Googong Township Integrated Water Cycle Operational Environmental Management Plan (OEMP)

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QPRC

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Glossary of Terms

ACTEW	Australian Capital Territory Electricity and Water Corporation
ADWF	Average Dry Weather Flow
BWPS	Bulk water pumping station
CDU	Chemical dosing unit
CoA	Minister for Planning's Condition of Approval
CIC	Canberra Investment Corporation
CIP	Community Information Plan
DP&E	Department of Planning and Environment
EA	Environmental Assessment
EDT	Emergency Detention Tank
EP	Equivalent population
EPA	Environment Protection Authority
EPBC Act	Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
EP&A Act	*Environmental Planning and Assessment Act 1979*
EWMS	Environmental work method statement
GFIMS	Googong Foreshores Interface Management Strategy
GTPL	Googong Township Proprietary Limited
HSEQ	Health, Safety Environment and Quality
IWC	Integrated Water Cycle
LGA	Local Government Area
NOW	Department of Primary Industries - Water
OEH	NSW Office of Environment and Heritage
OEMP	Operation Environmental Management Plan
POEO Act	*Protection of the Environment Operations Act 1997*
PIRMP	Pollution Incident Response Management Plan
PTWL	Pink-tailed Worm-lizard
QCC	Queanbeyan City Council (*merged with Palerang Shire Council)*
QPRC	Queanbeyan-Palerang Regional Council
RWQMP	Recycled Water Quality Management Plan
SoC	Statement of Commitment
SCADA	Supervisory Control and Data Acquisition
SDS	Safety Data Sheet
SOP	Standard Operating Procedure
SPS	Sewage pumping station
WRP	Water recycling plant
WMP	Water Management Plan

PART 1 – Environmental Management Plan

1.0 Introduction

1.1 Scope of the OEMP

This Operational Environmental Management Plan (OEMP) has been prepared for the operation and maintenance of the Googong Township Integrated Water Cycle (IWC) which currently comprises the Water Recycling Plant (WRP) and Network. The Project is located adjacent to Googong Dam in the Canberra region, around 7 km south of Queanbeyan in NSW. It is operated by Queanbeyan-Palerang Regional Council (QPRC).

This OEMP has been prepared in accordance with Condition D7 of the Director-General's Conditions of Approval (Application No. MP 08_0236) and has been developed to meet the requirements of the Conditions of Approval (CoA) and Statement of Commitments (SoC) for the Googong Township IWC Project, where relevant.

The OEMP has also been prepared in accordance with relevant legislative and policy requirements and defines the environmental management, maintenance responsibilities and reporting channels for all personnel, including employees and contractors involved in the operation and maintenance of the Googong Township IWC Project. All personnel are responsible for ensuring that their activities are conducted in accordance with legislative requirements and the requirements of this OEMP.

Condition of Approval (CoA) A6 allows the submission of any strategy, plan or program required by the approval on a progressive basis, with the approval of the Director-General. In accordance with this CoA and the Staging Report, this OEMP governs the operation of the IWC Project on behalf of Queanbeyan-Palerang Regional Council (QPRC) for the operational phase of the Project.

This is the overarching document in the environmental management system that includes a number of other management documents and has been prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004). The environmental management system structure is described in **Section 1.5**.

1.2 Objectives of the OEMP

The objectives of this OEMP are to:

- Ensure that environmental management is undertaken in accordance with the requirements of the Conditions of Approval (CoA), Statement of Commitments (SoC), Environmental Protection Licence (EPL) and relevant legislative and policy requirements;
- Prevent, reduce and effectively manage potential impacts to the environment resulting from operation and maintenance of the Googong Township IWC Project and
- Promote environmental awareness amongst employees and contractors to ensure that operation and maintenance of the Googong Township IWC Project is conducted with due diligence to the environment.

The objectives of this OEMP as described in Condition D7 are outlined in **Table 1**. The relevant sections of this OEMP where specific requirements are addressed have also been referenced. In addition, further requirements of the Conditions of Approval, Statement of Commitments, and other control measures are referenced in **Part 2 – Project Requirements Compliance Matrix.**

The OEMP shall be submitted for the approval of the Director General no later than one month prior to the commencement of Operation of the project or within such period as otherwise agreed by the Director General. Operation activities shall not commence until written approval has been received from the Director General.

Table 1: OEMP requirements (Ministers Condition of Approval D7)

No.	Requirement	Reference
D7	The Proponent shall prepare and implement an Operation Environmental Management Plan (OEMP) for the project, in accordance with *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004) or its latest version. The Plan shall be prepared in consultation with Councils, OEH and NOW and include, but not necessarily be limited to:	This plan
D7(a)	identification of all statutory and other obligations that the Proponent is required to fulfil in relation to the operation of the development, including all consents, licences, approvals and consultations;	Section 3 and Part 2
D7(b)	specific consideration of relevant measures to address any requirements identified in the documents referred to under condition A1;	Section 5 and Part 2
D7(c)	a management organisational chart identifying the roles and responsibilities for all relevant employees involved in the operation of the project;	Section 4
D7(d)	overall environmental policies and principles to be applied to the operation of the project;	Section 1.6
D7(e)	management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;	Section 1.7
D7(f)	standards and performance measures to be applied to the project, and means by which environmental performance can be periodically reviewed and improved (where appropriate), including what actions will be taken to address identified potential adverse environmental impacts. In particular, the following environmental performance issues shall be addressed in the Plan:	Section 5
D7(f)(i)	detailed contingency procedures for dealing with: power failures; sewer overflow following failures at the sewage pumping stations and/or during extended periods of wet weather flows; and structural failures in the sewage and recycled water transfer pipeline infrastructure;	Section 5.2.11, Section 5.2.12 and Annex C – Environmental Risk Register
D7(f)(ii)	noise emissions including measures for regular performance monitoring of noise generated by the project and measures to proactively respond to and deal with noise complaints;	Section 5.2.4, Section 8, Section 9
D7(f)(iii)	air quality impacts, particularly odour;	Section 5.2.5

No.	Requirement	Reference
D7(f)(iv)	operational traffic impacts, particularly during maintenance, and procedures to restore any damage attributable to the project during the operation phase;	Section 5.2.3
D7(f)(v)	mosquito control and the potential for algal blooms;	Water Management Plan (WMP)
D7(f)(vi)	impacts of operational activities on the Googong Dam and foreshores area, particularly water quality;	WMP
D7(f)(vii)	hazard and safety and emergency management measures including measures to prevent and control bushfires;	Section 5.2.13, Section 7
D7(f)(g)	procedures for the periodic review and update of the Operation Environmental Management Plan as necessary;	Section 1.5.1, Section 8
D7(f)(h)	the Management Plans listed under conditions D8 and D9; and	Section 1.5
D7(f)(i)	the environmental monitoring requirements outlined under this approval.	Section 8
	The OEMP shall be submitted for the approval of the Director-General no later than one month prior to the commencement of Operation of the project or within such period as otherwise agreed by the Director-General. Operation activities shall not commence until written approval has been received from the Director-General.	Section 1.2

1.3 Background and context

Googong Township Proprietary Limited (GTPL) – a partnership between Canberra Investment Corporation (CIC) and Mirvac, is responsible for the development of the new Googong Township, which will be home to approximately 16,000 people and developed over the next 25 years. The township is designed around an integrated water cycle (IWC), with a dedicated Water Recycling Plant (WRP) that will reduce the consumption of potable water in the community by around 60 per cent and recycle the township's wastewater for non-potable use.

The Googong Township Water Cycle Project Environmental Assessment (November, 2010) (EA) was prepared under (the now repealed) Part 3A of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act) to assess the impacts of construction and operation of infrastructure for the potable water, recycled water and sewage system required to service the township. Concept Approval for the ultimate development (Stage 1 and Stage 2) and a Project Approval for Stage 1 of the Googong Township IWC project were granted by the NSW Planning Assessment Commission, under delegation from the Minister for Planning and Infrastructure on 24 November 2011.

1.4 Staging

Stage 1 of the IWC Project was approved by the NSW Planning Assessment Commission, under delegation from the Minister for Planning and Infrastructure on 24 November 2011 and has commenced operation. It comprises of infrastructure to deliver potable drinking water to the township, treat wastewater and utilise recycled water for re-use in the township and for environmental discharge. Stage 1 included a new Stage AB WRP, interim reservoirs for

recycled and potable water, pumping stations and mains pipework (including rising and distribution mains) for sewage, recycled water and potable water.

Stage 2 of the IWC Project is being delivered in two sub stages (Stages C and D) in order to provide the appropriate IWC infrastructure to accommodate the size and growth of the township. Stage C is currently under development, with Stage D to be developed as demand requires in the future. Stage C has been further divided into three components, these being Stage C Network West (within the former Queanbeyan local government area (LGA)), Stage C Network East (within the former Palerang LGA) and Stage C WRP (within the former Queanbeyan LGA). The construction and operation of these components have been approved under the EP&A Act by the relevant determining or consent authority.

An OEMP was prepared for the operation of Stage AB WRP and Stage AB Network (prepared by AECOM) which superseded the OEMP for Stage AB only (prepared by RPS Manidis Roberts). This OEMP now incorporates the operation of Stage C Network West, which will support the ongoing development of the Googong township with the capacity to service approximately 9,400 EP. The IWC Project operated under this OEMP is shown in Figure 1 and a detailed description of the Stage C Network West addition is provided in **Section 2**.

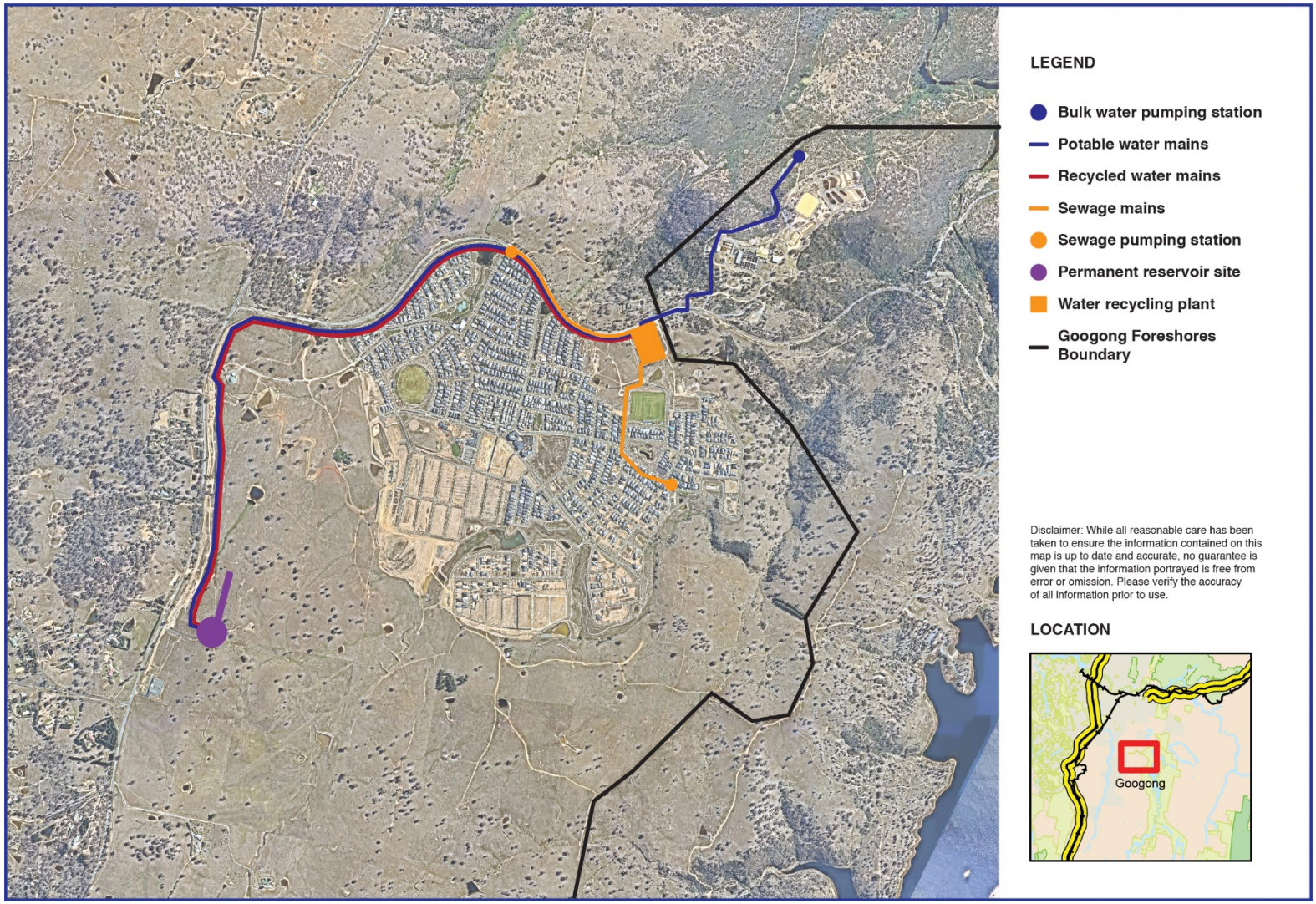


Figure 1 – The Googong Township IWC project operated under this OEMP

1.5 Plan structure

1.5.1 Operation Environmental Management Plan (CoA D7)

Part 1 – Environmental Management Plan - provides the system to manage and control the environmental aspects of operation of the IWC Project. It provides the overall framework to ensure environmental impacts are minimised and legislative and other requirements are fulfilled.

- **Section 1:** provides an introduction to the project background and context.
- **Section 2:** gives a brief process description for the IWC Project
- **Section 3:** summarises the planning approval process, legislative and other compliance requirements.
- **Section 4:** includes a management organisational chart and describes the roles and responsibilities for all relevant employees involved in the operation of the project.
- **Section 5:** identifies the environmental management activities, mitigation and control measures that will be implemented to prevent or minimise environmental impacts.
- **Section 6:** describes the process to promote competence, training and awareness.
- **Section 7:** procedures for managing incidents and sets out emergency response procedures.
- **Section 8**: required inspections, monitoring and auditing requirements for the OEMP.
- **Section 9:** enquires and complaints management processes.
- **Section 10:** document references.

Part 2 – Project Requirements Compliance Matrix – describes how the Project will comply with relevant requirements, including the Conditions of Approval, Statement of Commitments, and other control measures.

ANNEXURES – Includes the some of the Aspect Specific Management Plans developed to manage specific environmental issues as required by the Minister's Conditions of Approval (CoA) and further detailed information to support the OEMP.

This OEMP sets up a framework for managing operational environmental risks and will be a 'living' document that will be updated throughout the Googong Township IWC Project operational lifecycle. As the Googong Township IWC Project progresses, all roles, responsibilities, monitoring and reporting requirements in this OEMP will be reviewed and updated. The OEMP will be reviewed on an annual basis.

1.5.2 Water Management Plan (CoA D8)

Consideration of water issues is key to the operation of the Googong Township IWC Project. A Water Management Plan (WMP) has been prepared for Stage 1 to identify and manage specific impacts and aspects related to water. The WMP was approved by the Department of Planning and Environment for operation of the WRP on 10th November 2015. Parts of the WMP are applicable to the Stage AB WRP. This WMP will be updated to include Stage C Network West and the WMP should be read in conjunction with this OEMP.

The updated WMP will include the following components:

- Surface Water and Aquatic Ecology Monitoring Program
- Groundwater Monitoring Program
- Recycled Water Flow Release Protocol
- Surface and Groundwater Response Plan

- Irrigation Management Plan.

1.5.3 Pink-tailed Worm-lizard Protection and Management Plan (CoA D9)

A Pink-tailed Worm-lizard Protection and Management Plan has been prepared by ecology consultants, Biosis. The Plan details a Pink-tailed Worm-lizard (PTWL) Conservation Area that has been established by GTPL and designed in a manner that would result in a qualitative and quantitative long-term net-benefit to PTWL habitat within the locality. The Plan also outlines a range of management and monitoring requirements that extend into the operation phase.

1.5.4 Other project documents

GTPL and QPRC are responsible for the implementation of other project documents as required by the CoA, SoC and EPL. These include:

- Compliance Tracking Program (CoA A18)
- Community Engagement and Stakeholder Management Plan (SoC CS1/CoA A14/CoA A15)
- Community Education Strategy (SoC CS3)
- Landscape Management Plan (CoA B16)
- Essential Sewage and Recycled Water Quality Management Plan (HH2)

Figure 2 shows the structure of the environmental management system for the IWC Project and its relationship to other project documents.

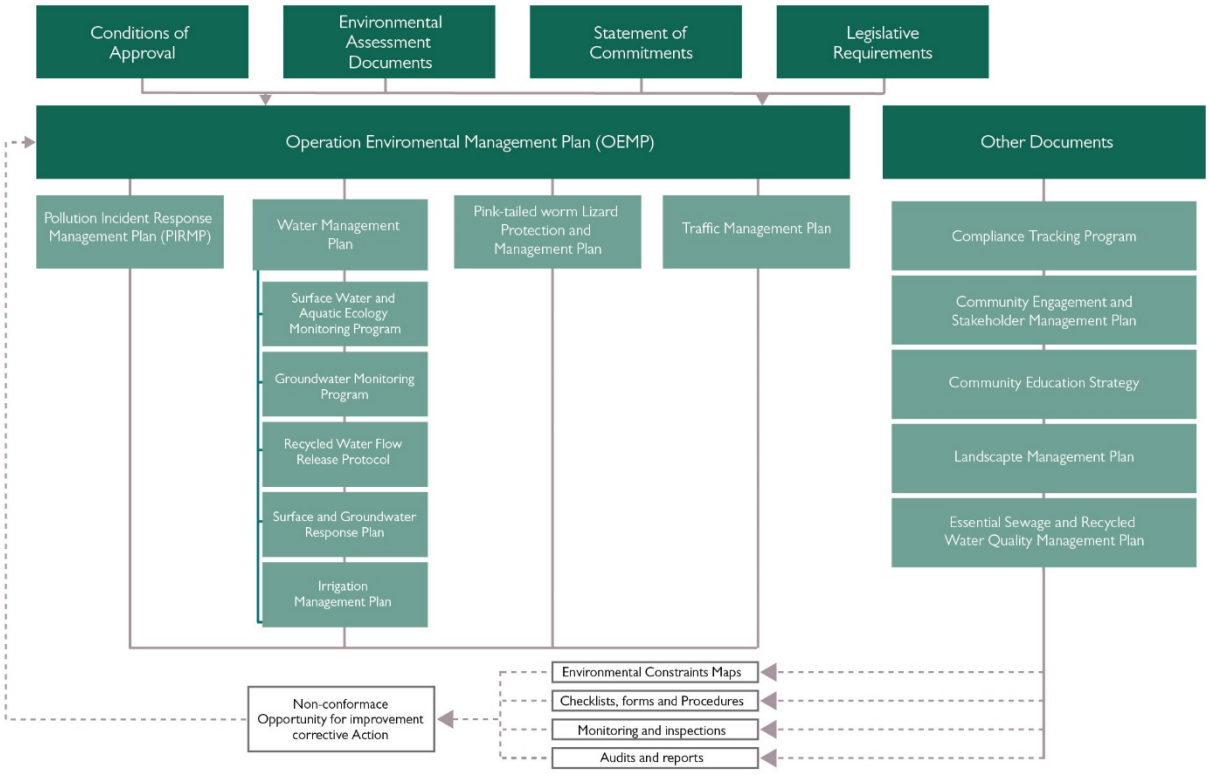


Figure 2 – Environmental Management System Structure

1.6 Health Safety Environment and Quality (HSEQ) Policy

QPRC have developed a HSEQ Policy which promotes a high standard of health, safety, environmental and quality management:

QPRC will endeavour to be consistent with this policy, where it applies to operations. All relevant policies are available on QPRC's website and at the QPRC office/depot.

1.7 Objectives and targets

Environmental objectives and targets have been established as a way to monitor and evaluate environmental performance during operation of the IWC Project. These objectives and targets have been developed with consideration of the key issues identified through the environmental assessment process.

The performance of the IWC Project against the objectives and targets will be documented annually (see **Section 8.0**) and should be reviewed for future stages of the Googong Township IWC Project.

Environmental objectives and targets for the IWC Project are provided in **Table 3.** Refer to **Section 4.0** for the Roles and Responsibilities for the implementation and monitoring of the targets.

Table 2 - Environmental objectives and targets

Objective	Target	Management tool
Comply with all statutory and legal requirements.	Full compliance with statutory approvals. No regulatory infringements (prosecutions, penalty infringement notices). No formal regulatory warnings.	Audits, compliance report.
Engage with the affected and broader community and minimise and manage complaints.	Communicate effectively with the community through the tools identified in the Communications Strategy (C1117545). Record and response to complaints within the timeframe specified in the Communications Strategy.	Review complaints register, audits, operation compliance report.
Continually improve environmental performance.	Incidents and non-conformances requiring investigation or action are appropriately investigated, and corrective actions assigned. Corrective actions are completed within designated timeframes. A program of ongoing environmental training is developed and maintained. Lessons learnt from environmental incidents are implemented to minimise repeat issues.	Audits, incident investigation, operation compliance report.

1.8 Consultation

In accordance with Condition D7 of the Director-General's Conditions of Approval, this OEMP has been prepared in consultation with:

- Queanbeyan-Palerang Regional Council (QPRC)
- Office of Environmental and Heritage (OEH)

- Department of Primary Industries – Water (DPI-Water).

Refer to **Annex D** for records of consultation and responses with OEH and DPI-Water.

Independent separate works approvals will be sought for any maintenance works on the reservoir tanks. Any works which impact the quality of water leaving the facility through the discharge point would be prepared in consultation with the EPA.

1.9 Certification and approval

A previous OEMP (RPS Manidis Roberts) was approved by the Director General of the DP&E. Consultation occurred with DP&E on 28 November 2017 regarding the update of this OEMP to include Stage C Network West. DP&E agreed that further approval of this OEMP was not required but the document would be provided to DP&E for their information.

2.0 IWC Project Process Description

2.1 Pumping stations and transfer of sewage

Sewage from Googong Township will flow in a gravity sewerage system to two separate sewage pumping stations (SPS1 and SPS2) and be pumping directly to the WRP.

SPS1 and SPS2 consist of an underground, concrete well structure with submersible sewage pumps. Emergency storage is provided for pump/power failure. Manual air valves and scour valve arrangements are also provided in accordance with WSA 04.

The pumping stations will pump directly to the inlet works at the WRP. There are 2-3 pumps within each wet well in a duty/standby arrangement. These pumps are controlled by wet well-level sensors, which switch the pumps on when the water level reaches the design cut-in level, and switches the pumps off, when the water level drops to the cut-out level.

Should inflow to either of the pumping stations exceed the pump discharge rate at any time, or failure of the pumps due to malfunction or loss of power to the site, the emergency storage tanks at each location will start to fill. The emergency storage capacity is different at both sewage pumping stations. Storage at SPS 1 is sufficient to provide 11 hours capacity at average dry weather flow (ADWF) and storage at SPS 2 is sufficient to provide 8 hours capacity at ADWF. Once normal operations are restored, the emergency storage tanks can be drained and pumped to the WRP via the normal process.

A Supervisory Control and Data Acquisition (SCADA) and telecommunication system is linked to SPS1 and SPS2 and is monitored remotely by QPRC. The pumping stations are ventilated to the atmosphere with a standard 12m high DN150mm ventilation stack, connected to the wet well.

The SPSs and sewage network are operated by QPRC and are controlled independently of the WRP. The inflow of sewage to the WRP is monitored by the WRP control system.

2.2 Inlet works

The purpose of the inlet works is to remove gross solids from the incoming sewage. It comprises the following equipment:

- 6mm screens
- 1mm screens
- grit removal
- collected screenings and grit handling, washing and dewatering.

The sewage flowing into the WRP is discharged into a covered, elevated inlet chamber and gravitates through the inlet works. Ferric sulphate is dosed into a chamber near the inlet to reduce hydrogen sulphide for odour control.

The sewage gravity flows through the screens and grit handling system where solids up to 6mm are removed and heavier settling grit and sand is removed as well. The screened and degritted sewage then flows through to the fine screens, where solids up to 1mm are removed to provide protection to the downstream membrane treatment process.

The removed grit and screenings are washed and dewatered before being stored in enclosed bins positioned at ground level from where they are transported off site for disposal.

Odours from the inlet works and equipment are extracted and treated by the odour control system.

2.3 Secondary treatment

The secondary treatment processes involve the use of biological and chemical methods to remove organic materials (biological oxygen demand (BOD) and chemical oxygen demand (COD)) and nutrients such as nitrogen and phosphorus, as well as total suspended solids (TSS) from the sewage. Sewage from the inlet works flows by gravity to the secondary treatment bioreactors.

The Googong WRP uses membrane bioreactors. These have been designed with additional capabilities to facilitate both biological nitrogen removal and biological phosphorus removal. The membrane bioreactors incorporate the following components:

- Distribution chamber at the inlet to the bioreactor.
- Anaerobic zone to allow for phosphorus removal, which is aided by chemical removal through ferric sulphate dosing.
- Anoxic zone to convert nitrate into nitrogen gas, which dissipates into the atmosphere.
- Aeration zone to remove biological and chemical oxygen demand, and oxidation of ammonia.
- Membrane tank for the microfiltration of bioreactor effluent.

The final zone in the bioreactor contains submerged membranes that act as a physical barrier to remove total suspended solids. The membranes have 0.45µm pore size and therefore produce a high quality filtered effluent.

The bioreactor is covered and air extracted and treated to prevent odour emissions. The extracted air is drawn to the odour control system for treatment.

Aeration for the aerobic zone is provided in the form of submerged fine bubble diffusers positioned on the floor of the tank.

2.4 Tertiary treatment

Tertiary treatment system has been included to achieve low effluent (or recycled water) phosphorus concentration. The tertiary treatment system comprises:

- Tertiary filtration feed pumps
- Alum dosing and mixing to form an alum precipitate
- Tertiary filtration for phosphorus removal
- UV disinfection
- Chlorine disinfection in a chlorine contact pipe.

Secondary effluent from the membrane bioreactors is stored in the filtrate storage tank from where it is pumped into the tertiary filtration system.

A 2-stage chemical precipitation process is employed to reduce the amount of chemicals required to achieve the effluent (or Recycled Water) phosphorus target. Minimisation of chemical dosing will assist in minimising the TDS of the effluent (or Recycled Water).

The 2-stage chemical precipitation consists of:

- Dosing of ferric sulphate into the bioreactor, targeted to achieve a soluble phosphorus level of 1 mg-P/L
- Dosing of alum into the MBR filtrate, targeted to meet the required effluent (or Recycled Water) phosphorus level of 0.5 mg-P/L as 90 percentile.

The precipitates formed will then be removed in the tertiary filtration system which uses a pressurised micro- filtration system.

A Clean In Place (CIP) system is used to batch chemical solutions which will be used for membrane cleaning in maintenance cleans and recovery cleans to remove membrane fouling, improve flux and reduce trans-membrane pressure. Chemical cleans use sulphuric acid, citric acid and sodium hypochlorite. The spent chemicals are neutralised after cleaning using sodium hydroxide and sodium bisulphite and then returned to the inlet works for treatment.

2.5 Disinfection

The effluent from the tertiary filtration system is disinfected to further deactivate human pathogens to ensure that the water is suitable for recycling and release into the local environment. Two forms of disinfection are used, as determined under the Australian Recycled Water Guidelines – chlorination and UV disinfection.

The UV system is sized to treat 100 per cent of the flow from the tertiary filtration system.

Chlorination will disinfect and provide a residual disinfectant which suppresses bacterial and algal regrowth within the recycled water reservoirs and pipework. Chlorination is conducted in a dedicated chlorine contact pipe prior to storage at the onsite Recycled Water Storage Tank.

2.6 Chemicals

The chemicals stored at the WRP and Hill800 are identified in Table 4.

Table 4 – Chemicals stored at the WRP and Hill800.

Chemical	Use – WRP	Use – Hill 800
Ferric sulphate	To control odours and remove chemical phosphorus	Not used
Alum	To precipitate phosphorus	Not used
Sodium hydroxide	To increase alkalinity to aid the biological processes that occur within the bioreactor	Not used
Sodium hypochlorite	To disinfect the secondary effluent and clean the membranes and tertiary filters	To boost chlorine levels in potable and recycled water network

Chemical	Use – WRP	Use – Hill 800
Sulphuric acid	To clean the membranes and tertiary filters	To correct pH in the potable and recycled water network.
Citric acid	To clean the membranes and tertiary filters	Not used
Acetic acid	Supplementary carbon source to assist biological processes in the bioreactor	Not used
Sodium meta bisulfide (SMBS)	To reduce chlorine levels allowing for discharge to the environment	To reduce chlorine levels allowing for discharge to the environment.
Polymers	Thickening and dewatering of sludge	Not used.

The chemicals are stored in storage tanks located, together with dosing pumps, in a centralised, bunded area at the WRP. Chemicals are segregated as required. This roofed facility is housed together with an adjacent bunded tanker delivery area. The bunded areas require manual draining by the Operator in the event of a spill.

2.6.1 Chemical storage tanks and bunds

All storage bunds are designed to contain 110% of the volume of the storage tank contained within the bund. Incompatible chemicals have separate bunds. The storage bunds are lined with a suitable lining to prevent concrete degradation from chemical leaks where appropriate.

Chemical fill points extend over the bund and are clearly labelled to indicate the chemical to be loaded into each fill point. An audible alarm and flashing light shall signal when a chemical tank is full. Additionally, each chemical tank is fitted with an external level indicator that clearly indicates the level of liquid in the tank. This indicator is clearly visible from the tank filling point. Chemical tanks shall be drained and cleaned from time-to-time as appropriate.

2.6.2 Bund drainage

To facilitate the handling of any chemicals in the event of a tank failure, all storage bunds are provided with an invert that is graded towards an un-grated sump. The sump is positioned in a location that is easily accessed from the exterior of the bund and permits the installation of a portable sump pump for the emptying of the bund to a tanker truck or to the neutralisation pit via permanent pipework. Inside the bund, the sump is isolated behind a hand rail to avoid slips, trips or falls. A portable pump is preferred rather than a permanent drain to ensure chemical bund drainage is carefully managed. Chemical storage bunds shall be covered with a roof with eaves overhangs to prevent high levels of rainwater collecting in the bund.

A reinforced concrete, liquid retaining, chemical tank unloading bund is provided adjacent to the chemical storage tanks. The bund shall also be graded to a sump fitted with an external isolation valve which shall normally remain open and drain to the General Purpose Pumping Station to allow drainage of rain water. During tanker unloading, this valve shall be closed. In

the event of a chemical spill a portable pump will be used to pump spilled chemical to the neutralisation pit using a permanent drain system provided.

Compatible chemicals, such as sodium hydroxide and sodium hypochlorite may be stored in common storage bunds. Incompatible chemicals will be stored in separate bunds e.g. sodium hydroxide and sulphuric acid may not be stored in the same bund.

Measures are provided to prevent the uncontrolled contamination of incompatible chemicals both in storage, transfer and at the point of application. This includes hardware such as non-return valves; software such as control interlocks and operational controls such as procedures and training.

2.6.3 Chemical transfer

All chemical transfer pipes are double contained, either in dedicated trench or secondary containment pipe. All buried pipework is double contained. Double containment is also provided at the application points. Appropriate lagging is provided to ensure that the chemical does not freeze either in storage or transfer. For this reason, caustic with a maximum concentration of 30% is provided given the low ambient temperature in the winter months.

2.7 Network

The network currently comprises of the following components:

- Two permanent reservoirs, including a recycled water discharge pipeline for excess recycled water that needs to be released from the recycled water reservoir.
- Main pipelines for recycled water and potable water including: new potable water and recycled water rising mains from the former interim reservoirs to the permanent reservoirs and a gravity flow system from the permanent reservoirs back into the Googong Township.

2.8 Discharges to environment

In certain scenarios, depending on the operating situation at the WRP and when the supply of recycled water exceeds demand recycled water or partially treated wastewater will need to discharge to the environment. There are three discharge points designed into the Facility namely:

- Discharge Point 1: Permanent Reservoir – Excess recycled water will be discharged from the permanent reservoir site and along the recycled water overland discharge line, where it will flow into the stormwater management system to Beltana Pond and into Googong Creek;
- Discharge Point 2: WRP (Montgomery Creek) – Untreated or partially treated wastewater will be discharged from the WRP site into the Montgomery Creek catchment, where it will eventually discharge into Queanbeyan River below Googong Dam (emergency discharge point); and
- Discharge Point 3: Beltana Park Outlet Structure (Googong Creek) – Off-specification recycled water will be discharged from the WRP at Beltana Park immediately downstream of Beltana Pond, where it will then flow into Googong Creek.

2.8.1 Off-Spec water discharges from the WRP

In the event that human health critical control points monitored at the tertiary filtration system and disinfection system are breached, the 'Off-Spec' water from the recycled water system will be diverted to the Effluent (Off-Spec Water) Tank. Flow diverted to the Effluent (Off-Spec Water) Tank will be stored and returned to the inlet works for treatment. In the event that the off-specification event lasts for longer than 2-4 hours (adjustable by the Operator), the effluent will be discharged to the licensed Discharge Point 3 at Googong Creek downstream of Beltana Pond. This effluent will be compliant with the criteria limits of EPL 20188.

2.8.2 Emergency overflow management

The WRP has been sized to treat both dry and wet weather flows. This design feature negates the need to incorporate a separate wet weather flow bypass system in the plant.

The WRP does, however, incorporate an emergency overflow facility located at the inlet distribution chamber, upstream of the bioreactors. Plant overflows (comprising screened and de-gritted sewage) in excess of a 1:10 years ARI storm event or during a power outage on site will be conveyed to the Emergency Detention Tank. This tank provides approximately 8 hours storage at the design average dry weather flows. When this tank is full, the overflow is discharged to the stormwater management system (Montgomery Creek catchment).Flows which are discharged to Montgomery Creek could be disinfected at the outlet of the EDT using sodium hypochlorite.

After the emergency overflow event has passed, any stored sewage remaining in the EDT will be transferred back to the inlet works for treatment through the WRP.

2.9 Biosolids management

Solids produced as waste sludge from the bioreactor processes are separated from the liquid process by the membranes in the bioreactor. The waste sludge is thickened and then digested in an aerobic digester, which reduces the volatile solids and bacteria in order to ensure the product is suitable for re-use. The sludge treatment process treats the sludge to achieve a Grade B Classification, suitable for restricted use 2 as per the *NSW EPA Environmental Guidelines on the Use and Disposal of Biosolids Products*.

Digested sludge is pumped from the digesters to a centrifuge, located in a dedicated plant room. The dewatered sludge from the centrifuge is stored in a sealed storage bin, which is collected by a standard hooklift truck for disposal. It is estimated that sludge collection and removal activities would involve about two truck movements each week at ultimate development capacity.

Odour is extracted from the biosolids management building and equipment and treated in the odour control system.

2.10 Odour control

Due to the close proximity of the WRP to residential areas and the subsequent potential to generate odour complaints, tanks and equipment that have the potential to generate odours are covered and odour extraction and treatment facilities are provided. The WRP areas that are covered for odour control are:

- Inlet Works Area and Equipment.

- Secondary Treatment Tanks.
- Sludge Digesters, Dewatering Equipment and Storage Bins.
- Emergency Detention Tank and General Purpose Pump Station.

The WRP has a centralised odour control facility which consists of activated carbon filters, two extraction fans (with acoustic hoods) and exhaust discharge stack. The odour control system is located on a bunded, reinforced concrete slab.

2.11 Recycled water system

The recycled water system supplies recycled water produced at the WRP to the township for use by the community. This system is comprised of the following:

- Components of the WRP:
    - Recycled water storage tanks;
    - The recycled water transfer pumping station;
- Mains for recycled water:
    - Recycled water rising main from the WRP to the permanent reservoirs site;
    - Gravity recycled water mains from the permanent reservoirs site back into the Googong Township; and
- One of the two permanent reservoirs at Hill 800, including a recycled water discharge pipeline for excess recycled water to be released from the recycled water reservoir at the licenced Discharge Point 1.

It should be noted that a prior approval under the *Local Government Act 1993* authorised all recycled water generated by the WRP to be discharged at the licensed Discharge Point 3 on Googong Creek downstream of Beltana Pond. A further approval under the *Local Government Act 1993* now permits recycled water to be used in the township and excess recycled water to be discharged at the licensed Discharge Point 1 in the Googong Creek catchment downstream of the permanent reservoirs.

Potable water is being used in the recycled water system until this approval is granted and in the future potable water may from time to time be required to top up the recycled water reservoir, especially when the demand exceeds recycled water production.

2.12 Potable water system

Potable water is supplied from ICON Water at a supply point located near the Googong WRP on the south side of Googong Dam Road at the boundary of the Googong Dam Foreshores Area. It should be noted that the potable water system upstream of this point is operated by ICON Water and is not covered by this OEMP. Potable water is pumped into the permanent water service reservoir from where it is distributed into the reticulation network. This reservoir has a capacity of 1.9 ML

The inlet of the reservoir has an air gap as per current Australian Standard AS3500 requirements, meaning that no backflow or cross-contamination can occur. There is a Service Level Agreement in place between QPRC and ICON Water that details contractual and supply agreements.

Cross connections and backflow prevention is discussed in the Googong Plumbing Standard and within Council's Backflow and Cross Connection Policy.

Reservoir levels are being monitored and controlled by SCADA and pump cut in and cut out levels. Reservoir operating levels are continually reviewed which is based on population growth, varying demand patterns and water quality.

Filling of the recycled water reservoir with potable water will stop once recycled water is produced.

Chemical dosing facilities exist at the reservoirs where chlorine is injected to maintain required disinfectant levels. These facilities are fully automated and regular monitoring are taking place in the reticulation network.

Sodium bisulphate will be dosed at the reservoir overflow to reduce the chlorine levels to acceptable environmental requirements, in the event of reservoir overflows.

The chemical dosing facilities are fully bunded.

2.13 SCADA system

The QPRC Supervisory Control and Data Acquisition system (SCADA) monitors a range of inputs from the bulk water supply, water reservoirs, chemical dosing facilities, sewerage pump stations and the WRP. Three levels of control exist with different input levels for:

- View Only – No adjustments can be made.
- Supervisor input – Adjustments to certain set points can be made.
- Engineer input – Full control.

SCADA and Telemetry data can be viewed and adjusted at:

- QPRC Main Depot – Master System.
- QPRC Sewage Treatment Plant – Secondary system.
- Human Machine Interface (HMI) at interim reservoir sites.
- Googong WRP – WRP processes only.
- On-Call Supervisors – Remote login and view from iPads/Laptops.

Priority alarms are sent to relevant personnel during office hours and after hours.

2.13.1 Bulk Water Supply from Icon Water

Flow from the bulk water pumping station is monitored between two flow meters. Pumps will shut down if a flow discrepancy exists between the two flow meters. An emergency latch stop can be activated at the reservoir site to force a pump shutdown in the event of an emergency.

2.13.2 Reservoirs

Reservoir levels are monitored and set points can be adjusted if and when required. A series of low level and high level alarms exist.

2.13.3 Chemical dosing facilities

Chemical dosing facilities at the reservoirs are fitted with online analysers to measure water quality and to adjust chemical dosing rates. Free Chlorine and pH, dosing pump status, chemical storage level are monitored continually. Chemical concentrations are set to be

within operational control points. Priority alarms are sent to relevant personnel should an operational control point be breached, or should a breakdown of plant or equipment occur. An emergency shower is located at the chemical dosing facility which sends a notification to relevant personnel if activated.

2.13.4 Sewerage Pumping Stations

Levels in the wet well, pump run times, excessive pump starts, power failure, flow meter readings, levels in the emergency storage level and overflow to the environment can be viewed on the SCADA screen. Priority alarms notify relevant personnel in the event of SPS failure or emergency event.

2.13.5 Water Recycling Plant

The basic requirements for process monitoring and control of the Googong Water Recycling Plant (WRP) are specified in the Plain English Process Functional Description.

Fail safe control philosophy has been used for control of processes/equipment. The fail-safe philosophy covered the various failure modes, e.g. power failure, PLC failure, communication failure, Plant air failure and instrument failure. Failure of critical instrumentation will result in a backup mode of operation. The backup or “failure mode” mode of operation has been covered in PEFD.

A master PLC will be located in the WRP Motor Control Centre (MCC) Building, adjacent to the plant control room. The master PLC will control all WRP functions through the plant control system (PCS). Interface to the master PLC/PCS will be via the plant SCADA system with appropriate workstation(s) located in the Administration Building of the WRP.

The workstation(s) will be used to:

- Allow the operator to pre-set the system performance and alarm set points.
- View the status of the controlled equipment.
- Receive and respond to alarm messages.
- Store and retrieve historical plant data.

The available work stations will also provide access to the QPRC network, however his will not be on the same platform as the WRP SCADA

3.0 Key Legal, Approval and Other Requirements

3.1 Approvals, permits and licencing

In accordance with CoA A7, all necessary licences, permits and approvals required for the project will be obtained and maintained as required throughout the life of the IWC Project. During operation of the IWC Project, a copy of the Project Approval and all other relevant approvals will be available on the IWC Project website and at the WRP.

No condition of the Project Approval removes the obligation to obtain, renew or comply with such necessary licences, permits or approvals except as provided under Section 75U of the EP&A Act.

Table 3 – Approvals

Regulatory Authority	Approval / Licence
Department of Planning and Environment (DP&E)	Stage 1 of the Googong Township IWC Project was approved by the Planning Assessment Commission of NSW under (the now repealed) Part 3A of the EP&A Act, on 24 November 2011. The ultimate development of water cycle infrastructure for the Googong Township IWC Project (including Stage 1) was also approved on 24 November 2011 under a Concept Approval. This OEMP will comply with the conditions of both the Concept Approval and Stage 1 Project Approval, where relevant to Stage AB WRP. Part 3A of the EP&A Act was repealed on 1 October 2011. Under the transitional arrangement, the project will continue to be legislated by the provisions of Part 3A, as in force immediately before its repeal. Stage C Network West was approved by (the then) Queanbeyan City Council under Part 5 of the EP&A Act on 13 April 2016
Environment Protection and Biodiversity Conservation Act 1999 (Cth)	The Googong Township IWC Project was referred to the DSEWPaC under the EPBC Act due to potential impacts on matters of national environmental significance, including migratory species, threatened species and communities. The Googong Township IWC Project was declared a controlled action under the EPBC Act, and subsequently approved on 19 May 2011, subject to conditions. This OEMP and environmental management documents will comply with the conditions of the EPBC Act approval, where relevant.
Environment Protection Authority (EPA)	The Protection of the Environment Operations Act 1997 (POEO Act) is the key piece of environment protection legislation administered by the OEH. QPRC is currently applying for a transfer of Environment Protection Licence (EPL) 20188 under the POEO Act from the current holders GTPL. The existing licence was previously amended on 12 February 2015 to permit the undertaking of activities associated with the process commissioning and verification of the WRP (referred to as 'testing' under Section A1.1 of the EPL). Activities associated with operation of the the IWC Project are the subject of the most recent application and the licence will be transferred from GPTL to QPRC. Chapter 5 of the POEO Act sets out classification of environmental offences as Tier 1, 2 or 3 and which includes the prohibiting of water pollution (under Section 120 of the POEO Act). There are also requirements to notify government agencies in the event of a pollution incident and the preparation of a Pollution Incident Response Management Plant (PIRMP) included in Annex A.

3.2 Relevant legislation

Table 4 Relevant Legislation

Legislation	Key Requirements	Relevance to WRP and Network
Water Management Act 2000 (WM Act)	Do not take water from a water source (a lake, river or estuary or place where water occurs naturally on or below the surface of the ground, and includes coastal waters) without an access licence. Do not use of water on land (unless supplied by a water utility, irrigation corporation etc or in accordance with basic landholder rights) without a water use approval. Do not use a water supply work, drainage work or flood work without the appropriate approval. Do not deposit material, excavate, or remove material within a watercourse bank, shore or bed, or on land 40 metres inland, or interfere with the likely flow of water to such a body, without a controlled activity approval.	The Project has been approved under Part 3A initially (now repealed) and subsequently Part 5 of the EP&A Act. Section 75U states that a water use approval under section 89, a water management work approval under section 90 or an activity approval under section 91 of the WM Act is not required. The Project will be carried out consistent with the aims of the WM Act. No surface or groundwater will be sourced for operations and geotechnical investigations indicate water from aquifers nominated in the Water Sharing Plan for NSW Murray Darling Basin Fractured Rock Groundwater Sources or Murrumbidgee Unregulated and Alluvial Water Sources would not be affected. As such, it is considered that a Water Access Licence under Section 56 and 60A would not be required.
Water Management Act 2000 (WM Act)	Do not take water from a water source (a lake, river or estuary or place where water occurs naturally on or below the surface of the ground, and includes coastal waters) without an access licence. Do not use of water on land (unless supplied by a water utility, irrigation corporation etc or in accordance with basic landholder rights) without a water use approval. Do not use a water supply work, drainage work or flood work without the appropriate approval. Do not deposit material, excavate, or remove material within a watercourse bank, shore or bed, or on land 40 metres inland, or interfere with the likely flow of water to such a body, without a controlled activity approval.	The Project has been approved under Part 3A initially (now repealed) and subsequently Part 5 of the EP&A Act. Section 75U states that a water use approval under section 89, a water management work approval under section 90 or an activity approval under section 91 of the WM Act is not required. The Project will be carried out consistent with the aims of the WM Act. No surface or groundwater will be sourced for operations and geotechnical investigations indicate water from aquifers nominated in the Water Sharing Plan for NSW Murray Darling Basin Fractured Rock Groundwater Sources or Murrumbidgee Unregulated and Alluvial Water Sources would not be affected. As such, it is considered that a Water Access Licence under Section 56 and 60A would not be required.
Water Act 1912 (Water Act) Note that this Act is being progressively	Obtain a licence or permit for construction or use of 'work' for purposes including the taking and using of water.	The Project will be carried out in accordance with the POEO Act, where relevant. Under Section 47 of the POEO Act a Scheduled Development Environment

repealed by the Water Management Act 2000.	Obtain a licence where interference with groundwater is likely to occur.	Protection Licence is required for operation of the IWC Project. QPRC will hold an EPL for operation of the works.
Local Government Act 1993 (LG Act)	Operate water and wastewater facilities.	QPRC (with support from GTPL) will seek approval from the Minister under S60 of the Local Government Act 1993 to operate water and waste water facilities.
Protection of the Environment Operations Act 1997 (POEO Act)	Do not cause or permit land pollution other than under authority of a licence or regulation.	The Project will be carried out in accordance with the POEO Act, where relevant.
Contaminated Land Management Act 1997 (CLM Act)	Notify the EPA if: Contaminants exceed thresholds contained in guidelines or the regulations where contamination has entered or will foreseeably enter neighbouring land, the atmosphere, groundwater or surface water. Contaminants in soil are equal to or exceed guideline levels with respect to the current or approved use of the land. Contamination meets other criteria that may be prescribed by the regulations.	The Project will be carried out in accordance with the CLM Act, where relevant.
Noxious Weeds Act 1993	As a private landowner, control noxious weeds on the land as required under the control category or categories specified in relation to the weeds concerned. Notify relevant control authority within 3 days of becoming aware (or ought reasonably to have known) that a notifiable weed (W1 weed) is on land. Must not scatter or cause to scatter notifiable weed material.	The Project will be carried out in accordance with the Noxious Weeds Act 1993, where relevant.
National Parks and Wildlife Act 1974 (NPW Act)	Only clear native vegetation in accordance with a planning approval or property vegetation plan.	The Project has been approved under Part 3A initially (now repealed) and subsequently Part 5 of the EP&A Act. Section 75U states that an authorisation to clear native vegetation or State protected land referred to in section 12 of the Native Vegetation Act 2003 is not required. The Project will be carried out consistent with the aims of the Act and will consult with OEH where required, regarding clearing of native vegetation.

Fisheries Management Act 1994 (FM Act)	Do not carry out dredging or reclamation work except under the authority of a permit issued by the Minister. Do not block fish passage without a permit	The Project has been approved under Part 3A initially (now repealed) and subsequently Part 5 of the EP&A Act. Section 75U states that a permit under section 201 or 219 of the FM Act is not required.
Protection of the Environment Operations(Waste) Regulation 2005	Comply with general requirements for the transport of waste. For example, any vehicle used by the person to transport waste must be kept in a clean condition and be maintained so as to prevent spillage of waste. For some wastes only licensed transporters can be used. Comply with record keeping requirements in relation to the transport of certain types of waste.	The Project will be carried out in accordance with the POEO (Waste) Regulation, where relevant.
Utilities Act 2000 (ACT)	Obtain approval to introduce a substance which is likely to interfere with the sewerage network or a network facility, or form compounds that would be likely to do so.	An Application for Non-Domestic Discharge to the Sewer will be required for the disposal of sewage to Icon facilities during operation.
National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 1998	Obtain consignment authorisation from the relevant authority prior to transporting waste across Australian state and territory borders.	Correspondence from the ACT Government on 11/06/2013 granted a geographical exemption for the movement of a controlled waste (NEPM waste code K130) from the Googong Township to the QPRC Sewage Treatment Plan in the ACT. A valid consignment authorisation number must still be obtained prior to the movement of any material.
Heritage Act 1977 (Heritage Act)	Notify the heritage Council on discovery of a relic.	The Project has been approved under Part 3A initially (now repealed) and subsequently Part 5 of the EP&A Act. Section 75U states that an approval under Part 4, or an excavation permit under section 139, of the Heritage Act 1977 is not required. The Project will be carried out consistent with the aims of the Heritage Act. Under Section146 of the Heritage Act the Heritage Council may need to be notified should a 'relic' be found which has not been previously identified in the EA. This requirement is not removed by Part 3A or Part 5 approval.
National Parks and Wildlife Act 1974	Do not harm or desecrate an Aboriginal object or Aboriginal place without consent. Notify the OEH and DP&I within reasonable time of becoming aware of	The Project will be carried out in accordance with the NPW Act, where relevant.

	the location or discovery of all new or unrecorded Aboriginal objects.	
Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth)	Report any discovery of Aboriginal remains to the Federal Minister for the Sustainability, Environment, Water, Population and Communities. Comply with the provisions of any declaration in relation to a significant Aboriginal area or object.	The Project will be carried out in accordance with the Aboriginal and Torres Strait Islander Heritage Protection Act 1984, where relevant. The Project will comply with the provisions of any declaration in relation to a significant Aboriginal area or object.
Environmentally Hazardous Chemicals Act 1985	Obtain a licence to undertake prescribed activities involving environmentally hazardous chemicals or declared chemical wastes. Codes of practice for the Storage and Handling of Corrosive substances is required.	The Project will be carried out in accordance with the *Environmentally Hazardous Chemicals Act 1985*, where relevant.
Dangerous Goods (Road and Rail Transport) Act 2008	Ensure that dangerous goods are transported in a safe manner.	The Project will be carried out in accordance with the *Dangerous Goods (Road and Rail Transport) Act 2008*, where relevant.
State Emergency and Rescue Management Act 1989	Manage risks in emergency and/or maintenance situations at key infrastructure (in this case bush fire, flood or similar natural disaster) (SoC R2).	The Project will be carried out in accordance with the *State Emergency and Rescue Management Act 1989* where relevant in relation to emergency preparedness and response.
Rural Fires Act 1997 and the Rural Fires Regulation 2002	Manage risks in emergency and/or maintenance situations at key infrastructure (in this case bush fire, flood or similar natural disaster).	The Project will be carried out in accordance with the *Rural Fires Act 1997* where relevant – in relation to emergency situation management.
Pesticides Act 1999	Use pesticides in an environmentally sensitive manner. Do not use an unregistered pesticide without a permit. Read the label or permit for the pesticide. Use registered pesticides in accordance with instructions on the label. Do not use any restricted pesticide unless authorised by a certificate of competency or a pesticide control order under the Act. Compliance with pesticide codes of practice is required.	The Project will be carried out in accordance with the *Pesticides Act 1999*, where relevant.
National Greenhouse and Energy Reporting Act, 2007 and Regulations 2008	Requires that larger energy users and greenhouse gas (GHG) emitters that trigger a certain level of direct GHG emissions, or total energy produced or consumed must report on GHG	The *National Greenhouse and Energy Reporting Act 2007* (the NGER Act) is a unified framework for the reporting of greenhouse gas emissions (GHGs) and energy use for significant corporation

	emissions to the OEH. Applicability dependent on thresholds	emitters of greater than 50kt CO2e and energy consumption of 200Tj. QPRC report greenhouse gas emissions in the State of Environment Report and annually to the DPI - Water as part of the performance monitoring.
Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) and State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 (the BASIX SEPP).	Under EP&A Regulation, BASIX applies to all BASIX affected development as well to BASIX optional development for which a BASIX certificate is lodged.	The Googong Township WRP is specifically recognised in BASIX. Each individual dwelling must submit a BASIX certificate as part of their approval which meets the water requirements for this development.

3.3 Relevant guidelines

This OEMP has been prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004). Where applicable, relevant guidelines are identified within the OEMP sub-plans. The operation of the Project will comply with Queanbeyan-Palerang Regional Council's *Development Specification – Googong*.

3.4 Environmental polices

The QPRC HSEQ Policy describes QPRC's commitment to continual improvement in environmental performance and compliance with applicable legal requirements.

The HSEQ Policy will be available at the WRP and communicated to staff and other interested parties via inductions and ongoing awareness programs.

4.0 Roles and Responsibilities

4.1 Organisational structure

Organisation structures for QPRC and the relevant departments with specific responsibilities for the implementation of this plan are provided below, including:

- QPRC organisational chart – Transition Structure, see **Figure 4.**
- QPRC organisational chart – Natural Landscapes & Health, see **Figure 5**.
- QPRC organisational chart – Utilities, see **Figure 6**.

Lines of communication for the Googong Township Integrated Water Cycle and specifically for the roles described in **Section 4.2** are shown in **Figure 7**.

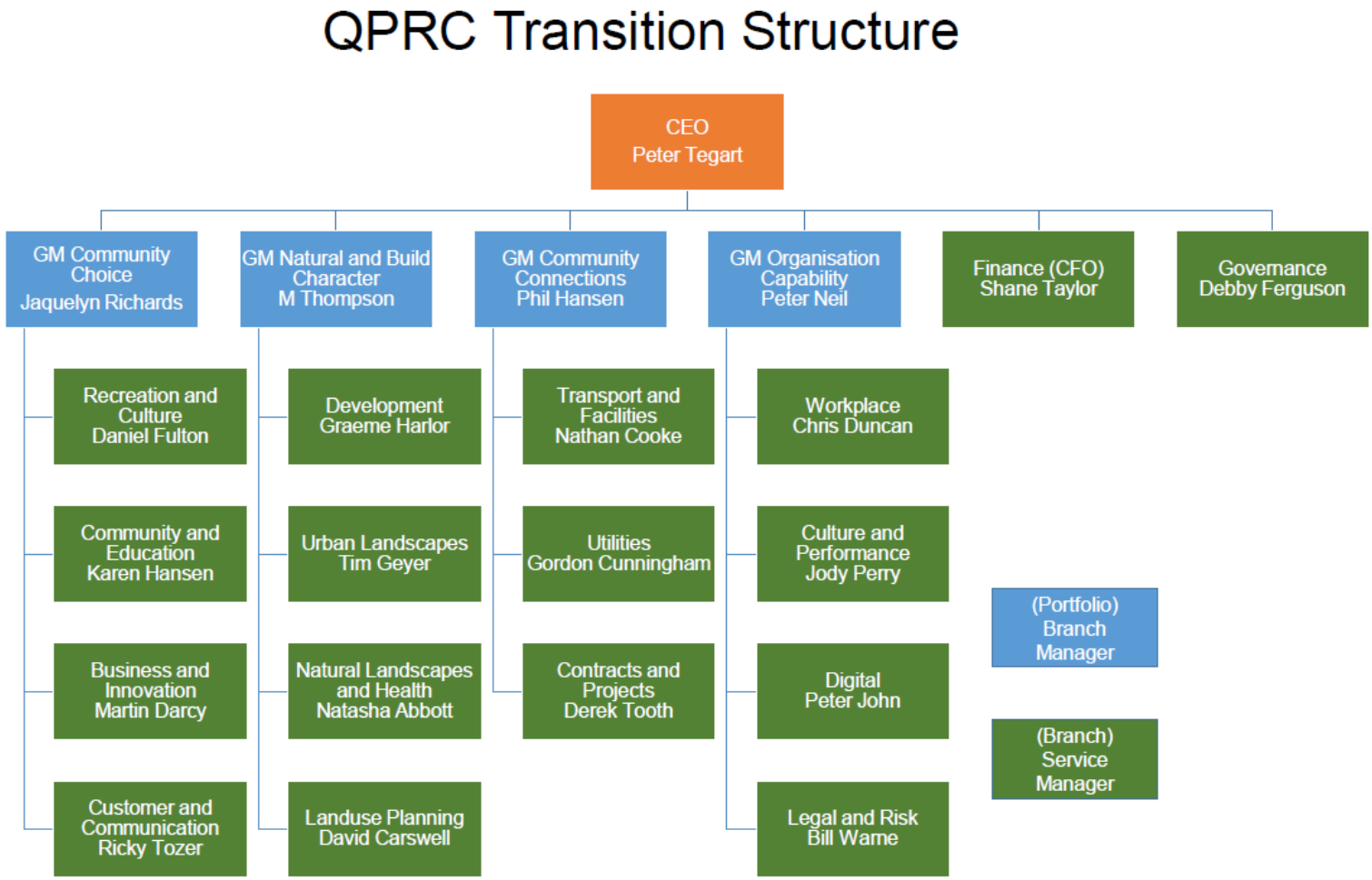


Figure 2 – QPRC organisational chart – Transition Structure, March 2018

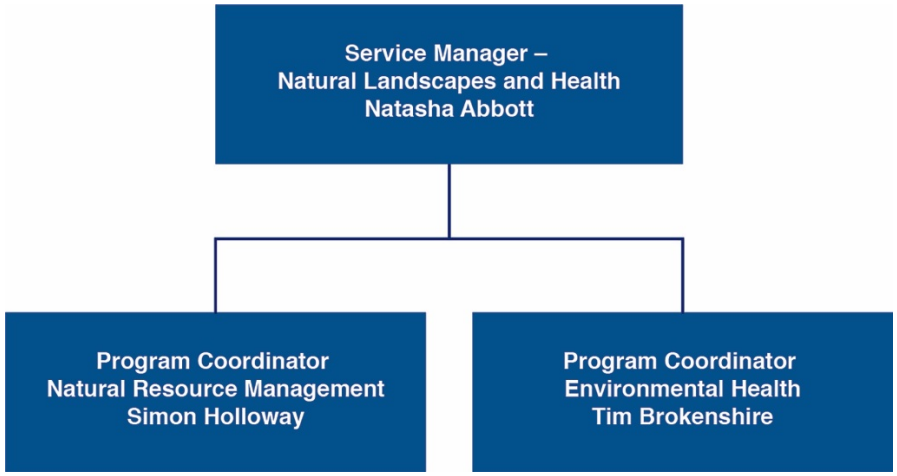


Figure 3 – QPRC organisational chart – Natural Landscapes & Health, March 2018

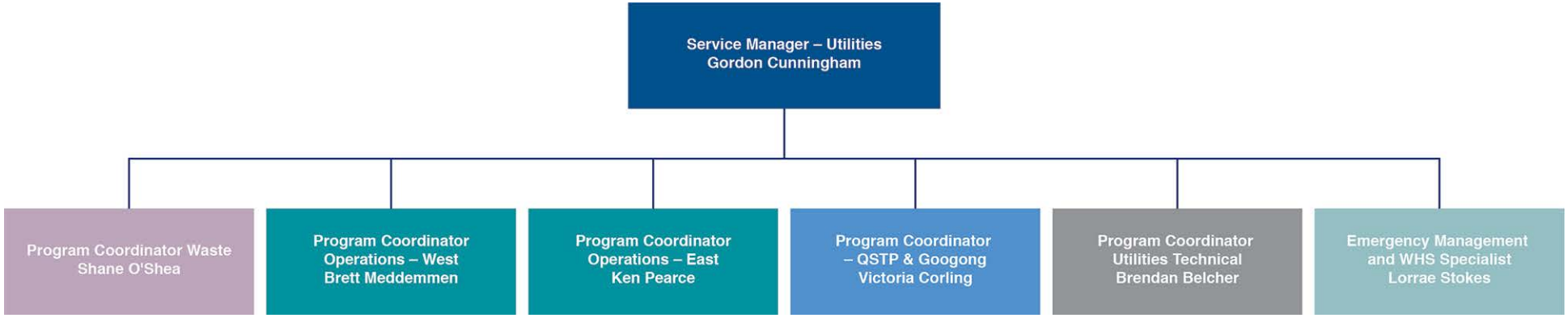


Figure 4 – QPRC organisational chart – Utilities, March 2018

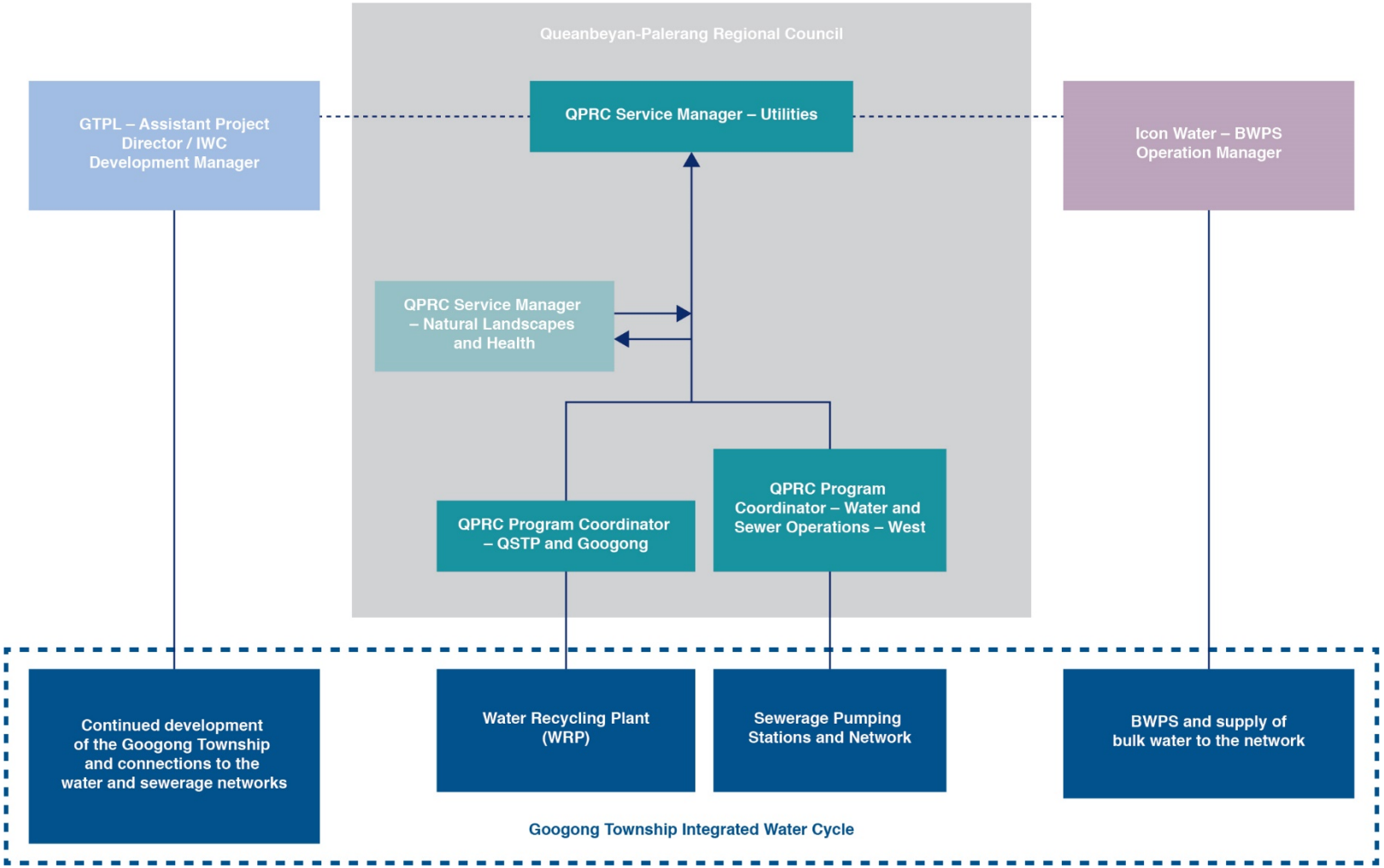


Figure 5 – Googong Township Integrated Water Cycle communication lines

4.2 Roles and responsibilities

The roles and responsibilities for the key people involved in implementing this OEMP for the operation of the WRP and Network is provided below.

4.2.1 QPRC Service Manager – Utilities

The environmental responsibilities of the QPRC Service Manager – Utilities include, but are not limited to:

- Ensure all water and sewerage works comply with relevant regulatory and IWC Project requirements.
- Ensure the requirements of this OEMP are fully implemented.
- Liaise with government authorities / stakeholders and provide notification/information where environmental incidents have occurred.
- Provide adequate resources (personnel, financial and technological) to ensure effective development, implementation and maintenance of this OEMP and the Project's compliance obligations in relation to relevant approvals, permits and licences where necessary.
- Manage environmental constraints maps, develop environmental control plans (and register) and provide input into EWMS where required in consultation with Portfolio General Manager – Natural and Built Character.
- Ensure that the WRP and Water, Recycled Water and Sewage Collection Networks are maintained in a proper and efficient condition and operated in a proper and efficient manner.
- Develop, implement, monitor and update the OEMP and management plans (including a review of the plans after any Category One incident) in consultation with the QPRC Service Manager – Natural Landscapes and Health.
- Ensure with the consultation with others, that that relevant environmental licences, approvals and permits are obtained and updated as required, and ensure that the Legal and Other Requirements Register is maintained for water and sewerage infrastructure.
- Ensure that all personnel receive appropriate induction training, including details of the environmental obligations.
- Ensure that complaints pertaining to water or sewerage activities are investigated to achieve effective resolution.
- Stop activities where there is an actual or immediate risk of harm to the environment and immediately advise the QPRC Service Manager – Natural Landscapes and Health.
- Develop and facilitate induction, toolbox talks and other training programs relating to environmental requirements for all site personnel.

4.2.2 QPRC Service Manager – Natural Landscapes and Health

The environmental responsibilities of the QPRC Service Manager – Natural Landscapes and Health include, but are not limited to:

- Report to the QPRC Service Manager – Utilities on environmental performance.
- Undertake regular inspections and audits
- Undertake regular compliance inspections.
- Undertake environmental monitoring compliance checks as required by the OEMP.

4.2.3 QPRC Program Coordinator – QSTP and Googong

The environmental responsibilities of the QPRC Program Coordinator – QSTP and Googong include, but are not limited to:

- Monitor operations of the WRP and Network including use and maintenance of the SCADA system.
- Stop activities at the WRP and network where there is an actual or immediate risk of harm to the environment and immediately advise QPRC Service Manager – Utilities.
- Maintain a Training Register of all project site inductions and environmental training.
- Maintain and update the Risk Register.
- Report all complaints received to the QPRC Service Manager – Utilities
- Ensure that the WRP is maintained in a proper and efficient condition and operated in a proper and efficient manner.
- Report compliance and performance of the WRP in terms of the EPL and Recycled Water Quality Management Plan's requirements.
- Manage a Non Conformance and Environmental Incident Register and provide documentation on environmental incidents, non-conformance and corrective actions to QPRC Service Manager – Utilities.

4.2.4 QPRC Program Coordinator – Water and Sewer Operations – West

Operation of the network includes the following:

- Manage call-out maintenance of equipment (e.g. pumps).
- Respond to all emergency maintenance on a 24-hour callout basis and provide emergency contact details.

The environmental responsibilities of the QPRC Program Coordinator – Water and Sewer Operations – West include, but are not limited to:

- Plan all operation works in a manner that avoids or minimises impact to environment.
- Ensure the relevant requirements of this OEMP are implemented, including the mitigation measures and monitoring/reporting requirements.
- Report any activity that has resulted, or has the potential to result, in an environmental incident immediately to the QPRC Service Manager – Utilities.

- Stop activities where there is an actual or immediate risk of harm to the environment or risk to public health and advise the QPRC Service Manager – Utilities.
- Prepare and implement emergency procedures that are consistent with the emergency response approach detailed in **Section 7.5** of the OEMP.

4.2.5 Icon Water - BWPS Operations Manager

Icon Water are responsible for the operation of the BWPS and supply of bulk water to the network via the bulk water supply pipeline. The BWPS and associated bulk water rising main operation includes the following:

- Operation and maintenance of the BWPS and associated bulk water rising main.
- Supply of bulk water from the BWPS to the Googong Foreshores boundary.

The environmental responsibilities of the BWPS Operations Manager include, but are not limited to:

- Liaise with QPRC Service Manager – Utilities as required.
- Provide input into the preparation of environmental documents as required.
- Ensure that operation of infrastructure is carried out in accordance with the requirements of the OEMP including implementing the mitigation measures and undertaking monitoring/reporting requirements, as required.
- Identify resources required for implementation of the OEMP.
- Ensure that all personnel receive appropriate induction training, including details of the environmental obligations.
- Report any activity that has resulted, or has the potential to result, in an environmental incident immediately to the QPRC Service Manager – Utilities.
- Stop activities where there is an actual or immediate risk of harm to the environment or risk to public health and advise the QPRC Service Manager – Utilities.
- Prepare and implement emergency procedures that are consistent with the emergency response approach detailed in **Section 7.5** of the OEMP.

4.2.6 GTPL – Assistant Project Director / IWC Development Manager

GTPL are responsible for managing the continued development of the Googong Township and IWC project.

- Liaise with QPRC Service Manager – Utilities as required.
- Provide input into the preparation of environmental documents as required.
- Identify resources required for implementation of the OEMP.
- Ensure that all personnel receive appropriate induction training, including details of the environmental obligations.
- Report any activity that has resulted, or has the potential to result, in an environmental incident immediately to the QPRC Service Manager – Utilities.

- Stop activities where there is an actual or immediate risk of harm to the environment or risk to public health.

5.0 Environmental Management System

5.1 Environmental aspects and impacts

In order to assess the potential environmental impacts of an activity, the IWC Project has adopted a risk management approach. This process considers potential regulatory risks and the overarching commitment to protect the environment.

During the development of this OEMP, an environment risk workshop was held to identify environmental risks. The outcome of this risk workshop provides the basis of the risk register (refer **Annex C**). The risk register includes a list of activities associated with the IWC Project, related aspects, corresponding risks, mitigation and residual risk after mitigation.

The risk register will be reviewed during process operation of the IWC Project as required, to ensure it remains current. In particular, the environmental risk assessment will be updated:

- If a significant incident or impact occurs
- If operational activities or processes change.

An assessment of potential risk to the environment will also be undertaken as part of the development of SWMS's for specific activities or works in specific areas. This would include both the direct impact of the activity and the impact of any incident that could result from the activity. Outcomes from ongoing risk assessments will be incorporated into this OEMP as required.

In response to the risk assessment and to satisfy the CoA, SoC's and EPL for operation of the IWC Project, details of the safeguards to be implemented to mitigate the risks and impacts identified in the EA are detailed in **Section 5.2** below.

5.2 Implementation

5.2.1 Water

Water is a key issue for the Googong Township IWC Project, as recycled water will be used for various re-uses in the township, irrigation and any excess will be released to the stormwater ponds, which will eventually discharge into Queanbeyan River. Such releases of excess recycled water, without the appropriate treatments and controls, may cause changes to water quality, aquatic ecology, groundwater and stream banks and also affect the water supply of downstream users. A detailed Water Management Plan (WMP) has been developed to address these issues throughout the operation of the IWC Project which was approved by the Department of Planning and Environment on 10th November 2015. The WMP seeks to establish a program for monitoring, and the results will inform a range of adaptive management actions to mitigate against potential impacts. See **Section 1.5.2** for further details of the WMP.

During the operation of the IWC Project, effluent discharge to the environment shall not exceed the pollutant concentration limits stipulated in the EPL. Sampling and analysis of the effluent discharge to the environment at compliance points 1 and 3 of the EPL will comply with the EPL.

Recycled water will meet the requirements for non-potable domestic use as defined in the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks*

(NRMMC, EPHC & AHMC, 2006). Recycled water will be appropriately planned and industry accepted management systems put in place to assure appropriate product quality.

The Community Education Strategy has been developed to inform the community and other recycled water users (tradesman) of the appropriate uses of recycled water with a focus on minimising environmental and human health risks associated with the use of recycled water.

See **Section 2.11** for details of the SCADA system for water quality monitoring.

5.2.2 Waste

Waste streams associated with the IWC Project include:

- Discharge of excess recycled water during operations (discussed in **Section 5.2.1**)
- Non-compliant effluent in the event of an emergency (e.g. catastrophic failure at the WRP)
- Stormwater from the "first flush" system (first 10mm of stormwater captured during rain events)
- Dewatered screenings and grit
- Dewatered biosolids
- General wastes - office waste, recyclables, special wastes (e.g. oils, batteries).

Control measures that will be implemented for waste management include:

- Reuse and recycle materials on site where feasible. Waste that cannot be recycled or reused is to be removed offsite. Waste must be correctly classified and disposed of at an appropriately licensed location.
- All liquid and/or non-liquid waste generated by the project will be assessed and classified in accordance with *Waste Classification Guidelines* (DECC 2008, or any future guideline that may supersede that document) and where removed from the site is only directed to a waste management facility lawfully permitted to accept those materials.
- No waste generated outside the site will be received at the WRP for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.
- Approvals and permits for the transport and disposal of the wastes will be obtained.
- General litter, recyclables, solid wastes and special wastes (eg: oils) will be disposed of appropriately.
- Do not burn green waste anywhere on site.
- Waste contractor to develop and implement a Standard Operating Procedure for the collection and transportation of Grade B Stabilised Biosolids.

Emergency situations

In the event that effluent compliance has not yet been met and there are problems with the WRP, multiple contingencies have been considered to reduce the risk of discharge to the environment:

- In the first instance, effluent will be stored in the filtrate storage tank. This provides approximately 45 minutes storage at the expected inflow rate during operation.
- In the second instance, effluent will be stored in the off spec water storage tank. This provides approximately 20 minutes storage at the expected inflow rate during operations.

- In the third instance, if the filtrate tank and recycled water storage tank are full, effluent will overflow to the Emergency Detention Tank, where a further approximately 8 hours average dray weather storage is available at the expected inflow rate during operations.
- In the fourth instance, QPRC will stop the sewer pump station, where up to an additional 6 hours storage at average dry weather flow is available at the expected inflow rate during operations.

Residual wastes

Residual wastes generated on site that are associated with the sewage treatment process (screenings and grit, and biosolids) are collected in sealed containers on site and then disposed of by a licensed waste contractor to landfill. The areas around the waste collection points are drained to the onsite General Purpose Pump Station, which pumps any collected drainage to the inlet works for retreatment. There is no discharge from the collection areas to the stormwater drains or the environment. Biosolids will be treated to achieve Grade B stabilisation and suitable for restricted use 2 according to the NSW EPA *Environmental Guidelines on the Use and Disposal of Biosolids Products*. Grade B Biosolids can be used for agriculture, forestry, soil and site rehabilitation, landfill disposal and surface land disposal (applied within the boundaries of the sewage treatment plant site). The biosolids are to be tested during the process commissioning and verification phase (once sludge yields are sufficient) to confirm compliance with the Grade B criteria.

5.2.3 Traffic

During the 'normal' operation of the IWC Project, traffic movements are predominately limited to:

- WRP Operator staff movements (light vehicles).
- Operation and maintenance vehicles (no more than 5 vehicles per week).
- Removal of waste (see **Section 5.2.2** for further details).
- Chemical deliveries (around 2-3 truck movements a month).

A Traffic Management Plan has been prepared for the operation and maintenance of key water cycle infrastructure, which includes:

- Standard management and mitigation measures for managing vehicle movements at water cycle infrastructure sites.
- A schedule of truck movements for deliveries and disposal, and parking arrangements.
- Vehicle routes, speed limits and the timing of trips, associated with waste management.
- Details of safeguards for managing potential traffic impacts during maintenance activities, particularly for network maintenance.

Further control measures that will be implemented to reduce traffic impacts include:

- Traffic (heavy and light vehicles) will not access the site outside the following hours (7am – 6pm), unless in an emergency situation to reduce noise impacts.
- Any damage to roads, driveways and access points attributable to the project during the operation phase will be repaired.
- Contractors and operators will be advised of any likely access changes along roads to water cycle infrastructure as a result of other construction activities for the Googong Township (e.g. partial or temporary closures of roads), where possible.

5.2.4 Noise

Noise emitted from the operation of the WRP infrastructure shall not exceed 35dB(A) ($L_{Aeq(15min)}$) at any residence on privately owned land. Noise generated by the WRP is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the *NSW Industrial Noise Policy*.

Operational Noise Assessments have been completed by SLR in April 2014 and by WSP in September 2016 to assess whether the staging design provided sufficient noise attenuation from operations to keep noise levels within the relevant criteria at the existing sensitive receptors. The assessment provided noise attenuation treatments as part of the design which have been implemented as required. Further noise control strategies recommended for implementation during operation of the WRP included:

- Roller shutters for the blower building and sludge dewatering building:
    - There should be no gaps or openings around the roller shutter, and all parts of the head box and guide rails must be fully sealed to the surrounding structure.
    - Roller shutter to be closed when the plant equipment within the buildings are operating.
    - Closing and opening the roller shutters must not increase the risk of an exceedance of the noise criteria.
- No element of the blower building façade and roof should be left opening during operation. If temperature control is required, condenser units should be installed on the eastern side of the building.

It is unlikely that the operation of the reservoirs pose any acoustic risk to nearby sensitive receivers as it has been predicted that the operation of the pumps would be less than 25dB at al identified receivers.

Other control measures to further minimise noise impacts during IWC project operation include:

- Operations for the IWC Project to be undertaken in accordance with the conditions and monitoring requirements identified in the Environmental Protection Licence issued for the facility.
- All plant and equipment used on site is maintained and operated in a proper and efficient manner.
- Plant and equipment will be turned off when not in use and equipment enclosures kept closed during operation.
- All Delivery Contractors will be required to ensure that only vehicles and machinery in good working condition, with appropriate exhaust pollution controls that meet all relevant Australian Standards are used.
- Where feasible, all stationery and mobile equipment will be fitted with residential-type silencers. Noise generated by work equipment will comply with Australian Standard AS 1055.
- Scheduled and/or non-emergency maintenance works (e.g. to the network) would be undertaken during standard working hours, where feasible, i.e.:
    - restricted to between the hours of 7:00am and 6:00pm Monday to Friday.
    - restricted to between the hours of 8:00am and 1:00pm Saturday.
    - not to be undertaken on Sundays or Public Holidays.
- During development of the Googong Township, QPRC will ensure that there are appropriate buffer distances included in development approvals in the region of the IWC Project to reduce noise impacts on future residences.

See **Section 5.2.3** for traffic related noise controls.

Noise complaints will be managed in accordance with **Section 9**.

5.2.5 Odour and air quality

No offensive odours are to be emitted from the IWC Project, as defined under the *Protection of the Environment Operation Act 1997*. Odour generated from the operation of the WRP is collected and treated by odour control units on site. Process units that may emit odours are covered and odorous gases are extracted to the odour control units. The odour control facilities are designed and installed as detailed in the EA. Continuous odour monitoring will be undertaken at the vent stacks of the WRP to ensure compliance with the EPL conditions. Odour generated from the operation of SPS1 and SPS2 during operation is collected and treated by vent stacks on site at these locations.

To further minimise odour and air quality impacts:

- The odour control facilities at the WRP will be operated and maintained to minimise odour impacts from the site (e.g. ensuring inspection hatches on covered areas are closed when not in use).
- Monitoring and testing of odour control facilities at the WRP to ensure compliance with the Technical Specifications.
- All plant and equipment used on site is maintained and operated in a proper and efficient manner.
- Proactively respond to all odour complaints by identifying odour source, undertaking monitoring and considering options to address. Odour complaints will be managed in accordance with **Section 9**.

5.2.6 Biodiversity

An Endangered Ecological Community (EEC) is located immediately north of the existing Icon Water Googong water treatment plant site, adjacent to the potable water pipeline. The Blakely's Red Gum/Red Box/Bundy Grassy Woodland is a protected EEC under the EPBC Act and must not be impacted during operation of the IWC Project . This EEC has been marked on the Environmental Constraints Map which is included at **Annex B** and will be taken into consideration during development of operating procedures.

A Pink-tailed Worm-lizard Protection and Management Plan will be implemented which includes a range of management and monitoring requirements for the Pink-tailed Worm-lizard. See **Section 1.5.3** for further details.

A number of noxious and environmental weeds were identified throughout the project area. The operation of the IWC Project is unlikely to increase the risk of spreading weeds as the majority of maintenance and operational vehicles will be using designated access roads. However for vehicles travelling off sealed access road, weed incursion is small risk, particularly adjacent to the BWPS. QPRC will develop and implement a weed maintenance program for the Googong Township.

Weed maintenance will be managed on the WRP site in accordance with the Landscape Management Plan.

Refer to **Section 5.2.7** for safeguards to reduce potential impacts to nocturnal species.

5.2.7 Lighting

To reduce potential offsite lighting impacts:

- All practicable measures will be taken to mitigate off-site lighting impacts during operation of the project (e.g. use of light emitting diodes (LED) and low angle cut-off fittings and motion sensitive lights were feasible).
- Ensure that all external lighting associated with the project complies with Australian Standard *AS4282 – 1997 – Control of the Obtrusive Effects of Outdoor Lighting.*

5.2.8 Cultural heritage

Known Aboriginal heritage sites are identified in the Environmental Constraints Map included at **Annex B**. These sites will be taken into consideration during the development of specific operating procedures and managed appropriately during operation.

Where these sites fall within close proximity to operation/maintenance works, particularly for network maintenance, exclusion fencing must be installed to protect the sites from inadvertent impacts. This does not apply to sites that have already been destroyed. Management for sites covered by existing Aboriginal Heritage Impact Permits (AHIPs) must include liaising with the AHIP holder to ensure the conditions of the permit are upheld.

5.2.9 Hazards, risks, safety and emergency

The Pollution Incident Response Management Plan describes the management and controls required to minimise and control risks of a pollution incident. The WRP is designed with redundancy to ensure continuity of operations in the event of equipment failure. The WRP is controlled and monitored via a PLC and SCADA control system, with telemetry to notify the plant operators of plant faults or critical alarms in the event of emergencies. QPRC will respond to all alarms and telemetry signals from the SCADA system.

QPRC will prepare and implement emergency procedures that are consistent with the emergency response approach detailed in **Section 7** of the OEMP.

5.2.10 Spills

The WRP is designed with a first flush system, which collects and contains surface runoff and sediment from onsite drainage around the inlet works, bioreactor, tertiary treatment, biosolids areas, and associated roadworks, which can then be returned to the head of the works for treatment.

Any chemical spills that occur on site during chemical filling operations will be fully contained within the chemical bund area. The Standard Operating Procedure for chemical deliveries (SOP001 – Bulk Liquid Chemical Delivery and SOP002 – Intermediate Bulk Container Chemical Management) describes the correct procedure for chemical unloading and the appropriate response to spills on site. In addition, the Chemical transport contractor will prepare an Incident Management Plan. Incidents on site involving chemical spills will be managed in accordance with this Plan.

The structural failure of tanks or pipes would cause spillage on site. For chemicals, a structural failure of tanks would result in the chemicals being contained within the bund. For other tanks, a catastrophic failure on site would result in sewage, effluent or recycled water spillage on site. The Emergency Response Plan will be implemented in the unlikely event of these failures occurring.

To prevent and mitigate spills materials will be stored, transported and handled onsite as follows:

- All dangerous goods, as defined by the Australian Dangerous Goods Code, will be stored and handled strictly in accordance with:
  - all relevant Australian Standards;
  - for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and
  - DECC's *Environment Protection Manual Technical Bulletin – Bunding and Spill Management*.
- Bunded areas will be used for the storage and delivery of chemicals in accordance with *AS 3780:2008 The storage and handling of corrosive substances.*
- Develop and implement a service specific Safety Management Plan.
- Undertake operational activities in accordance with relevant SDSs.
- Ensure spill response procedures and equipment for containment and recovery are available on site.
- Conduct workforce training on the transport, storage, handling and disposal procedures relating to chemicals.
- The chemical delivery contractor will implement the Standard Operating Procedure for chemical deliveries (**Annex D**) which addresses vehicle routes on site, safety protocols, containment protocols, and emergency response.
- Implement the relevant actions from Section 3.7 *Brocken/Blocked Sewage Pipes* of the *Queanbeyan City Council Sewerage System Recovery Action Plan July 2012* to rectify any sewage spills resulting from structural failure or damage to sewage pipes, and repair infrastructure.
- The Pollution and Incident Response Management Plan (PIRMP) will be implemented. See **Annex A**.

5.2.11 Overflows

WRP

During normal operation the risk of overflows from the WRP to the environment are minimised as all tanks are designed with overflow capacity that gravity discharges to the Emergency Detention Tank (EDT) on site. The EDT has a storage capacity of 330m^3, which provides up to 8 hours of storage at the expected average dry weather inflow of 1 ML/d during operation. The EDT is fitted with level instrumentation which is connected to the plant PLC/SCADA for control, monitoring and alarming to the Operator.

SPS

The design capacity of SPS1 and SPS2 is for ultimate development (i.e. an EP of 9,976 and 12,042 respectively), which greatly exceeds the expected sewage volumes for the operation of Stage AB – Network. Although the pumps currently in place are not sized for ultimate development and will need to be augmented in a future stage. As such, overflows at SPS1 and SPS2 are not expected and overflow structures, while in place, would not be utilised during this stage.

Permanent reservoirs

There is a small risk of chlorinated water being released to the environment at the permanent reservoirs if they exceed capacity. Whilst such an event are unlikely during operation of the IWC Project, the design of the reservoirs is such that water will overflow to a

de-chlorination system so that any water discharged to the environment will meet acceptable environmental discharge limits. Similarly, the potable water main within the Googong Foreshores boundary includes chamber pits with de-chlorination to allow for treatment of water before it is discharged into stormwater culverts.

QPRC will monitor discharges on a monthly basis following commencement of operations, in order to identify any areas of erosion along the drainage line and any impacts on the existing farm dams and ponds. In the event that impacts are identified, additional measures will be considered to modify dissipation structures along the drainage line, strengthen diversion structures or provide additional sediment basins.

5.2.12 Power outages

WRP

In the event of a power failure on site and inflow continues from SPS 1 and/or 2, flow will be diverted to the EDT for storage until power is restored. Upon power restoration, the stored sewage will be pumped back to the inlet works for treatment. Should power fail to be restored for an extended period and inflow from the SPSs continues, then the EDT will overflow to Montgomery Creek once it is full. This is considered an emergency discharge event.

A permanent emergency generator is installed on site as part of the WRP works and allows operation of critical equipment during the mains power failure. Critical equipment includes screening and grit removal, ferrous dosing to minimise release of hazardous/odourous gases, odour control fan, membrane blower, site service water pumps, sodium hypochlorite disinfection for discharge flow, and air compressor.

The likelihood of an extended power failure exceeding 5 hours is around 8% and exceeding 10 hours is around 4% (taken from *the Googong WRP (Power) Reliability Study-Final* (GHD, 2014).

Telemetry alarms will notify the Operator of the power failure. A UPS provides battery backup to the PLC for at least 2 hours.

SPS

In the event that there is power failure at SPS1 and/or SPS2 there is capacity for up to 6 hours storage for the ultimate development. In the event of an extended power outage, the SPS Operator will arrange for an emergency generator to be brought to site to power the pumps.

BWPS

Communication systems and radio telemetry at the BWPS have back-up batteries with four-hour capacity and would remain operational in the event of a power outage. Icon Water operate a Control Centre to monitor assets 24 hours, 7 days a week and in the event of a power outage the staff at the monitoring centre would immediately respond to the notification by contacting the supply authority to confirm the expected outage duration. If a long outage was expected, then Icon Water would arrange for a generator. Generators typically can be provided within four hours during business hours, but if they are required for out of hours this

will be organised by Icon Water staff from the Control Centre. Note that the demand for a generator will also be dependent on consumption patterns, interim reservoir levels and QPRC requirements.

Permanent reservoirs

Water from the permanent reservoirs is gravity fed to the township and is not reliant on an electricity supply and so water availability would not be affected during a power outage. Communication systems and radio telemetry have back-up batteries and would remain operational in the event of a power outage. The alarm would notify QPRC of a power outage and then a temporary generator would be arranged by QPRC for the chlorine-dosing unit to ensure appropriate levels of chlorine (which would still be monitored by the telemetry and back up battery supply). The connection of a temporary generator could take between 1 hour and 2 days (for an externally sourced generator outside the Canberra region) depending on the availability of the generators in the area. This would be sufficient time to maintain the quality of the water supply to the township.

5.2.13 Bushfire

The risk of bushfires impacting the WRP has been reduced by clearing of bush around the site. Fire detection and protection systems have been installed to monitor the WRP, which are mainly to detect a fire within buildings. Alarms from the fire monitoring system are sent from the site directly to the NSW Fire Service.

The BWPS has been placed in a block building due to concerns around potential for bush fire given the presence of nearby vegetation. The building and apertures have been rated to the appropriate bush fire protection as required by Australian Standards. Fire monitoring and telemetry signals have also been installed inside the BWPS building. Bush fire risk is considered to be lower for the interim reservoirs and SPS1 and SPS2.

As a precaution the following bushfire controls will be implemented for all IWC infrastructure:

- Fire alarms and monitoring are installed and maintained.
- Flammable substances are stored safely.
- Fire extinguishers are kept on site.
- Water supply for firefighting is identified.
- Staff trained to respond to bushfires and contact emergency services.
- Bushfire hazard reduction.

Overall, QPRC will be responsible for responding to bushfires at the interim reservoirs, SPS and WRP, and Icon Water at the BWPS.

6.0 Competence, Training and Awareness

6.1 Purpose and application

To ensure that this OEMP is effectively implemented, each level of management is responsible for ensuring that all personnel reporting to them are aware of the requirements of this OEMP. The QPRC Training Coordinator and Waste Water Treatment Plant Coordinator will coordinate and review with the Environmental Health Manager, environmental training. Several forms of environmental training will be provided, including:

- A project site induction, including environmental roles and responsibilities.
- Toolbox talks.
- General qualification training for WRP Operators and Network maintenance staff.
- Environmental awareness training for specific issues.

A Training Register of all project site inductions and environmental training carried out will be kept. Records of attendees at toolboxes will be kept on file. The Training Register will include a record of the topic, content, dates, name(s) and qualifications of trainers, names and signatures of personnel trained.

6.2 Facility induction, regular meetings and toolbox talks

All personnel (including sub-contractors) will attend a site induction prior to commencing any activities on site. The site induction will include an environment component and will ensure all personnel are aware of the environmental risks on site, the requirements of the OEMP and their responsibilities around the implementation of environmental management measures.

The environmental component of the induction will include, but not be limited to, an overview of:

- Purpose and objectives of the OEMP.
- Conditions of environmental licences, permits and approvals.
- Key environmental issues and responsibilities.
- Mitigation measures for the control of environmental issues, including working hours.
- Transport, storage, handling and disposal procedures relating to chemicals
- Incident management, response and reporting requirements.

A record of all environment inductions will be kept on site.

Regular meetings, typically held monthly, will be undertaken to raise awareness and educate personnel on issues related to all aspects of WRP operation, including environmental issues. These meetings will be targeted to relevant personnel. Attendance is mandatory for all personnel on the WRP site.

Toolbox talks will be conducted daily prior to any work activity. Work Health and Safety, Risks and specific tasks and activities will be discussed. Each attendee is required to sign off on the toolbox talk to register their understanding. Records of attendance will be maintained.

6.3 Environmental training

Environmental training for WRP operators and/or network maintenance staff may include (but is not limited to):

- Incidents and spill response for specific events (such as chemical spill or sewage spill on site).
- Managing noise and amenity impacts.
- Sampling and monitoring for environmental impacts, including managing odour complaints.
- Improvements to existing procedures based on findings of environmental inspections, monitoring and audit.
- Management of hazardous substances.
- Standard Operating Procedures for specific activities such as chemical deliveries, etc.

7.0 Incidents and Emergencies

7.1 Classification of environmental incidents

There are two categories of environmental incidents.

7.1.1 Category one

Category one incidents include:

- Unauthorised effluent or sediment discharge or fuel, oil or chemical spill leaving site where the pollution incident causes or threatens material harm to the environment or people (as per Part 5.7 of the NSW Protection of the Environment Operations Act 1997 (POEO Act)).
- Unauthorised impact to threatened species and endangered ecological communities.
- Unauthorised impact to Aboriginal or non-Aboriginal heritage items, sites or relics.
- Carrying out of work without necessary approval/permit/licence.

7.1.2 Category two

Category two incidents include:

- Pollution incidents that can be cleaned up without material harm to the environment or people (as per Part 5.7 of the POEO Act).
- A non-conformance with the environmental management system that does not result in a Category one incident.

7.2 Incident management

7.2.1 Pollution Incident Response Management Plan

The *Protection of the Environment Legislation Amendment Act 2011* (POELA Act) has introduced several changes to improve the way pollution incidents are reported, managed and communicated to the general community. This includes a new requirement (under Part 5.7A of the POELA Act) to prepare, keep, test and implement a pollution incident response management plan.

A Pollution Incident Response Management Plan (PIRMP) has been prepared for the IWC Project and the latest version is available at http://www.qprc.nsw.gov.au/. The PIRMP will be updated, maintained and implemented during operation of the IWC Project .

7.2.2 Incident management response

The incident management response for any environmental incident (including non-pollution incidents) is outlined in the PIRMP. It includes details on the management and reporting requirements when an incident occurs.

7.2.3 QPRC incident reporting system

Incidents will be reported as per current procedures as set out in the relevant Recovery Action Plan.

7.3 Notification

Pollution incidents posing material harm to the environment should be notified to each 'relevant authority' as defined in section 148(8) of the POEO Act. 'Relevant authority' means:

- the appropriate regulatory authority (ARA) (i.e. DP&E)

- the Environment Protection Authority (EPA)
- the Ministry of Health
- the WorkCover Authority
- the local authorities (e.g. QPRC)
- Fire and Rescue NSW.

7.4 Emergency contacts

Table 5 – Emergency contact details

Emergency contact	Contact details
DP&E (Queanbeyan Office)	(02) 4224 9450
EPA (Queanbeyan Office)	(02) 6229 7002
Queanbeyan-Palerang Regional Council (QPRC)	1300 735 025 After hours emergency 1300 735 025
Murrumbidgee/Southern NSW Local Health District Public Health Unit	(02) 5943 2044
NSW Health	(02) 9391 9000
Police	000 (or 112 from mobiles)
Local Police	(02) 6298 0599
Ambulance	000 (or 112 from mobiles)
Canberra Hospital	(02) 6244 2222
NSW Rural Fire Service	000 (or 112 from mobiles)
Jemena Gas/Electricity (Faults)	131 909/ 131 626
Telstra (Faults)	132 203
WorkCover NSW	13 10 50
Transport Canberra and City Services (TCCS)	13 22 81
WIRES	1300 094 737

For QPRC staff contact numbers, an extensive list of contact details for Duty Officers, On-call Labourers, Plumbers and Sewage Treatment Works personnel, contractors, utilities and other emergency services can be found in the Recovery Action Plan.

7.5 Incident investigation

All environmental incidents will be investigated as per the PIRMP. A root cause analysis approach will be adopted to identify the origin of the problem in order to:

- Determine what happened
- Determine why it happened
- Identify and implement measures to reduce the likelihood that it will happen again.

The review of the OEMP and environmental management plans will be coordinated by the Water and Sewerage Manager after every Category One incident. The Water and Sewerage Manager will ensure that any additional measures arising from the incident investigation are incorporated into the relevant plans and communicated to relevant parties.

QPRC will forward the incident report to the Director-General (DP&E) as per the PIRMP – within seven days for a Category 1 Incident or in the compliance report for Category 2 Incidents (see **Section 8.0** for details).

Where the Director-General provides recommendations to address the cause or impact of any incident reported to the DP&E, QPRC will meet the requirements of the Director-General's recommendations, in the timeframe specified, unless otherwise agreed.

Incidents will be closed out as quickly as possible, taking all required action to resolve each environmental incident.

Any recommended actions to improve existing processes or systems will be managed through the improvement mechanisms, as outlined in **Section 8.0.**

7.6 Emergency response

The types of emergencies that could occur during the operation of the IWC Project could include (but would not be limited to):

- Overflows
- Fire
- Uncontained chemical spill
- Power outages (e.g. from heat waves or bushfires)
- Structural failure of the water cycle infrastructure.

Many operational risks have been considered in the design process while residual risks will be managed through the installation of telemetry and alarms to notify operators of emergencies along with a range of mitigation measures for reacting to potential emergencies.

An Emergency Response Plan will be developed by GTPL (in consultation with QPRC) for the IWC Project . Such procedures will be communicated to all project team members and persons associated with the IWC Project .

QPRC has in place a number of incident management plans including, but not limited to, the following:

- STP Incident Management Plan (TRIM).
- Water and Sewer Incident Management Plan (TRIM C114554).
- Water Supply Recovery Action Plan (TRIM C12107540).
- Sewerage System Recovery Action Plan (TRIM C1273574).

The Incident Management Plan outlines the processes for initiation, management and reporting on all water- and sewer-related incidents. This plan also details the timeframe and responsibilities for the actions. This plan is a controlled document and is reviewed periodically.

The Recovery Plans set out the actions required to maintain or restore the operation of the water supply/sewerage systems in the event of any of the following incidents:

- Loss of radio signal from pumping station or reservoir.
- Failure of telemetry system.
- Mechanical or control failure pumping station or reservoir.
- Power failure affecting pumping stations or reservoirs.
- Structural failure or breach at reservoir.
- Damaged water main, connection or valve.
- High flow event at the STP.
- Broken/blocked sewage pipe.
- Chemical interdiction in the sewerage system.

The Recovery Plans also set out the roles and responsibilities of those involved and the resources available to support or implement the response and recovery actions. Two procedures are relevant for the control of water quality deviations, these are:

- Environmental Off-spec Management (O&M Manual Section 6.19)
- Overall Health Off-spec Management (O&M Manual Section 6.20).

8.0 Inspections, Monitoring, Auditing and Reporting

8.1 Environmental inspections

QPRC will arrange for regular inspections of the IWC Project operational sites in consultation with Icon Water (where relevant). The frequency of site inspections will be determined by the nature of activities being undertaken and their associated environmental risks. A record of each inspection will be maintained.

Required actions will be discussed and prioritised at the completion of the inspection and timeframes for implementation of corrective actions agreed.

8.2 Environmental monitoring

Monitoring will be undertaken to measure the effectiveness of environmental controls and implementation of this OEMP, and to address approval requirements. The monitoring and reporting requirements for the IWC Project are included in **Table 7.**

8.3 Auditing

Internal auditing will be undertaken generally on a yearly basis and co-ordinated by QPRC with inputs from Icon Water. The purpose of auditing is to verify compliance with:

- This OEMP and management plans;
- Approval requirements (CoAs, SoCs)
- Any relevant legal and other requirements (e.g. licences, permits and regulations)

External auditing will be undertaken by an independent environment auditor in accordance with *ISO 19011:2003 – Guidelines for Quality and/or Environmental Management Systems Auditing*. Independent auditing will occur annually for the first two years after the WRP commences operation and every three years thereafter, to align with the OEMP review period. It will be developed to address the requirements of CoA A18. A copy of the audit report will be provided to DP&E.

These audits focus on verifying compliance with: approval documents (CoAs and SoCs), this OEMP and management plans, any relevant legal or other requirements (e.g. licenses, permits, regulations). Audit results and records are to be kept on file, and assigned actions tracked. Significant non-compliances will require formal investigation and corrective actions to be developed.

8.4 Reporting

QPRC will compile an annual operation report for the IWC Project. It will:

- Record compliance with the CoA, SoCs and other licence/approvals/permits (as per the Tracking Compliance Program required for the first two years of operation).
- Track progress of environmental objectives (see **Section 1.7**).
- Discuss nature of and response to community complaints (see **Section 6.3**).
- Include results from inspections, monitoring and the independent audit (see **Section 8.1 – 8.3**).

- Discussion of Non-Conformance Register and opportunities for improvement (see **Section 8.5**).

As outlined in the Compliance Tracking Program, annual compliance reports were provided to the Director General of DP&E for the first two years of operation.

The annual operation report will then be used to review the OEMP and supporting plans and procedures to ascertain whether current operations are adequate to meet the CoA/SoCs and environmental objectives for the IWC Project. This process is explained in more detail in **Section 8.6**.

The reporting requirements associated with environmental monitoring for the IWC Project is included in **Table 7.**

QPRC will also be responsible for submitting the Annual Return as required by Condition R1 of the EPL.

Table 6 – Monitoring requirements

Aspect	Reference	Monitoring requirement	Timing	Reporting	Responsibility
BWPS	SoC OP2 SoC R2	Obtain telemetry data from water cycle infrastructure including flow monitoring for the BWPS.	Ongoing	Provide results of telemetry data to QPRC annually	Icon Water
BWPS	QPRC request	Provide water quality data for bulk water that is to be supplied to the interim reservoirs to QPRC.	Ongoing	As required	Icon Water
Drinking water	CoA D2 CoA D3	Ongoing management and monitoring of the supply of the drinking water shall form part of the *NSW Health Drinking Water Monitoring Program* and must be complaint with the *Australian Drinking Water Guidelines 6* (NHRMC & NRMMC, 2011).	Ongoing	As required	QPRC
Greenhouse gases	EA Section 14.3	Obtain electricity data from all SCADA and telemetry for water cycle infrastructure during operation to assess electricity usage to help minimise consumption of electricity.	Annually	Operators to provide electricity data, QPRC to compile results annually	QPRC, Icon Water, WRP Operator and Water and Sewerage Operations Engineer
Groundwater	SoC G8 WMP	Undertake groundwater monitoring as outlined in Table 12 of the Googong Township Water Cycle Project Submissions Report.	Refer WMP	Refer WMP	QPRC
Groundwater	CoAD8 (b)(iii) WMP	Monitor and assess: • Impacts on the groundwater supply of potentially affected landowners. • Impacts on any groundwater dependent ecosystems and riparian vegetation.	Refer WMP	Refer WMP	QPRC
Noise	CoA D1	Undertake noise monitoring for the WRP once operational to ensure the noise does not exceed 35dB(A) (LAeq(15min)) at any residence on privately owned land.	Once during first year of operation	Prepare noise monitoring report	QPRC

Aspect	Reference	Monitoring requirement	Timing	Reporting	Responsibility
Noise	CoA D7(f)(ii)	Undertake noise monitoring at nearest receivers on an as needs basis to respond to noise complaints.	As required	Prepare noise monitoring report	QPRC
Odour	CoA D7(f)(iii)	Undertake odour monitoring at nearest receivers on an as needs basis to respond to odour complaints.	As required	Prepare odour monitoring report	QPRC
Odour	AQ1	Site specific odour data collected during and following commissioning, prior to the residential development of the immediate area west of the WRP.	Once	Prepare odour monitoring report	QPRC / GTPL
Pink-tailed Worm Lizard	CoA D9(e)(vii) Pink-tailed Worm-lizard Protection and Management Plan	Undertake a program to monitor the Pink-tailed Word-lizard population within the conservation area	Refer to the Pink-tailed Worm-lizard Protection and Management Plan	Refer to the Pink-tailed Worm-lizard Protection and Management Plan	QPRC
Soil	CoA D8(e)(iv) WMP	Monitor areas subject to irrigation to ascertain salinity impacts.	Refer WMP	Refer WMP	QPRC
Surface water and aquatic ecology	CoA D8(a)(iii) WMP	Monitor and assess: • Surface water flows and quality. • Impacts on water users. • Stream health and habitat. Channel stability.	Refer WMP	Refer WMP	QPRC

8.5 Non-conformity, corrective and preventative actions

A non-conformance is an action or omission that does not conform with the requirements of this OEMP and supporting environmental documentation, or any legal or other requirement as outlined in **Part 2 – Project Requirements and Compliance Matrix**. Any member of the project team can identify a non-conformance.

An opportunity for improvement may be identified through the review and monitoring processes that will be implemented during the operation of the IWC Project. Review, monitoring or auditing may identify a variety of improvements that must or should be made to ensure continual improvement. Any member of the project team can identify an opportunity for improvement.

8.5.1 Identifying non-conformance

Non-conformances may be identified in one of the following ways:

- Environmental incidents
- Through monitoring and/or reporting
- Community complaints
- OEMP audits/review
- Project team communication/feedback.

8.5.2 Reporting non-conformance

Non-conformances will be investigated and reported. The following details must be included:

- Details of the person reporting the non-conformance
- Description of the non-conformance including time, date and location
- Summary of the non-conformance including personnel involved, cause and environmental impact
- Summary of actions taken to remediate the situation and mitigate further environmental impact
- Further action required, a timeframe for completion, and responsibility to correct or prevent future non- conformances.

8.5.3 Recording non-conformance

Following the investigation and reporting, a summary of the non-conformance must be recorded in a Non-Conformance Register, which is to be maintained by QPRC for the duration of the IWC Project. Improvement opportunities will also be recorded in the Non-Conformance Register, for example to capture any system improvements recommended as the result of an incident investigation provided by the Operator/Contractor.

8.5.4 Review of the Non-Conformance Register

The Non-Conformance Register will be reviewed regularly by QPRC during the operation of the IWC Project to ensure actions are closed out in a timely manner or as required.

8.6 Adaptive management

The program of monitoring (which includes monitoring detailed in the WMP and other relevant plans) has been designed to identify and capture changes to the environment. In addition, auditing will help to identify non-conformances and ascertain whether mitigation measures are being effectively implemented.

The findings of the monitoring and audit reports for the IWC Project will be collated by QPRC for consideration in consultation with GTPL. This will allow for opportunities to improve the management of the IWC Project. Such changes may result in changes to operations, to mitigation measures or monitoring, reporting requirements and other measures listed in this OEMP. The OEMP for the IWC Project , the WMP and the Pink-tailed Worm-lizard Protection and Management Plan will be reviewed and updated on an annual basis as per the review process documented in **Section 1.5.1**.

9.0 Enquiries and complaints management

9.1 Complaints handling

Complaints to QPRC can be made at the contact details as follows:

- Phone: 1300 735 025 (24 hours).
- Fax: 02 6285 6666.
- Address: 256 Crawford Street, Queanbeyan NSW 2620.
- Mail: PO Box 90, Queanbeyan NSW 2620.
- Email: council@qprc.nsw.gov.au
- Website: https://www.qprc.nsw.gov.au/Home

Any complaints received will be directed to the QPRC Manager – Service Manager and will require the following records to be kept:

- Date, time and nature of the complaint or inquiry.
- Type of communication (telephone, letter, meeting etc).
- Name, address, contact number.
- Nature of complaint.
- Response details (including if no action was taken, the reason why no action was taken).

9.2 Complaints management procedure

A Complaints Management Procedure has been developed by GTPL in accordance with CoAA15 and is included as an appendix to the Community Engagement and Stakeholder Management Plan. The procedure details:

- Protocols for receiving complaints.
- A methodology for the recording, tracking and reporting on complaints.
- Timeframes for responding to and resolving complaints.
- An escalation process for complaints that cannot be easily resolved.

The community can make an enquiry or complaint by telephone, post, email or face to face.

The Complaints Management Procedure outlines the specific procedure that QPRC will undertake in order to manage complaints and should be read in conjunction with the Community Engagement and Stakeholder Management Plan and the Communications Strategy.

10.0 References

AECOM (2016) *Googong Township Water Recycling Plant (WRP) and Network Operation Environmental Management Plan (OEMP).* Prepared by AECOM on behalf of Queanbeyan-Palerang Regional Council.

ANZECC & ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Published by Australian Water Association, Sydney.

Australian Standard AS 3500 (2013) National Plumbing and Drainage.

DEC (2004) *Environmental Guidelines: Use of Effluent by Irrigation. Published by Department of Environment and Conservation*, Sydney.

DECC (2007) *Environment Protection Manual Technical Bulletin – Bunding and Spill Management*. Published by Department of Environment and Climate Change, Sydney.

DECC (2008) *Waste Classification Guidelines*. Published by Department of Environment and Climate Change, Sydney.

DIPNR (2004) *Guideline for the Preparation of Environmental Management Plans.*

EPA (2000) *NSW Industrial Noise Policy*. Published by Environment Protection Authority, Sydney.

EPA (2007) *Environmental Guidelines on the Use and Disposal of Biosolid Products*. Published by Environment Protection Authority, Sydney.

Googong Plumbing Standard and within Council's Backflow and Cross Connection Policy.

John Holland (2015) *Operation Environmental Management Plan – Process Commissioning and Verification.*

Manidis Roberts (2010) *Googong Township Water Cycle Project Environmental Assessment.* Prepared by Manidis Roberts on behalf of CIC Australia, Canberra.

Manidis Roberts (2012) *Googong Township Water Cycle Project Staging Report.* Prepared by Manidis Roberts on behalf of CIC Australia, Canberra.

Manidis Roberts (2015) *Operation Environmental Management Plan – Stage AB - Network.* Prepared by Manidis Roberts on behalf of CIC Australia, Canberra.

NRMMC, EPHC & AHMC (2006) *National Water Quality Management Strategy – Australian Guidelines for Water Recycling: Managing Health and Environmental Risks.* Published by Natural Resource Management Ministerial Council, Environment Protection and Heritage Council and the Australian Health Ministers' Conference, Canberra.

Queanbeyan City Council (QCC) Queanbeyan Googong Township Development – Interim Reservoirs and Chemical Dosing Functional Design Specification.

Queanbeyan City Council (QCC) Communications Strategy (C1117545).

PART 2 - Project Requirements Compliance Matrix

Condition	Requirement	How this requirement will be met
Project Planning Approval relevant to Stage AB		
A1	A1 The Proponent shall carry out the project generally in accordance with the: (a) EA; (b) Statement of Commitments; and (c) conditions of this approval. *Note: the general layout of the project is shown in Appendix1*	Noted.
A2	If there is any inconsistency between the documents in condition A1, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.	Noted.
A3	The Proponent shall comply with any reasonable requirement(s) of the Director-General arising from the Department's assessment of: (a) any reports, strategies, plans, programs, reviews, audits or correspondence that are submitted in accordance with this approval; and (b) the implementation of any actions or measures contained in these documents.	Noted.
A4	This project approval shall lapse five years after the date on which it is granted, unless works subject of this approval have commenced before that time.	Noted.
A6	With the approval of the Director-General, the Proponent may submit any strategy, plan or program required by this approval on a progressive basis.	Noted.
A7	The Proponent shall ensure that all licences, permits and approvals are obtained and maintained as required throughout the life of the project. No condition of this approval removes the obligation of the Proponent to obtain, renew or comply with such licences, permits or approvals. The Proponent shall ensure that a copy of this approval and all relevant environmental approvals are available on the site at all times during the project.	Section 3.
A8	The Proponent shall ensure that employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.	Section 5 and Part 2 - Project Requirements and Compliance Matrix.

Condition	Requirement	How this requirement will be met
A9	The Proponent shall be responsible for environmental impacts resulting from the actions of all persons that it invites onto the site, including contractors, sub-contractors and visitors.	Sections 5, 7 and 8.
A10	Subject to confidentiality, the Proponent shall make all documents required under this approval available for public inspection on request.	Noted.
A13	The Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation or rehabilitation of the project.	This Plan and the documents identified in Section 1.5.
A16	The Proponent shall record details of all complaints received through the means listed in condition A15 of this approval in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to: (a) the date and time of the complaint; (b) the means by which the complaint was made (telephone, mail or email); (c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect; (d) the nature of the complaint; (e) any action(s) taken by the Proponent in relation to the complaint, including timeframes for implementing the action; and (f) if no action was taken by the Proponent in relation to the complaint, the reason(s) why no action was taken. The Complaints Register shall be made available for inspection by the Director-General upon request	Section 9.
A17	The Proponent shall provide an initial response to any complaints made in relation to the project during construction or operation within 48 hours of the complaint being made. The response and any subsequent action taken shall be recorded in accordance with condition A16. Any subsequent detailed response or action is to be provided within two weeks, or as otherwise agreed by the complainant/Director-General.	Section 9.

Condition	Requirement	How this requirement will be met
A18	Prior to the commencement of construction, the Proponent shall develop and implement a **Compliance Tracking Program**, to track compliance with the requirements of this approval during the construction and operation of all project and shall include, but not necessarily be limited to: (a) provisions for periodic reporting of compliance status to the Director-General including at least prior to the commencement of construction of the project, prior to the commencement of operation of the project and within two years of operation commencement; (b) a program for independent environmental auditing in accordance with AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing; (c) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance; (d) mechanisms for recording environmental incidents and actions taken in response to those incidents; (e) provisions for reporting environmental incidents to the Director-General during construction and operation; and (f) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.	Section 7, Section 8.
B1	The Proponent shall ensure that all the plant and equipment used on site is (a) Maintained in a proper and efficient condition; and (b) Operated in a proper and efficient manner.	Section 4, Section 5.2.5.
B2	Except as may be expressly provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the *Protection of the Environment Operations Act 1997.*	Section 5, Water Management Plan.

Condition	Requirement	How this requirement will be met
B3	The Proponent shall provide a compensatory water supply to any land owner whose water entitlements are adversely impacted (other than an impact that is negligible) as a result of the project, in accordance with the criteria established in the Water Management Plan in condition D8. The compensatory water supply measures shall provide an alternate water supply for the duration of the impact attributed to the project. The alternate water supply shall at least be of an equivalent quality and quantity to the affected supply and be provided within 24 hours of the loss being identified, or as otherwise agreed by the affected resident/land owner. If the Proponent is unable to provide an alternative supply of water, then it shall provide reasonable alternative compensation in consultation with the affected land owner. If the Proponent and the land owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.	Water Management Plan.
B6	The Proponent shall ensure no offensive odours are emitted from the project site, as defined under the *Protection of the Environment Operations Act 1997.*	Section 5.2.5.
B7	The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.	Section 3, Section 5.2.2.
B8	The Proponent shall maximise the reuse and/or recycling of waste materials generated on site, to minimise the need for treatment or disposal of those materials outside the site.	Section 5.2.2.
B9	The Proponent shall ensure that all liquid and/or non-liquid waste generated by the project is assessed and classified in accordance with *Waste Classification Guidelines* (DECC 2008, or any future guideline that may supersede that document) and where removed from the site is only directed to a waste management facility lawfully permitted to accept those materials.	Section 3, Section 5.2.2.
B10	The Proponent shall ensure that no green waste is burned on site during the life of the project.	Section 5.2.2.

Condition	Requirement	How this requirement will be met
B14	The Proponent shall establish and maintain in perpetuity a dedicated area of land on the project site for the conservation of the Pink-tailed Legless Lizard (*Aprasia parapulchella*) as outlined in the plan prepared in accordance with condition D9 and shown in Appendix 2.	Pink-tailed Worm-lizard Protection and Management Plan.
B15	The Proponent shall store and handle all dangerous goods, as defined by the Australian Dangerous Goods Code, strictly in accordance with: (a) All relevant Australian Standards; (b) For liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and (c) DECC's *Environment Protection Manual Technical Bulletin – Bunding and Spill Management*. In the event of an inconsistency between the requirements listed from (a) to (c) above, the most stringent requirement shall prevail to the extent of the inconsistency.	Section 3, Section 5.2.10.
B16	The Proponent shall prepare and implement a Landscape Management Plan for the project. The Plan shall be prepared in consultation with Councils and include, but not necessarily be limited to: (a) An identification of the project elements which may impact on the visual amenity of the area and potential sensitive receiver locations, including residents of the Googong Township urban development area; (b) Measures to minimise and/or avoid visual amenity impacts to sensitive receiver locations, including: i. Landscape design, including a schedule of species to be used in landscaping and revegetation; ii. Built elements, including proposed treatments, finishes and materials of exposed surfaces (including colour specifications and samples); and iii. Lighting design. (c) Details of the timing and progressive implementation of the visual mitigation works; and (d) Procedures and methods to monitor and maintain landscaped or rehabilitated areas. The Plan shall be prepared and submitted to the Director-General prior to construction, unless otherwise agreed by the Director-General.	Landscape Management Plan.

Condition	Requirement	How this requirement will be met
B17	The Proponent shall: (a) Take all practicable measures to mitigate off-site lighting impacts from the construction and operation of the project; and (b) Ensure that all external lighting associated with the project complies with Australian Standard AS4282 – 1997 – Control of the Obtrusive Effects of Outdoor Lighting.	Section 5.2.7.
D1	Noise emitted from the operation of the project-related infrastructure shall not exceed 35dB(A) (LAeq(15min)) at any residence on privately owned land. Note: Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the *NSW Industrial Noise Policy*.	Section 5.2.4.
D2	Water provided as drinking water to service the Googong Township, as outlined under the documents referred to in condition A1, shall comply with the *Australian Drinking Water Guidelines 2011.*	WRP will comply with Australian Guidelines for Water Recycling.
D3	Ongoing management and monitoring of the supply of the drinking water shall form part of the NSW Drinking Water Monitoring Program.	WRP will comply with Australian Guidelines for Water Recycling.
D4	Water provided as recycled water to service the Googong Township, as outlined under the documents referred to in Condition A1, shall comply with *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).*	WRP will comply with Australian Guidelines for Water Recycling.

<table>
<tr><th>Condition</th><th>Requirement</th><th>How this requirement will be met</th></tr>
<tr><td>D5</td><td>The recycled water discharged to the environment shall not exceed the water quality parameters identified in Table D1 below.
Table D1: Effluent Quality Limits
<table>
<tr><th rowspan="2">Parameter</th><th colspan="2">Effluent discharge limits to environment</th></tr>
<tr><th>Units</th><th>90th Percentile</th></tr>
<tr><td>BOD</td><td>mg/L</td><td>10</td></tr>
<tr><td>Suspended Solids</td><td>mg/L</td><td>10</td></tr>
<tr><td>TN</td><td>mg/L</td><td>10</td></tr>
<tr><td>TP</td><td>mg/L</td><td>0.5</td></tr>
<tr><td>TDS</td><td>mg/L</td><td>700</td></tr>
<tr><td>Faecal Coliforms</td><td>cfu/100mL</td><td>150</td></tr>
<tr><td>pH</td><td></td><td>6.5-8.0</td></tr>
<tr><td>Free Chlorine (residual)</td><td>mg/L</td><td>0.1</td></tr>
<tr><td>Nitrogen – Ammonia</td><td>mg/L</td><td>2</td></tr>
<tr><td>Oil & Grease</td><td>mg/L</td><td>2</td></tr>
</table>
If the results of the water quality monitoring undertaken in accordance with the Water Management Plan in condition D8 indicates that the downstream ambient water quality criteria of the Queanbeyan River is exceeded as a result of the project, then the project shall be adjusted to reduce the concentration of the relevant parameters in the recycled water discharged to the environment.</td><td>Water Management Plan, Section 5.2.1, Section 8.</td></tr>
<tr><td>D6</td><td>No recycled water shall be discharged to the environment until at least 12 months of baseline data for the receiving waterways has been obtained and the flow release protocol has been established, in accordance with the approved Water Management Plan in condition D8.</td><td>Water Management Plan.</td></tr>
<tr><td>D8</td><td>The Proponent shall prepare and implement a Water Management Plan for the project to manage potential impacts on surface water and groundwater systems during operation of the project. The plan must be prepared in accordance with Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 2000), particularly Volume 1, Chapter 5: Guidelines for Recreational Water Quality and Aesthetics and Volume 2, section 8.2.3: Aquatic Ecosystems, and include:</td><td>Water Management Plan.</td></tr>
</table>

Condition	Requirement	How this requirement will be met
D8(a)	(a) Surface Water Monitoring Program, including: (i) procedures to obtain detailed baseline data on surface water flows and quality in creeks and other waterbodies that could potentially be affected by the project, including relevant parameters and monitoring locations; (ii) surface water and stream health impact assessment criteria including trigger levels for investigating any potentially adverse surface water impacts and for the supply of compensatory water; (iii) a program to monitor and assess: • surface water flows and quality; • impacts on water users; • stream health and habitat; and • channel stability;	Water Management Plan.
D8(b)	(b) Groundwater Monitoring Program, including: (i) detailed baseline data of groundwater levels, yield and quality in the region, and privately-owned groundwater bores, that could be affected by the project; (ii) groundwater impact assessment criteria including trigger levels for investigating any potentially adverse groundwater impacts; (iii) a program to monitor and assess: • impacts on the groundwater supply of potentially affected landowners; • impacts on any groundwater dependent ecosystems and riparian vegetation;	Water Management Plan.
D8(c)	(c) a Recycled Water Flow Release Protocol, including: (i) recommended discharge rates based on baseline data of receiving waterways and meteorological conditions; (ii) the detailed design and operation specifications for the discharge structure/s; (iii) procedures for the review and amendment of flow release protocols based on the outcomes of monitoring;	Water Management Plan.

Condition	Requirement	How this requirement will be met
D8(d)	(d) a Surface and Ground Water Response Plan, including: (i) a response protocol for any exceedances of the surface water and groundwater assessment criteria; (ii) measures to notify and compensate landowners of privately- owned land whose water supply is adversely affected by the project; and (iii) measures to mitigate and/or offset any adverse impacts on waterways, groundwater dependent ecosystems and/or riparian vegetation; and	Water Management Plan.
D8(e)	(e) an Irrigation Management Plan prepared in accordance with relevant guidelines including *Environmental Guidelines: Use of Effluent by Irrigation* (DEC, 2004) and *National 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*), which must: (i) include detailed baseline data of the soil properties of the proposed irrigation areas, including salinity levels and a nutrient budget; (ii) identify any potential off-site risks and impacts and describe measures to minimise any environmental impacts; (iii) include a protocol for the use of recycled effluent for irrigation including application rates and restrictions; and (iv) include a program to monitor areas subject to irrigation. The Water Management Plan and sub-plans shall be prepared in consultation with OEH, NOW, NSW Health and DTIRIS (Fisheries), and be submitted to the Director-General for approval by the end of June 2012 and prior to commencing operation of the project, unless otherwise agreed by the Director-General.	Water Management Plan.

Condition	Requirement	How this requirement will be met
D9	The Proponent shall prepare and implement an Aprasia Conservation Management Plan for the project to provide and maintain habitat for the Pink-tailed Legless Lizard in accordance with condition B14. This plan must be prepared in consultation with OEH and DSEWPaC, and be submitted to the Director-General for approval by the end of June 2012. The plan must: (a) be prepared or peer reviewed by a suitably qualified ecologist; (b) be based on the recommendations in the EA and the objectives of the National Recovery Plan for the species; (c) outline the roles and responsibilities of parties that would implement the plan; (d) set out the appropriate objectives, actions and milestones for the Proponent, prior to handing over ownership of this land to Queanbeyan City Council; (e) include: (i) procedures to survey and mark the boundary of the conservation area and a 20 metre buffer zone; (ii) procedures for the establishment and maintenance of boundary fencing, including measures to promote kangaroo grazing; (iii) procedures and success criteria for habitat restoration and weed management; (iv) procedures to control and monitor access and use of the conservation area by domestic and feral animals; (v) a community education program; (vi) procedures to achieve long-term security for the conservation area; (vii) a program to monitor the Pink-tailed Legless Lizard population within the conservation area; and (viii) a program which sets out milestone dates for achieving the actions and measures in the plan.	Pink-tailed Worm-lizard Protection and Management Plan.
D10	Prior to the commencement of operation of the project, the Proponent shall assess the condition of all public roads and footpaths traversed by construction traffic associated with the project (including over-mass or over- dimensional vehicles) in consultation with the relevant road authorities. Should this assessment identify any damage to roads or footpaths attributable to the project, the Proponent shall repair the damage to the satisfaction of the relevant road authority.	Section 5.2.3.

Condition	Requirement	How this requirement will be met
D11	Prior to the commencement of operation, the Proponent shall submit to the Director-General details of recommendations made by the relevant road authority and how these have been addressed.	Section 5.2.3.
E1	The Proponent shall notify the Director-General and any other relevant agencies of any incident associated with the project as soon as practicable after the Proponent becomes aware of the incident. Within 7 days of becoming aware of the incident, the Proponent shall provide the Director- General and any relevant agencies with a detailed report on the incident.	Section 7.
E2	The Proponent shall meet the requirements of the Director-General to address the cause or impact of any incident, as it relates to this approval, reported in accordance with condition E1 of this approval, within such period as the Director-General may require.	Section 7.
Statement of Commitments relevant to the operation of Stage AB		
A1	Aquatic ecology impacts are considered under WQ4. A water quality and aquatic ecology monitoring program will be developed to monitor construction and operation impacts of the Project on waterways (refer to WQ4 for further details). The monitoring program will include siting of the aquatic ecology monitoring location to ensure viable comparison with historical and other recent river ecology data.	Water Management Plan.
AQ1	The dispersion modelling undertaken as part of the Googong New Town WRP Odour Impact Assessment will be validated at a later stage in the design, for the ultimate development. This will include consideration of: • Site specific odour data collected during and following commissioning, prior to the residential development of the immediate area west of the WRP.	Validation will be conducted by the developers.
AQ3	Odour complaints will be registered and investigated. Verified odour issues will be addressed with engineering, operational or other mitigation and management measures.	Section 5.2.5, Section 9.
CS3	A community education strategy will be developed, which will focus on minimising environmental and human health risks associated with the use of recycled water.	Communication Education Strategy.

Condition	Requirement	How this requirement will be met
D3	The construction and operation of the Project will comply with Queanbeyan City Council's *Development Specification – Googong*.	Section 3.3.
F3	An Operational Environmental Management Plan (OEMP) will be prepared for the Project, and implemented. This will detail emergency, spill and maintenance procedures as well as monitoring and reporting regimes as they relate to the protection of terrestrial and aquatic ecology.	OEMP and Water Management Plan.
G3	Develop a groundwater monitoring program for the Project in consultation with relevant stakeholders. This program will address the following: • The salt levels in groundwater will be regularly monitored during and after Stage 1 of the Project. • Groundwater samples will be collected from both the shallow and regional aquifers, and soil conductivity (that is, salt) mapping will be carried out where possible in areas of inferred impact. • The monitoring of salt levels in the receiving waters will be indicative of the effectiveness of the stormwater system (refer below).	Water Management Plan.
G7	Soil monitoring in low-lying areas, where salt is likely to accumulate, will be undertaken. If salt levels were shown to be increasing, engineered drainage structures to nearby creek lines will be constructed. As a preventative measure, to avoid future bare soil patches and erosion, salt-tolerant landscaping will be used in low-lying areas.	Water Management Plan.
G8	Undertake the groundwater monitoring program as outlined in Table 12 of this report [Submissions Report].	Water Management Plan.

Condition	Requirement	How this requirement will be met
HH1	Recycled water will meet the requirements for non-potable domestic use as defined in the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks* (NRMMC, EPHC & AHMC, 2006). Recycled water will be appropriately planned and industry accepted management systems put in place to assure appropriate product quality.	Essential Sewage and Recycled Water Quality Management Plan.
HH2	A Recycled Water Quality Management Plan (RWQMP) will be prepared based on the risk management framework outlined in *Australian National Guidelines for Water Recycling – Managing Health and Environmental Risks* (2006). This RWQMP will be a living document that will be refined throughout operation of the recycled water scheme. It will involve: • Developing the RWQMP through hazard identification (for the operation of the recycled water system and use of recycled water). • Identifying the significant human and environmental health risks. • Conducting validation, operational and verification monitoring to determine the success of the following respective components of the scheme: the risk management system, preventative measures, and the achievement of safe and sustainable water recycling. • Completing the RWQMP, based on the monitoring results.	Essential Sewage and Recycled Water Quality Management Plan.
HH3	The Proponent will apply the following risk management practices to limit exposures to recycled water: • Installation regulations and codes of practice that include systematic processes to reduce the probability of cross connections. • Materials codes and regulations that easily discriminate drinking and recycled water plumbing. • Regulations that limit the legal installation and modification of plumbing systems to licensed individuals. • Education on recycled water use and the need to avoid creating cross- connections. • Installation of backflow prevention. • Operational checking (that is, testing of recycled effluent quality following treatment) and connection auditing. • Continue to liaise with relevant stakeholders to ensure awareness and understanding of the Project (including discharges of excess recycled water to the environment) and to address arising issues.	Essential Sewage and Recycled Water Quality Management Plan.

Condition	Requirement	How this requirement will be met
N2	The acoustic treatments specified for the WRP components, as outlined in Appendix J [of the EA], will be implemented and then reviewed for effectiveness following noise measurement verification.	Section 5.2.4.
OP1	Establishment and location details for monitoring sites will be in accordance with WQ4. Results of all monitoring programs that form part of these Statement of Commitments will be considered in terms of overall environmental impact on a regular basis, including: • The trade-off between potable water savings, reduction in stormwater discharges and increased recycled water discharges. • Relative impacts of excess recycled water discharges compared to impacts on soil and groundwater from recycled water uses. • The timeframe for relative comparisons of impacts of components of the water cycle will be determined in consultation with the relevant government agencies. • The ability to feedback results for further stages of Googong Township.	Water Management Plan.
OP2	Telemetry will be installed on all major water cycle infrastructure to gather operational data.	Section 2.11, Section 8.
OP3	Management plans will be reviewed with consideration of the outcomes of monitoring programs: • Additional management and mitigation measures will be implemented, should monitoring identify that the water cycle system is operating outside of modelled or expected parameters.	Section 8.
R1	Measures typical of facilities of the nature and size of the Project will include: • Storing relevant chemicals below threshold quantity levels. • Undertaking activities in accordance with relevant MSDS's. • Installing bunded areas for the storage and delivery of chemicals in accordance with *AS 3780:2008 The storage and handling of corrosive substances* and the relevant MSDS's. • Developing and implementing appropriate procedures for delivery, handling and accidental spills of chemicals.	Section 5.2.2.

Condition	Requirement	How this requirement will be met
R2	The OEMP and RWQMP will outline the management of emergency situations for all key water cycle infrastructure. For emergency or maintenance events associated with the WRP, the following will be implemented/installed, and will include measures such as: • Telemetry at all key infrastructure (eg SCADA). • An alarm system. • Backup procedures should the power to infrastructure be interrupted. • First flush tank at the WRP and wet well emergency storage at the SPS's. • Overflows at the WRP and the SPS's.	Section 5.2, Section 7, Essential Sewage and Recycled Water Quality Management Plan.
S3	To prevent and manage spills, the proponent will: • Implement chemical transport, storage, handling and disposal procedures, in accordance with requirements for dangerous goods, of environmental legislation and industry standards. • Ensure spill response procedures and equipment for containment and recovery are available on site. • Conduct workforce training on the transport, storage, handling and disposal procedures relating to chemicals.	Section 5.2.10.

Condition	Requirement	How this requirement will be met
S5	Early stages of Googong Township will be used as a trial to better understand the movement of salt in the landscape. It will involve the installation of carefully located piezometers and the monitoring of results, as well as monitoring the effectiveness of pre-emptive measures such as any subsurface drainage system. The results will be used to improve strategies for ensuing stages. The proposed WRP should be designed to minimise the need for additions of chemicals for phosphorous removal, to minimise salt loading. The Proponent will explore options to switch off the phosphorous removal process during peak irrigation demand periods in accordance with Statement of Commitment OP1. Recycled water users will be informed of the specific risks associated with irrigation with recycled water, in the context of developing a complete awareness of the Project and its environmental trade-offs. This will include: • Education on salinity impacts on soil and plant damage and regrowth. • Encouragement to grow salt-tolerant species, particularly in areas considered to be of high risk. Householders will be educated on the benefits of using detergents that are low in phosphorus, sodium and salt – in terms of the impact on recycled water quality. This will form part of the broad community education program.	Water Management Plan. The WRP has been designed to minimise the need for chemical addition for phosphorous removal. Community Education Strategy.
T5	A Traffic Management Plan will be prepared for the operation and maintenance of key water cycle infrastructure, which will include: • Standard management and mitigation measures for managing vehicle movements at water cycle infrastructure sites. • Timing of truck movements for deliveries and disposal, and parking arrangements.	Section 5.2.3, Traffic Management Plan.
V1	Additional vegetation will be planted along site boundaries to obscure views of infrastructure from sensitive receivers.	Landscape Management Plan.

Condition	Requirement	How this requirement will be met
W2	Operational management of wastes will be incorporated into the OEMP for the key sites. Some inclusions are procedures for: • The collection and transportation of grit and screenings from the WRP to an appropriately licensed facility. • Treatment and handling of biosolids, suitable for use in agriculture, forestry, soil and site rehabilitation (Grade B), in accordance with OEH's *Environmental Guidelines on the Use and Disposal of Biosolids Products* (2007). ~~• Management and monitoring of the discharge of treated effluent (recycled water) during commissioning and verification phases of the WRP operation.~~ • Waste management for putrescible and recyclable wastes generated from the WRP and other water cycle infrastructure. • Procedures for the collection and dewatering of any solid matter removed through maintenance activities of water cycle infrastructure, and transportation and disposal off site. • Vehicle routes, and the timing of trips, associated with waste management, in consideration of the traffic management plan.	Section 5.2.2, Section 5.2.3, Traffic Management Plan.
WQ4	A monitoring program to assess the potential impacts of the Project on the Queanbeyan River (including water quality, flow, fish migration, macrophytes and macro invertebrate communities) will be undertaken. • Details of the monitoring program will be determined in consultation with relevant government authorities/stakeholders (including the OEH, DPI and, potentially, ACTEW Corporation). Such consultation will ensure the sharing of available data for the Queanbeyan River for comparative and impact assessment purposes. • A new monitoring site within the Queanbeyan River is proposed to measure water quality and aquatic ecology impacts over the medium term. This site will be located near the confluence of Googong Creek and Queanbeyan River (and will be sited to enable comparison with data collected from upstream and downstream sites). ~~• Monitoring will commence approximately 12 months prior to commissioning the water recycling plant.~~	Water Management Plan.
WQ5	The operation environmental management plan (OEMP) will outline erosion and sediment control measures to protect buffer and riparian vegetation zones, in general accordance with Statement of Commitment WQ3.	Water Management Plan.

Condition	Requirement	How this requirement will be met
Project Planning Approval relevant to Stage C Network West		
	All wastes generated during the project must be managed in a manner that prevents the pollution of waters and air. Waste must be classified in accordance with the POEO Act and Waste Classification Guidelines (DECCW,2010). All waste materials must be taken to a place which can lawfully receive them in accordance with the requirements of the POEO Act.	Section 5.2.2.
	The Recycled Water Quality Management Plan and Water Management Plan is to be updated to incorporate the potential health and environmental risks associated with the proposed works in accordance with the Australian Guidelines for Water Recycling: Managing Health and Environmental Risks.	Essential Sewage and Recycled Water Quality Management Plan.
	All works on waterfront land, including the stormwater outlet and energy dissipation structure associated with excess water discharges and any reconfiguration of the natural drainage line, be designed in accordance with the "Guideline for Controlled Activities on Waterfront Land (DPI 2012)	Water Management Plan.
Statement of Commitments relevant to the operation of Stage C Network West		
O1	The temporary access road from Old Cooma Road to the permanent reservoirs site would be maintained until such times as approval for a permanent access road has been granted.	Traffic Management Plan.
O2	The future of the temporary access road intersection on Old Cooma Road would be determined in consultation with Roads and Maritime at that time.	Traffic Management Plan.
O3	Decrease the visual prominence of the permanent reservoirs through the use of muted colours and non-reflective surfaces.	Landscape Management Plan.

Condition	Requirement	How this requirement will be met
O4	Effective screening of the permanent reservoirs should be provided through the use of locally endemic vegetation close to the site. Species selection should aim to inhibit views at the ground and mid levels up to 10 meters in particular on the eastern and western sides of the reservoirs. A landscape concept plan should be prepared that demonstrates how the proposed planting treatments will screen the reservoirs from surrounding areas. Planting treatments should also be sympathetic to the existing landscape in its use of plant types and their arrangements and avoid rigid, row type hedge planting.	Landscape Management Plan.
O5	Monitoring of trees and vegetation should be done at permanent reservoirs site to ensure successful planting and screening is achieved. Replace trees and vegetation that are dead or dying.	Landscape Management Plan.
O6	The use of light emitting diodes (LED) lighting and low angle cut-off fittings should be implemented where lighting is needed to mitigate and help reduce stray light.	Section 5.2.7.
O7	Decrease the visual prominence of the recycled water tank at the WRP through the use of muted colours and non-reflective surfaces.	Landscape Management Plan.
O8	Monitoring of trees and vegetation should be done at WRP site to ensure successful planting and screening is achieved. Replace trees and vegetation that are dead or dying.	Landscape Management Plan.
O9	During operation plant and machinery would be well maintained in order to minimise operational noise emissions.	Section 5.2.4.
O10	All access roads surrounding the infrastructure is maintained as a defendable space and grasses and vegetation should be managed adjacent to these roads.	Landscape Management Plan.
O11	Emergency access to the access roads around the facilities should be maintained at all times.	STP Incident Management Plan.

Condition	Requirement	How this requirement will be met
O13	To mitigate these potential, temporary impacts of the discharge of excess recycled water, GTPL proposes to: ▪ Install an energy dissipation structure immediately downstream of the discharge location. Monitor the drainage line on a monthly basis following the commencement of operations to identify any areas of erosion along the drainage line and any impacts on the existing farm dams and sediment pond.	Section 5.2.11.
O14	In the event that impacts are identified, additional measures will be considered. These would include the provision of: ▪ Additional energy dissipation structures along the drainage line. ▪ Diversion structures around the farm dams or strengthening these structures. Additional sediment basins or the modification of the existing basin.	Section 5.2.11.
O15	Operational water quality and hydrology management measures would be outlined in the Googong IWC Water Management Plan.	Water Management Plan.
O16	A standard operating procedure (SOP) would be developed for the ongoing management of the reservoir facilities, including management of waste at the site as part of the OEMP.	QPRC Standard Operating Procedure.
O17	Independent separate work approvals are to be sought for any maintenance works on the reservoir tanks. Any works which impact the quality of water leaving the facility through the discharge point would be prepared in consultation with the EPA.	Section 1.8.
O18	A variety of measures would be implemented to manage the operational risks of the storage and delivery of chemicals associated within the project. These measures would be outlined in the OEMP and are typical of those applied at similar facilities and include: ▪ Storing quantities of certain chemicals on site that are within the relevant thresholds. ▪ Undertaking activities in accordance with the relevant material and safety data sheets. ▪ Installing bunded areas for the storage and delivery of chemicals in accordance with Australian Standard AS 3780:2008 and the relevant material and safety data sheets. Developing and implementing appropriate procedures for delivering, handling and accidental spills of chemicals.	Section 2.6, PIRMP, QPRC Standard Operating Procedure.

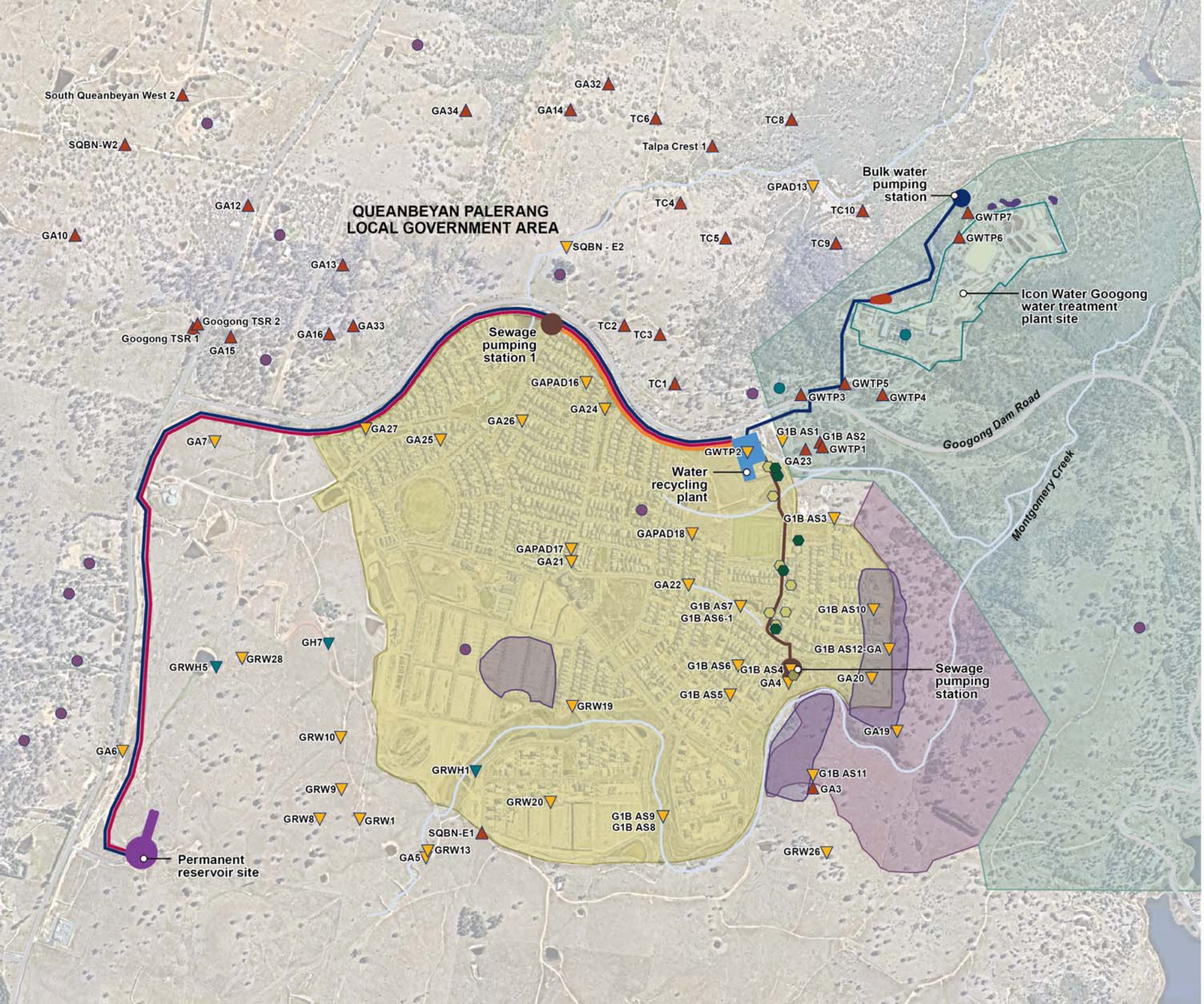
Condition	Requirement	How this requirement will be met
O19	Measures associated with the management of risks from emergency or maintenance events associated with the system are largely incorporated in the design. These measures include: ▪ Implementing back-up procedures should power to infrastructure be interrupted. ▪ Installing appropriate management measures at the recycled water discharge pipeline at the permanent reservoirs site. Implementing emergency management plans and undertaking ongoing liaison with the local emergency services.	STP Incident Management Plan (TRIM).

Condition	Requirement	How this requirement will be met
EPBC Act approval		
2	To prevent impacts on listed threatened species and ecological communities, and the environment on Commonwealth land, the person taking the action must prepare and submit a Googong Foreshores Interface Management Strategy for the Minister's approval. The strategy must include measures to: (i) Induct construction workers and contractors about requirements to protect threatened species and the environment on Commonwealth land. (ii) Provide indicative environmental management checklists to assist with monitoring the implementation of environmental management obligations during construction works. (iii) Establish and maintain fences. (iv) Identify and implement erosion and sedimentation control measures. (v) Identify and implement appropriate weed hygiene measures (vi) Protect and maintain the Googong Foreshores buffer area. (vii) Provide details of financial contributions for the publishing, monitoring and review of the Googong Foreshores Plan of Management. (viii) Provide details of financial contributions for capital and recurrent costs associated with the implementation of the Googong Foreshores Plan of Management. (ix) Manage community and water supply impacts, including measures from the Queanbeyan Local Environment Plan (Googong) 2009. (x) Provide details of an environmental education program, which must include information about the protection of water quality in the Googong reservoir. (xi) Indicate timing and frequency of monitoring to determine impacts and effectiveness of mitigation measures. (xii) Provide performance indicators, specifying outcomes to be achieved and reports of compliance at key milestones. (xiii) Undertake corrective actions if management measures are not achieved. (xiv) Clearly state the person or persons responsible for each management measure, and (xv) Provide details of how the area to be managed under the Googong Foreshores Interface Management Strategy will be managed in perpetuity.	Googong Foreshores Interface Management Strategy.

Condition	Requirement	How this requirement will be met
	The area to be managed under the Googong Foreshores Interface Management Strategy is defined by Figure 1 at Appendix 1 [of the EPBC Act Approval]. This map must be included in the Googong Foreshores Interface Management Strategy. The person taking the action must not commence construction of neighbourhoods 1B, 4 or 5, as defined by Figure 8 at Appendix 2 [of the EPBC Act approval], until the Minister has approved the strategy. The approved Googong Foreshores Interface Management Strategy must be implemented.	

ANNEXURES

Annex A – Environmental Constraints Map



ENVIRONMENTAL CONSTRAINTS

LEGEND

- Recorded Aboriginal Heritage Sites (existing)
- Recorded Aboriginal Heritage Sites (AHIP issued)
- European heritage
- Hollow-bearing tree
- Non-hollow bearing tree
- Noxious weed
- Blakely's Red Gum/Red box/Bundy Grassy Woodland
- Hoary Sunray population
- Commercial receivers
- Residential receivers
- Potable water mains
- recycled water mains
- Sewerage mains
- Sewer rising mains
- Watercourse
- Potential Acheological Deposite (PAD)
- PTWL conservation area
- Googong township (Stage 1)
- Googong foreshores (Commonwealth land)

N

0 250 500

Metres

Annex B – Environmental Risk Register

Environmental Risk Register

An environmental risk assessment has been performed in accordance with the principles of *AS/NZS 31000:2009*. This risk assessment was used to confirm the key issues and identify the scope of environmental impact mitigation and management measures required for construction of the IWC Project. The risk assessment focused on the following issues, as identified in the Environmental Assessment (EA), previous management plans for the IWC Project and the Environmental Risk Workshop:

- Water quality and hydrology
- Soils
- Groundwater
- Ecology
- Heritage
- Traffic and access
- Waste
- Air quality
- Noise and vibration
- Hazards and risk
- Visual amenity
- Socio-economic
- Community
- Utilities and services
- Incident management
- Legislative approvals

For each issue, associated risks (impacts) have been identified. The relative level of risk was assessed and ranked using the risk analysis matrix presented below. Each environmental risk is categorised based on:

- The environmental aspect.
- Relative scale of the potential impact (refer to **Table D**).
- Type of potential impact.
- Likelihood of occurrence (refer to **Table D2**).

The Environmental Risk Workshop was conducted on Friday 4 December 2015 and was attended by key environmental and operations staff in QPRC and AECOM. The purpose of the workshop was to review previous environment risk registers for the WRP and associated network, and update the safeguards and control measures to be implemented to manage these risks, and any additional risks identified. The Agenda for this workshop is provided in **Figure D1**.

Queanbeyan City Council

AECOM

Googong WRP and Network Operation Environmental Management Plan

Environmental Risk Workshop

Friday 4th December 2015 (1pm to 5pm)

Location:
Black Mountain room
AECOM offices, Level 2, 60 Marcus Clarke Street, Canberra, ACT, 2601, Australia
If you have any issues, please call Richard Farmer: 0428 870 811.

Purpose:
To review the Googong Township IWC projects previous environmental risk registers for the Water Recycling Plant (WRP) and associated Network and update the safeguards and control measures to be implemented to manage these risks, and any additional risks identified, for the proposed operation of the facility and network by Queanbeyan City Council (QCC).

Aim and outcomes:
Updated environmental risk register for the Water Recycling Plant (WRP) and associated Network with specific controls measures / safeguards identifying methods to manage the risks and responsible parties for managing the risks.

Discussion points (including but not limited to):

- Environmental risks and potential environmental impacts
- Environmental controls and monitoring
- Waste streams and management processes
- Hazardous chemicals handling and storage
- Traffic management protocols
- Roles and responsibilities for the WRP and network
- Incident response and emergency procedures and contacts
- Reporting requirements
- Training requirements and proposed training delivery
- Existing QCC environmental procedures and processes
- **Lessons learnt from the WRP process commissioning and verification phase**

Schedule:

Item	Time
Introduction and purpose / aims of the risk workshop	1:00 – 1:15
Description of the WRP and network operating process *(We invite QCC to present here and provide an overview of the process)*	1:15 – 1:30
Review of existing identified environmental risks and update of the control measures	1:30 – 5:00
Insert new risks (as identified for each aspect) and determine control measures	

Figure D1 - Environmental Risk Workshop Agenda

Table D1 Risk assessment consequence definitions

Consequence level	Definition
Extreme	Would result in a major prosecution under relevant environmental legislation. Would cause long-term and irreversible impacts.
Major	Would result in a fine or equivalent under relevant environmental legislation. Would cause medium-long-term, potentially irreversible impacts.
Moderate	Would result in a medium-term, reversible impact.
Minor	Would result in short-term, reversible impact.
Insignificant	Would not result in any perceptible impacts.

The second descriptor of risk identifies the frequency of activities that may cause the impact and the probability of the impact occurring during that activity, the likelihood level is outlined in **Table D2**.

Table D2 Risk assessment likelihood definitions

Likelihood level	Definition
Almost certain	The impact is expected to occur in most circumstances.
Likely	The impact will probably occur in most circumstances.
Possible	The impact will probably occur at some time.
Unlikely	The impact could occur at some time.
Rare	The impact may only occur in exceptional circumstances.

When both the descriptors of risk have been identified for each potential impact the level of risk is determined using the risk matrix in **Table D3.**

Table D3 Risk Matrix

Likelihood	Consequences: Extreme	Major	Moderate	Minor	Low
Almost Certain	High	High	Significant	Significant	Moderate
Likely	High	Significant	Significant	Moderate	Moderate
Possible	Significant	Significant	Moderate	Moderate	Low
Unlikely	Significant	Moderate	Moderate	Low	Low
Rare	Significant	Moderate	Low	Low	Low

Table D4 outlines the results from the environmental risk assessment by displaying the recognised risks and the associated risk rating (before implementation of the mitigation and management measures included in **Section 5** of this OEMP. The effectiveness of the controls and the person responsible for managing this risk has also been identified.

Table D4 Risk Matrix

No.	Risk	Risk Rating (before mitigation) Likelihood	Consequence	Rating	Mitigation	Risk Responsibility	Effectiveness of controls
Water Quality							
WQ-01	Poor water quality discharges from WRP if process design fails, leading to reduced water quality in receiving waters.	L2-Unlikely	C4-Major	**Significant**	• Compliance monitoring of process operations and water quality discharged to the environment. • Surface Water (and Aquatic Ecology) Monitoring Program. • Groundwater Monitoring Program (groundwater baseline monitoring data with established trigger levels for investigating any adverse impacts). • Surface Water and Groundwater Response Plan (protocol for responding to any exceedances of the criteria).	QPRC Manager - Water and Sewerage WRP operators; QPRC Environment and Health Manager	**High**
WQ-02	Failure in network and/or pumping stations, leading to overflow and reduced receiving water quality.	L1-Rare	C5-Extreme	**Moderate**	• Monitoring of network system operations by SCADA system. • Emergency storage in the wet wells of the pumping stations. • QPRC maintenance team available to response to emergency failures in the network.	Network maintenance team WRP operators	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
WQ-03	Treatment failure / power failure leading to overflows at the WRP.	L1-Rare	C4-Major	**Moderate**	• Back-up power unit at the WRP. • Untreated effluent is diverted to the Emergency Discharge Tank during catastrophic failure of the system. • Process equipment within bunded areas. • First flush of the WRP is pumped by the general purpose pump station to the first flush tank.	WRP operators	**High**
WQ-04	User ignorance (people doing the wrong thing in the network) leading to processing challenges in the WRP.	L4-Likely	C3-Moderate	**Significant**	• Trade waste licences issued to industrial effluent sources. • Community education program to highlight issues with inappropriate use of the IWC network. • Developer Information Pack (provided at purchase of the land).	Trade Waste Officer; Education Officer; QPRC Water and Sewerage; QPRC Environment and Health Manager	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
WQ-05	User ignorance (people doing the wrong thing in the network) leading to over irrigation of recycled water and potential impacts of waterlogging / groundwater quality issues.	L4-Likely	C4-Major	**Highly Significant**	• Irrigation Management Plan (baseline data for soil properties, irrigation areas and salinity and nutrient budget including a program to monitor areas subject to irrigation). • Recycled Water Use Protocol (for the use of recycled effluent including application rates and restrictions). • Groundwater Monitoring Program (groundwater baseline monitoring data with established trigger levels for investigating any adverse impacts). • Surface Water and Groundwater Response Plan (protocol for responding to any exceedances of the criteria). • Community education program to raise awareness of the correct uses of recycled water and the risks with over irrigation / waterlogging. • Developer Information Pack (provided at purchase of the land). • Signage within properties to identify recycled water network.	QPRC Environment and Health Manager; QPRC Parks and Recreation Manager	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
WQ-06	Runoff Control Failure	L3-Possible	C2-Minor	**Moderate**	• Water Management Plan	QPRC Environment and Health Manager; QPRC Parks and Recreation Manager	**High**
WQ-07	Spills of pollutants (chemicals for operation, effluent, fuels) causing pollution of receiving waters.	L1-Rare	C4-Major	**Moderate**	• Standard Operating Procedure developed for chemical unloading and tankering (of chemicals, waste, effluent) • Chemical unloading area is fully bunded and contained. • Tanker areas will be bunded and have fixed coupling connection points.• Personnel trained in SOPs and Incident Response Plan in the event of a spill. • All fuels stored appropriately in hazardous areas. • Attendance at all times by the unloading Operator.• MSDS available on site at the WRP for the chemicals stored.	Water Recycling Plant Operators QPRC Water and Sewerage Manager	**High**

No.	Risk	Risk Rating (before mitigation) Likelihood	Consequence	Rating	Mitigation	Risk Responsibility	Effectiveness of controls
Hydrology							
Hy-01	Scouring of the receiving water from WRP discharges.	L2-Unlikely	C3-Moderate	**Moderate**	• Follow the Recycled Water Flow Release Protocol in the Water Management Plan. • Install and maintain energy dissipation control measures at the discharge point. • Visual inspection of the discharge point to be conducted on a periodic basis to enable quick identification of any negative impacts on receiving waterways.	QPRC Environment and Health Manager QPRC Water and Sewerage Manager	**High**
Hy-02	Changed geomorphology of receiving water beds due to recycled water discharges (increased flows) during operations	L2-Unlikely	C3-Moderate	**Moderate**	• Follow the Recycled Water Flow Release Protocol in the Water Management Plan. • Visual inspection of the creek on a periodic basis to identify any negative impacts on the geomorphology of receiving waterbeds.	QPRC Environment and Health Manager	**High**
Hy-03	Flooding risk	L2-Unlikely	C3-Moderate	**Moderate**	• Comply with the EA requirements to ensure that flood risk is minimised. • Follow the Recycled Water Flow Release Protocol in the Water Management Plan. • Review integrity of the "farm dams" near to the discharge point which play a flood control function.	QPRC Environment and Health Manager, QPRC Manager - Water and Sewerage	**High**

No.	Risk	Risk Rating (before mitigation) Likelihood	Consequence	Rating	Mitigation	Risk Responsibility	Effectiveness of controls
Heritage (Aboriginal and non-Aboriginal)							
He-01	Impacts on unidentified sites that are of heritage or recreational value.	L1-Rare	C5-Extreme	**Moderate**	• As part of EA development, a detailed assessment was prepared to address the General's Requirements issued by the Department of Planning and Environment (former Department of Planning and Infrastructure). The Aboriginal and non-Indigenous heritage assessment was addressed in Section 12 and Appendix G of the EA. • The EA concluded that there were unlikely to be significant Aboriginal and non-Indigenous heritage impacts associated with the operation of the IWC Project, following the implementation of the proposed mitigation measures identified in the EA.	Development Control Manager; QPRC Water and Sewerage Manager; Engineering Services Manager; Parks and Recreation Manager	**High**
He-02	Impacts on identified sites that are of heritage or recreational value.	L2-Unlikely	C4-Major	**Significant**	• Aboriginal heritage sites are identified in the Environmental Constraints Map within the OEMP. • Where these sites fall within close proximity to operation/maintenance works, exclusion fencing will be installed to protect the sites from inadvertent impacts during any required maintenance or other works.		**High**

No.	Risk	Risk Rating (before mitigation) Likelihood	Consequence	Rating	Mitigation	Risk Responsibility	Effectiveness of controls
Geology and Soils							
Ge-01	Spills of pollutants (chemicals for operation, effluent, fuels) causing pollution of soils.	L1-Rare	C4-Major	**Moderate**	• Standard Operating Procedure developed for chemical unloading, effluent tankering and seeding. • Chemical unloading area is fully bunded and contained. • Tanker areas for effluent and seeding will be bunded and have fixed coupling connection points. • Attendance at all times by the unloading Operator. • All fuels stored appropriately in hazardous areas. • MSDS available on site at the WRP for the chemicals stored. • Personnel trained in SOPs and Incident Response Plan in the event of a spill.	Work Health and Safety Coordinators; WRP Operators	**High**
Ge-02	Biosolids not managed appropriately leading to impacts on soils	L1-Rare	C3-Moderate	**Low**	• Biosolids are stored with a secure containment area. • Disposal by specialist 3rd party subcontractor.	WRP operators; Waste contractors	**High**

No.	Risk	Risk Rating (before mitigation) Likelihood	Consequence	Rating	Mitigation	Risk Responsibility	Effectiveness of controls
Air Quality (Greenhouse Gas, dust and odour)							
A-01	Increase in greenhouse gas emissions (from operation vehicles, plant and equipment; and fugitive emissions during operation).	L5-Almost certain	C1-Insignificant	**Moderate**	• Vehicles will be maintained to minimise exhaust emissions. • Plant, vehicles and machinery will be operated in a proper and efficient manner (e.g. no vehicle idling) • Onsite generator will be maintained in accordance with manufacturer recommendations.	WRP operators	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
A-02	Odour emissions from WRP and network, leading to adverse impact on air quality (and amenity).	L3-Possible	C4-Major	**Significant**	• All odorous areas are covered and odours extracted and treated via the odour control system. • Continuous odour monitoring (hydrogen sulphide) at the vent stacks linked to the SCADA system (with alert system). • Monitoring and testing of the odour control facilities at the WRP to ensure compliance with the Technical Specifications. • Periodic testing (at least every 6 months) using a "sniffer tube" to monitor for odours at vent stacks. • Odour emissions minimised at the pump stations by ensuring that floating sewage debris, including fats and oils, does not accumulate on the surface of sewage in the wet well and that heavy debris does not accumulate in still-water areas of the wet well. The accumulation of floating debris is lessened with a wet well washer to clean the oils off the well walls, by minimising the wet well control volume, and by ensuring appropriate pump selection for the required inflow volumes.	WRP operators Trade Waste Officer Operational Staff Water and Sewerage Operations Engineer	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
A-03	Odour emissions from malfunctions anywhere in the treatment system and network.	L3-Possible	C4-Major	**Significant**	• Monitoring and testing of the odour control facilities at the WRP to ensure compliance with the Technical Specifications. • Odour control system has redundancy built into the design. • All odorous areas are covered and odours extracted and treated via the odour control system.	WRP operators; Trade Waste Officer; Operational Staff; Water & Sewerage Operations Engineer	**High**
A-04	Dust and/or odour emissions from removal of residual wastes by tankering (e.g. biosolids, screenings)	L3-Possible	C3-Moderate	**Significant**	• Low risk of dust issues. • All odorous areas are covered and odours extracted and treated via the odour control system. • Connection tanker points will be via fixed couplings to enclosed tanks. • Waste contractors trained in odour control techniques.	WRP operators; Waste contractors	**High**

No.	Risk	Risk Rating (before mitigation) Likelihood	Consequence	Rating	Mitigation	Risk Responsibility	Effectiveness of controls
Biodiversity							
B-01	Adverse impacts on threatened species (NSW/Cth) and Endangered Ecological Communities (EECs).	L2-Unlikely	C4-Major	**Significant**	• As part of EA development, a detailed assessment was prepared to address the Director-General's Requirements issued by the Department of Planning and Environment (former Department of Planning and Infrastructure). The flora and fauna assessment was addressed in Section 11 and Appendix F of the EA. • The EA concluded that there were unlikely to be significant flora and fauna impacts associated with the operation of the IWC Project, following the implementation of the proposed mitigation measures identified in the EA.	Development Control Manager; Water & Sewerage Manager Engineering; Services Manager; Parks and Recreation Manager	**High**
B-02	Impacts to nocturnal animals from facility lighting during night time.	L3-Possible	C2-Minor	**Moderate**	• Ensure night time lighting at the facility is minimised where possible. • Security lighting is motion activated so will be off in the 'normal operating position'.	WRP Operators	**High**
B-03	Weed growth (noxious and environmental) particularly within disturbed areas.	L2-Unlikely	C3-Moderate	**Moderate**	• Landscape Management Plan (includes weed maintenance program in place for the WRP). • Weed management undertaken as part of council-wide weed management schedule.	Network maintenance team	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
B-04	Increased active erosion and scouring, and loss of riparian vegetation in creeks due to increased flows during operations.	L2-Unlikely	C3-Moderate	**Moderate**	• Follow the Recycled Water Flow Release Protocol in the WMP. • Visual inspection of the creek to be conducted on a periodic basis to enable quick identification of erosion and scouring and loss of riparian vegetation in creeks due to increased flows.	QPRC Environment and Health Manager	**High**
B-05	Impacts on downstream ecology due to changed hydrology in creeks during operations.	L2-Unlikely	C3-Moderate	**Moderate**	• Follow the Recycled Water Flow Release Protocol in the WMP. • Visual inspection of the creek to be conducted on a periodic basis to enable quick identification of any negative impacts on downstream ecology.	QPRC Environment and Health Manager	**High**
B-06	Changes to water quality (alkalinity, conductivity and turbidity conditions) may create changes in aquatic ecology during operations.	L3-Possible	C4-Major	**Significant**	• Undertake compliance monitoring of water discharged to the environment during operation in accordance with EPL conditions. • WRP can bypass off-spec effluent for retreatment. Effluent can also be tankered offsite, if required.	WRP operators	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
B-07	Algal blooms in the network or at discharge point leading to deterioration in the receiving water quality.	L3-Possible	C4-Major	**Significant**	• WRP designed to maximise nitrogen and phosphorous removal. • Residual chlorine would be maintained to prevent bacterial and algal regrowth within the recycled water reservoirs and pipework. The recycled water will be de-chlorinated (at the reservoirs) and discharged into the first of the stormwater ponds, it will then flow through the stormwater management system (including Beltana Pond) and into Googong Creek. • Bio-retention basins, vegetated swale and wetland elements are designed to capture, reduce and in some instances remove pollution caused by nitrogen and phosphorous. By reducing these elements to acceptable levels the chance or occurrence of algal blooms is greatly reduced and most probably eliminated. • Beltana Pond has been designed so that passive water flow is directed to flow though the wetland and into the pond via the longest route possible. In addition a recirculation pump has been provided to ensure water in the pond is regularly passed through the wetland to increase oxygenation and retreat for pollutants.	WRP operators QPRC Environmental and Health Manager QPRC Water and Sewerage Manager	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
B-08	Stagnant water in the ponds leads to increased mosquito breeding and impacts to amenity	L3-Possible	C3-Moderate	**Significant**	• The design of the recycled water network has ensured that the availability of stagnant or standing water is minimised where possible. • Beltana Pond has been designed so that passive water flow is directed to flow though the wetland and into the pond via the longest route possible. In addition a recirculation pump has been provided to ensure water in the pond is regularly passed through the wetland to increase oxygenation and retreat for pollutants.	QPRC Parks and Recreation Manager QPRC Environmental and Health Manager	**High**
Traffic and Access							
T-01	Traffic impacts due to interaction with vehicles and other necessary deliveries/maintenance.	L4-Likely	C2-Minor	**Significant**	• Limited traffic movements associated with the operation of the WRP (limited mainly to: waste removal, chemical deliveries, operator personal vehicles). • Traffic management plans in place of all tankering activities.	WRP operators	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
T-02	Damage to roads or footpaths from operational vehicles	L3-Possible	C2-Minor	**Moderate**	• Limited traffic movements associated with the operation of the WRP (limited mainly to: waste removal, chemical deliveries, operator personal vehicles). • Traffic management plans in place (including coverage of vehicles routes, turning circles, queuing and access points). • Roads and footpaths will be inspected and repaired.	QPRC Manager - Water and Sewerage	**High**
Visual Amenity and Landscape/Urban Design							
V-01	Negative impact on visual amenity due to presence of infrastructure.	L5-Almost certain	C2-Minor	**Significant**	• Planting and landscaping as required by the Landscape Management Plan. • Weed management undertaken as part of council-wide weed management schedule.	Parks and Recreation Manager	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
V-02	Graffiti of walls, plant, signage, other parts of the system or network from unauthorised access	L1-Rare	C2-Minor	**Low**	• CCTV security system in 24/7 operation. • Fencing and security protective measures (e.g. alarms) to reduce unauthorised access. • Prompt removal of graffiti in instances that it occurs. • Security lighting (motion activated).	WRP operators; Network Maintenance Operators	**High**

No.	Risk	Risk Rating (before mitigation) Likelihood	Consequence	Rating	Mitigation	Risk Responsibility	Effectiveness of controls
Noise and Vibration							
NV-01	Noise and vibration impacts from operation of the WRP.	L3-Possible	C3-Moderate	**Significant**	• Operational Noise Assessment was completed by SLR in April 2014, concluding that the proposed noise control strategies will lead to compliance with the project specific noise levels at the nearest existing noise receivers under the prevailing meteorological conditions. • Noise control strategies incorporated into the design (e.g. most noisy processing equipment within a covered area). • Noise surveys / monitoring to be undertaken at the WRP to demonstrate compliance with the specified noise levels. • Restricted working hours for operations staff and maintenance activities (unless in emergency situations). • QPRC to ensure that Development Approvals for new housing is outside of the required distances to ensure compliance with the noise criteria.	WRP operators; QPRC Environment and Health Manager; QPRC Manager - Water and Sewerage	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
NV-02	Noise impacts from heavy vehicle movements for removal of waste and deliveries.	L4-Likely	C3-Moderate	**Significant**	• Limited traffic movements associated with the operation of the WRP (mainly limited to: waste removal, chemical deliveries, operator personal vehicles). • Traffic Management Plan will be in place. • Heavy vehicle movements are restricted to maximum of 20 per day and between the hours of 7am and 6pm.	WRP operators	**High**
Utilities and Services							
U-01	Cross connections with recycled water network (at individual houses or at reticulation network) and potable network.	L2-Unlikely	C5-Extreme	**Significant**	• QPRC have the ability to stop supply to individual houses if required. • At reticulation, non-return valves and double isolation used. • Plumbers require a licence to alter or connect to recycled water network. • Audits of plumbers work (by QPRC surveyor or private certifiers). • SOP6 Prevention of cross connections procedure (included in the Water Management Plan).	QPRC Water and Sewerage Manager Development Control Manager	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
Waste							
W-01	Impacts of waste contractors not having appropriate approvals to dispose of waste at a licensed facility.	L3-Possible	C4-Major	**Significant**	• Permits and approvals identified and in place before and trucking of waste commences.	QPRC Manager - Water and Sewerage	**High**
W-02	Effluent is not of an acceptable quality for discharge to the environment.	L2-Unlikely	C3-Moderate	**Moderate**	• Continuous monitoring of effluent quality is undertaken to confirm compliance. • In the event that effluent that does not meet the discharge criteria its diverted to an Off-Spec Water Tank at the WRP and then pumped along a separate pipeline along Googong Dam Road. The recycled water will be dechlorinated at the WRP prior to entering the pipeline. The recycled water will then be discharged into the ephemeral Googong Creek via the existing chamber and outlet structure at Beltana Park, immediately downstream of Beltana Pond. Recycled water discharged at this location will be required to meet the effluent criteria in CoA D5 and relevant conditions of the EPL.	QPRC Manager - Water and Sewerage; WRP operators	**High**

No.	Risk	Risk Rating (before mitigation) Likelihood	Consequence	Rating	Mitigation	Risk Responsibility	Effectiveness of controls
Socio-economic							
S-01	Impacts on recreational use at various nearby sites during operation.	L2-Unlikely	C4-Major	**Significant**	• Recycled Water Flow Release protocol and Surface and Groundwater Response Plan have been developed. • Undertake compliance testing of discharge points during operation to confirm compliance with EPL criteria.	QPRC Environment and Health Manager; QPRC Water and Sewerage Manager; Education Officer; Communications Coordinator	**High**

No.	Risk	Risk Rating (before mitigation) Likelihood	Consequence	Rating	Mitigation	Risk Responsibility	Effectiveness of controls
Hazards and Risks (including human health)							
Hz-01	Safety hazards and risks during operation (e.g bushfire, power outages, chemical spills, traffic accidents).	L3-Possible	C5-Extreme	**Highly Significant**	• Bushfire controls are in place (cleared area, fire breaks, fire alarms and monitoring, inflammable substances stored correctly, water supply for fire fighting identified, staff trained, fire extinguishers available). • Design of the WRP has incorporated safety features (fireproof design). • A standby generator is installed as part of the WRP works that will operate critical equipment during power outage to control odours, provide screening and disinfect any sewage discharge that may flow to the Montgomery Creek. • Emergency storage in the Emergency Discharge Tank on site will provide up to 8 hrs storage at average dry weather flow. • Operator is notified immediately via SCADA (telemetry) of all emergency alarms. • Emergency response procedures to be developed and implemented. • All chemical storage areas are bunded. • Sewage pumping station have storage capacity in the wet wells. • If Emergency Discharge Tank is full, sewage will flow to the emergency discharge point at Montgomery Creek.	QPRC Manager - Water and Sewerage; WRP operators	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
Hz-02	Risk to human health via pathways of exposure of recycled water.	L3-Possible	C4-Major	**Significant**	• Operations personnel trained on health risks and hygiene • Recycled water is monitored for compliance against the RWQMP • RWQMP in place. • Community education program to raise community awareness of the proper use of recycled water.	QPRC Environment and Health Manager; QPRC Water and Sewerage Manager; Education Officer; Communications Coordinator	**High**
Hz-03	The WRP is unable to treat sewage from the Googong Township (during operational phase)	L2-Unlikely	C4-Major	**Significant**	• WRP has been designed with redundancy and contingencies (including emergency storage). • Process verification and commissioning phase has been undertaken to confirm the WRP processes are fit for operation. • WRP will be operated and maintained in accordance with O&M manuals and SOPs. • In the event that the WRP cannot receive flow for an extended period, tankering of sewage can be undertaken from SPS1.	QPRC Manager - Water and Sewerage	**High**

No.	Risk	Risk Rating (before mitigation)			Mitigation	Risk Responsibility	Effectiveness of controls
		Likelihood	Consequence	Rating			
z-04	Health impacts associated with the use of recycled water in fire control for the Googong Township	L3-Possible	C4-Major	**Significant**	• Memorandum of understanding in place between QPRC and NSW Office of Water (NOW) and the NSW Fire Service for the use of recycled water for fire control. • QPRC has informed other emergency services. Briefing session held.	QPRC Manager - Water and Sewerage	**High**

Annex C – Consultation Responses

NSW GOVERNMENT | Office of Environment & Heritage

DOC16/156610

The General Manager
Queanbeyan City Council
PO Box 90
QUEANBEYAN NSW 2620
Attention: Andre Pretorius

Dear Mr Pretorius

Re: Googong Township Water Recycling Plant and Network Operational and Environmental Management Plan (OEMP) review

I refer to your email, received by the Office of Environment and Heritage (OEH) on 22 March 2016, in relation to the above OEMP, and your request for OEH comment.
OEH has reviewed the OEMP and had some concerns regarding the currency and consistency of the constraints mapping and the Pink-tailed Worm-Lizard Protection and Management Plan. Further details are outlined below;

Aboriginal Cultural Heritage
Site G1B AS7 (AHIMS # 57-2-0801) is not on the constraints map (Figure B2). It must be listed as a salvaged site on Figure B2 because an AHIP was issued for this site.

OEH considers that the reference to exclusion fencing for Aboriginal sites in section 5.2.8 Cultural Heritage, page 31 of the OEMP state that exclusion fencing "must" be installed, rather than "will" be.

If this OEMP will include Stages C and D in the future, then the constraints map must be regularly updated for Aboriginal Cultural Heritage sites.

Biodiversity
The Pink-tailed Worm-Lizard Protection and Management Plan attached as Annex G appears to be out of date (Final (Version 4) – 29 April 2014). The Plan needs to be updated to reflect the changes made that were finalised as a result of the Modification 3 to the Project Approval MP 08_0236 dated 27 October 2014. The changes are related to the size of the conservation area and are crucial to the plan being fit for purpose. OEH understands that the latest version is Version 5 dated July 2014.

OEH also notes that in the OEMP, Annex B – Environmental Constraints Map, Figure B1, titled Stage A Network, does not reflect the current footprint for the Pink-tailed Worm-lizard conservation area either and will need to be updated. OEH acknowledges that Figure B2 titled Stage AB WRP and Stage B Network does appear to show the latest Pink-tailed Worm-lizard conservation area.

Annual review of plans
OEH notes in section 8.6 of the OEMP titled Adaptive Management that there will be an annual review of the OEMP and the Pink-tailed Worm-Lizard Protection and Management Plan. OEH considers it

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appropriate that we continue to be included in the adaptive management of these plans, and as such the annual review process. Aboriginal heritage sites should be updated as part of the constraints map to indicate the status of all recorded sites within the Googong project area.

If you require further information or would like to discuss the above comments further, please contact Lyndal Walters on 02 6229 7157.

Yours sincerely

7/4/16

ALLISON TREWEEK
Senior Team Leader, Planning - South East
Regional Operations Group
OFFICE OF ENVIRONMENT AND HERITAGE

Googong Township Water Recycling Plant (WRP) and Network – Consultation comments register

Document reviewed	Operational Environmental Management Plan (OEMP)
Organisation	Office of Environment and Heritage (OEH)
Contact	Allison Treweek / Lyndal Walters
Date comments received	7th April 2016

Comment	Response
Aboriginal Cultural Heritage Site G1B AS7 (AHIMS #57-2-0801) is not on the constraints map (Figure B2). It must be listed as a salvaged site on Figure B2 because an AHIP was used for this site.	Environmental constraints maps B1 and B2 updated and consolidated. Please see attached updated Figure B1 (attached) which includes an updated search of the OEH AHIMS register undertaken on 8th April 2016. Site G1B AS7 (AHIMS #57-2-0801) has been included.
OEH considers that the reference to exclusion fencing for Aboriginal sites in section 5.2.8 Cultural Heritage, page 31 of the OEMP state that exclusion fencing "must" be installed, rather than "will" be.	Plan updated to incorporate suggested text change.
If this OEMP will include Stages C and D in the future, then the constraints map must be regularly updated for Aboriginal Cultural Heritage sites.	Noted.
Biodiversity The Pink-tailed Worm-Lizard Protection and Management Plan attached as Annex G appears to be out of date (Final (version 4) – 29 April 2014). The Plan needs to be updated to reflect the changes made that were finalised as a result of the Modification 3 to the Project Approval MP08_0236 dated 27 October 2014. The changes are related to the size of the conservation area and are crucial to the plan being fit for purpose. OEH understands that the latest version is Version 5 dated July 2015.	Noted. Version 4 was provided in error. Version 5 has been attached to the latest version of the OEMP.

Comment	Response
OEH also notes that in the OEMP, Annex B – Environmental Constraints Map, Figure B1, titled Stage A Network, does not reflect the current footprint for the Pink-tailed Worm-lizard conservation area either and will need to be updated.	Environmental constraints maps B1 and B2 updated and consolidated. Please see attached updated Figure B1 (attached) which includes the current footprint for the Pink-tailed Worm-lizard conservation area in accordance with Modification 3 to the Project Approval MP08_0236 dated 27 October 2014.
OEH acknowledges that Figure B2 titled Stage AB WRP and Stage B Network does appear to show the latest Pink-tailed Worm-lizard Conservation area.	Noted.
Annual review of plans OEH notes in section 8.6 of the OEMP titled Adaptive Management that there will be an annual review of the OEMP and the Pink-tailed Worm-lizard Protection and Management Plan. OEH considers it appropriate that we continue to be included in the adaptive management of these plans, and as such the annual review process.	Noted.
Aboriginal heritage sites should be updated as part of the constraints map to indicate the status of all recorded sites within the Googong project area.	Please see attached updated Figure B1 (attached) which includes an updated search of the OEH AHIMS register undertaken on 8th April 2016.

Department of Primary Industries
Water

Contact Tim Baker
Phone 02 6841 7403
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Fax 02 6884 0096
Email Tim.Baker@dpi.nsw.gov.au

Our ref OUT16/14814

André Pretorius
Queanbeyan City Council
PO Box 90
QUEANBEYAN NSW 2620

Dear André

Googong Township Water Recycling Plant and Network Operational and Environmental Management Plan

I refer to your letter dated 17th March 2016 requesting comments from DPI Water on the Operation Environmental Management Plan (OEMP) for the Googong Township Water Recycling Plant and Network. The requirement for DPI Water to be consulted is stated in Condition D7 of the project approval for the Googong Water Cycle Project (MP08_0236).

DPI Water is satisfied that the consultation requirements have been met in respect of preparation of the OEMP. A key section for DPI Water is Appendix F – Water Management Plan which has been commented on previously and was approved by Department of Planning and Environment in November 2015. No further comment in relation to application of the *Water Management Act 2000* and associated policies is required.

It is recommended discussions continue with relevant DPI Water staff in relation to necessary s60 approvals under the *Local Government Act 1993* to construct and operate water and waste water facilities.

Should you have any further queries in relation to this submission please do not hesitate to contact Tim Baker on (02) 6841 7403.

Yours sincerely

Mitchell Isaacs
Director Planning Policy & Assessment Advice – DPI
11/04/16