Design and Construction of Stage AB of the Googong Water Recycling Plant (WRP)

Contract Number WRP01

Operation Environmental Management Plan - Process Commissioning and Verification

DOCUMENT No. 8553-PLN-012

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1.1	20/2/2015	RPS Manidis Roberts	CH	RS	Template prepared for JHPL inputs
2	16/4/2015	JHPL	Lisa Chan	Steve Merange	Inputs by JHPL
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5	OEH – Biodiversity and Aboriginal Heritage	
6	NSW Office of Water	
7	NSW Health	

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Acronyms and glossary

AMS	Activity Method Statement
BWPS	Bulk water pumping station
CDU	Chemical dosing unit
CoA	Minister for Planning's Condition of Approval
Contractor	John Holland PL
CIC	Canberra Investment Corporation
CIP	Community Information Plan
DP&E	Department of Planning and Environment
EA	Environmental Assessment
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 (the Proponent)
ICON Water	Water Utility that supplies potable and bulk water to Canberra and Queanbeyan
IWC	Integrated Water Cycle
JHET	John Holland Event Tracking
JHPL	John Holland Proprietary Limited (Contractor)
SDS	Safety Data Sheet
NH	Neighbourhood
NOW	NSW Office of Water
OEH	NSW Office of Environment and Heritage
OEMP	Operation Environmental Management Plan
POEO Act	*Protection of the Environment Operations Act 1997*
Principal	GTPL
Process Designer	GTPL Principal's Engineer
Proponent	GTPL
PTWL	Pink-tailed Worm-lizard
QCC	Queanbeyan City Council
RMS	Roads and Maritime Services

SoC	Statement of Commitment
SOP	Standard Operating Procedure
SPS	Sewage pumping station
STP	Sewage treatment plant
WRP	Water recycling plant
WMP	Water Management Plan

1 Introduction

1.1 Background

Googong Township Proprietary Limited (GTPL) – a partnership between Canberra Investment Corporation (CIC) and Mirvac, is responsible for the development of the new Googong Township that will be located in the Canberra region, around 7 km south of Queanbeyan in NSW. The new Googong Township will be home to about 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.

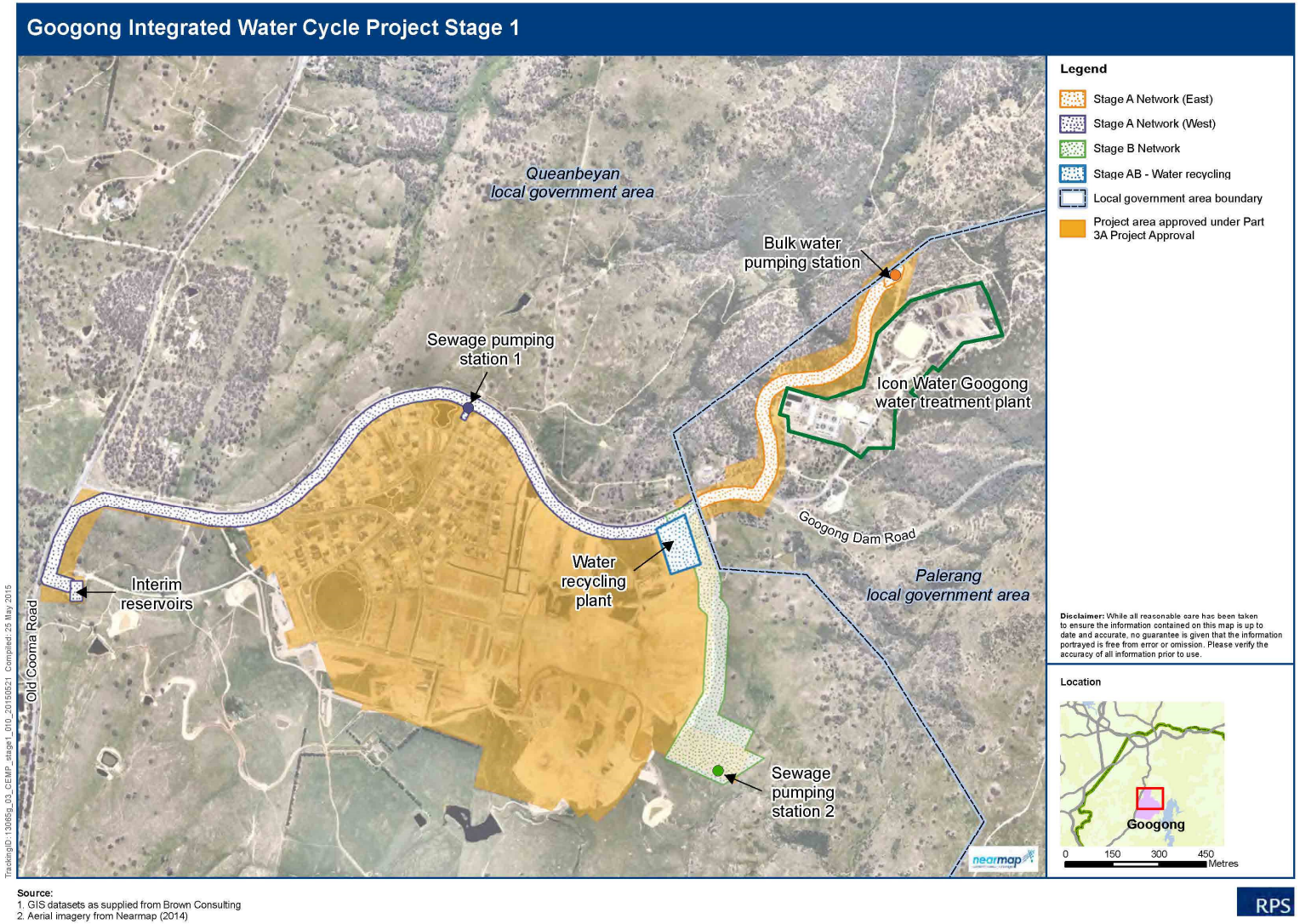
The Googong Township IWC Project is being constructed and operated in stages to ensure the infrastructure is correctly sized to meet the incremental level of demand.

Stage 1 of the IWC comprises new 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 includes a new WRP, temporary reservoirs for recycled and potable water, pumping stations and mains pipework (including rising and distribution mains) for sewage, recycled water and potable water.

References to 'Stage A', 'Stage B' and 'Stage AB' throughout this document relate to sub-stages of the Stage 1 IWC Project.

The Stage AB WRP detailed design, construction, process commissioning and verification is being delivered by JHPL (as the Contractor) and in accordance with the contract flowchart, provided in Figure 2. As shown in the flowchart, the Operation Environmental Management Plan (OEMP) is prepared and implemented by JHPL for process commissioning and verification of the Stage AB WRP (referred to as 'testing' under Section A1.1 of the EPL). A separate OEMP will be prepared and implemented by Queanbeyan City Council (QCC) for the operation of the Stage AB WRP following its handover by GTPL.

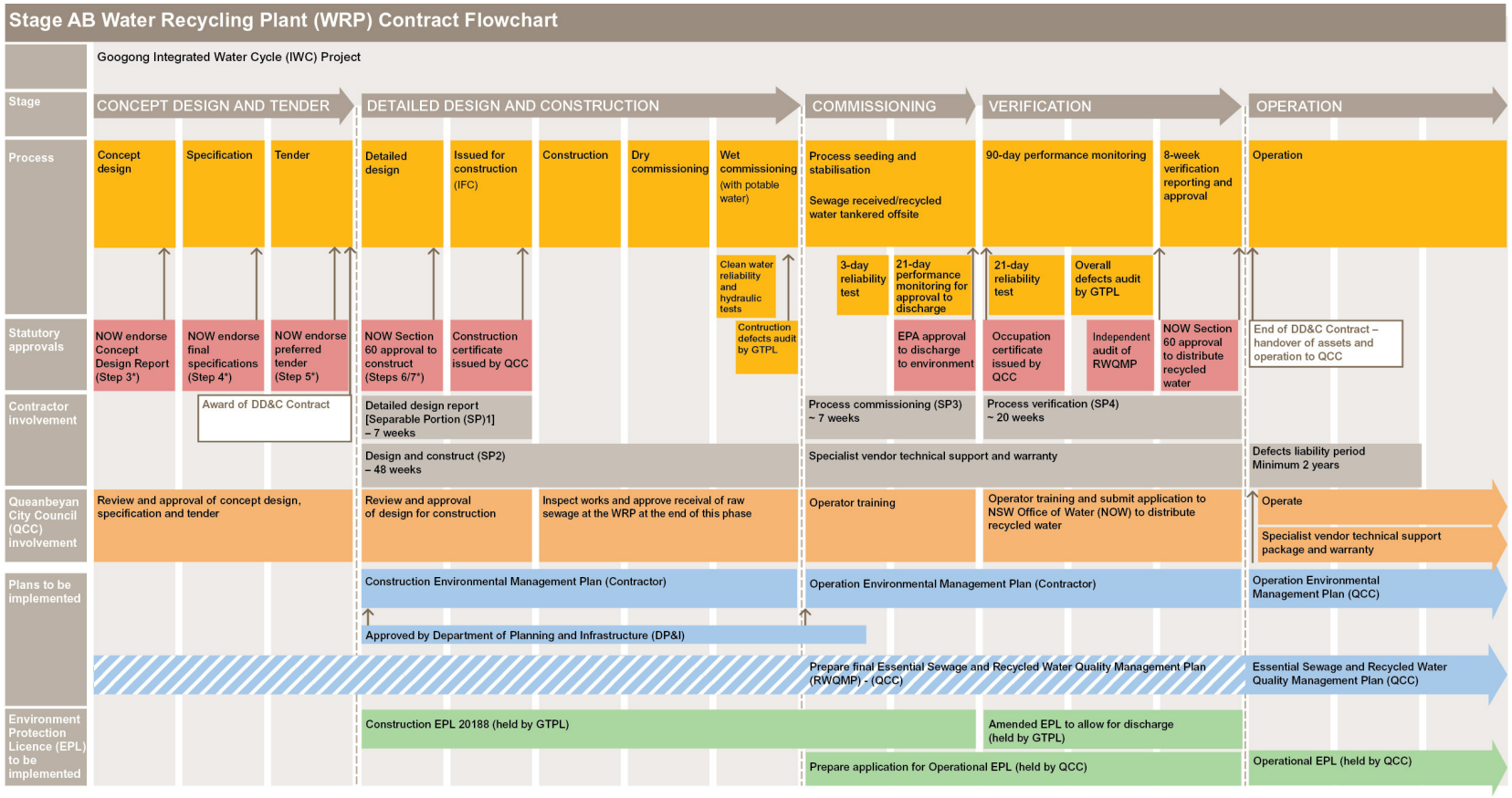
Figure 1 Stage 1 (Stages A and B) of the Googong Township IWC Project



Source:
1. GIS datasets as supplied from Brown Consulting
2. Aerial imagery from Nearmap (2014)

RPS

Figure 2 Stage AB WRP Contract Flowchart



Manrob-PRO-IMG-00001, version 10.0, 14 April 2014

RWQMP drafted and to be considered during design, construct and commissioning phases

* Refers to the NOW Section 60 approval – Application process for 'design and construct' projects http://www.water.nsw.gov.au/ArticleDocuments/36/town_regs_design_construct_approval_process_diagram.pdf.aspx

1.2 Staging

Stage 1 of the Googong Township IWC Project is being constructed in stages and will also be operated in stages to meet the incremental demand for services and operational constraints. Stage A – Network (comprising Bulk Water Pumping Station (BWPS), water and sewage mains, interim reservoirs and Sewage Pumping Station (SPS)) will operate first until the WRP is operational. This is because the WRP cannot be commissioned and subsequently operated until there is sufficient sewage load. As such, operation of Stage A – Network will continue until an equivalent population (EP) of 600 (approximately 200 occupied dwellings) is reached and commissioning of the WRP commences.

The proposed operational stages for Stage 1 presented in the Staging Report (Manidis Roberts, 2012) included:

- Stage A – Network – operation for up to 600 Equivalent Population (EP) (approximately 194 occupied dwellings).
- Stage A – Network and Stage AB WRP – operation for up to 1,900 EP (approximately 653 occupied dwellings).
- Stage A – Network, Stage AB WRP and Stage B – Network – operation for up to 3,600 EP (approximately 1,175 occupied dwellings).

As the design and construction programs for Stage 1 have progressed since the finalisation of the Staging Report, it has been determined that the '*Stage A – Network and Stage AB WRP – operation for up to 1,900 EP*' operational stage is no longer required. Hence delivery of the WRP has moved straight to a combined Stage AB of 4,700 EP operational capacity (one quarter of the ultimate WRP capacity). It is assumed that a project modification will be sought in the future to allow operation of the WRP to service 4,700EP.

For each of the remaining two stages one or more Operation Environmental Management Plans (OEMPs) will be prepared and implemented. An OEMP has already been prepared for the operation of Stage A – Network.

Note that the operational phase of Stage AB WRP does not include construction of the WRP – this activity is covered by the relevant Construction Environmental Management Plan (CEMP). Process commissioning and verification of the WRP (referred to as 'testing' under Section A1.1 of the EPL) is considered part of Stage AB WRP operations under the Part 3A Project Approval, and is the subject of this OEMP.

1.3 Purpose of this document

The purpose of this OEMP is to provide an approach to the management of environmental issues during process commissioning and verification of Stage AB WRP only, and to meet the requirements of the Conditions of Approval (CoA) and Statement of Commitments (SoC) for the Googong Township IWC Project, where relevant.

Condition of Approval (CoA) A6 allows GTPL to submit 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 has been prepared to consider operation of Stage AB WRP during process commissioning and verification (referred to as 'testing' under Section A1.1 of the EPL). A separate OEMP will be prepared by Queanbeyan City Council (QCC) for the operational phase of the Stage AB WRP.

For process commissioning and verification of the Stage AB WRP, John Holland Group (JHPL) as Contractor to GTPL will take the lead operational role for the WRP.

This OEMP, while relevant to process commissioning and verification of the Stage AB WRP only, sets up a framework for managing operational environmental risks and will be a 'living' document that will be updated throughout the various stages of the Googong Township IWC Project.

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 updated at the review milestones, listed in Section 1.11. As GTPL 'hands over' the Stage AB WRP to QCC following process verification, an updated OEMP, prepared by QCC, will reflect the changes in WRP operator and the transfer of responsibilities.

This OEMP has been prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004) and is the overarching document in the environmental management system that includes a number of other management documents. The environmental management system structure is described in Section 1.9.

1.4 Conditions of Approval and Statement of Commitments

Table 1 and Table 2 outline where in this document (or in other project documents) the CoA and SoCs applicable to the OEMP are addressed for the Stage AB WRP.

Table 1 Project Approval CoA requirements for Stage AB WRP

CoA No.	Requirement	Reference/Comments
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 3.2 Appendix C
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
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
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 environmental management documents identified in Section 1.9
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 4.3
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 4.3 Appendix C

CoA No.	Requirement	Reference/Comments
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.	Refer Water Management Plan (WMP)
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 4.3
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 4.3, 3.2
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 4.3
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 3.2 and 4.3
B10	The Proponent shall ensure that no green waste is burned on site during the life of the project.	Section 4.3
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; (c) For liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and (d) 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 3.2 and 4.3

CoA No.	Requirement	Reference/Comments
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; (e) 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. (f) Details of the timing and progressive implementation of the visual mitigation works; and (g) 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.	Refer Landscape Management Plan
B17	The Proponent shall: (a) Take all practicable measures to mitigate off-site lighting impacts from the construction and operation of the project; and (h) Ensure that all external lighting associated with the project complies with *Australian Standard AS4282 – 1997 – Control of the Obtrusive Effects of Outdoor Lighting.*	Section 4.3
D1	Noise emitted from the operation of the project-related infrastructure shall not exceed 35dB(A) ($L_{Aeq(15min)}$) 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 4.3
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.	Not Applicable to this OEMP as drinking water is not being supplied.
D3	Ongoing management and monitoring of the supply of the drinking water shall form part of the NSW Drinking Water Monitoring Program.	Not Applicable to this OEMP as drinking water is not being supplied.

<table>
<tr><th>CoA No.</th><th>Requirement</th><th>Reference/Comments</th></tr>
<tr><td>D4</td><td>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).</td><td>Not Applicable to this OEMP as recycled water is not being supplied during this phase.</td></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. 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>Refer WMP
Section 4.3 and 8.2</td></tr>
<tr><td></td><td>Table D1 Effluent quality limits
<table>
<tr><th>Parameter</th><th colspan="2">Effluent discharge limits to environment</th></tr>
<tr><th></th><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></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 and grease</td><td>mg/L</td><td>2</td></tr>
</table></td><td></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>Refer Water Management Plan (WMP)</td></tr>
<tr><td>D7</td><td>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:</td><td>This Plan.</td></tr>
<tr><td></td><td>(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;</td><td>Section 3.1 and 3.2
Appendix C</td></tr>
</table>

CoA No.	Requirement	Reference/Comments
	(b) Specific consideration of relevant measures to address any requirements identified in the documents referred to under condition A1;	This Plan
	(c) A management organisational chart identifying the roles and responsibilities for all relevant employees involved in the operation of the project;	Section 4.1
	(d) Overall environmental policies and principles to be applied to the operation of the project;	Section 3.3
	(e) Management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;	Section 3.3
	(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:	This Plan.
	(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 4.3 and 7.5
	(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 4.3 and 6.3
	(iii) air quality impacts, particularly odour;	Section 4.3
	(iv) operational traffic impacts, particularly during maintenance, and procedures to restore any damage attributable to the project during the operation phase;	Section 4.3
	(v) mosquito control and the potential for algal blooms;	Refer WMP
	(vi) impacts of operational activities on the Googong Dam and foreshores area, particularly water quality;	Refer Googong Foreshores Interface Management Strategy.
	(vii) hazard and safety and emergency management measures including measures to prevent and control bushfires;	Section 4.3 and 7.5
	(g) Procedures for the periodic review and update of the Operation Environmental Management Plan as necessary;	Section 1.11 and 8.6
	(h) the Management Plans listed under conditions D8 and D9; and	Refer WMP and Pink-tailed Worm-lizard Protection and Management Plan
	(i) the environmental monitoring requirements outlined under this approval.	Section 4.3 and 8.2

CoA No.	Requirement	Reference/Comments
	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 1.8
D8	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:	Refer WMP
	(a) Surface Water Monitoring Program, including:	Refer WMP
	(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;	Refer WMP
	(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;	Refer WMP
	(iii) a program to monitor and assess: ▪ surface water flows and quality; ▪ impacts on water users; ▪ stream health and habitat; and ▪ channel stability;	Refer WMP
	(b) a Groundwater Monitoring Program, including:	Refer WMP
	(iv) detailed baseline data of groundwater levels, yield and quality in the region, and privately-owned groundwater bores, that could be affected by the project;	Refer WMP
	(v) groundwater impact assessment criteria including trigger levels for investigating any potentially adverse groundwater impacts;	Refer WMP
	(vi) a program to monitor and assess: ▪ impacts on the groundwater supply of potentially affected landowners; ▪ impacts on any groundwater dependent ecosystems and riparian vegetation;	Refer WMP
	(c) a Recycled Water Flow Release Protocol, including:	Refer WMP
	(vii) recommended discharge rates based on baseline data of receiving waterways and meteorological conditions;	Refer WMP
	(viii) the detailed design and operation specifications for the discharge structure/s;	Refer WMP

CoA No.	Requirement	Reference/Comments
	(ix) procedures for the review and amendment of flow release protocols based on the outcomes of monitoring;	Refer WMP
	(d) a Surface and Ground Water Response Plan, including:	Refer WMP
	(x) a response protocol for any exceedances of the surface water and groundwater assessment criteria;	Refer WMP
	(xi) measures to notify and compensate landowners of privately-owned land whose water supply is adversely affected by the project; and	Refer WMP
	(xii) measures to mitigate and/or offset any adverse impacts on waterways, groundwater dependent ecosystems and/or riparian vegetation; and	Refer WMP
	(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:	Refer WMP
	(xiii) include detailed baseline data of the soil properties of the proposed irrigation areas, including salinity levels and a nutrient budget;	Refer WMP
	(xiv) identify any potential off-site risks and impacts and describe measures to minimise any environmental impacts;	Refer WMP
	(xv) include a protocol for the use of recycled effluent for irrigation including application rates and restrictions; and	Refer WMP
	(xvi) include a program to monitor areas subject to irrigation.	Refer WMP
	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.	Refer WMP
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 4.3
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 4.3

CoA No.	Requirement	Reference/Comments
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 7.4

Table 2 SoC requirements for Stage AB WRP OEMP

SoC No.	Requirement	Reference/Comments
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.	Refer WMP
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 meteorological data, collected at the WRP site for at least 12 months prior to commissioning. ▪ Site specific odour data collected during and following commissioning, prior to the residential development of the immediate area west of the WRP.	Section 8.2
AQ3	Odour complaints will be registered and investigated. Verified odour issues will be addressed with engineering, operational or other mitigation and management measures.	Section 6.3
D3	The construction and operation of the Project will comply with Queanbeyan City Council's Development Specification – Googong.	Section 6.1
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.	This Plan and WMP
G3	Develop a groundwater monitoring program for the Project in consultation with relevant stakeholders. This program will address the following:	Refer WMP
	▪ The salt levels in groundwater will be regularly monitored during and after Stage 1 of the Project.	Refer WMP
	▪ 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.	Refer WMP

SoC No.	Requirement	Reference/Comments
	▪ The monitoring of salt levels in the receiving waters will be indicative of the effectiveness of the stormwater system (refer below).	Refer WMP
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.	Refer WMP
G8	Undertake the groundwater monitoring program as outlined in Table 12 of this report [Submissions Report].	Refer WMP
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.	Section 4.3 Appendix C
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:	Refer Essential Sewage and Recycled Water Quality Management Plan (RWQMP).
	▪ Developing the RWQMP through hazard identification (for the operation of the recycled water system and use of recycled water).	Refer RWQMP
	▪ Identifying the significant human and environmental health risks.	Refer RWQMP
	▪ 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.	Refer RWQMP
	▪ Completing the RWQMP, based on the monitoring results.	Refer RWQMP
HH3	The Proponent will apply the following risk management practices to limit exposures to recycled water:	Refer RWQMP. Recycle water will not be supplied for use as part of the scope of this OEMP.
	▪ Installation regulations and codes of practice that include systematic processes to reduce the probability of cross□connections.	Refer RWQMP
	▪ Materials codes and regulations that easily discriminate drinking and recycled water plumbing.	Refer RWQMP
	▪ Regulations that limit the legal installation and modification of plumbing systems to licensed individuals.	Refer RWQMP
	▪ Education on recycled water use and the need to avoid creating cross-connections.	Refer RWQMP and Community Education Strategy

SoC No.	Requirement	Reference/Comments
	▪ Installation of backflow prevention.	Refer RWQMP
	▪ Operational checking (that is, testing of recycled effluent quality following treatment) and connection auditing.	Refer RWQMP Section 8.2
	▪ 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.	Refer RWQMP and Community Education Strategy
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 4.3 and 8.2
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:	Refer WMP
	▪ The trade-off between potable water savings, reduction in stormwater discharges and increased recycled water discharges.	Refer WMP
	▪ Relative impacts of excess recycled water discharges compared to impacts on soil and groundwater from recycled water uses.	Refer WMP
	▪ The timeframe for relative comparisons of impacts of components of the water cycle will be determined in consultation with the relevant government agencies.	Refer WMP
	▪ The ability to feedback results for further stages of Googong Township.	Refer WMP
OP2	Telemetry will be installed on all major water cycle infrastructure to gather operational data.	Section 4.3
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 1.11 and 8.6
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 4.3

SoC No.	Requirement	Reference/Comments
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 4.3 and 7.5 Refer RWQMP
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 4.3 and 5.1
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.	Refer WMP
	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.	The WRP has been designed to minimise the need for chemical addition for phosphorous removal. As part of Process Verification optimisation of TP removal will be undertaken
	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.	Community Education Strategy

SoC No.	Requirement	Reference/Comments
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 4.3
V1	Additional vegetation will be planted along site boundaries to obscure views of infrastructure from sensitive receivers.	Refer Landscape Management Plan
W2	Operational management of wastes will be incorporated into the OEMP for the key sites. Some inclusions are procedures for:	Section 4.3
	▪ The collection and transportation of grit and screenings from the WRP to an appropriately licensed facility.	Section 4.3
	▪ 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).	Section 4.3
	▪ Management and monitoring of the discharge of treated effluent (recycled water) during commissioning and verification phases of the WRP operation.	Section 4.3 and 8.2
	▪ Waste management for putrescible and recyclable wastes generated from the WRP and other water cycle infrastructure.	Section 4.3
	▪ Procedures for the collection and dewatering of any solid matter removed through maintenance activities of water cycle infrastructure, and transportation and disposal off site.	Section 4.3
	▪ Vehicle routes, and the timing of trips, associated with waste management, in consideration of the traffic management plan.	Section 4.3
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.	Refer WMP
	▪ Details of the monitoring program will be determined in consultation with relevant government authorities/stakeholders (including the OEH, DPI and, potentially, ICON Water). Such consultation will ensure the sharing of available data for the Queanbeyan River for comparative and impact assessment purposes.	Refer WMP
	▪ 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).	Refer WMP
	▪ Monitoring will commence approximately 12 months prior to commissioning the water recycling plant.	Refer WMP

SoC No.	Requirement	Reference/Comments
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.	Refer to WMP.

1.5 Environment Protection Licence 20188 conditions

GTPL is the holder of Environment Protection Licence (EPL) 20188 issued under the Protection of the Environment Operations Act 1997 (POEO Act). EPL 20188 contains a number of licence conditions that are relevant to Stage AB WRP during process commissioning and verification. The EPL is included at Appendix A.

1.6 EPBC Act Approval

Table 3 presents the EPBC Act condition of approval that is relevant to Stage AB WRP.

Table 3 EPBC Act Condition of Approval

Condition No.	Requirement	Reference/Comments
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:	Refer Googong Foreshores Interface Management Strategy (GFIMS)
i.	Induct construction workers and contractors about requirements to protect threatened species and the environment on Commonwealth land.	Refer GFIMS
ii.	Provide indicative environmental management checklists to assist with monitoring the implementation of environmental management obligations during construction works.	Refer GFIMS
iii.	Establish and maintain fences.	Refer GFIMS
iv.	Identify and implement erosion and sedimentation control measures.	Refer GFIMS
v.	Identify and implement appropriate weed hygiene measures	Refer GFIMS
vi.	Protect and maintain the Googong Foreshores buffer area.	Refer GFIMS
vii.	Provide details of financial contributions for the publishing, monitoring and review of the Googong Foreshores Plan of Management.	Refer GFIMS
viii.	Provide details of financial contributions for capital and recurrent costs associated with the implementation of the Googong Foreshores Plan of Management.	Refer GFIMS
ix.	Manage community and water supply impacts, including measures from the Queanbeyan Local Environment Plan (Googong) 2009.	Refer GFIMS
x.	Provide details of an environmental education program, which must include information about the protection of water quality in the Googong reservoir.	Refer GFIMS

Condition No.	Requirement	Reference/Comments
xi.	Indicate timing and frequency of monitoring to determine impacts and effectiveness of mitigation measures.	Refer GFIMS
xii	Provide performance indicators, specifying outcomes to be achieved and reports of compliance at key milestones.	Refer GFIMS
xiii.	Undertake corrective actions if management measures are not achieved.	Refer GFIMS
xiv.	Clearly state the person or persons responsible for each management measure, and	Refer GFIMS
xv.	Provide details of how the area to be managed under the Googong Foreshores Interface Management Strategy will be managed in perpetuity.	Refer GFIMS
	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.	Refer GFIMS
	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.	Refer GFIMS
	The approved Googong Foreshores Interface Management Strategy must be implemented.	Refer GFIMS

1.7 Consultation

Consultation with relevant stakeholders and government authorities has continued through the development of this OEMP. Those consulted include:

- Environment Protection Authority (EPA).
- Office of Environment and Heritage (OEH).
- NSW Office of Water (NOW).
- NSW Health.
- ICON WATER.
- QCC.

As part of the preparation of this OEMP, the stakeholders listed above were issued a draft copy of the plan for review by GTPL.

1.8 Certification and approval

This OEMP must be submitted by GTPL for approval to the Director-General of DP&E. Submission to DP&E is required no later than one month prior to commencement of operation or as otherwise agreed, and the OEMP must be approved by the Director-General of DP&E prior to the commencement of operation.

The scope of this OEMP covers the commencement of operation under the Contractor's responsibility of process commissioning and verification. A separate OEMP will be prepared by Queanbeyan City Council (QCC) for the operational phase of the Stage AB WRP that will be submitted to the DP&E for approval.

1.9 Environmental management system structure

1.9.1 Operation Environmental Management Plan (CoA D7)

This OEMP provides the system to manage and control the environmental aspects of process commissioning and verification of Stage AB WRP. It provides the overall framework to ensure environmental impacts are minimised and legislative and other requirements are fulfilled.

1.9.2 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 by GTPL to identify and manage specific impacts and aspects related to water. Parts of the WMP are applicable to the Stage AB WRP, and the WMP should be read in conjunction with this OEMP and any other/future OEMPs.

The WMP includes 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.

1.9.3 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 would be established by GTPL and that has been 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.

1.9.4 Other project documents

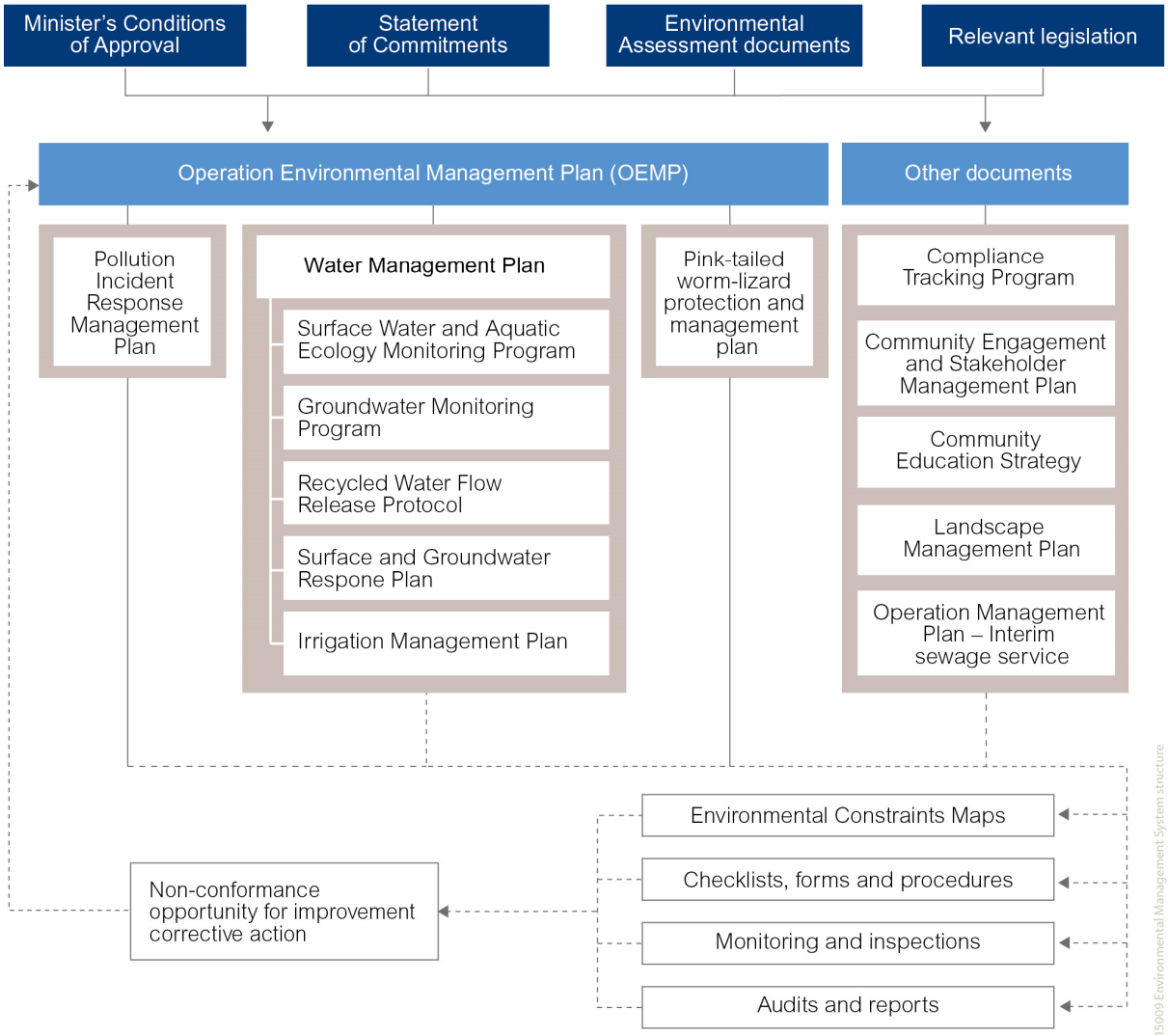
GTPL and QCC are responsible for the implementation of other project documents as required by the CoA or SoC. These include:

- 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) – QCC.

Where relevant, JHPL will comply with these project documents for the process commissioning and verification of Stage AB WRP. JHPL may also prepare additional documents for inclusion in the EMS.

Figure 3 shows the structure of the environmental management system for Stage AB WRP and its relationship to other project documents.

Figure 3 - Environmental Management System structure



1.9.5 Environmental Constraints Map

Constraints maps may be prepared to detail environmentally sensitive areas such as flora features, local waterways, recorded threatened fauna habitat, heritage sites and sensitive receivers.

Environmental control plans may also be prepared for discreet sites and include information such as environmentally sensitive areas (no-go areas), erosion and sediment control measures, sensitive receivers, designated work areas and access tracks.

An Environmental Constraints Map has been prepared for Stage AB WRP and depicts watercourses, existing and future sensitive receivers, Aboriginal heritage sites, threatened species, and Endangered Ecological Community (EEC) areas. The Environmental Constraints Map is included at Appendix B.

1.9.6 Environmental procedures, forms and checklists

Environmental procedures are tools used to document an environmental process. Project-specific procedures will be developed by JHPL for the operation of Stage AB WRP during process commissioning and verification. These standard operating procedures will be developed prior to commencement of operations and will include procedures such as disposal of treated effluent offsite, disposal of waste screenings, grit and biosolids offsite, and chemical deliveries.

1.10 Distribution

This OEMP will be made available to all JHPL personnel and sub-contractors. An electronic copy will be uploaded to the Googong IWC Project website [www.compliance.googong.net].

The document is uncontrolled when printed. One controlled hard copy of the OEMP and supporting documentation will be stored at GTPL's office and at the WRP site.

Registered copies will be distributed to:

- GTPL.
- QCC.
- JHPL (operating contractor).
- Department of Planning and Environment (DP&E).
- NSW EPA.
- OEH – Biodiversity and Aboriginal heritage.
- NSW Office of Water
- NSW Health.

1.11 Revision

A document review process will ensure that this OEMP is updated as appropriate for the specific works that are occurring during process commissioning and verification of the Stage AB WRP and other subsequent stages of the IWC Project. It is proposed that this OEMP will exist as a separate document to the OEMP for Stage A – Network. Opportunities for combined OEMPs for Stage A – Network, Stage AB WRP and/or Stage B – Network will be investigated as assets are handed over to QCC for ultimate operation.

1.11.1 Review of OEMP (during process commissioning and verification of the Stage AB WRP)

JHPL will co-ordinate the review and distribution, as appropriate, of the OEMP for Stage AB WRP until completion of the process verification.

Revision of the Stage AB WRP OEMP may be triggered by findings of the monitoring and audit reports and non-conformance register prescribed for Stage AB WRP in this OEMP (refer Section 8.6). The review may result in changes to operations, to mitigation measures or monitoring/reporting requirements or other updates to the OEMP.

For the revision of the Stage AB WRP OEMP, JHPL will ensure that documentation is:

- Developed in consultation with relevant stakeholders identified in Section 1.6, reviewed and approved prior to issue.
- Issued for use.
- Controlled and stored for the legally required timeframe.
- Removed from use and archived when superseded or obsolete.

JHPL's Environment Manager or Commissioning Manager will endorse minor changes to the Stage AB WRP OEMP. Minor changes would typically include those that:

- Are editorial.
- Do not increase the extent of environmental impacts when considered individually or cumulatively.
- Do not restrict the project's ability to meet all CoA and environmental obligations.

JHPL's Environment Manager or Commissioning Manager will inform GTPL of any minor changes, and provide a copy of the updated OEMP to GTPL so that it can be distributed to the controlled copyholders.

Where JHPL's Environment Manager or Commissioning Manager determines that a change is not minor, the revised OEMP will be sent to DP&E for approval.

A register will identify the current revision of particular documents. Revised documents will be distributed to controlled copyholders, as identified in Section 1.9.

2 Project description

Commissioning and testing of the Stage AB WRP is undertaken after the completion of construction. The commissioning and testing is performed in two stages:

- Process Commissioning (SP3)
- Process Verification (SP4)

After Process Verification (SP4), the WRP will be operated by QCC. The WRP will treat sewage from the Googong township to a standard suitable for non-potable urban reuse and discharge to the environment. The objective of the process commissioning and process verification phases is to demonstrate that the WRP can operate in compliance with the requirements of the EPL for environmental discharge and comply with the recycled water quality requirements of the NOW approval.

Management of the process commissioning and verification phases is covered in the Googong WRP Project Commissioning Plan, 8553-PLN-006.

2.1 Process commissioning

During process commissioning, the biological process will be started by seeding with activated sludge. Sewage will be introduced to the WRP via the operation of the upstream SPS1.

The seed sludge will be tankered to the WRP site from an STP with a suitable activated sludge to enable process startup. A licensed tankering contractor will be used to transport the seed sludge. The Traffic Management Plan and Standard Operating Procedure is included in Appendix G & H. The seed sludge will be tankered onto the site and emptied into the Emergency Discharge Tank (EDT) via a fixed point coupling. The tanker discharge area will bunded to contain any spillage. The WRP odour control system will be operational prior to the introduction of seed sludge to extract and treat any odour emissions from the seeding activities. The seeding and startup of the WRP will be completed in accordance with the Seeding & Startup Plan, 8553-PLN-0014.

Chemicals will be delivered and used as part of the treatment process. A Traffic Management Plan and Standard Operating Procedure will be developed prior to delivery of any chemical on site and included in Appendix GH. Bulk chemicals are unloaded in a dedicated bunded area.

During process commissioning, the WRP will be monitored and adjustments made to the operation in order to establish and stabilise the biological treatment process. (Note: Process design and performance is by the GTPL Principal's Engineer). During the process stabilisation period it is expected that the effluent quality may not meet the EPL discharge criteria and hence will be required to be tankered to the Queanbeyan STP, Coppins Crossing or Lower Molongolo Water Quality Control Centre (LMWQCC) for disposal and treatment. The Traffic Management Plan and Standard Operating Procedure for effluent tankering is included in Appendix GH. Fixed point couplings and dedicated bunded areas will be provided for the connection of the tanker to the effluent collection point to minimise the risk of spillage on site. Multiple days' storage on site (over 7 days at the expected sewage inflow rate during commissioning) provides contingency in the event that tankers are unavailable for a period of time. Further, the SPS can be stopped, if required.

It is expected that the process commissioning duration will be 7 weeks duration and will include compliance testing of the effluent quality.

The purpose of the process commissioning phase is to confirm the readiness of the system to achieve the required performance, leading to treated effluent being discharged from the WRP to the designated discharge location, in compliance with the EPL.

In addition to the effluent performance, the individual unit processes and the odour control system will be tested to assess performance against the Technical Specifications.

2.2 Process verification

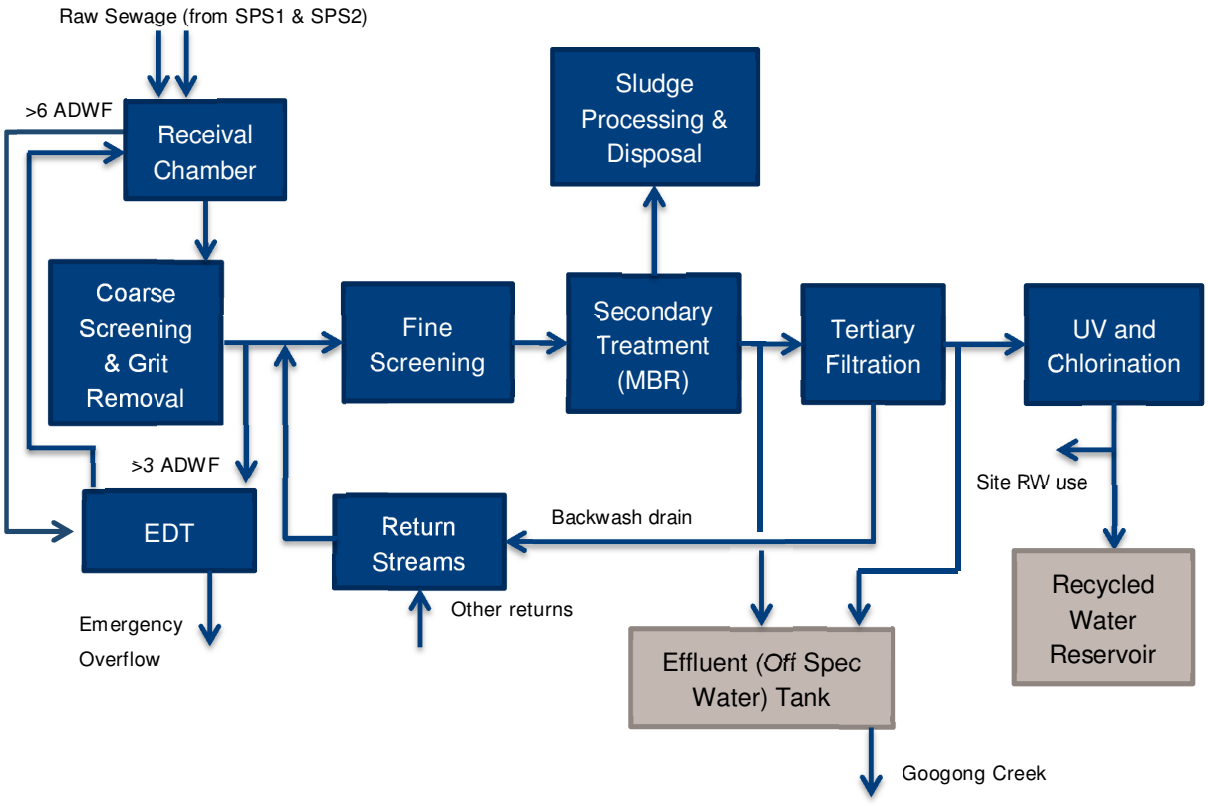
The process verification phase includes compliance testing and reliability trials over a period of 140 days. During the process verification phase, the WRP will be tested in 'normal operation', where the WRP is operated and maintained to a standard expected of a typical sewage treatment plant in NSW and in automatic operation. Effluent will be discharged to the designated discharge location as per the EPL.

In the event that effluent does not meet the effluent discharge criteria, the effluent will be tankered offsite as per the procedure developed for the Process Commissioning phase.

During the process verification phase, compliance testing will be completed to verify the WRP performance, leading to NOW approving the WRP for the supply of recycled water to the Googong Township.

In addition to the recycled water quality, the individual unit processes, effluent quality and the odour control system will be tested to assess performance against the Technical Specifications.

2.3 Description of the Stage AB – WRP elements



2.3.1 Receipt of sewage

There are two pump stations that pump sewage to the inlet works of the WRP. During the process commissioning and verification stage flows will be received from SPS 1 and SPS 2.

The SPSs and sewage network are operated by QCC and are controlled independently of the WRP.

The inflow of sewage to the WRP is monitored by the WRP control system.

2.3.2 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 the incoming rising mains 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.

2.3.3 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.
- Swing Anaerobic/Primary anoxic zone. The anaerobic zone allows for phosphorus removal, which is aided by chemical removal through ferric sulphate dosing. When biological phosphorous removal is not required, this volume will become part of the primary anoxic zone
- 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.

2.3.4 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 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,

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.

2.3.5 Chemicals

Several chemicals are utilised at the WRP:

- Ferric sulphate – to control odours and remove chemical phosphorus.
- Alum – to precipitate phosphorus.
- Sodium hydroxide – to increase alkalinity to aid the biological processes that occur within the bioreactor, increase pH for disinfection and chemical neutralisation
- Sodium hypochlorite – to disinfect the secondary effluent, clean both the MBR and tertiary membranes; scum suppression and emergency dosing.
- Sulphuric acid – to clean both the MBR and tertiary membranes.
- Citric acid – to clean both the MBR and tertiary membranes
- Acetic acid – a supplementary carbon source to assist the biological processes within the bioreactor
- Sodium Meta Bisulphite – for de-chlorination and chemical neutralisation
- Polymer – to aid waste sludge thickening and dewatering

The chemicals are stored in storage tanks located, together with dosing pumps, in a centralised, bunded area at the WRP (except for polymer, which is stored in the Dewatering Building). 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.

2.3.6 Discharges to environment

In the event that 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 location point at Googong Creek. This effluent will be compliant with the criteria limits of the EPL.

2.3.7 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 that flows to the Emergency Detention Tank (EDT). The EDT will receive wet weather flows greater than 3 x ADWF (34.3 L/s) that have been screened (6mm) and de-gritted at the inlet works. In the event of flows being received at the WRP at >6 ADWF (68.5 L/s), or power failure causing blockage of the packaged inlet works, the EDT will also receive flows which have been screened to 10 mm. In the event that the 10 mm overflow screen is blocked, the EDT may also receive unscreened sewage.

The Stage AB EDT capacity of 330 m^3 will ensure that all wet weather flow, for events up to the 1:10 yr design storm event, will be captured and treated at the WRP. Emergency storages at the SPSs 1 and 2 will be utilised for emergencies or wet weather events in excess of the 1:10 year ARI at the discretion of the Network Operator.

Operational control for wet weather events is automatically controlled by the SCADA system and overflow weirs at the inlet distribution chambers. Telemetry installed will notify the Plant Operator of an emergency

event. The upstream SPS's will operate based on two flow set points; a dry weather flow (DWF) flow set point and wet weather flow (WWF) set point. At each SPS, the pump operation will be controlled via a cut in and cut out level for operation at DWF. In the event of wet weather, the wet well level will continue to rise above the wet weather flow cut in level, leading to ramping up of the SPS pumps to deliver WWF. The SPS will operate to deliver WWF until the cut out level is reached, at which point the flow set point will decrease to DWF. Therefore, the WRP may receive a combination

The EDT will normally be empty under dry weather flow conditions. The EDT will gradually fill up during a major wet weather event. When the wet weather subsides, the EDT content will be returned to the inlet works for reprocessing using the EDT return pumps.

In the case where persistent wet weather occurs, which causes the available storage volume at the EDT to be exceeded, SPS 1 and 2 will deliver wastewater to the WRP at their WWF set points, and the excess wastewater will be discharged via the EDT to Montgomery Creek (on an emergency basis).

The EDT provides approximately 8 hours storage at the design average dry weather flows. There is an option to disinfect flows which are discharged to Montgomery Creek at the outlet of the EDT using sodium hypochlorite. Overflows to Montgomery Creek will most likely only occur during excessive wet weather (1-in-10 year event) where the bypassed flow will be heavily diluted. It is not proposed to dose chlorine on any overflow events during the process commissioning and verification phase of the WRP should such an event occur. Tests will be conducted on wet weather flow experienced during the process commissioning and verification phases to understand the faecal coliform level and chlorine demands. This information will then form the basis for implementing the bypass chlorination strategy

2.3.8 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.

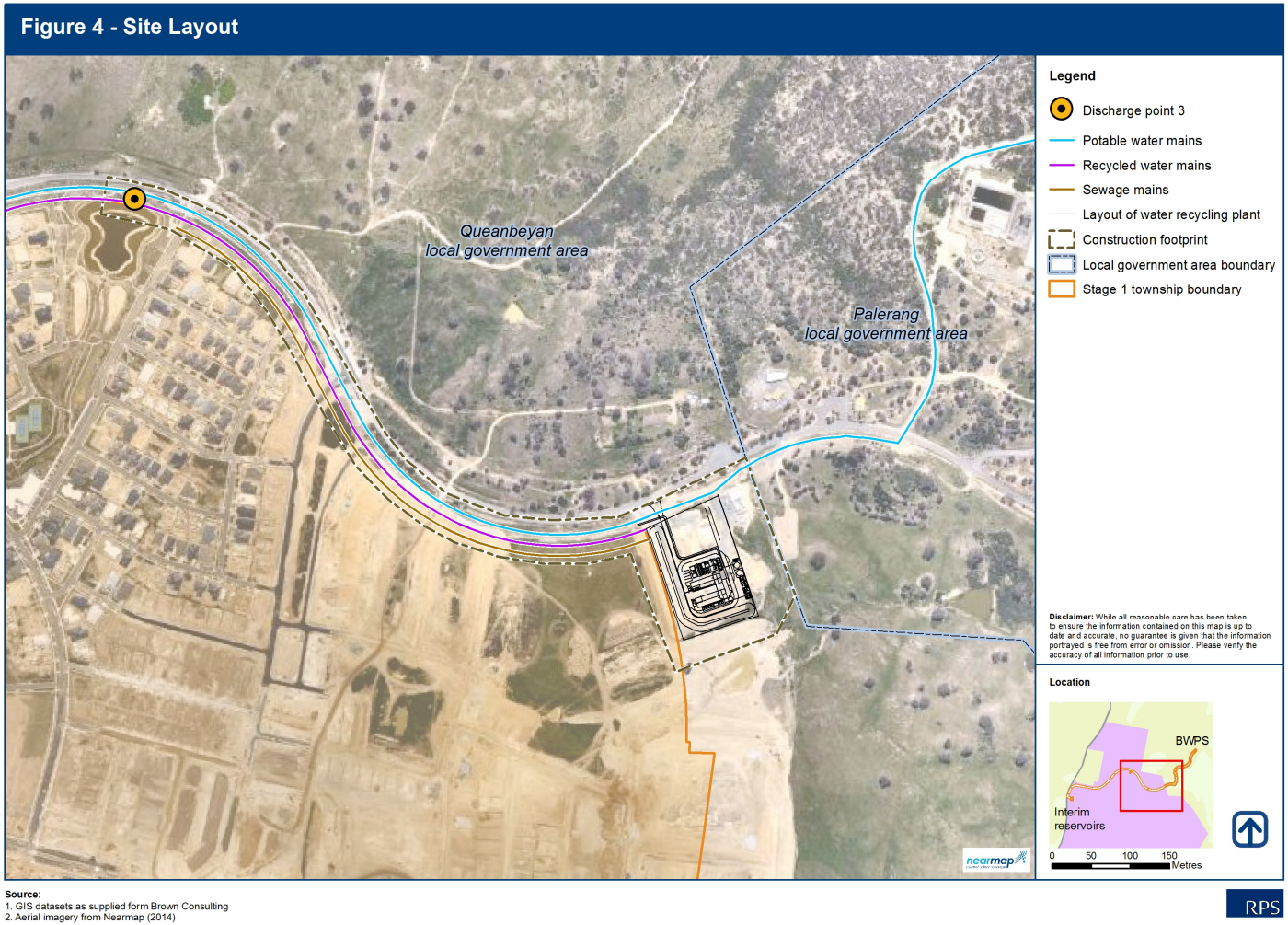
2.3.9 Odour control

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 Discharge Tank and General Purpose Pump Station

The Stage AB 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.

Figure 4 Site Layout - at Stage AB WRP and Pipeline



3 Planning

3.1 Legal and other requirements

A register of legal and other requirements for Stage AB WRP is contained at Appendix C.

3.1.1 Approval under Part 3A of the NSW Environmental Planning and Assessment Act 1979

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.

3.1.2 Approval under Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EBPC Act)

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.

3.1.3 Environment Protection Licence issued under the Protection of the Environment Operations Act 1997

The Protection of the Environment Operations Act 1997 (POEO Act) is the key piece of environment protection legislation administered by the OEH.

GTPL is the holder of Environment Protection Licence (EPL) 20188 issued under the POEO Act. EPL 20188 was amended on the 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 WRP are not permitted under this EPL (Section A1.3 of the EPL). An amendment to the EPL to enable operation of the WRP will be sought at a later date by QCC.

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. Appendix C outlines specific requirements for Stage AB WRP relating to the POEO Act.

3.1.4 Other legal requirements

Refer to Appendix C for a register of all legal and other requirements relevant to Stage AB – WRP.

3.2 Approvals, permits and licensing

A number of approvals, permits and licenses will be obtained for the operation of Stage AB WRP. Appendix C contains a register of all relevant legal and other requirements, identifying the need for any environmental approvals, permits and licenses. The register will be reviewed prior to the commencement of the process commissioning and process verification phases.

In addition, a number of permits are required for the removal of effluent waste offsite to a licensed STP, seed sludge transport to the WRP site from a licensed STP during process commissioning and residues (screenings and biosolids) to a landfill facility. These permits include:

- a trade Waste Agreement with ICON WATER as operator of Coppin's Creek and Lower Molongolo Water Quality Control Centre (LMWQCC)
- an Environment Protection Licence (EPL) for the transport of trackable waste through NSW into another state/territory (issued by EPA NSW).
- a geographical exemption for the movement of a controlled waste (NEPM waste code K130) from the Googong Township to the ICON WATER STP located in the ACT.
- a valid consignment authorisation number.

A Notification of Dangerous Goods on Premises is required to be sent to Worksafe for the storage of sodium hypochlorite, acetic acid, ferric sulphate, sodium hydroxide on site.

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 operations of Stage AB WRP, a copy of the Project Approval and all other relevant approvals will be available on the IWC Project website and the WRP site.

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.

3.3 The WRP Deed of Agreement between GTPL and QCC states the approval obligation for this OEMP rests with GTPL. While QCC does not have a formal approval role for this OEMP under Part 3A, the deed of agreement states that QCC must approve the pumping raw sewage from SPS1 to the WRP. Environmental policies

The environmental policy describes GTPL's and JHPL's commitment to continual improvement in environmental performance and compliance with applicable legal requirements.

Both GTPL's and JHPL's environmental policies will be displayed at the site office, and communicated to staff and other interested parties via inductions and ongoing awareness programs.

A copy of GTPL's and JHPL's environmental policy is provided in Appendix D.

3.4 Objectives and targets

Environmental objectives and targets for Stage AB – WRP are provided in Table 4.

Table 4 Environmental objectives and targets (including JHPL 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 Community Information Plan. Record and response to complaints within the timeframe specified in the Community Information Plan.	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.
Environmental Incident Frequency Rate (EIFR) Number of Class 1 & 2 incidents in the period x 1,000,000 divided by the number of hours worked in the period	Group – 0,3 Project – 0,0	Review of monthly environmental reports and incidents
All Environmental Incident Frequency Rate (AEIFR) Number of Class 1 & 2 incidents in the period x 1,000,000 divided by the number of hours worked in the period	Group – 12 Project – 8	Review of monthly environmental reports and incidents
Conduct Global Mandatory Requirements (GMR) Assessments	1 GMR self–assessment to be completed by the project every 2 months 1 external GMR assessment to be completed by the project every 6 months	Assessment tool
Conduct regular environmental observations	1/week by Supervisor	Site diary records.
Prevent serious environmental incidents	No class 1 or 2 incidents (refer JH-APP_SQE-010-02 Environment Incident Severity Classification)	
Training	All staff complete GMR training.	Training module.

4 Implementation and operation

4.1 Roles and responsibilities

GTPL Assistant Project Director

The environmental responsibilities of the GTPL Assistant Project Director include, but are not limited to:

- Review the OEMP and any environmental management plans and related documents prepared for Stage AB WRP.
- Ensure all project alterations are assessed for consistency against the approved IWC Project.
- Oversee the implementation of the OEMP and environmental management plans for Stage AB WRP.
- Liaise with government stakeholders and provide notification/information where environmental incidents have occurred.
- Monitor the environmental performance of Stage AB WRP in relation to GTPL requirements through the Compliance Tracking Program.

Black Mountain Construction Assurance (BMCA) Superintendent

The environmental responsibilities of the BMCA Superintendent include, but are not limited to

- Administer the contract with respect to environmental requirements
- Liaise with JHPL and GTPL with respect to the implementation of the OEMP
- Point of contact in the event of any unexpected finds on site

JHPL Project Manager

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

- Ensure all works comply with relevant regulatory and IWC Project requirements.
- Ensure the requirements of this OEMP are fully implemented.
- Liaise with GTPL and government authorities, as required.
- 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 all approvals, permits and licences.
- Ensure that all personnel receive appropriate induction training, including details of the environmental obligations.
- Ensure that complaints 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 Commissioning Manager, and GTPL Assistant Project Director.

Note that during the process commissioning and verification phases, the Project Manager role may not be a full time on site role as responsibilities are transitioned to the Commissioning Manager.

JHPL Commissioning Manager

- Ensure all commissioning activities comply with relevant regulatory and IWC Project requirements.
- Ensure the requirements of this OEMP are fully implemented.

- Liaise with GTPL and government authorities as required.
- 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 all approvals, permits and licences.
- Ensure that all personnel receive appropriate induction training, including details of the environmental obligations.
- Ensure that complaints are investigated to achieve effective resolution.
- Plan commissioning activities in a manner that avoids or minimises impact to environment.
- Control commissioning activities and implement/maintain effective environmental controls.
- Stop activities where there is an actual or immediate risk of harm to the environment and immediately advise the Project Manager and GTPL Assistant Project Director.
- Reports to the Project Manager

JHPL Environment Manager

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

- Develop, implement, monitor and update the Stage AB WRP Contractor OEMP and management plans (including a review of the plans after any Category One incident).
- Manage environmental constraints maps, develop environmental control plans (and register) and provide input into EWMS where required.
- Maintain and update the Risk Register.
- Ensure that that all environmental licences, approvals and permits are obtained and updated as required, and ensure that the Legal and Other Requirements Register is maintained.
- Report to the Project Manager and GTPL on environmental performance and prepare a Monthly Report.
- Undertake weekly inspections and audits.
- Develop and facilitate induction, toolbox talks and other training programs relating to environmental requirements for all site personnel.
- Maintain a Training Register of all project site inductions and environmental training.
- Stop activities where there is an actual or immediate risk of harm to the environment and immediately advise the Commissioning Manager, Project Manager, and the GTPL Assistant Project Director.
- Manage a Non Conformance and Environmental Incident Register and provide documentation on environmental incidents, non-conformance and corrective actions to Project Manager and the GTPL Assistant Project Director.

Note that during the process commissioning and verification phases, the Environment Manager role may not be required full time on site as responsibilities are transitioned to the Commissioning Manager.

Wider project team (including sub-contractors)

- Comply with the relevant requirements of the Contractor OEMP, or other environmental management guidance as instructed by a member of the Project's management.
- Participate in the compulsory IWC Project/site specific induction program, toolbox talks and daily pre-start meetings.

- Stop activities where there is an actual or immediate risk of harm to the environment and report any activity that has resulted, or has the potential to result, in an environmental incident immediately to the Commissioning Manager.

QCC

QCC are the Water Authority and will be the future operator of the facility at the completion of SP4. QCC will attend the Googong WRP site during the process commissioning and verification phases for inspections, meetings and training. Whilst on site, QCC personnel will

- Comply with the relevant requirements of the Contractor OEMP, or other environmental management guidance as instructed by a member of the Project's management.
- Participate in the compulsory IWC Project/site specific induction program, toolbox talks and daily pre-start meetings.
- Stop activities where there is an actual or immediate risk of harm to the environment and report any activity that has resulted, or has the potential to result, in an environmental incident immediately to the Commissioning Manager.

4.2 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 for Stage AB WRP Process Commissioning and Verification, an environment risk workshop was held to identify environmental risks. The outcome of this risk workshop provides the basis of the risk register (refer Appendix E). The risk register includes a list of activities associated with Stage AB WRP, related aspects, corresponding risks, mitigation and residual risk after mitigation.

The risk register will be reviewed by the Commissioning Manager and Environmental Manager during process commissioning and verification of Stage AB WRP, as required, to ensure it remains current. In particular, the environmental risk assessment will be updated:

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

An assessment of potential risk to the environment will also be undertaken as part of the development of AMS'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 Stage AB WRP OEMP as required.

In response to the risk assessment and to satisfy the CoA and SoC's for process commissioning and verification of the Stage AB WRP, a table of mitigation measures has been developed (refer Section 4.3). Responsibility for the implementation of mitigation measures has also been considered.

4.2.1 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 may cause changes to water quality, aquatic ecology, groundwater and stream banks and also affect the water supply of

downstream users. A Water Management Plan (WMP) has been developed to address these issues throughout the operation of the IWC Project. 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.

During the process commissioning and verification of the Stage AB WRP, effluent discharge to the environment shall not exceed the pollutant concentration limits stipulated in Condition L2.4 of the EPL. Sampling and analysis of the effluent discharge to the environment at compliance points 1 and 3 of the EPL will comply with Clause M2.2 of the EPL during the process commissioning and verification phase.

4.2.2 Waste

During Process Commissioning, treated effluent will be collected at the WRP and transferred offsite by the Sewage Tankering Contractor. Quantity of effluent collected is tracked via dockets from the Sewage Tankering Contractor. Handling of such waste could result in contamination of soil or water or from leaks during storage and transportation, if not appropriately managed. There are also considerations for waste volumes and quality so that sewage can be accepted by the receiving treatment plant. All trade waste approvals and permits are listed in Section 3.2, and will be obtained by the relevant body.

In the event that effluent compliance has not yet been met and there is a problem with availability of tankers, 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 1 day storage at the expected inflow rate during process commissioning.
- In the second instance, effluent will be stored in the recycled water storage tank, from where it can be collected by the tankers. This provides approximately 3.3 days storage at the expected inflow rate during process commissioning.
- In the third instance, if the filtrate tank and recycled water storage tank are full, effluent will overflow to the Emergency Discharge Tank, where a further approximately 2.6 days storage is available at the expected inflow rate during process commissioning.
- In the fourth instance, GTPL will stop the SPS 1 pump station, where up to an additional 5 days storage is available at the expected inflow rate during process commissioning. This is available in emergency situations, with approval from QCC. In this instance, effluent tankering from the SPS1 will need to be reinstated.

Residual wastes generated on site that are associated with the sewage treatment process are dewatered screenings and grit, and dewatered biosolids. All of these wastes 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 . The biosolids will be tested during the process commissioning and verification phase to confirm compliance with the Grade B criteria.

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 by a licensed waste contractor.

4.2.3 Traffic

Once the WRP is commissioned and prior to approval to discharge to the environment, treated effluent will be tankered from the WRP site to a licensed STP. A maximum of 20 tankers a day are allowed under Part 3A EA. Tankers will enter and exit the site from Googong Dam Rd. Refer to the Stage AB Network OEMP for traffic management in relation to the Interim Sewer Service out of SPS1.

A Traffic Management Plan will be prepared by the Effluent Tankering Contractor and will consider the route, timing and potential interactions with other operational vehicles.

A separate Traffic Management Plan will be prepared by the Seed Sludge Tankering Contractor for transport of seed sludge to the WRP.

Refer to Appendix G for the Traffic Management Plans.

Vehicle movements associated with operational activities will occur daily. Also, there will be 2-3 truck movements a month associated with chemical deliveries. These type of vehicle movements will have a negligible traffic impact.

4.2.4 Noise

Mechanical and electrical equipment used as part of the operation of the WRP will emit noise to the environment.

Noise generated from the operation of the WRP has been modelled to demonstrate that as per CoA D1, the noise level emitted from the WRP measured at any residence on privately owned land shall not exceed 35 dB(A) Leq (15min).

During commissioning the noise level emitted from the WRP will be measured and confirmed against the CoA.

To minimise noise impacts from effluent tankering operations, tanker movements from the site will be restricted to between the hours of 7am and 6pm, except in an emergency situation.

4.2.5 Odour

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.

Site specific odour data will be collected during the process commissioning and verification of the WRP. This will be used to confirm that the site achieves compliance against the environmental commitments.

4.2.6 Biodiversity

Areas of significance are identified in the Environmental Constraints Map included at Appendix B. It is unlikely that any operational activities will have any significant impacts on threatened flora and fauna.

Although a number of noxious and environmental weeds are identified in the project area, the spread of weeds is unlikely as vehicles will be using designated access roads. Weed maintenance will be managed on the WRP site in accordance with the Landscape Management Plan.

4.2.7 Cultural heritage

Known Aboriginal heritage sites are identified in the Environmental Constraints Map included at Appendix 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, exclusion fencing has been installed to protect the sites from inadvertent impacts.

4.2.8 Hazards, risks, safety and emergency

A commissioning risk assessment forms part of the outputs from the Commissioning Management Plan and identifies hazards, risks, safety and associated mitigation responses during the process commissioning and verification of the WRP. An outline of the key risks and contingencies are included below.

In the event of an emergency, the Workplace Emergency Response Plan describes the actions to take and reporting protocol.

In addition, the Pollution Incident Response Management Plan describes the management and controls required to minimise and control risks of a pollution incident.

The Stage AB WRP infrastructure allows for a treatment capacity of ADWF of 1.0ML/D, however, it is expected that during the process commissioning and verification phase, (which this OEMP covers) the inflow to the WRP will be approximately 0.15 to 0.2 ML/D. There is sufficient storage capacity both at the SPS and the treatment plant to cater for power outages, wet weather events or delays in tanker availability.

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 commissioning team of plant faults or critical alarms in the event of emergencies.

Spills

There is a risk of treated effluent spillage on site during tanker filling operations. The Standard Operating Procedure for effluent tankering describes the correct procedures, containments and the response to any spills. In the event of a spillage during tanker filling, valves will be immediately closed at the fill point. The tanker fill points will be fixed points with couplings and within the first flush drainage collection area. The WRP is designed with a first flush drainage collection system, which collects and contains surface runoff and sediment in a 40 kL tank 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. In addition, the Effluent Tankering Contractor will prepare an Incident Management Plan included in the Standard Operating Procedure. Tankering-related incidents on site will be managed in accordance with this Plan.

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 describes the correct procedure for chemical unloading and the appropriate response to spills on site. In addition, the Chemical Tankering 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 Workplace Emergency Response Plan will be implemented in the unlikely event.

During process commissioning, seed sludge will be brought to the WRP from a suitable STP. The seed sludge will be unloaded from the tanker via a dedicated and fixed coupling connection point at the Emergency Discharge Tank. This tanker discharge area is within the first flush drainage collection area which means any spillage will be collected within the 40 kL first flush storage tank. A Traffic Management Plan and Standard Operating Procedure for the transfer of seed sludge will be prepared to describe the operations, risks and contingency responses. This will include arrangements to contain any spills and detailed layout plans and maps of the unloading area.

Any spills that occur on site will have the full commitment of GTPL and JHG for containment, cleanup and return of the WRP to normal operation.

Overflows

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 2 days of storage at the expected average dry weather inflow of 0.150 ML/d during process commissioning and verification. In addition, refer to Section 2.3.7 Emergency Overflow Management.

The EDT, inlet chamber, bioreactor wet weather overflow chamber, filtrate storage tank, off-spec storage tank and recycled water storage tank is fitted with level instrumentation which is connected to the plant PLC/SCADA for control, monitoring and alarming to the Operator.

The utilisation of the emergency storage tanks will be managed at SPS1 and SPS2 in an emergency to reduce the potential for overflows due to inflows at the WRP. Refer to Stage AB Network OEMP.

Power outages

In the event of a power failure on site and inflow continues from the 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. In consultation and agreement with GTPL and QCC, to prevent emergency discharges, effluent tankering from the SPSs may recommence.

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.

Refer to Stage AB Network OEMP for management of power outages at the SPS 1/SPS2.

Bush fire

A Bushfire Assessment Report was conducted by UWS on 25th of September 2015. This report concluded that the bush fire hazard potential for the site was minimal and that the requirements of the associated standards have been achieved.

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.

Personnel on site will be trained on the appropriate bushfire and fire response.

Table 5 Operational risks for Stage AB WRP

Risk/hazard	Untreated impact	Treatment of risk	Treatment impact	Resulting risk to be managed
Power outage at WRP	Significant	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 EDT on site will provide up to 8 hrs storage at average dry weather flow. If EDT is full, sewage will flow to the emergency discharge point at Montgomery Creek. SPSs have storage capacity as well.	Low	-
Tankering contractor is not available to remove effluent from the WRP as scheduled (eg: labour strike, long weekend, contract default etc)	Moderate	The WRP has capacity to store effluent onsite for up to approximately 7 days at the expected inflow capacity during process commissioning. SPS has additional 5 days storage. Additional tankers may be required to remove stored effluent.	Low	Permits to allow additional tankering outside of 7am to 6pm hours of operation.
Spillage on site during effluent tankering operations	Moderate	Standard Operating Procedure developed for effluent tanker loading. Designated area on site for effluent unloading and attendance at all times by the unloading Operator. Personnel trained in SOP and Incident Response Plan in the event of a spill. First flush system will contain solids and sediment on site from specific areas.	Low	
Spillage on site during chemical unloading operations	Moderate	Standard Operating Procedure developed for chemical unloading. Chemical unloading area is fully bunded and contained. Attendance at all times by the unloading Operator. Personnel trained in SOP and Incident Response Plan in the event of a spill.	Low	

Risk/hazard	Untreated impact	Treatment of risk	Treatment impact	Resulting risk to be managed
Sewage inflow higher than expected during process commissioning (ie: greater than 0.15ML/d)	Low	The WRP is designed to treat up to 1.0 ML/D Additional tankers may be required to remove higher effluent flows.	Low	Permits to allow additional tankering outside of 7am to 6pm hours of operation
Increased inflow to the WRP during wet weather events	Low	The WRP is designed to treat up to 1.0 ML/D Additional tankers may be required to remove higher effluent flows.	Low	Permits to allow additional tankering outside of 7am to 6pm hours of operation
Nominated STP unable to accept effluent from WRP due to capacity issues	Low	Alternative disposal location to be found	Low	Permits to allow tankering to alternative site
Nominated STP unable to accept effluent from WRP due to quality noncompliance	Low	The effluent quality will be better than raw sewage so risk of non-compliance is low.	Low	
Community complaints	Low	GTPL has in place a Community Information Plan and other procedures to inform residents (Section 6.3 of this OEMP.)		
WRP effluent does not meet EPL discharge concentration limits	Low	Monitoring program is in place during process commissioning and verification. WRP can bypass off-spec effluent for retreatment. Effluent can be tankered offsite, if required.	Low	
Odour emissions from site	Moderate	Odour control system will be in operation during process commissioning and verification.	Low	

4.3 Mitigation measures

A table of mitigation measures has been developed for Stage AB WRP to address the environmental risks and aspects discussed in Section 4.2.

Table 6 Mitigation measures

Aspect	Mitigation measure/action	Reference	Responsibility
WATER QUALITY			
	Undertake compliance monitoring of water discharged to the environment during process commissioning and verification to confirm compliance with the concentration limits as stipulated in the EPL	SoC D5	JHPL
WASTE			
	Reuse and recycle materials on the WRP 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.	CoA B8 CoA B9 SoC W2	JHPL
	Do not burn green waste on the WRP site.	CoA B10	JHPL
	No sewage, effluent or waste to be brought onto the WRP site for treatment, except as permitted by the EPL 20188	CoA B7	JHPL, GTPL
	No sewage, effluent or waste to be brought into the Googong Township	CoA B7	GTPL, JHPL, Effluent Tankering and Waste Disposal Contractors
	Develop and implement standard operating procedure for the collection and transportation of dewatered grit and screenings from the WRP to an appropriate licensed facility	SoC W2	JHPL, Waste Disposal Contractor
	Undertake compliance testing of biosolids produced during process commissioning and verification to confirm compliance with Grade B Stabilisation criteria	SoC W2	JHPL
	Develop and implement standard operating procedure for the collection and transportation of Grade B Stabilised Biosolids from the WRP to an appropriate disposal location.	SoC W2	JHPL, Waste Disposal Contractor
EMERGENCY & RISK			
	Prepare and implement emergency response procedures that are consistent with the emergency response approach detailed in Section 7.5 of this OEMP	CoA D7 f(vii) SoC R2	JHPL, Effluent Tankering Operator, Chemical Delivery Operator

Aspect	Mitigation measure/action	Reference	Responsibility
	JHPL Operator will immediately respond to all emergency alarms from the WRP telemetry system during Process Commissioning and Verification	CoA D7 f(vii) SoC R2	JHPL
	Ensure the following bushfire and fire controls are in place at the WRP: • Fire alarms and monitoring are installed and maintained • Inflammable substances are stored safely • Fire extinguishers are kept on site • Water supply for fire fighting is identified • Staff are trained to respond to bushfires and contact emergency services	CoA D7 f(vii)	JHPL
STORAGE & HANDLING			
	Develop and implement a Standard Operating Procedure for chemical deliveries that will address vehicle routes on site, safety protocols, containment protocols, and emergency response	SoC S3 SoC R1	JHPL, Chemical Delivery Contractor
	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.	CoA B15 SoC S3	JHPL, Chemical Delivery Contractor
	Ensure spill response procedures and equipment for containment and recovery are available on site	SoC S3 SoC R1	JHPL
	Conduct workforce training on the transport, storage, handling and disposal procedures relating to chemicals	SoC S3 SoC R1	JHPL
POWER OUTAGE			
	The emergency onsite generator is tested and maintained at the WRP and operation of the critical equipment are monitored during an outage.	CoA D7 f(i)	JHPL

Aspect	Mitigation measure/action	Reference	Responsibility
ODOUR			
	The odour control facilities at the WRP will be operated and maintained to minimise odour impacts from the site. (eg: ensuring inspection hatches on covered areas are closed when not in use)	CoA B6	JHPL
	Monitoring and testing of odour control facilities at the WRP to ensure compliance with the Technical Specifications.	CoA B6, CoA D7 f(iii)	JHPL
HERITAGE			
	Impacts to known Aboriginal heritage sites G1B, AS1, and GWTP3 will be avoided. These sites have already been fenced off.	SoC H1, H2	JHPL, GTPL
NOISE			
	Undertake a noise survey of the WRP during process commissioning and verification to demonstrate compliance with the specified noise levels	CoA D1	JHPL
	Noise complaints will be received, recorded and investigated in accordance with the Complaints Management Procedure, which is included as Appendix B to the Community Engagement and Stakeholder Management Plan. The Environment Manger will forward any complaints to GTPL who will respond within the timeframes specified in the Complaints Management Procedure. As per Condition of Approval A17, the initial response to complaints should be made within 48 hours of the complaint and need to be recorded in the Project consultation manager database.	CoA D7 f(ii) (iii) SoC N1	JHPL, GTPL Assistant Project Director
TRAFFIC			
	Repair any damage to roads, driveways and access points attributable to the WRP project during the process commissioning and verification phase.	CoA D7 f(iv) SoC T5 SoC W2	JHPL
	Repair any damage to roads, driveways and access points attributable to the construction activities at the WRP undertaken by JHPL	CoA D10	JHPL

Aspect	Mitigation measure/action	Reference	Responsibility
	Report to the Director-General details of recommendations made by the relevant road authority and how these have been addressed.	CoA D11	JHPL
	The Effluent Tankering Contractor will prepare an operating procedure that will include details of vehicle routes, timing of trips, parking, ingress and egress considerations for access in the WRP to remove effluent. Where possible the Procedure will prescribe vehicle routes outside built up areas and along main roads. The Procedure will also consider interactions with other construction vehicles present in the project area.	SoC T5 SoC W2	GTPL, Effluent Tankering Contractor
	The Effluent Tankering Contractor will track daily tanker movements from the WRP and provide information to JHPL on a weekly basis.	SoC T5 SoC W2	GTPL, Effluent Tankering Contractor
	Waste tankers will not access the WRP site outside the following hours (7am – 6pm), unless in the unlikely event that additional loads are required to remove excessive volumes or during an emergency situation.	SoC T5	JHPL, Effluent Tankering Contractor
	All other vehicles will minimise traffic movements outside the following hours (7am – 6pm everyday) and park in designated areas at the WRP.	SoC T5	JHPL
	The Effluent Tankering Contractor, JHPL and GTPL will liaise and co-ordinate truck movements based upon volume estimates of effluent to be removed obtained from records of incoming flows to the WRP and past volumes.	SoC T5	JHPL, GTPL, Effluent Tankering Contractor
BIODIVERSITY			
	Ensure operational activities do not affect or impact on the listed threatened species or Endangered Ecological Communities (eg Blakely's Red Gum/Red Gum/Bundy Grassy Woodland, Hoary Sunray, and Pink-tailed Worm Lizard are marked on the Environmental Constraints Map for Stage A – Network and must be avoided).	SoC F3	JHPL, GTPL, Effluent Tankering Contractor
	Weed maintenance program in place for the WRP	SoC F3	GTPL
VISUAL AMENITY			

Aspect	Mitigation measure/action	Reference	Responsibility
	Off-site lighting impacts from the WRP Process Commissioning and Verification works will be mitigated by ensuring that night works are minimised where possible and that lighting is directed so that it avoids offsite impacts if night lighting is necessary	CoA B17	JHPL

5 Competence, training and awareness

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 Environment Manager or Commissioning Manager will coordinate the environmental training. Several forms of environmental training will be provided, including:

- A project site induction, including environmental roles and responsibilities.
- Toolbox talks.
- Pre-start meetings.
- 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 for all personnel is intended to ensure that all persons working and involved in the project are aware of their environmental responsibilities and ensure the following:

- the requirements of the OEMP are communicated to all staff and sub-contractors and
- all the management measures identified in the OEMP are implemented during operations

5.1 Inductions and Toolbox Talks

All personnel (including sub-contractors and QCC provided operators) 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.
- Working hours.
- Mitigation measures for the control of environmental issues.
- 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.

Toolbox talks will typically be held weekly and will be used to raise awareness and educate personnel on issues related to all aspects of commissioning and operating the WRP, including environmental issues. Toolbox talks will be targeted to relevant personnel. Toolbox attendance is mandatory for all personnel on site and attendees of toolbox talks are required to sign an attendance form. Each attendee is required to sign off on the toolbox talk to register their understanding, and records of attendance will be maintained.

5.2 Training programs

Environmental training for all Commissioning Team members and Operators (including QCC Operators) will 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
- Managing odour complaints
- Threatened species, endangered ecological communities and protection of vegetation.
- Heritage and managing unexpected finds.
- Improvements to existing procedures based on findings of environmental inspections, monitoring and audit
- Environmental auditing
- Management of hazardous substances
- Standard Operating Procedures for specific activities such as effluent tankering, chemical deliveries, etc

A register of all training will be kept. 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 Communication and consultation

6.1 Communication with GTPL, QCC and ICON WATER

A key to ensuring compliance with environmental obligations and continual improvement is the ongoing communication to project personnel. JHPL, as Contractor, will be primarily responsible for the operation of the Stage AB WRP during process commissioning and verification for GTPL. Interfacing will also be required between QCC and ICON WATER as other Operators of the Stage A Network. As such, a co-ordinated approach to communication will be adopted.

GTPL and JHPL will meet regularly to discuss any issues or concerns with on site environmental management, any amendments to environmental management documents that might be required, or in response to any non-conformances during process commissioning and verification of Stage AB WRP.

Regular meetings will also be held between JHPL, GTPL, QCC and ICON WATER to discuss interfacing issues and may also include tanker operators where required to review any environmental management topics. Reporting requirements to Icon Water for the effluent tankering to Coppins Crossing are as per the Googong Tankered Liquid Waste Acceptance Agreement dated 15 April 2015 between GTPL and Icon Water.

As per the WRP Deed of Agreement between QCC and GTPL, a QCC operator will be provided onsite during the process commissioning and process verification phases for training and observation purposes.

The Project Manager, Commissioning Manager and Environment Manager have responsibilities for notifying GTPL of any environmental incidents as soon as they become aware of the incident.

The Environmental Manager (or Commissioning Manager) has the responsibility to report on the ongoing environmental performance of the process commissioning and verification phase of Stage AB WRP to GTPL. Progress and key environmental issues will be reported through the preparation of monthly environment reports.

6.2 Communication with government agencies

The GTPL Community Engagement and Stakeholder Management Plan outlines GTPL's approach to communication with government agencies. The GTPL Assistant Project Director has the responsibility to report on the ongoing environmental performance to the DP&E as part of the Compliance Tracking Program for the first two years of operation. GTPL also has the responsibility to notify DP&E and EPA or other relevant agencies of environmental incidents.

6.3 Stakeholder and community consultation

Community Engagement and Stakeholder Management Plan

The GTPL Community Engagement and Stakeholder Management Plan outlines GTPL's approach to communication with the community and other stakeholders (refer Appendix A of the Community Information Plan and Appendix B of the Complaints Management Procedure). It provides an overview of activities, identifies key interfaces, and promotes consistency of messages, to ensure successful ongoing relationships. It is an active document that will be updated as the Stage 1 project progresses.

Community Information Plan

A Community Information Plan has been developed to provide an approach to community communication and consultation processes in accordance with the requirements of CoA A14 and is appended to the Community Engagement and Stakeholder Management plan. The Plan identifies opportunities for providing information and consulting with the community during the construction phase and the process commissioning and verification phase of the IWC Project. The Plan defines an approach to positive and proactive interactions with the community in the lead up to and during construction and commissioning.

Communication tools defined in the strategy include:

- Community newsletters.
- Email updates.
- Displays.
- Community events.
- Advertising notifications.
- Letterbox notifications.
- Meetings.
- Fact sheets.
- Website.
- Signage.

GTPL is responsible for implementing the Community Information Plan during process commissioning and verification of Stage AB WRP.

During the process commissioning and verification phases, communications may include information on:

- Commencement of sewage treatment at the WRP (and subsequent cessation of tankering from SPS1)
- Seeding and process commissioning activity commencement at the WRP
- Fact sheet on operations of the WRP, status and benefits to the community

Complaints Management Procedure

The Complaints Management Procedure is included as an appendix to the Community Engagement and Stakeholder Management Plan and 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. Details of how to contact the project team will be advertised in local newspapers (before the project begins and every six months during construction and commissioning and for at least the next two years of operation), on the project website, on site signage and on all communication materials. The Project Manager will direct all complaints and enquiries to the GTPL Assistant Project Director.

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

7 Incidents and emergencies

7.1 Classification of environmental incidents

There are two categories of environmental incidents.

Category one

Category one incidents include:

- Unauthorised 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.

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 and is included at Appendix F. The PIRMP must be maintained and implemented by JHPL during process commissioning and verification of Stage AB WRP. .

7.2.2 Incident management response

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

Condition L2.3 of EPL 20188 stipulates pollutant concentration limits that should not be exceeded during process commissioning and verification. Any detected exceedance of licence limits will be required to be reported to the EPA in accordance with licence conditions and/or the POEO Act.

7.2.3 JHPL Internal Incident Reporting

Any incident with actual or potential impacts on the biophysical environment, shall be recorded and addressed by the JHPL Project Manager and JHPL Environment Manager (or Commissioning Manager) as detailed in JH-MPR-SQE-010 Incident Management procedure.

7.3 Emergency contacts

Emergency contact/organisation	Name	Contact details
GTPL Assistant Project Director	Craig Harris	0409 999 059
JHPL Project Manager	Steve Merange	0420 395 388
JHPL Commissioning Manager	Ross Phillips	0439 155 756
JHPL Environment Manager	Andre Kruize	0408 524 115
BMCA Superintendent	Geoff Gardner	0432 565 123
OEH - EPA	Pollution line	131 555
OEH – EPA (South East region)	Julian Thompson/ Sharon Peters	(02) 6229 7002
DP&E	Lisa Mitchell	(02) 9228 6283
Queanbeyan City Council (QCC)	N/A	(02) 6285 6000 After hours (02) 6298 1234
ICON WATER	N/A	(02) 6248 3457
Murrumbidgee/Southern NSW Local Health District Public Health Unit	N/A	(02) 6080 8900
NSW Health	N/A	(02) 9391 9000
Police	N/A	000 (or 112 from mobiles)
Local Police	N/A	131 444
Ambulance	N/A	000 (or 112 from mobiles)
Canberra Hospital	N/A	(02) 6244 2222
NSW Rural Fire Service	N/A	000 (or 112 from mobiles)
Gas/Electricity	N/A	131 909
Telstra	N/A	132 999
WorkCover NSW	N/A	13 10 50
ACT Territory and Municipal Services	N/A	13 22 81
WIRES	N/A	1300 194 737

7.4 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 OEMP and environmental management plans will be reviewed by the Environment Manager after every Category One incident. The Environment Manager will ensure that any additional measures arising from the incident investigation are incorporated into the relevant plans.

GTPL 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 six monthly compliance report for Category 2 Incidents.

Where the Director-General provides recommendations to address the cause or impact of any incident reported to the DP&E, the project (i.e. Stage AB WRP) 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 JHET, as outlined in Section 8.4 .

7.5 Emergency response

The types of emergencies that could occur during the process commissioning and verification of Stage AB WRP could include, but would not be limited to

- overflows,
- fire
- uncontained chemical spill
- 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 JHPL of emergencies along with a range of mitigation measures for reacting to potential emergencies (refer Table 3).

An Emergency Response Plan has been developed by JHPL for the Stage AB WRP. Such procedures will be communicated to all project team members and persons associated with the Stage AB WRP.

8 Environmental inspections, monitoring and auditing

8.1 Environmental inspections

JHPL will arrange for regular inspections of Stage AB WRP in consultation with GTPL. 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. Copies of inspection reports will be provided to QCC.

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

Weekly inspections

The Environmental Manager or Commissioning Manager will initially undertake weekly inspections of the work sites to monitor and evaluate the effectiveness of environmental management measures. If any environmental controls require maintenance, are ineffective, or require installation to address an actual or potential environmental issue, these observations will be recorded on the environmental inspection checklist. Any action will also be given a priority. The frequency of inspections will be reviewed and determined by the nature of activities being undertaken and their associated environmental risk and may be reduced as required.

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.

Monitoring and reporting requirements specific for the Stage AB WRP Process Commissioning and Verification are included in Table 7.

8.3 Auditing

Internal auditing will be undertaken generally on a yearly basis for Stage AB WRP and co-ordinated by GTPL with inputs from JHPL. The purpose of auditing is to verify compliance with:

- This OEMP and management plans.
- Approval requirements (CoAs, SoCs).
- Any relevant legal and other requirements (eg licenses, permits, regulations).

8.3.1 Independent external audits

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 every six months as outlined in the Compliance Tracking Program, coordinated by GTPL, and developed to address the requirements of CoA A18. A copy of the audit report will be provided to DP&E.

Table 7 Monitoring and reporting requirements for Stage AB WRP Process Commissioning and Verification

Aspect	Reference	Monitoring requirement	Timing	Reporting	Responsibility
Air Quality	SoC AQ1	Undertake odour data collection from the WRP during process commissioning and verification. Such data will be used to validate the Odour Impact Assessment.	During Process Commissioning and Verification	Submit test results to GTPL in Process Verification Report at the completion of test works.	JHPL
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	GTPL
Noise	CoA D1	Undertake noise monitoring for the WRP during commissioning to ensure the noise does not exceed 35 dB(A) LAeq (15min) at any residence on privately owned land	Once during Process Commissioning and Verification	Submit test results to GTPL in Process Verification Report at the completion of test works.	JHPL
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	GTPL
Water Quality	CoA D5	Undertake water quality sampling and analysis during WRP process commissioning and verification to ensure water discharged to the environment does not exceed the water quality parameters in CoA D5, Table D1: Effluent Quality Limits.	Weekly composite during Process Commissioning and Verification	Submit test results to GTPL in Process Commissioning Report and Process Verification Report at the completion of test works for these two phases. Any exceedances shall be reported to the EPA at the time of exceedance and in the EPA Annual Return.	JHPL (GTPL to report exceedances to the EPA and prepare and submit Annual Return to the EPA as required by the EPL 20188)
Water Quality	SoC HH3	Undertake recycled water quality testing verification to confirm compliance with the NOW Recycled Water Quality approval requirements during WRP process commissioning and verification.	Daily and weekly monitoring during Process Verification	Submit test results to GTPL in Process Verification Report at the completion of test works.	JHPL (GTPL to prepare and submit any report required to NOW)

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Aspect	Reference	Monitoring requirement	Timing	Reporting	Responsibility
Waste Dockets	CoA B9	Track waste volumes and contents (pH and DO) removed from the WRP as per the conditions of the applicable trade waste agreement/license	Daily during Process Commissioning and Verification	Provide evidence of waste dockets and other receipts to JHPL on a monthly basis	Effluent Tankering Contractor, Waste Disposal Contractor
Tanker Movements	CoA D7 (f) (iv)	Monitor and record daily waste tanker movements	Daily during Process Commissioning and Verification	Provide information to GTPL on a weekly basis.	Effluent Tankering Contractor
Operations	SoC OP2	Monitor operational data through telemetry during WRP process commissioning and verification	Daily during Process Commissioning and Verification	Submit Process Commissioning Report and Process Verification Report at the completion of test works for these two phases.	JHPL
Greenhouse Gases	EA Section 14.3	Obtain electricity data from SCADA for WRP during operation to assess electricity usage to help minimise consumption of electricity	Annually	JHPL to provide electricity data to GTPL. GTPL to compile results annually	JHPL, GTPL
Groundwater	CoAD8 (b)(i) WMP	Obtain detailed baseline data of groundwater levels, yield and quality in the region, and privately owned groundwater bores, that could be affected by the Project.	Refer WMP	Refer WMP	GTPL
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	GTPL, QCC
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	GTPL, QCC

Aspect	Reference	Monitoring requirement	Timing	Reporting	Responsibility
Soil	CoA D8(e)(i) SoC G7 SoC S5 WMP	Obtain baseline data of the soil properties of the proposed irrigation areas, including salinity levels and a nutrient budget.	Refer WMP	Refer WMP	GTPL
Soil	CoA D8(e)(iv) WMP	Monitor areas subject to irrigation to ascertain salinity impacts.	Refer WMP	Refer WMP	GTPL, QCC
Surface water and aquatic ecology	CoA D6 CoA D8(a)(i) SoC A1 SoC WQ4 WMP	Obtain baseline data of surface water flows and quality in creeks and other water bodies affected by the project.	Refer WMP	Refer WMP	GTPL
Surface water and aquatic ecology	CoA D8(a)(iii)	Monitor and assess: • Surface water flows and quality. • Impacts on water users. • Stream health and habitat. • Channel stability.	Refer WMP	Refer WMP	GTPL, QCC

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8.4 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 Appendix C. 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 process commissioning and verification of Stage AB WRP. Review, monitoring or auditing may identify a variety of improvements that must or should be made to ensure continual improvement.

For example, an internal audit of the JHET system may identify an opportunity for improvement in areas such as documentation (OEMP, management plans, procedures, checklists etc) or resourcing (number and experience of environmental or other personnel). Any member of the project team can identify an opportunity for improvement.

Non conformance reports will be provided to GTPL and QCC.

8.4.1 Identifying non-conformance

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

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

8.4.2 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.

8.4.3 Recording non-conformance

Following the investigation and reporting, a summary of the non-conformance must be recorded in JHET. Improvement opportunities will also be recorded in JHET, for example to capture any system improvements recommended as the result of an incident investigation.

8.4.4 Review of JHET

JHET will be reviewed regularly to ensure actions are closed out in a timely manner or as required. The system will escalate any outstanding actions to senior JHPL management that aren't closed out in the

specified timeframes. Procedures for rectifying any non-compliance identified during environmental auditing or review of compliance are also documented in the Compliance Tracking Program.

8.5 Reporting

8.5.1 Monthly reports

The Environment Manager (or Commissioning Manager) will prepare a monthly environment report to track progress on environmental performance. The Monthly Report will include relevant details including, but not limited to:

- Environmental inspections.
- Environmental monitoring.
- Environmental incidents.
- Environmental non-conformances.
- Environmental audits.
- Planned and completed construction notifications to the community.
- Complaints and enquiries.
- Training.

This report will be provided to GTPL, QCC and RPS on a monthly basis.

8.5.2 Annual operation report

GTPL will compile an annual operation report for Stage 1 of the IWC Project while they are operator. 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 (refer Section 3.4).
- Discuss nature of and response to community complaints (refer Section 6.3).
- Include results from inspections, monitoring and the annual audit (refer Section 8.3).
- Discussion of Non-Conformance Register and opportunities for improvement (refer Section 8.4).

JHPL will be required to provide all relevant information as requested by the GTPL Assistant Project Director, to assist with preparation of the annual operation report for Stage AB WRP.

As outlined in the Compliance Tracking Program, annual compliance reports will be 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 Stage AB WRP. This process is explained in more detail in Section 8.6.

8.6 Adaptive management

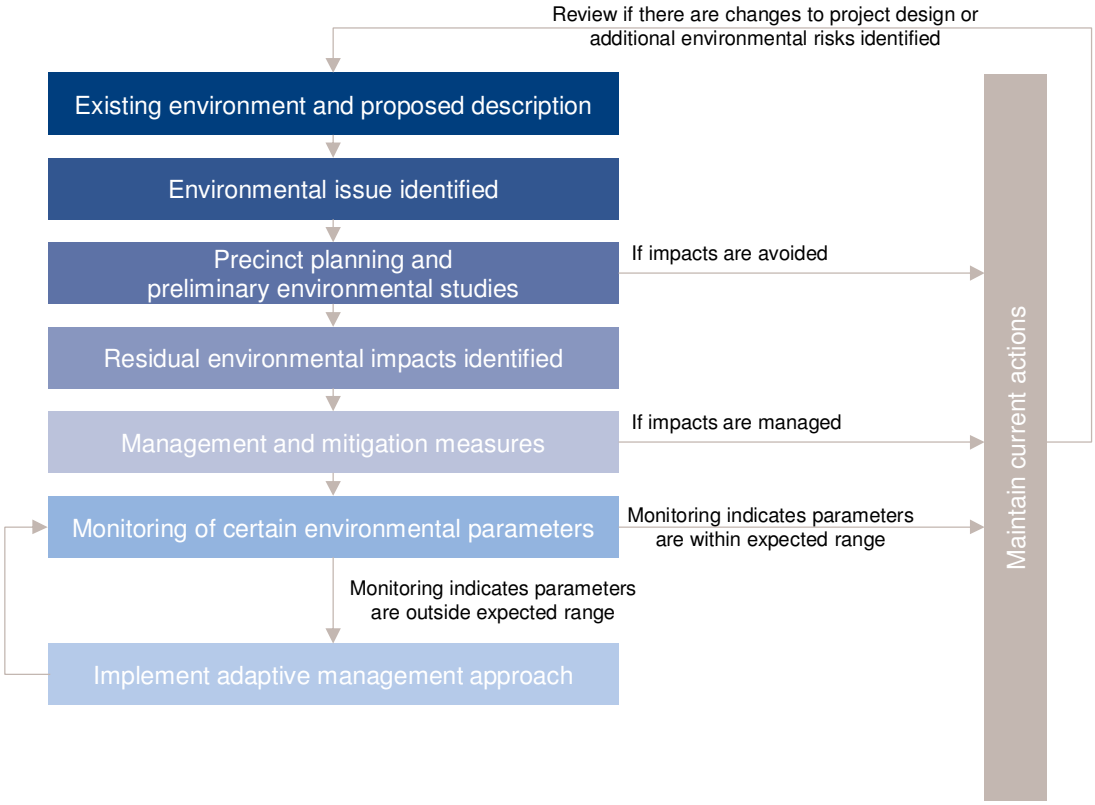
The OEMP has identified key environmental aspects based on earlier environmental assessment processes, recommends a range of mitigation measures and prescribes a program of monitoring, auditing and reporting that will allow for an adaptive management approach to the process commissioning and verification of the Googong Township IWC project.

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 Stage AB WRP will be collated by JHPL for consideration in consultation with the other sub-contractors. This will allow for opportunities to improve the management of the IWC Project and inform later stages of operation. 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 Stage AB WRP, 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 1.10.

The process used to assess and manage environmental issues is shown in Figure 7.

Figure 5 Adaptive management framework



9 Documentation

9.1 Environmental records

The Environment Manager (or Commissioning Manager) is responsible for maintaining all environmental management records. Types of records include:

- All monitoring, inspection and compliance reports/records.
- Community engagement and stakeholder management information.
- Register of SEP's
- Legal and Other Requirements Register (Appendix C).
- Complaints and close out actions.
- Monthly environmental reporting (i.e. Monthly Report) and other environmental reporting as required by the contract documentation or the Compliance Tracking Program.
- Training Register and all other induction and training records.
- Correspondence with government agencies and other stakeholders.
- Community engagement and stakeholder management information.
- Incidents and Non-conformances.

All environmental management documents are subject to ongoing review and continual improvement. This includes changes to legislative or licensing requirements.

9.2 Record keeping

All records will be maintained on the JHPL Lotus Notes Project Pack.

Incidents and Non-Conformances will be maintained on JHET.

Hard copies of the EPL and all environmental management plans will be maintained on site.

Records will be provided to GTPL and QCC at the completion of the process commissioning and verification phase.

10 References

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

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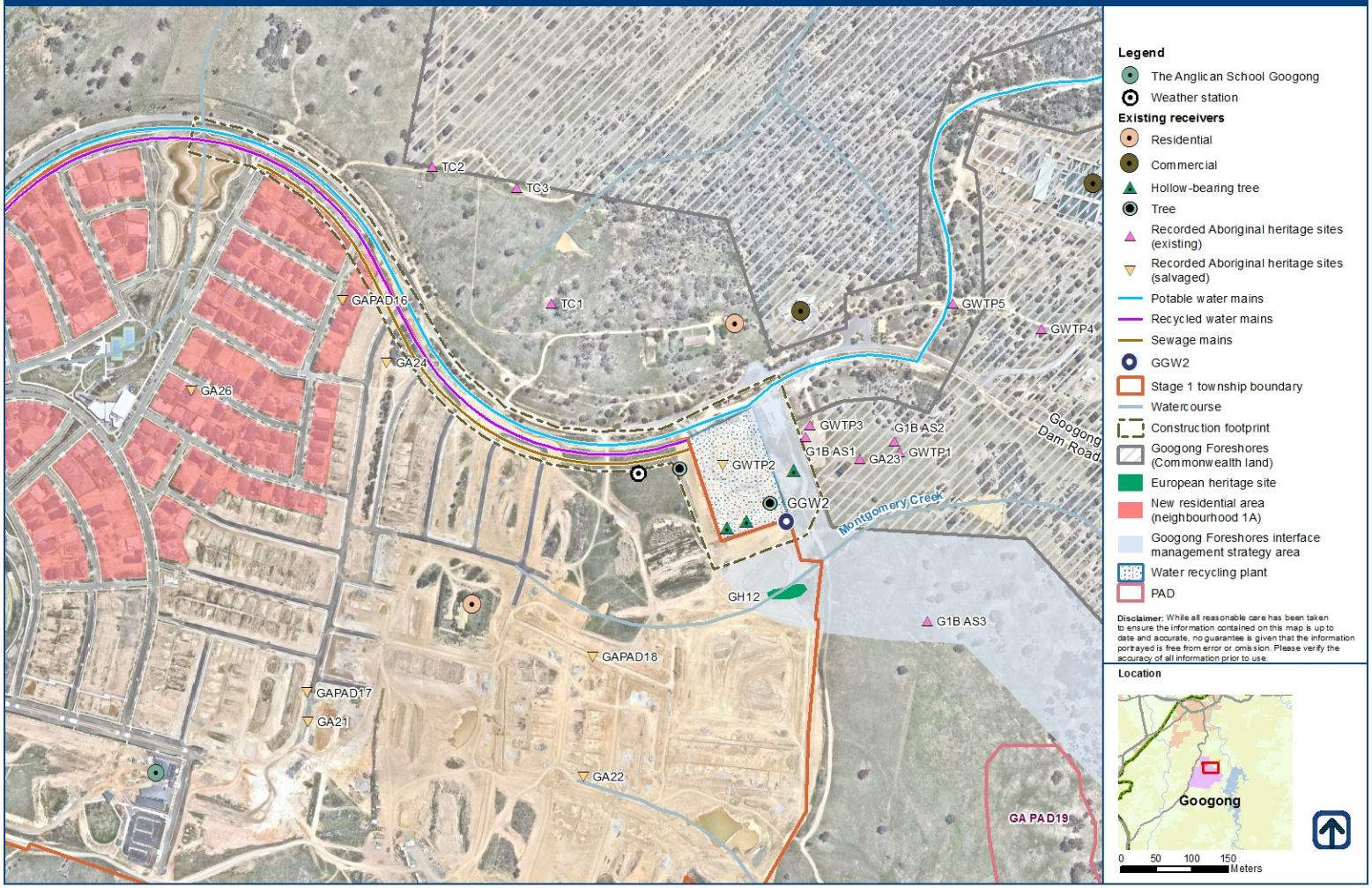
Appendix A

EPL 20188

Appendix B

Environmental Constraints Map

Environmental Constraint Map



Source:
1. GIS datasets as supplied from Navin Officer
2. Aerial imagery from Nearmap (2015)

Appendix C

Legal and other requirements

Act	Activity/aspect	Requirement	Reference	Applicability to the Project
General				
Environmental Planning and Assessment Act, 1979 (EP&A Act)	All	Comply with the terms Minister for Planning's approval for the Project. Obtain the Minister's approval for any project modifications that are not consistent with the Project Approval.	S75W	The Project has been approved under Part 3A of the EP&A Act subject to Conditions of Approval (CoA). The Project must comply with all CoA. Any changes not consistent with the Project Approval would require additional assessment and approval from the Minister.
Water				
Water Management Act 2000 (WM Act)	Water access and use	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.	S56 S60A S89 S91A	The Project has been approved under Part 3A 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 process commissioning or verification 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 works	Do not construct/use a water supply work, drainage work or flood work without the appropriate approval.	S90 S91B S91C S91D	
	Waterfront land	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.	S91	

Water Act 1912 (Water Act) Note that this Act is being progressively repealed by the Water Management Act 2000.	Surface water	Obtain a licence or permit for construction or use of 'work' for purposes including the taking and using of water.	S21B	The Water Act does not apply, as the Stage AB WRP site is located within a Water Sharing Plan area, and so *Water Management Act 2000* applies.
	Groundwater	Obtain a licence where interference with groundwater is likely to occur.	S112 S121A	
Protection of the Environment Operations Act 1997 (POEO Act)	Water pollution	Do not cause water pollution (other than to a sewer), except in accordance with the conditions of any EPA licence.	S120	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 Protection Licence is required for construction and testing of Stage AB WRP. GTPL holds EPL 20188 for construction and testing works. The licence was amended to allow for process commissioning and verification activities (i.e. to allow discharge to environment).
Local Government Act 1993 (LG Act)	Construct and operate water and wastewater facilities	Construct and operate water and wastewater facilities.	S60 (local council operator)	QCC will not be responsible for the process commissioning and verification of Stage AB WRP, however as QCC will operate the plant, QCC (with support from GTPL) will seek approval from the Minister under S60 of the Local Government Act 1993 to construct and operate water and waste water facilities.
Water Industry Competition Act 2006 (WIC Act)	Construct and operate water and wastewater facilities	Obtain a Network operator's licence prior to construction for construction maintenance and operation of water industry infrastructure.		As QCC will operate the water and wastewater facilities, GTPL are not required to seek a Network operator's licence under the WIC Act.

Noise				
Protection of the Environment Operations Act 1997 (POEO Act)	Plant maintenance and operation	Do not operate plant if it emits noise caused by poor maintenance or operation.	S139	The Project will be carried out in accordance with the POEO Act, where relevant.
	Materials management	Do not cause noise by failing to properly and efficiently deal with materials.	S140	
Contaminated land				
Protection of the Environment Operations Act 1997 (POEO Act)	Land pollution	Do not cause or permit land pollution other than under authority of a licence or regulation. It is however not a land pollution offence to place virgin excavated natural material or lawful pesticides and fertilisers on land, or by placing matter on land that has been notified to the EPA as an unlicensed landfill and which is operated in accordance with the regulations.	S142A – S142E	The Project will be carried out in accordance with the POEO Act, where relevant.
Contaminated Land Management Act 1997 (CLM Act)	Reporting contamination	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.	S60	The Project will be carried out in accordance with the CLM Act, where relevant.
Biodiversity				
Noxious Weeds Act 1993	Weed control	As a private landowner, control noxious weeds on the land as required under the control category or categories specified in relation to the weeds	S12 S16	The Project will be carried out in accordance with the *Noxious Weeds Act 1993*, where relevant.

		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.	S30	
National Parks and Wildlife Act 1974 (NPW Act)	Native fauna	Do not harm any animal that is of a threatened species population or ecological community, or its habitat except in accordance with a planning approval.	Part 8A	The Project will be carried out in accordance with the NPW Act, where relevant.
		Do not harm critical habitat except as in accordance with a planning approval.	S98	
		Do not harm native fauna (other than listed unprotected fauna) except in accordance with a planning approval or licence.	S120	
	Flora and native vegetation conservation	Do not pick protected native plants without a licence.	S117 S131	
Native Vegetation Act 2003	Flora and native vegetation conservation	Only clear native vegetation in accordance with a planning approval or property vegetation plan.	S12	The Project has been approved under Part 3A of the EP&A Act 1979. 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)	Dredging and reclamation	Do not carry out dredging or reclamation work except under the authority of a permit issued by the Minister.	S201	The Project has been approved under Part 3A of the EP&A Act. Section 75U states that a permit under section 201 or 219 of the

	Fish passage	Do not block fish passage without a permit	S219	FM Act is not required.
Environment Protection Biodiversity Conservation Act, 1999 (Commonwealth) (EPBC Act)	Flora and fauna conservation	Do not kill, injure or take a member of a listed threatened species without a permit.	Part 13	The Project will be carried out in accordance with the EPBC Act, where relevant.
		Comply with the terms of any EPBC Act approval for the project.		The Project was approved on 19 May 2011 (EPBC 2011/5829). The approval is subject to conditions. Refer Pink-tailed Worm-lizard Protection and Management Plan and Googong Foreshores Interface Management Strategy.
Waste				
Protection of the Environment Operations Act 1997 (POEO Act)	Littering	Do not litter in a public place or an open private place. Do not litter from a vehicle. Only deposit advertising material in receptacles provided for mail or newspapers or under the door of the premises. Do not deposit advertising material on or in vehicles.	Part 5.6A	The Project will be carried out in accordance with the POEO Act, where relevant.
	Transport of trackable waste	An EPL is required for transport of category 2 trackable waste, meaning the transport of category 2 trackable waste from New South Wales to a participating State, into New South Wales from a participating State or through New South Wales from one participating State to another.	Schedule 1 Clause 48(b)	An EPL will be required by the trucking contractor for the transport of sewage across state and territory borders.
	Waste and transportation	Only transport waste to a facility that can lawfully accept the waste.	S143	The Project will be carried out in accordance with the POEO Act, where relevant.
		Do not dispose of waste in a manner that harms or is likely to harm the environment.	S115	
Protection of the Environment Operations	Waste and transportation	Comply with general requirements for the transport of waste. For example, any vehicle used by	Regulation	The Project will be carried out in accordance with the POEO (Waste)

(Waste) Regulation 2005		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.	cl.49	Regulation, where relevant.
		Comply with record keeping requirements in relation to the transport of certain types of waste.	Regulation Part 3	
Local Government Act 1993	Management of waste	Obtain approval to dispose of waste into a sewer of the council.	S68	An application for a Liquid Trade Waste Approval/Agreement will be required for the disposal of sewage to QCC facilities during operation, if required.
Utilities Act 2000 (ACT)	Prohibited substances—water or sewerage network	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.	S127(1)	An Application for Non-Domestic Discharge to the Sewer will be required for the disposal of sewage to ICON WATER facilities during operation.
National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 1998	Waste and transportation across Australian state and territory borders.	Obtain consignment authorisation from the relevant authority prior to transporting waste across Australian state and territory borders.	All	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 QCC Sewage Treatment Plan in the ACT. A valid consignment authorisation number must still be obtained prior to the movement of any material.
Heritage				
Heritage Act 1977 (Heritage Act)	Heritage	Do not undertake an activity that will affect a place, building, work, relic, moveable object or precinct which is subject to an Interim Heritage Order or is listed on the State Heritage Register without approval from the Heritage Council.	S56-57	The Project has been approved under Part 3A 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.
		Do not disturb or excavate land with knowledge or reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed; or Do not disturb or excavate land on where a relic has been discovered or exposed.	S139	The Project has been approved under Part 3A 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.
		Notify the heritage Council on discovery of a relic.	S146	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 approval.
National Parks and Wildlife Act 1974	Aboriginal places and objects	Do not harm or desecrate an Aboriginal object or Aboriginal place without consent.	S86 S90	The Project will be carried out in accordance with the NPW Act, where relevant.
		Notify the OEH and DP&I within reasonable time of becoming aware of the location or discovery of all new or unrecorded Aboriginal objects.	S89A	
Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth)	Protection of areas and objects	Report any discovery of Aboriginal remains to the Federal Minister for the Sustainability, Environment, Water, Population and Communities.	S20	The Project will be carried out in accordance with the Aboriginal and Torres Strait Islander Heritage Protection Act 1984, where relevant.
		Comply with the provisions of any declaration in relation to a significant Aboriginal area or object.		The Project will comply with the provisions of any declaration in relation to a significant Aboriginal area or object.
General				
Protection of the Environment Operations	Harming the environment	Do not risk harming the environment by wilfully or negligently:	S115 S116	The Project will be carried out in accordance with the POEO Act, where

Act 1997 (POEO Act)		▪ disposing of waste unlawfully. ▪ causing any substance to leak, spill or otherwise escape (whether or not from a container); or ▪ emitting an ozone depleting substance.	S117	relevant.
	Control equipment	Properly and efficiently maintain and operate any installed pollution control equipment (including monitoring devices).	S167	
	Notification of pollution incidents	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) (ie DP&I) ▪ the Environment Protection Authority (EPA) ▪ the Ministry of Health ▪ the WorkCover Authority ▪ the local authority, (ie QCC) ▪ Fire and Rescue NSW.	S148	The Project will be carried out in accordance with the POEO Act, where relevant. Notification instructions are provided in Section 7.2 and the PIRMP (Appendix F).
	Site licensing	Do not carry out or allow an activity listed in Schedule 1, or carry out work to enable such an activity, unless the premises are licensed by the EPA.	S47 S48	The Project will be carried out in accordance with the POEO Act and the relevant EPLs, where relevant.
Environmentally Hazardous Chemicals Act 1985	Hazards and risks	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	Hazards and risks	Ensure that dangerous goods are transported in a safe manner.	S9	The Project will be carried out in accordance with the *Dangerous Goods (Road and Rail Transport) Act 2008*, where relevant.

Pesticides Act 1999	Hazards and risks	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.	S12 S13 S14 S15 S17	The Project will be carried out in accordance with the *Pesticides Act 1999*, where relevant.
State Emergency and Rescue Management Act 1989	Hazards and risks	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	Hazards and risks	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.
National Greenhouse and Energy Reporting Act, 2007 and Regulations 2008	Greenhouse gas emissions	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 emissions to the OEH. Applicability dependent on thresholds.		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 emitters of greater than 50kt CO_2e and energy consumption of 200Tj. GTPL is not required to report under the NGER Act as they do not meet the required threshold.

Appendix D

Environment policies

The following is the CIC Corporate Environmental Policy, as adopted by Googong Township Proprietary Limited (GTPL).

CIC is committed to a high standard of environmental management practice. To achieve this objective any consultants or contractors engaged by CIC shall provide an Environmental Management Plan that covers the following requirements as appropriate;

The Consultant or Contractor must implement an Environment Management Plan that:

- Acknowledges the potential impact of activities, products or services on the environment;
- Includes an environmental policy that has the total support of management involved in the works;
- Has planning processes and procedures in place that have the capacity to identify possible environmental impacts;
- Has planning processes and procedures in place to develop mitigation measures to minimise environmental impacts;
- Establishes responsibilities and procedures for implementing required mitigation measures;
- Establishes systems and procedures to review the implementation process.
- Establishes a process of management review of systems and procedures that support the environmental policy and which will lead to continually improving performance.

POLICY

Environmental

Our commitment

John Holland is committed to caring for the environment and minimising impacts in all our operations.

Our approach

John Holland will undertake its business in a manner which recognises the importance of environmental sustainability and protection.

Environmental Policy in practice

- Comply with all applicable laws, regulations and statutory obligations
- Manage environmental aspects in accordance with customer requirements, policies and procedures
- Promote a culture of shared responsibility for environmental outcomes within our business
- Improve our energy, water and resource use efficiency, and take all reasonable and practicable steps to prevent pollution, reduce waste and other adverse environmental effects
- Improve knowledge, awareness and skills of our employees related to environmental and sustainability requirements and practices
- Measure our environmental performance and communicate it to our employees and other stakeholders
- Continually improve our Environmental Management System
- Fully and transparently investigate environmental incidents to identify all causal factors, and actions taken to prevent recurrence
- Engage with our business partners, the communities we work within and other stakeholders on environmental sustainability and protection.

We provide engineering and infrastructure solutions with skill and passion that benefit our customers, our people, our communities and our shareholders.

Glenn Palin

Group Managing Director | John Holland Group Pty Ltd

March 2013

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Appendix E

Risk register

E1 Risk analysis background

The environmental risk assessment has been performed in accordance with the principles of AS/NZS 4360:2004. 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 Stage AB WRP. The risk assessment focused on the following issues, as identified in the Environmental Assessment (EA) for the IWC Project:

- 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 Table 6).
- Type of potential impact.
- Likelihood of occurrence (refer Table 7).

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.

Consequence level	Definition
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 7.

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 8.

Risk matrix

		Consequences				
		Insignificant	**Minor**	**Moderate**	**Major**	**Extreme**
Likelihood	**Almost certain**	Moderate	Significant	High	High	High
	Likely	Moderate	Significant	Significant	High	High
	Possible	Low	Moderate	Significant	Significant	High
	Unlikely	Low	Low	Moderate	Significant	Significant
	Rare	Low	Low	Low	Moderate	Moderate

E2 Risk analysis for operation

Table 9 outlines the results from the environmental risk assessment by displaying the recognised risks and the associated risk rating (before and after implementation of the mitigation and management measures included in Table 5 of this OEMP). This risk assessment has considered the mitigation measures that are included in Table 5.

Rating key

- High
- Significant
- Moderate
- Low

Risk assessment results for operation of Stage AB WRP

No	Risk	Risk rating – before mitigation				Risk rating – after mitigation		
		Likelihood	Consequences	Rating	Mitigation	Likelihood	Consequences	Rating
Water quality								
1	Poor water quality discharges from WRP if process design fails, leading to reduced water quality in receiving waters.	Unlikely	Major		- Compliance monitoring of process operations and water quality discharged to the environment. - Noncompliant effluent will be stored on site (up to 7 days storage) and tankered offsite to Quenabeyan, Coppins Crossing or Lower Molongolo Water Quality Control Centre (LMWQCC).	Unlikely	Insignificant	
2	Failure in treatment system, leading to discharge of poor quality recycled water and consequent reduced receiving water quality (quality related).	Rare	Major		- Compliance monitoring of process operations and water quality discharged to the environment. - Noncompliant effluent will be stored on site (up to 7 days storage) and tankered offsite to Quenabeyan, Coppins Crossing or Lower Molongolo Water Quality Control Centre (LMWQCC).	Unlikely	Insignificant	

No	Risk	Risk rating – before mitigation			Mitigation	Risk rating – after mitigation		
		Likelihood	Consequences	Rating		Likelihood	Consequences	Rating
3	Spills of pollutants (chemicals for operation, effluent, fuels) causing pollution of receiving waters.	Rare	Major		- 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. - Personnel trained in SOPs and Incident Response Plan in the event of a spill.	Unlikely	Insignificant	
Hydrology								
1	Changes in flows in receiving waters due to discharges of recycled water causing negative hydrology impacts during Process Verification	Unlikely	Moderate		- Follow the Recycled Water Flow Release Protocol in the WMP. - Visual inspection of the discharge point to be conducted weekly when discharging to enable quick identification of any negative impacts on receiving waterways.	Unlikely	Minor	
2	Changed geomorphology of receiving water beds due to recycled water discharges (increased flows) during Process Verification	Unlikely	Moderate		- Follow the Recycled Water Flow Release Protocol in the WMP. - Visual inspection of the discharge point to be conducted weekly when discharging to enable quick identification of any negative impacts on the geomorphology of receiving waterbeds.	Unlikely	Minor	
Heritage (Indigenous and non-Indigenous)								

No	Risk	Risk rating – before mitigation			Mitigation	Risk rating – after mitigation		
		Likelihood	Consequences	Rating		Likelihood	Consequences	Rating
1	Impacts on unidentified sites that are of heritage or recreational value.	Rare	Extreme		- As part of EA development, a detailed assessment was prepared to address the Director-General's Requirements issued by the Department of Planning and Infrastructure (DP&I). 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 construction and operation of the IWC Project, following the implementation of the proposed mitigation measures identified in the EA.	Rare	Major	
2	Impacts on identified sites that are of heritage or recreational value.	Unlikely	Major		- Aboriginal heritage sites are identified in the Environmental Constraints Map, Appendix B. - Where these sites fall within close proximity to operation/maintenance works, exclusion fencing will be installed to protect the sites from inadvertent impacts.	Unlikely	Minor	
Geology and soils/geomorphology								

No	Risk	Risk rating – before mitigation			Mitigation	Risk rating – after mitigation		
		Likelihood	Consequences	Rating		Likelihood	Consequences	Rating
1	Spills of pollutants (chemicals for operation, effluent, fuels) causing pollution of soils.	Rare	Major		- 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. - Personnel trained in SOPs and Incident Response Plan in the event of a spil	Unlikely	Insignificant	
Air quality (greenhouse gases, dust and odour)								
1	Increase in greenhouse gas emissions (from operation vehicles, plant and equipment; and fugitive emissions during operation).	Almost certain	Insignificant		- Vehicles will be maintained to minimize exhaust emissions. - Plant, vehicles and machinery will be operated in a proper and efficient manner - Onsite generator will be maintained in accordance with manufacturer recommendations.	Almost certain	Insignificant	
2	Odour emissions from WRP, leading to adverse impact on air quality (and amenity).	Possible	Major		- Odour control system will be in operation during process commissioning and verification. - Monitoring and testing of the odour control facilities at the WRP to ensure compliance with the Technical Specifications.	Possible	Insignificant	

No	Risk	Risk rating – before mitigation			Mitigation	Risk rating – after mitigation		
		Likelihood	Consequences	Rating		Likelihood	Consequences	Rating
3	Odour emissions from malfunctions anywhere in the treatment system.	Possible	Major		- 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	Possible	Insignificant	
4	Odour emissions from tankering associated with commissioning of the WRP (biosolids, screenings, seed sludge)	Possible	Moderate		- Odour control system will be in operation during process commissioning and verification. - 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	Possible	Insignificant	
Biodiversity								
1	Adverse impacts on threatened species (NSW/Cth) and Endangered Ecological Communities (EECs).	Unlikely	Major		- As part of EA development, a detailed assessment was prepared to address the Director-General's Requirements issued by the Department of Planning and Infrastructure (DP&I). 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 construction and operation of the IWC Project, following the implementation of the proposed mitigation measures identified in the EA.	Rare	Major	
2	Further migration of weeds (noxious and environmental) within disturbed areas.	Unlikely	Moderate		- Weed maintenance program in place for the WRP	Rare	Insignificant	

No	Risk	Risk rating – before mitigation			Mitigation	Risk rating – after mitigation		
		Likelihood	Consequences	Rating		Likelihood	Consequences	Rating
3	Increased active erosion and scouring, and loss of riparian vegetation in creeks due to increased flows during Process Verification.	Unlikely	Moderate		- Follow the Recycled Water Flow Release Protocol in the WMP. - Visual inspection of the discharge point to be conducted weekly when discharging to enable quick identification of erosion and scouring and loss of riparian vegetation in creeks due to increased flows.	Unlikely	Minor	
4	Impacts on downstream ecology due to changed hydrology in creeks during Process Verification	Unlikely	Moderate		- Follow the Recycled Water Flow Release Protocol in the WMP. - Visual inspection of the discharge point to be conducted weekly during discharge to enable quick identification of any negative impacts on downstream ecology.	Unlikely	Minor	
5	Changes to water quality (alkalinity, conductivity and turbidity conditions) may create changes in aquatic ecology during Process Verification.	Possible	Major		- Undertake compliance monitoring of water discharged to the environment during process verification in accordance with EPL 20188 conditions. - WRP can bypass off-spec effluent for retreatment. Effluent can also be tankered offsite, if required	Rare	Moderate	
Traffic and access								
1	Traffic impacts due to interaction with other construction vehicles and other necessary deliveries/maintenance.	Almost certain	Minor		- Traffic management plans in place fo all tankering activities	Possible	Insignificant	
2	Damage to roads from construction or operational vehicles	Possible	Minor		- Traffic management plans in place. (including coverage of vehicles routes, turning circles, queuing and access points) - Roads will be inspected and repaired	Possible	Insignificant	
Visual amenity and landscape urban/design								

No	Risk	Risk rating – before mitigation			Mitigation	Risk rating – after mitigation		
		Likelihood	Consequences	Rating		Likelihood	Consequences	Rating
1	Negative impact on visual amenity due to presence o infrastructure.	n/a	n/a		- n/a	n/a	n/a	
Noise and vibration								
1	Noise and vibration impacts from operation of the WRP.	Almost certain	Moderate		- Operational Noise Assessment was completed y 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 receptor under the prevailing meteorological conditions. - Recommended noise control strategies have been incorporated into the design - A noise survey of the WRP during process commissioning verification will be done to demonstrate compliance with the specified noise levels.	Possible	Insignificant	
2	Noise impacts sourced from tanker and truck movements for removal of effluent and other waste, and deliveries.	Likely	Moderate		- Traffic Management Plan will be in place. - Tanker movements are restricted to maximum of 20 per day and between the hours of 7am and 6pm.	Possible	Minor	
Utilities and services								
1	Negative impacts on other major projects, infrastructure or land use in the area.	Rare	Minor		No further mitigation required	Rare	Minor	

No	Risk	Risk rating – before mitigation			Mitigation	Risk rating – after mitigation		
		Likelihood	Consequences	Rating		Likelihood	Consequences	Rating
Waste								
1	Impacts related to the trucking of liquid waste, specifically not having appropriate approvals to dispose of waste at a licensed facility.	Almost certain	Major		- Permits and approvals have been identified and in place before and trucking of waste	Unlikely	Insignificant	
2	Effluent is not of an acceptable quality, or receiving STP is unable to accept the waste due to infrastructure limits.	Unlikely	Moderate		- Daily testing of effluent quality is completed - The effluent quality will be better than raw sewage so risk of non-compliance is low. - An alternative disposal location is identified.	Unlikely	Insignificant	
Socio-economic								
1	Impacts on recreational use at various nearby sites during operation.	Unlikely	Major		- Recycled Water Flow Release protocol and Surface and Groundwater Response Plan have been developed. - Undertake compliance testing of water discharged to the environment during process commissioning and verification to confirm compliance with the concentration limits as stipulated in the EPL. - Public notification protocols to be followed by the WRP Operator	Rare	Minor	
Hazards and risks (including human health)								

No	Risk	Risk rating – before mitigation				Risk rating – after mitigation		
		Likelihood	Consequences	Rating	Mitigation	Likelihood	Consequences	Rating
1	Safety hazards and risks during operation (eg bushfire, power outages, chemical spills, traffic accidents).	Possible	Extreme		- 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) - 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 EDT on site will provide up to 8 hrs storage at average dry weather flow. - If EDT is full, sewage will flow to the emergency discharge point at Montgomery Creek. - SPSs have storage capacity as well. - Chemical areas are bunded in accordance with the DG Code - Emergency response procedures in place - Operator is notified immediately via SCADA/telemetry of all emergency alarms	Possible	Minor	
2	Risk to human health via pathways of exposure of recycled water.	Possible	Major		- Operations personnel trained on health risks and hygiene - Recycled water is monitored for compliance against the RWQMP - RWQMP in place.	Unlikely	Minor	

No	Risk	Risk rating – before mitigation				Risk rating – after mitigation		
		Likelihood	Consequences	Rating	Mitigation	Likelihood	Consequences	Rating
3	During process commissioning and verification the WRP is unable to treat sewage from the Googong Township	Unlikely	Major		- WRP is designed with redundancy and contingencies - WRP will be pre-commissioned and wet-commissioned prior to process commissioning to verify all equipment is operational in accordance with the specifications - WRP will be operated and maintained in accordance with O&M manuals and SOPs - At expected inflow rates during process commissioning, the WRP has up to 7 days storage on site - In the event that the WRP cannot receive flow for an extended period, tankering of sewage can resume from the SPS1.	Rare	Insignificant	

Appendix F

Pollution Incident Response

Management Plan

Design and Construction of Stage AB of the Googong Water Recycling Plant (WRP)

Contract Number WRP01

Pollution Incident Response Management Plan - Process Commissioning and Verification OEMP

DOCUMENT No. 8553-PLN-013

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
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1.1	20/2/2015	RPS Manidis Roberts	CH	RS	Template prepared for JHPL inputs
2	16/4/2015	JHPL	Lisa Chan	Steve Merange	Inputs by JHPL
3	29/4/2015	JHPL	Lisa Chan	Steve Merange	GTPL, RPS, MWH Comments incorporated. For QCC Review.
4	22/5/15	JHPL	Lisa Chan	Steve Merange	Reviewed by EPA, NOW, NSW Health, OEH, QCC and ICON
5	29/6/15	JHPL	Lisa Chan	Steve Merange	Reviewed by QCC

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1	Googong Township Pty Ltd	
2	Queanbeyan City Council	
3	DP&E	
4	NSW EPA	
5	OEH – Biodiversity and Aboriginal Heritage	
6	NSW Office of Water	
7	NSW Health	

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1 Introduction

1.1 Background

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 *Protection of the Environment Operations Act 1997* (POEO Act)) for holders of Environment Protection Licences (EPLs) to prepare, keep, test and implement a Pollution Incident Response Management Plan (PIRMP).

Googong Township Pty Ltd (GTPL) has obtained EPL (No. 20188), which allows for the process commissioning and process verification of the Stage AB WRP (refer Appendix 1); and under Section 153A of the POEO Act are required to prepare and implement a PIRMP. Copies of the EPL and PIRMP must be held on site.

1.2 Purpose and objectives

This PIRMP (or Plan) has been developed for the process commissioning and process verification of the Stage AB WRP, as part of the Googong Township Integrated Water Cycle (IWC) Project and should be read in conjunction with the Operation Environment Management Plan (OEMP).

The Stage AB WRP OEMP is the key document in the Environmental Management System (EMS) for operation works and is required as per the IWC Project Condition of Approval (CoA) D7. The EMS structure, which includes this PIRMP is outlined in Figure 1 and described in more detail in Section 1.8 of Stage AB WRP OEMP.

The objectives of this PIRMP are to:

- Ensure comprehensive and timely communication about a pollution incident to staff at the premises, the Environment Protection Authority (EPA) and other relevant authorities specified in the POEO Act (such as local councils, NSW Ministry for Health, WorkCover NSW, and Fire and Rescue NSW), and people outside the project who might be affected by the impacts of a pollution incident.
- Minimise and control the risk of a pollution incident associated with the process commissioning and verification of the project by requiring identification of risks and the development of planned actions to minimise and manage those risks.
- Ensure that the PIRMP is properly implemented by trained staff, identifying persons responsible for implementing it and ensuring that the plan is regularly tested for accuracy, currency and suitability.

Unless otherwise identified, JHPL will be responsible for the review and implementation of this Plan and related environmental documents based on detailed commissioning information.

1.3 Definition of 'pollution incident'

The POEO Act defines a pollution incident as:

> *An incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.*

A pollution incident is required to be notified if there is a risk of material harm to the environment. Material harm is defined under the POEO Act as:

- If the actual or potential harm to the health or safety of human beings or ecosystems is not trivial.
- If actual or potential loss or property damage (including clean-up costs) associated with an environmental incident exceeds $10,000.

Industry is now required to report pollution incidents immediately (i.e. promptly and without delay) to the EPA, NSW Health, Fire and Rescue NSW, WorkCover NSW and the local council.

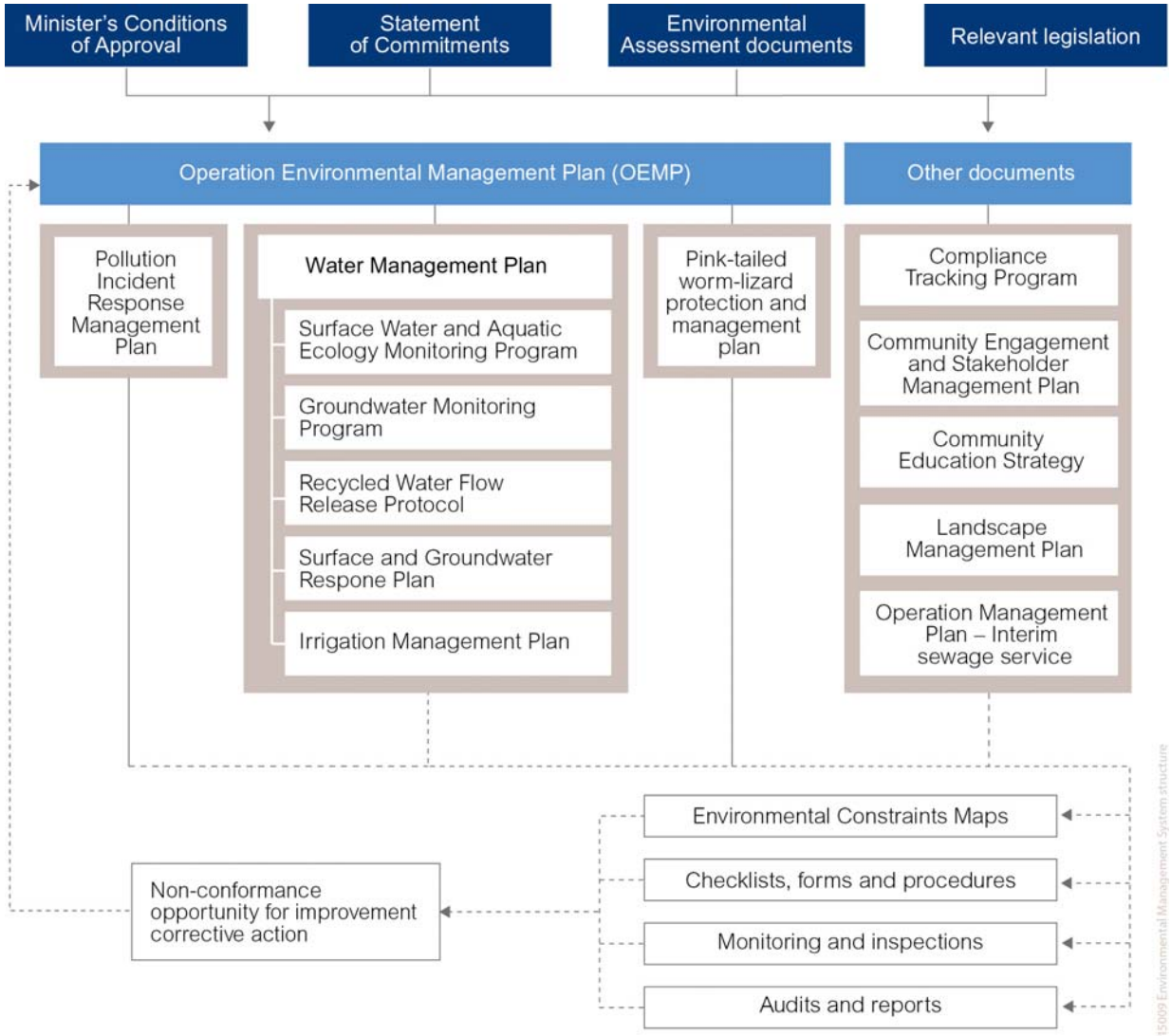


Figure 1 Environment Management System structure

2 Project description

Commissioning and testing of the Stage AB WRP is undertaken after the completion of construction. The commissioning and testing is performed in two stages:

- Process Commissioning (SP3)
- Process Verification (SP4)

After Process Verification (SP4), the WRP will be operated by QCC. The WRP treats sewage from the Googong township to a standard suitable for non-potable urban reuse and discharge to the environment. The objective of the process commissioning and process verification phases is to demonstrate that the WRP can operate in compliance with the requirements of the EPL for environmental discharge and comply with the recycled water quality requirements of the NOW approval.

Management of the process commissioning and verification phases is covered in the Googong WRP Project Commissioning Plan, 8553-PLN-006.

2.1 Process commissioning

During process commissioning, the biological process will be started by seeding with activated sludge. Sewage will be introduced to the WRP via the operation of the upstream SPS1.

The seed sludge will be tankered to the WRP site from an STP with a suitable activated sludge to enable process startup. A licensed tankering contractor will be used to transport the seed sludge. The Traffic Management Plan and Standard Operating Procedure is included in Appendix G & H. The seed sludge will be tankered onto the site and emptied into the Emergency Discharge Tank (EDT) via a fixed point coupling. The tanker discharge area will bunded to contain any spillage. The WRP odour control system will be operational prior to the introduction of seed sludge to extract and treat any odour emissions from the seeding activities.. The seeding and startup of the WRP will be completed in accordance with the Seeding & Startup Plan, 8553-PLN-0014.

Chemicals will be delivered and used as part of the treatment process. A Traffic Management Plan and Standard Operating Procedure will be developed prior to delivery of any chemical on site and included in Appendix G & H. Bulk chemicals are unloaded in a dedicated bunded area.

During process commissioning, the WRP will be monitored and adjustments made to the operation in order to establish and stabilise the biological treatment process. (Note: Process design and performance is by the GTPL Principle's Engineer). During the process stabilisation period it is expected that the effluent quality may not meet the EPL discharge criteria and hence will be required to be tankered to the Queanbeyan STP, Coppins Crossing or Lower Molongolo Water Quality Control Centre (LMWQCC)for disposal and treatment. The Traffic Management Plan and Standard Operating Procedure for effluent tankering is included in Appendix G & H. Fixed point couplings and dedicated bunded areas will be provided for the connection of the tanker to the effluent collection point to minimise the risk of spillage on site. Multiple days' storage on site (over 7 days at the expected sewage inflow rate during commissioning) provides contingency in the event that tankers are unavailable for a period of time. Further, the SPS can be stopped, if required.

It is expected that the process commissioning duration will be 7 weeks duration and will include compliance testing of the effluent quality.

The purpose of the process commissioning phase is to confirm the readiness of the system to achieve the required performance, leading to treated effluent being discharged from the WRP to the designated discharge location, in compliance with the EPL.

In addition to the effluent performance, the individual unit processes and the odour control system will be tested to assess performance against the Technical Specifications.

2.2 Process verification

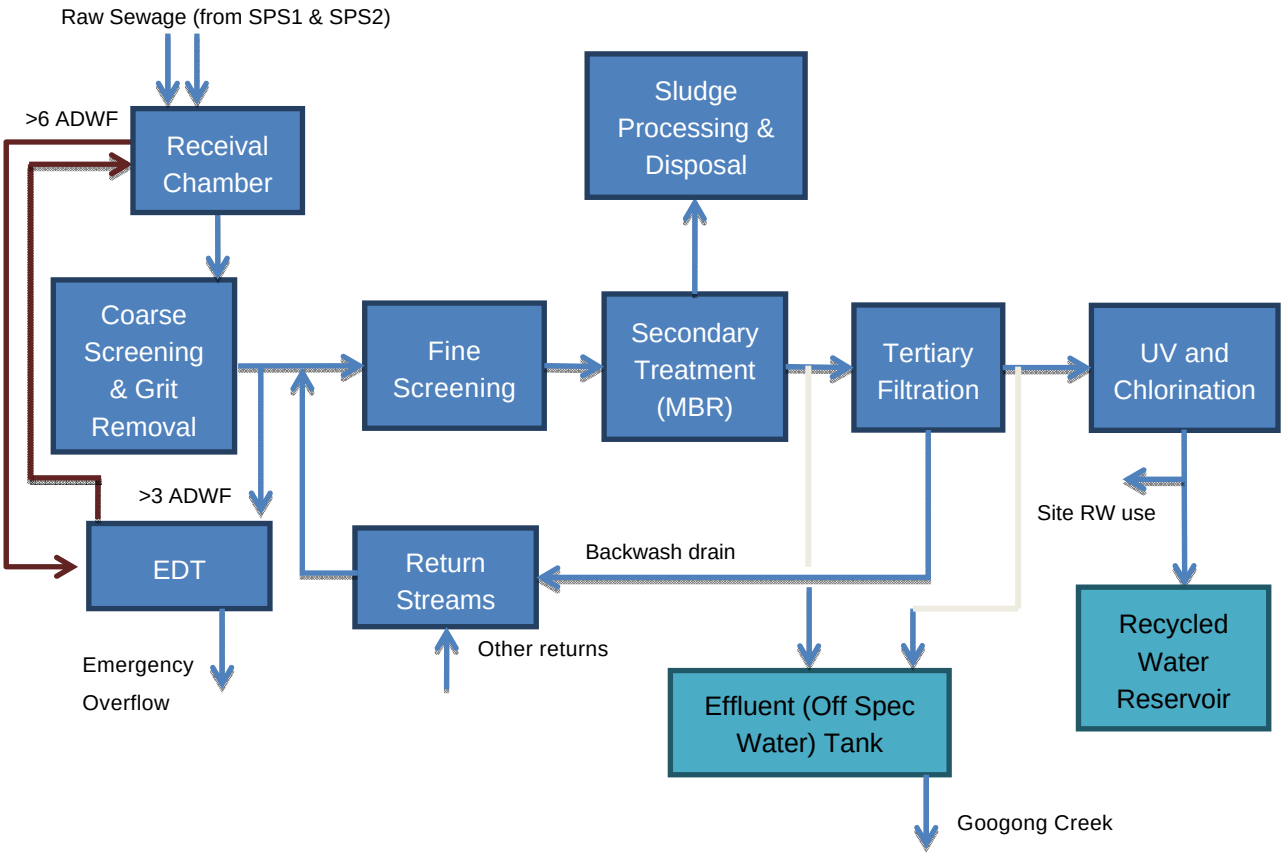
The process verification phase includes compliance testing and reliability trials over a period of 140 days. During the process verification phase, the WRP will be tested in 'normal operation', where the WRP is operated and maintained to a standard expected of a typical sewage treatment plant in NSW and in automatic operation. Effluent will be discharged to the designated discharge location as per the EPL.

In the event that effluent does not meet the effluent discharge criteria, the effluent will be tankered offsite as per the procedure developed for the Process Commissioning phase.

During the process verification phase, compliance testing will be completed to verify the WRP performance, leading to NOW approving the WRP for the supply of recycled water to the Googong Township.

In addition to the recycled water quality, the individual unit processes, effluent quality and the odour control system will be tested to assess performance against the Technical Specifications.

2.3 Description of the Stage AB – WRP elements



2.3.1 Receipt of sewage

There are two pump stations that pump sewage to the inlet works of the WRP. During the process commissioning and verification stage flows will be received from SPS 1 and SPS 2.

The SPSs and sewage network are operated by QCC and are controlled independently of the WRP.

The inflow of sewage to the WRP is monitored by the WRP control system.

2.3.2 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 the incoming rising mains 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.

2.3.3 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.
- Swing Anaerobic/Primary anoxic zone. The anaerobic zone allows for phosphorus removal, which is aided by chemical removal through ferric sulphate dosing. When biological phosphorous removal is not required, this volume will become part of the primary anoxic zone
- 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.

2.3.4 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 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,

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.

2.3.5 Chemicals

Several chemicals are utilised at the WRP:

- Ferric sulphate – to control odours and remove chemical phosphorus.
- Alum – to precipitate phosphorus.
- Sodium hydroxide – to increase alkalinity to aid the biological processes that occur within the bioreactor, increase pH for disinfection and chemical neutralisation
- Sodium hypochlorite – to disinfect the secondary effluent, clean both the MBR and tertiary membranes; scum suppression and emergency dosing.
- Sulphuric acid – to clean both the MBR and tertiary membranes.
- Citric acid – to clean both the MBR and tertiary membranes
- Acetic acid – a supplementary carbon source to assist the biological processes within the bioreactor
- Sodium Meta Bisulphite – for de-chlorination and chemical neutralisation
- Polymer – to aid waste sludge thickening and dewatering

The chemicals are stored in storage tanks located, together with dosing pumps, in a centralised, bunded area at the WRP (except for polymer, which is stored in the Dewatering Building). 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.

2.3.6 Discharges to environment

In the event that 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 location point at Googong Creek. This effluent will be compliant with the criteria limits of the EPL.

2.3.7 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 that flows to the Emergency Detention Tank (EDT). The EDT will

receive wet weather flows greater than 3 x ADWF (34.3 L/s) that have been screened (6mm) and de-gritted at the inlet works. In the event of flows being received at the WRP at >6 ADWF (68.5 L/s), or power failure causing blockage of the packaged inlet works, the EDT will also receive flows which have been screened to 10 mm. In the event that the 10 mm overflow screen is blocked, the EDT may also receive unscreened sewage.

The Stage AB EDT capacity of 330 m^3 will ensure that all wet weather flow, for events up to the 1:10 yr design storm event, will be captured and treated at the WRP. Emergency storages at the SPSs 1 and 2 will be utilised for emergencies or wet weather events in excess of the 1:10 year ARI at the discretion of the Network Operator.

Operational control for wet weather events is automatically controlled by the SCADA system and overflow weirs at the inlet distribution chambers. Telemetry installed will notify the Plant Operator of an emergency event. The upstream SPS's will operate based on two flow set points; a dry weather flow (DWF) flow set point and wet weather flow (WWF) set point. At each SPS, the pump operation will be controlled via a cut in and cut out level for operation at DWF. In the event of wet weather, the wet well level will continue to rise above the wet weather flow cut in level, leading to ramping up of the SPS pumps to deliver WWF. The SPS will operate to deliver WWF until the cut out level is reached, at which point the flow set point will decrease to DWF. Therefore, the WRP may receive a combination

The EDT will normally be empty under dry weather flow conditions. The EDT will gradually fill up during a major wet weather event. When the wet weather subsides, the EDT content will be returned to the inlet works for reprocessing using the EDT return pumps.

In the case where persistent wet weather occurs, which causes the available storage volume at the EDT to be exceeded, SPS 1 and 2 will deliver wastewater to the WRP at their WWF set points, and the excess wastewater will be discharged via the EDT to Montgomery Creek (on an emergency basis).

The EDT provides approximately 8 hours storage at the design average dry weather flows. There is an option to disinfect flows which are discharged to Montgomery Creek at the outlet of the EDT using sodium hypochlorite. Overflows to Montgomery Creek will most likely only occur during excessive wet weather (1-in-10 year event) where the bypassed flow will be heavily diluted. It is not proposed to dose chlorine on any overflow events during the process commissioning and verification phase of the WRP should such an event occur. Tests will be conducted on wet weather flow experienced during the process commissioning and verification phases to understand the faecal coliform level and chlorine demands. This information will then form the basis for implementing the bypass chlorination strategy

2.3.8 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.

2.3.9 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 Discharge Tank and General Purpose Pump Station

The Stage AB 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.

3 Hazard identification and pre-emptive measures

3.1 Identification of pollution hazards

Section 4.2 of the OEMP identifies environmental and safety aspects associated with the process commissioning and verification of the Stage AB Network. These may include:

- Effluent discharge from the WRP.
- Residual waste generation from the WRP – Grade B biosolids, screenings and grit.
- General solid waste - Non-recyclable and other putrescible general solid waste.
- Odour emissions.
- Spills - effluent, chemicals, sewage.
- Sewage overflow.
- Power outages.
- Bushfire/General fires.

3.2 Pre-emptive measures

A list of pre-emptive actions (also referred to as mitigation measures) is listed in Section 4.3 of the OEMP. Responsibility for implementing the mitigation measures to minimise or prevent the risk of pollution incidents from occurring are also defined in the OEMP.

Additionally, other EMS documents have been developed and can be used to identify potential hazards to human health and the environment, (e.g. environmental work method statements, environmental constraints map, and specific environmental procedures, forms and checklists).

4 Inventory of chemical pollutants

A Safety Data Sheet (SDS) and a Hazardous and Dangerous Substances Register shall be kept at all chemical storage and handling locations and which will provide an inventory of the pollutants on site.

JHPL's Commissioning Manager will:

- Ensure a current (within five years of the date of issue) SDS is available for all products and substances to be used on the site.
- Review the SDS to determine if the product or substance is classified as hazardous before a product or substance is used on the site.
- Provide all employees involved in the use of products classified as hazardous with relevant information and training to allow safe completion of the required task.
- Maintain a register of hazardous and dangerous substances used (displayed externally to storage facility).
- Ensure the quantities of chemicals are included in the hazardous substances register.

Furthermore, all storage and use of hazardous substances and dangerous goods will be stored:

- in accordance with the SDS and legislative requirements;
- in their original containers with the label intact at all times; and
- with a manifest of hazardous substances displayed externally to the storage facility.

JHPL's Commissioning Manager will be responsible for monitoring the quantity of chemicals stored/used on site to ensure the manifest quantity is not exceeded in accordance with the Regulations.

For storage of chemicals that exceed the manifest quantity as defined in the WHS Regulations, a Notification of DG on Premises shall be made to Worksafe with associated Emergency Plan lodged with Fire and Rescue NSW.

5 Safety equipment

A list of pre-emptive actions (or mitigation measures) to be implemented during operation of Stage AB WRP to minimise or prevent the risks to human health and the environment is outlined in Table 4.3 of the Stage AB WRP OEMP. The table includes a description of safety equipment and activity-specific equipment to address hazard, risk and safety issues. Spill kits will also be available on site for all personnel to use. Refer to Section 5 of the Workplace Health and Safety Plan for more detail on PPE and Site Safety Equipment.

6 Maps

The following maps have been included in this Plan:

- Figure 2 – Stage AB WRP site layout
- Figure 3 – Stage 1 EPL premises boundary
- Figure 4 – Sensitive receivers
- Figure 5 – Location of chemical pollutants to be stored on site
- Appendix 1 – Environmental Constraints Map for Stage AB WRP that shows environmental features including local waterways.

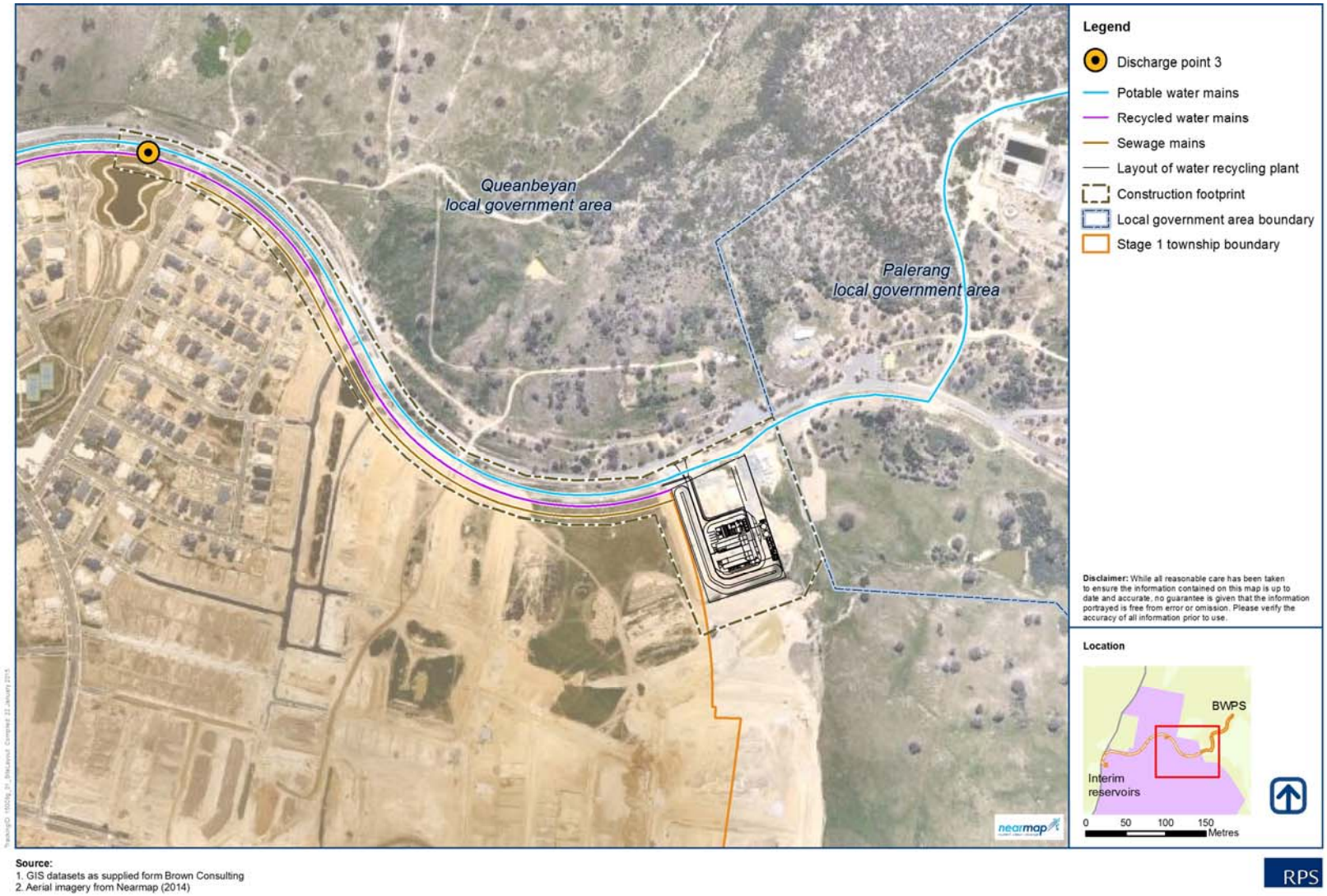


Figure 2 Stage AB WRP site layout

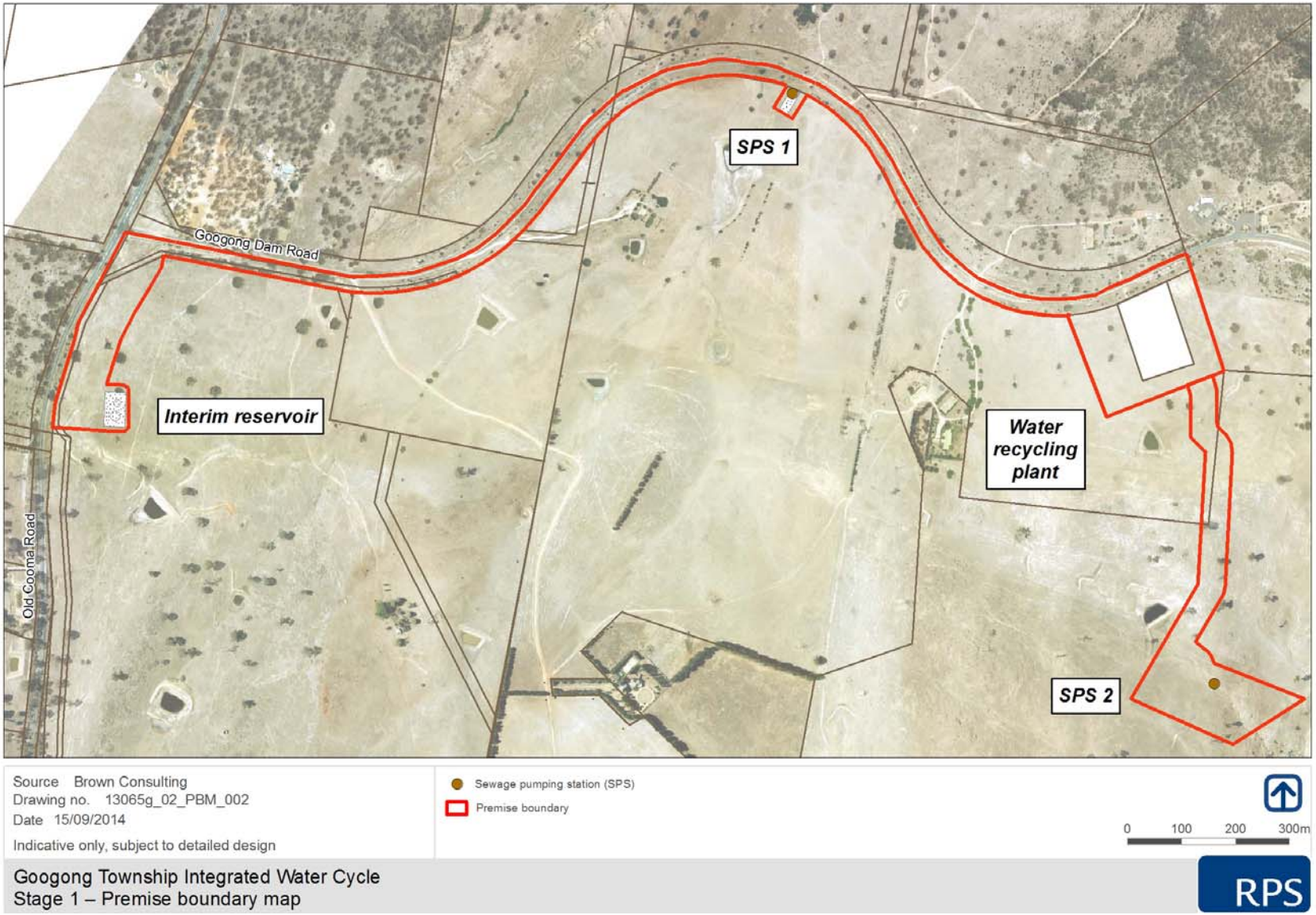


Figure 3 Stage 1 EPL premises boundary

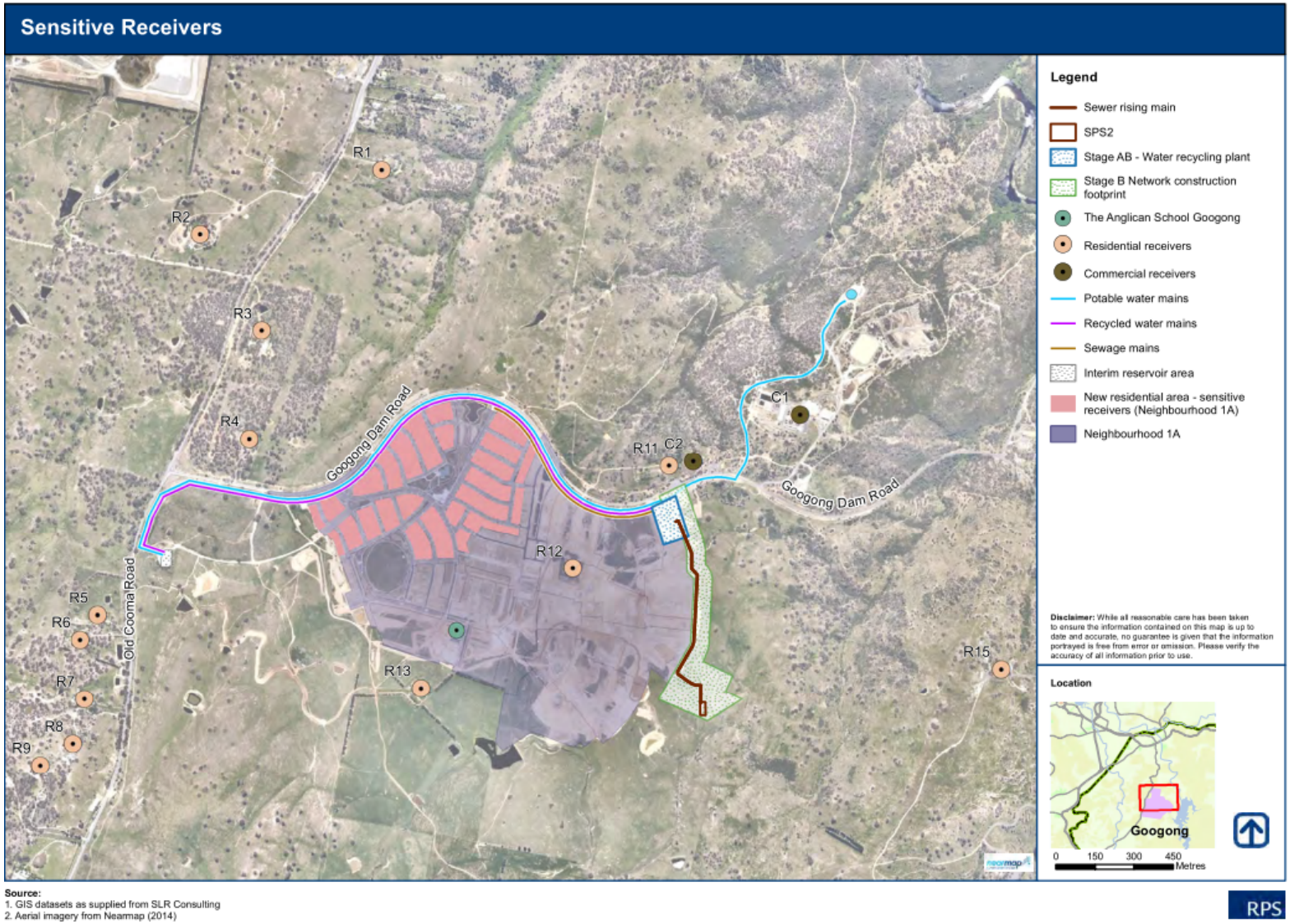


Figure 4 Sensitive receivers

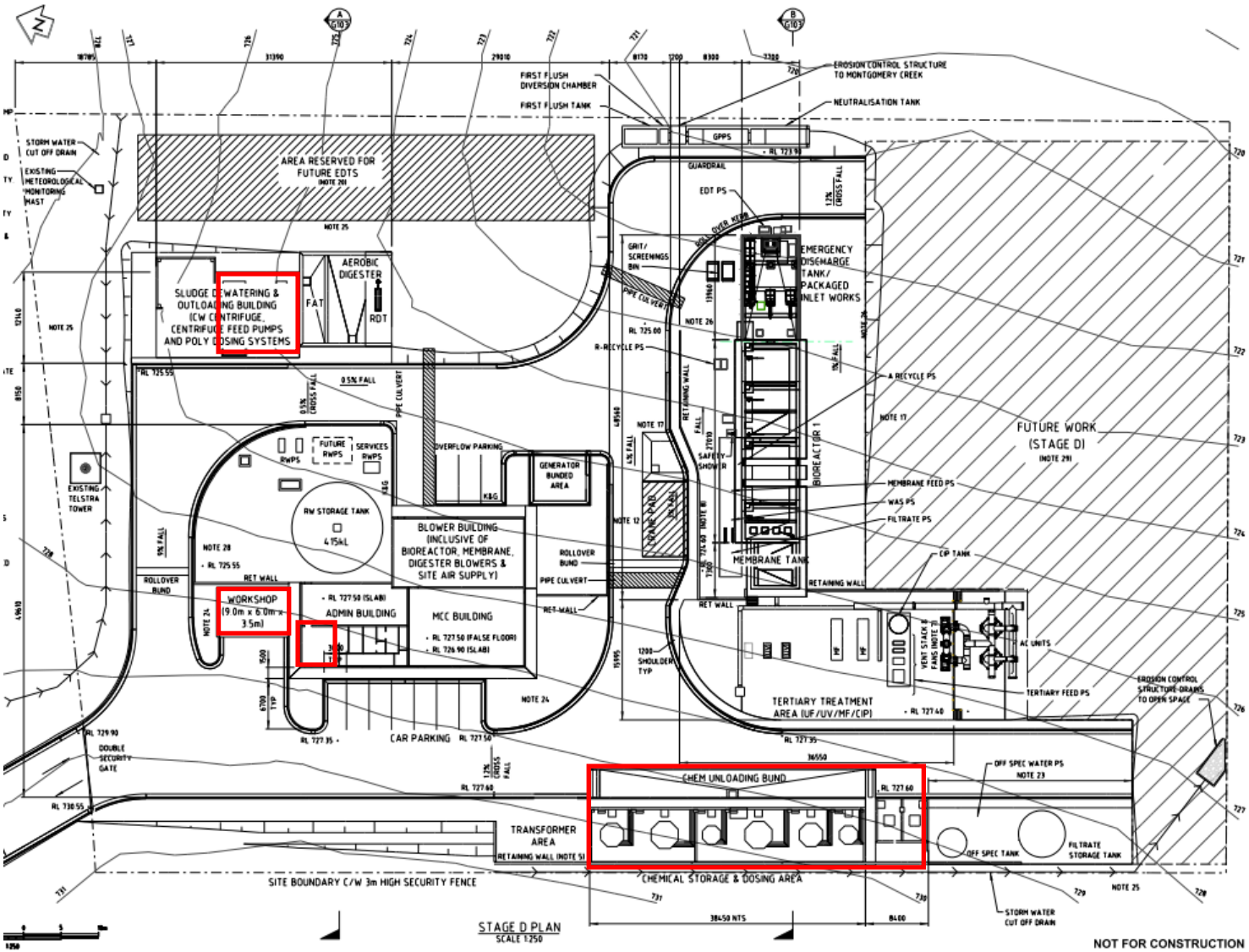


Figure 5 Location of chemical pollutants to be stored on site

7 Incident management and notification

Section 153F of the POEO Act requires the PIRMP is implemented if a pollution incident occurs. This section provides a detailed description of the actions that will be taken immediately after a pollution incident to reduce or control any pollution.

7.1 Classification of environmental incidents

The Stage AB WRP OEMP classifies two categories of environmental incidents. These are detailed in the sections below.

7.1.1.1 Category one

Category one incidents include:

- Unauthorised 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 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.

7.1.1.2 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 response

7.2.1.1 Category one

- If necessary, stop work in relevant area and take necessary actions or put in place suitable controls to avoid and reduce impacts of incidents to the environment or community.
- All JHPL personnel must immediately notify the Environment Manager (or Commissioning Manager) (refer to Section 7.3 of the OEMP).
- Environment Manager (or Commissioning Manager) to immediately notify the GTPL Assistance Project Director and RPS (refer to Section 7.3 of the OEMP)
- GTPL to immediately notify all relevant authorities (DP&E, EPA, Ministry of Health, WorkCover, QCC/Palerang Council and Fire and Rescue NSW) for pollution incidents causing or threatening material harm (refer to Section 7.3 of the OEMP).
- GTPL to immediately notify DP&E (and others as required) for all other category one incidents.
- JHPL will complete an incident report form and record in the Incident Register (to be developed and managed by JHPL) and submit report to GTPL within two days.
- JHPL and GTPL will investigate the incident (root cause analysis) and implement any opportunities for improvement (as soon as practical, but within one week). Refer Section 7.4 of the OEMP.
- GTPL to issue copy of incident report and root cause analysis to DP&E (and others as required) for their consideration (within seven days).

7.2.1.2 Category two

- If necessary, stop work in relevant area and take necessary actions or put in place suitable controls to avoid and reduce impacts of incidents to the environment or community.
- All JHPL personnel must immediately notify the Environment Manager (or Commissioning Manager) (refer to Section 7.3).
- Environment Manager (or Commissioning Manager) to immediately notify the GTPL Assistant Project Director and RPS (refer to Section 7.3 of the CEMP).
- JHPL will complete an incident report form and record in the Incident Register (to be developed and managed by JHPL) and submit to report to GTPL within two weeks.
- JHPL and GTPL will investigate the incident (root cause analysis) and implement any opportunities for improvement (as soon as practical, but within one week). Refer Section 7.4 of the OEMP.
- GTPL to report on category two incidents to DP&E in the six-month construction compliance report.
- GTPL to report on category two incidents to EPA in the Annual Return.

7.3 Incident reporting

The Environment Manager (or Commissioning Manager) must immediately notify GTPL and RPS of any environment incidents immediately and in writing within 24 hours of the incident occurring.

GTPL and/or RPS will determine if the incident is a Category one or Category two incident and then follow the appropriate reporting protocol (see below and refer Figure 1).

All incident recording, management and reporting will be in accordance with the requirements of the Compliance Tracking Program, which documents GTPL's:

- Mechanisms for recording incidents and actions taken in response to those incidents.
- Provisions for reporting environmental incidents to the Director-General during construction and operation.

7.3.1 Category one pollution incident reporting - notification under the POEO Act

All pollution incidents causing or threatening material harm to the environment must be notified to the EPA via the EPA Environment Line (telephone 131 555) and to the Unit Head of the South East Region (refer Figure 1) in accordance with Section 148 of the POEO Act.

A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur. Material harm is defined under the POEO Act:

- If the actual or potential harm to the health or safety of human beings or ecosystems is not trivial.
- If actual or potential loss or property damage (including clean-up costs) associated with an environmental incident exceeds $10,000.

All pollution incidents causing or threatening material harm to the environment must be notified in accordance with Section 148 of the POEO Act. For Category one pollution incidents, GTPL will immediately (that is promptly and without delay, after they become aware of the incident) notify the following relevant agencies:

- DP&I.
- EPA.
- Ministry of Health.
- WorkCover.

- QCC and/or Palerang Council.
- Fire and Rescue NSW.

An environment incident report (in accordance with the reporting requirements of EPL 20188) will be prepared by the contractors and provided to GTPL and RPS within two days of the incident occurring, including learnings from the incident and proposed measures to prevent the occurrence of a similar incident.

Within seven days of the incident occurring, GTPL will provide a detailed incident report and copy of the root cause analysis investigation to the EPA, including the following information in accordance with Section 150 and Condition R3 of EPL 20188 of the amended POEO Act:

- The time, date, nature duration and location of the incident.
- The location of the place where pollution is occurring or is likely to occur.
- The nature, the estimated quantity or volume and the concentration of any pollutants involved, if known.
- The circumstances in which the incident occurred, including the cause of the incident, if known.
- The action or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known.
- Other information prescribed by the regulations.

In line with the Section D3 of WMP, if an emergency discharge was to occur from the system, the operator must notify potentially affected stakeholders, including ACT Territory and Municipal Services (TAMS) and downstream landholders.

7.3.2 All other Category one incident reporting

For all other Category one incidents, GTPL will notify the Director-General DP&E and any relevant agencies as soon as practicable after GTPL becomes aware of the incident.

An environment incident report will be prepared by the contractors and provided to GTPL and RPS within two days of the incident occurring, including learnings from the incident and proposed measures to prevent the occurrence of a similar incident.

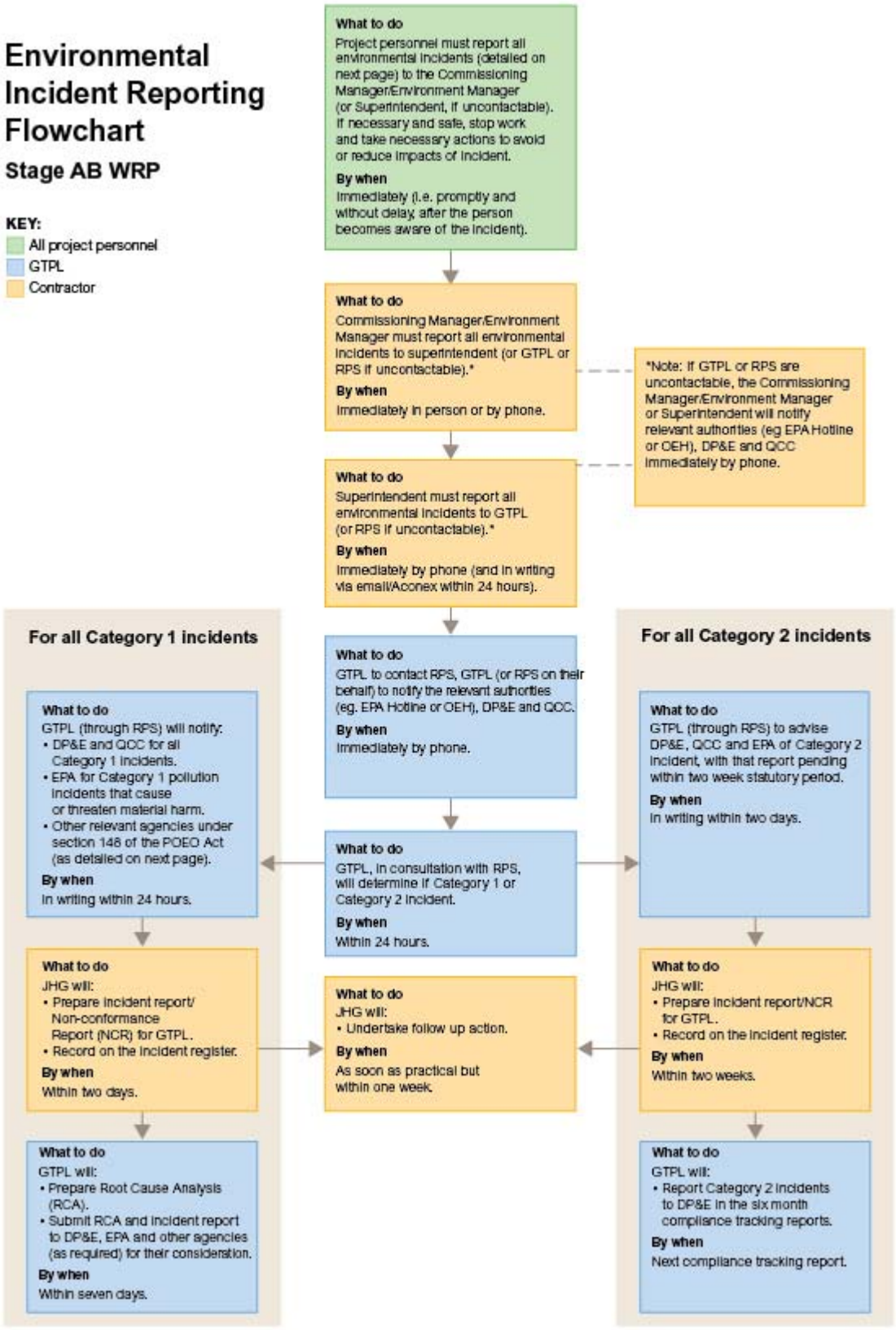
Within seven days of the incident occurring, GTPL will provide the Director-General of DP&E, and any relevant agencies referenced in Section 7.3.1, a detailed incident report and copy of the root cause analysis investigation.

7.3.3 Category two incident reporting

An environment incident report will be prepared by the contractors and provided to GTPL and RPS within two weeks of the incident occurring, including learnings from the incident and proposed measures to prevent the occurrence of a similar incident.

Category two incidents will be reported to DP&E through the six-monthly compliance reports (required for the first two years of operation). They will also be reported to the EPA through the Annual Return in accordance with Condition R1 of EPL 20188.

Figure 1 Incident reporting flowchart



WHAT IS AN ENVIRONMENTAL INCIDENT?

What is a Category 1 Incident?

- A pollution incident which 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). For example, unauthorised sediment discharge or fuel, oil or chemical spill leaving site.
- 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.

What is a Category 2 Incident?

- 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 1 incident.

CONTACT DETAILS

	Name	Phone	Email
PROJECT TEAM			
	JHG/BLACK MOUNTAIN		
	Steve Merange (Project Manager)	0420 395 388	steve.merange@jhg.com.au
	Ross Phillips (Commissioning Manager)	0439 155 756	ross.phillips@jhg.com.au
	Andre Krulze (Environment Manager)	0406 524 115	andre.krulze@jhg.com.au
	Geoff Gardner (Superintendent)	0432 565 123	geoff.gardner@blackmtn.com.au
	GTPL		
	Craig Harris (Assistant Project Director)	0409 999 059	craig.harris@cicaustralia.com.au
	RPS		
	Rob Salisbury (Environment Advisor to GTPL)	0416 034 054	rob.salisbury@rpsgroup.com.au
AGENCIES			
	DP&E		
	Lisa Mitchell (Manager Water Infrastructure Projects)	(02) 9228 6263	lisa.mitchell@planning.nsw.gov.au
	EPA (Pollution Incidents)		
	Julian Thompson (Unit Head - South East Region)	(02) 6229 7002	julian.thompson@epa.nsw.gov.au
	Sharon Peters (Regional Operations Officer)	(02) 6229 7002	sharon.peters@epa.nsw.gov.au
	EPA Hotline	131 555	
	OEH (Heritage and Biodiversity)		
	Jackie Taylor (Archaeologist – South East)	0406 201 239	jackie.taylor@environment.nsw.gov.au
	Heritage Council of NSW (for non-Aboriginal heritage)	(02) 9873 8500	
	Rod Pietsch (Senior Threatened Species Officer)	(02) 6229 7114	rod.pietsch@environment.nsw.gov.au
	QCC		
	QCC Duty Officer	0417 499 153	
OTHER AGENCIES			
	NSW Rural Fire Service	000	
	Southern NSW Local Health District Public Health Unit	(02) 6080 8900	
	WorkCover NSW	131 050	

Notification of pollution incidents under Section 148 of the Protection of Environment Operations Act 1997.

Pollution incidents causing or threatening material harm to the environment must, immediately after the incident is made aware of, notify each relevant authority of the incident and all relevant information about it.

Relevant authority means any of the following:
a) for all incidents
- EPA
- QCC

b) potentially
- Southern NSW Local Health District Public Health Unit
- WorkCover NSW
- NSW Rural Fire Service

Contact details have been provided for the relevant authorities.

12083v_xx

Information as of April 21, 2015

8 Emergency contact details

Table 1 Emergency Contacts

Emergency contact/organisation	Name	Contact details
GTPL Assistant Project Director	Craig Harris	0409 999 059
JHPL Project Manager	Steve Merange	0420 395 388
JHPL Commissioning Manager	Ross Phillips	0439 155 756
JHPL Environment Manager	Andre Kruize	0408 524 115
OEH – EPA	Pollution line	131 555
OEH – EPA (South East Region)	Julian Thompson	(02) 6229 7002
DP&E	Lisa Mitchell	(02) 9228 6283
NSW Health	N/A	(02) 9391 9000
Police	N/A	000 (or 112 from mobiles)
Local Police	N/A	131 444
Ambulance	N/A	000 (or 112 from mobiles)
Canberra Hospital	N/A	(02) 6244 2222
NSW Rural Fire Service	N/A	000 (or 112 from mobiles)
Gas/electricity	N/A	131 909
Queanbeyan City Council	N/A	(02) 6285 6000 After hours 0417 499 153
ICON Water	N/A	6248 3457
WorkCover NSW	N/A	13 10 50
Telstra	N/A	132 999
ACT Territory and Municipal Services	N/A	13 22 81
WIRES	N/A	1300 194 737

9 Emergency response and minimising harm to persons

The JHPL emergency response provides more detail on measures to minimise the risk of harm to any persons on the premises resulting from a pollution incident (and other emergencies such as fire, flood etc). This plan includes the following:

- Evacuation procedures including the advertising of muster points.
- Identifying options for medical treatment and location of nearby services.

10 Community notification

Local community stakeholders that may be potentially affected by a pollution incident include nearby residents, the ranger station and the ACTEW water treatment plant or downstream water users (refer Figure 4). In the unlikely event of a pollution incident that could result in impacts outside the Stage AB WRP site, community stakeholders will be notified immediately by one of the following methods:

- Door knocking by GTPL representative or emergency services personnel (dependent on nature of event).
- Phone call by GTPL representative.
- Other methods determined by the GTPL as deemed necessary or as advised by a particular agency (e.g. follow up letters/emails, or website update).

All communications will be undertaken in accordance with the Community Engagement and Stakeholder Management Plan that includes a Community Information Plan, which has been prepared for Stage 1 of the IWC Project.

11 Staff training

Details regarding the nature and objectives of any staff competence, training and awareness are outlined in Section 5 of the Stage AB WRP OEMP. Several forms of environmental training will be provided, including:

- A project site induction, including environmental roles and responsibilities.
- Toolbox talks.
- Environmental Safe Operating Procedures for site activities to which all site personnel will be inducted.
- Environmental awareness training for specific issues.

The Environment Manager (or Commissioning Manager) will undertake training and maintain a register of all project site inductions and environmental training carried out will be maintained.

12 Testing and review

12.1 Testing of the PIRMP

12.1.1 Timing

The POEO (General) Regulation 2009 (Clause 98E) states for testing of the PIRMP:

(1) The testing of a plan is to be carried out in such a manner as to ensure that the information included in the plan is accurate and up to date and the plan is capable of being implemented in a workable and effective manner.

(2) Any such test is to be carried out:

- *Routinely at least once every 12 months, and*
- *Within 1 month of any pollution incident occurring in the course of an activity to which the licence relates so as to assess, in the light of that incident, whether the information included in the plan is accurate and up to date and the plan is still capable of being implemented in a workable and effective manner.*

In accordance with the Regulation, testing of this PIRMP will occur:

- Initially within three months after commencement of process commissioning of Stage AB WRP, and
- Within 1 month of any Category One pollution incident during the process commissioning and verification of Stage AB WRP.

12.1.2 Records

Testing of the PIRMP will involve:

- Desk top simulation; or
- Practical exercise or drill.

JHPL's Environment Manager (or Commissioning Manager) will record the outcomes of each test by using the register included at Appendix 3. If the test identifies any shortcomings, this PIRMP will be corrected and/or appropriate non-conformance actions will be undertaken in accordance with Section 8.4 of the Stage AB WRP OEMP. This would include any non-conformance or opportunities for improvement to be recorded through the non-conformance register.

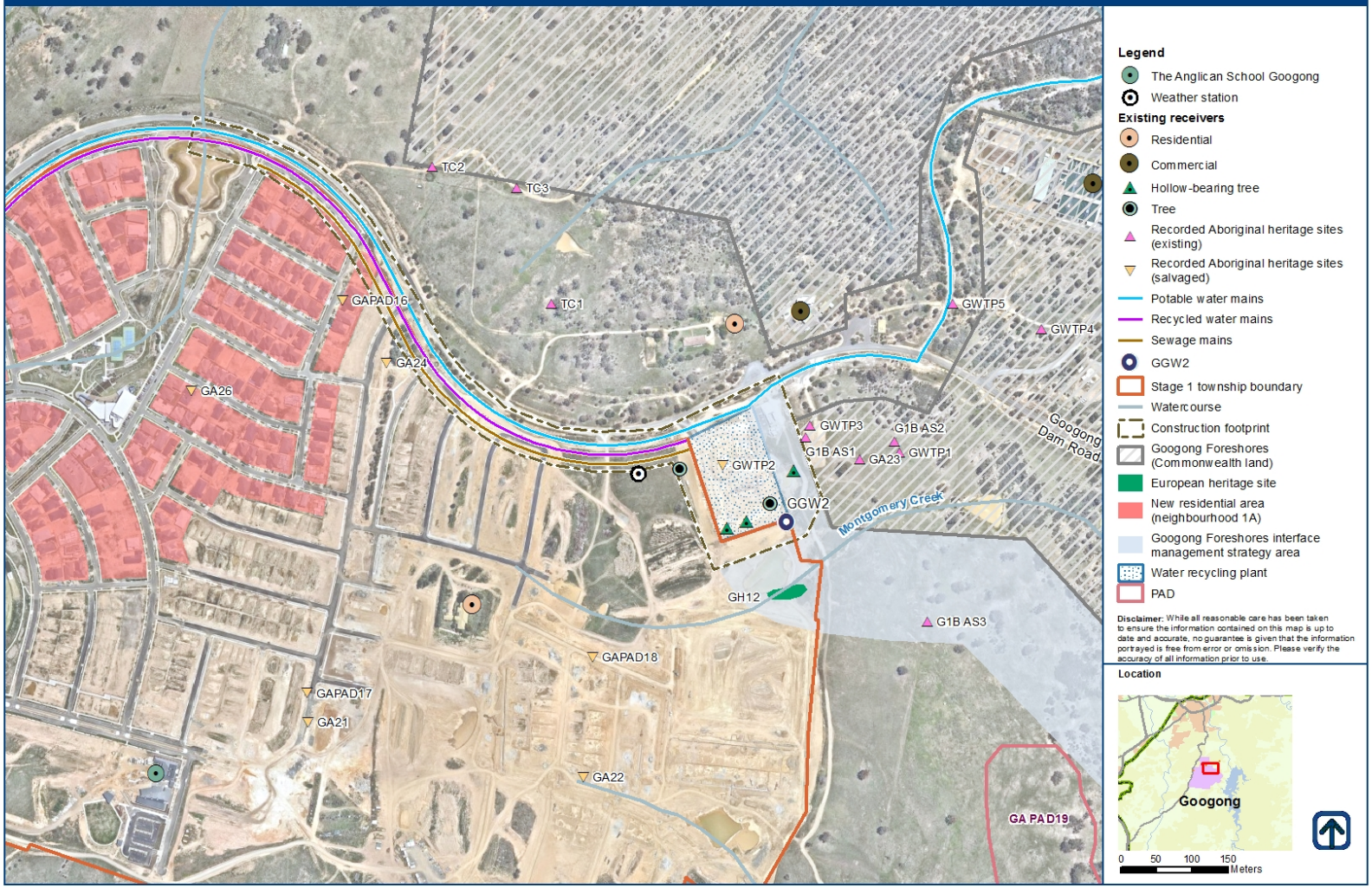
Appendix 1

EPL #20188

Appendix 2

Environmental Constraints Map

Environmental Constraint Map



Source:
1. GIS datasets as supplied from Navin Officer
2. Aerial imagery from Nearmap (2015)

RPS

Appendix 3

PIRMP Test Register

Date of test	Name of personnel undertaking test	Manner of testing	Summary of changes (include brief detail and section number	Date of update

Appendix G

Traffic Management Plan

EFFLUENT TRANSPORT GOOGONG TOWNSHIP TO QUEANBEYAN STP or COPPINS CROSSING

INTRODUCTION

Transpacific has been contracted by Googong Township Pty Ltd (GTPL) to collect effluent from the Googong Township Water Recycling Plant (WRP) and transport loads to Queanbeyan Sewage Treatment Plant (STP) or the ACTEW disposal point at Coppins Crossing for processing. A **maximum of 20 return trips** will be made each day. This Traffic Management Plan outlines traffic considerations for this activity.

Googong WRP site: Effluent is pumped into the tanker and then transported to Queanbeyan STP (located about 13 km in the ACT) or to the Coppins Crossing disposal point (located about 40 km in the ACT).

The Transpacific Project Manager is Steve Martin, available on **0419 418 825**

Please **notify the Project Manager if**:

1. Site conditions change; and/or
2. This Work Instruction is incorrect.

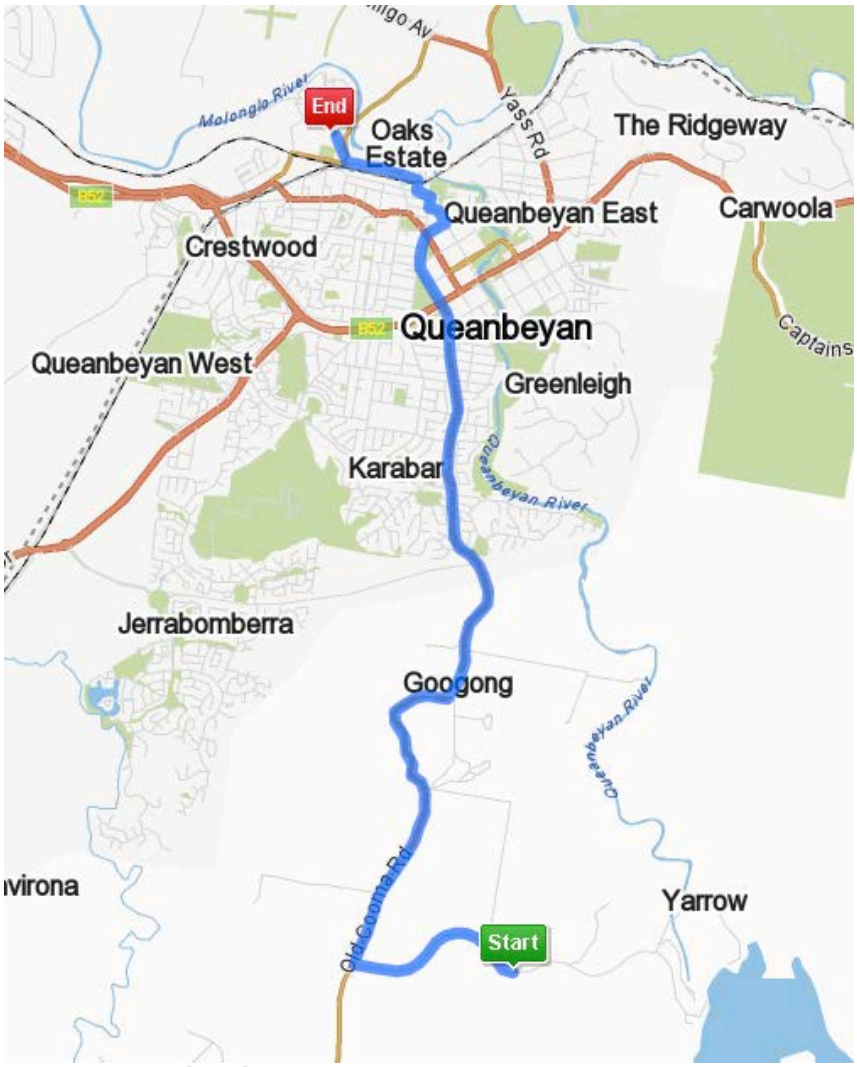
SPECIFIC TRANSPORT ROUTES

The following transport route has been formulated in conjunction with Queanbeyan City Council who operate the Queanbeyan STP and who have discussed the arrangements with OEH as well as the EPA in Canberra. It has been formulated to have minimum effect on the local residents with regards to noise, and traffic movements.

Googong to Queanbeyan STP designated route:

Continue on **Googong Rd, Googong** - proceed West		
Turn right onto **Old Cooma Rd, Googong**	5.2km	4min
Continue along **Cooma St, Karabar**	2.7km	4min
At the roundabout take the **1st** exit onto **Lowe St, Queanbeyan** at **St Gregorys Infants**	0.5km	1min
At the roundabout take the **1st** exit onto **Lowe St, Queanbeyan**	0.2km	30sec
Veer right onto **Campbell St, Queanbeyan** at **Motel Parkway**	0.3km	48sec
Continue along **Erin St, Queanbeyan**	0.2km	34sec
Turn left onto **Collett St, Queanbeyan** at **Retirement Village**	0.3km	37sec
Turn right onto **Campbell St, Queanbeyan** at **Greek Orthodox Church**	0.1km	20sec
Continue along **Henderson Rd, Queanbeyan**	0.1km	21sec
Turn right onto **Mcewan Av, Queanbeyan**	0.1km	16sec
Turn left onto **Railway St, Oaks Estate**	0.8km	2min
Turn right onto **Oaks Estate Rd, Oaks Estate**	28m	2sec
Turn left onto **Nimrod Rd, Jerrabomberra District**	0.3km	28sec
Arrive at **Nimrod Rd, Jerrabomberra District**		

Return to Googong STP in the reverse direction.



Source: Whereis

The following transport route to Coppins Crossing has been formulated to have minimum effect on the local residents with regards to noise, and traffic movements and use major roads where possible.

Googong to Coppins Crossing designated route:

Continue along **Googong Rd, Googong**

Turn right onto **Old Cooma Rd, Googong**

Continue along **Cooma St, Karabar**

At the roundabout take the **1st** exit onto **Lowe St, Queanbeyan** at **St Gregorys Infants**

Turn right onto **Kings Hwy, Queanbeyan**

At the roundabout take the **2nd** exit onto **Kings Hwy, Queanbeyan East**

At the roundabout take the **1st** exit onto **Yass Rd, Queanbeyan East**

Continue along **Pialligo Av, Majura**

Continue on **Pialligo Av, Majura** - proceed West

At the roundabout take the **1st** exit onto **Pialligo Av, Majura**

At the roundabout take the **1st** exit onto **Pialligo Av, Majura**

Continue along **Morshead Dr, Pialligo**

At the roundabout take the **2nd** exit onto **Morshead Dr, Campbell**

At the roundabout take the **2nd** exit onto **Morshead Dr, Campbell**

At the roundabout take the **2nd** exit onto **Morshead Dr, Barton**

Continue along **Parkes Wy, Parkes**

At the roundabout take the **1st** exit onto **Parkes Wy, Parkes**

Take the LEFT FORK onto **Parkes**

Continue along **Parkes Wy, Parkes**

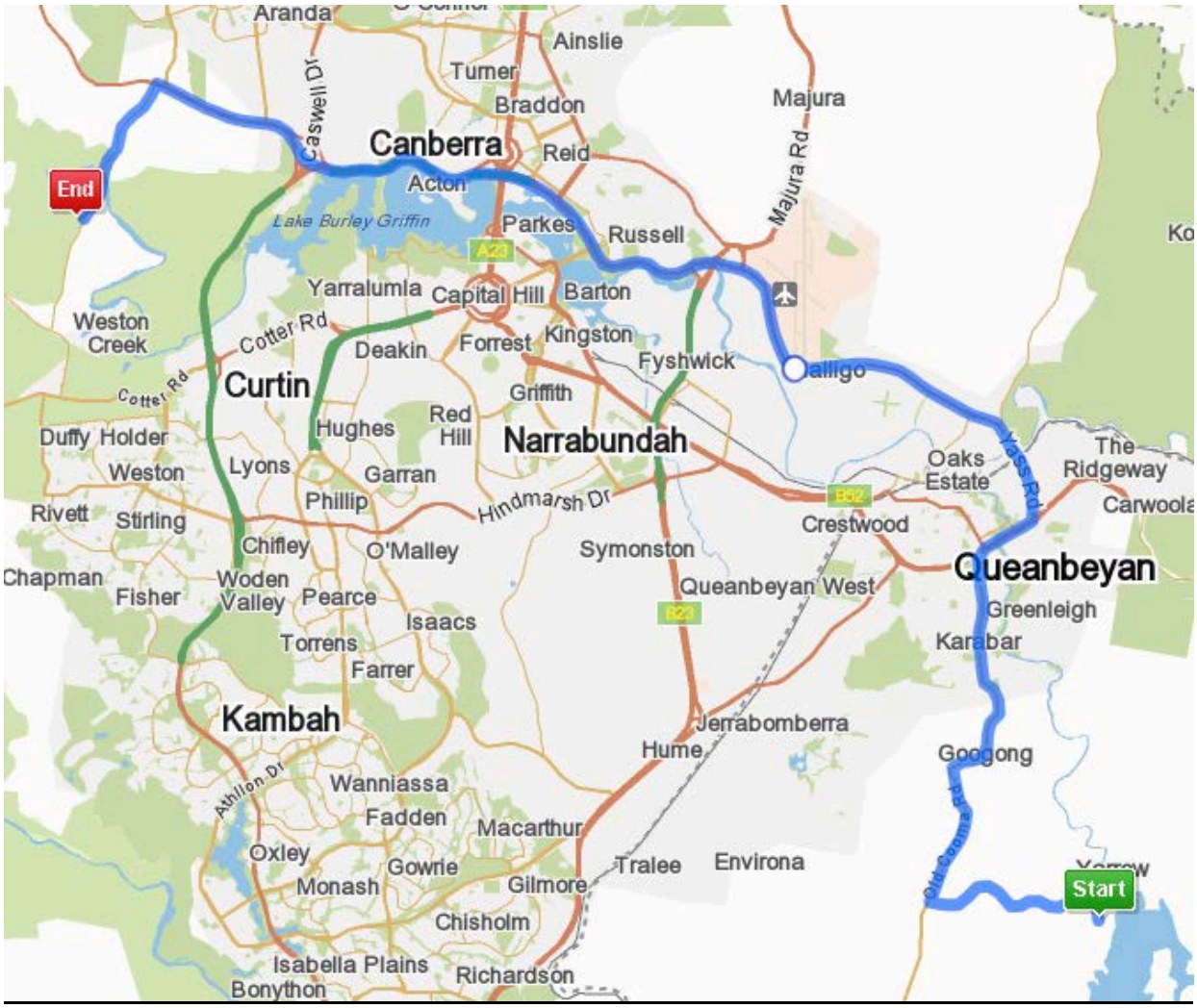
Take the RIGHT FORK onto **William Hovell Dr Exit, Canberra Central District**

Continue along **William Hovell Dr, Belconnen District** after ramp

Turn left onto **Coppins Crossing Rd, Belconnen District**

Arrive at **Coppins Crossing Rd, Denman Prospect**

Return to Googong STP in the reverse direction.



Source: Whereis.com

SPECIAL NOTES

- Under no circumstances in normal conditions shall tankers deviate from this transport route.
- All tanker movements shall be undertaken between the hours of 7:00AM and 6:00PM as per the requirements of Queanbeyan City Council.
- Tankers will travel to the Googong STP near the Foreshores boundary to turn around area
- Tankers will park only in the designated tanker parking bay and not on Googong Dam Road.
- Tankers will have regard for other construction vehicles in the area and follow other traffic instructions as required.
- 40 km/hr School Zones apply 8:00AM to 9:30AM and 2:30PM to 4:00PM on school days. This applies to the school on Lowe Street.

Other ACTEW requirements for entry into Coppins Crossing disposal point:

- Transpacific must provide GTPL/ACTEW with registration number and tanker volume capacity.
- GTPL to contact the ACTEW Representative to confirm disposal timing.
- ACTEW representative to meet Transpacific driver on site (or for longer term arrangements a key may be provided).
- The entrance gate to the site from the Coppins Crossing Road must remain locked other than when passing through it and is not left unlocked whilst visiting the site for any reason.
- Transpacific must take all reasonable steps to prevent tailgating whilst passing through the gate.
- Note no signage exists for trucks turning on and off Coppins Crossing Road.
- The road/access track into the disposal point is greasy and potentially dangerous during wet weather.
- The road/access track into the disposal point has no passing area for two trucks.
- The road/access track into the disposal point has may be accessed by hikers and there are no signs informing hikers or truck drivers of this fact.
- The road/access track into the disposal point passes a police area where explosives are used.
- The road/access track into the disposal point has wash out and pot holes.
- There is no lighting at the disposal point.
- There are no steps in and out of the bund area.
- The manhole or dump area access lid area is broken.
- The fence area at the disposal point has minimal security features.

Figure 1

MATERIALS REQUIRED

- Heavy vehicle prime mover and trailer.
- Googong Tankering Log and Consignment Authorisations.

OTHER REQUIREMENTS

- JSEA Job Safety and Environmental Analysis for collection and transport of liquid waste;
- GTPL's Environmental Incident Reporting Flowchart;
- GTPL Safety Incident Reporting Flowchart;
- Transpacific Transport Induction; and
- Project contact phone number listing.

Design and Construction of Stage AB of the Googong Water Recycling Plant (WRP)

Contract Number WRP01

Testing & Commissioning Phase Traffic Management PLAN

DOCUMENT No. 8553-PLN-014

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
01	29/5/15	LChan	R Phillips	S Merange	
02	29/6/15	LChan	R Phillips	S Merange	QCC Comments

TABLE OF CONTENTS

1. PURPOSE & APPLICATION

The Googong Township Pty Ltd as Trustee for the Googong Township Trust (GTPL and Client) has appointed John Holland Pty Ltd (JHPL) under a detail Design & Construct Contract (Contract), to perform the detail design, construction, commissioning, process proving, handover and completion of Googong Water Recycling Plant Stage AB (Project).

The purpose of this Traffic Management Plan (TMP) is to outline the general practices and procedures that will be implemented during the testing and commissioning phases of the project to manage traffic on the WRP site. This plan indicates all pedestrian and vehicular traffic around the Site, and outlines all procedures, equipment and personnel required to ensure the continuous safe passage of pedestrians and vehicles around the site.

In addition to normal staff and contractor vehicles, during testing and commissioning the following contractors and vehicular traffic will require access on site:

- Tankers for effluent disposal and seed sludge delivery – by Transpacific
- Bulk chemical tanker deliveries – Contractor to be confirmed

2. CONTROLS

The WRP site traffic management plan is included in Appendix A. The key aspects are as follows:

- Directional signage will be placed on site road to guide traffic on the site.
- Site facility identification and speed limits
- Vehicle parking bays will be designated to prevent vehicular escape routes from becoming blocked.
- Security access arrangements will be made for Contractor and delivery vehicles prior to arrival at site.
- Truck turning areas are identified
- Any construction zones will be clearly delineated with warning signage, barriers and/or flagging - ‘Construction Site – Do not Enter’ / ‘Construction Vehicles only’ etc

Refer to the Project Emergency Response Plan and Pollution Incident Response Management Plan in the event of an incident or emergency on site.

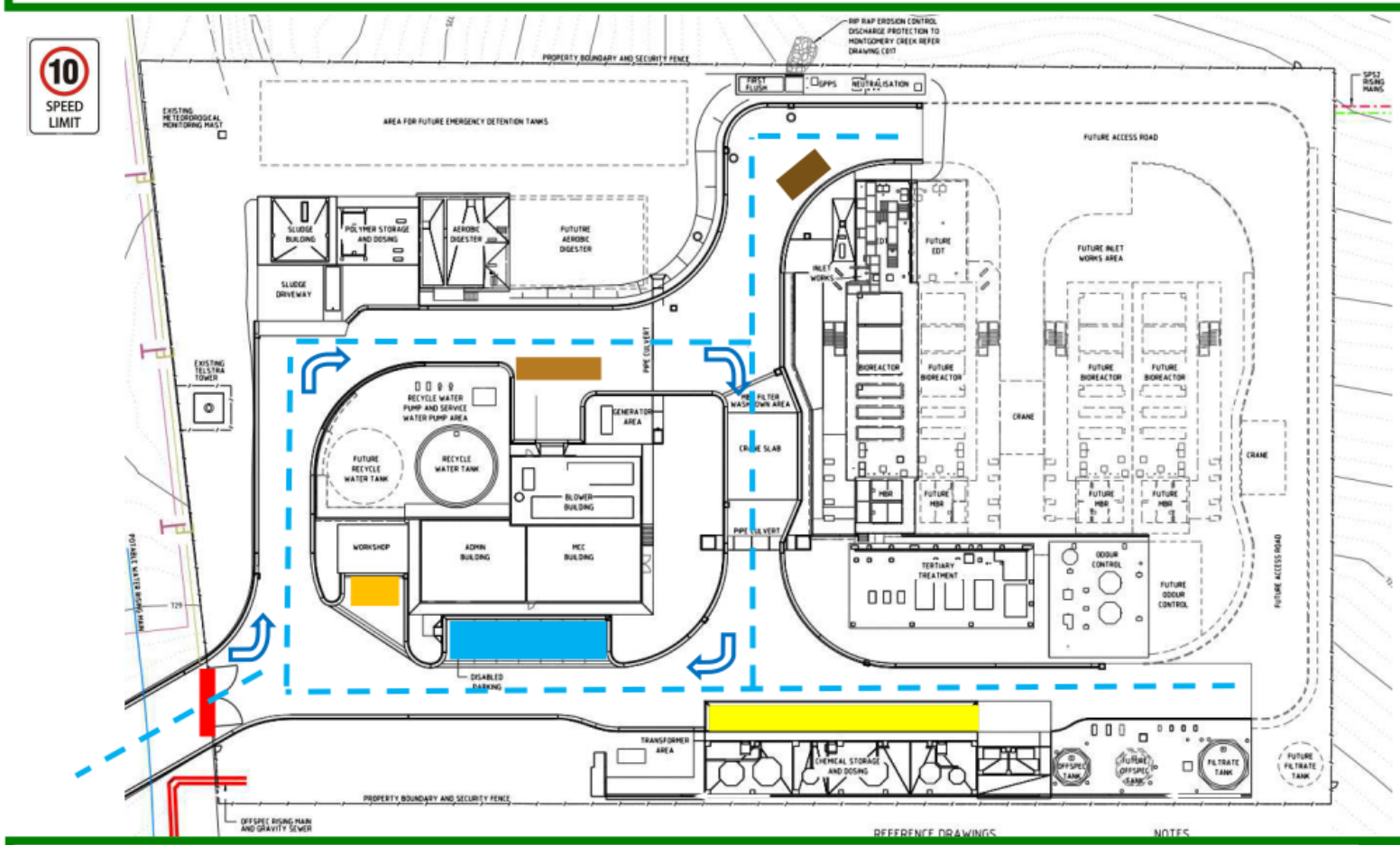
Transpacific is contracted by GTPL to collect the effluent from the Googong WRP. Transpacific’s TMP for effluent tankering is included in Appendix B.

Transpacific is contracted by John Holland to deliver seed sludge to the Googong WRP. Transpacific’s TMP for seed sludge delivery will be included in Appendix B when the seed sludge donor site has been finalised.

Chemicals will be delivered in bulk to the Googong WRP. The Contractor TMP will be included at Appendix D when the contracting arrangements have been finalised.

APPENDIX A - SITE TRAFFIC MANAGEMENT PLAN

Googong WRP Site Traffic Management Plan, Commissioning, SP3



Legend

- Two –way vehicle route
- Car park
- Site office
- Main front gate
- Chemical delivery area
- Parts delivery area
- Effluent Unloading area
- Seed sludge delivery area

N
Not to scale: indicative only

All vehicles are subject to 10km speed limit on site

Effluent, Chemical and Seed Sludge Tankering Traffic Direction (CW)

Rev	By	Date	Description
0	LC	27/05/15	First Issue

Designed By: LC	Checked By: RP
Drawn By: LC	Approved By: SM

APPENDIX B – EFFLUENT TANKERING CONTRACTOR TMP

APPENDIX C - BULK CHEMICAL DELIVERY CONTRACTOR TMP

Appendix H

Standard Operating Procedures

GOOGONG WRP

STANDARD OPERATING PROCEDURE

Bulk Liquid Chemical Delivery

Date	Rev.	Description	Author	Review	Approved
29th May 2015	1	First Issue for OEMP	LC	RP	SM
29th June 2015	2	Updated QCC Comments	LC	RP	SM

INTRODUCTION

The purpose of this SOP is to provide instructions for the bulk chemical delivery of:

- Ferric Sulphate
- Acetic Acid
- Sodium Hypochlorite
- Sodium Hydroxide
- Citric Acid
- Alum

These chemicals are delivered by bulk tanker and pumped from the tanker into the storage tank. Power for the transfer pump on the delivery truck is provided by a GPO located at each tank's filling point. Power will cut out (stopping the pump) if the high level switch is activated with flashing light for visual indication and audible alarm.

The majority of the work for chemical deliveries is performed by the delivery driver. It is the responsibility of the plant operator to set-up for the transfer, ensure that the delivery driver connects to the correct fill point, switch on the power to the GPO at the tanker fill panel, and clean up once completed. The plant operator must also supervise and ensure that the transfer is completed safely.

This SOP must be read in conjunction with its associated risk assessment. As site conditions can change, ensure that the risk assessment is reviewed and amended as appropriate before performing this SOP.

WARNING: *Failure to adhere to this procedure could result in an environmental or safety incident*

RESPONSIBILITY

The plant operators and operations supervisor, in conjunction with the tanker driver, are responsible for carrying out this SOP.

The operations team is responsible for validating this SOP at least once per year.

CONDITIONS

The following conditions are required to perform this SOP:

- An operator is available to assist/supervise the tanker driver during unloading
- Appropriate safety gear is available
- The tanker pump is operational
- Safety shower and eyewash in chemical delivery area is operational

STANDARDS

The following are required to perform this SOP:

- Minimum site Personal Protective Equipment (PPE) as well as any specified in the MSDS or TRA must be worn by the plant operators performing this SOP. The minimum PPE is:
    - Safety glasses
    - Safety boots
    - Long sleeves and pants
    - Hi-Vis clothing

- The PPE Requirements as per MSDSs are listed in the below table:

	Overalls	Rubber Boots	Safety Glasses	Chemical Goggles	Face Shield	Rubber Gloves(Long)	Apron	Mist Respirator
Ferric Sulphate	Y	Y		Y	Y	Y	Y	If required
Acetic Acid	Y	Y		Y	Y	Y	Y	If required
Sodium Hypochlorite	Y	Y		Y	Y	Y	Y	If required
Sodium Hydroxide	Y	Y		Y	Y	Y	Y	If required
Citric Acid	Y			Y		Y		If required
Alum	Y			Y		Y		If required

- Enter all relevant information into the site diary

EMERGENCY STOP – FILLING

An emergency stop button is provided at the tanker and the tanker fill panel to immediately cut power to the tanker pump if required.

PROCEDURE

The following valves are to be used for the delivery of bulk liquid chemicals:

Chemical	Fill Point Valve	Fill Point Drain Valve	Tank Drain Valve
Ferric Sulphate	VLV 7137	VLV 7149	VLV 7139
Acetic Acid	VLV 7220	VLV 7223	Drain valve
Sodium Hypochlorite	VLV 7365	VLV 7367	VLV 7366
Sodium Hydroxide	VLV 7429	VLV 7431	VLV 7430
Citric Acid	VLV 7513	VLV 7514	VLV 7529
Alum	VLV 7813	VLV 7814	VLV 7815

Task 1: Delivery Checks

Location: Chemical Storage Area

Steps:

1. The plant operator should stay with the delivery driver at all times.
2. Visually check that the delivery driver has the relevant dangerous goods licence. The operator is to note down the licence number.
3. Visually check the tanker signage and delivery docket. Check that the correct chemical and amount are being delivered.

Task 2: Pre-Start Checks

Location: Chemical Storage Area

Steps:

1. Check that the delivery driver has and is using the required PPE
2. Check that the chemical bund is empty. Do not proceed with the chemical delivery if the bund is not empty.
3. Check that the drain valve on the tank is closed
4. Check that the chemical truck unloading bay drain valve (VLV 7158) is closed
5. Check that the nearest safety shower and eyewash are fully operational and have clear access
6. Ensure that the tanker is fully parked within the delivery bay

Task 3: Correct Access Point

Location: Chemical Storage Area

Steps:

1. Check the correct unloading panel
2. Note the level in the tank. Ensure that there is sufficient level in the tank to take the delivery

Task 4: Load Chemical Storage Tank (by tanker driver, supervised by operator)

Location: Chemical Storage Area

Ensure that the delivery driver is connecting to the correct chemical fill point

Steps:

1. Check that the *fill point valve* is closed
2. Open the *fill point drain valve* and remove any residual chemical in the pipe before commencing unloading
3. Close the *fill point drain valve*
4. Remove the cap from the filling line
5. Connect the hose from the tanker to the chemical fill line making sure that it is securely fixed in place
6. Check and open the transfer pump suction and discharge valves on the tanker
7. Open the *fill point valve* to the storage tank
8. Ensure that all personnel are standing clear from the fill point in case it leaks when turning on the pump
9. Operator authorises the chemical pumping to start by switching the *Tank Fill* switch to *On*. This powers the tanker fill panel GPO.
10. Plug in and start the tanker pump

11. Monitor the storage tank level (on the indicator panel) and watch for leaks. Watch for the flashing warning light and audible alarm which will be raised if the tank is overfilled.

    Note: *If the tank is overfilled the power supply to the unloading panel will be cut. Do not, however, rely on this occurring.*

12. Stop the tanker pump when the ordered quantity is delivered or the designated storage tank level is reached

13. Close the tanker pump's suction and discharge valves

14. Open the *fill point drain valve* and drain the contents of the tanker hose and fill line to the sump.

    WARNING: *This must be done before disconnecting the tanker from the fill point to relieve pressure in the system and prevent chemical spraying from the filling point during hose disconnection.*

15. Carefully uncouple the hose at the tanker and divert any remaining contents to the bund

16. Disconnect the delivery hose from the fill point and close the *fill point valve* and the *fill point drain valve*

17. Wash out the delivery hose ensuring the wash water and residual chemical are washed into the bund sump

Task 5: Clean up (after the delivery truck has left)

Location: Chemical Storage Area

Note: *If significant amounts of chemical entered the bund during the delivery process follow the procedures listed in the* Bund Management *SOP.*

WARNING: *Adding water to sodium hydroxide can lead to splattering of the chemical due to heat generated during dilution*

Steps:

1. Hose down any residual chemical in the bunded area and dilute chemical drained into the sump.
2. Pump out the chemical bund sump to the neutralisation pit, if required
3. Open the Chemical Truck Unloading Bay Drain Valve, VLV 7158 and hose down the truck bund area (which will drain to the GPPS)
4. Ensure that no chemical is remaining in the truck bund area

Sign-on Register

EMPLOYEE NAME	SIGNATURE (I have been consulted in and understand this SOP)	DATE

SOP Review Table

Review No	01	02	03	04	06	07	08
Initial:	LC	LC					
Date:	28/5/15	29/6/15					

Change Management Table

SOP Change Details	Change Management Actions	Date
Updated following QCC Comments	SOP Updated	29/6/15

GOOGONG WRP

STANDARD OPERATING PROCEDURE

Effluent Loading For Offsite Disposal

Date	Rev.	Description	Author	Review	Approved
29th May 2015	1	First Issue for OEMP	LC	RP	SM

INTRODUCTION

The purpose of this SOP is to provide instructions for the effluent unloading from the recycled water storage tank during SP3, Process Commissioning.

During SP3, Process Commissioning, treated effluent will be tankered offsite. This will continue until approval is granted from GTPL, to discharge effluent to the environment.

The majority of the work for effluent unloading is performed by the tanker driver. It is the responsibility of the plant operator to set-up for the transfer, ensure that the delivery driver connects to the correct fill point and clean up once completed. The plant operator must also supervise and ensure that the transfer is completed safely.

The SOP for tankering and loading operations is prepared by Transpacific and attached at Appendix A

This SOP must be read in conjunction with its associated TRA. As site conditions can change, ensure that the TRA is reviewed and amended as appropriate before performing this SOP.

WARNING: *Failure to adhere to this procedure could result in an environmental or safety incident*

RESPONSIBILITY

The plant operators and operations supervisor, in conjunction with the tanker driver, are responsible for carrying out this SOP.

The operations team is responsible for validating this SOP at least once per year.

CONDITIONS

The following conditions are required to perform this SOP:

- An operator is available to assist/supervise the tanker driver during unloading
- Appropriate safety gear is available
- The unloading pipework is in place and ready for use

STANDARDS

The following are required to perform this SOP:

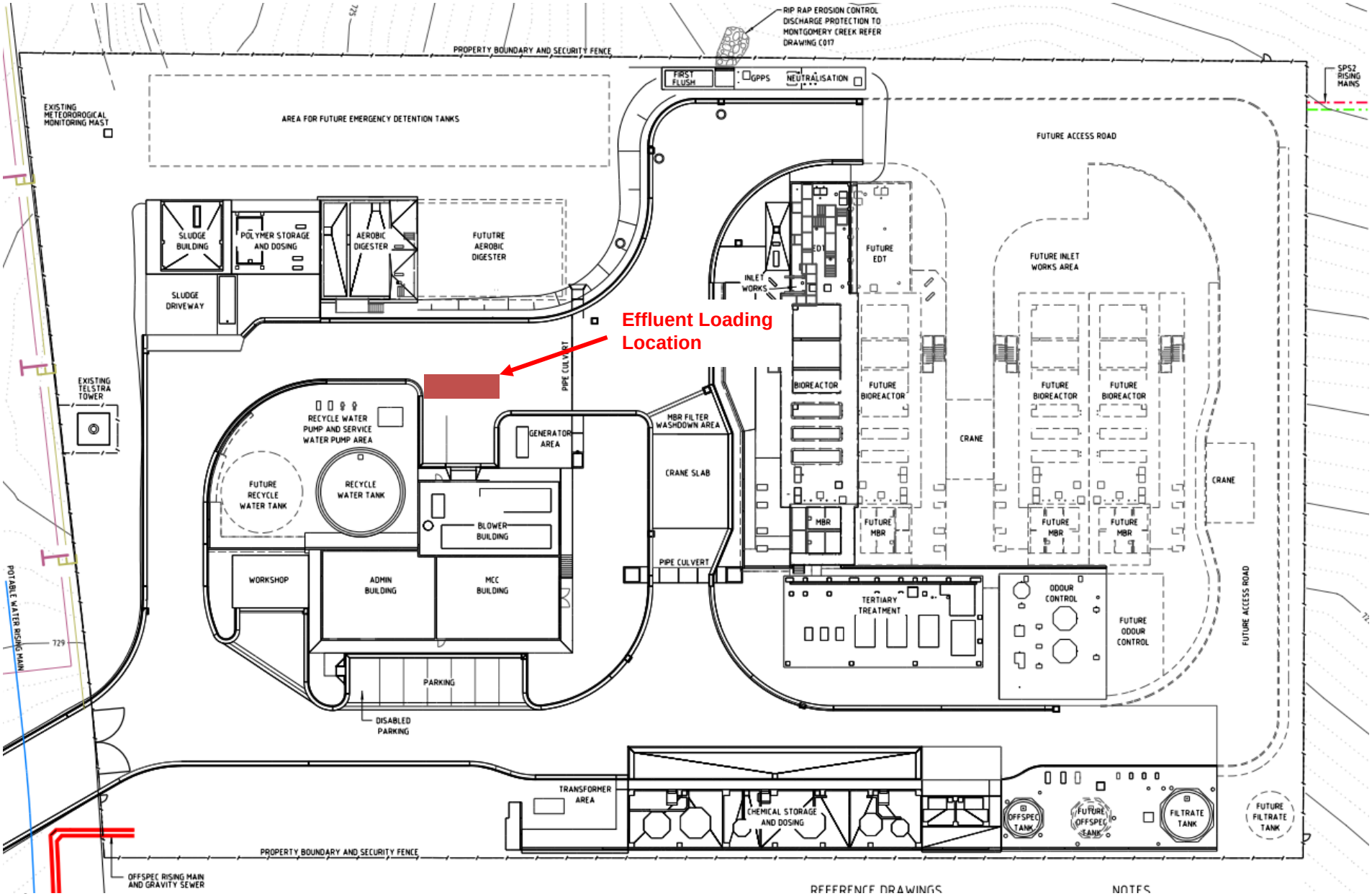
- Minimum site Personal Protective Equipment (PPE) as well as any specified in the TRA must be worn by the plant operators performing this SOP. The minimum PPE is:
    - Safety glasses
    - Safety boots
    - Long sleeves and pants
    - Hi-Vis clothing
    - Gloves

PROCEDURE

Effluent is loaded from the recycled water tank through pipework and valves setup specifically for the effluent loading operations. The Plant Operator is responsible for directing the Transpacific Driver to the filling location and authorising the connection and opening of valves for the loading of effluent into the tanker.

Any spillage that may occur from the tankering filling operations will be captured by the first flush drainage system. The first flush drainage tank has a capacity of 40 kL.

Effluent Loading for Offsite Disposal



Task 1: Prestart Checks

Location: Recycled Water Storage Area

Steps:

1. Prior to arrival of the tanker, Operator to ensure that the first flush tank is empty. Drain first flush tank to the GPPS by opening VLV 8205, if required. Then close valve.
2. The plant operator should stay with the tanker driver at all times.
3. Visually check that the tanker driver has the relevant consignment authorisations and permit.
4. Confirm the tanker capacity and quantity of effluent to be filled with the tanker driver
5. Check that the delivery driver has and is using the required PPE
6. Ensure that the tanker is parked within the designated area and that through traffic and emergency access ways are not obstructed
7. Ensure that access to Recycled Water Storage Tank Discharge Valve, VLV 4640, is accessible and operable in case emergency closure is required

Task 2: Load Effluent into Tanker (by tanker driver, supervised by operator)

Location: Recycled Water Storage Area

Ensure that the tanker driver is connecting to the correct fill location

Steps:

1. Tanker driver to complete tanker loading operations in accordance with Transpacific Work Instruction and Vacuum Loading Operations Guideline included in Appendix A.
2. Ensure that all personnel are standing clear from the fill point in case it leaks when turning on the pump
3. Monitor the tanker level and watch for leaks
4. Tanker driver to follow Transpacific Work Instruction and Vacuum Loading Operations Guideline included in Appendix A for disconnection of hoses and completion of tanker loading operations.
5. Tanker driver to give copy of docket to Operator for records before leaving site

Task 3: Clean up (after the delivery truck has left)

Location: Recycled Water Storage Area

Steps:

1. Hose down the area, as required.
2. Check the first flush tank and empty to the GPPS, if required

Sign-on Register

EMPLOYEE NAME	SIGNATURE (I have been consulted in and understand this SOP)	DATE

SOP Review Table

Review No	01	02	03	04	06	07	08
Initial:	LC						
Date:	28/5/15						

Change Management Table

SOP Change Details	Change Management Actions	Date

GOOGONG WRP

STANDARD OPERATING PROCEDURE

Seed Sludge Unloading

Date	Rev.	Description	Author	Review	Approved
29th May 2015	1	First Issue for OEMP	LC	RP	SM

INTRODUCTION

The purpose of this SOP is to provide instructions for the unloading of seed sludge into the EDT for process commissioning at the start of SP3, Process Commissioning.

It is expected that seed sludge delivery will only occur over the first week of process commissioning.

The majority of the work for seed sludge unloading is performed by the tanker driver. It is the responsibility of the plant operator to set-up for the transfer, ensure that the delivery driver connects to the correct transfer point and clean up once completed. The plant operator must also supervise and ensure that the transfer is completed safely.

The SOP for tankering and loading operations is prepared by Transpacific and attached at Appendix A

This SOP must be read in conjunction with its associated TRA. As site conditions can change, ensure that the TRA is reviewed and amended as appropriate before performing this SOP.

WARNING: *Failure to adhere to this procedure could result in an environmental or safety incident*

RESPONSIBILITY

The plant operators and operations supervisor, in conjunction with the tanker driver, are responsible for carrying out this SOP.

The operations team is responsible for validating this SOP at least once per year.

CONDITIONS

The following conditions are required to perform this SOP:

- An operator is available to assist/supervise the tanker driver during unloading
- Appropriate safety gear is available
- The process team has confirmed the system is ready to receive the seed sludge

STANDARDS

The following are required to perform this SOP:

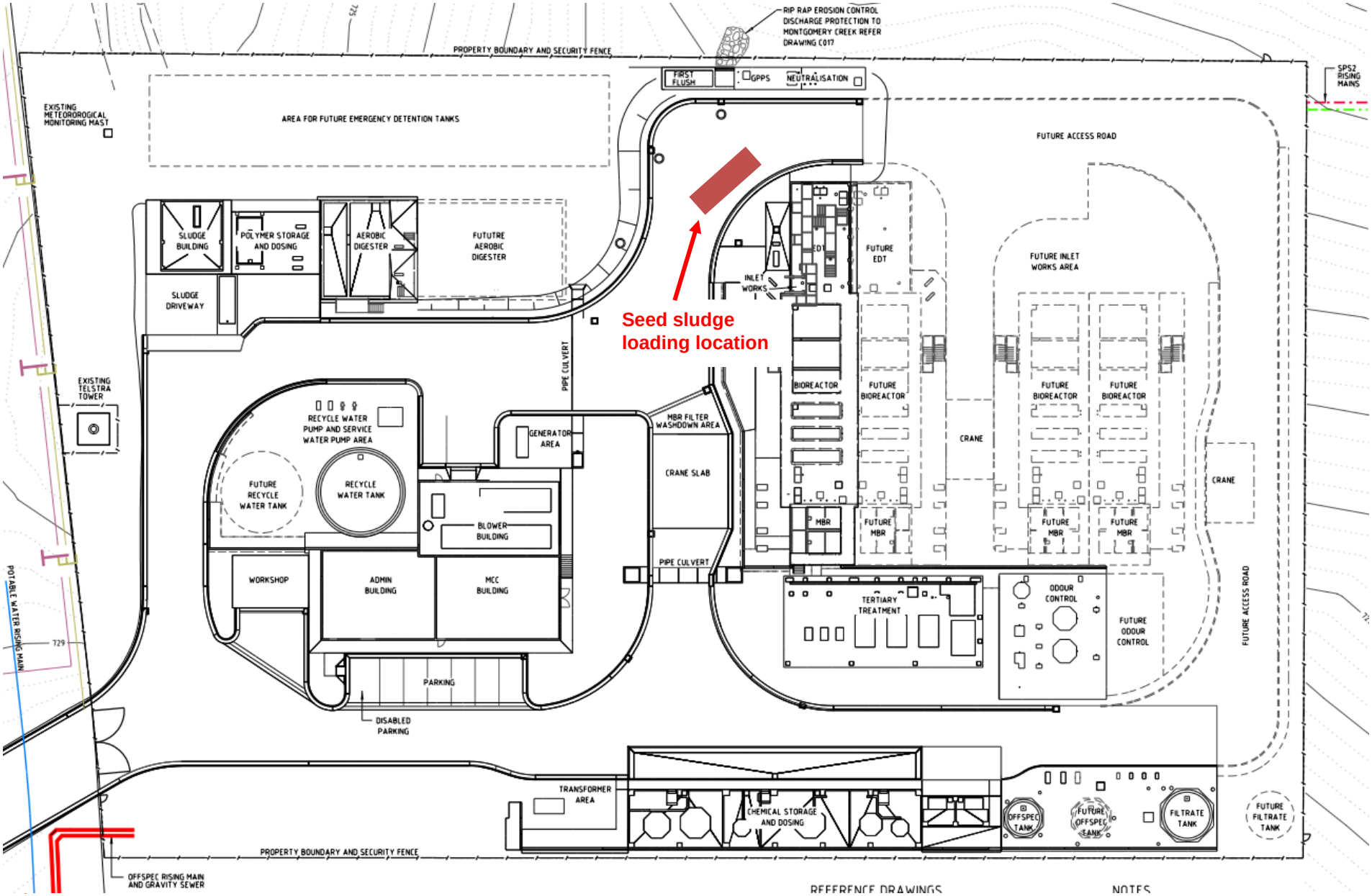
- Minimum site Personal Protective Equipment (PPE) as well as any specified in the TRA must be worn by the plant operators performing this SOP. The minimum PPE is:
    - Safety glasses
    - Safety boots
    - Long sleeves and pants
    - Hi-Vis clothing
    - Gloves

PROCEDURE

Seed sludge is loaded into the EDT through the fixed pipework and valves specifically designed for transfer from the EDT. The Plant Operator is responsible for directing the Transpacific Driver to the filling location and authorising the connection and opening of valves for the loading of seed sludge from the tanker.

Any spillage that may occur from the tankering operations will be captured by the first flush drainage system. The first flush drainage tank has a capacity of 40 kL.

Seed Sludge Unloading



Task 1: Prestart Checks

Location: EDT Area

Steps:

1. Prior to arrival of the tanker, Operator to ensure that the first flush tank is empty. Drain first flush tank to the GPPS by opening VLV 8205, if required. Then close valve.
2. Plant operator to check that the EDT has sufficient storage to receive the full seed sludge load from the tanker.
3. The plant operator should stay with the tanker driver at all times.
4. Visually check that the tanker driver has the relevant consignment authorisations and permit.
5. Confirm the tanker capacity and quantity of seed sludge to be discharged into the EDT with the tanker driver
6. Check that the delivery driver has and is using the required PPE
7. Ensure that the tanker is parked within the designated area and that through traffic and emergency access ways are not obstructed
8. Ensure that access to EDT Isolation Valve, VLV 1320, is accessible and operable in case emergency closure is required
9. Ensure that EDT drainage valve, VLV 1321 is closed.

Task 2: Unload Seed Sludge from Tanker (by tanker driver, supervised by operator)

Location: EDT Area

Ensure that the tanker driver is connecting to the correct fill location

Steps:

1. Tanker driver to complete tanker unloading operations in accordance with Transpacific Work Instruction and Vacuum Loading Operations Guideline included in Appendix A.
2. Ensure that all personnel are standing clear from the fill point in case it leaks when turning on the pump
3. Monitor the tanker level and watch for leaks
4. Tanker driver to follow Transpacific Work Instruction and Vacuum Loading Operations Guideline included in Appendix A for disconnection of hoses and completion of tanker loading operations.
5. Operator to confirm that VLV 1320 and VLV 1322 are closed.
6. Tanker driver to give copy of docket to Operator for records before leaving site

Task 3: Clean up (after the tanker has left)

Seed sludge Unloading

Location: **EDT Area**

Steps:

1. Hose down the area, as required.
2. Check the first flush tank and empty to the GPPS, if required

Sign-on Register

EMPLOYEE NAME	SIGNATURE (I have been consulted in and understand this SOP)	DATE

SOP Review Table

Review No	01	02	03	04	06	07	08
Initial:	LC						
Date:	28/5/15						

Change Management Table

SOP Change Details	Change Management Actions	Date

Division: TIS	Branch: Unanderra	Date: 18/03/2014
State: New South Wales	HSE Advisor: David Brinson	
Site Location: TIS Unanderra	Suburb: Unanderra	Country: Australia

This form is to be completed by the person/s undertaking the risk assessment in accordance with the applicable ***'Identification and Risk Assessment Checklist'***.

Risk assessment undertaken by:	Chris Blackett	Position Title:	Operations Manager
Other persons involved:	David Brinson		

Task/Equipment/Activity to be risk assessed:	Tanker Operations - Non DG
Person/s at Risk:	☑ Employee ☑ Contractor ☑ On-Site Visitor ☑ Member of Public

Date of Assessment:	18/03/2014	Date of Last Assessment:	

Section 1. Summary of key hazards that were identified during the assessment.	
1	

Section 2. Risk Assessment (List identified hazards and detail measures taken to address the hazards)								
Identified Hazards	**Uncontrolled Risk**		**Risk Rating**	**Current Control**	**Additional Required Controls**	**Controlled Risk**		**Residual Risk Rating**
	Likelihood	**Consequences**				**Likelihood**	**Consequences**	
Truck Collision	Unlikely	Significant	22	Qualified and trained drivers Bi annual driver assessments proper maintenance and schduled servicing Follow all RTA rules and regs Daily prestart checks driver to be fit for work driver to take regular breaks		Rare	Significant	19
Tanker Rollover causing major environmental incident	Unlikely	Moderate	12	Follow all RTA rules and regs 1300 spills Drive to the road conditions stock and maintain spill kits drive to the tankers capacity limits Baffles to be included in tanker bodys		Rare	Moderate	11
coming into contact with Biological Hazards	Likely	Moderate	14	Ensure HEP A & B shots are up to date. Tyvek suit, chemical gloves to be worn. Wash hands & face after handling hoses, before eating or smoking.		Unlikely	Minor	7

fall from heights	Possible	Major	18	Ensure that the Tram track system is operatioal and that you connect if going on to the top of the tanker 3 points of contact as you access the truck Barricade hole when open		Unlikely	Minor	7
Slips Trips	Possible	Moderate	13	Eyes on your path as you move around site keep work area clean and tidy		Unlikely	Minor	7
Manual handling injury, Pinch Points	Likely	Major	20	use grate opening devices when lifting lids or pit covers keep hands and feet clear when lowering hoses ove the pit edges. Gloves to worn whilst working		Unlikely	Minor	7

IMPLEMENTATION PLAN - For each 'required' control please complete the below table.

Control option	Hierarchy (see below)	Resources required	Person/s responsible	Control considered but not implemented	Implementation date

1. CONSEQUENCE / IMPACT CRITERIA	Consequence / Impact Ratings (Where an event has more than one 'Loss Type', choose the 'Consequence / Impact' with the highest rating. If 'Near Miss' select potential rating).				
Description	**Insignificant**	**Minor**	**Moderate**	**Major**	**Significant**
Health and Safety	Near miss	First aid treatment required	Medical treatment required	Lost time injury to worker, injury to member of the public or permanent injury or disability (public or workers)	One or more fatalities (public or workers)
Environmental	Near miss	Minor environmental damage	Environmental impact requiring treatment inside or outside site	Serious environmental harm requiring restoration and/or remediation inside or outside of site with possible regulatory intervention	Permanent/material damage to environment requiring ongoing remediation and monitoring with regulatory involvement and possible further enforcement action
Business Interruption	A temporary delay in servicing a small number of customers	Delay affecting customers but no damage to relationships	Inconvenience to customers that cause some harm to relationships	Widespread damage to customer relationships (some permanent)	Irreversible damage to a large number of customers (impacts viability of the business)
Reputational	Slight impact- public awareness may exist but no public concern.	Limited impact- local public concern.	Considerable impact- regional public concern. Client unease.	National public concern. Leads to share price volatility. Loss of client.	International public attention. Direct impact on share price. Loss of core client.
Financial *(Set locally)*	AUD $0 to < AUD $ X K EBIT	> AUD $ X K to < AUD $ X M EBIT	> AUD $ XM to < AUD $ XM EBIT	> AUD $ XM to < AUD $ XM EBIT	> AUD $ X M EBIT

2. LIKELIHOOD / PROBABILITY & RISK RATING			Risk Rating				
Likelihood / Probability	**Examples** (Near-misses as well as actual events)	% chance of occurring					
Almost Certain	The unwanted event has occurred frequently; occurs in order of one or more times per year & is likely to reoccur within 1 year	>75% - 99%	**5**	**10**	**15**	**21**	**25**
Likely	The unwanted event has occurred infrequently; occurs in order of less than once per year & is likely to reoccur within 5 years	>50%-<74%	**4**	**9**	**14**	**20**	**24**
Possible	The unwanted event has happened in the business/industry at some time; or could happen within 10 years	>25%-<49%	**3**	**8**	**13**	**18**	**23**
Unlikely	The unwanted event has happened in the business/industry at some time; or could happen within 20 years	>11%-<24%	**2**	**7**	**12**	**17**	**22**
Rare	The unwanted event has never been known to occur in the business/industry; or it is highly unlikely that it will occur within 20 years	0- <10%	**1**	**6**	**11**	**16**	**19**

Risk Level: **Extreme** ***NO WORK TO BE CONDUCTED*** **High** *Requires Manager/Regional Manager Sign off* **Medium** *Requires Supervisor Sign off* **Low** *Monitor*

POLLUTION INCIDENT RESPONSE

MANAGEMENT PLAN (*Transport)*

TRANSPACIFIC INDUSTRAIL SERVICES LICENCE 11215 GOOGONG ACT AREA.

Industry is now required to report pollution incidents ***immediately*** to ALL regulatory bodies.

Notification Protocol

Call 000 if the incident presents an immediate threat to human health or property

If the incident clearly requires notification, e.g. truck rollover losing all contents and liquid entering creek, the driver shall notify 000 immediately, followed by the operations manager who will then notify the remaining departments.

If the driver is unsure if the incident requires notification they will advise Business Unit Manager to determine if notification is appropriate, if so the Business Unit Manager will notify all departments.

The driver is to assist the Fire Brigade as far as practical in the clean-up and/or advising the local residents to minimise the risk of a spill the driver will undertake a Daily Prestart check and Monthly Compliance checks in line with Transpacific Standard Operating Procedure TIG SEQ SOP 1178 Waste Transport, to ensure the truck is in good working order and all safety and spill kit equipment is in working order.

Regulatory Contact Numbers

Environment Protection Authority	**131 555**
Local Council	**For List of Local Councils See Appendix A**
The Ministry of Health	**For list of Public Health Units See Appendix B**
WorkCover	**13 10 50**
Comcare	**1300 366 979**
Fire and Rescue	**000**
Fire and Rescue without immediate treat	**1300 729 579**

Business Unit Contact Numbers

Business Unit Manager	**Chris Blackett**	**4275 2222**	**0434 368 018**
Operations Manager	**Davd Cox**	**02 4275 2222**	

Also call TPI Spill response 1800 SPILLS (1800 774 557), if appropriate.

Revision Status date last reviewed 24 April 2014

3.3.5 Contact details [clause 98C(1)(g) and (h)]

For the full list of NSW Council Contacts:
http://www.dlg.nsw.gov.au/dlg/dlghome/dlg_InformationIndex.asp?areaindex=DOWNLOADS&index=200&mi=3&ml=6
for full list of Public Health Contact:
http://www.health.nsw.gov.au/publichealth/infectious/phus.asp

DEFINITION OF POLLUTION INCIDENT

Under NSW Regulations:

The definition of a pollution incident is:

Pollution incident means an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.

A pollution incident is required to be notified if there is a risk of 'material harm to the environment', which is defined in section 147 of the POEO Act as:

(a) Harm to the environment is material if:

(i) It involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or

(ii) It results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations), and

(b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

Industry is now required to report pollution incidents ***immediately*** to ALL

ACT & NSW Local Council Contact Numbers

Albury City Council	Albury	02 6023 8111
ACT Canberra Connect	**ACT Canberra**	**132 281**
Armidale Dumaresq Council	Armidale	02 6770 3600
Ashfield Council	Ashfield	02 9716 1800
Auburn City Council	AUBURN	02 9735 1222
Ballina Shire Council	Ballina	02 6686 4444
Balranald Shire Council	Balranald	03 5020 1300
Bankstown City Council	BANKSTOWN	02 9707 9999
Bathurst Regional Council	Bathurst	02 6333 6111
The Hills Shire Council	CASTLE HILL	02 9843 0555
Bega Valley Shire Council	Bega	02 6499 2222
Bellingen Shire Council	Bellingen	02 6655 7300
Berrigan Shire Council	Berrigan	03 5888 5100
Blacktown City Council	Blacktown	02 9839 6000
Bland Shire Council	West Wyalong	02 6972 2266
Blayney Shire Council	Blayney	02 6368 2104
Blue Mountains City Council	KATOOMBA	02 4780 5000
Bogan Shire Council	Nyngan	02 6835 9000
Bombala Council	Bombala	02 6458 3555
Boorowa Council	Boorowa	02 6385 3303
The Council of the City of Botany Bay	Mascot	02 9366 3666
Bourke Shire Council	Bourke	02 6830 8000
Brewarrina Shire Council	Brewarrina	02 6839 2106
Broken Hill City Council	Broken Hill	08 8080 3300
Burwood Council	BURWOOD	02 9911 9911
Byron Shire Council	Mullumbimby	02 6626 7000
Cabonne Council	Molong	02 6392 3200
Camden Council	Camden	02 4654 7777
Campbelltown City Council	Campbelltown	02 4645 4000
City of Canada Bay Council	Drummoyne	02 9911 6555
Canterbury City Council	Campsie	02 9789 9300
Carrathool Shire Council	Goolgowi	02 6965 1900
Central Darling Shire Council	Wilcannia	08 8083 8900
Cessnock City Council	Cessnock	02 4993 4100
Clarence Valley Council	Grafton	02 6643 0200
Cobar Shire Council	COBAR	02 6836 5888
Coffs Harbour City Council	Coffs Harbour	02 6648 4000
Conargo Shire Council	Deniliquin	03 5880 1200
Coolamon Shire Council	Coolamon	02 6927 3206
Cooma-Monaro Shire Council	Cooma	02 6455 1777
Coonamble Shire Council	Coonamble	02 6827 1900
Cootamundra Shire Council	Cootamundra	02 6940 2100
Corowa Shire Council	Corowa	02 6033 8999
Cowra Shire Council	Cowra	02 6340 2000
Deniliquin Council	Deniliquin	03 5898 3000
Dubbo City Council	Dubbo	02 6801 4000
Dungog Shire Council	Dungog	02 4995 7777
Eurobodalla Shire Council	Moruya	02 4474 1000
Fairfield City Council	FAIRFIELD	02 9725 0222
Forbes Shire Council	Forbes	02 6850 2300
Gilgandra Shire Council	Gilgandra	02 6817 8800

Glen Innes Severn Council	GLEN INNES	02 6730 2300
Gloucester Shire Council	Gloucester	02 6538 5250
Gosford City Council	Gosford	02 4325 8222
Goulburn Mulwaree Council	**Goulburn**	**02 4823 4444**
Greater Taree City Council	Taree	02 6592 5399
Greater Hume Shire Council	Holbrook	02 6036 0100
Great Lakes Council	Forster	02 6591 7222
Griffith City Council	Griffith	02 6962 8100
Gundagai Shire Council	Gundagai	02 6944 0200
Gunnedah Shire Council	GUNNEDAH	02 6740 2100
Guyra Shire Council	Guyra	02 6770 7100
Gwydir Shire Council	Bingara	02 6724 2000
Harden Shire Council	Harden	02 6386 2305
Port Macquarie-Hastings Council	PORT MACQUARIE	02 6581 8111
Hawkesbury City Council	Windsor	02 4560 4444
Hay Shire Council	HAY	02 6993 1003
Holroyd City Council	Merrylands	02 9840 9840
The Council of the Shire of Hornsby	Hornsby	02 9847 6666
The Council of the Municipality of Hunters Hill	Hunters Hill	02 9879 9400
Hurstville City Council	Hurstville BC	02 9330 6222
Inverell Shire Council	Inverell	02 6728 8288
Jerilderie Shire Council	Jerilderie	03 5886 1200
Junee Shire Council	Junee	02 6924 8100
Kempsey Shire Council	WEST KEMPSEY	02 6566 3200
The Council of the Municipality of Kiama	KIAMA	02 4232 0444
Kogarah City Council	Kogarah	02 9330 9400
Ku-ring-gai Council	Pymble	02 9424 0888
Kyogle Council	Kyogle	02 6632 1611
Lachlan Shire Council	Condobolin	02 6895 1900
Lake Macquarie City Council	Hunter Reg Mail Ctr	02 4921 0333
Lane Cove Municipal Council	Lane Cove	02 9911 3555
Leeton Shire Council	Leeton	02 6953 0911
Leichhardt Municipal Council	Leichhardt	02 9367 9222
Lismore City Council	Lismore	02 6625 0500
City of Lithgow Council	Lithgow	02 6354 9999
Liverpool City Council	LIVERPOOL BC	02 9821 9222
Liverpool Plains Shire Council	Quirindi	02 6746 1755
Lockhart Shire Council	Lockhart	02 6920 5305
Maitland City Council	Maitland	02 4934 9700
Manly Council	Manly	02 9976 1500
Marrickville Council	Petersham	02 9335 2222
Mid-Western Regional Council	Mudgee	02 6378 2850
Moree Plains Shire Council	Moree	02 6757 3222
Mosman Municipal Council	Spit Junction	02 9978 4000
Murray Shire Council	Mathoura	03 5884 3302
Murrumbidgee Shire Council	Darlington Point	02 6968 4166
Muswellbrook Shire Council	Muswellbrook	02 6549 3700
Nambucca Shire Council	Macksville	02 6568 2555
Narrabri Shire Council	Narrabri	02 6799 6866
Narrandera Shire Council	Narrandera	02 6959 5510
Narromine Shire Council	Narromine	02 6889 9999
Newcastle City Council	NEWCASTLE	02 4974 2000
North Sydney Council	North Sydney	02 9936 8100
Oberon Council	Oberon	02 6329 8100

Orange City Council	ORANGE	02 6393 8000
Palerang Council	BUNGENDORE	1300 735 025
Parkes Shire Council	Parkes	02 6861 2333
Parramatta City Council	Parramatta	02 9806 5050
Penrith City Council	Penrith	02 4732 7777
Pittwater Council	Mona Vale	02 9970 1111
Port Stephens Council	RAYMOND TERRACE	02 4980 0255
Queanbeyan City Council	**Queanbeyan**	**02 6285 6000**
Randwick City Council	Randwick	02 9399 0999
Richmond Valley Council	Casino	02 6660 0300
Rockdale City Council	Rockdale	02 9562 1666
Ryde City Council	North Ryde	02 9952 8222
Shellharbour City Council	SHELLHARBOUR CITY CENTRE	02 4221 6111
Shoalhaven City Council	Nowra	02 4429 3111
Singleton Council	SINGLETON	02 6578 7290
Snowy River Shire Council	Berridale	02 6451 1195
Strathfield Municipal Council	Strathfield	02 9748 9999
Sutherland Shire Council	Sutherland	02 9710 0333
Council of the City of Sydney	Sydney	02 9265 9333
Tamworth Regional Council	TAMWORTH	02 6767 5555
Temora Shire Council	Temora	02 6980 1100
Tenterfield Shire Council	Tenterfield	02 6736 6000
Tumbarumba Shire Council	Tumbarumba	02 6948 9100
Tumut Shire Council	Tumut	02 6941 2555
Tweed Shire Council	Murwillumbah	02 6670 2400
Upper Hunter Shire Council	SCONE	02 6540 1100
Upper Lachlan Shire Council	GUNNING	02 4830 1000
Uralla Shire Council	Uralla	02 6778 4606
Urana Shire Council	Urana	02 6930 9100
Wagga Wagga City Council	Wagga Wagga	1300 292 442
The Council of the Shire of Wakool	Moulamein	03 5887 5007
Walcha Council	Walcha	02 6774 2500
Walgett Shire Council	Walgett	02 6828 1399
Warren Shire Council	Warren	02 6847 6600
Warringah Council	Dee Why	02 9942 2111
Warrumbungle Shire Council	Coonabarabran	02 6849 2000
Waverley Council	Bondi Junction	02 9369 8000
Weddin Shire Council	Grenfell	02 6343 1212
Wellington Council	WELLINGTON	02 6840 1700
Wentworth Shire Council	Wentworth	03 5027 5027
Willoughby City Council	Chatswood	02 9777 1000
Wingecarribee Shire Council	MOSS VALE	02 4868 0888
Wollondilly Shire Council	Picton	02 4677 1100
Wollongong City Council	WOLLONGONG	02 4227 7111
Woollahra Municipal Council	Double Bay	02 9391 7000
Wyong Shire Council	Wyong	02 4350 5555
Yass Valley Council	**Yass**	**02 6226 1477**
Young Shire Council	Young	02 6380 1200

Contact details for Public Health Units

Public Health Unit – Referral List at 20 Jan 10

Postcode	PHU
2000-2002	Randwick SESI PHU
2004-2009	Camperdown SSW PHU
2010-2011	Randwick SESI PHU
2012-2017	Camperdown SSW PHU
2018-2036	Randwick SESI PHU
2037-2050	Camperdown SSW PHU
2052	Randwick SESI PHU
2055-2114	Hornsby NSCC PHU
2115-2118	Parramatta SW PHU
2119-2122	Hornsby NSCC PHU
2123-2125	Parramatta SW PHU
2126	Hornsby NSCC PHU
2127-2128	Parramatta SW PHU
2129-2140	Camperdown SSW PHU
2141-2157	Parramatta SW PHU
2158-2159	Hornsby NSCC PHU
2160-2161	Parramatta SW PHU
2162-2179	Camperdown SSW PHU
2190-2200	Camperdown SSW PHU
2203-2204	Camperdown SSW PHU
2205	Randwick SESI PHU
2206	Camperdown SSW PHU
2207	Randwick SESI PHU
2208	Camperdown SSW PHU
2209-2210	Randwick SESI PHU
2211-2214	Camperdown SSW PHU
2216-2234	Randwick SESI PHU
2250-2252	Gosford NSCC PHU
2256-2263	Gosford NSCC PHU
2264-2267	Newcastle HNE PHU
2278-2338	Newcastle HNE PHU
2339-2356	Tamworth HNE PHU
2357	Dubbo GW PHU
2358-2361	Tamworth HNE PHU
2365	Tamworth HNE PHU
2369-2372	Tamworth HNE PHU
2379-2382	Tamworth HNE PHU
2386-2390	Tamworth HNE PHU
2395-2396	Dubbo GW PHU
2397-2411	Tamworth HNE PHU
2415	Newcastle HNE PHU
2420-2430	Newcastle HNE PHU
2431	Port Macquarie NC PHU
2439-2456	Port Macquarie NC PHU
2460-2466	Lismore NC PHU
2469-2474	Lismore NC PHU
2475	Tamworth HNE PHU
2476-2490	Lismore NC PHU
2500-2502	Wollongong SESI PHU
2505-2508	Wollongong SESI PHU
2515-2522	Wollongong SESI PHU
2525-2530	Wollongong SESI PHU
2533-2535	Wollongong SESI PHU
2536-2537	Goulburn GS PHU
2538-2541	Wollongong SESI PHU
2545-2551	Goulburn GS PHU
2555-2560	Camperdown SSW PHU
2563-2579	Camperdown SSW PHU
2580-2587	Goulburn GS PHU
2588-2590	Albury GS PHU
2594	Goulburn GS PHU
2611	Goulburn GS PHU
2618-2633	Goulburn GS PHU
2640-2647	Albury GS PHU
2648	Broken Hill GW PHU
2649-2671	Albury GS PHU
2672	Bathurst GW PHU
2675	Albury GS PHU
2680-2681	Albury GS PHU
2700-2714	Albury GS PHU
2715	Broken Hill GW PHU
2716	Albury GS PHU
2717	Broken Hill GW PHU
2720	Albury GS PHU
2721	Bathurst GW PHU
2722	Albury GS PHU
2725	Albury GS PHU
2726	Goulburn GS PHU
2727-2733	Albury GS PHU
2734	Broken Hill GW PHU
2735-2736	Albury GS PHU
2737-2739	Broken Hill GW PHU
2745	Camperdown SSW PHU
2747-2751	Penrith SW PHU
2752	Camperdown SSW PHU
2753-2760	Penrith SW PHU
2761-2770	Parramatta SW PHU
2773-2786	Penrith SW PHU
2787	Bathurst GW PHU
2790-2800	Bathurst GW PHU
2803	Goulburn GS PHU
2804-2806	Bathurst GW PHU
2807	Goulburn GS PHU
2808-2810	Bathurst GW PHU
2820-2831	Dubbo GW PHU
2832-2834	Broken Hill GW PHU
2835	Dubbo GW PHU
2836	Broken Hill GW PHU
2839-2840	Broken Hill GW PHU
2842-2844	Dubbo GW PHU
2845-2847	Penrith SW PHU
2848-2849	Bathurst GW PHU
2850-2852	Dubbo GW PHU
2864-2877	Bathurst GW PHU
2878-2880	Broken Hill GW PHU
2890-2891	Wollongong SESI PHU
2898	Broken Hill GW PHU

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