered in sections 5.3 and above, with the implementation of mitigation measures the project is considered to be not offensive (also refer to Appendix B). A range of measures to ensure the adequate management and handling of chemicals to be used on the project site have been identified, including bunding areas and preparing and implementing procedures for delivery,

	handling and accidental spills of chemicals. With these measures, the Department is satisfied that the project would not pose an unacceptable risk to surrounding landuse during construction and operation. Accordingly, further assessment or preparation of management measures requiring the Director-General's approval are not recommended. Risks to water quality and air quality are considered in Sections 5.1 and 5.7 of this report respectively.
Other	The Department is satisfied that all other matters have been adequately addressed in the Submissions Report and Preferred Project Report and / or Statement of Commitments.

6. RECOMMENDED CONDITIONS

The Department has recommended further assessment requirements for future projects under the concept plan approval, and recommended conditions of approval for the Stage 1 project application (Appendix A). These requirements and conditions are required to:

- prevent, minimise, and/or offset adverse impacts of the project;
- ensure standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The Department believes the conditions reflect current best practice for the regulation of infrastructure projects in NSW, and has consulted with the relevant public authorities in drafting these conditions. CIC has reviewed and accepted the proposed conditions.

The Department also consulted with Palerang and Queanbeyan City Councils and government agencies on the draft conditions, which resulted in minor revisions to the conditions. Queanbeyan City Council provided detailed conditions relating to design, construction and operation of the project, and the Department has included a condition of project approval requiring the design and construction of the project to be undertaken in consultation with the Councils and to include consideration of the requirements of the Councils.

Future applications for subsequent stages of the project associated with the concept plan approval would not be made under Part 3A, as noted in section 3.1. However, assessment requirements have been set by the Department which would need to be considered by the consent authority determining future applications.

7. CONCLUSION

The Department has assessed the project application, EA, submissions on the project, CIC's response to submissions and preferred project report, in accordance with the objects of the EP&A Act and the principles of ecologically sustainable development.

This assessment has found that the operation of the project would potentially alter the flow regime of Googong Creek and the Queanbeyan River, with the changes likely to be more noticeable in Googong Creek. Additionally, the operation of the project, particularly the discharge of treated effluent, could potentially impact water quality in receiving waters and result in localised impacts on groundwater. Both the changed flow regime and water quality impacts may impact aquatic habitat and bank stability of Googong Creek and the Queanbeyan River.

The project would be designed and constructed in accordance with the relevant industry standards and guidelines, and water treatment would utilise UV and chlorine disinfection to produce highly treated water suitable for non-potable reuse within the township.

Subsequently, the Department is satisfied that these impacts can be adequately mitigated, managed, and/or compensated through implementation of a number of commitments made by CIC and conditions recommended by the Department. These include:

- the implementation of a comprehensive water management plan which would include baseline and ongoing monitoring of water quality, aquatic habitat, flows and groundwater, adaptive management, a flow release protocol and irrigation management;
- the establishment of a conservation area for the Pink-tailed Legless Lizard; and
- stringent performance criteria for construction and operation activities.

Construction of the Stage 1 project may result in impacts typical of any infrastructure construction activity, including vegetation clearing, fuel spills, erosion and sedimentation, noise, and traffic impacts. The Department has included as a recommended condition of approval the preparation of a comprehensive CEMP to manage these impacts during construction.

On balance, the Department believes that the project's benefits would outweigh its residual impacts, that it is in the public interest and should be approved, subject to conditions.

The Department considers that further assessment, at a project level, is required for components of the project that are subject to the concept plan. The Department therefore recommends concept approval for the entire scheme, with the inclusion of further assessment requirements (refer to section 5 and Appendix F), and project approval for Stage 1.

8. RECOMMENDATION

It is RECOMMENDED that the Planning Assessment Commission:

- consider the findings and recommendations of this report;
- approve the concept and project application, subject to conditions; and
- sign the attached instruments of approval (see Appendix F).

16/11/11

A/Director
Infrastructure Projects

16.11.11

Executive Director
Major Projects Assessment

17/11/11

Deputy Director-General
Development Assessment & Systems Performance

APPENDIX A ENVIRONMENTAL ASSESSMENT

See the Department's website at
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=3119

APPENDIX B ENVIRONMENTAL PLANNING INSTRUMENTS

State Environmental Planning Policy (Major Development) 2005
See discussion in section 3.1.

State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP)
See discussion in section 3.3

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33)
See discussion in section 5.6. The Department is satisfied that the project is not potentially hazardous or offensive with the implementation of appropriate mitigation measures, and that the proposal is generally consistent with the aims, objectives and provisions of SEPP 33.

State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44)
The Koala has been recorded within the vicinity of the project site, although the site does not contain potential Koala habitat (as defined by SEPP 44). No evidence of Koala activity, either direct observation or indirect evidence (such as scats or scratches on tree trunks) was recorded within the project site. As a result of previous clearing within the project site, Koala are unlikely to occur. The Department accepts that the project site does not contain potential Koala habitat and is satisfied that the proposal is generally consistent with the aims, objectives, and requirements of SEPP 44. As such, the Department is satisfied that the project would be unlikely to impact on Koalas.

State Environmental Planning Policy* No.55 – Remediation of Land *(SEPP 55)
SEPP 55 is concerned with the remediation of contaminated land. It sets out matters relating to contaminated land that a consent authority must consider in determining an application for development consent. Further consideration of SEPP 55 is provided in section 5.1.3. The Department has considered the matters in SEPP 55 and is satisfied that the land can be used for the purposes of water infrastructure.

APPENDIX C SUBMISSIONS

See the Department's website at
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=3119

APPENDIX D PROPONENT'S RESPONSE TO SUBMISSIONS AND PREFERRED PROJECT REPORT

See the Department's website at
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=3119

APPENDIX E POLITICAL DONATIONS DISCLOSURES

See the Department's website at https://majorprojects.affinitylive.com/public/676df6b7232b5794db27bb8238d362d4/Political%20Donations%20Disclosure%20Statement%20%2814%20November%202008%29.pdf

APPENDIX F RECOMMENDED CONDITIONS OF APPROVAL