



Construction Environmental Management Plan - Stage C Network West

Googong Township Integrated Water Cycle Project

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Acronyms and glossary

Acronym	Meaning
BWPS	Bulk water pumping station
CEMP	Construction Environmental Management Plan
CIC	Canberra Investment Corporation
CoA	Minister for Planning's Condition of Approval
DoE	Department of the Environment (Cth)
DP&E	Department of Planning and Environment (NSW)
EA	Environmental Assessment
EEC	Endangered Ecological Community
EP	Equivalent population
EPA	Environment Protection Authority
EPL	Environment Protection Licence
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environmental Protection and Biodiversity Conservation Act 1999
EWMS	Environmental work method statement
GLA	Guideline ACT Proprietary Limited
GTPL	Googong Township Proprietary Limited
IWC	Integrated Water Cycle
NH1A	Neighbourhood 1A
NOW	NSW Office of Water
OEH	Office of Environment and Heritage (NSW)
OEMP	Operation Environmental Management Plan
PIRMP	Pollution Incident Response Management Plan
POELA Act	Protection of the Environment Legislation Amendment Act 2011
POEO Act	Protection of the Environment Operations Act 1997
QPRC	Queanbeyan-Palerang Regional Council
RMS	Roads and Maritime Services
SoC	Statement of Commitments
SPS	Sewage pumping station
WRP	Water recycling plant

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- Appendix 2 GLA Temporary Traffic Management Plan
- Appendix 3 Waste and Resource Management Plan
- Appendix 4 Environmental constraints maps
- Appendix 5 Example Environmental Control Plan
- Appendix 6 Environmental Risk register
- Appendix 7 GLA Legal and Other Requirements
- Appendix 8 GLA Policies, Environmental Management Plan
- Appendix 9 Monthly report (template)
- Appendix 10 GLA Emergency Management Plan
- Appendix 11 Weekly Checklists
- Appendix 12 Noise and Vibration Management Plan
- Appendix 13 Soil and Water Management Plan, Erosion and sediment control plans
- Appendix 14 Pollution Incident Response Management Plan

2.0 Introduction

2.2 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 seven kilometres 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 water 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 systems required to service the township.

Concept Approval for the ultimate development (Stage 1 and Stage 2) of the Googong IWC Project was granted by the NSW Planning Assessment Commission, under delegation from the Minister for Planning and Infrastructure on 24 November 2011.

The Googong 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 Project was approved by the NSW Planning Assessment Commission, under delegation from the Minister for Planning and Infrastructure on 24 November 2011 and has commenced operation. It comprises 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.

Stage 2 of the IWC Project is being delivered in two sub stages (Stages C and D) in order to provide the appropriate IWC infrastructure to accommodate the size and growth of the Googong township. Stage C is currently under development, with Stage D to be developed as demand requires in the future. Stage C has been further divided into three components, to facilitate project planning approvals, these being Stage C Network West (within the former Queanbeyan local government area (LGA)), Stage C Network East (within the former Palerang LGA) and Stage C WRP (within the former Queanbeyan LGA).

The Project Approval for Stage C Network West was granted by the Queanbeyan-Palerang Regional Council (QPRC) on 18 April 2016. Pending the appropriate legal documents and remaining approvals, Guideline ACT will undertake the construction of the project on behalf of QPRC and GTPL.

This Construction Environmental Management Plan (CEMP) has been developed for the construction of Stage C Network West (the Project).

2.3 Purpose of this document

The Project is subject to a number of Conditions of Approval (CoA). CoA A1 states that the Proponent shall carry out the project generally in accordance with the EA, Statement of Commitments (SoC) and CoA. This CEMP has been developed for the construction of Stage C Network West. This CEMP references CoA and SoC relevant to the construction of Stage C Network West.

Tables 1-4 and Table 5 outline the CoA and SoC relating to the preparation of a CEMP and where such conditions have been addressed in this CEMP, management plans or other project documents. CoA and SoC relating to a particular issue (e.g. heritage, flora and fauna) have been considered in more detail in the management plans appended to this CEMP.

The purpose of this CEMP is to provide a systematic approach to the management of environmental issues during construction of Stage C Network West, and to ensure that the requirements of the CoA are met. The CEMP is the overarching document in the environmental management system that includes a number of documents and plans (refer Section 1.5).

This CEMP has been prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004). It is also generally consistent with AS/NZS ISO 14001.

A contractor, appointed by GTPL, will carry out the construction of Stage C Network West. Unless otherwise identified, the contractor will be responsible for the ongoing review and implementation of this CEMP and related environmental documents based on detailed construction information.

This CEMP and associated documents will be made available, and are applicable, to all employees and persons involved in construction of Stage C Network West, including relevant sub-contractors.

Table 1 Conditions of the Part 3A Concept Approval (approved on: 24 November, 2011)

CoA	Condition	Reference
Terms of the Concept Plan Approval		
1.4	The Proponent shall comply with any reasonable requirements(s) of the Director-General arising from the Department's assessment of: (a) any reports, plans or correspondence that are submitted in accordance with this Concept Plan approval or any related project approvals; and (b) the implementation of any actions or measures contained in these reports, plans or correspondence.	Section 3.2 Appendix 7
Publicly available information		
3.1	Subject to confidentiality, the Proponent shall make all documents required under this approval available for public inspection on request.	Section 4.2
Provision of electronic information		
3.2	Prior to the commencement of construction of any projects associated with this Concept Plan approval, the Proponent shall establish a dedicated website or maintain dedicated pages within its existing website for the provision of electronic information associated with the project. The Proponent shall publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:	Section 1.6
	(c) A copy of each relevant environmental approval, licence or permit required and obtained in relation to the project;	
	(d) A copy of each approval plan, report, or monitoring program	

CoA	Condition	Reference
	required by this approval and associated project approvals;	
	(e) A summary of the monitoring results of the project, which have been reported in accordance with the various plans and programs approved under this approval and associated project approvals;	
	(f) Details of the outcomes of compliance reviews and audits of the project, to the satisfaction of the Director-General.	

Table 2 Queanbeyan-Palerang Regional Council Project Conditions of Approval (determined by Queanbeyan-Palerang Regional Council on:18 April, 2016)

CoA	Condition	Reference
1.	A Construction Environmental Management Plan is to be prepared and submitted to Council prior to construction works commencing that compiles the requirements and findings of all management plans required in the Statement of Commitments and the additional conditions.	This Plan
2.	To manage potential erosion caused by excess recycled water discharges, site specific erosion and sediment control plans are required where there is land disturbance associated with works along the drainage line prepared in accordance with Managing Urban Stormwater: Soils and Construction Vol 1 and included in the Construction Environmental Management Plan. Detailed erosion and sediment control plans should also refer to relevant Volume 2 guidance including installation of gas and water pipe lines in Managing Urban Stormwater: Soils and Construction, Vol 2A Installation of Services; and for access roads and creek crossings in Managing Urban Stormwater: Soils and Construction, Vol 2C Unsealed Roads.	Appendix 13A SWMP Appendix 13B ESCP
3.	The Construction Environmental Management Plan is to include details of measures to be put in place to ensure effective erosion and sediment control in accordance with the EPA's Blue Book.	Appendix 13A SWMP
4.	The Construction Environmental Management Plan is to address the detection, management and disposal of potential soil contamination, and any wastes generated or encountered during construction and/or operation.	Appendix 8B – Section 4 Appendix 14 PIRMP
5.	The Construction Environmental Management Plan is to address measures to treat and manage all noxious weeds in accordance with the Pesticides Act 1999 and the Pesticides Regulation 2009 on site at the start of throughout construction to limit the growth, spread and reproduction of these species.	Appendix 8B – Section 7
6.	Any emergency management plan appended to the Construction Environmental Management Plan is to also address and detail the notification requirements for incidents in accordance with sections 148-152 of the POEO Act.	Section 7 Appendix 7 – Incident Reporting Flowchart Appendix 14 - PIRMP
7.	All wastes generated during the project must be managed in a manner that prevents the pollution of waters and air. Waste must be classified in accordance with the POEO Act and Waste Classification Guidelines (DECCW, 2010). All waste materials must be taken to a place which can lawfully receive them in accordance with the requirements of the POEO Act.	Appendix 3 WRMP (Section 3.1 and W11)
8.	Sediment basins/dams should be appropriately managed ensuring any discharge complies with section 120 of the POEO Act. A standard operating procedure (SOP) for dewatering of sediment basins/dams at the site should be developed, implemented and	Section 8.2 Appendix 7 – Incident Reporting Flowchart Appendix 13A SWMP

CoA	Condition	Reference
	documented in the CEMP. Incidents will be managed and notified in accordance with the requirements under section 148 of the POEO Act.	
10.	All works on waterfront land, including the stormwater outlet and energy dissipation structure associated with excess water discharges and any reconfiguration of the natural drainage line, be designed in accordance with the "Guidelines for Controlled Activities on Waterfront Land (DPI 2012).	NA Design Requirement

Table 3 Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Condition of Approvals (approved on: 19 May, 2011)

CoA	Condition	Reference
1.	The person taking the action must prepare and submit a Pink-tailed Worm-lizard Protection and Management Plan for the Minister's approval for the protection of Pink-tailed Worm-lizard (<i>Aprasia parapulchella</i>). The plan must include: (ii) management measures to mitigate construction impacts;	Appendix 8B – Section 5
2.	To prevent impacts on listed threatened species and ecological communities, and the environment on Commonwealth land, the person taking the action must prepare and submit a Googong Foreshores Interface Management Strategy for the Minister's approval. The strategy must include measures to: i) Induct construction workers and contractors about requirements to protect threatened species and the environment on Commonwealth land; ii) Provide indicative environmental management checklists to assist with monitoring the implementation of environmental management obligations during construction works; iii) Identify and implement erosion and sedimentation control measures; xi) Indicate timing and frequency of monitoring to determine impacts and effectiveness of mitigation measures; xiii) Undertake corrective actions if management measures are not achieved;	GTPL Responsibility
6.	Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans and strategies as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the department at the same time as the compliance report is published.	
7.	Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	
11.	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plan or strategy required by this approval, and make	

CoA	Condition	Reference
	them available upon request to the department. Such records may be subject to audit by the department or an independent auditor in accordance with section 458 of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> , or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the department's website. The results of audits may also be publicised through the general media.	

Table 4 Licence conditions for EPL 20788

EPL	Condition	Reference
20788	Sewage treatment processing by small plants > 219-1000 ML annual maximum volume of discharge	Appendix 7

Table 5 Statement of Commitments, Section 7.3 of the Stage C Network West Review of Environment Factors (RPS Manidis Roberts Pty Ltd, September 2015)

SoC No.	Requirement	Reference
C1	A detailed traffic and access management plan would be prepared prior to construction to outline all access routes to, from and within the construction zones, traffic control methods to be utilised and methods to minimise impacts on the local road network. This plan would be prepared in accordance RMS standard Traffic Control Plan (TCP) 195 and submitted to RMS for consultation and approval.	Appendix 2 – Table 3 (T3)
C2	All employees and contractors would be inducted into the site and would receive appropriate training to fulfil their individual and environmental responsibilities, including requirements and responsibilities under the traffic and access management plan.	Section 4 Section 5 Appendix 2 – Table 3 (T1)
C3	Where feasible, construction deliveries would be scheduled outside of peak periods, in particular peak residential access times.	Appendix 2 – Table 3 (T6)
C4	Access to residential properties would be maintained at all times.	Section 2.2.6 Appendix 2 – Table 3 (T9, T10)
C5	Construction staff and delivery vehicles would not park in public parking areas where supply is limited.	Section 2.2.5 Appendix 2 – Table 3 (T18)
C6	Any permits required for oversize vehicles to transport plant or equipment are to be obtained from Roads and Maritime.	Section 3.1.5 Appendix 2 – Table 3 (T5)
C7	Installation of temporary fencing at the permanent reservoirs site for security and to visually delineate the area of construction.	Section 2.3 Appendix 2 – Table 3 (T14)
C8	The site to be kept tidy and well maintained, including removal of all rubbish at regular intervals. There should be no storage of materials beyond the construction boundaries.	Section 8 Appendix 3 – Section 4 (W9) Appendix 11
C9	Temporary hoardings, barriers, traffic management and signage would be removed when no longer required.	Section 2.2.1.3 Appendix 2 – Table 3 (T13)
C10	Locate construction plant, machinery and vehicle parking areas away from public or sensitive viewing areas.	Section 2.2.5 Appendix 2 – Table 3 (T19)
C11	Locate any lighting needed for construction night-time activities away from public or sensitive viewing areas.	Section 2.3
C12	Upon completion, revegetate residual site areas.	Section 2.2.7 Appendix 8B – Section 5 (FF14)
C13	A Construction Noise and Vibration Management Plan would be prepared for all construction activities and included in the	

SoC No.	Requirement	Reference
	Construction Environment Management Plan (CEMP). It would outline measures to minimise construction noise and vibration impacts on sensitive receivers. This would also include an action plan to be followed if complaints are received.	Appendix 12 – Table 17 (NV2)
C14	Works (including delivery of plant and equipment) would be limited to standard working hours of: <ul style="list-style-type: none"> ▪ Monday to Friday 7:00am to 6:00pm ▪ Saturday 8:00am to 1:00pm ▪ No works on Sunday or public holidays. 	Section 2.2.1.2 Appendix 12 – Table 17 (NV5, NV15))
C15	All impacted residents would be notified of the proposed works, including the nature and duration of construction activities, predicted noise levels and contact details should they have any issues with the construction activities.	Section 6.3.1.1 Appendix 12 – Table 17 (NV4)
C16	Construction schedule would provide for respite periods when noisy activities are being undertaken, and the distance between noise construction activities and sensitive receivers would be maximised where feasible and reasonable.	Section 8.2.1 Appendix 12 – Table 17 (NV6)
C17	Construction plant and equipment would be well maintained (including noise reduction fittings where feasible) and would be turned off when not in use to minimise noisy emissions.	Section 4.1.4 Appendix 12 – Table 17 (NV14, NV16)
C18	Where feasible reversing equipment would use 'quacker' alarms or would be minimised to prevent causing a nuisance.	Section 8.2.1 Appendix 12 – Table 17 (NV17)
C19	Loading and unloading would be undertaken away from sensitive receivers.	Section 8.2.1 Appendix 12 – Table 17 (NV18)
C20	The use of vibratory rollers would not be used within 50 metres of residential properties.	Section 8.2.1 Appendix 12 – Table 17 (NV19)
C21	Rock breaking activities are not to be undertaken within 50 metres of sensitive receivers.	
C22	Only trees within the proposal boundary, as identified on Figure 6-10, would be cleared and only if required as part of the proposed works. Trees required for removal would be clearly marked. Any trees not to be removed as part of the works that are within the proposal boundary would be flagged/fenced with tape to ensure they are not impacted by the proposed works.	Section 2.2.1.4 Appendix 8B – Section 5 (FF1, FF5, FF6)
C23	An ecologist would be on site for the clearing of any trees from the proposal site to ensure the trees are free from local fauna prior to felling.	Appendix 8B – Section 5 (FF11, FF13)
C24	Where feasible and reasonable, removal of trees would be undertaken between August and March.	Appendix 8B – Section 5 (FF10)
C25	Where feasible, the landscaping plans should provide for replanting of local species, in particular tree species that provide habitat and foraging opportunities (such as Yellow Box and Red Box).	Section 2.2.7 Appendix 8B – Section 5 (FF15)
C26	The CEMP would include measures to treat and manage all noxious weeds on site at the start of and throughout construction to limit the growth, spread and reproduction of these species.	Appendix 8B – Section 7
C27	All access roads surrounding the infrastructure are maintained as a defendable space and grasses and vegetation should be managed adjacent to these roads.	Section 2.2.6.4 Appendix 8B – Section 8 (F3)
C28	Emergency access to the access roads around the facilities should be maintained at all times.	Section 2.2.6.4 Appendix 8B – Section 8 (F4)

SoC No.	Requirement	Reference
C29	The pumping station should have a maintenance track between it and the grassland to the east.	Section 2.2.6.1 Appendix 8B – Section 8 (F1)
C30	Site GA6 will be fenced for the duration of construction activities associated with the proposal. The construction of the fence should be conducted with on-site advice from the project archaeologist.	Section 2.3 Appendix 8B – Section 6 (H2)
C31	The location of the site GA6 should be clearly marked on all site plans and maps utilised for the proposal.	Appendix 8B – Section 6 (H3)
C32	The location of sites GA7, GA23, G1B AS1, GRW28, G1B AS2, GWTP1 and GWTP3 should be clearly marked on all site plans and maps utilised for the proposal.	
C33	The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 8B – Section 1.6.8) should be implemented if necessary.	Appendix 8B – Section 6 (H6, H7) Appendix 8B – Section 9
C34	Site staff would be advised of the location and presence of Site GRWH5 and the need to avoid impacts to the area. The site should be included on all maps and plans as a no-go zone both on and off site. If direct impact is necessary no permits to impact are required for this site.	Section 5.2 Appendix 8B – Section 6 (H4) Appendix 4
C35	Maintaining surface and soil stability at all times during cut-and-fill excavation activities (particularly in relation to trenching and the excavation of soil at the permanent reservoir site) by implementing standard erosion and sediment control techniques in construction areas like berms and sedimentation fencing. Site-specific Erosion and Sediment Control Plans (ESCPs) will be prepared progressively to include the management strategies and controls for all activities with the potential to impact on sediment loss and erosion.	Appendix 13A – Table 5 (SW6, SW7) Appendix 13B
C36	Erosion within the trench would be mitigated by using trench plugs (i.e. trench/sack breakers) at appropriate intervals. These measures are in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004 – also referred to as ‘The Blue Book’).	Appendix 13A – Table 5 (SW7)
C37	Measures to ensure limited tracking of dirt off site will be implemented at access points. Where required the controls may include exit rumble grids at all points of egress onto public (sealed) roads, and/or stabilisation of site roads/tracks with aggregate where appropriate.	Section 2.2.6.4 Section 8.1.1 Appendix 11 Appendix 13A – Table 5 (SW4)
C38	Erosion and sedimentation controls will be inspected prior to and after each rain period and during periods of prolonged rainfall. Any defects will be rectified immediately.	Section 8.1.1 Appendix 13A – Table 5 (SW5)
C39	Sediment basins will be designed and constructed in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) and located as specified in relevant ESCPs.	Appendix 13A – Table 5 (SW8)
C40	All runoff from disturbed areas within the work site will be directed to sediment basins (or other appropriate sediment control structures). Sediment basins will only be discharged to receiving waters when confirmed as complying through field tests/laboratory analysis tests with discharge guidelines.	Appendix 13A – Table 5 (SW9)
C41	Erosion and sediment measures to secure the stockpile areas (e.g. diversions, sediment fences) will be installed prior to the commencement of spoil stockpiling activities.	Appendix 13A – Table 5 (SW10)
C42	Stockpiles will be checked for stability weekly and after heavy rainfall.	Appendix 11 Appendix 13A – Table 5 (SW11)

SoC No.	Requirement	Reference
C43	Topsoil will be conserved, where reasonable and feasible, for use in site rehabilitation/revegetation.	Appendix 13A – Table 5 (SW13)
C44	The site would be re-profiled to achieve soil stability and congruity with the surrounding landscape. This would be done in consideration of the landscape and open space strategy for the Googong township development.	Appendix 13A – Table 5 (SW30)
C45	Re-seeding would be undertaken, and geotextile materials used as required.	Appendix 13A – Table 5 (SW30)
C46	Trenches would be backfilled and compacted in layers.	Appendix 13A – Table 5 (SW31)
C47	Access to the site would be managed (including site restrictions) to assist with site recovery.	Section 2.2.6.1
C48	There will be progressive revegetation, stabilisation and restoration works of earthworks areas in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004).	Appendix 13A – Table 5 (SW29)
C49	Works in the vicinity will be stopped or modified and will not recommence until the material has been analysed, the hazard has been assessed and appropriate action has been taken (including delineating areas of concern as required until earthworks can resume safely).	Appendix 8B – Section 4 (CH7, CH10) Appendix 13A – Table 5 Appendix 13A – Appendix 1 Appendix 14
C50	Storage areas for fuels, oils and chemicals used during construction will be covered and contained within an impervious bund to retain any spills of more than 110% of the volume of the largest container in the bunded area. Any spillage will be immediately contained and absorbed with a suitable absorbent material. The contaminated material will be disposed of according to manufacturers and OEH requirements.	Appendix 8B – Section 4 (CH4)
C51	Where possible, all refuelling would occur at designated fuel distribution points. These distribution points would be underlain by compacted earth to prevent the significant loss of fuel into the ground in the event of a spill. They would also be bunded to contain any large spills that may occur as a result of machinery or tank failure.	Appendix 8B – Section 4 (CH3)
C52	Spill response procedures and equipment for containment and recovery would be available on site.	Appendix 8B – Section 4 (CH5)
C53	Workforce training would be conducted on the transport, storage, handling and disposal procedures relating to chemicals.	Section 5 Appendix 1 Appendix 8B – Section 4 (CH1)
C54	Speed limits would be reduced during high dust/windy conditions.	Appendix 8B – Section 2 (A15)
C55	Clearing of vegetation and topsoil would be limited to the designated footprint required.	Appendix 8B – Section 2 (A7)
C56	Disturbed areas would be progressively reinstated with suitable stabilising agents or revegetation.	Appendix 8B – Section 2 (A7, A17)
C57	Water trucks would be used to reduce dust in dry, windy conditions.	Appendix 8B – Section 2 (A6)
C58	Working practices would be modified during periods of high winds by limiting the use of some machinery and by reducing travel speeds.	Appendix 8B – Section 2 (A13, A15)
C59	The burning of material on site would be prohibited, except under the instruction of NSW Rural Fire Services.	Appendix 8B – Section 8 (F5)
C60	All dust suppression measures are to be based on standard construction industry measures based on the 'Blue Book' (Landcom,	Appendix 8B – Section 2

SoC No.	Requirement	Reference
	2004) and would be sufficient to adequately manage dust during the construction phase.	
C70	Resource management hierarchy principles are to be followed (in particular in the removal and disposal of the existing interim reservoir site): <ul style="list-style-type: none"> ▪ Avoid unnecessary resource consumption as a priority ▪ Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) ▪ Disposal is undertaken as a last resort at a licenced waste facility (in accordance with the Waste Avoidance and Resource Recovery Act 2011). 	Appendix 3 – Section 4 (W10)
C71	Waste materials, other than (re-used) landscaped vegetation and/or tree mulch, is not to be left on site once the works are complete	Appendix 3 – Section 4 (W12)
C72	Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day	Section 8 Appendix 3 – Section 4 (W9) Appendix 11
C73	No waste is to be burnt on site.	Appendix 8B – Section 8 (F5)
C74	Mitigation measures that would be implemented during construction would be outlined in the CEMP and would include (but not limited to): <ul style="list-style-type: none"> ▪ Implementation of appropriate safety and training procedures, such as safe work method statements, safety management plan(s), auditing of contractors' safety management and approval of construction equipment. ▪ Risks register and risk minimisation process. ▪ Implementation of a traffic management plan (see Section 13.1.6). ▪ Liaison with local emergency services, in particular regarding high fire-danger periods. ▪ Installing exclusion fencing where appropriate. 	This Plan

2.4 Consultation

Consultation is an ongoing and vital component of GTPL's approach to developing the Googong township. The primary objective of consultation is to keep stakeholders informed and involved with the development of the IWC Project, and to establish effective lines of communication between GTPL and key stakeholders during each stage.

In particular, extensive consultation has been undertaken and is continuing with QPRC who will be the ultimate operator of Stage C Network West. QPRC has been involved in the design process for the Stage C Network West, and is also one of the stakeholders and government authorities consulted during the development of this CEMP. Those consulted during the development of this CEMP include:

- Environment Protection Authority (EPA).
- Office of Environment and Heritage (OEH).
- QPRC.
- NSW Office of Water (NOW).
- NSW Roads and Maritime Services (RMS).
- Commonwealth Department of the Environment (DoE).

Consultation with relevant stakeholders and government authorities will continue throughout the construction Stage C Network West, as identified in the GTPL Community Engagement and Stakeholder Management Plan.

The outcome of any future consultation will be documented where relevant in subsequent revisions of this CEMP.

2.5 Certification and approval

This CEMP must be submitted to GTPL (RPS) for review of conditions of approval. Submission to QPRC is required prior to commencement of construction works or as otherwise agreed.

2.6 Environmental management system structure

2.6.4 Construction Environmental Management Plan

This CEMP provides the system to manage and control the environmental aspects of Stage C Network West during construction. It provides the overall framework to ensure environmental impacts are minimised and legislative and other requirements are fulfilled. The contractor will be responsible for implementing this CEMP and developing supportive documents and registers to assist with the implementation, including:

- Site inspection checklists.
- Non-compliance and corrective action reports.
- A complaints report.
- Environment incident reports.
- Environment training registers.
- Monitoring checklists.

2.6.5 Environmental management plans

A number of environmental management plans support the CEMP. These documents have been prepared to identify and manage the specific impacts or aspects of the activities described in Section 2.0. They address requirements of the CoA, SoCs and the environment assessment documentation.

The following management plans have been prepared to support this CEMP:

- GLA WHS Management Plan (Appendix 1)
- GLA Temporary Traffic Management Plan (Appendix 2)
- Waste and Resource Management Plan (Appendix 3)
- Environmental Management Plan (Appendix 8B)
- Noise and Vibration Management Plan (Appendix 12)
- Soil and Water Management Plan (Appendix 13A)
- Erosion and Sediment Control Plan (Appendix 13B)
- Pollution Incident Response Management Plan (Appendix 14)

2.6.6 Environmental Work Method Statement

Environmental Work Method Statements (EWMS) detail a specific construction methodology and environmental mitigation and management measures for an activity or area, for example, fencing or site-specific rehabilitation measures. EWMS will be prepared, as required by the contractor, prior to the commencement of significant activities. They will be prepared progressively in the lead up to and throughout construction, and approved by the Project Engineer.

2.6.7 Environmental procedures, forms and checklists

Environmental procedures are tools used to document an environmental process (such as flocculating a sedimentation basin, dewatering a trench). Project specific procedures will be developed as required by the Project Engineer.

2.6.8 Environmental constraints maps

Environmental constraints maps detail environmentally sensitive areas, including:

- Flora features, including threatened species and endangered ecological communities.
- Local waterways.
- Recorded threatened fauna habitat, including hollow bearing trees.
- Heritage sites.
- Bushfire prone areas.
- Googong Foreshore Buffer Area.
- Pink-tailed Worm-lizard Conservation Area.
- Noise sensitive receivers.

An environmental constraints map for the Stage C Network West site is provided at Appendix 4. This map will be revised throughout construction, as required, to reflect any revision to sensitive sites. Environmental constraints maps will assist pre-construction planning and on site construction management to help identify areas of environmental sensitivity.

2.6.9 Environmental control plans

An environmental control plan will be prepared to manage the impacts of construction on the environment at the Stage C Network West site. If required, a map will be prepared at a scale that ensures all controls are clearly identified. The environmental control plan will include information such as:

- Environmentally sensitive areas, including no-go areas.
- Erosion and sediment control measures.
- Noise sensitive receivers.
- Designated works areas and access tracks.
- Site compounds, stockpile locations and refuelling areas.
- Rehabilitation measures that would be implemented.

The environmental control plan will be developed by the Project Engineer, and is to be implemented prior to works commencing at the site.

The Project Engineer will maintain a register of environmental control plans. An example environmental control plan is provided in Appendix 8.

2.6.10 Other project documents

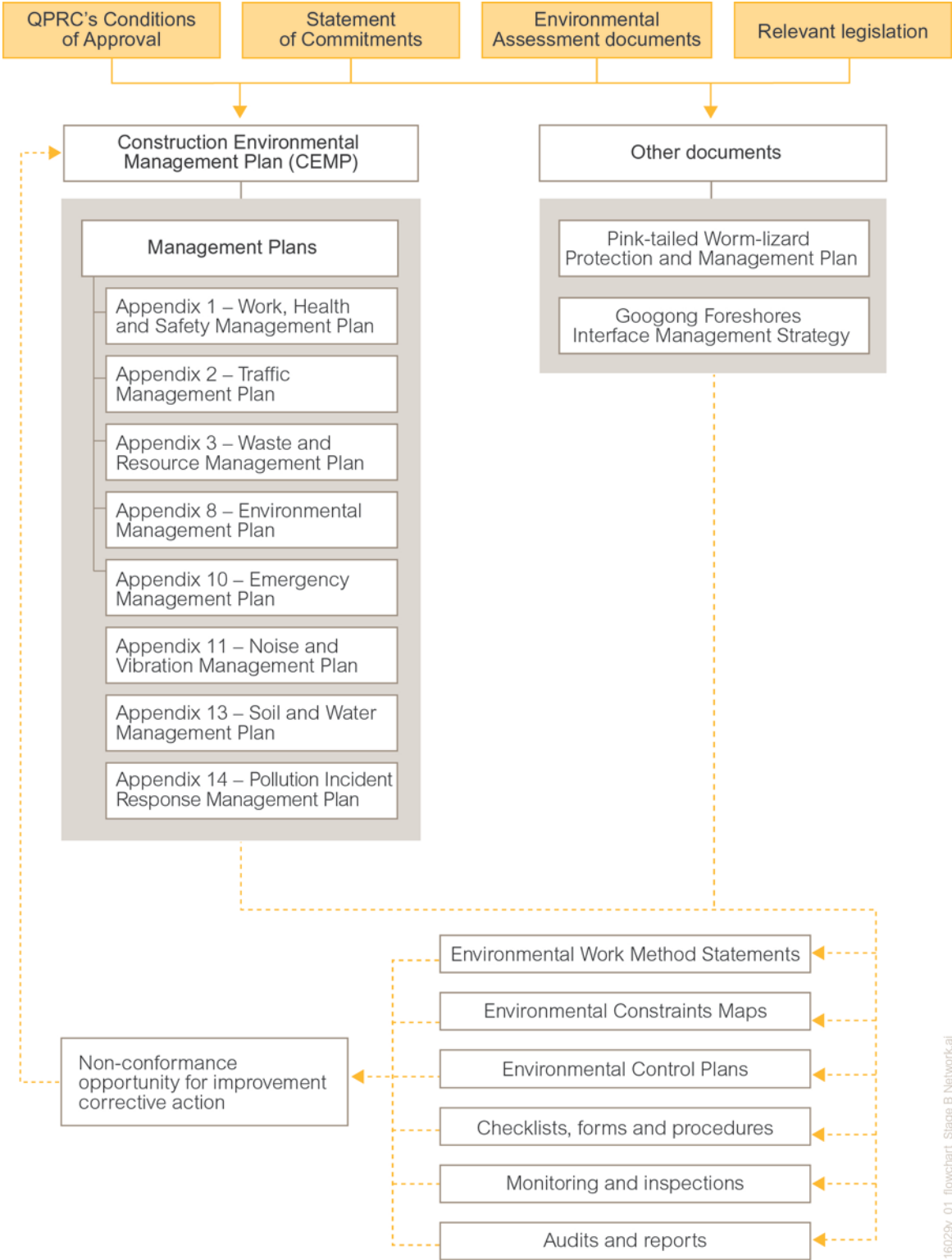
GTPL is responsible for the preparation of other project documents as required by the CoA or SoC. These include:

- Pink-tailed Worm-lizard Protection and Management Plan (EPBC CoA 1).
- Googong Foreshores Interface Management Strategy (EPBC CoA 2).

The contractor will comply with these overarching project documents, where relevant.

Figure 1 shows the structure of the environmental management system and its relationship to other project documents.

Figure 1 Environmental Management System structure



16029v_01_flowchart_Stage B Network.ai

2.7 Distribution

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

The CEMP is uncontrolled when printed. One controlled hard copy of the CEMP and supporting documentation will be maintained at GTPL's office.

Controlled copies will be distributed to:

- GTPL.
- Contractor.
- QPRC.
- Site superintendent.

2.8 Revision

A document review process ensures that environmental documentation including this CEMP is updated as appropriate for the specific works that are occurring on site or in response to environmental incidents. This includes following the document review process described in Section 9.1. In addition, the CEMP and environmental management plans will be reviewed by the Project Engineer after every Category One incident. The Project Engineer will ensure that any additional measures arising from the incident investigation are incorporated into the relevant plans

The contractor will coordinate the review and distribution of this CEMP, management plans and other environmental documents during construction of Stage C Network West, in consultation with GTPL.

For any revision of this CEMP, the contractor will ensure that documentation is:

- Developed, 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.

The revised document will then be issued to the Site Superintendent for review. The Site Superintendent will endorse minor changes to the CEMP. 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.

Where the Site Superintendent determines that the change is not minor, the revised CEMP will be sent by GTPL to QPRC for approval.

A register will identify the current revision of particular documents. Revised documents will be distributed to controlled-copy holders, as identified in Section 1.6.

3.0 Project description

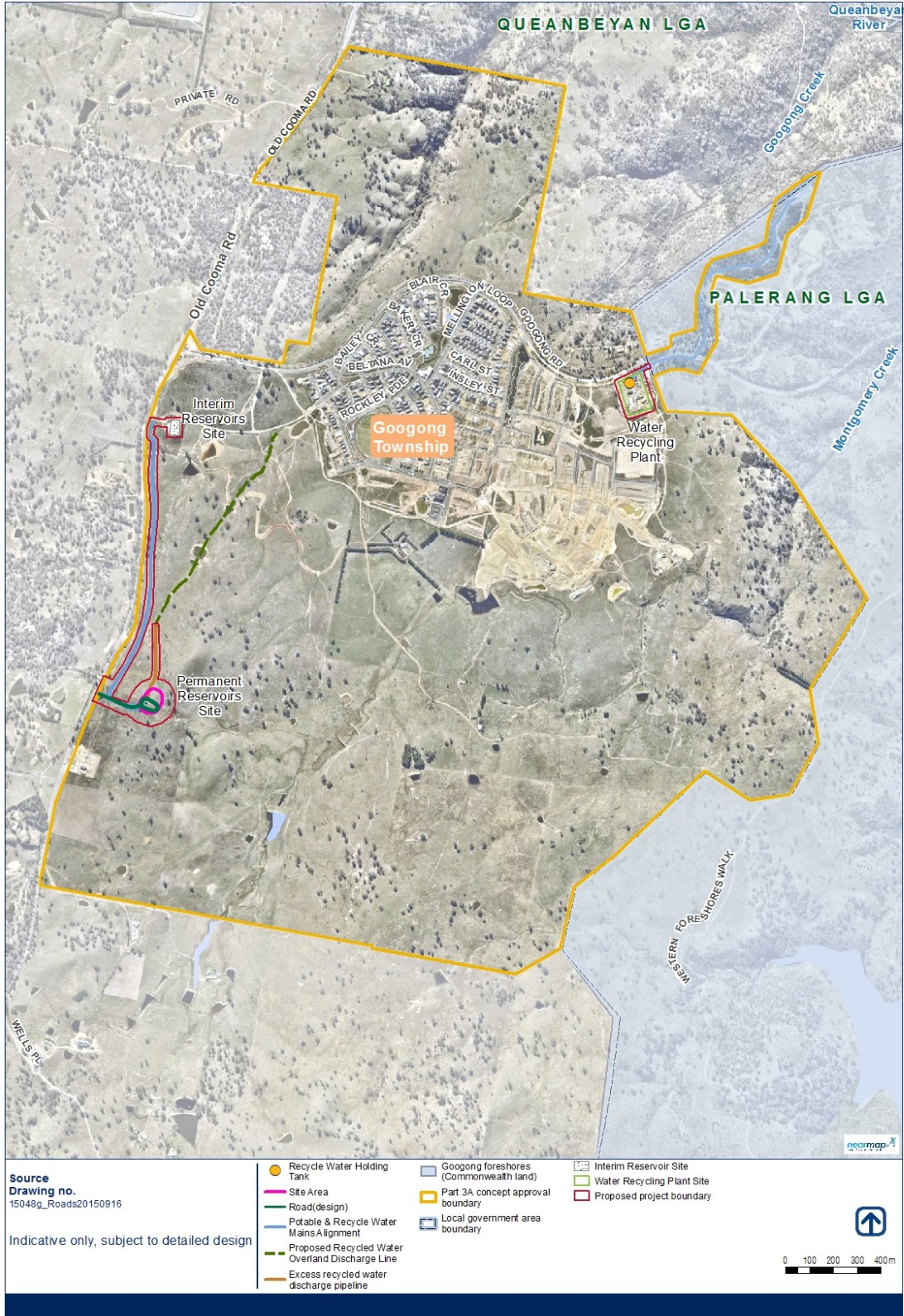
3.2 General features

This CEMP applies to works for Stage C Network West that will include construction of the following:

- Works associated with the installation of two permanent reservoirs at Hill 800, including a recycled water discharge pipeline for excess recycled water that needs to be released from the recycled water reservoir.
- Works associated with the installation of mains for recycled water and potable water, including:
 - The installation of new potable water and recycled water rising mains (an extension to the existing pipelines) from the interim reservoirs to the permanent reservoirs.
 - The installation of new gravity potable water and recycled water mains from the permanent reservoirs back into the Googong Township.
 - Continue the new Stage C Network East potable water pipeline from the boundary of the Googong Foreshores to the WRP for potable water top-up of the recycled water supply.
- Works associated with the WRP, including:
 - The installation of a new recycled water tank.
 - Increasing the capacity of the recycled water pumping station at the WRP site by installing new pumps.
- Works associated with the decommissioning of the interim potable and recycled water reservoirs.

Figures 2, 3 and 4 provide the site layout of Stage C Network West.

Figure 2 Site Stage C Network West and construction boundaries



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Figure 3 Site layout – Stage C Network West Reservoir and Pipeline construction boundary

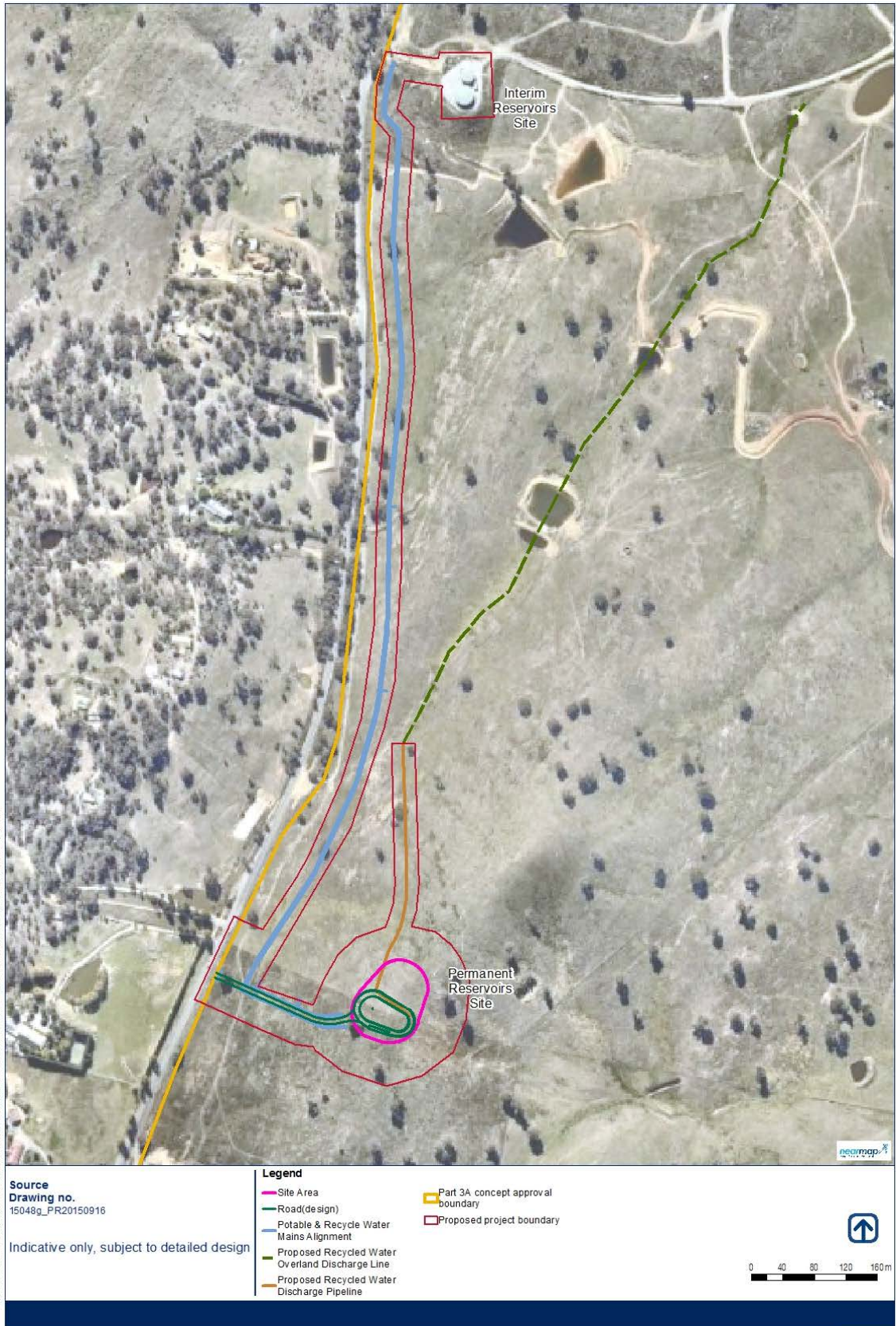


Figure 4 Site layout – Stage C Network West WRP construction boundary



3.3 Construction activities

3.3.4 Works at the permanent reservoirs site and the WRP site

The construction activities required at the permanent reservoirs site and the WRP site will be similar as they both involve the construction of water reservoirs/tanks, pumping stations and associated equipment. The key difference is that the WRP site will be operational during the construction works and only minor establishment and preparatory works will be required.

3.3.4.1 Site establishment

Site establishment for the permanent reservoirs site will include:

- Services search on site (both aboveground and belowground).
- Survey location.
- Install temporary perimeter fencing and gates.
- Install environmental controls.
- Subgrade preparation.
- Transport and establishment of site office and amenities.
- Install temporary power supply.
- Install temporary water and plumbing.

3.3.4.2 Work Hours

Work hours including all delivery of plant and equipment will be limited to the standard working hours of:

Monday to Friday	7:00am to 6:00pm
Saturday	8:00am to 1:00pm
Sunday and Public Holidays	No Works

3.3.4.3 Traffic Management

A temporary traffic management plan (TTM) has been outlined in Appendix 2. The plan stipulates temporary construction signage, bollard placement and flagman locations for various stages of the project. To minimise the effects on local and passing traffic, as the project develops only the necessary controls will be left in place. Continual monitoring of the requirements will be undertaken as part of the weekly safety inspection (Appendix 11) and as requirements change throughout the project unnecessary traffic controls will be removed.

3.3.4.4 Clearing, stripping and stockpiling

Where clearing of trees is required (as stipulated in design drawings) clear and visible markings are to be made on said trees. Prior to removal of any flora the appropriate authorities are to be notified and an ecologist is to be on site ensuring any local fauna are clear from the tree. To minimise the effects on breeding birds any removal of trees should be undertaken (out of season) between August and March.

Stripping and stockpiling of topsoil for later re-use will commence after site establishment activities are complete. An area approximately 7,500 square meters will be required for the permanent reservoirs site, stockpile, access road, construction office and compound.

The following machinery is expected to be required to carry out these activities (final list of plant to be determined by contractor):

- Staff site vehicles.
- Dozers and Scrapers for clearing and vegetation removal.
- Excavators for clearing, stripping and stockpiling.
- Water cart for dust suppression.
- Scrapers and Tippers for the relocation of spoil to designated stockpile sites.

3.3.4.5 Earthworks

Excavation works at the site will be predominately achieved with conventional earth moving equipment such as bucket excavators and tippers for spoil movement. Some pneumatic rock hammering may be required to facilitate excavation. Open trenching will be used for the installation of buried services, conduits, connection to incoming flowlines and site drainage piping.

Foundation size and design will vary depending on the geotechnical nature of the soils and rock strata levels. The current assumption is that piling will be required to provide adequate reservoir foundations.

The following machinery is expected to be required to carry out these activities (final plant to be determined by contractor):

- Excavators for trenching, backfilling and stockpiling.
- Roller for compaction of backfill materials.
- Cranes for positioning pipework.
- Whacker for compaction around pipework.
- Water cart for dust suppression.
- Tippers for spoil movement.
- Piling rigs for piling for reservoir foundations.
- Blasting equipment if required.

3.3.4.6 Concrete works

Concrete works will be required for the construction of reservoir foundations, building slabs, hard stand areas and chemical delivery and storage bunds within the site.

Preparation works for foundations will involve the surface preparation, construction of formwork, and the placement and tying of reinforcing steel.

A concrete washout area will be provided for disposal and wash down of excess concrete from delivery trucks.

The following machinery is expected to be required to carry out these activities (final list of plant to be determined by contractor):

- Cranes for lifting of formwork and reinforcement steel.
- Excavators for excavation, backfilling and stockpiling.
- Concrete trucks for the supply of concrete to the site.
- Concrete pump for pumping of concrete to foundations.
- Staff site vehicles.

3.3.4.7 Structures

The tank walls will be constructed as required, based on the material selected during the procurement process. The construction methodology will either involve the installation of sections of tank wall manufactured off-site (steel or reinforced concrete panels) or concrete pouring in situ. All options will have a structural steel roof.

Additional carport type roof structures will be installed on the chemical dosing and storage facilities.

Steel frames and panels will be factory fabricated before delivery to site for final assembly.

The onsite potable water and recycled water booster pumping station building will be constructed from masonry/block work with reinforced concrete slab foundation.

The following machinery is expected to be required to carry out these activities (final list of plant to be determined by contractor):

- Cranes for lifting and placing steel frames and panels/formwork.
- Elevated working platforms (EWPs) for the erection of steel frame and tank panels/formwork.
- Staff site vehicles.

3.3.4.8 Roadworks

Construction of the internal permanent roadways will be among the final excavation activities to take place for the proposed works. Roads will be constructed as flexible pavement with subgrade, sub base, and base course layers compacted and finished with an asphalt concrete wearing course.

Typical equipment required for these works will include (final list of plant to be determined by contractor):

- Truck and dogs for the delivery of road base materials.
- Rollers for the compaction of backfill materials.
- Concrete trucks for the delivery of concrete.
- Staff site vehicles.
- Water cart for dust suppression.

3.3.4.9 Mechanical fit out

The majority of the mechanical plant will be installed as part of the potable water and recycled water booster pumping station and chemical dosing facilities. Equipment will be delivered to site as packaged units where possible, that can be positioned directly onto their designated operational areas. Mechanical site works will predominantly involve the installation and assembly of pipework.

Mechanical installation will require the following equipment (final list of plant to be determined by contractor):

- Crane for unloading and installation of plant and equipment.
- EWP for installation of piping.
- Welder for pipe welding and cutting.
- Staff site vehicles.

3.3.4.10 Electrical fit out

Electrical installation works will include the installation of cable trays, installation and testing of power and instrumentation wiring to plant, pumps, alarm instrumentation, lighting and control and monitoring equipment. The control systems will be interfaced with an overall project control system.

Electrical installation will require the following equipment (final list of plant to be determined by contractor):

- EWP for installation of cable trays and lighting etc.
- Staff site vehicles.

3.3.4.11 Demobilisation

As construction activities are completed, materials and plant will be removed from the site. Site offices and amenities buildings will remain until construction is complete. Construction plant and facilities will be removed from site using standard flatbed trucks, 19-25m articulated heavy vehicles, with some larger equipment requiring a float from site using a low loader.

3.3.4.12 Restoration and landscaping

A landscaping plan will be developed for restoration works upon completion of construction activities.

The proposed access to the permanent reservoir site will be stabilised and finished with compacted road base and bounded by the perimeter roadway to provide clear, unhindered all weather access. A landscaped buffer will be provided on the outside of the perimeter roadway. This buffer will help maintain the aesthetics of the area and the selected plant species will tie in with the overall landscape for the surrounding open space parkland to be established on Hill 800.

Any batters that are required as a result of establishing the all weather access area around the reservoirs will be designed to blend in with the existing landform. The batters will be finished with either an appropriate grass mix or a combination of grass and shrubs.

The permanent reservoir site will require shelters for facilities such as the chemical storage tanks and the booster pumps. Therefore it is anticipated that as part of minimising the aesthetic, colours for any structures and the reservoirs will be selected to ensure they can blend in with the surrounding environment. Standard basic colours like Environmental and/or Midnight green will be considered to ensure a subtle blending of the major built forms with the surrounding environment.

The following equipment will be used during restoration works (final list of plant to be determined by contractor):

- Excavators for distribution of topsoil and mulch.
- Tipper cart for the movement of topsoil and mulch.
- Water cart for dust suppression.

3.3.5 Installation of potable water and recycled water mains

The proposed construction activities for this component of work are based on installing approximately 50m of each of the four mains per day. Construction works would include:

- Continuous stripping/excavating of soil material to create trenches.
- Removal/stockpile of surplus spoil material.
- Intermittent pipe laying.
- Intermittent backfilling of trenches.
- Intermittent compaction of backfill.
- Rock excavation as required for trenching in rock.

Construction traffic and traffic movements are expected to be (final figures would be developed by contractor prior to construction):

- Employee traffic (light vehicles) up to 10 vehicles movements each way per day.
- Delivery of mobile plant at beginning and end of the project.
- Deliveries of resources, up to 4 semi-trailer each way per day.
- Deliveries of pipes and jointing components, 1 semi-trailer each way per week.
- For this to be achieved, the following construction equipment would be required:
 - Excavators (30t-50t).
 - Backhoe.
 - Padfoot roller.
 - Rigid truck.

3.3.6 Decommissioning of the interim reservoir site

The interim reservoir site will not be decommissioned until the permanent reservoir site has had successful operation for several months. In this way the interim reservoirs can be relied upon as a back system for the supply of potable water and recycled water to the Googong township in the unlikely event of a significant failure at the permanent reservoirs.

Once the permanent reservoir site has been successfully operating for a few months the interim reservoir site will be fully decommissioned with the removal of all above and below-ground assets to provide an unencumbered site for future development.

3.3.7 Commissioning of Stage C Network West

The permanent reservoirs site and all associated infrastructure (i.e. the associated rising mains, gravity mains and chemical dosing facilities) and the proposed works at the WRP will need to be fully commissioned prior to them being cut over to supply potable water and recycled water to the Googong township.

A commissioning and cut-over plan will be developed towards the conclusion of the detail design phase when the final design is fully understood. It is likely that the new assets will be commissioned in the order as nominated in Table 6.

Table 6 Stage C Network West asset operation requirements before the interim reservoirs site is decommissioned

Asset	Requirement	Comment
1. BWPS upgraded existing pumps (not part of Stage C Network West scope of works)	Fully commission	Upgraded pumps will have the capacity to supply the potable water reservoir at the permanent reservoirs site
2. Potable water rising main extension	Pressure test	Use the bulk water pumping station to fill potable water reservoir via extended potable water rising main
3a. Potable water reservoir	Pre, dry and wet commission potable water reservoir	Use water in reservoir to support commissioning of chemical dosing systems
3b. Chemical dosing systems and yard pipe work	Pre, dry and wet commission dosing system	Use water in the potable water reservoir
4a. Recycled water reservoir	Pre, dry and wet commission recycled water reservoir	Use BWPS to fill recycled water reservoir
4b. Chemical dosing systems and yard pipe work	Complete any supplementary commissioning activities needed	There may be some supplementary chemical dosing system commissioning tests that rely on the recycled water reservoir to be available
5. Telemetry and SCADA	Commission all SCADA and telemetry	
6. Recycled water pumping station	Progressively install and replace existing recycled water pumps	New units will be able to continue to supply the interim reservoirs recycled water reservoir
7. Recycled water rising main extension	Pressure test the mains to the permanent reservoir site	
8. Recycled water holding tank	Pre-commissioning and hydrostatically test	
9. Recycled water holding tank	Clean and super-chlorinate	
10. Recycled water rising main extension to permanent reservoir site	Scour and super-chlorinate	Use water from super-chlorination of recycled water holding tank
11. Potable water and recycled water reservoirs and yard piping	Clean and super-chlorinate	
12. Potable water and recycled water gravity mains	Pressure test, scour and super-chlorinate	
13. Potable water and recycled water reservoirs, yard piping and gravity mains	Charge with potable water and recycled water as required and cut-over	Googong recycled water and potable water networks now being fed by permanent reservoirs site

3.3.8 Construction compound

A temporary site compound is required to support construction of the Stage C Network West. The primary site compound will accommodate the majority of management, engineering, specialist and administrative personnel. Typically these facilities will include portable buildings, parking facilities, staff amenities and material and chemical storage. Depending on the arrangement, electricity, sewerage, telecommunications and water supplies will be installed. During Stage C Network West works three temporary site compounds will be established; one will be commissioned for the preliminary trench works along Old Cooma road with the other two being established for further works at both the permanent reservoir site and WRP. All locations are shown on the environmental constraints maps in appendix 4.

The contractor will determine the final location of the construction compounds but they will be located within the construction footprints shown in Figures 3 and 4 and should also meet the following criteria:

- Located in an area of low ecological significance and require minimal clearing of native vegetation (beyond that already required by the project).
- Located in an area of low heritage conservation significance and require no impact on heritage (beyond that already required by the project).
- Located in an area that will not unreasonably affect the amenity of adjacent land users.
- Located more than 40 metres from a local waterway
- Located above the 1 in 100 year flood level of Montgomery Creek.
- Supply enough parking space for both construction staff and delivery vehicles.
- Located so that parking of construction plant, machinery and vehicles are away from sensitive or public viewing areas.

3.3.9 Construction access points

3.3.9.1 Construction access to the permanent reservoir site

Access to the permanent reservoir site during construction works will require a new access road via Old Cooma Road (refer to Figure 3). A sealed access road will be constructed at a T-intersection with Old Cooma Road directly west of the reservoir site. Along the southbound site of Old Cooma Road, a 200 metre deceleration lane and a 200 metres acceleration lane will be built to provide safe access for vehicles onto the access road. All tracks will be maintained so as not to obstruct any residential access throughout the duration of the project.

Specific traffic control measures will be implemented during mobilisation and demobilisation of large earth moving equipment, site amenities and other large deliveries that require slow movements to and from the site access roads. Specifically the measures will ensure minimal hindrance on local traffic and residential access. To cater for such circumstances, where possible deliveries will be scheduled outside of peak hour periods thus minimising effects on traffic flow.

Site access shall be restricted by appropriate measures (such as fencing) to prevent unauthorised access and to aid in site recovery and rehabilitation.

3.3.9.2 Construction access for the installation of rising and gravity mains

Construction access entry to the construction site for the installation of the rising and gravity mains will be via the access road identified above (refer to Figure 3). Informal access tracks (e.g. dirt roads) would be established along the length of the construction trench for these works. This access track would be within the project area identified in Figure 3 and clear of any residential access.

3.3.9.3 Construction access to the WRP site

Construction access to the WRP site to install the proposed recycled water tank and upgrade the RWPS will be via the existing WRP site access from Googong Road shown in Figure 4. No additional access works would be required for this aspect of the proposal.

Access points would be limited to sites where they:

- Will not require the removal of vegetation (beyond that already required by the Project).

- Will not impact on heritage (beyond that already required by the Project).
- Will not unreasonably affect the amenity of adjacent land users.

Further detail is provided in the Temporary Traffic Management Plan (Appendix 2).

3.3.9.4 Access Track Safety and Maintenance

All access roads surrounding infrastructure will be maintained so as to minimise any fire hazard. To achieve this outcome grasses and vegetation adjacent to roads will be monitored and in accordance with Appendix 8B section 8 fire management plans will be followed at all times. To ensure access to emergency tracks at all times, areas will be designated for parking and storage and all site visitors and workers will be inducted as to the safety parking locations as well as the correct procedures should an emergency occur.

As part of site establishment earthworks all access track entrances and exits will be stabilised so as to limit the tracking of dirt off site. Further, as part of the site weekly environmental checklist (Appendix 11) the tracks and adjoining roads will monitored throughout the project duration and any necessary actions recorded.

3.3.10 **Revegetation and reinstatement**

During the life of the project any disturbed areas will be monitored and where practicable, progressive revegetation, stabilisation and restoration works carried out in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004). Part of the monitoring process will involve conservation of onsite topsoil for use in site rehabilitation/revegetation.

3.4 **Defining work areas**

The environmental constraints map will be used in conjunction with the environmental control plan and EWMS (as required) to help identify key risk areas and to promote ongoing communication to construction personnel during construction (refer Section 1.5).

The environmental constraints map outlines the environmentally sensitive and 'no go' areas for the site (refer Appendix 4). The environmental control plan, to be prepared, will clearly define work areas, including access tracks. Refer to Section 1.5 for further detail.

Areas that are to be protected during construction will be fenced with exclusion fencing and the fencing will remain in place for the duration of construction activities. Fencing type will be determined based on the sensitivity of the area and the potential for unauthorised access, but may include chain wire fencing, para-web fencing or flagging tape.

Temporary security fencing will be erected surrounding the site, specifically the permanent reservoirs site. The fencing will aid in visually delineating the areas of construction as well as providing security to the construction site.

Should night works be undertaken and high powered lighting needed, the environmental constraints map will be used as a guide to protect sensitive and 'no go areas' from unwanted light pollution. Lighting will be strategically placed so as not to disrupt any passing traffic, local fauna or nearby residents.

4.0 Planning

4.2 Legal and other requirements

A register of legal and other requirements for the construction of Stage C Network West is contained in Appendix 7. This register will be reviewed by the contractor at regular intervals (i.e. at least every six months) and updated to reflect any legislative or approval changes as required. Any changes made to the legal requirements register will be communicated to the wider project team where necessary through toolbox talks, specific training or other methods.

4.2.4 Approval under Part 3A

The *Googong Township Water Cycle Project Environmental Assessment* (November, 2010) (EA) was prepared under (the now repealed) Part 3A of the *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 including the construction of the WRP.

Concept Approval for the ultimate development (Stage 1 and Stage 2) was granted by the NSW Planning Assessment Commission, under delegation from the Minister for Planning and Infrastructure on 24 November 2011.

This CEMP and environmental management documentation will comply with the conditions of the Concept Approval, where relevant to the construction of Stage C Network West.

Part 3A of the EP&A Act was repealed on 1 October 2011. Under the transitional arrangement, the IWC Project will continue to be legislated by the provisions of Part 3A, as in force immediately before its repeal.

4.2.5 Approval under Part 5

The *Googong Stage C Network West Review of Environmental Factors* (September, 2015) (REF) was prepared under Part 5 of the EP&A Act to assess the impacts of construction and operation of Stage C Network West.

Project Approval for Stage C Network West was granted by the Queanbeyan-Palerang Regional Council (QPRC) on 18 April 2016.

This CEMP and environmental management documentation will comply with the conditions of the Stage C Network West Project Approval, where relevant to the construction of Stage C Network West.

4.2.6 Approval under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*

The Googong Township Project was referred to the DoE under the EPBC Act due to potential impacts on matters of national environmental significance, including migratory species, threatened species and communities. The Googong Township Project was declared a controlled action under the EPBC Act, and subsequently approved on 19 May 2011, subject to conditions.

This CEMP and environmental management documents will comply with the conditions of the EPBC Act approval, where relevant to Stage C Network West.

4.2.7 Environment Protection Licence under the *Protection of the Environment Operations Act 1997*

GTPL holds Environment Protection Licence (EPL) 20788, which allows for construction and testing of Sewage treatment processing by small plants with > 219-1000 ML annual maximum volume of discharge. The contractor must adhere to and implement the conditions of EPL 20788.

The contractor is responsible for reporting any exceedances of EPL conditions to GTPL who will notify the EPA (also refer Section 7).

4.2.8 Other legal requirements

Should the project necessitate the use of oversized vehicles for transportation of plant or equipment; all required permits will be obtained from Roads and Maritime.

Refer to Appendix 7 for a register of all legal and other requirements relevant to the construction of Stage C Network West.

Environmental legislation relevant to a particular environmental management plan is referenced in that plan.

4.3 Approvals, permits and licensing

Appendix 7 contains a register of all relevant legal and other requirements, identifying the need for any environmental approvals, permits and licenses for the construction of Stage C Network West. The register will be maintained by the Project Engineer and will be reviewed prior to the commencement of construction, and at regular intervals during construction.

All necessary licences, permits and approvals required for the Project will be obtained and maintained as required throughout the life of the Project. In particular it is likely that the following additional approvals may be required for Stage C Network West:

- Certificate under Section 138 of the *Roads Act 1993* (should works be required on Old Cooma Road or Googong Dam Road).
- Construction and occupation certificates.

A copy of the Project Approval and all other relevant approvals will be kept on site at all times during construction of Stage C Network West.

4.4 Environmental aspects and impacts

In order to assess the potential environmental impacts of an activity, the construction of Stage C Network West will adopt a risk management approach. This process considers potential regulatory risks and the overarching commitment to protect the environment.

During the development of this CEMP, an environment risk assessment was undertaken on 27 June 2016 to revise and update environmental risks identified in the REF for the Project. The outcome of this risk workshop provides the basis of the risk register (Appendix 6). The risk register includes a list of activities associated with the construction of Stage C Network West, related aspects and corresponding risks before mitigation and after implementation of the measures are included in each of the environmental management plans appended to the CEMP.

The Project Engineer will review the risk register during construction of Stage C Network West, 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 changes.

An assessment of potential risk to the environment will also be undertaken as part of the development of EWMS for specific activities or works in specific areas. This should include both the direct impact of the activity and the impact of any incident that could result from the activity. Outcomes from the ongoing risk assessments will be incorporated into the CEMP and environmental management documents as required.

4.5 Environmental policy

The environmental policy included at Appendix 8 describes GTPL's commitment to continual improvement in environmental performance and compliance with applicable legal requirements. The contractor is also required by contract documentation to have an environmental policy.

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

4.6 Objectives and targets

Environmental objectives and targets have been established as a way to monitor and evaluate environmental performance during construction of Stage C Network West. These objectives and targets have been developed with consideration of the key issues identified through the environmental assessment and risk assessment process.

The performance of the construction of Stage C Network West against the objectives and targets will be documented in the Project construction compliance reports.

Environmental objectives and targets for the construction of Stage C Network West are provided in Table 7.

Table 7 Environmental objectives and targets

Objective	Target	Management tool
Comply with all statutory and legal requirements.	Full compliance with statutory approvals. No regulatory infringements (prosecutions, penalty infringement notices). No formal regulatory warnings.	ER inspections, audits.
Engage with the effected 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, review of monthly environmental reports.
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 learned from environmental incidents are implemented to minimise repeat issues.	ER inspections, audits, review of monthly environmental reports, incident investigation.

4.7 Project alterations

Alterations to the Project may result from detailed design refinement or changes identified during the construction period.

The GTPL Assistant Project Director is responsible for ensuring that all Project refinements are assessed for consistency against the Concept and Project Approval. During construction of Stage C Network West any design changes or changes in scope of works will be communicated by Guideline to the GTPL Assistant Project Director. GTPL will then undertake a consistency assessment through a desktop analysis of the environmental issues included in the REF.

GTPL will then determine whether the proposed alteration is consistent with the approved Project. Where GTPL determines that the change is generally consistent, this CEMP would be reviewed and revised by Guideline as per the procedures outlined in Section 1.7.

A copy of the consistency assessment will be provided to QPRC for information, prior to the commencement of substantial works associated with the proposed alteration.

Where GTPL determines that the proposed alteration is generally not consistent with the approved Project, a modification to the approved Project is required. GTPL will prepare a modification, to be submitted to QPRC for determination. Guideline will be required to provide support, as relevant.

GTPL is responsible for documenting minor changes that are consistent with the approved Project, and if required, for seeking approval from QPRC for any substantial project modifications. No work associated with a proposed or pending modification can commence without approval of QPRC.

5.0 Implementation and operation

5.2 Roles and responsibilities

5.2.4 GTPL Assistant Project Director

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

- Review the CEMP and any environmental management plans and related documents prepared for Stage C Network West.
- Ensure all project alterations are assessed for consistency against the approved Project.
- Oversee the implementation of the CEMP and environmental management plans for Stage C Network West.
- Liaise with government stakeholders and provide notification/information where environmental incidents have occurred.
- Monitor the environmental performance of Stage C Network West in relation to GTPL requirements.

5.2.5 Site Superintendent (Black Mountain)

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

- Advise all personnel and sub-contractors of their responsibilities under the CEMP and site-specific environmental issues.
- Coordinate the implementation of the CEMP.
- Endorse minor revisions to the CEMP.
- Identify resources required for implementation of the CEMP.
- Program toolbox talks and daily pre-start meetings to include environmental requirements where required.
- Report any activity that has resulted, or has the potential to result, in an environmental incident immediately to GTPL.
- Coordinate action in emergency situations and allocate required resources.
- Stop activities where there is an actual or immediate risk of harm to the environment and advise the Project Engineer.GTPL Assistant Project Director.

5.2.6 Project Manager

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

- Coordinate the implementation of the CEMP.
- Liaise with GTPL and government authorities as required.
- Provide adequate resources (personnel, financial and technological) to ensure effective development, implementation and maintenance of this CEMP and the Project's compliance obligations in relation to all approvals, permits and licences.
- Ensure that complaints are investigated to achieve effective resolution.
- Undertake one weekly inspection each month, ensuring all works comply with relevant regulatory and Project requirements.

5.2.7 Project Engineer (Guideline)

Guideline will appoint a Project Engineer to oversee the delivery of Stage C Network West. The environmental responsibilities of the Project Engineer include, but are not limited to:

- Ensure all works comply with relevant regulatory and Project requirements.
- Ensure the requirements of this CEMP 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 CEMP 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 construction works in a manner that avoids or minimises impact to environment.
- Control field works 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 GTPL Assistant Project Director and Site Superintendent.
- Ensure steps are taken to rectify and prevent future incidents from occurring.
- Act on all recommendations made by the Site Superintendent as soon as practicable. If the Project Engineer chooses not to implement recommendations of the Site Superintendent, written justification of the alternate course of action will be provided to QPRC within seven days of receiving the recommendation. QPRC must be satisfied with the alternate course of action.

The Project Engineer will also have overall responsibility for the implementation of environmental management on the construction of Stage C Network West. The environmental responsibilities of the Project Engineer include, but are not limited to:

- Develop, implement, monitor and update the Stage C Network West CEMP 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 (refer Appendix 4 and Appendix 8).
- Maintain and update the Environment risk register (refer Appendix 6).
- 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 (refer Appendix 7).
- Report to Site Superintendent and GTPL on environmental performance and prepare a Monthly report (refer Appendix 9).
- Lead liaison with the Site Superintendent.
- Oversee site monitoring, and 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 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 to the Site Superintendent and the GTPL Assistant Project Director.

- Ensure steps are taken to rectify and prevent future incidents from occurring.
- Manage an incident register and provide documentation on environmental incidents, non-conformance and corrective actions to Project Engineer and the GTPL Assistant Project Director.
- Project Engineer will have responsibility for ensuring the CoA and SoC related to design of the Stage C Network West are incorporated.

5.2.8 Wider project team (including sub-contractors)

- Comply with the relevant requirements of the CEMP, or other environmental management guidance as instructed by a member of the Project's management.
- Participate in the compulsory 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 Project Engineer.

For plant operators the allocated driver is responsible to ensure that their vehicle is maintained and kept in a safe, good and clean condition. The driver is to ensure the vehicle is serviced every 10,000km and is to liaise with the Workshop Manager to ensure this happens.

The Workshop is to use the Vehicle Service Checklist (GLA-SF-2.3-03) for servicing vehicles, which is then filed in the Workshop.

At 6 monthly intervals, lifting gear such as chains and slings, are collected and brought into the workshop to be independently checked and tagged. A register of equipment is supplied and then made available via the Guideline ACT Intranet.

5.3 CEMP availability

A copy of this CEMP will be held in the site office.

An electronic copy of the approved CEMP will be available on the IWC Project website [www.compliance.googong.net]. Supporting documents, for example relevant EMWS and environmental control plans will be held on site and on any online document control management systems.

6.0 Competence, training and awareness

6.2 Purpose

To ensure that this CEMP is effectively implemented, each level of management is responsible for ensuring that all personnel reporting to them are aware of the requirements of this CEMP. The Project Engineer 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.

The Project Engineer will maintain a register of all project site inductions and environmental training carried out. Records of attendees at EWMS toolboxes will be kept on file.

6.3 Site inductions

All personnel (including sub-contractors) will attend a site induction prior to commencing any work 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 CEMP and their responsibilities around the implementation of environmental management measures.

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

- Purpose and objectives of the CEMP.
- Conditions of environmental licences, permits and approvals.
- Key environmental issues and responsibilities.
- Working hours.
- Mitigation measures for the control of environmental issues.
- Boundaries for vegetation clearing, location of exclusion zones, and other environmental constraints.
- Responsibilities under the *NSW Heritage Act 1977* and *NSW National Parks and Wildlife Act 1974*, for example if a potential relic/item is uncovered during construction.
- Incident management, response and reporting requirements.
- Locations and risks associated with protected and heritage sites (GRWH5, GA6, etc.) All of which will be shown on environmental constraints maps (Appendix 4) and displayed in site sheds.

A record of all environment inductions will be maintained by the Project Engineer and kept on site.

6.4 Toolbox talks, training and awareness

Toolbox talks will typically be held weekly and will be used to raise awareness and educate personnel on issues related to all aspects of construction including environmental issues. Toolbox talks will include details of EWMS, relevant to upcoming works and targeted to relevant personnel.

Environmental issues may include (but are not limited to):

- Erosion and sedimentation control.

- Incidents and spill response.
- Managing noise and amenity impacts.
- 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 audits (refer Section 8.0).

Toolbox attendance is mandatory 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.

For activities with high environmental risk, targeted environmental awareness training will be provided. The content of targeted training may include the topics outlined above, or as otherwise required, dependant on the nature of construction activities and the type of impact and environmental risk.

The Project Engineer will maintain a register of environmental training. The register will include a record of the topic, content, dates, name(s) and qualifications of trainers, names and signatures of personnel trained.

6.5 Pre-start meetings

The pre-start meeting is a tool for informing the workforce of the day's activities, including information relating to the work schedule, safety, environment or other information that may be relevant to the day's work.

Environmental concerns covered in the pre-start meeting will include any aspect of the day's construction activities that may be impacted by, or may impact on, the environment. Risks and measures to manage those risks will be discussed.

All workers will be required to attend a daily pre-start meeting, prior to commencement of that day's construction and sign on to a pre-start meeting attendance sheet. The Project Engineer will record pre-start topics, dates delivered and a register of attendees.

7.0 Communication and consultation

7.2 Internal communication

A key to ensuring compliance with environmental obligations and continual improvement is the ongoing communication to project personnel.

GTPL, the Site Superintendent and the contractor will communicate regularly to discuss any issues or concerns with on site environmental management, any amendments to environmental management documents that might be required or any changes to construction activities.

Guideline will ensure regular communication around the environmental requirements and performance updates is carried out, for example through training and awareness raising as described in Section 5.3.

The Project Engineer is responsible for notifying GTPL and the Site Superintendent of any environmental incidents as soon as they become aware of the incident.

The Project Engineer has the responsibility to report on the ongoing environmental performance of the construction of Stage C Network West to GTPL and the Site Superintendent. The Project Engineer will report on progress and key environmental issues through the preparation of monthly environment reports (refer Appendix 9).

7.3 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 will be the main point of contact regarding specific environmental issues and has the responsibility to notify QPRC, EPA or any other relevant agencies of environmental incidents.

The Site Superintendent will also liaise with QPRC and provide QPRC with copies of inspections reports, non-conformance and incident registers and any other documentation as necessary.

7.4 Stakeholder and community consultation

The contractor is responsible for providing notification to council, and nearby residents for activities such as the start of construction along with noisy works and blasting (as detailed in the environmental management plans and EPL 20788). The contractor will provide details of notification to GTPL and issue to the community at least seven days prior to that activity.

Works deemed to impact nearby residents with either noise pollution or vibrations will require the contractor's notification to both the impacted residents and GTPL. Notification to nearby residents will be in the form of a letter detailing the nature and duration of the works as well as details for further inquiries. Letters will be delivered prior to any major works.

GTPL will be notified through their correspondent of all the residents who fall within the impact area and who have been issued a letter for the proposed works.

7.4.4 Complaints Management Procedure

The community can make an enquiry or complaint by telephone, post, email or face to face through the following communication lines:

Information line: 1800 838 438

Project email: iwc@googong.net

The above email address and hotline are managed by GTPL who will provide details of any community inquiries or complaints to the Site Superintendent and Contractor.

Details of how to contact the project team will be available on the project website, on site signage and on all communication materials (i.e. notification letters). All complaints received will undergo an investigation determining cause and effects and the results will be recorded in the Monthly Environmental Report (Appendix 9). The Project Engineer will be required to direct all complaints and enquiries to the GTPL Assistant Project Director for further review.

8.0 Incidents and emergencies

The following describes the classification and reporting of environmental incidents required to be notified under the POEO Act, Part 5.7, sections 148 to 152.

8.2 Classification of environmental incidents

There are two categories of environmental incidents.

8.2.4 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.

Note that under Section 147 of the PoEO Act harm to the environment is material if:

(1) (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.

(2) For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.

8.2.5 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 does not result in a Category one incident.

8.3 Incident management

8.3.4 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 14. The PIRMP must be maintained and implemented by the contractor during construction of Stage C Network West.

In summary, the incident management response is outlined in the following sections.

8.3.5 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.
- Project personnel to immediately notify the Project Engineer.
- Project Engineer to immediately notify the GTPL Assistant Project Director and the Site Superintendent (refer to Section 7.3).
- GTPL to immediately notify the EPA and QPRC (and others as required) for pollution incidents causing or threatening material harm (refer to Section 7.3).
- GTPL to immediately notify QPRC (and others as required) for all other category one incidents.
- Project Engineer to complete an incident report and record in the incident register (to be developed and managed by the contractor) and submit report to GTPL within two days.
- GTPL and contractor to investigate incident (root cause analysis) and implement any opportunities for improvement (as soon as practical, but within one week) (refer Section 7.3).
- GTPL to issue copy of incident report and root cause analysis to QPRC (and others as required) for their consideration (within seven days).

8.3.6 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.
- Project personnel to immediately notify the Project Engineer.
- Project Engineer to immediately notify the GTPL Assistant Project Director and the Site Superintendent (refer to Section 7.3).
- Project Engineer to complete an incident report and record in the incident register (to be developed and managed by the contractor) and submit report to GTPL within two weeks.
- GTPL and contractor to investigate incident (root cause analysis) and implement any opportunities for improvement (as soon as practical, but within one week) (refer Section 7.3).
- GTPL to report on category two incidents to EPA in the Annual Return.

8.4 Incident reporting

The Project Engineer must immediately notify GTPL and the Site Superintendent of any environment incidents immediately and in writing within 24 hours of the incident occurring.

GTPL and/or the Site Superintendent 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 5).

All incident recording, management and reporting will be in accordance with the requirements of the conditions of approvals and EPL 20788, which documents GTPL's:

- Mechanisms for recording incidents and actions taken in response to those incidents.

- Provisions for reporting environmental incidents to QPRC during construction and operation.

8.4.4 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) in accordance with Section 148 of the POEO Act and Condition R2 of EPL 20788.

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 to each relevant authority 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:

- QPRC.
- EPA.
- Ministry of Health.
- WorkCover.
- Fire and Rescue NSW.

An environment incident report (in accordance with the reporting requirements of EPL 20788) will be prepared by the contractor and provided to GTPL and the Site Superintendent 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 of the amended POEO Act and Condition R3 of EPL 20788:

- 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.

8.4.5 All other Category one incident reporting

For all other Category one incidents, GTPL will notify QPRC and any relevant agencies as soon as practicable after GTPL becomes aware of the incident.

An environment incident report will be prepared by the contractor and provided to GTPL and the Site Superintendent 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 QPRC, and any relevant agencies, a detailed incident report and copy of the root cause analysis investigation.

8.4.6 Category two incident reporting

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

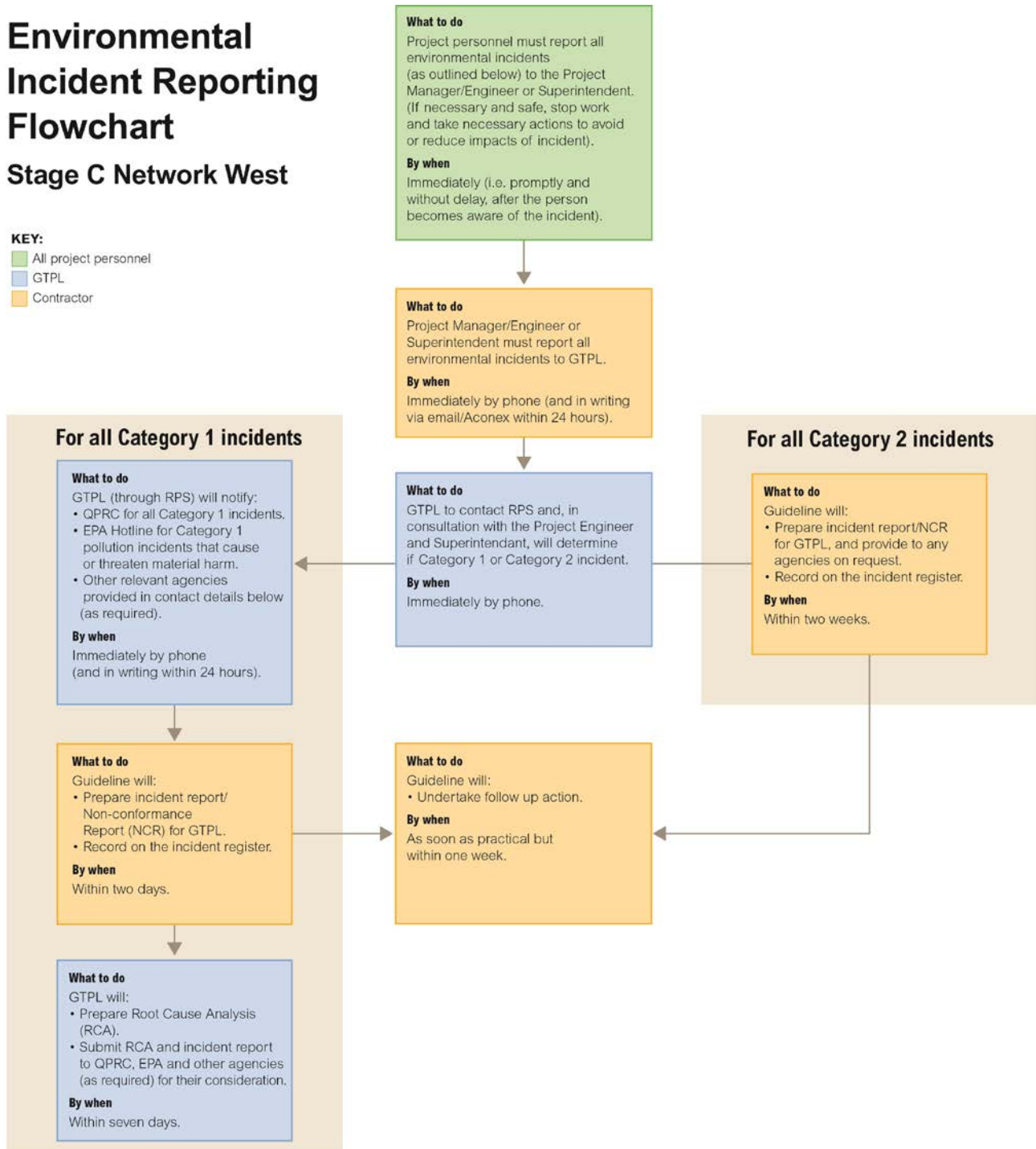
Category two incidents will be reported to QPRC through the six-monthly construction compliance reports. They will also be reported to the EPA through the Annual Return in accordance with Condition R1 of EPL 20788. Key contacts for environmental emergencies are provided in Table 8.

Figure 5 Incident reporting flowchart (to be printed at A3 and posted up onsite)

Environmental Incident Reporting Flowchart

Stage C Network West

KEY:
■ All project personnel
■ GTPL
■ Contractor



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.
- Harm to the environment is material if it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not neutral OR it results in actual or potential loss or property of an amount, or amounts in aggregate exceeding \$10,000.
- 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**PROJECT TEAM**

Name	Phone	Email
GUIDELINE/BLACK MOUNTAIN		
John Hite (Project Manager)	0407 008 195	john.hite@guidelineact.com.au
Tom Darmody (Project Engineer)	0432 591 897	tom.darmody@guidelineact.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

Queanbeyan-Palerang Region Council (QPRC)		
Andre Pretorius (Manage Water & Sewerage)	0418 250 863	andre.pretorius@qprc.nsw.gov.au
EPA		
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	

OTHER AGENCIES

NSW Rural Fire Service	000	
Southern NSW Local Health District Public Health Unit	(02) 6080 8900	
WorkCover NSW	131 050	

Information as of July 5, 2016

Table 8 Emergency contacts

Emergency contact/organisation	Name	Contact details
GTPL Assistant Project Director	Craig Harris	0409 999 059
Project Manager	John Hite	0407 008 195
Project Engineer	Tom Darmody	0432 591 897
Site Superintendent	Geoff Gardner	0432 565 123
NSW EPA	Pollution line	131 555
NSW EPA (South East region)	Julian Thompson	(02) 6229 7002
QPRC	Andre Pretorius	0418 250 863
	N/A	(02) 6285 6000 (02) 6298 1234 (after hours)
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
Queanbeyan Hospital	N/A	(02) 6298 9211
NSW Rural Fire Service	N/A	000 (or 112 from mobiles)
Gas/electricity	N/A	131 909
Icon Water	N/A	(02) 6248 3111
WorkCover NSW	N/A	13 10 50
Telstra	N/A	132 999

Emergency contact/organisation	Name	Contact details
ACT Territory and Municipal Services	N/A	13 22 81
WIRES	N/A	1300 194 737

8.5 Incident investigation

All environmental incidents will be investigated. 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 CEMP and environmental management plans will be reviewed by the Project Engineer after every Category One incident. The Project Engineer will ensure that any additional measures arising from the incident investigation are incorporated into the relevant plans.

Where QPRC provides recommendations to address the cause or impact of any incident reported to the QPRC, the contractor for Stage C Network West will meet the requirements of QPRC'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 Non-Conformance Register (to be developed by the contractor), as outlined in Section 8.3.

8.6 Emergency response

The objectives of the GLA WHS Management Plan (Appendix 1) will be communicated to all project team members and persons working on site.

Emergency controllers/fire wardens are to be assigned specific responsibilities and are to be trained, where necessary, in the evacuation procedures and the use of any specialised emergency response equipment (e.g. fire extinguishers, spill kits, etc.). Spill management will be undertaken in accordance with the GLA WHS Management (Appendix 1) and the Environmental Management Plan (Appendix 8).

9.0 Environmental inspections, monitoring and auditing

9.2 Environmental inspections

9.2.4 Weekly Inspections

The Project Engineer (or delegate) will undertake at least weekly inspections of the work sites to monitor and evaluate the effectiveness of environmental management measures. Such measures will include monitoring site tidiness, regular rubbish removal, dust control, tidiness of adjoining roads and ensuring appropriate storage facilities within the construction boundaries.

If an extreme weather event is forecast an inspection will be carried out before and after said event ensuring required controls are in place. If the required controls are found not to be in place measures will be taken immediately to rectify the situation.

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 (see GLA-SF-2.2-05 and GLA-EF 3.2-01 Appendix 11). Any action will also be given a priority.

9.2.5 Site Superintendent Inspections

The Site Superintendent will undertake regular inspections of the Stage C Network West construction work site. The frequency of site inspections will be determined by the nature of activities being undertaken and their associated environmental risks.

A member of the project team will participate in all Site Superintendent inspections, and records will be maintained. Required actions will be discussed and prioritised at the completion of the inspection and timeframes for implementation of corrective actions agreed.

The contractor will act on all recommendations made by the Site Superintendent as soon as practicable. If the contractor chooses not to implement recommendations of the Site Superintendent, written justification of the alternate course of action will be provided to GTPL within seven days of receiving the recommendation. GTPL must be satisfied with the alternate course of action.

9.3 Environmental monitoring

Monitoring will be undertaken to measure the effectiveness of environmental controls and implementation of this CEMP, and to address approval requirements. The monitoring requirements for required aspects are included in the relevant environmental management plans.

9.3.4 Noise and vibration monitoring

Any work generating high noise that has impulsive, intermittent, low frequency or tonal characteristics, including jack hammering, line drilling, pile driving, rock hammering, rock breaking, saw cutting, sheet piling, vibratory rolling but excluding blasting, shall only be undertaken:

- a) between the hours of 8.00 am and 6.00 pm Monday to Friday;
- b) between the hours of 8.00 am and 1.00 pm Saturday; and
- c) in continuous blocks of no more than three hours, with at least one hour respite between each block of work generating high noise impact, where the location of the work is likely to impact the same receivers;

except as otherwise approved by the Superintendent. For the purposes of this condition “continuous” includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition.

Due to the distance of vibration causing activities and sensitive receivers (all identified sensitive receivers are located at least 50 metres from vibratory activities), the level of vibration will be below the level of human perception. Nevertheless activities such as rock breaking, the use of vibratory rollers and unloading must take place a minimum of 50 metres away from any sensitive receivers.

In the event of a complaint being registered, noise and vibration monitoring shall be established to determine whether acceptable limits have been exceeded as described in Appendix 12 NVMP.

9.3.5 Sediment basins / dams monitoring

Sediment basins/dams should be appropriately managed ensuring any discharge complies with section 120 of the POEO Act. A standard operating procedure (SOP) for dewatering of sediment basins/dams at the site is included in Appendix 13A SWMP.

9.4 Non-conformity, corrective and preventative actions

A non-conformance is an action or omission that does not conform with the requirements of this CEMP and supporting environmental documentation, or any legal or other requirement as outlined in Appendix 7. Any member of the project team or the Site Superintendent can identify a non-conformance.

An opportunity for improvement may be identified through the review and monitoring processes that will be implemented during the construction of Stage C Network West. 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 incident register may identify an opportunity for improvement in areas such as documentation (CEMP, management plans, procedures, checklists etc) or resourcing (number and experience of environmental or other personnel). Any member of the project team or the Site Superintendent can identify an opportunity for improvement.

9.4.4.1 [Identifying non-conformance](#)

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

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

9.4.4.2 [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.

9.4.4.3 [Recording non-conformance](#)

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

9.4.4.4 [Review of the non-conformance register](#)

The register will be reviewed regularly to ensure actions are closed out in a timely manner or as required. Procedures for rectifying any non-compliance identified during environmental auditing or review of compliance should also be documented in the Monthly Report.

9.5 **Auditing**

9.5.4 **Internal audits**

Internal auditing will be undertaken generally on a six monthly basis throughout the construction of Stage C Network West. The purpose of auditing is to verify compliance with:

- This CEMP and environmental management plans.
- Approval requirements (CoAs, SoCs).
- Any relevant legal and other requirements (e.g. licenses, permits, regulations).

9.6 Reporting

9.6.4 Monthly environment report

The Project Engineer 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 and the Site Superintendent on a monthly basis. A template for monthly reporting is located in Appendix 9.

10.0 Documentation

10.2 Environmental records

The Project Engineer is responsible for maintaining all environmental management records. Types of records include:

- All monitoring, inspection and compliance reports/records.
- Reports on environmental incidents, environmental non-conformances, complaints and close out actions.
- Copy of environmental control plan register, site induction register, environmental training register, incident register and non-conformance register.
- Monthly environmental reporting and other environmental reporting as required by the contract documentation..
- Induction and training records.
- Correspondence with government agencies and other stakeholders.
- Community engagement and stakeholder management information.

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

Only the Project Manager/Project Engineer has the authority to change any of the environmental management documentation.

10.3 EPL monitoring and recording conditions

In accordance with the EPL 20788 (Appendix 7A), the following monitoring and recording conditions are required:

M1 – Monitoring Records

Any records are to be kept, maintained and available for perusal to any authorised officer of the EPA on request.

M2 – Testing Methods - Load limits

(It is not anticipated that this measure will be required in IWC Network Stage C)

M3 – Recording of pollution complaints

All complaints will be recorded and submitted to GTPL as part of the monthly environmental report (Appendix 9), with the details recorded as stipulated in the requirements of the EPL.

M4 – Telephone complaints line

Ensuring a line of contact for the purpose of raising complaints, the licensee must operate during its operating hours a telephone complaints line for members of the public - 1800 838 438

See the EPL (Appendix 7, Section 5 - Monitoring and Recording Conditions) for the outline of specific recording details

Appendix 1

GLA WHS Management Plan



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2 WORK HEALTH & SAFETY (WHS) MANAGEMENT PLAN

Project Name: Googong IWC West

Project No.: 611

WHSMP PREPARED BY:

Name: Brendan Nucifora Ph. Number: 0423882089

WHSMP Revision No & Date: Rev 0 – 3/5/16

WHSMP APPROVED BY

GUIDELINE ACT GENERAL MANAGER OR PROJECT MANAGER

Name: John Hite Sign: _____ Date: _____

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2.1 Revision Status

Revision No	Revision Date	Revised Section No & Name	What's New?	Authorised by (sign and date)

2.2 Introduction

The objective of this Project Work Health & Safety Management Plan (WHSMP) is to document the Work Health, Safety and Rehabilitation (WHS&R) Management that will be implemented by Guideline ACT for the construction of the Googong IWC West.

This WHSMP defines WHS Policies, Organisational Structure, Responsibilities, Authorities, Resources, Procedures and Forms to ensure effective implementation. Procedures set out in this plan shall be followed by all personnel unless an explicit instruction to do otherwise is indicated, or directed by a relevant authority.

This WHS Management Plan will be communicated to all workers on site INITIALLY through the Site Induction. Revisions of the plan will be communicated via a Toolbox. During this communication, it will be advised where the plan is kept on site and the workers advised of their rights to access and inspect the plan at any time.

2.3 Work Health & Safety (WHS) Policies

Guideline ACT has a number of WHS Policies and Commitments which can be found in **Appendix B**. The list is as follows:

- WHS Policy
- SunSmart Commitment
- Fit for Work Policy
- 5 Day Working Week Policy
- Inclement Weather Policy
- Bullying Policy
- Communication Consultation Policy
- Confidential information Policy
- Rehabilitation Commitment

It is a requirement that all Guideline ACT employees, contractors and visitors comply with the requirements of the abovementioned Guideline ACT Work Health & Safety and Rehabilitation Policies.

The requirements of the ACT Work Health & Safety Regulation state that a WHS management plan must include the following:

Requirement	Location in PMP
a) the names, positions and health and safety responsibilities of all persons at the workplace whose positions or roles involve specific health and safety responsibilities in connection with the project;	see PMP Introduction - Key Staff and Responsibilities
b) the arrangements in place, between any persons conducting a business or undertaking at the workplace where the construction project is being undertaken, for consultation, co-operation and the co-ordination of activities in relation to compliance with their duties under the Act and this regulation;	see Consultation, Cooperation & coordination in this WHS Mgmt Plan
c) the arrangements in place for managing any work health and safety incidents that occur;	See Incidents/Accidents/Injuries section in this WHS Mgmt Plan
d) any site specific health and safety rules, and the arrangements for ensuring that all persons at the workplace are informed of these rules;	see Site Specific Safety Rules in this WHS Mgmt Plan
e) the arrangements for the collection and any assessment,	collection and assessment is covered by the Subcontractor

monitoring and review of safe work method statements at the workplace.	SWMS section of this WHS Management Plan, Monitoring and review of SWMS is covered under the Project Specific Hazard and Risk Assessments section of this WHS Management Plan
--	---

2.4 Site Specific Safety Rules

The following Site Specific Safety Rules apply to this project:

- Mobile Plant is a high risk to Workers, effective communication must be maintained between Operator and Workers
- Workers must stay out of Plant blind spots as shown on Mobile Plant Operator Blind Spot posters
- All personnel must have a General Induction Card and carry it with them at all times
- All personnel have a responsibility to work safely including actively participating in consultation
- Must follow all safety instructions given to you
- All personnel must complete Safe Work Method Statement (SWMS) training prior to starting an activity
- Report any safety issues to your Foreperson. All accidents, incidents and near misses must be reported immediately
- You must not use any equipment or tools you have not received training for
- Do not use unsafe plant or equipment – any plant tagged “do not operate” must not be moved
- Safety guards must be in place before operation of equipment
- Safety pins must be used on quick hitches
- Only use tagged electrical equipment (equipment tagging frequency = 3 months for office & 1 month for site)
- No unauthorised use of equipment or materials
- Only appropriately licenced Guideline ACT personnel can drive company vehicles or operate plant
- High visibility clothing, long sleeves and pants, safety boots and hard hats must be worn at all times
- Task specific PPE must be worn; hearing protection, eye protection, hand protection
- Hazardous materials – only use after you have been toolboxed on the SDS
- Personal mobile phone use must be limited to break times and emergencies only
- Mobile phones must not be used whilst driving or operating plant
- No smoking in or within 3m of site sheds, office and workshop
- No smoking in any Guideline ACT vehicle or plant
- No pets allowed on site
- No fighting onsite
- No earphones or hoodies
- No practical jokes
- No fires
- No bullying
- No illicit drugs will be tolerated on site
- Workers must be fit for work
- No excavation to take place without a Pre-Excavation Checklist being completed
- Only ticketed traffic controllers are permitted to control traffic
- Only ticketed (qualified) personnel are to enter a confined space
- Hot works permit must be complete prior to carrying out hot works

Disregard of safety rules will lead to dismissal

These rules will be communicated via toolboxes and/or site inductions.

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2.5 Consultation, Cooperation & Coordination

Guideline ACT is committed to Safety as its number one priority. It recognises that this must be entrenched as a part of the GLA culture and to facilitate it, effective communication needs to be established between all employees.

The consultation arrangements for this project are as follows:

Consultation is required:

- a) at all stages of the risk management process
- b) when toolboxing workers
- c) when making WHS decisions that affect workers

Workers are encouraged to:

- Ask questions about health and safety
- Raise concerns
- Report problems
- Make safety recommendations
- Be part of the problem solving process.

To reinforce this safety culture Guideline ACT management has implemented a number of formal communication processes which assist and encourage a two way flow of information. These processes include:

- Business Management System Review meeting – Every 6 months
- Consultative Committee meeting - Every 3 months
- WHS Committee meeting – every other month from the Consultative Committee meeting
- Management meeting - Every 3 months
- Weekly Site meeting – Weekly
- Resource meeting - Weekly
- Toolboxes – Minimum one toolbox each week
- Pre-Start Meetings – Minimum one pre-start each day

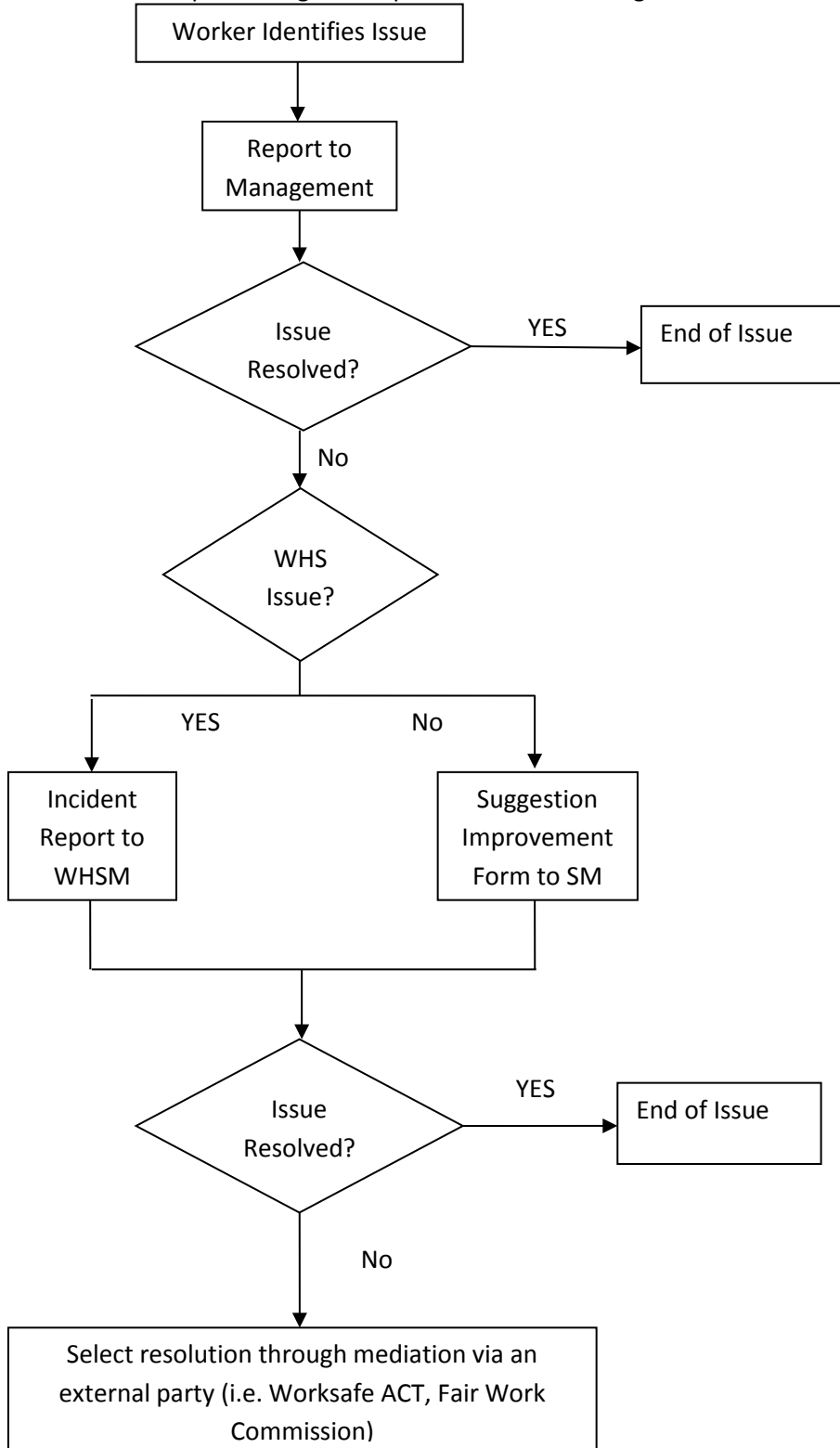
In addition, all employees are encouraged to assist management to improve company safety and awareness through the use of the Suggestion/ Improvement Form (GLA-BF-1.1-02).

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2.5.1 Issue Resolution

The following Issue Resolution section was extracted from Guideline ACT’s Business Management System Procedure GLA-BP-1.3.3.

The following is a flow chart representing the steps to take for resolving an issue within Guideline ACT.



Any dispute relating to an Industrial Relations matter must be dealt with through the Dispute Settlement Procedure in the Guideline ACT Pty Ltd Enterprise Agreement. The following Default

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Procedure extracted from Section 23 of the ACT WHS Regulation, provides the detail required when implementing the above Issue Resolution Flow Chart above.

“(2) Any party to the issue may commence the procedure by informing each other party—

(a) that there is an issue to be resolved; and

(b) the nature and scope of the issue.

(3) As soon as parties are informed of the issue, all parties must meet or communicate with each other to attempt to resolve the issue.

(4) The parties must have regard to all relevant matters including the following:

(a) the degree and immediacy of risk to workers or other persons affected by the issue;

(b) the number and location of workers and other persons affected by the issue;

(c) the measures (both temporary and permanent) that must be implemented to resolve the issue;

(d) who will be responsible for implementing the resolution measures.

(5) A party may, in resolving the issue, be assisted or represented by a person nominated by the party.

(6) If the issue is resolved, details of the issue and its resolution must be set out in a written agreement if any party to the issue requests this.

*Note Under the Act, **parties** to an issue include not only a person conducting a business or undertaking, a worker and a health and safety representative, but also representatives of these persons (see Act, s 80).*

(7) If a written agreement is prepared all parties to the issue must be satisfied that the agreement reflects the resolution of the issue.

(8) A copy of the written agreement must be given to—

(a) all parties to the issue; and

(b) if requested, to the health and safety committee for the workplace.”

2.6 Site Establishment

The following Site Establishment procedure was extracted from Guideline ACT's Business Management System Procedure GLA-SP-2.1.3.

Within 2 weeks of site setup, the Site Establishment Checklist (GLA-SF-2.1-03) needs to be completed and signed off by both Engineer and Foreperson.

A detail plan for the site compound showing buildings, storage containers, storage areas, parking facilities and traffic arrangements can be in **Appendix D**.

2.6.1 Dial Before You Dig (DBYD)

The Project Engineer must obtain all Dial Before You Dig (DBYD) plans for the project prior to commencing work on site as per the Pre-Excavation section of the High Risk Activities procedure (GLA-SP-2.2.4).

2.6.2 Amenities

Guideline ACT Amenities – Minimum Requirements

Particular emphasis on the following 3 items:

- **The Work Environment should be maintained in a clean and safe condition.**
- **Facilities should be clean, safe, accessible and in good working order.**
- **Workplaces and facilities should be cleaned regularly,** Usually on a daily basis.

Entry and Exit to and from the workplace must be safe.

Broken or damaged furniture, fixtures and fittings, including chairs, plumbing, air-conditioning and lighting should be repaired promptly.

Training all workers in good housekeeping procedures and their cooperation with these procedures is necessary to keep the workplace tidy.

Suitable, rodent proof containers for waste should be conveniently located and regularly emptied.

Consumable items, including soap and toilet paper, should be replenished regularly.

Equipment and furniture such as toasters, fridges, lockers or seating should be maintained in good working order.

Outdoor workers should have access to shelter for eating meals and taking breaks, and to protect them in adverse weather conditions.

The following items have been adapted from ACT Work Health & Safety (Managing the Work Environment and Facilities) Code of Practice 2011, these items are important to Guideline ACT:

1. Enclosed amenities:

- a. Be of sound construction and weatherproof
- b. Have adequate ventilation, heating & cooling
- c. Be protected against insects
- d. Be appropriately insulated against weather conditions
- e. Be kept clean and sanitary
- f. Waste water from amenities should be adequately discharged to ensure hygiene and safety

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- g. An adequate supply of cleaning equipment and accessories should be available and replenished regularly (soap, hand drying, toilet paper, cleaning agents, mops, brooms etc)
- h. All amenity areas should be positioned to prevent external flooding
- i. Access to amenities, and facilities within, should be kept clear at all times
- j. Amenities should not be used for the storage of any building materials or equipment (apart from personal work tools and PPE)
- k. All power supplied to amenities should comply with the relevant supply authority rules and be consistent with *AS/NZS 3012:2010 Electrical Installations – Construction and Demolition Sites* and the *Code of Practice – Electrical Practices for Construction Work*
- l. Adequate lighting (natural or artificial) should allow safe movement around the workplace and work without compromising posture or straining their eyes

2. Site Office:

- a. For employees who undertake work in a seated position, seating needs to:
 - i. Provides good body support, especially for the lower back
 - ii. Provides foot support, preferably with both feet flat on the floor, otherwise a footrest should be provided
 - iii. Allows adequate space for leg clearance and freedom of movement
- b. Chairs should be fully adjustable (with seat height, back rest height and back rest tilt adjustments).
- c. Workplaces inside buildings may have natural ventilation, mechanical ventilation (fans or extraction units) or air-conditioning. An air-conditioning system should:
 - i. Provide a comfortable environment in relation to air temperature, humidity and air movement
 - ii. Prevent the excessive accumulation of odours
 - iii. Reduce the levels of respiratory by-products, especially carbon dioxide, and other indoor contaminants that may arise from work activities
 - iv. Supply an amount of fresh air to the workplace, exhaust some of the stale air as well as filter and recirculate some of the indoor air.
- d. Air conditioning and other ventilation systems should be regularly serviced and maintained in accordance with manufacturer's instructions.

3. Meal Rooms:

- a. Workers should be provided with access to hygienic dining facilities for eating their meals and for preparing and storing food.
- b. A separate dining room should be provided if:
 - i. 10 or more workers usually eat at the workplace at the same time
 - ii. There is a risk of substances or processes contaminating food
- c. A dedicated dining room should be provided that is protected from the weather and is separate from work processes, toilet facilities and any hazards (i.e. noise, heat and atmospheric contaminants). It should be supplied with:
 - i. Adequate numbers of suitable tables and seating (chairs) to accommodate each worker likely to use the dining room at one time

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- ii. A sink with hot and cold water, washing utensils and detergent
 - iii. An appliance for boiling water
 - iv. Food warming appliances, such as a microwave oven
 - v. Clean storage, including a refrigerator for storing perishable food
 - vi. Vermin-proof rubbish bins, which should be emptied at least daily.
- d. The floor area should be provided at the rate of at least 1 square metre of floor space for each person likely to use the room at any one time (excluding any space occupied by dining furniture, appliances, fittings)
 - e. Tables of sturdy construction should be provided and of a length at 560mm for each person using the facility at any one time; tables should be of a quality so that they can be easily cleaned (e.g. plastic smooth top, or laminated finish timber top)
 - f. Meal rooms should have adequate means of heating and cooling

4. Toilets:

- a. Access to clean toilets must be provided for all workers while they are at work
- b. Toilets should be clearly signposted where separate toilets are provided for males and females (with male and female toilet signage)
- c. An adequate number of toilets must be provided, the minimum requirement is a ratio of at least one toilet for each 20 persons or part there of
- d. Toilets and urinals should be installed so as to provide adequate privacy
- e. Provide an adequate supply of toilet paper for each toilet
- f. Toilets should be connected to the sewer where practicable
- g. If connection to a sewer is not practicable, self contained freshwater flushing or open closet portable toilets should be provided
- h. Toilets that are not connected to a sewer should be serviced at least once every 2 weeks for a toilet used by up to 5 persons, or at least once every week for a toilet used by more than 5 persons
- i. Toilet facilities should be installed to prevent any odours reaching dining facilities
- j. Portable toilets should be installed to prevent them toppling over
- k. Each toilet should be weatherproof and provided with adequate lighting (natural/artificial) and ventilation.
- l. Each toilet should be fitted with a hinged seat and lid
- m. Toilets should be fitted with a hinged door. The door should be capable of locking from the inside
- n. Each toilet should be designed to allow emergency access
- o. Each toilet should be well drained and have a floor constructed of, or covered with, a durable waterproof material
- p. Sanitary disposal units for female use should be provided, where required, and serviced regularly

5. Washing facilities:

- a. Should be accessible at all times to work areas, eating areas and the toilets

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- b. Where work involves exposure to infectious substances or other contaminants, separate hand washing basins should be provided in addition to those provided with toilets
- c. Should be separate from troughs or sinks used in connection with the work process
- d. Clean water and cleansing agents (and disinfecting agents where appropriate) should be provided for the purposes of washing
- e. Contain both hot and cold water
- f. Should be protected from the weather
- g. Should contain hygienic hand drying facilities, e.g. an adequate supply of paper towel that is regularly replenished
- h. Garbage bins, with removable liners and secure lids should be provided for disposal of used paper towel
- i. If no hand washing facilities are available, workers should have access to alternative hand hygiene facilities, e.g. water container with soap and paper towels, hand wipes or alcohol-based hand wash

6. Drinking water:

- a. An adequate supply of cool, clean drinking water should be available on work sites
- b. Drinking water points should be provided near all hot and strenuous work stations
- c. Water should be separate from toilet or washing facilities to avoid contamination of the drinking water.
- d. Temperature should be at or below 24 degrees Celsius
- e. Water should be supplied in a hygienic manner, so that workers do not drink directly from a shared container.
- f. Any non-potable water should be clearly marked with warning signs.

Where connection to a water supply is not possible, supply may be provided by other means suitable for dispensing drinking water such as a tank (filled with potable water). The tank must be on a stand and have a suitable tap connection.

2.6.3 Signage

Guideline ACT Site Safety Sign is to be installed for every project indicating specific contact details and project safety requirements. The figure below shows the layout of the sign.

The Emergency Evacuation Signs are to be installed at the nominated Emergency Evacuation Point(s)

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FIGURE 1 – Guideline ACT Site Safety Sign

2.6.4 Emergency equipment

As part of the site establishment the PE in consultation with the WHSM shall determine the suitability, location and accessibility of emergency equipment such as fire extinguishers and first aid, with reference to and record in the Project Risk Register (GLA-SF-2.1-06)

Emergency Equipment will be regularly checked, serviced to appropriate regulations, codes of practice, standards. This is managed through head office. PE/FP to co-ordinate through head office as replacement or service required between scheduled servicing for emergency equipment.

2.6.5 First Aid

At the beginning of the project the following needs to be assessed by the PE and WHSM (using the Project Risk Register GLA-SF-2.1-06):

- Location of First Aid equipment and facilities – is it convenient and in an area where there is a higher risk of injury or illness occurring?

- Size of the workplace – for larger workplaces, first aid may be required in more than 1 location if:
 - Work is being carried out a long distance from emergency services
 - Small numbers of workers are dispersed over a wide area
 - Access to a part of the workplace is difficult
- Maximum number of workers likely to be on site at any one time
- If any of the following equipment or facilities are required:
 - Equipment
 - Automatic Defibrillators
 - Eye wash and shower equipment
 - Facilities
 - First Aid Rooms

First Aid Kits must be monitored and maintained at a minimum frequency of once every 6 months in accordance with the requirements of the code of practice. This process is managed through head office. A nominated First Aider should periodically check the contents of the First Aid Kit in the interim and notify head office if any items need to be re-stocked before the 6 month period is up.

First Aid signs must also be displayed to allow workers to easily identify where the First Aid kits are located on site.

Appropriately trained First Aid Personnel must be available on every project site (at a minimum frequency of one per 25 workers). Refresher training in CPR should be conducted annually and the First Aid qualifications should be renewed every 3 years.

A First Aid Procedure for each site must be written into the Project Management Plan (PMP). Records must be kept of First Aid Treatment provided on the Incident Report Form (GLA-SF-2.2-09).

2.6.6 Fire Extinguishers

At the beginning of the project, the risk of fire is to be assessed by the PE and WHSM (using the Project Risk Register GLA-SF-2.1-06) and Fire Extinguishers are to be located in areas for convenient access in the event of a fire. Fire extinguishers must be easily accessible.

All fire extinguishers must be mounted to prevent them being knocked. The following signage is to accompany the fire extinguisher:

- ID sign which shows what sort of fires the extinguisher can be used on (placed immediately above the extinguisher)
- Location sign (placed a minimum of 2m above the ground).

Fire Extinguishers are to be tested and maintained at a minimum frequency of once every 6 months by a competent person (usually a representative from a nominated supplier). This process is managed through head office.

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2.7 Risk Assessment and SWMS

The following Risk Assessment and SWMS Procedure was extracted from Guideline ACT's Business Management System Procedure GLA-SP-2.1.2.

2.7.1 Company Risk Register

Guideline ACT has a Company Risk Register that lists all the risks that Guideline ACT expects to face on any construction site. The Company Risk Register was created using the Risk Register form (GLA-SF-2.1-06).

2.7.2 Project Risk Register

Prior to the commencement of project site works the PE shall prepare a Project Risk Register on the Risk Register form (GLA-SF-2.1-06).

The Project Risk Register must be created using the Company Risk Register as a template,

The Project Risk Register is a list of the risks that Guideline ACT expects to face on a particular project site and created using the following minimum information:

- using the Company Risk Register as a template
- The safety in design report or equivalent supplied or requested from the project design consultant. Request to be formalized utilising RFI form (GLA-QF 4.2.30)
- The issue register (GLA-CF 5.3-01) from during Guideline tender stage

The Project Risk Register must only include those risks that would be relevant to the project.

The Project Risk Register must be forwarded to each Subcontractor upon engagement for inclusion of the project specific risks into their WHS documentation prior to starting on site.

This register is a live document that is updated whenever a new risk is identified. This may occur following the investigation of an incident report (GLA-SF-2.2-09). Also from records produced following (GLA – SP 2.2.2 Monitoring). However a general review of the risk register shall be carried out periodically based on project demand, but no more than 6 months and recorded on the review table at the end of the project Risk Register. (Optional reviews should be min 2 PM, PE, CM, PM, GM, MD, SM, WHSM)

Utilising the project risk register, the PE with the WHSM is to identify any need for exposure monitoring of the workplace and workers. An appropriate monitoring program is to be put in place to address the specific needs identified.

This is to be detailed in the Project Management Plan.

In the case of an incident, the personal exposure monitoring/ health is managed by the Rehab officer, through industry professionals

2.7.3 Risk Assessment

The steps in the risk assessment procedure to determine the risk rating and control measures for the Risk Register are detailed below.

Identify Hazards

Hazards can be identified by:

- Review of company Risk Register;

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- Reviewing the design safety report (by the PE) and adding risks to the Project Risk Register not already identified;
- Review and/or survey of workplace through drawings and/or physical means;
- Review design changes derived from request for information, or changes by client, during the project
- Consulting with employees, consultants, clients and subcontractors; and
- Referring to manufacturers' instruction and statements of proper use.

Assess the Risks

Once a hazard has been identified, a risk assessment is to be carried out in order to determine the level of risk associated with the hazard as per the following risk matrix. A risk assessment should consider the risks to all people potentially affected by the hazard including risks that are not directly associated with the project such as the general public, existing structures, clients and neighbouring workplaces, Non-employees, such as subcontractors and members of the public (including client's or entity's workplaces).

A risk assessment should determine the following:

- ✓ Activity being undertaken;
- ✓ Occupations and tasks at risk;
- ✓ Likelihood of an incident;
- ✓ Consequence of an incident; and
- ✓ Level of Risk.

If the risk assessment identifies that a client or other entity's workplace may be affected, The PE must ensure that an item agenda (e.g. other stakeholders) is included in client meetings for the purpose of liaison with such parties and recorded outcomes communicated, at a client level through minutes and at a project level through tool box talks

The following tables are to be used for the development of all Risk Registers:

Step 1: Determine Probability		Step 2: Determine Consequences		
Likelihood		People		Business/Environmental
		Consequences		Consequences
A	Common or frequent occurrence likely to reoccur	1	Death or multiple life threatening injuries	Extreme damage extreme business interruption. Irreversible environment impact
B	Has happened before or a near miss has been recorded	2	Life threatening injury or multiple serious injuries causing hospitalisation	High-level damage, significant business interruption. Serious environmental impact
C	Could occur or I have heard of it happening in the industry	3	Serious injury causing hospitalisation or multiple medical treatment cases	Medium level damage, serious production disruption. Reversible environmental impact
D	Not likely to occur within the business or industry	4	Injury or health issue requiring medical assistance	Low level damage, slight production disruption. Minor environmental impact
E	May occur but only in exceptional circumstances	5	Minor injury or 1 st aid treatment case	Negligible damage, minimal production disruption. No environmental impact

When assessing likelihood and consequence utilise available information on the hazard, such as records of incidents, illness and disease

Determine the **level of risk** by plotting the consequences and likelihood on this matrix:

Step 3: Calculate the Risk (Likelihood + Consequence = Level of Risk)						
Likelihood						
		A	B	C	D	E
Consequence	1	High (1)	High (3)	High (6)	Medium (10)	Medium (15)
	2	High (2)	High (5)	High (8)	Medium (14)	Medium (19)
	3	High (4)	High (7)	Medium (13)	Medium (18)	Low (22)
	4	Medium (9)	Medium (12)	Medium (17)	Low (21)	Low (24)
	5	Medium (11)	Medium (16)	Low (20)	Low (23)	Low (25)

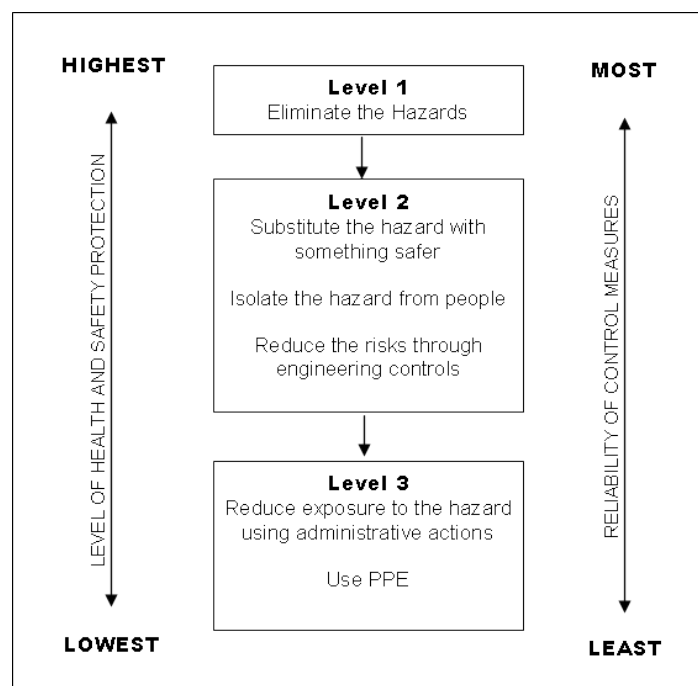
From the identified risk rating, when determining control measures refer to table below:

Risk Ranking	Risk Control Priorities
HIGH 1- 8	Do not proceed – immediately introduce control measures to lower risk (through consultation with management, consultative committee and relevant workers).
MEDIUM 9 - 19	Monitor and review controls for effectiveness and record results in table included in Risk Register and SWMS.
LOW 20 -25	Proceed with task and monitor.

Determine Control Measures

Using the results of the risk assessment, determine what control measures or what action to take, in order to eliminate or reduce the risks. The hierarchy of risk control from the ACT Work Health and Safety (How to Manage Work Health and Safety Risks) Code of Practice 2011 is to be used, as shown below.

Elimination of hazards is the preferred option in all cases, where this is not possible; use the hierarchy in order of Highest to Lowest to determine the appropriate control measure.



Level 1 control measures

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Elimination of hazards is more practical to achieve at the design or planning stage of a project. Elimination can also be achieved by removing the hazard from the work area i.e. removing trip hazards by housekeeping.

If you cannot eliminate the hazard, then eliminate as many of the risks associated with the hazard as possible.

Level 2 control measures

If it is not reasonably practicable to eliminate the hazard and associated risks, you should minimize the risks using one or more of the following approaches:

- ✓ *Substitute the hazard with something safer*
- ✓ *Isolate the hazard from people*
This involves physically separating the source of harm from people by distance or using barriers
- ✓ *Use engineering controls*
An engineering control is a control measure that is physical in nature, including a mechanical device or process. E.g. place guards around moving parts of machinery, use machines for lifting instead of manual handling.

Level 3 control measures

These control measures do not control the hazard at the source. They rely on human behaviour and supervision, and used on their own, tend to be the least effective in minimizing risks. Two approaches to reduce risk in this way are:

- ✓ *Use administrative controls*
Administrative controls are work methods or procedures that are designed to minimize exposure to a hazard. E.g. developing procedures for safe operation of plant; using signs for alerting people to a hazard; limiting exposure to a hazardous task.
- ✓ *Use personal protective equipment (PPE)*

Administrative controls and PPE should only be used:

- as a last resort
- as an interim until a more effective control method can be used
- to supplement higher level control levels

Monitor and Review Control Measures

Monitoring and review of control measures occur periodically through items such as internal or external audits, review of incidents and WHS Committee Meetings.

At the completion of each project a review of the project risk register shall be carried out by the WHSM. New hazards from the project risk register shall be added to the company risk register.

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2.7.4 Plant Risk Assessments

All Guideline items of plant must have a Plant Risk Assessment form (GLA-SF-2.1-07) completed initially (or after any damage occurs, and recorded via an incident report). The Plant Risk Assessment form is to be completed by a competent WHS Manager and/or Workshop Manager.

The Plant Risk Assessment prompts to check for any potential risks from the use of the plant on site. The form is to be completed by ticking yes, or no for all of the questions. If any YES answers, the actions taken are to be noted at the bottom of the form (e.g. Refer to Backhoe SWMS).

Plant SWMS are then developed for the purpose of inducting personnel into the use of plant and competency training. A list of plant SWMS is in the SWMS Register (GLA-SF-2.1-04).

The completed Plant Risk Assessment is to be kept on the company intranet, available for hard copy if required.

Subcontractors

All subcontractors' plant is required to have a plant risk assessment carried out and evidence provided to the project team, each time the plant arrives on site. This is not to be more than 6 months old.

2.7.5 Safe Work Method Statements (SWMS)

Guideline ACT has developed and maintains a company set of generic SWMS. The SWMS are listed in the SWMS Register (GLA-SF-2.1-04) and the register is maintained by the Systems Manager.

The SM and WHSM are responsible to include the relevant legislation, Codes of Practice, Australian Standards to the company generic SWMS through procedure (GLA-BP-1.1.3) continual improvement and form (GLA-BF-1.1-06) WHS legislation and other WHS information register, ensuring the controls listed in the relevant documents are appropriately incorporated into SWMS.

The PE shall prepare Safe Work Method Statements (SWMS) for all project high risk activities. The project specific SWMS are based on generic SWMS (if available) for site specific use on the Safe Work Method Statement form (GLA SF-2.1-02). The PE must make sure when adapting a generic SWMS that they do not compromise the original intent of the SWMS. In addition the PE should consult with the SM and WHSM if any site specific risks identified may not be covered by current legislation listed. The prepared SWSMS is then reviewed and approved by the PM, CM or GM. The Foreperson is responsible to ensure that work is carried out and monitored in accordance with the SWMS.

The SWMS must:

- Be easily understood
- Be site specific
- Have company contact details
- Identify work that is high risk construction work
- Specify hazards relating to the high risk construction work and risks to health and safety associated with those hazards
- Describe the measures to be implemented to control the risks
- Describe how the control measures are to be implemented, monitored and reviewed.

The content of a SWMS should provide clear direction on the control measures to be implemented. There should be no statements that require a decision to be made by supervisors or workers.

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Before work commences on any particular activity the required personnel must be inducted into the SWMS using the SWMS Training Record form (GLA-SF-2.2-08). All activities and/or personnel are to be covered by a SWMS including all subcontractors and hired plant.

The Project SWMS Register can be found in **Appendix E** along with the Project Specific SWMS.

2.7.5.1 Review of SWMS

The company set of generic SWMS (as per the SWMS Register GLA-SF-2.1-04) needs to be reviewed for their suitability periodically. This is to involve Consultation between the following personnel:

- Health & Safety Officer
- Managers
- Project Engineers
- Foremen
- Operators
- Consultative Committee Members
- Subcontractors.

Once the review is complete, the Systems Manager will update and distribute the new SWMS.

2.7.5.2 Review of Subcontractor SWMS

All SWMS prepared by Subcontractors need to be reviewed and approved by Guideline ACT site supervisors prior to any work commencing on site. This can be done using the Subbie SWMS Review Checklist (GLA-SF-2.1-05).

The Subbie SWMS Review Checklist must be forwarded to the Subcontractor for their review, modification and re-submission if the following box on the checklist has been ticked:

- The SWMS requires re-submission prior to work commencing

Work can commence on site if either of the following 2 boxes are ticked:

- Work can proceed based on the SWMS
- Work can proceed based on the hand modified SWMS (providing the SWMS has been hand modified).

Once the Subcontractor SWMS has been approved by Guideline ACT, the Subbie SWMS Review Checklist is to be filed onsite along with the SWMS. A record of the induction of ALL external SWMS is to be kept on site at all times.

2.7.5.3 Monitoring of SWMS

Guideline ACT and Subcontractor SWMS are to be monitored for their implementation as per the following frequency

- Minimum one GLA SWMS per month per project by the Project Engineer
- Minimum one Subbie SWMS per month per project by the Project Engineer

The following procedure shall be used for monitoring of SWMS. The monitoring officer selects a current site activity. A copy of the relevant SWMS for that activity is taken out on site. The officer is to monitor the implementation of the controls specified. The effectiveness of GLA SWMS is documented on the last page of form GLA-SF-2.1-02.

The effectiveness of subcontractors SWMS is to be documented using page 2 of form GLA-SF-2.1-05.

Any action required is nominated in this table, this could include:

- Update of SWMS required;

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- Non Conformance/Corrective Action raised;
- Nil action required.
- Forwarded to the Subcontractor to rectify SWMS.

The process must also be followed when new site specific hazards are identified, from Audits both internal and external and/or when the hazard causes an incident.

2.8 WHS Training

The following WHS Training procedure was extracted from Guideline ACT's Business Management System Procedure GLA-SP-2.2.1.

All WHS training will be conducted as per the Guideline ACT BMS Procedure (GLA-SP-2.2.1).

The minimum mandatory requirement to work on site is a general construction induction training (white card). This must be available from the worker at all times.

As of 1st July 2014 it is mandatory for all construction workers to have Asbestos Awareness Training for work in the ACT. Refer to procedure GLA-SP-2.2.4 High Risk Activities for further information.

2.8.1 Site Induction

No personnel are to commence work onsite without being site inducted (using Site Induction Record Form GLA-SF-2.2-03).

Each worker shall sign the induction record form to acknowledge that they have understood the content.

The induction needs to be site specific and registered in the Site Induction Register (GLA-SF-2.2-04).

The following groups do not need to be site inducted, but will be required to sign in and out of site:

- Visitors, but they must be escorted by a site inducted person at all times
- Delivery drivers, may need a shortened or modified site induction as required

A Visitor is defined as somebody who is not carrying work out on site and will not attend the site for the duration of a full shift.

If a worker wants/needs clarification in regards to legislative requirements specific to the task at hand, then the PE / FP can access the Guideline intranet for the WHS legislation and other information register or internet web pages, and then either show or print the documents to be communicated to the worker(s)

2.8.2 Competencies

Each Guideline ACT employee is issued a competency folder which shows all competencies achieved such as qualifications, tickets, on the job experience and courses attended.

Folders are collected, updated, a record kept and returned to the employees at a minimum every 6 months, refer to procedure GLA-BP-1.2.2.

2.8.3 Pre-Start Meetings

All sites are to have a minimum of 1 Pre-Start Meeting per day before commencing work on site using the Pre-Start Meeting Checklist (GLA-SF-2.2-20). This form is used to:

1. Check if there have been any changes, and if so, have the risks been assessed

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2. Consult with Workers and highlight any specific workplace hazards and the controls that need to be implemented

2.8.4 Toolboxes

Toolbox Talks are another important way of communicating site WHS issues. The FP shall co-ordinate and conduct the site toolbox meeting, and ensure the meeting minutes are recorded using the Toolbox Meeting Record Form (GLA-SF-2.2-06). The purpose of the toolbox meetings are to:

1. Provide safety training of a general nature
2. Reinforce company policies and safety rules
3. Report any recent safety alerts
4. Encourage feedback.

A register of toolboxes (Toolbox Meeting Register GLA SF-2.2-07) is to be kept up to date as a quick reference to what topics have been covered.

All sites are to have a minimum of 1 toolbox per week.

All relevant hazard or safety alerts which are communicated from the Superintendent shall be forward to Guideline ACT nominated representative. The FP shall ensure these alerts are communicated to applicable employees and sub-contractors via site toolbox meetings, other meetings and notice boards.

2.8.5 Induction to SWMS

All personnel are to be trained in the Safe Work Method Statements relevant to the activity they will be doing using the SWMS Training Record (GLA-SF-2.2-08). All personnel must be made aware of the associated hazards and risks prior to commencing each activity.

2.9 Monitoring of WHS

The following Monitoring of WHS procedure was extracted from Guideline ACT's Business Management System Procedure GLA-SP-2.2.2.

2.9.1 Safety Inspection Checklist

A site safety inspection needs to be completed at least once per week to identify and eliminate unsafe work practices and unsafe work areas. The inspection is to be recorded using the Safety Inspection Checklist (GLA-SF-2.2-05).

The FP is to initiate the check, involving the use of workers and subcontractors to form an inspection team. FM is to ensure any actions raised are completed within the stipulated time. Once the checklist is complete, the page with the action list is to be filled out. The action priorities are determined by assessing the risk of each hazard using the risk matrix on the checklist.

After completion of appropriate action, the checklist is to be forwarded to the PE for review and filing in the project file. The PE shall ensure that any actions raised have been completed.

CM, PM and PE shall periodically take part in Safety Inspections (minimum of 1 per month).

The Work Health & Safety Manager (WHSM) also conducts safety Inspections (using form GLA-SF-2.2-05) on each site once per month. The results are given to the Project Engineer to follow up on the actions, close out and file with the project documents.

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2.9.2 Auditing

WHS management forms part of the following audits:

Internal PMP Audit:

The Project Management Plan (PMP) shall be subject to an audit at least once for each project and at 6 monthly intervals to determine whether the provisions of the WHS system are being implemented effectively and in accordance with legislative requirements. Refer to the Quality - Construction Phase - Audit Procedure (GLA-QP-4.2.3) for further details.

GLA Compliance Check:

Significant aspects of the WHS System will be monitored internally by the Systems Manager approximately once per month for each project. Refer to the Quality - Construction Phase - Audit Procedure (GLA-QP-4.2.3) for further details.

The above audits may identify areas of potential improvements to the WHS System.

2.9.3 Management Review

The MD shall carry out an annual management review to evaluate the continuing suitability, adequacy and effectiveness of the WHS System. In the review the MD shall consider outcomes from Consultative Committee Meetings, Management Meetings, summaries of Incident Reports, discussions with the HSO & review of KPIs. The legislation register shall be checked for currency prior to the review and any updates or changes to be identified during the meeting. The MD will report the outcomes of the review to the BMS Review Meeting and the Systems Manager will record this review on the BMS Review Meeting Minutes (GLA-BF-1.2-03).

2.9.4 Internal Meetings

WHS is a topic the following: Weekly Site Meeting, Consultative Committee Meeting, Foreperson/ Management Meeting, Management Review Meeting and Resource Meeting.

2.10 Incidents/Accidents/Injuries

The following Incidents/Accidents/Injuries procedure was extracted from Guideline ACT's Business Management System Procedure GLA-SP-2.2.3.

2.10.1 Incident Response

For each incident, the Incident Reporting Flow Chart (GLA SF 2.2-21) is to be followed according to the incident severity (High, Medium or Low). The Incident Reporting Flow Chart can be found in the Emergency Planning & Management Procedure (GLA-SP-2.2.6).

2.10.2 Incident Reporting

All incidents are to be reported immediately via phone to the Work Health & Safety Manager (WHSM). After being notified, the WHSM is to contact the relevant person as per the Incident Reporting Flow Chart.

An Incident Report Form (GLA SF 2.2-09) is to be accurately completed by either the Foreperson (FM), Project Engineer (PE), Project Manager (PM), or Work Health & Safety Manager (WHSM). The Incident Report Form is to be forwarded to head office within 24hrs via email (civil@guidelineact.com.au).

All injuries potentially requiring a doctors' appointment are to be reported to head office via phone by the WHSM.

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If the incident is Notifiable, the WHSM is to contact the appropriate Authority (e.g. Worksafe ACT) and arrange for the appropriate people to complete the required submissions (as most of Guideline ACT’s work is in the ACT, refer to the Worksafe ACT website for Guidance Note on ‘How to report a Notifiable Incident’ and ‘Notifiable Incident Report’). Records of notifiable incidents shall be kept for 5 years and kept on file in Head Office.

In the event that the WHSM is unavailable or away, the PE/FP is to contact the General Manager (GM). In turn, if the GM is unavailable or away, the PE/FP is to contact the Managing Director (MD). The MD or the GM will assume the role described above for the WHSM.

If none of the above are available and the incident is suspected to be notifiable, the FP or PE is to contact Worksafe ACT and liaise with them.

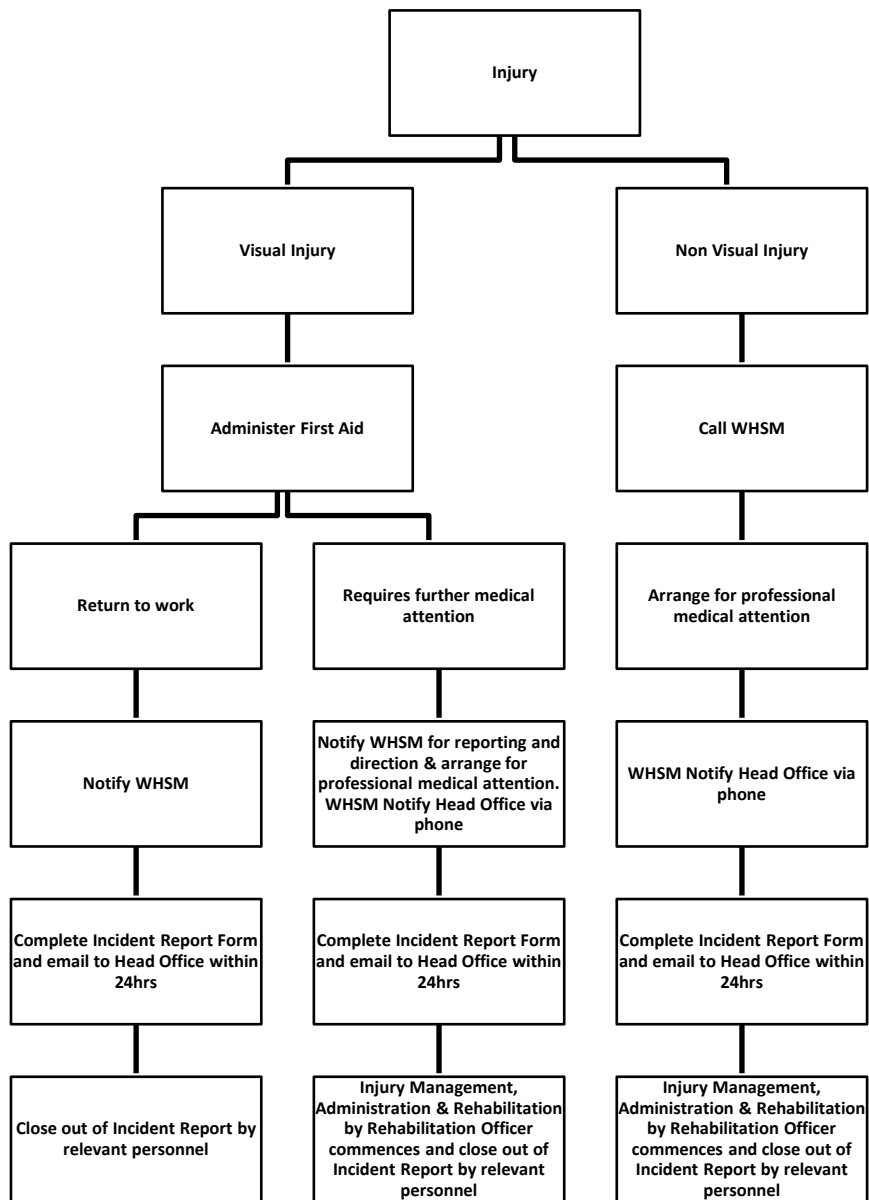
In addition, The Office of Federal Safety Commission (OFSC) reporting requirements are set out below:

Overview of the OFSC Reporting Framework		
Requirement	When	Details
Contract Declaration Form	As soon as agreement is reached on a tender, or a contract is signed for a Scheme project	<ul style="list-style-type: none"> Notifies the OFSC of the details regarding a new Scheme project that was awarded to the accredited contractor
Scheme Project Report	<ul style="list-style-type: none"> Report 6 monthly, due on 15 October and 15 April each year and at the completion of a Scheme project (within 2 weeks of the project completion date) A separate report must be submitted for each Scheme project 	<ul style="list-style-type: none"> Incidents, hours worked and notices on a Scheme project Whether any high risk construction has taken place on the project
OFSC Incident Report	<p>Following:</p> <ul style="list-style-type: none"> All fatalities irrespective of the project value or type (notify immediately to 1800 652 500 and provide report within 48 hours); Any incident on a Scheme or non-Scheme project resulting in a LTI (reporting of AWIs is also encouraged) where the project value is \$3 million or more (provide report within 48 hours if a Notifiable Incident, otherwise provide report within 3 weeks); Any MTI or dangerous occurrence on a Scheme 	<ul style="list-style-type: none"> Location / incident details Breakdown agency of incident Working days /shifts lost and/or significant change to duties made/expected Injured party details, project details, work activity details Investigation details (if reporting a fatality)

	project (provide report within 48 hours if a Notifiable Incident, otherwise provide report within 3 weeks)	
Biannual Activity Report	<ul style="list-style-type: none"> • Report 6 monthly, due on 15 February and 15 July each year • All accredited contractors must submit, even if no projects (Scheme and/or non-Scheme) have been undertaken in the period 	<ul style="list-style-type: none"> • Fatalities • Numbers of LTIs and MTIs • Injury and incident number and profile • Current workers' compensation premium rate • Notices, prosecutions • PPI, key initiatives

On-Site Injury Management

All injuries must be referred to medical attention (be it First Aid, doctor check-up or hospitalisation). The following flow chart explains the Injury Management Procedure:



All incidents will be followed up and reviewed by Guideline ACT management.

2.10.3 First Aid Plan

This plan must include the following:

Requirement	Location
The type of first aid kits and where they are located	Project Risk Register
The location of first aid facilities such as first aid rooms	Project Risk Register
Who is responsible for the first aid kits and facilities and how frequently they should be checked and maintained	Emergency Plan in Appendix F
How to establish and maintain appropriate communication systems (including equipment and procedures) to ensure rapid emergency communication with first aiders	Emergency Plan in Appendix F
The communication equipment and systems to be used when first aid is required (especially for remote and isolated workers). These procedures should contain information about how to locate the communication equipment, who is responsible for the equipment and how it should be maintained	Emergency Plan in Appendix F
The work areas and shifts that have been allocated to each first aider. These procedures should contain the names and contact details of each first aider	Emergency Plan in Appendix F
Arrangements to ensure first aiders receive appropriate training	Emergency Plan in Appendix F
Arrangements for ensuring that workers receive appropriate information, instruction and training in relation to first aid	Workers informed of Emergency Plan in Appendix F
Seeking information when a worker commences work about any first aid needs that may require specific treatment in a medical emergency, such as severe allergies. Information about a worker's health must be kept confidential and only provided to first aiders with the worker's consent	Site Induction section in WHS Management Plan
How to report injuries and illnesses that may occur in the workplace	Incidents/Accidents/Injuries section of WHS Management Plan
Practices to avoid exposure to blood and body substances	Project Risk Register
What to do when a worker or other person is too injured or ill to stay at work, for example if they require assistance with transport to a medical service, home or somewhere else where they can rest and recover	Incidents/Accidents/Injuries section of WHS Management Plan
Access to debriefing or counselling services to support first aiders and workers after a serious workplace incident.	Emergency Plan in Appendix F

2.11 Emergency Procedures

Refer to **Appendix F** for the project Emergency Plan.

The following Emergency Plan and Emergency Management sections were extracted from Guideline ACT's Business Management System Procedure GLA-SP-2.2.6.

2.11.1 Emergency Plan

An Emergency Plan must be prepared for each project. The Emergency Plan must include following steps:

1. Roles
2. Evacuation procedures
3. Response to an emergency
4. Site specific rescue plans

When preparing the Emergency Plan, the PE and WHSM must be take into consideration the following:

- a. Nature of the work being carried out at the workplace;
- b. Nature of the hazards at the workplace;
- c. Size and location of the workplace;

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- d. Number and composition of the workers and other persons at the workplace.
- e. Risk register to identify potential emergency situation.
- f. Development of site specific emergency and/or rescue plans from risks identified in the project risk register.

The site specific Emergency Plan can be found in PMP appendix F.

The types of emergency response situations that may be included but not limited to in the emergency plan are:

- Fire
- Medical responses from professionals
- External influences, such as storms, flooding, bush fire
- Armed hold up, personal threat, bomb threat
- Site specific risks such as confined space, trench collapse, plant roll over, electrical powerlines, working over water, pressurized gas, working at heights

2.11.2 Emergency Management

All workers and visitors need to sign in on arrival to site and sign out when they leave site using the Site Sign In/Out Register (GLA-SF-2.2-19). The Site Sign In/Out Register will be used in the event of an emergency to determine who is on site.

Roles and Responsibilities:

The Emergency Controller for each site will be the Foreperson or Engineer. The Emergency Controller is responsible to act in accordance with the following:

Emergency Controller

- Ascertain the nature of the emergency.
- Phone the WHS Manager immediately and follow directions from the WHS Manager.
- Coordinate the Emergency Services to site, either directly or delegated and manage the site until emergency services arrive.
- Respond and take control and initiate the appropriate action; emergency evacuation, emergency response or rescue plan.
- Brief the emergency services personnel upon arrival on type, scope and location of the emergency and the status of the evacuation and, thereafter, act on the senior officer's instructions.
- When required, coordinate with the Warden to search the site to ensure all people have evacuated. Account for all workers that are registered on the site sign on sheet. (GLA- SF 2.2-19).

Emergency Warden

- Stop work in the area.
- Coordinate and assist in first aid triage and treatment.
- Isolate and preserve the area if safe to do so.
- Deputise any Guideline vehicles and drivers to assist in clearing the site.
- Search the site to ensure all people have evacuated.
- Clear the site of all workers to the emergency assembly point.
- Provide any additional information to emergency services

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WHS Manager – directly after it being reported, the WHS Manager will:

- Initiate an emergency correspondence through all roles within Guideline ACT
- Contact all relevant authorities in regards to the specific incident
- Instruct the Emergency Controller to isolate and preserve the incident area
- Go directly to site and assist with any emergency needs and
- Manage media, public, CFMEU, client, etc, as appropriate (critical incident response)
- Go directly to site and conduct a thorough investigation.
- Provide any additional information to emergency services.

Note: Project Manager may carry out either the Emergency Controller or Warden Roles if required.

2.11.3 Critical Incident Management

The following Critical Incident Management section was extracted from Guideline ACT’s Business Management System Procedure GLA-SP-2.2.7.

Guideline ACT shall initiate critical incident management for all emergencies that are classified as high in accordance with Incident Reporting Flowchart GLA-SF-2.2-21; that involves injury to worker and/or is a notifiable incident.

Response Roles and Responsibilities:

Emergency Controller

1. Manage the scene in accordance with first aid training and the project Emergency Plan
2. Notify the Work Health Safety Manager by phone as soon as practically possible
3. Manage the site until emergency services arrive
4. Manage the preservation of the scene with barricades or similar
5. Manage entry and exit to the site by the following
 - Emergency services
 - Worksafe
 - Restrict access to 1 permit holder from each organization (e.g. CFMEU) till further assistance is on site (e.g. WHSM)

Media must not be permitted into the site. If requested to comment, respond by saying:

“The spokesman for Guideline ACT is the Managing Director. The Managing Director is aware of the incident and can be contacted on 6299 3262 at head office.”

Work Health Safety Manager

1. During the initial conversation with the Emergency Controller offer support, for example
 - Check emergency services have been requested.
 - Check the scene is secure, if safe to do so.
 - Advise that the WHSM is on the way to site. Ask “Are you ok?”

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2. Notify the Managing Director of the incident. If MD is unavailable leave a voice message and text message. Then call the General Manger and notify of the incident. If GM is unavailable leave voice message and text message.
3. Go to site and provide
 - Support to site personnel
 - Assistance in managing media, public, CFMEU, client, etc, as appropriate.
4. Provide information to emergency services and authorities if required
5. Investigate the incident

Managing Director/General Manager

After receiving notification from the WHSM the MD and GM are to contact each other and coordinate the following

1. Contact site for more information regarding the incident, if appropriate
2. Contact, or arrange for the contact of, relevant authorities/ parties as required

Possible Checklist

- Family
- GLA Office
- Worksafe ACT
- Client
- PAP/Superintendent
- PCW (Procurement Capital Works)
- MBA (Master Builders Association ACT Branch)
- EAP (Ozhelp)
- OFSC
- Media consultant
- Solicitor
- Independent investigator, engaged through solicitor

3. Go to site, medical facility, home and provide support as considered necessary
4. Prepare media response if considered necessary
5. Arrange debrief with appropriate personnel within 48 hours if possible. The debrief shall be recorded on Tool Box Meeting Record (GLA-SF-2.2-06). In particular, the debrief shall include a review of this procedure's effectiveness and make recommendation for system improvements or further training if required.

Critical Incident Response Training

Trial scenarios of critical response shall be carried out by the above personnel that have roles and responsibilities for critical incidents. The scenarios shall be carried out every 6 months. Refer to information, training and instruction component of this procedure.

The records of critical response scenarios shall be held in a file at head office.

Notifying Emergency Services

In the event of an emergency which requires assistance by Emergency Services, the Emergency Controller (Foreperson or Engineer) or Deputised Emergency Controller MUST contact Emergency Services at the earliest opportunity. The emergency controller shall then delegate someone to meet Emergency Services at the site entry, or other land mark, to escort them to the emergency scene.

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The details of emergency contact numbers are in PMP Appendix F.

Information Training and Instruction

All Workers on site must be inducted into the Emergency Plan for the project via the Site Induction Record Form (GLA-SF-2.2-03)

Site Specific rescue plans that are identified relevant to the project and incorporated into the emergency plan, are to be included in training for the emergency response team members and workers allocated to the project following the procedure below:

Emergency Response Team Training

Resource	Response Purpose	Emergency Type	Servicing Frequency
<u>Personnel</u>			
Emergency Controllers/Wardens	Respond to emergencies	All	Training and Meetings
First Aid Trained	Provide First Aid for a minor injury	Medical Emergency	Re-train every 3 years
Traffic Controllers	Control in the event of an emergency that affects a public road	Public road incident/accident	Re train every 3 years

Training of Evacuation Drill and Emergency Responses

The Emergency Plan must be maintained for the duration of the project so that it remains effective, and should be reviewed at the frequency of the evacuation drills set out below.

The project specific evacuation procedure is outlined in the emergency plan in PMP Appendix F.

There must be Emergency Evacuation drills and selected emergency responses carried out on each site. For all projects, the first drill is to be conducted no longer than 3 months after the date the Site Establishment Checklist (GLA-SF-2.1-03) was signed off. Then subsequent emergency evacuation drills, and emergency responses are to be conducted every 6 months after the first drill or after any emergency where an emergency response is required.

The success (or otherwise) of each Emergency Evacuation and Scenario is to be recorded on a Toolbox Meeting Record form (GLA-SF-2.2-06). The success is to be determined by answering the following questions:

1. Did all Emergency Controllers know what they had to do?
2. Did all workers receive the warning signal that the emergency evacuation was being conducted?
3. Did all workers assemble at the Emergency Evacuation Point?
4. Was there an “All Clear” notification given at the end of the Emergency Evacuation so that workers knew they could go back to work?
5. Did the response to the emergency follow the procedure or rescue plan?

Any items that need to be improved for the emergency evacuation must be recorded on a Non Conformance/Corrective Action (NCA) Report form (GLA-QF-4.2-20).

For all Emergencies, the Incident Reporting Flow Chart is to be followed according to the Incident Severity. The Emergency is to be recorded on an Incident Report Form (GLA-SF-2.2-09) along with the details of the incident as per the Incidents/Accidents/Injuries procedure (GLA-SP-2.2.3).

Testing of Equipment & Facilities

The equipment and facilities list is in PMP appendix F and provides the following details:

- Resource
- Response Purpose
- Emergency Type
- Servicing Frequency
- Placement in workplace

Employee Assistance Program (EAP)

Following any emergency, it must be determined whether any workers that have been directly or indirectly affected, require further assistance e.g. counselling. If so, the Worker must be directed to a nominated provider by the WHS Manager.

2.12 High Risk Activities

The following High Risk Activities procedure was extracted from Guideline ACT's Business Management System Procedure GLA-SP-2.2.4.

2.12.1 Hazardous Substances

The use of a Hazardous Substance is considered a High Risk Activity whereby the risk can be managed by following the procedure below.

The following information is required to be readily accessible to employees for all hazardous substances present in the workplace:

1. Substances Register (GLA-SF-2.2-18)
2. Safety Data Sheets (SDS)
3. Hazardous Substance Risk Assessment (GLA-SF-2.2-23)
4. All original labels to be left on the packaging so the hazardous substance is easily identified

Before any hazardous substance can be used, the personnel to be using it must be trained in the hazards and risks associated, recorded on the Toolbox Meeting Record form (GLA-SF-2.2-06), and the appropriate control measures put in place.

In accordance with the ACT Dangerous Substance Regulations 2004 part 2.3 sections 222 and 223 Risk Assessment Making. Quantities under the placard amount do not require a risk assessment

If the amount of Dangerous substances is equal or more than the placard amount, a risk assessment will then be carried out and this will follow the same procedure as BMS 2.1.2 Risk assessment and SWMS Preparation, and added to the Project Risk Register. (For the workers who are going to use the hazardous chemical, the FP/PE must tool box talk those involved on the SDS controls or the Risk Assessment).

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However if a chemical recorded in the substance register has a component listed in NHOSC 1005 schedule 3 a risk assessment is required. The schedule is provided in the PMP.

All hazardous chemicals are to be stored in the ventilated site containers.

The Substance Register (Form GLA-SF-2.2-18) needs to be completed on all projects as it captures all of the chemical products that are onsite and prompts for a check that the SDS has been obtained.

The maximum storage quantities are nominated in Table 2.2.1 'Dangerous substances—placard quantities and manifest quantities' which is an extract from the ACT Dangerous Substances Regulation 2004 – Schedule 1. The maximum quantity of a dangerous substance that can be stored at a site without needing to notify the relevant authorities (i.e. Worksafe ACT) is the Placard Quantity in Column 4 of the table. For notification requirements, contact the relevant authorities. The Manifest Quantity is the maximum quantity that can be stored onsite before Emergency Services need to be notified and an Emergency Plan needs to be drawn up (refer Column 5 of the 'Dangerous substances—placard quantities and manifest quantities' table).

Table 2.2.1 - Dangerous Substances – placard quantities and manifest quantities

Column 1 Item	Column 2 Dangerous Substances	Column 3 Packing Group	Column 4 Placard Quantity	Column 5 Manifest Quantity
1	class 2			
1.1	class 2.1	not applicable	500L	5 000L
1.2	class 2.2 subsidiary risk 5.1	not applicable	2 000L	10 000L
1.3	class 2.2 other than subsidiary risk 5.1	not applicable	5 000L	10 000L
1.4	class 2.3	not applicable	50L	500L
1.5	aerosols	not applicable	5 000L	10 000L
1.6	cryogenic fluids	not applicable	1 000L	10 000L
2	class 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1 or 8	I II III	50kg or L 250kg or L 1 000kg or L	500kg or L 2 500kg or L 10 000kg or L
		mixed packing groups in a single class with the quantity of each packing group below the quantity specified for the packing group	1 000kg or L	10 000kg or L
3	class 9	II	1 000kg or L	10 000kg or L
		III	5 000kg or L	10 000kg or L
		mixed packing groups class 9 with the quantity of each packing group below the quantity specified for the packing group	5 000kg or L	10 000kg or L
4	mixed classes of dangerous substances	not applicable	if the quantity stated in this schedule for each class present is 2 000kg or L or less – 2 000kg or L	10 000kg or L
			if the quantity stated in this schedule for 1 or more classes present is 5 000kg or L – 5 000kg or L	10 000kg or L
5	goods too dangerous to be transported	not applicable	5kg or L	50kg or L
6	combustible liquids handled with fire risk	not applicable	1 000kg or L	10 000kg or L

	dangerous substances			
7	C1 combustible liquids	not applicable	10 000L in a tank 50 000L packaged 50 000L in tanks and packaged combined if the quantity of C1 in the tanks is not more than 10 000L	100 000L in tanks or packaged

The Safety Data Sheet (SDS) provides all the information for proper storage and usage. SDS must be obtained for all chemical products used and stored onsite. The SDS must be kept up to date at all times in the SDS folder onsite. The SDS will identify whether the material is considered hazardous. If so, a Hazardous Substance Risk Assessment (GLA-SF-2.2-23) is to be completed.

The controls required when handling and storage of hazardous substances include:

- controlling access to the site/substances
- keeping plant and equipment properly maintained
- ensuring there are no ignition sources in hazardous areas
- preventing spills, and containing spills and leaks that do occur
- preventing interaction with other substances
- thoroughly cleaning tanks and containers
- providing safety and personal protective equipment
- providing fire protection and firefighting equipment
- Developing emergency procedures.

Any materials or chemicals that include substances listed in schedule 3 of NOHSC 1005:1994 require Health Surveillance if workers are actually exposed to the substance. The schedule is provided in the PMP.

The establishment of the surveillance plan will follow the guidelines for Health Surveillance NOHSC 7039: 1995 with a selected appropriate medical professional.

2.12.2 Asbestos

The discovering of Asbestos is considered a High Risk component of excavation whereby the risk can be managed by following the procedure below.

As part of the Risk Register, at the commencement of each project, the PE must assess the possibility of asbestos discovery on the project.

All personnel should be aware of the possibility of encountering asbestos particularly on sites that are being refurbished and where the original construction was completed prior to 1986. The majority of potential asbestos which will be encountered will be in the form of conduits and other pipelines or buried builders waste with ‘fibro sheets’. As of 1st July 2014 it is now mandatory for all personnel conducting construction occupations in the ACT to be trained in asbestos awareness so they can identify potential risks and inform the FP or PE to commence the asbestos removal procedure to remove the risk.

Robson Environmental has undertaken the “Asbestos Survey & Management Plan” for the project. The plan is to ensure on-site workers, visitors and members of the public receive the highest standard of health and safety in relation to in-situ and unexpected finds of asbestos.

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The plan includes the following:

- Emergency plan for risks in the removal zone
- Evidence of personnel conducting the work to have appropriate licence/competency
- Asbestos procedures for handling removal and disposal
- Adequate controls to prevent exposure to public
- Air monitoring procedure if applicable
- Provision to supply an clearance certificate once work is complete
- A health surveillance plan for removalists

The plan is aligned with undertaking the Asbestos Checklist (GLA-SF-2.2-11) to eliminate the hazard. A checklist is required for each individual encounter of asbestos. The checklist is to be complete prior to work re-commencing in the affected area.

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See Figure 1 below for a flow chart that needs to be used when managing asbestos risk:

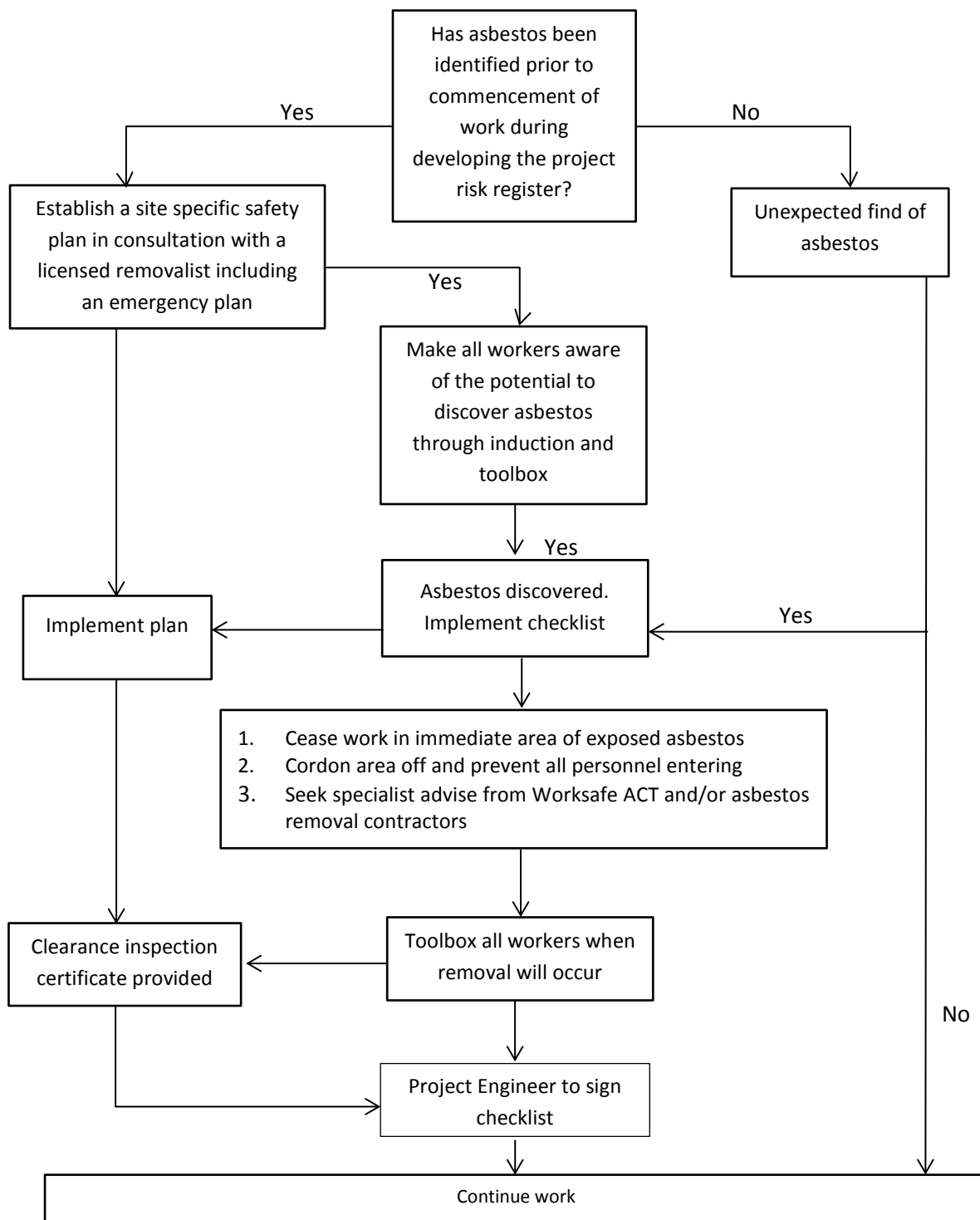


Figure 1 - Asbestos Flow Chart

If a worker has been exposed to dust derived from asbestos, an incident report must be completed and medical advice sort to determine whether a health surveillance plan is required. The establishment of the plan will follow the guidelines for health surveillance NOHSC 7039

2.12.3 Confined Spaces

Working in a confined space is considered a High Risk Activity whereby the risks can be managed by following the procedure below.

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A confined space means “an enclosed or partly enclosed space that is not intended or designed primarily for human occupancy, within which there is a risk of one or more of the following:

- a) An oxygen concentration outside the safe oxygen range.
- b) A concentration of airborne contaminant that may cause impairment, loss of consciousness or asphyxiation.
- c) A concentration of flammable airborne contaminant that may cause injury from fire or explosion.
- d) Engulfment in a stored free-flowing solid or a rising level of liquid that may cause suffocation or drowning.” (AS2865-2009 – Confined Spaces).

On determining that works need to be carried out in a confined space:

1. Project Engineer is to organize the appropriate personnel to manage and undertake the confined space work.
 - a. Work within a confined space is to be carried out by competent personnel only. Guideline ACT competent personnel are trained in confined space.
 - b. Guideline ACT maintains a confined space competent work force across all levels to manage and undertake confined space work.
 - c. Confined space work undertaken through permit system and risk assessment is considered to maintain competency between formal training. This can be monitored through the entry permit and competency folder.
2. The confined space work is to be undertaken using the Confined Space Entry Permit (GLA-SF-2.2-12).

When confined spaces are identified on a project, the documented emergency procedure on the Confined Space Entry Permit (GLA-SF-2.2-12) shall be communicated to all personnel involved in the confined space work and signed off under the workers acknowledgement on the permit. This satisfies the emergency response requirement for the project.

2.12.4 Hot Works

Hot works are considered a High Risk Activity whereby the risk can be managed by following the procedure below:

When carrying out hot works i.e. welding with oxy & acetylene, cutting of steel (including cutting with a disc) the Hot Work Permit (Form GLA-SF-2.2-13) must be filled out prior to works commencing. This is to ensure that checks are done to confirm that the area is safe and that the works will not produce an uncontrolled fire. Once the Hot Works have finished, it is important to complete the Hot Works Permit to ensure that no hazards are left behind as a result of the works.

2.12.5 Pre-excavation

Excavation is considered high risk, in particular the striking of existing services.

Before any work can commence onsite, the location of existing services must be known and located. This requires the collection of Dial Before You Dig plans as well as looking at any Works as Executed information. Dial Before You Dig plans can be requested at the following site www.1100.com.au. Once the Dial Before You Dig Plans have been received, a Pre Excavation Checklist (Form GLA-SF-2.2-15) must be used to eliminate the risk of striking existing services.

It is critical the pre-excavation checklist is accurately completed at levels appropriate to the level of risk.

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Guideline ACT takes the issue of service strikes seriously, and as such has adopted a single strike policy in regard to not following the pre-excavation checklist completely. Termination will occur on the second strike.

All excavations which cannot be battered or benched at a 1:1 ratio over 1.5m in depth shall be shored with proprietary modular shoring equipment. (The shoring system is to be designed and verified by suitably qualified professional.) Where excavations will occur adjacent to surrounding structures and will be within the 1:1 zone of influence of the structures support system, seek advice from a Geotechnical Engineer for suitable control measures and include relevant documentation i.e. Project Risk Register, SWMS- Alternatively a geotechnical engineer is to verify the excavation as safe for the intended use.

2.12.6 Noise Exposure

The WHSM is to undertake or arrange for the measurement and assessment of noise emissions and exposure on a project basis, at least once per project. The measurements shall be recorded on Noise Measurement Record Form GLA-SF-2.2-22.

The results of the records shall be discussed with the consultative committee to review exposure and whether current controls are effective.

All employees will undergo an audiometric hearing test within 3 months of commencing employment.

Selected employees frequently exposed to noise levels above the peak and weighted average will undergo monitoring testing every 2 years of continuous employment.

2.12.7 Other Activities

All construction activities carry an element of risk. Generic SWMS and Hazard and Risk Assessments have been prepared to cover most “every day” activities and are listed in the SWMS Register (refer to the Hazard Risk & SWMS Preparation Procedure GLA-SP-2.1.2).

Other “one off” high risk activities e.g. bridge construction over an existing road, will require a specific SWMS, developed from the hazards identified in the project risk register (refer to the Risk Assessment & SWMS Preparation Procedure GLA-SP-2.1.2).

2.13 Traffic Management

The following Traffic Management procedure was extracted from Guideline ACT’s Business Management System Procedure GLA-SP-2.2.5.

Temporary Traffic Management Plans (TTMs) will be required for most projects where there is a need to obstruct traffic or for entering and exiting the site.

The following steps are required when preparing, implementing, monitoring, maintaining and amending TTM plans:

- Preparation:
Carry out a site specific risk assessment for the project to identify the controls required to manage public, plant and person movements. Record the assessment via the project risk register.

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TTM plans are to be prepared to conform to the Australian Standards and any project specific requirements, usually by a suitably qualified external professional;

- **Review:**
The plans are then reviewed for suitability by the PE;
- **Endorsement:**
The plans are then submitted to the Superintendent for endorsement;
- **Approval:**
Submit the plans to the regulatory authority for approval
No TTM is to be put in place unless it is approved by the regulatory authority.
- **Implement:**
The TTM is then set up as per the approved plan and Australian Standard reflecting a high standard of quality. The PE is to check the implemented plan is as per the approved drawing and record the check on the Traffic Management Check Record form (GLA-SF-2.2-14)
- **Monitor & Maintain:**
TTMs must be checked on a daily basis and recorded on the Traffic Management Check Record form (GLA-SF-2.2-14).

Signs which are to be covered at certain times, must be covered properly i.e. don't use plastic or hessian. Devices must reflect a high standard of quality.

- **Amendment:**

If TTMs need to be amended, they must be approved by the regulatory authority prior to amending it. If the amendment is as a result of unforeseen safety requirement, effect the change; inform the Superintendent and regulatory authority in writing within 24hrs, and arrange for the TTM plan to be amended to match the change immediately.

The Temporary Traffic Management (TTM) plan for this project can be found in **Appendix G**.

2.14 Operators, Plant & Equipment

2.14.1 Competency of Operators

Once an employee is selected to be a trainee operator for a particular item of plant, the following procedure must be followed.

An initial induction must take place including:

1. Plant introduction: maintenance checks, greasing & lubricating points, greasing & lubricating procedure, ensure plant operation and maintenance manual is available in plant or copy given to trainee;
2. Introduction to basic operation: pre-start check, start up/ shut down procedure, warm up/ warm down steps, emergency stop (if applicable), braking system, range of movement & swing, modes of operation;
3. SWMS induction;
4. Competency criteria provided along with competency folder sheets to fill out for the log book.

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The personnel that must be present for the initial induction: Work Health & Safety Manager (WHSM), Workshop Manager, Experienced Operator & Trainee.

As the trainee gains experience:

- Trainee must maintain a logbook for a minimum of 3 months for all load shifting plant, with exception to a roller and trencher (min required 40hrs). The logbook must have daily entries and be signed off by the supervising operator or Foreperson in order to achieve competency;
- Trainee should identify different types of work activities in the logbook and refer to the assessment criteria to enable gaining relevant experience to apply for competency;
- The trainee is to learn how to safely plan their work and shift loads, through watching other operators, guidance from supervisors and reading & understanding the machine operating procedures.
- The supervisors duty is to assess the trainees current ability, and allocate appropriate duties that will not put the trainee or others at risk and to enable requests for help or assistance to gaining experience against the criteria;

Final competency assessment

- When the trainee believes they can meet all of the assessment criteria and the minimum time frame has expired, they can request an assessment;
- Assessment criteria shall be drawn from the following:
 - National certificate of competency assessment instruments for excavator, front end loader backhoe and skid steer
 - External RTO criteria if differs to above
 - Guideline internal developed assessments for roller and trencher
- A practical assessment will be carried out against the required criteria in the presence of a competent assessor from the following:
 - External RTO assessor, or
 - A minimum of two from the following; Workshop Manager, experienced supervisor, experienced competent operator, WHSM, Consultative Committee member, person deemed competent to assess for internal roller and trencher
- Upon successful completion of practical assessment, competency can be issued by the external RTO or WHSM or GM

The competency is recorded in the competency folder.

Competency evidence

Subcontractors and workers holding competency documentation achieved prior to 30 June 2011, are still acceptable forms of competency provided the person has not been out of the industry for a continual period of 2 years.

Documents of competency that will be accepted as evidence are:

- A Certificate of Competency issued under the National Certification System;
- A certificate, license or permit issued and recognized under a State or Territory scheme for authorizing persons to carry out work using such plant; or
- A Statement of Attainment issued by a Registered Training Organization for the successful completion of the appropriate unit of competency in a training package

Evidence of competency is to be recorded on the Site Induction Record Form GLA-SF-2.2-03.

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2.14.2 Plant & Equipment

Procurement

In procuring plant and equipment the following shall be taken into account

- WHS
- Conformance to Australian Standards
- Conformance to regulation requirements
- Is fit for purpose
- Environmental impacts, e.g. fuel consumption
- Expected life cycle

Only plant and equipment meeting the statutory standards and requirements will be used on project.

Plant Risk Assessment

A Plant Risk Assessment must be conducted for each item of plant as per the Plant Risk Assessment section in the Risk Assessment & SWMS Preparation procedure (GLA-SP-2.1.2).

Plant Induction

When an item of plant arrives on site a Plant Safety Checklist (Prior to Commencement) (GLA-SF-2.3-02) is to be completed prior to the plant commencing work.

Plant Daily Check

All plant on site (including site Utes) are to be inspected daily and recorded on the Plant & Vehicle Daily Checklist (GLA-SF-2.3-01) or an equivalent form supplied by a Subcontractor. The checklist is used to confirm the Plant's suitability in terms of safety on a daily basis and relay repair requirements to the Workshop. The forms that are used to check Guideline ACT equipment are sent to the office weekly for review, action and filing by the Workshop. Non Guideline ACT equipment forms are filed on site.

The GLA plant and vehicle check list is to be set out to allow for the specific checks of plant using the OEM of specific plant. Adequacy of the checklist is to be reviewed annually by the Workshop Manager and WHSM. This review to be recorded in the minutes of the BMS review meeting under plant item

Utilities or light vehicles GVM mass under 4500kg with an allocated drivers are exempt. Driver is responsibility to maintain the vehicle.

All plant that does not meet the minimum safety requirements shall not be used and must be "parked up" immediately. The Foreperson is to notify the Workshop Manager in the case of Guideline ACT equipment. The Workshop Manager will affect the necessary repairs.

No unauthorized use of Plant or Equipment.

Plant & Equipment Maintenance

A copy of the Operation & Maintenance Manual is kept either in the Plant or in the Site Office.

Note: A consolidated copy of the OEM's is available "Guideline ACT Plant operations and Safety instructions"

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Prior to commencing maintenance or repair, workshop staff must complete a Workshop job card/safety checklist, refer to form GLA-SF-2.3-05. Completed forms shall be filed in the head office.

A monthly service report is generated from hours and kilometers recorded on a monthly basis by the foreperson and compared to the services reports provided by the workshop. Completed monthly service reports are filed in the head office.

The Workshop Manager then arranges for machine servicing (including site utes) through the foreperson and completes the Machine Service Checklist (GLA-SF-2.3-04). The forms are filed in the head office. Service intervals shall be at approximately 250hrs or in accordance with intervals recommended by manufacturer.

Repairs to Guideline ACT equipment are carried out on site or in the Workshop as required based on priorities influenced by safety, workload and available resources. As required the Workshop Manager will discuss this with the MD.

Subcontractors to ensure plant is regularly maintained and shall be required to provide copies of current service records evidence when requested. This requirement is part of the procurement process of subcontractors and monitored through compliance checks.

Vehicle Servicing and Maintenance (for vehicles with an allocated driver)

The allocated driver is responsible to ensure that their vehicle is maintained and kept in a safe good clean condition.

The driver is to ensure the vehicle is serviced every 10,000km and is to liaise with the Workshop Manager to ensure this happens. Loan vehicles are available from the Workshop.

When a vehicle requires repair, liaise with the Workshop Manager to have it carried out.

The Workshop is to use the Vehicle Service Checklist (GLA-SF-2.3-03) for servicing vehicles, which is then filed in the Workshop.

Lifting Gear

At 6 monthly intervals, lifting gear such as chains and slings, are collected and brought into the workshop to be independently checked and tagged. A register of equipment is supplied and then made available via the Guideline ACT Intranet.

Site Lifting Procedures

If workers need to use chains or slings they must:

- Follow the dogging procedures for site lifting requirements kept in plant (such as excavator or backhoe) used for slinging loads. The labourer and operator must read and understand the process and then sign into the procedure. The procedure is designed to eliminate the need to make a judgment regarding the lift. Copies of these procedures are available on the Guideline ACT Intranet.

For any item required to make a judgment on the lift, or not covered in the site lifting requirements, a person with a high risk work Licence Class DG (Dogging) MUST be used.

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2.15 Retention of WHS Records

In addition to the Quality Management Plan Requirement in Section 4.10 – Management of Project Records (retaining the project records for a period of 7 years), the table below addresses the specific WHS Record Management Requirements as stipulated in the ACT WHS Act and Regulation:

Item No	Reference	Legislative Requirement	How Guideline ACT Complies
1	WHS Act s38	<i>keep a record of notifiable incidents for at least 5 years from the day the notice was given to the regulator</i>	If a Notifiable Incident occurs, the Notifiable Incident is filed in hard copy in Head Office so that it is easily accessible for the 5 year period as stipulated in the WHS Act.
2	WHS Reg s77(3)	<i>If a notifiable incident occurs in connection with a confined space permit or risk assessment, the assessment or permit must be kept for a min of 2 years after the incident occurs</i>	If a Notifiable Incident occurs in connection with a Confined Space Permit or Risk Assessment, the Confined Space entry permit or risk assessment is filed together with the Notifiable Incident Report in Head Office for the 2 year period as stipulated in the WHS Reg.
3	WHS Reg s162(3)	<i>If a notifiable incident occurs in connection with an electrical equipment risk assessment, the assessment must be kept for a min of 2 years after the incident occurs</i>	If a Notifiable Incident occurs in connection with an electrical equipment risk assessment, the assessment is filed together with the Notifiable Incident Report in Head Office for the 2 year period as stipulated in the WHS Reg.
4	WHS Reg s303(2)	<i>If a notifiable incident occurs in connection with High Risk Construction Work, the SWMS must be kept for a min of 2 years after the incident occurs</i>	If a Notifiable Incident occurs in connection with High Risk Construction Work, the SWMS is filed together with the Notifiable Incident Report in Head Office for the 2 year period as stipulated in the WHS Reg.
5	WHS Reg s304(6)	<i>If a notifiable incident occurs in connection with the excavation work to which the information relates—for the underground essential services information must be kept for at least 2 years after the incident occurs</i>	If a Notifiable Incident occurs in connection with High Risk Construction Work, the underground essential services information is filed together with the Notifiable Incident Report in Head Office for the 2 year period as stipulated in the WHS Reg.
6	WHS Reg s313(2)	<i>If a notifiable incident occurs in connection with the construction project to which the plan relates, the WHS Management Plan must be kept for a min of 2 years after the incident occurs</i>	If a Notifiable Incident occurs in connection with the construction project to which the plan relates, the WHS Management Plan is filed together with the Notifiable Incident Report in Head Office for the 2 year period as stipulated in the WHS Reg.

All of the above documentation is filed in Head Office to allow the information to remain easily accessible, as the rest of the Project Documentation is archived at the completion of the project.

Doc No.: QLA-QF-4.1-10	Revision 2 Draft	Page 2-42
Approved By: Managing Director	Date July 2015	

2.16 Special Project WHS Issues

- Chemical dosing plant will involve the interaction with harmful chemicals.

Doc No.: QLA-QF-4.1-10	Revision 2	Page 2-43
Approved By: Managing Director	Date July 2015	

Appendix 2

GLA Temporary Traffic Management Plan



Temporary Traffic Management Protocol

Googong Township IWC Project: Stage C Network

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Version / Date: v2-0 / July 2016

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Document Status

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John Hite		12/07/2016

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Appendices

Appendix 1	Traffic Control Plans (TCP)s
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1.0 Introduction

1.1 Context

This Traffic Management Protocol (TMP or Protocol) forms part of the Construction Environmental Management Plan (CEMP) for the Googong Township IWC Project Stage C Network.

Refer to Section 1 and Section 2 of the CEMP for additional detail on the scope of Stage C Network to which this TMP applies.

This TMP has been prepared to address the requirements of the Council's Conditions of Approval (CoA), the Statement of Commitments (SoC), submissions report, and all applicable legislation.

1.2 Background

The Stage C Network Review of Environmental Factors (REF) assessed the impacts of construction and operation of the Stage C Network West on traffic.

It was determined that the proposal would result in additional vehicle movements (both light and heavy vehicles) along local roads throughout the construction period. This impact is expected to be minor given the overall construction activities occurring within the Googong township.

The proposal would also include the construction of a temporary access point to the permanent reservoir site from Old Cooma Road. This would include building a southbound deceleration and acceleration lane along Old Cooma Road immediately adjacent to the permanent reservoir site to provide safe access. Consultation with Roads and Maritime would be undertaken regarding the design and construction of these lanes and the impacts to the operation of Old Cooma Road are expected to be minor. The permanent access point would be established through the Googong township once development of the adjacent areas has commenced.

1.3 Environmental Management System overview

The overall Environmental Management System for Stage C Network and approach to managing environmental impacts during construction is described throughout the CEMP.

This TTM forms part of the environmental management framework for Stage C Network, as described in Section 1.5.2 of the CEMP.

2.0 Purpose and objectives

2.1 Purpose

The purpose of this Protocol is to describe how Googong Township Proprietary Limited (GTPL) and the contractor will manage traffic and access during construction of Stage C Network.

This TTM is an overarching plan that establishes the procedures for work area or task specific traffic control plans (TCPs) to control and maintain safe and effective road traffic.

This Protocol also assists in ensuring that the construction of Stage C Network meets the environmental objectives and targets as defined in the CEMP.

2.2 Objectives

The key objective of the TTM is to ensure that impacts to traffic and access are minimised. To realise this objective, the following will be undertaken:

- Ensure appropriate controls and procedures are implemented during construction activities to avoid or minimise potential adverse impacts to traffic and access (refer Section 5.1).
- Ensure appropriate measures are implemented to address the relevant CoA and SoC, (refer Section 3.2 and Section 3.3).
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this Protocol.

3.0 Environmental requirements

3.1 Relevant legislation and guidelines

Section 3.1 of the CEMP identifies the legal and other requirements applicable to the IWC Project and the construction of Stage C Network. This section identifies the key legislation applicable to managing traffic and access.

3.1.1 Relevant guidelines

This Protocol has been prepared in accordance with the following:

- *AS1742.3 Traffic Control for Works on Roads (AS1742.3: 2009)*
- *Development Construction Specification C201 Control of Traffic (QCC, 2011)*

4.0 Environmental aspects and impacts

The following sections summarise existing traffic environment and the local road network identified in the environmental assessment. Identified impacts are then reviewed. The key reference documents are Section 6.1 of the REF.

4.1 Environmental aspects

4.1.1 Main roads and traffic flow

Old Cooma Road is a two lane (one in each direction) arterial road connecting Queanbeyan with townships to the south before connecting to the Monaro Highway. Old Cooma Road runs along the western boundary of the Googong township and includes a T-intersection with Googong Road. Old Cooma Road in the proposal location is posted at 100km per hour speed limit. It is a rural road with dirt shoulders and drains running parallel to the road. Old Cooma Road is under the control and authority of the NSW Roads and Maritime Service (RMS).

Googong Road runs north of the Googong township and connects at a T-intersection with Old Cooma Road to the west and the Googong Foreshores land to the east. A number of T-intersections connect to the south of Googong Road providing access into the Googong township. Googong Road currently is a semi rural road with minimal formal kerb and gutters along the length of the road. The majority of the road is dirt shoulders with table drains, however this would change with the ongoing development of the Googong township. The speed limit on Googong Road is 60km per hour. Googong Road is under the control and authority of QCC, however GTPL are managing the road on the behalf of QCC during development of the Googong township.

Currently there are no formal access points or roads leading to or within the Hill 800 proposal area. A dirt access track does run inside the fence on GTPL land parallel to Old Cooma Road.

Currently access into the WRP is via a formal driveway access from Googong Road. Parking for construction staff and vehicles is available within the WRP site.

Currently access to the interim reservoir site is via a formed dirt road from within the Googong township. Some informal parking space is available at the interim reservoir site.

No formal pedestrian access is provided throughout any of the proposal area sites.

Refer to Figure 4-1 for existing road and access arrangements.

Table 1 outlines traffic flows on these two main roads documented for the environmental assessment. Old Cooma Road has been divided into two parts (north and south of Googong Road) in relation to traffic flow statistics.

Table 1 Previous traffic flows in the vicinity of the IWC Project

Road	Date	Average weekday traffic (total vehicles)	Peak two-way traffic flow (vehicles/hr)	Percentage of heavy vehicles traffic
Old Cooma Road (south of Googong Road)	May 2005	2,120	244	5.7%
Old Cooma Road (north of Googong Road)	December 2006	2,537	265	5.7%
Googong Road	August 2004	260	29	9.5%

Since the environmental assessment, the traffic in the immediate area has changed. There have been increased vehicle movements associated with the construction of the Part 4 subdivision works and WRP. There will be some vehicle movements associated with the Part 4 subdivision works and/or Stage AB WRP works taking place at the same time as construction of Stage C Network.

4.1.2 Intersections

The intersection at Old Cooma Road and Googong Road is the only significant intersection in the vicinity and is being upgraded as part of the IWC Project.

The traffic volumes at this intersection are low in relation to the capacity of the intersection. Both the morning peak hour and afternoon peak hour flows are classified as level of service (LoS) A and B, respectively.

4.2 Construction activities

Key aspects of the construction of Stage C Network that could result in adverse impacts to traffic and access include:

- Increase in vehicular use of the existing road network.
- Access for construction vehicles off Old Cooma Road.

4.3 Traffic and access impacts

Any oversized and over mass loads will be transported in accordance with RMS guidelines. A permit will be sought from RMS' Special Permits Unit in Glen Innes (phone 1300 656 371) or directly from NHVR, as determined by the contractor.

4.3.1.1 Access routes

Construction vehicles would access the various construction areas via three separate routes, including:

- The WRP – access would be via the driveway access off Googong Road (refer to Figure 4-2).
- Hill 800 reservoir site – access would be via the temporary access road and dedicated southbound deceleration and acceleration turn lanes established on Old Cooma Road as shown in Figure 4-3.
- The interim reservoir site – access to this site would be via the existing dirt access road to the site via the Googong township.

It is expected that construction traffic movements generated throughout construction would have a minor impact on the operation of the local road network. This is primarily due to the low number of vehicle movements required, three separate access points and the staging of construction activities.

The temporary access turn lanes established on Old Cooma Road to access the permanent reservoir site would be sufficient to provide for trucks slowing down and turning at 100km/h speed limit. This would minimise impacts on through traffic flow along Old Cooma Road. This access point would remain until a permanent access point is established as part of the adjacent neighbourhood of the Googong township development currently planned in 2018.

No impacts to residential property access or pedestrian access are expected as a result of the proposal.

Construction haul routes and heavy vehicle routes will be developed by the contractor and identified in relevant TCPs. Where possible, routes will be developed to minimise impacts on noise and amenity of nearby residents.

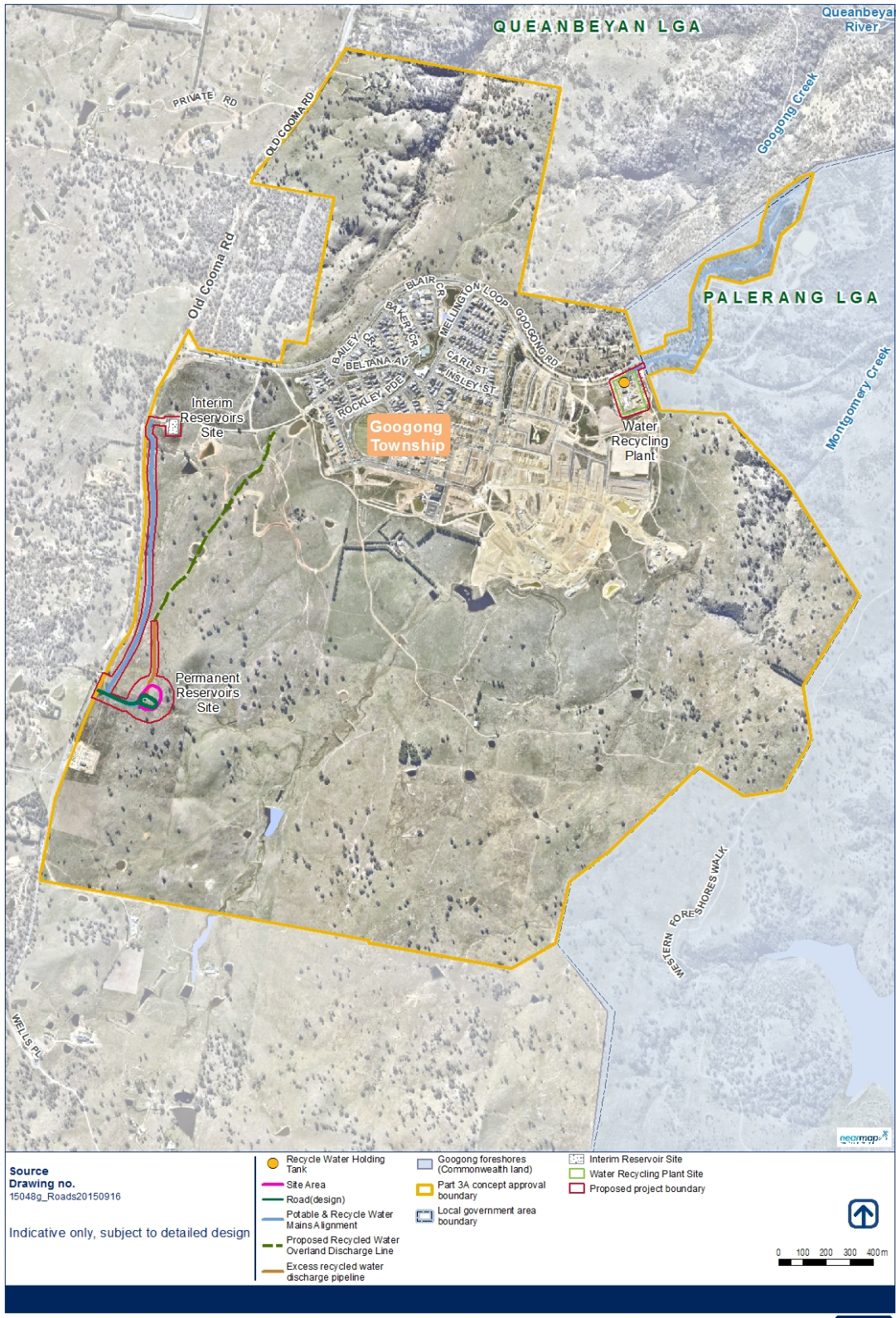


FIGURE 4-1 EXISTING ROAD AND ACCESS ARRANGEMENTS FOR THE PROPOSAL AREA

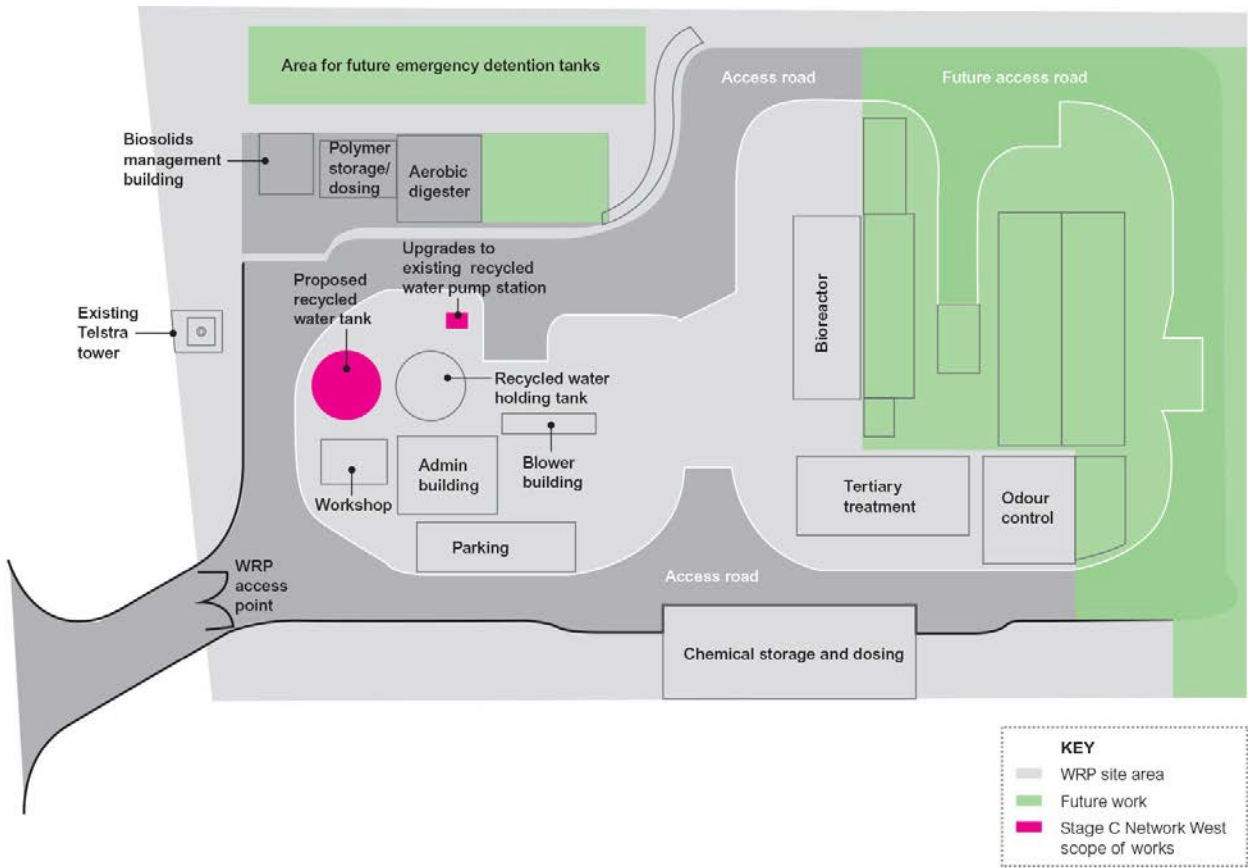


Figure 4-2 Water Recycling Plant layout – Stage C Network West works

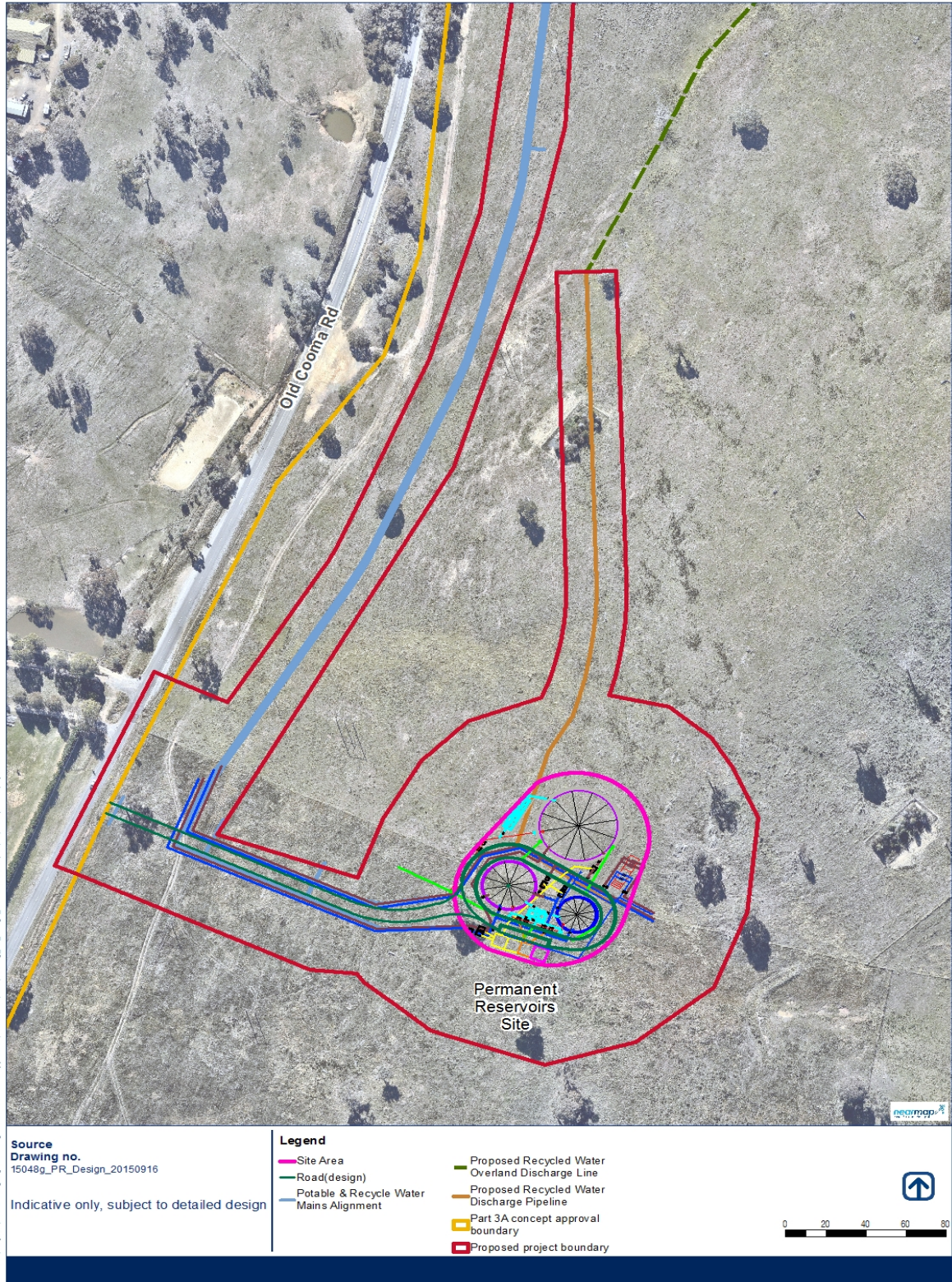


FIGURE 4-3 INDICATIVE ACCESS ROAD DESIGN TO PERMANENT RESERVOIR SITE

4.3.1.2 Traffic generation

Throughout construction there will be increases in vehicle movements to, from and throughout the proposal area. These will change dependent on the stage and progress of construction activities. Construction vehicle activities would include:

- At initial set up stage – large construction plant and equipment would be delivered to the construction site using flatbed trucks, articulated trucks and low loaders up to 25 metres in length. Where feasible construction plant will be left on-site for the duration of use in order to minimise impacts to the local road network.
- Throughout construction at the WRP – vehicle movements would predominantly involve delivery of equipment and materials and staff accessing the site.
- Throughout construction at the permanent reservoirs site (including pipework between the permanent reservoirs site and the interim reservoir sites) – Peak heavy vehicle traffic movements are likely to occur during excavation and construction of the internal access roads (including the temporary access road from Old Cooma Road) and during concrete pours for the reservoir foundations. Delivery of other equipment and materials would also be required as well as construction staff accessing the site.
- Demolition and restoration of the interim reservoirs site – Truck movements to bring in plant and equipment for the demolition of the site and then additional truck movements to remove waste material from the site. Construction staff accessing the site would also be required.
- Completion of construction – large construction plant would be removed from the site.

Table 2 outlines the estimated number of vehicle movements per day throughout construction. These vehicle movements would not all be undertaken at the same time as construction would be progressive. In addition, the vehicles would be accessing different areas of the proposal area, reducing the cumulative traffic impacts of construction.

Table 2 Peak construction vehicle movements estimated per day

Construction activity	Peak trips per day	Construction activity
Set up/mobilisation	10	Delivery of plant and amenities to site
Earthworks	20	Fuel and materials delivery
Concrete pouring	50	Concrete truck deliveries for reservoir foundation pours
Roadworks	20	Delivery of road base materials
Mechanical/electrical works	10	Delivery and installation of reservoir and booster pump plant and equipment
Removal of waste	10	Demolition of interim reservoir site
Construction staff	20	Construction staff accessing the site

4.3.1.3 [Future impacts on main roads](#)

During operation, access to the permanent reservoirs site would be via the temporary access road established during construction. This is a temporary measure and a permanent access road to the site would be built at a later stage as further details about the surrounding development become available. The construction of this permanent access road would be subject to a separate environmental assessment as part of the next stage of the Googong township urban development.

Vehicle movements to and from the permanent reservoirs site would be limited to ongoing maintenance and service operations. The site will operate as an unmanned site. These are expected to be minor (an average of between 1–5 movements per day) and are unlikely to impact on the ongoing operation of the local road network.

The proposal is not expected to increase the number of operation vehicle movements to and from the WRP. The ongoing maintenance of the additional tank at this facility as part of this proposal would be managed as part of the overall facility management.

4.3.1.4 [Potential impacts on access to properties](#)

Access to properties would generally be maintained during construction of Stage C Network and it is not anticipated that the property access to private residence would be adversely affected given the remote location of Stage C Network from existing properties. However if temporary alterations to access are required, arrangements will be negotiated with relevant landowners (refer Table 3 (T10, T11)). The community will be notified of any traffic alterations prior to commencement of said changes.

4.3.1.5 [Construction traffic noise](#)

Construction traffic noise impacts from vehicle movements to and from the construction site are covered in the Noise and Vibration Management Plan (refer Appendix 12 of CEMP).

5.0 Environmental control measures

5.1 Traffic and access mitigation and management measures

A range of environmental requirements and control measures are identified in the various environmental documents, including the CoA, SoC. Specific measures and requirements to address impacts on traffic and access are outlined in Table 4. Responsibilities have been assigned to roles that GTPL considers will be required by the contractor. However the contractor will be responsible for confirming roles prior to the commencement of construction.

Table 3 Traffic mitigation measures

ID	Measure	When to implement	Reference	Responsibility
T1	All personnel will be required to attend the project induction and will receive ongoing training via toolbox talks regarding their responsibilities related to traffic management and access.	Prior to Construction		Foreman and Project engineer
T2	A road dilapidation survey will be carried out prior to the commencement of construction. The survey will include as a minimum Googong Road and Old Cooma Road to be used for construction access. Dilapidation surveys will be carried out in consultation with QPRC and RMS (if relevant). Dilapidation surveys will document the current condition of roads through photographic and written reports, or similar.	Prior to construction		GTPL Assistant Project Engineer
T3	Prior to construction, individual TTMs will be developed for each specific section of works. These plans will show the specifics of the proposed works and individual traffic controls for the site. TTMs will further describe the implementation of the measures prescribed by this TMP on a site and activity specific basis.	Prior to construction, construction	SoC C1	Project Engineer
T4	The contractor will obtain a road occupancy licence from the relevant road authority (local council/RMS) as required by Section 138 of the <i>Roads Act 1993</i> .	Construction		Project engineer
T5	Construction haul routes and heavy vehicle routes will be developed by the contractor and identified in relevant TCPs. Where possible, routes will be developed to minimise impacts on noise and amenity of nearby residents. Any oversized and over mass loads will be transported in accordance with RMS guidelines. A permit will be sought from RMS' Special Permits Unit in Glen Innes (phone 1300 656 371) or directly from NHVR, as determined by the contractor.	Construction	SoC C3 SoC C6	Project engineer
T6	Deliveries will be scheduled to occur within approved work hours (7.00am to 6.00pm Monday to Friday and 8.00am to 1.00pm on Saturday) to minimise impact on amenity and peak residential access time.	Construction	SoC C3	Project engineer
T9	The contractor will notify councils, property owners and the local community of any potential loss of or disruption to access to properties, roads and/or pathways. Details of notification will be provided to GTPL for inclusion in the stakeholder database.	Construction	SoC C4	Project engineer

ID	Measure	When to implement	Reference	Responsibility
T10	Safe and convenient passage for vehicles, pedestrians and stock to and from side roads and property accesses to the roadway will be maintained or alternative arrangements made following consultation with the affected community. If required, appropriate temporary measures – to either provide alternative access or to reinstate access at the end of each workday – will be negotiated with relevant parties. The details for maintaining access will be provided on individual TTMs.	Construction	SoC C4	Project engineer
T11	If required, posted speed limits will be reduced on the road network to comply with work safety requirements and enhance road safety through temporary construction zones that impact on traffic flows. QCC and/or Palerang Council will be consulted prior to installation of any speed limit changes on local roads. Consultation with NSW Police Service will be undertaken where required to determine the strategies to enforce these speed restrictions through work sites.	Construction		Project engineer
T12	Traffic control will be in accordance with AS1742.3 and the Specification 201: Control of Traffic Design (QCC, 2011).	Construction		Project engineer
T13	Directional signposting, driver information signposting and variable message signs to provide advance warning of changes to traffic conditions will be erected to minimise disruption to traffic and removed when no longer required.	Construction	SoC C9	Project engineer
T14	The Stage C Network site will be fenced as necessary to provide security and delineate the area of construction at the reservoir site to prevent unauthorised pedestrian access and to enhance pedestrian safety.	Construction	SoC C7	Project engineer
T15	Any damage to local roads (e.g. Old Cooma Road) that poses a potential safety impact and is attributable to the construction of the Stage C Network will be repaired as soon as possible.	Construction		Project engineer
T16	GTPL will ensure there is effective communications between any other contractors delivering sections of the IWC Project and relevant authorities to allow the identification of potential cumulative impacts from other developments. In the event of cumulative impacts from construction traffic generated by other developments, GTPL will communicate with the relevant developers or authority to identify any possible ways of minimising impacts. This may include coordination of high traffic events, or scheduling to minimise overall impacts.	Construction		GTPL Assistant Project Director Construction Manager
T17	The contractor should identify opportunities to maximise vehicle use efficiency to reduce the number of vehicle trips, e.g. through car pooling. Fuel efficient and low emission vehicles will be utilised where practicable.	Construction		Project engineer
T18	Parking areas will be allocated during Site Establishment ensuring construction staff and delivery vehicles do not park in public parking areas where supply is limited as well as providing ample space for delivery of construction plant and machinery..	Construction	SoC C5	Project engineer
T19	Location of onsite parking will be strategically located so that construction plant, machinery and vehicle	Construction	SoC C10	Project engineer

ID	Measure	When to implement	Reference	Responsibility
	parking is clear from any public or sensitive viewing areas			
T20	<p>At the completion of construction of Stage C of the IWC Project, the condition of roads utilised for the construction works will be reviewed in consultation with QPRCil and RMS (if relevant).</p> <p>Road restoration measures and nominated timeframes to repair roads will be developed in consultation with the relevant road authority. The timeframe for repair work will be developed with consideration of potential future impacts. GTPL will ultimately bear the cost of any repair work attributable to construction of Stage C.</p>	Post Construction		GTPL Assistant Project Engineer

6.0 Compliance management

6.1 Roles and responsibilities

The project team's roles and responsibilities are outlined in Section 4.1 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 5 of this Protocol.

6.2 Training

All personnel working on site will undergo site induction training relating to traffic and access issues. The induction training will address elements related to traffic and access management including:

- Construction haul routes.
- Approved work hours.
- Maintenance of property access.
- Appropriate driver behaviour.

Further details regarding induction and training are outlined in Section 5 of the CEMP.

6.3 Inspections

The Project Engineer or Foreman will undertake weekly inspections including an evaluation of traffic and access management and mitigation measures. This will include auditing of construction activities to ensure property access and pedestrian/cyclist access is maintained. These inspections will be documented on the weekly checklist.

Requirements and responsibilities in relation to inspections are documented in Section 8.1 of the CEMP.

6.4 Auditing

Internal Audits will be undertaken to assess the effectiveness of environmental controls, compliance with this Plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 8.4 of the CEMP.

6.5 Reporting

Results and outcomes of inspections (namely non-compliances), monitoring and auditing will be reported internally on a monthly basis as part of the monthly environmental report. Reporting requirements and responsibilities are documented in Section 8.5 of the CEMP.

7.0 Review and improvement

7.1 Non-conformity, corrective and preventative actions

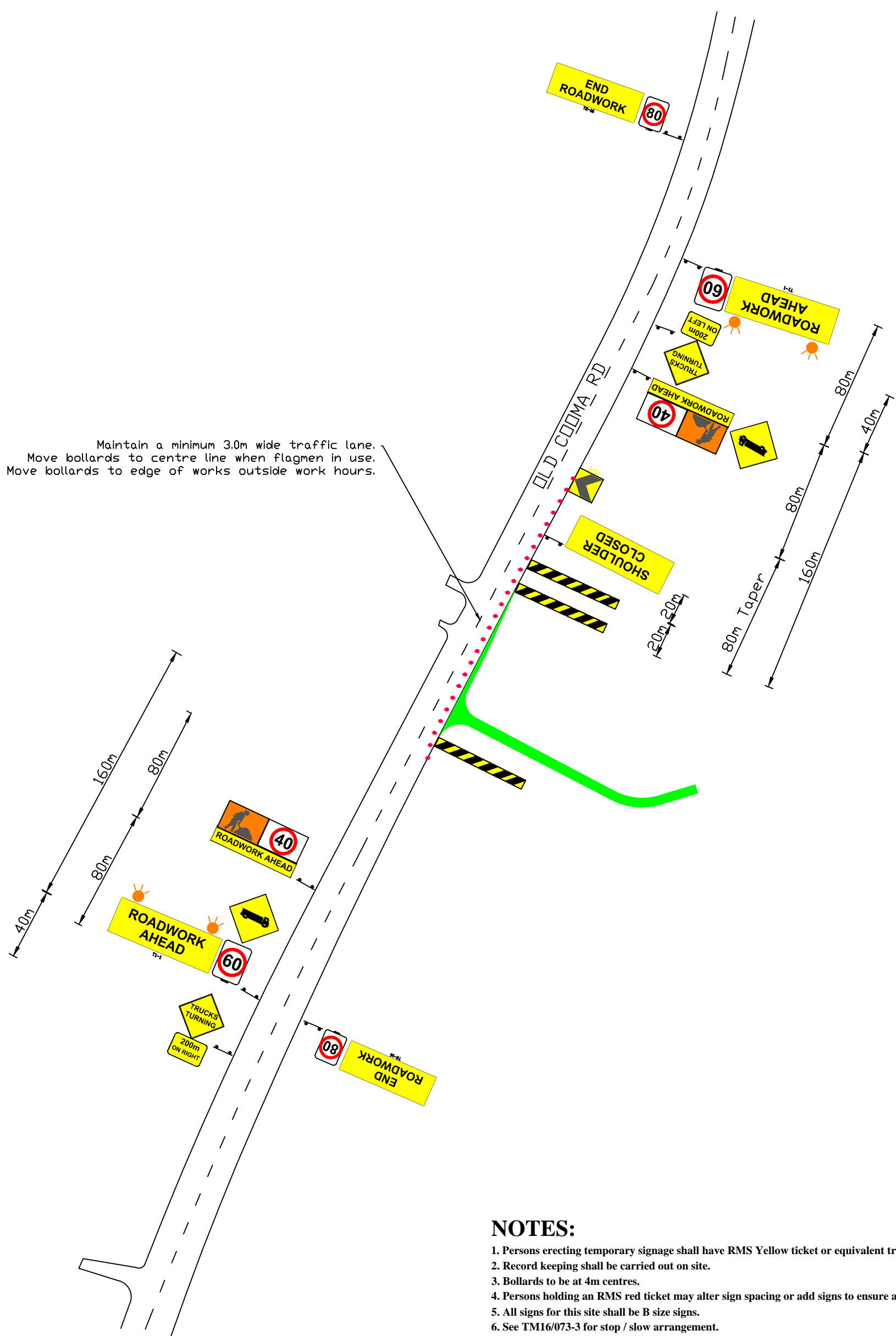
A non-conformance is an action or omission that does not conform with the requirements of this TMP or any legal and other requirements. Any member of the project team can identify a non-conformance or opportunity for improvement. Section 8.3 of the CEMP identifies the process for identifying, reporting, recoding and reviewing non-conformances. This will ensure continual improvement.

7.2 Management plan update and amendment

The processes described in Section 7 and Section 8 of the CEMP (relating to incidents, inspections, monitoring and auditing) may result in the need to update this TMP. This will occur as needed.

Appendix 1

Traffic control Plans



NOTES:

1. Persons erecting temporary signage shall have RMS Yellow ticket or equivalent training.
2. Record keeping shall be carried out on site.
3. Bollards to be at 4m centres.
4. Persons holding an RMS red ticket may alter sign spacing or add signs to ensure a safe work site.
5. All signs for this site shall be B size signs.
6. See TM16/073-3 for stop / slow arrangement.

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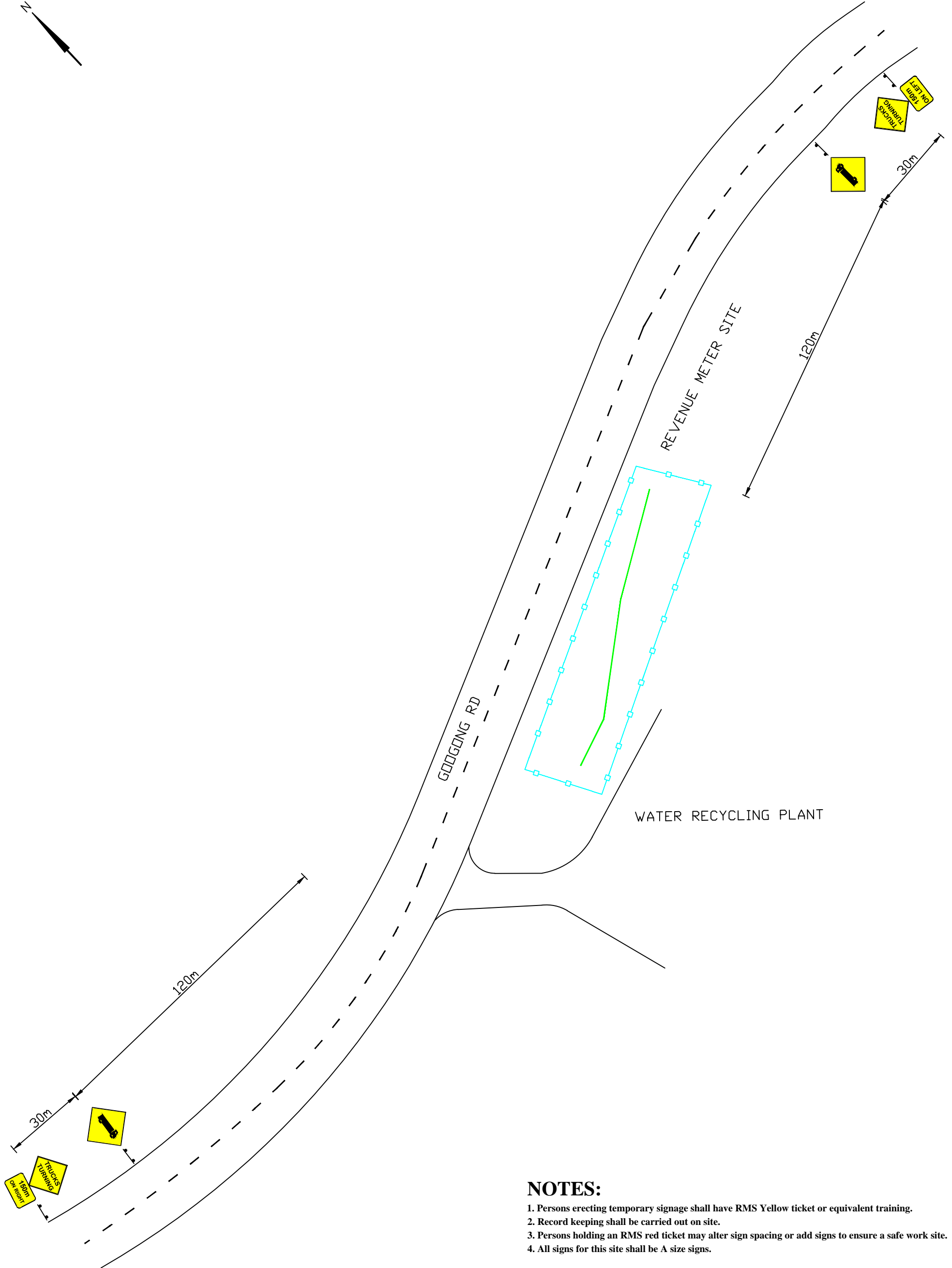
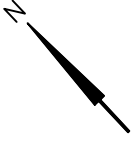
Drawn: A. Morton	Designed:	Approved:	Scale: NTS	Date: 27/6/16
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Endorsed by: RMS Ticket: 20531177

Title:
**ACCESS ROAD CONSTRUCTION
 OLD COOMA RD
 GOOGONG**

Client:

Temporary Traffic Management
TM16/073-1



NOTES:

1. Persons erecting temporary signage shall have RMS Yellow ticket or equivalent training.
2. Record keeping shall be carried out on site.
3. Persons holding an RMS red ticket may alter sign spacing or add signs to ensure a safe work site.
4. All signs for this site shall be A size signs.

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Drawn: A. Morton	Designed:	Approved:	Scale: NTS	Date: 27/6/16
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Endorsed by: RMS Ticket: 20531177

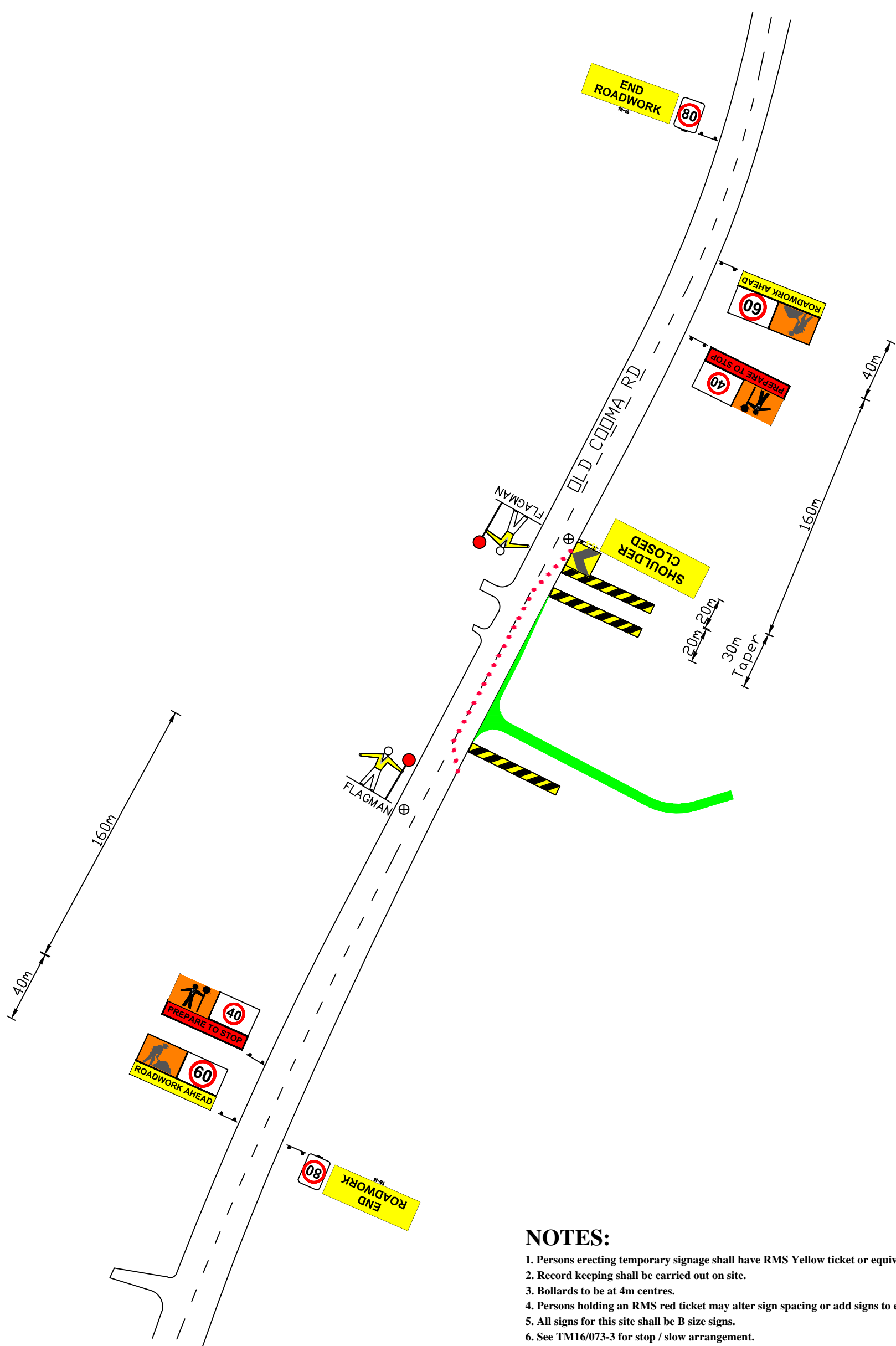
Title:
 RISING MAIN CONSTRUCTION
 GOOGONG RD
 GOOGONG

Client:



Temporary Traffic Management

TM16/073-2



NOTES:

1. Persons erecting temporary signage shall have RMS Yellow ticket or equivalent training.
2. Record keeping shall be carried out on site.
3. Bollards to be at 4m centres.
4. Persons holding an RMS red ticket may alter sign spacing or add signs to ensure a safe work site.
5. All signs for this site shall be B size signs.
6. See TM16/073-3 for stop / slow arrangement.

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Drawn:	Designed:	Approved:	Scale:	Date:
A. Morton			NTS	27/6/16

Endorsed by: RMS Ticket: 20531177

Title:
 ACCESS ROAD CONSTRUCTION
 OLD COOMA RD
 GOOGONG
 STOP / SLOW ARRANGEMENT

Client:


Temporary Traffic Management
 TM16/073-3

Appendix 3

Waste and Resource Management Plan



Waste and Resource Management Plan

Googong Township IWC Project: Stage C Network

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Version / Date: v2-0 / July 2016

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2.0	Draft for Submission	JH	BN	12/07/2016

Approval for Issue

Name	Signature	Date
John Hite		12/07/2016

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Appendix 1 Waste Classification Procedure

1.0 PRINCIPLES

The construction will use the following waste management principles, in order of priority:

1. avoid the use of excess materials and production of waste,
2. reuse waste materials (such as off cuts) on site where possible,
3. recycle waste, and
4. dispose of waste correctly.



REDUCTION RE-USE RECYCLING RECOVERY DISPOSAL

When deciding how to minimise waste management impacts, consider the following:

- will construction generate surplus material which can be recycled?
- will construction generate waste material which can be disposed on site?
- will construction generate waste material which will have to be disposed off-site?
- will site personnel generate litter or rubbish

2.0 WASTE MANAGEMENT PLAN

The waste management plan involves three major steps:

1. Estimating the type and quantity of waste generated on site;
 2. Specifying whether the waste is;
 - reused on site;
 - reused or recycled offsite; or
 - disposed of to landfill.
 3. Identifying who is responsible for recycling or landfilling.
- This Plan is summarised in Attachment A.

Effluent from the amenities for which Guideline ACT is responsible, will be discharged into the local sewerage system, where available. Otherwise, septic tanks and portable self-contained toilets of suitable capacity may be used subject to acceptable arrangements for disposal of the effluent. Pit toilets are not to be used.

Littering or dumping of unwanted waste or disposal of surplus construction materials or permitting such activities on any land on or around the site, is not permitted.

Set up skip bins or other appropriate receptacles to contain waste materials, litter and spoil. Provide separate bins for recyclable and non-recyclable material, dispose of their contents off-site at a suitable waste disposal location on a regular basis. Chemical, fuel and lubricant containers, solid and liquid wastes must be disposed of in accordance with EPA or local requirements.

Green wastes shall be mulched for re-use (when appropriate) or taken to a composting facility.

3.0 Legislation and Contacts

3.1 Protection of the Environment Operations Act 1997 (POEO Act)

The POEO Act is the key piece of environment protection legislation, and is administered by the Environment Protection Agency (EPA). Construction of Stage C Network will be undertaken in accordance with the POEO Act, which covers a range of environmental offences including the regulation and enforcement of pollution control in NSW. Specifically Part 5.6 of the POEO Act identifies mechanisms for preventing environmental degradation including pollution prevention, cleaner production, reduction in discharge levels likely to cause harm to the environment, recycling and progressive environmental improvement.

A section 143 notice under the POEO Act enables the disposal of waste to private properties which are not licensed waste facilities, such as Virgin Excavated Natural Material (VENM).

3.2 Contact

- Environment Protection Authority 131 555

4.0 Management and Mitigation

4.1 Potential impacts

Waste streams from construction activities will vary depending on the construction activities being undertaken at any one time. General expected waste streams would include:

Vegetation waste from clearing and stripping activities – estimated 1600m²
Excess spoil from excavation – an estimated 9,600m³ of primarily virgin excess spoil (refer to section 6.8)
Spent fuel and chemical containers
Packaging waste from delivery of construction materials and plant and equipment
General construction waste such as excess concrete, formwork, pipe offcuts, cabling and wiring
Contaminated soil material caused by accidental fuel and chemical spills
General waste from site amenities including food waste, office waste and waste water
Disused environmental controls such as sediment fences, straw bales, gravel socks etc.

Generally waste to be produced would be in minimal quantities and would be disposed of at an appropriately licensed facility. It is not expected that any contaminated waste (except as a result of accidental spills) would be produced as a result of the proposed construction activities.

4.2 Waste management

The following Waste Management procedure was extracted from Guideline ACT's Business Management System Procedure GLA-EP-3.2.4.

A Waste Management Plan (GLA-EF-3.2-03) is to be drawn up at the commencement on site of the project between the Project Engineer (PE) and Systems Manager (SM). Refer to for this project's Waste Management Plan example.

The Waste Management Plan is to be communicated to staff via toolboxes.
The Waste Management Plan is to be maintained throughout the project construction period and the effectiveness of the Waste Management Plan is to be measured against it through audits.

4.3 Waste – Management and Mitigation Measures

Table 1 Management and Mitigation Measures

ID	Prior to construction	Reference	Responsibility
W1	All construction personnel will be made aware of the requirements of this Waste Management Plan through site inductions and toolbox talks.		Foreman & Project Engineer
W2	Communicate with the staff and discuss with the client's representative on reducing waste and the use of recycled material		Project Engineer
	During construction		Responsibility
W3	A waste register will be maintained throughout the duration of construction to record and monitor all wastes being generated by the works and transported from the site.		Foreman
W4	Separate recyclable materials from non-recyclable materials.		All Employees
W5	Non-recyclable materials are to be disposed of at an appropriate approved disposal centre (e.g. Mugga Lane Landfill).		Foreman
W6	Prior to disposal of waste at an offsite facility, it will be verified that the receiver is licensed to accept the waste.		Project Engineer
W7	Where possible, recycle building material at an appropriate recycling centre (i.e. ACT Concrete Recyclers, local landscape suppliers, and local scrap metal yards).		Foreman
W8	Green waste (excluding weeds or weed contaminated material) is to be mulched and used on site as mulch or recycled to a local landscape supplier.		Foreman
W9	The project site will be maintained in a clean and tidy condition, with all rubbish and litter placed into appropriate receptacles. There will be no storage of materials beyond construction boundaries.	SoC C8 SoC C72	All Employees
W10	Resource management hierarchy principles are to be followed: Avoid unnecessary resource consumption as a priority Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) Disposal is undertaken as a last resort at a licenced waste facility (In accordance with the Waste Avoidance and Resource Recovery Act 2011).	SoC C70	Foreman and Project Engineer
W11	Prior to disposal, non-recyclable liquid and non-liquid waste will be classified based on the Waste Classification Guidelines: Parts 1 and 2 (DECCW, 2010) and in accordance with the Waste Classification Procedure (refer Appendix 1). This procedure also represents the resource recovery and re-use strategy.		
	Post construction		Responsibility
W12	Construction site is to be left clean, uncontaminated and free of	SoC C71	Foreman &

	<p>stockpiles, litter or waste. Waste materials, other than (re-used) landscaped vegetation and/or tree mulch, is not to be left on site once the works are complete</p>		<p>Project Engineer</p>
--	--	--	-------------------------

WASTE MANAGEMENT PLAN EXAMPLE

Project Name	Project Number
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Waste Materials	Estimated quantity		Destination		
	Vol (m ³)	Mass (t)	On site (specify proposed reuse or recycling methods)	Off site (specify recycler and recycling outlet)	Disposal (specify landfill site)
Plastic, wrapping					
Cardboard packaging					
Bricks					
Timber and green waste					
Fencing materials					
Asphalt and bituminous surfacing					
Concrete, rubble, pipes, etc.					
Non-recyclable mixed waste, for disposal					
Topsoil					
Earthworks spoil					
Effluent					
Hazardous waste e.g adhesives, lubricants					

Appendix 1

Waste Classification Procedure

Step 1	
Can the waste be recycled?	Reuse, Recycling, Disposal options
<p>Some waste material can be recycled. This may include:</p> <ul style="list-style-type: none"> ▪ Steel. ▪ Cardboard/paper. ▪ Concrete. ▪ Plastic/glass. 	<p>Recyclable materials: If the material can be recycled, then it is to be segregated and stored separately for disposal in accordance with the relevant legislation and guidelines.</p>
Step 2	
Is the waste special waste?	Reuse, Recycling, Disposal options
<p>Special waste is defined as (1) Clinical and related waste, (2) asbestos waste, (3) waste tyres. Clinical/related waste is typically associated with medical/dental/pharmaceutical practice and is unlikely to be generated on site.</p> <p>NOTE: Asbestos waste means any waste that contains asbestos. Where asbestos is mixed with other waste to form asbestos waste, it is to be assessed in accordance with steps 3 to 7 below. Asbestos waste can only be disposed of at a waste facility that can lawfully receive asbestos and the other class of waste with which it is mixed (if any).</p> <p>If unsure that the waste is/is not special waste then contact the Environment Manager for further advice.</p>	<p>Special waste:</p> <p>If the waste is a special waste category then contact the Environment Manager.</p> <p>Note: Special waste must be disposed of at a facility licenced to take that classification of waste.</p> <p>Special waste must be transported by a licensed transporter. Evidence of appropriate disposal, including quantities, must be provided to the Environment Manager.</p>

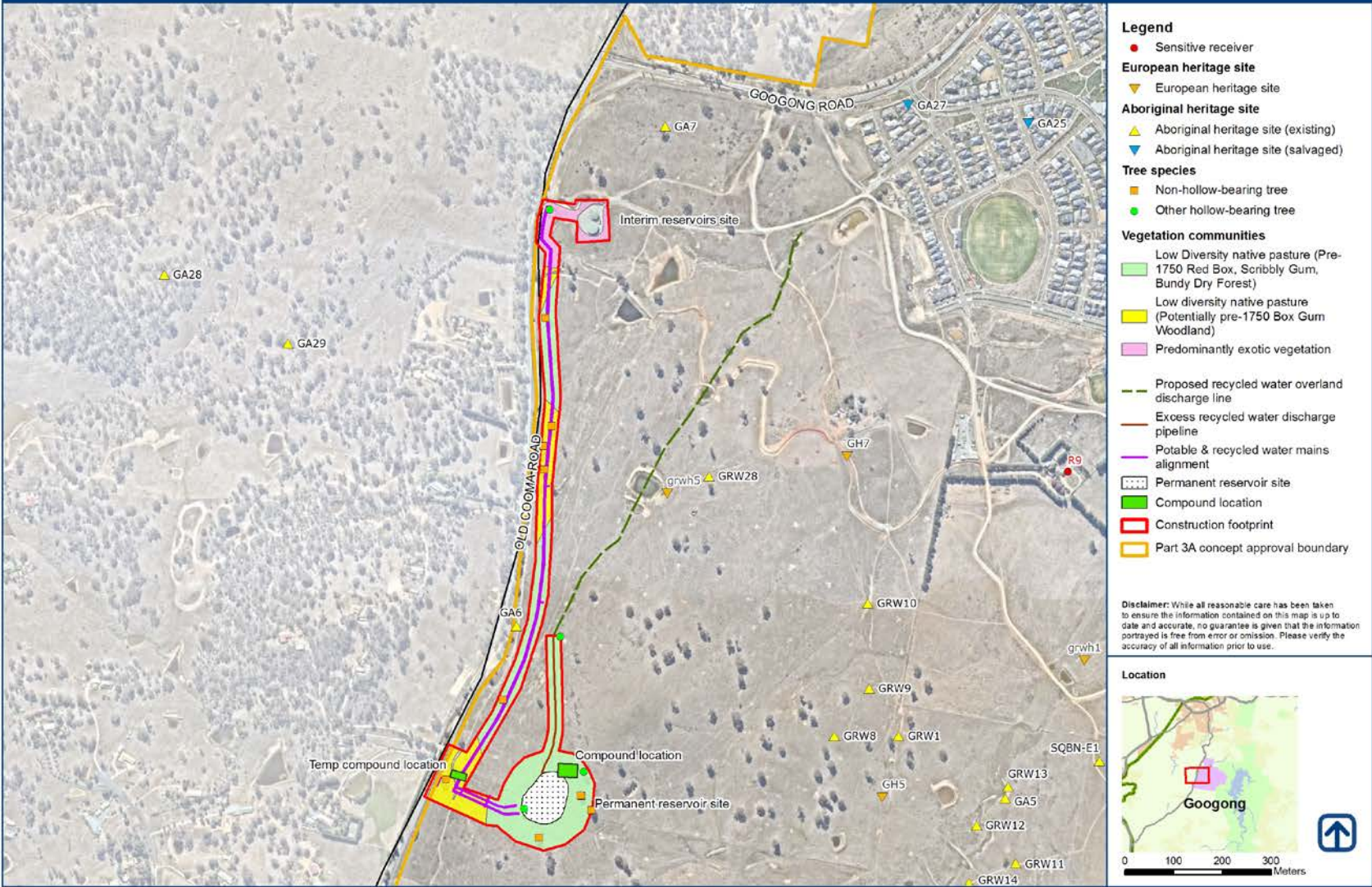
Step 3	
If the waste is not special waste (other than asbestos waste), establish whether the waste should be classified as liquid waste.	Reuse, Recycling, Disposal options
<p>According to the waste classification guidelines, liquid waste is any waste that:</p> <ul style="list-style-type: none"> ▪ Becomes free flowing at or below 60°C or when transported ▪ Is not generally able to be picked up by a spade or shovel. <p>Liquid wastes typically include oils, fuels and must be stored correctly prior to disposal or reuse. Refer 'Storing Liquid Waste' fact sheet at: (http://www.environment.nsw.gov.au/resources/waste/storewaste05249.pdf)</p> <p>If liquid waste is mixed with another waste type (i.e. hazardous or solid waste) and retains the characteristics of liquid waste, the waste remains liquid waste.</p> <p>If the waste is not a liquid waste then proceed to step 4.</p>	<p>Liquid Waste:</p> <p>If the waste is a liquid waste then contact the Environment Manager.</p> <p>Note: Liquid waste must be disposed of at a facility licenced to take liquid waste.</p> <p>Liquid waste must be transported by a licensed transporter. Evidence of appropriate disposal, including quantities, must be provided to the Environment Manager.</p>
Step 4	
Is the waste pre-classified by OEHL?	Reuse, Recycling, Disposal options
<p>The following wastes have been pre-classified in the OEHL guidelines:</p> <ul style="list-style-type: none"> ▪ Hazardous waste (see step 6) ▪ Restricted solid waste ▪ General solid waste (putrescible) ▪ General solid waste (non-putrescible). <p>Definitions of pre-classified wastes are included in the Waste Classification Guidelines (DECCW, 2009).</p> <p>General solid waste (non-putrescible) will typically comprise the waste generated on site. General solid waste (non-putrescible) can be classed into the following sub-classes:</p> <ul style="list-style-type: none"> ▪ Building and demolition waste ▪ Garden waste ▪ Virgin excavated natural material (VENM) and excavated natural material (ENM) ▪ Wood waste. <p>It is important to separate waste into its classifications and sub-classifications to maximise opportunities for reuse and recycling potential.</p>	<p>Hazardous waste: See Step 5.</p> <p>Restricted solid waste: If the waste is restricted solid waste then contact the Environment Manager. Restricted solid waste must be disposed of at a facility licensed to take that waste type.</p> <p>Restricted solid waste must be transported by a licensed transporter. Evidence of appropriate disposal, including quantities, must be provided to the Environment Manager.</p> <p>General solid waste (putrescible) and General solid waste (non-putrescible): General solid waste (putrescible) and General solid waste (non-putrescible) must be transported by a licensed transporter. Evidence of appropriate disposal, including quantities, must be provided to the Environment Manager.</p>
Step 5	
Does the waste possess hazardous characteristics?	Reuse, Recycling, Disposal options
<p>Waste must be classified as 'hazardous waste' if it is a dangerous good under Class 1, Class 2, Divisions 4.1, 4.2 and 4.3, Class 5, Division 6.1 or Class 8 as identified in the Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission 2008).</p> <p>Refer Waste Classification Guidelines (DECCW, 2009) for further detail on hazardous waste material classes.</p>	<p>Hazardous waste: If the waste is hazardous waste then contact the Environment Manager. Hazardous waste must be disposed of at a facility licensed to take that waste type.</p> <p>Hazardous waste must be transported by a licensed transporter. Evidence of appropriate disposal, including quantities, must be provided to the Environment Manager.</p>

Step 6	
Determining a waste's classification using chemical assessment?	Reuse, Recycling, Disposal options
<p>Where a material cannot be easily classified as:</p> <ul style="list-style-type: none"> ▪ a special, liquid, or pre-classified waste, or ▪ a waste possessing hazardous characteristics, or ▪ the composition of the material is not known, <p>it is to be chemically assessed to determine its classification. A licensed contractor will be engaged do this.</p>	<p>If the material cannot be easily classified, contact the Environment Manager.</p> <p>The Environment Manager will determine if waste classification using chemical assessment is required.</p> <p>The chemical assessment will be undertaken by a specialist consultant who will provide a waste classification for the material as well as Reuse/ Recycling/ Disposal options.</p>
Step 7	
Determining a waste's classification using chemical assessment?	Reuse, Recycling, Disposal options
<p>Where chemical assessment of a waste results in classification of the waste as general solid waste, further assessment may be undertaken to determine whether the waste can be classified as 'general solid waste (putrescible)' or 'general solid waste (non-putrescible)'.</p> <p>The activities identified in Step 4 shall be followed for material classified as 'general solid waste (putrescible)' or 'general solid waste (non-putrescible)'.</p>	<p>Refer Step 4.</p>

Appendix 4

Environmental constraints map

Stage C Network West Environmental Constraints Map (Reservoir Sites)

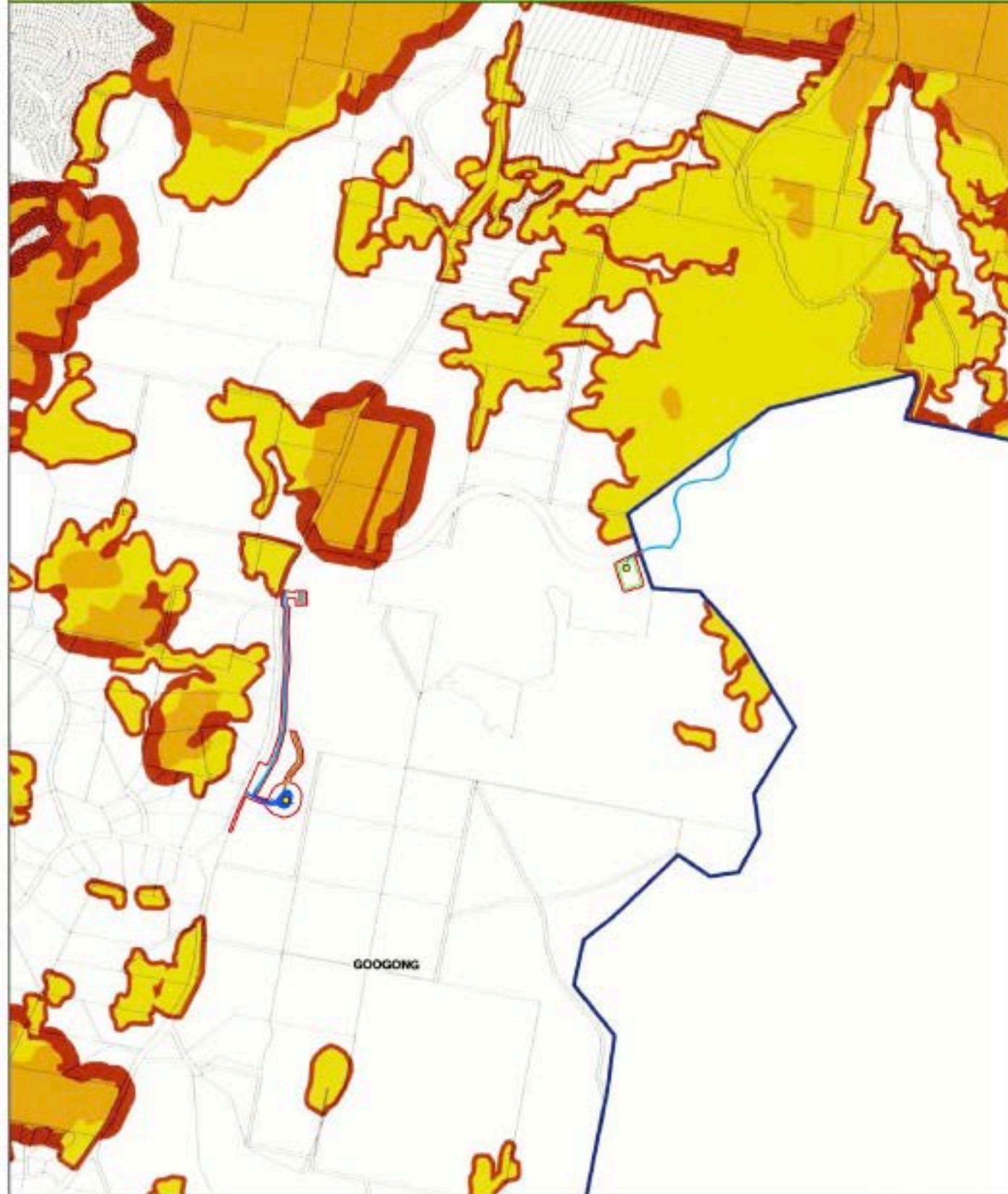


Source:
1. Aerial imagery from Nearmap (2016)



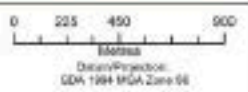
Source:
1. Aerial imagery from Nearmap (2016)

Bushfire Prone Land



- Legend**
- proposed project boundary
 - water recycling plant
 - recycle water holding tank
 - interim reservoir site
 - permanent reservoir site
 - water main
 - discharge

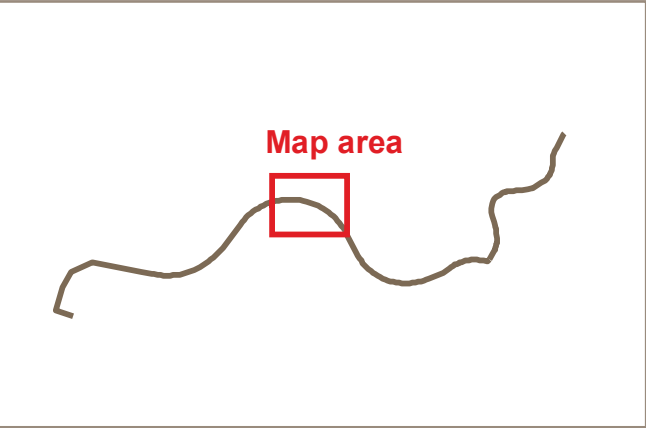
- Bushfire Prone Land**
- vegetation category 1
 - vegetation category 2
 - vegetation buffer
 - Queensbeyen LGA



Datum/Projection:
GDA 1984 MGA Zone 56

Appendix 5

Example Environmental Control Plan



Project contacts

Role	Contact details
Project manager	TBA
Construction manager	TBA
Superintendent	TBA
Environment manager	TBA

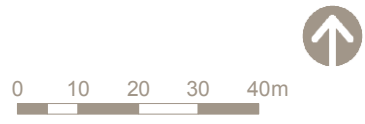
Emergency contacts

Organisation	Contact details
Fire/police/ambulance	000
EPA pollution line	131555
Community information line	TBA
WIRES	TBA

Source Brown Consulting
 Drawing no. 11122g_SPS1

Indicative only, subject to detailed design

- Pipeline**
- Potable water mains
- Sewage mains
- Construction site**
- ▭ Sediment fence
- ▭ Site boundary
- ➔ Access point
- ▨ Rumble grid (access point)
- ▨ Site amenities/storage
- ▨ Stockpile area
- ▨ Construction footprint
- Sensitive receiver**
- Residential
- Waterway**
- Watercourse
- Environmentally sensitive area (no go zone)**
- ⊗ Waterway
- ⊗ Vegetation



Appendix 6

Environmental Risk register

Introduction

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 C Network West.

The risk assessment focused on the following issues, as identified in the Review of Environmental Factors (REF):

- 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 9).
- Type of potential impact.
- Likelihood of occurrence (refer Table 10).

Table 9 Risk assessment consequence definitions

Consequence level	Definition
Extreme	<ul style="list-style-type: none"> ▪ Would result in a major prosecution under relevant environmental legislation. ▪ Would cause long-term and irreversible impacts.
Major	<ul style="list-style-type: none"> ▪ Would result in a fine or equivalent under relevant environmental legislation. ▪ Would cause medium-long-term, potentially irreversible impacts.
Moderate	<ul style="list-style-type: none"> ▪ Would result in a medium-term, reversible impact.
Minor	<ul style="list-style-type: none"> ▪ Would result in short-term, reversible impact.

Consequence level	Definition
Insignificant	<ul style="list-style-type: none"> Would not result in any perceptible impacts.

Table 10 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.

Table 11 Risk matrix

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

The risk rankings identified are documented in Table 11 and were used to develop the impact mitigation and management strategies for the CEMP and management plans and procedures.

Risk assessment results

Table 7 outlines the results from the environmental risk assessment by including the recognised risks and the associate risk rating before and after the implementation of the mitigation measures include in this CEMP and environmental management plans.

Table 12 Risk assessment results – before and after consideration of mitigation

Risk	Risk rating – before mitigation			Risk rating – after mitigation		
Water quality and hydrology						
Surface water quality impacts due to construction (dewatering, sediment runoff, chemical spills etc).	Likely	Minor	Significant	Unlikely	Minor	Low
Unforeseen impacts upon water quality in the Googong Dam catchment.	Rare	Moderate	Low	Rare	Moderate	Low
Soils						
Expansive soils that exist in the area may create stability issues during construction.	Unlikely	Minor	Low	Unlikely	Minor	Low
Contamination of land or soils due to chemical spills.	Possible	Minor	Moderate	Unlikely	Minor	Low
Increased soil erosion and potential for soil erosion due to disturbance of topsoil and loss of vegetation.	Possible	Minor	Moderate	Unlikely	Minor	Low
Failure to adequately identify contaminated soils results in impacts on surrounding environment once exposed.	Unlikely	Major	Moderate	Unlikely	Minor	Low
Groundwater						
Interception of groundwater without a license.	Possible	Major	Significant	Unlikely	Major	Moderate
Changes to groundwater flows and quality due to construction activities.	Possible	Minor	Moderate	Unlikely	Minor	Low
Ecology						
Removal of native vegetation including endangered ecological communities in addition to that already approved.	Unlikely	Major	Moderate	Rare	Major	Moderate
Impacts on threatened species (NSW/Commonwealth) in addition to that already approved.	Unlikely	Major	Moderate	Unlikely	Major	Moderate

Risk	Risk rating – before mitigation			Risk rating – after mitigation		
Native flora and fauna habitat loss in addition to that already approved.	Unlikely	Major	Moderate	Unlikely	Major	Moderate
Failure to adequately address environmentally sensitive areas in design and construction.	Unlikely	Major	Moderate	Unlikely	Major	Moderate
Encourage further migration of weeds (noxious and environmental).	Likely	Moderate	Significant	Unlikely	Moderate	Moderate
Wildlife entrapment in trenches.	Likely	Minor	Significant	Unlikely	Minor	Low
Increased vehicle/fauna interactions due to increased traffic.	Possible	Minor	Moderate	Unlikely	Minor	Low
Heritage						
Direct impacts on known items of significance during construction.	Likely	Major	High	Rare	Major	Moderate
Unforeseen impacts, including discovery and impacts on sites that are of cultural heritage or recreational value.	Possible	Major	Significant	Unlikely	Major	Moderate
Traffic and access						
Road diversion and/or temporary closure of roads. Impacts to road users.	Possible	Minor	Moderate	Unlikely	Minor	Low
Road diversion and/or temporary closure of roads. Impacts to private property access.	Unlikely	Minor	Low	Unlikely	Minor	Low
Waste						
Incorrect classification and / or inappropriate disposal of construction waste.	Likely	Moderate	Significant	Unlikely	Moderate	Moderate
Excessive waste from construction and general waste from construction camps.	Possible	Minor	Moderate	Unlikely	Minor	Low
Air quality						
Greenhouse gas emissions during construction (emissions from vehicles, plant and equipment).	Almost certain	Insignificant	Significant	Almost certain	Insignificant	Significant
Plant and equipment emissions affecting local air quality.	Unlikely	Minor	Low	Unlikely	Minor	Low
Dust from earthmoving equipment activities (vegetation clearing, wind erosion from stockpiling of excavated	Almost certain	Minor	Significant	Unlikely	Minor	Low

Risk	Risk rating – before mitigation			Risk rating – after mitigation		
material, etc).						
Noise and vibration						
Working outside approved hours.	Likely	Minor	Significant	Unlikely	Minor	Low
Noise and vibration impacts.	Almost certain	Minor	Significant	Possible	Minor	Moderate
Hazards and risks						
Safety hazards and risks as a result of construction (bushfire, personal safety and security, chemical storage).	Possible	Extreme	High	Unlikely	Extreme	Significant
Visual amenity						
Inadequate site rehabilitation.	Possible	Minor	Moderate	Unlikely	Minor	Low
Temporary visual impacts (site compounds, works).	Possible	Insignificant	Low	Possible	Insignificant	Low
Socio-economic						
Impacts on recreational use at various nearby sites.	Possible	Minor	Moderate	Unlikely	Minor	Low
Community						
Inadequate / late response to community complaints	Likely	Moderate	Significant	Unlikely	Moderate	Moderate
Utilities and services						
Impacts and interruptions to utilities and services.	Unlikely	Major	Moderate	Unlikely	Minor	Low
Incident management						
Inadequate response to incident, including reporting requirements.	Likely	Major	High	Unlikely	Major	Moderate
Legislative approvals						
Carrying out activities inconsistent with conditions of Project Approval.	Likely	Major	High	Unlikely	Major	Moderate
Non-compliance with legislative requirements.	Likely	Major	High	Unlikely	Major	Moderate
Cumulative impacts						
Cumulative noise, dust, vegetation impacts as a result of Part 4 subdivision occurring concurrently.	Likely	Moderate	Significant	Unlikely	Moderate	Moderate

Appendix 7

Legal and Other Requirements

Act	Activity/aspect	Requirement	Reference	Applicability to the construction of Stage C Network West
General				
<i>Environmental Planning and Assessment Act 1979 (EP&A Act)</i>	All	Comply with the terms Minister for Planning's approval for the IWC Project.	S75W	The IWC Project has been granted a Concept Approval under Part 3A of the EP&A Act subject to Conditions of Approval (CoA). Stage C Network West has been granted a Project Approval under Part 5 of the EP&A Act subject to Conditions of Approval (CoA). The construction of Stage C Network West must comply with all CoA. Any changes not consistent with the IWC Concept Approval would require additional assessment and approval from the Minister or Queanbeyan-Palerang Regional Council (QPRC).
	BCA and Certification	The Proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA. Notes: <ul style="list-style-type: none"> Under Part 4 of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works; and Part 8 of the EP&A Regulation sets out the requirements for the certification of the project. 	Part 4	The contractor will ensure that all new buildings and structures are constructed in accordance with the relevant requirements of the BCA and obtain the relevant construction/occupation certificates from QPRC.
Water				
<i>Water Management Act 2000 (WM Act)</i>	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 construction of Stage C Network West will be carried out consistent with the aims of the WM Act. It is not expected that groundwater will be intercepted during Stage C Network West construction works therefore it is not anticipated that a Water Access Licence under the WM Act will 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	Consultation with Office of Environment and Heritage (OEH) / NSW Office of Water (NOW) will be undertaken where required, regarding works in and around waterways. An approval to undertake controlled activities on

Act	Activity/aspect	Requirement	Reference	Applicability to the construction of Stage C Network West
	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 front land is not required as works are being undertaken on behalf of a public authority (QPRC). Refer to GLA Environmental Management Plan for water management requirements.
<i>Water Act 1912 (Water Act)</i> Note that this Act is being progressively repealed by the <i>Water Management Act 2000</i> .	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 C Network West site is located within a Water Sharing Plan area, and so <i>Water Management Act 2000</i> applies.
	Groundwater	Obtain a licence where interference with groundwater is likely to occur.	S112 S121A	The Water Act does not apply, as the Stage C Network West site is located within a Water Sharing Plan area, and so <i>Water Management Act 2000</i> applies.
<i>Protection of the Environment Operations Act 1997 (POEO Act)</i>	Water pollution	Do not cause water pollution (other than to a sewer), except in accordance with the conditions of any EPA licence.	S120	The construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Under Section 48 of the POEO Act a Scheduled Activity Environment Protection Licence is required for construction of Stage C Network West. GTPL holds EPL 20788 for construction works. Refer to GLA Environmental Management Plan for water management requirements.
<i>Local Government Act 1993 (LG Act)</i>	Construction and operate water and wastewater facilities	Construction and operate water and wastewater facilities.	S60 (local council)	QPRC will not be responsible for the construction of Stage C Network West, but as QPRC will operate the plant, QPRC (with support from GTPL) will seek approval from the Minister under S60 of the <i>Local Government Act 1993</i> to operate Stage 2 of the IWC Project.
	Construction and operate water and wastewater facilities	Construction and operate water and wastewater facilities.	S68 (private sector)	GTPL will seek approval from QPRC for approval to construct and operate (if required) sewerage infrastructure.
<i>Water Industry Competition Act 2006 (WIC Act)</i>	Construction 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 QPRC will operate the water and wastewater facilities, GTPL are not required to seek a Network operator's licence under the WIC Act.
Noise				

Act	Activity/aspect	Requirement	Reference	Applicability to the construction of Stage C Network West
<i>Protection of the Environment Operations Act 1997</i>	Plant maintenance and operation	Do not operate plant if it emits noise caused by poor maintenance or operation.	S139	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Refer to GLA Environmental Management Plan for noise management requirements.
	Materials management	Do not cause noise by failing to properly and efficiently deal with materials.	S140	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Refer to GLA Environmental Management Plan for noise management requirements.
Roads				
<i>Roads Act 1993</i>	Works and structures on public roads	Do not erect a structure or carry out a work in, on or over a public road, or dig up or disturb the surface of a public road, or remove or interfere with a structure, work or tree on a public road, or pump water into a public road from any land adjoining the road, or connect a road (whether public or private) to a classified road, otherwise than with the consent of the appropriate roads authority.	S138	The contractor will apply for a road occupancy permit under Section 138 for any works undertaken on public roads. The relevant roads authority is QPRC for Googong Road/Googong Dam Road and Roads and Maritime Services for Old Cooma Road.
Contaminated land				
<i>Protection of the Environment Operations Act 1997</i>	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	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Soil and water management measures are outlined in the GLA Environmental Management Plan.
<i>Contaminated Land Management Act 1997 (CLM Act)</i>	Reporting contamination	Notify the EPA if: <ul style="list-style-type: none"> ▪ 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 	S60	Construction of Stage C Network West will be carried out in accordance with the CLM Act, where relevant. Refer to GLA Environmental Management Plan for contamination reporting requirements.

Act	Activity/aspect	Requirement	Reference	Applicability to the construction of Stage C Network West
		prescribed by the regulations.		
Biodiversity				
<i>Noxious Weeds Act 1993</i>	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 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.	S12 S16 S30	Construction of Stage C Network West will be carried out in accordance with the <i>Noxious Weeds Act 1993</i> , where relevant. Weed management measures are outlined in the GLA Environmental Management Plan.
<i>National Parks and Wildlife Act 1974 (NPW Act)</i>	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	Construction of Stage C Network West will be carried out in accordance with the NPW Act, where relevant. Fauna protection measures are outlined in the GLA Environmental Management Plan.
		Do not harm critical habitat except as in accordance with a planning approval.	S98	Construction of Stage C Network West will be carried out in accordance with the NPW Act, where relevant. Habitat protection measures are outlined in the GLA Environmental Management Plan.
		Do not harm native fauna (other than listed unprotected fauna) except in accordance with a planning approval or licence.	S120	Construction of Stage C Network West will be carried out in accordance with the NPW Act, where relevant. Fauna protection measures are outlined in the GLA Environmental Management Plan.
	Flora and native vegetation conservation	Do not pick protected native plants without a licence.	S117 S131	Construction of Stage C Network West will be carried out in accordance with the NPW Act, where relevant. Flora protection measures are outlined in the GLA Environmental Management Plan.
<i>Native Vegetation Act 2003</i>	Flora and native vegetation conservation	Only clear native vegetation in accordance with a planning approval or property vegetation plan.	S12	Construction of Stage C Network West will be carried out consistent with the aims of the Act and will consult with OEH where required, regarding clearing of native vegetation. Habitat protection measures are outlined in the GLA Environmental Management Plan.

Act	Activity/aspect	Requirement	Reference	Applicability to the construction of Stage C Network West
<i>Fisheries Management Act 1994</i> (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 IWC Project will be carried out in accordance with the <i>Fisheries Management Act 1994</i> , where relevant. No dredging or reclamation works are expected for Stage C Network West works.
	Fish passage	Do not block fish passage without a permit	S219	The IWC Project will be carried out in accordance with the <i>Fisheries Management Act 1994</i> , where relevant. No blockage of fish passage is expected for Stage C Network West works.
<i>Environment Protection Biodiversity Conservation Act 1999</i> (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	Construction of Stage C Network West will be carried out in accordance with the EPBC Act, where relevant. Flora and fauna protection measures are outlined in the GLA Environmental Management Plan.
		Comply with the terms of any EPBC Act approval for the project.		The IWC Project was approved on 19 May 2011 (EPBC 2011/5829). The approval is subject to conditions. Relevant conditions are addressed in the CEMP and GLA Environmental Management Plan.
Waste				
<i>Protection of the Environment Operations Act 1997</i>	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	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Waste management measures are outlined in the GLA Waste Management Plan.
	Waste and transportation	Do not undertake a scheduled waste activity unless in accordance with an environmental protection licence. A licence must be obtained when construction and demolition wastes are applied to land under certain circumstances. This includes the reincorporation of crushed road base material back into roads and the placing of excess fill material onto properties. A licence is not required if the material: <ul style="list-style-type: none"> ▪ Is VENM. 	Part 3.2 Schedule 1	Due to the relatively small volume of spoil likely to be generated by the construction of Stage C Network West, it is unlikely that a licence to dispose of waste to landfill will be required. Spoil will be reused on site where possible. Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant.

Act	Activity/aspect	Requirement	Reference	Applicability to the construction of Stage C Network West
		<ul style="list-style-type: none"> ▪ Does not exceed 200 tonnes in the Sydney, Newcastle and Wollongong areas, or 20,000 tonnes outside these areas. ▪ Is covered by a 'general exemption'. Current exempted materials are ENM, recycled aggregates and raw mulch. These exemptions are conditional and require some chemical testing of materials before they are placed onto land. <p>A licence must be obtained if more than 2,500 tonnes (or cubic metres) is stored on a stockpile site at any one time, or more than 30,000 tonnes of waste is received per year from off site.</p>		
		Only transport waste to a facility that can lawfully accept the waste.	S143	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Waste management measures are outlined in the GLA Waste Management Plan.
		Do not dispose of waste in a manner that harms or is likely to harm the environment.	S115	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Waste management measures are outlined in the GLA Waste Management Plan.
Protection of the Environment Operations (Waste) Regulation 2005	Waste and transportation	Comply with general requirements for the transport of waste. For example, any vehicle used by the person to transport waste must be kept in a clean condition and be maintained so as to prevent spillage of waste. For some wastes only licensed transporters can be used.	Regulation cl.49	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Waste management measures are outlined in the GLA Waste Management Plan.
		Comply with record keeping requirements in relation to the transport of certain types of waste.	Regulation Part 3	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Waste management measures are outlined in the GLA Waste Management Plan.
Heritage				
<i>Heritage Act 1977</i> (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	S56-57	Construction of Stage C Network West will be carried out in accordance with the aims of the Heritage Act.

Act	Activity/aspect	Requirement	Reference	Applicability to the construction of Stage C Network West
		Register without approval from the Heritage Council.		Heritage management measures are outlined in the GLA Environmental Management Plan.
		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	Construction of Stage C Network West will be carried out in accordance with the aims of the Heritage Act. Heritage management measures are outlined in the GLA Environmental Management Plan.
		Notify the heritage Council on discovery of a relic.	S146	Under Section 146 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 REF. Reporting requirements are outlined in the GLA Environmental Management Plan.
<i>National Parks and Wildlife Act 1974</i>	Aboriginal places and objects	Do not harm or desecrate an Aboriginal object or Aboriginal place without consent.	S86 S90	Construction of Stage C Network West will be carried out in accordance with the NPW Act, where relevant. Heritage management measures are outlined in the GLA Environmental Management Plan.
		Notify the OEH and DP&E immediately of the location or discovery of all new or unrecorded Aboriginal objects.	S89A	Construction of Stage C Network West will be carried out in accordance with the NPW Act, where relevant. Heritage management measures are outlined in the GLA Environmental Management Plan.
<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth)</i>	Protection of areas and objects	Report any discovery of Aboriginal remains to the Federal Minister for the Sustainability, <i>Environment, Water, Population and Communities</i> .	S20	Construction of Stage C Network West will be carried out in accordance with the <i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i> , where relevant. Heritage management measures are outlined in the GLA Environmental Management Plan.
		Comply with the provisions of any declaration in relation to a significant Aboriginal area or object.	S22	Construction of Stage C Network West will comply with the provisions of any declaration in relation to a significant Aboriginal area or object. Heritage management measures are outlined in the GLA Environmental Management Plan.
General				

Act	Activity/aspect	Requirement	Reference	Applicability to the construction of Stage C Network West
<i>Protection of the Environment Operations Act 1997</i>	Harming the environment	Do not risk harming the environment by wilfully or negligently: <ul style="list-style-type: none"> 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 	S115 S116 S117	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant.
	Control equipment	Properly and efficiently maintain and operate any installed pollution control equipment (including monitoring devices).	S167	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant.
	Notification of pollution incidents	Notify the EPA immediately of pollution incidents where material harm to the environment is caused or threatened.	S148	Construction of Stage C Network West will be carried out in accordance with the POEO Act, where relevant. Notification instructions are provided in Section 7.3 of the CEMP and the PIRMP (Appendix 8).
	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	Construction of Stage C Network West will be carried out in accordance with the POEO Act and the relevant EPLs, where relevant.
<i>Environmentally Hazardous Chemicals Act 1985</i>	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.		Construction of Stage C Network West will be carried out in accordance with the <i>Environmentally Hazardous Chemicals Act 1985</i> , where relevant. Measures to manage hazards are outlined in the GLA WHS Management Plan.
<i>Dangerous Goods (Road and Rail Transport) Act 2008</i>	Hazards and risks	Ensure that dangerous goods are transported in a safe manner.	S9	Construction of Stage C Network West will be carried out in accordance with the <i>Dangerous Goods (Road and Rail Transport) Act 2008</i> , where relevant. Measures to manage hazards are outlined in the GLA WHS Management Plan.
<i>Pesticides Act 1999</i>	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	S12 S13 S14 S15 S17	Construction of Stage C Network West will be carried out in accordance with the <i>Pesticides Act 1999</i> , where relevant. Measures to manage hazards are outlined in the GLA WHS Management Plan.

Act	Activity/aspect	Requirement	Reference	Applicability to the construction of Stage C Network West
		certificate of competency or a pesticide control order under the Act. Compliance with pesticide codes of practice is required.		
<i>State Emergency and Rescue Management Act 1989</i>	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)		Construction of Stage C Network West will be carried out in accordance with the <i>State Emergency and Rescue Management Act 1989</i> where relevant in relation to emergency preparedness and response. Measures to manage hazards are outlined in the GLA WHS Management Plan.
<i>Rural Fires Act 1997 and the Rural Fires Regulation 2002</i>	Hazards and risks	Manage risks in emergency and/or maintenance situations at key infrastructure (in this case bush fire, flood or similar natural disaster)		Construction of Stage C Network West will be carried out in accordance with the <i>Rural Fires Act 1997</i> where relevant – in relation to emergency situation management. Measures to manage hazards are outlined in the GLA WHS Management Plan.
<i>National Greenhouse and Energy Reporting Act, 2007 and Regulations 2008</i>	Greenhouse gas emissions	Accounting and reporting of greenhouse gases produced and energy consumed during construction. 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 ₂ -e and energy consumption of 200TJ. GTPPL is not required to report under the NGERs Act as they do not meet the required threshold.

Environment Protection Licence



Licence - 20788

Licence Details

Number:	20788
Anniversary Date:	16-June

Licensee

GOOGONG TOWNSHIP PTY LIMITED

PO BOX 1000

CIVIC SQUARE ACT 2608

Premises

GOOGONG TOWNSHIP SEWAGE TREATMENT SYSTEM -
STAGE C

GOOGONG ROAD

GOOGONG NSW 2620

Scheduled Activity

Sewage treatment

Fee Based Activity

Sewage treatment processing by small plants

Scale

> 219-1000 ML annual maximum
volume of discharge

Region

South East - Queanbeyan

11 Farrer Place

QUEANBEYAN NSW 2620

Phone: (02) 6229 7002

Fax: (02) 6229 7006

PO Box 622 QUEANBEYAN

NSW 2620

Environment Protection Licence

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Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

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The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

GOOGONG TOWNSHIP PTY LIMITED
PO BOX 1000
CIVIC SQUARE ACT 2608

subject to the conditions which follow.

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1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled development work listed below at the premises listed in A2:

Construction of Stage C Network sewage treatment infrastructure including extension to the sewage reticulation system, construction of recycled water reservoirs and capacity upgrade of Googong sewage treatment plant.

A1.2 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Sewage treatment	Sewage treatment processing by small plants	> 219 - 1000 ML annual maximum volume of discharge

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
GOOGONG TOWNSHIP SEWAGE TREATMENT SYSTEM - STAGE C
GOOGONG ROAD
GOOGONG
NSW 2620
LOCATED WITHIN THE GOOGONG TOWNSHIP DEVELOPMENT AREA, OLD COOMA ROAD SOUTH OF GOOGONG ROAD, AS MARKED IN LIGHT BLUE SHADING ON MAP "GOOGONG IWC - CONSTRUCTION AND OPERATION ENVIRONMENTAL PROTECTION LICENCE BOUNDARIES" DRAWING NO. 15048G_EPL20160224 PREPARED BY RPS.

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

a) the applications for any licences (including former pollution control approvals) which this licence

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replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and

b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Load limits

L2.1 The actual load of an assessable pollutant discharged from the premises during the reporting period must not exceed the load limit specified for the assessable pollutant in the table below.

Note: An assessable pollutant is a pollutant which affects the licence fee payable for the licence.

L2.2 The actual load of an assessable pollutant must be calculated in accordance with the relevant load calculation protocol.

Assessable Pollutant	Load limit (kg)
BOD (Enclosed Water)	
Nitrogen (total) (Enclosed Water)	
Oil and Grease (Enclosed Water)	
Phosphorus (total) (Enclosed Water)	
Total suspended solids (Enclosed Water)	

L3 Waste

L3.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes

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expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.

Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.

This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A
NA	Waste	Any waste received on site that is below the licencing thresholds in Schedule 1 of the POEO Act, as in force from time to time.	-	N/A

L4 Blasting

- L4.1 The overpressure level from blasting operations at the premises must not exceed 120dB (Lin Peak) at any time. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.
- L4.2 The overpressure level from blasting operations at the premises must not exceed 115dB (Lin Peak) for more than five percent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.
- L4.3 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 10mm/sec at any time. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.
- L4.4 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 5mm/sec for more than five percent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L5 Hours of operation

- L5.1 **Standard working hours**

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Unless otherwise specified by any other condition of this licence, all construction activities are:

- a) restricted to between the hours of 7:00am and 6:00pm Monday to Friday;
- b) restricted to between the hours of 8:00am and 1:00pm Saturday; and
- c) not to be undertaken on Sundays or Public Holidays.

L5.2 Exemptions to standard construction hours

The following activities may be carried outside the standard construction hours permitted by Condition L4.1:

- a) the delivery of oversized plant or structures that police or other authorised authorities determine require special arrangements to transport along public roads;
- b) emergency work to avoid the loss of lives or property, or to prevent environmental harm.

L5.3 Notification

In the case of L4.2 a) and b) above the licensee must notify the EPA, local Council and the affected community as soon as practicable after the need for the work outside the hours specified in conditions L4.1 becomes known to the licensee.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:

- a) must be maintained in a proper and efficient condition; and
- b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises.

O4 Waste management

O4.1 The licensee must assess, classify and manage any waste generated at the premises in accordance with EPA's Waste Classification Guidelines Part 1 : Classifying Waste 2014.

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O4.2 If waste is transported from the premises, the licensee must ensure that the waste is transported:

- (a) by a waste transporter authorised to transport such waste; and
- (b) to a place that can lawfully accept that waste.

O5 Other operating conditions

O5.1 All works must be carried out in a manner that will minimise the emission of noise and vibration from the premises.

O5.2 The licensee must ensure that all practicable and reasonable noise and vibration mitigation and management measures are used during construction work authorised by this licence, including the following measures:

- (a) identifying and using least noisy construction methods, vehicles, plant and equipment available for the type of work being undertaken;
- (b) positioning plant and equipment that generates high noise levels, impulsive noise, intermittent noise, low-frequency noise or tonal noise, so as to minimise noise and vibration impacts on surrounding noise sensitive receivers;
- (c) avoiding the simultaneous operation of more than one item of noisy plant or equipment close together and near noise sensitive receivers;
- (d) scheduling respite periods if the work to be undertaken would be likely to generate noise and vibration emissions from the premises and would be conducted over extended periods in the same locality;
- (e) planning the work site and work processes and taking all such practicable measures necessary to minimise movements that would activate audible reversing and movements alarms, especially during out of hours work;
- (f) undertaking any loading or unloading operations away from noise sensitive receivers,
- (g) selecting and locating access points and roads to the premises as far away as practicable from noise sensitive receivers;
- (h) preventing vehicle, plant and equipment queuing and idling outside the hours of operation prescribed in condition L2.1; and
- (i) installing measures to effectively dampen noise impacts from temporary road plates, metal trays, tipper bodies and bins.

O5.3 Erosion and sediment control

Prior to undertaking any construction work, including any earthmoving or vegetation removal work, the licensee must implement erosion and sediment control measures to prevent pollution of waters. These erosion and sediment control measures must be designed and operated in accordance with the guideline "Managing Urban Stormwater: Soils and Construction" Vol 1. 4th Ed. "The Blue Book".

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- O5.4 The licensee must check the operation of soil and water management works weekly, and prior to forecast rainfall events, and immediately following rainfall events, and initiate repair and maintenance of these works when required to prevent pollution of waters.

5 Monitoring and Recording Conditions

M1 Monitoring records

- M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.
- M1.2 All records required to be kept by this licence must be:
- in a legible form, or in a form that can readily be reduced to a legible form;
 - kept for at least 4 years after the monitoring or event to which they relate took place; and
 - produced in a legible form to any authorised officer of the EPA who asks to see them.
- M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
- the date(s) on which the sample was taken;
 - the time(s) at which the sample was collected;
 - the point at which the sample was taken; and
 - the name of the person who collected the sample.

M2 Testing methods - load limits

Note: Division 3 of the *Protection of the Environment Operations (General) Regulation 2009* requires that monitoring of actual loads of assessable pollutants listed in L2.2 must be carried out in accordance with the relevant load calculation protocol set out for the fee-based activity classification listed in the Administrative Conditions of this licence.

M3 Recording of pollution complaints

- M3.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.
- M3.2 The record must include details of the following:
- the date and time of the complaint;
 - the method by which the complaint was made;
 - any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
 - the nature of the complaint;
 - the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
 - if no action was taken by the licensee, the reasons why no action was taken.
- M3.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

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M3.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M4 Telephone complaints line

M4.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M4.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M4.3 The preceding two conditions do not apply until three months after the date of the issue of this licence.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data,
7. a Statement of Compliance - Environmental Management Systems and Practices; and
8. a Statement of Compliance - Environmental Improvement Works.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must

Environment Protection Licence

Licence - 20788



prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 Where the licensee is unable to complete a part of the Annual Return by the due date because the licensee was unable to calculate the actual load of a pollutant due to circumstances beyond the licensee's control, the licensee must notify the EPA in writing as soon as practicable, and in any event not later than the due date. The notification must specify:

- a) the assessable pollutants for which the actual load could not be calculated; and
- b) the relevant circumstances that were beyond the control of the licensee.

R1.7 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.8 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:

- a) the licence holder; or
- b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

- a) where this licence applies to premises, an event has occurred at the premises; or
- b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

Environment Protection Licence

Licence - 20788



- R3.3 The request may require a report which includes any or all of the following information:
- a) the cause, time and duration of the event;
 - b) the type, volume and concentration of every pollutant discharged as a result of the event;
 - c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
 - d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
 - e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
 - f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
 - g) any other relevant matters.
- R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

- G1.1 A copy of this licence must be kept at the premises to which the licence applies.
- G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

Environment Protection Licence



Licence - 20788

Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

Environment Protection Licence



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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

Environment Protection Licence

Licence - 20788



TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Mr Julian Thompson

Environment Protection Authority

(By Delegation)

Date of this edition: 16-June-2016

End Notes

Appendix 8

8A GLA Policies,

8B Environmental Management Plan

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 contractor 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.

▪

8A GLA Policies,

PMP Appendix 8A – WHS, Environment & QA Management Policies

Work Health & Safety (WHS) Policy


It is the policy of Guideline ACT that each employee shall be provided with a safe and healthy place in which to work. To achieve this policy, management will abide by relevant WHS Acts and Regulations.

Management is committed to assisting each employee to achieve a positive work/life balance.

Management and each employee have a personal obligation to ensure their own safety and that of fellow workers through an absolute commitment to safe work practices.

Guideline ACT will implement its policy and commitment by:

- Making Safety its Number One Priority
- Communicating this policy and procedures to all employees, subcontractors and other stakeholders by ensuring they are aware of their obligations with respect to Company operations and the requirements of relevant WHS Acts and Regulations
- Cultivating a safety awareness attitude amongst all employees and subcontractors and providing an avenue for feedback through regular Consultative Committee meetings, Toolboxes and Suggestion/Improvement forms
- Putting in place safe work practices for all our activities and maintaining and upgrading our systems to continuously improve our operations
- Recording and investigating all incidents to prevent reoccurrence and providing rehabilitation for any injured employee to enable that employee to return to work as soon as possible
- Reviewing this policy and our procedures regularly to maintain their relevance
- Considering WHS issues in all company decision



Nick Zardo
Managing Director

14th May 2012.

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SunSmart Commitment

Our commitment

Guideline ACT recognises that a combination of sun protection control measures, which includes engineering and administrative controls and personal protective equipment with appropriate training, provides the best protection to employees from exposure to solar UVR.

Management will:

- Provide shaded areas or temporary shade where possible;
- Encourage workers to move jobs where possible to shaded areas;
- Provide indoor areas or shaded outdoor areas for rest/meal breaks;
- Schedule outdoor work tasks to occur when levels of solar UVR are less intense, such as earlier in the morning or later in the afternoon;
- Schedule indoor/shaded work tasks to occur when levels of solar UVR are strongest, such as the middle part of the day;
- Encourage employees to rotate between indoor/shaded and outdoor tasks to avoid exposing any one individual to solar UVR for long periods of time;
- Provide appropriate sun protective PPE in line with SunSmart guidelines including:
 - Sun protective work clothing;
 - Sun protective hats;
 - Sunglasses;
 - Sunscreen;
 - Provide training to employees to enable them to work safely in the sun;
 - Ensure training is provided as part of induction for new employees;
 - Ensure managers and supervisors act as positive role models; and
 - Promote the use of sun protection measures 'off the job'.

Employees will:

- Cooperate with all measures introduced by management to minimise the risks associated with exposure to solar UVR.
- Participate in sun protection education programs.
- Act as positive role models.
- Be responsible for own sun protective practices at work.

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Fit for Work Policy

Guideline ACT in its duty to provide a safe and healthy place to work, recognizes that due to the high risk nature of the work it carries out, workers who are impaired must not commence or remain at the workplace.

Possible reasons workers may not be fit for work, but not limited to are listed below.

- Alcohol
- Illicit Drugs
- Prescription Drugs
- Fatigue
- Personal Issues

Employee workers, who are suspected of being impaired by alcohol or illicit drugs, will have arrangements made by the Foreperson to get them home safely, (This will generally include driving them and arranging for their car to also be driven home). The worker will not receive any payment for the days lost. An incident Report (GLA-SF-2.2-09) must be completed. The WHSM is to be notified.

Management will not form an opinion outside of the workers ability to perform their duty.

If the worker disputes the suspicion, the Foreperson will contact a senior manager to resolve the conflict, the worker is to remain on site but not work until the issue is resolved. If the issue cannot be resolved by the senior manager through direct consultation the incident is to be treated through the Determination Process, defined in the Consequence Policy.

If the worker presents a second time impaired, management will warn the employee of the consequence should they present to work a third time and be encouraged to seek independent counselling with an offer for Guideline ACT to arrange the counselling.(Usually through OZHELP)

If the worker presents a third time, they will be subject to the determination process, with the default consequence being dismissal.

Employee workers, who are suspected of being impaired by other than alcohol or illicit drugs, will have arrangements made by the Foreperson to get them home safely. Employees will be entitled to personal leave or taking an RDO for the day. An incident Report (GLA-SF-2.2-09) must be completed. The WHSM is to be notified, who is to assess the need for counselling or other appropriate action which can be arranged by Guideline ACT, particularly in repeat cases.

Workers who are not employees, but are suspected of being impaired are to be dismissed from the site; foreperson is to ensure arrangements are made to get them home safely, (usually through their employer). Through a consultative process repeat offenders will not be allowed to work on any Guideline ACT sites.

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NOTE: THE POSSESSION OF AND OR USE OF AN ILLICIT SUBSTANCE ON SITE WILL LEAD TO DISMISSAL FOR EMPLOYEES AND NOT BEING ALLOWED TO WORK ON ANY GUIDELINE ACT SITE FOR OTHER WORKERS.

DRUG and ALCOHOL TESTING

Employees may be tested for drug and alcohol levels at random. Random testing will not involve the targeting of particular workers.

Employees may be requested to undergo drug and alcohol testing where reasonable cause exist to suspect that an employee is impaired by alcohol or other drugs, in particular when not cooperating with management in terms of the fit for work policy, or to prove use of an illicit substance on site.

Employees who are involved in a work related accident or injury may be requested to undergo drug and alcohol testing.

Random testing is aimed at better informing management and workers of the extent of the drug and alcohol issue providing data for training, risk management as well as acting as a deterrent.

Test results are to be taken into consideration during the determination process as outlined in the consequence policy.

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Five Day Working Week Policy

Following consultation with its Consultative Committee in 2009, Guideline ACT has adopted a 5 day working week, Monday to Friday 7am to 5pm, in the interest of a better work life balance for its employees. Work outside of these hours must only occur in special cases and is to be approved by the MD.

This has resulted in Guideline ACT having a RDO calendar agreed with its workforce which may be different to the industry calendar.

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Inclement Weather Policy

All employees must attend their allocated work site regardless of the weather and receive instructions from your Foreperson or Project Engineer.

Employees are not expected to work in rain outside of emergency work or work required to make a site safe. If employees do work in rain and get wet, they are to be allowed to go home immediately on completion of work.

Each site will be assessed for whether work may continue following the inclement weather and a decision is made on a site to site basis. This decision is made by the GENERAL MANAGER who will let the MD know of the decision.

Consideration must also be given to working in very hot weather, Management is to:

- Provide alternative work areas or tasks less affected by heat
- Encourage more rest breaks
- Ensure plenty of drinking water is available
- Comply with the Sunsmart procedure.
- In very hot weather periods, hours of work may be reduced to 8 hours per day, to help manage fatigue.

Prolonged inclement weather may require management to rearrange its workforce to reduce the impact.

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Bullying and Harassment Policy

Guideline ACT is committed to the prevention of bullying.

Bullying is repeated unreasonable behaviour directed towards a worker or a group of workers that creates a risk to health and safety. A broad range of behaviours can be bullying, these behaviours can be direct or indirect such as:

Direct bullying:

- Verbal abuse
- Putting someone down
- Spreading rumours or innuendo about someone
- Interfering with someone's personal property or work equipment

Indirect bullying:

- Unjustified criticism or complaints
- Withholding information that is vital for effective work performance
- Setting tasks that are unreasonably above or below a workers ability
- Excessive scrutiny at work

If anyone is bullied or harassed, they are encouraged to come forward and report it to your Foreperson or Consultative Committee member.

The report is to be recorded on the Incident Report Form (GLA-SF-2.2-09).

All bullying and harassment incidents will be investigated by Management and action taken to prevent re-occurrence including:

- Complying with the Rehabilitation Commitment for the worker(s) that have been bullied
- Disciplining (or dismissing where necessary) the worker(s) who have been instigating the bullying.

However it is important to note the following reasonable management actions that are carried out in a fair way are not bullying:

- Setting performance goals, standards and deadlines
- Deciding not to select a worker for promotion
- Informing a worker about unsatisfactory performance
- Constructive feedback
- Informing a worker about inappropriate behaviour.

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Communication and Consultation Policy

Guideline ACT (GLA) is committed to Safety as its #1 priority. It recognizes that this must be entrenched as a part of the GLA culture and to facilitate it, good communication needs to be established between all employees.

To reinforce this safety culture, the following formal meetings have a safety component:

- BMS Management Review meeting
- Consultative Committee meeting
- Management meeting
- Weekly site meeting
- Resource meeting
- Toolbox meeting
- Pre-start meetings

In addition, all employees are encouraged to assist management to improve company safety and awareness through the use of the Suggestion/ Improvement Form (GLA-BF-1.2-03).

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Confidential Information Policy

An Employee will not at any time, either during or after his or her employment with Guideline ACT Pty Ltd, for any reason divulge any of the affairs of the Company to any other company, firm, business, person or persons without the previous consent in writing of the Managing Director.

The Employee will not use or attempt to use any information which he or she may acquire in the course of his or her employment in any manner which may injure or cause loss or be calculated to injure or cause loss to Guideline ACT Pty Ltd.

Without limiting the generality of the above, the information referred to in that clause includes:

- Business Management Systems
- Correspondence
- Meeting Minutes
- Files
- Tender / Client Submissions
- Tender Make Up
- Financial Documentation
- Client Lists
- Commercial Assessments
- Procedures
- Contracts
- Programs
- Standard Documentation
- Formats for Resumes and CV
- Financial, Costing Data, Formats and any Documentation pertaining to the business

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Rehabilitation Commitment

Guideline ACT maintains current workers compensation insurance in both ACT and NSW.

Management understands the company's legal obligations and while the main focus is on injury prevention, if an incident occurs to an employee which results in injury then an injury management plan including rehabilitation as necessary is put in place.

Experience has shown that workplace rehabilitation assists the healing process and helps restore the worker's normal function sooner.

Guideline ACT is committed to:

- Providing a safe and healthy work environment, but in the event of an injury or an illness, making sure workplace rehabilitation is started as soon as possible in accordance with medical advice.
- Within operational limitation, ensuring appropriate suitable duties are made available to injured or ill workers to facilitate their safe and early return to work. These duties must be consistent with the current medical certificate and will be time limited.
- A graduated return to full time duties, permanent part-time work or reduced hours relative to pre-injury hours will be considered when planning and implementing return-to-work activities.
- Respecting the confidential nature of medical and rehabilitation information and ensuring there will be both verbal and written confidentiality.
- Ensuring all workers are aware that in the event of injury or illness, they will be consulted to ensure a structured and safe return to work that will not disadvantage them financially.
- Complying with legislative obligations with respect to Worker's Compensation and the standard for rehabilitation.
- Reviewing this policy and procedures at least every three years to ensure it continues to meet legislative requirements and the needs of all parties.

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Environmental Management Policy

Guideline ACT (GLA) is committed to continual improvement of its Environmental Management System.

The objectives which GLA will base its Environmental Management System on are:


1. Comply with relevant environmental legislation, Environment Protection Authority licences, guidelines and any specific contract requirements,
2. Take all reasonable measures to stop erosion and sediment runoff, minimize dust and noise ensuring construction activities do not adversely affect the environment,
3. Respond promptly to any situation which could cause adverse environmental impacts,
4. Consider the environment in all aspects of operation at all levels including business decisions,
5. Support the principles of Ecologically Sustainable Design and construction practices,
6. Set environmental targets in terms of reportable environmental incidents at each management meeting and review the results.

Environmental compliance of the above objectives will be periodically reviewed. *GLA* aims to prevent problems from occurring and promote continuous improvement towards best practice in environmental management.

Appropriate training and instruction shall be provided to ensure that project staff understands how to implement the Environmental Policy and Management System. Staff members are encouraged to offer suggestions about how environmental protection measures can be improved. Such suggestions will be assessed by GLA management and implemented as appropriate.

GLA is open about its environmental policy and will make this policy statement available to all staff and on request to other relevant interested parties including the general public.

A signed copy of this Environmental Management Policy is displayed at Head Office and in each site office.



Nick Zardo
Managing Director

14th May 2012

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Quality Management Policy

Guideline ACT Pty Ltd is committed to a Quality System for all of its products, services and operations. The objective of this commitment is to:

1. Lower the cost and increase the benefits of our products to Clients
2. Achieve Client satisfaction and confidence in our products
3. Satisfy the legitimate needs of the community with regard to the impact of construction projects, environmental issues and safety.


Guideline ACT will implement its policy and commitment by:

- communicating this policy and procedures to all employees, subcontractors and other stakeholders by ensuring they are aware of their obligations with respect to our operations
- providing products and services that meet or exceed the standards specified in our contracts and maintaining documentation to record this
- embracing new ideas, technology and innovation and striving for continuous improvement
- aiming to get it “right first time” and reducing the need for rework
- reviewing this policy and our procedures regularly to maintain their relevance

Improvements in quality will flow on to Clients as more cost effective solutions to their needs. Less rework will increase employee satisfaction and motivation and lead to company growth.

Guideline ACT management and staff are committed to the implementation and continual improvement of the effectiveness of the Quality system. It is the responsibility of the managing director through supervisory staff, and in turn of all employees, to ensure the achievement of quality in a planned and documented manner.

The Guideline ACT Quality System is designed to satisfy the requirements of AS/NZS ISO 9001:2008, and can be modified to suit individual client needs.



Nick Zardo
Managing Director

14th May 2012.

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Environmental Management Plan

Googong Township IWC Project: Stage C Network

Prepared by:

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Name	Signature	Date
John Hite		12/07/2016

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1.0 Introduction

This Environmental Management Plan describes the Environmental requirements for this project.

This Environmental Management Plan (EMP) has been prepared to cover all construction activities that relate to environmental management that are associated with the development of the Googong IWC West. This plan has been developed in accordance with industry best practice, and to facilitate implementation of commitments stated in the CEMP.

The purpose of this Environmental Management Plan is to facilitate implementation of appropriate environmental protection and impact minimisation techniques throughout the construction phase of the Project. The following document describes the safeguards and controls to be employed to prevent, manage and monitor identified and potential impacts of Guideline ACT activities of the construction, and reflects commitments described in the Environmental Management Policy (see Appendix 8A).

1.1 Environmental Management Policy

The Environmental Management Policy can be found in CEMP Appendix 8A.

1.2 General Project Information

Project Name: Googong IWC West **Project No:** 611

Project Location:

Street Address:	Old Cooma Road, Googong, New South Wales
Block:	TBA
Section:	TBA
Certificate Title (if applicable):	

Project Description:

The Googong Integrated Water Cycle Network will provide innovative solutions to reduce the use of potable water and the discharge of wastewater from the newly constructed residences and commercial properties in the Township.

The delivery of the IWC Network has been staged in four Stages, of which Stages A and B have been let. Stage C is split into Stage C West, which will be owned and operated by Queanbeyan City Council, and Stage C East, which will be that part of the project that is owned and operated by Icon Water.

Resources:

Resources will be assigned to the project to ensure that the CEMP is fully implemented. The project management team will be based onsite which will ensure constant supervision is maintained. Review of the environmental controls will be undertaken in accordance with GLA Procedure GLA-EP-3.2.2 completed each week and post rain events.

Key project personnel are as follows:

Table 1 Key Personnel

Name	Position	Responsibilities
John Hite Contact: 0407 008 195	Project Manager	Environmental Management Representative
Tom Darmody Contact 24hr – 0432 591 897	Project Engineer	Site Supervisor Site Environment Weekly Checklist - monitoring Liaise with the GTPL/QCC regarding sediment and erosion controls Establishment of Erosion Controls Waste Management Plan
Shane Malec	Project Foreperson	Site Supervisor Site Environment Weekly Checklist – implementation Establishment of Erosion Controls
Brendan Nucifora	Junior Engineer	Site Supervisor Site Environment Weekly Checklist - monitoring

1.2.2 Key characteristics of the Construction Project

Include a description of the components of the construction works, including the nature and extent of proposed and current works. This information can be summarised in the form of a table, an example of which follows:

Stage C Network West will include construction of the following:

- Works associated with the installation of two permanent reservoirs at Hill 800, including a recycled water discharge pipeline for excess recycled water that needs to be released from the recycled water reservoir.
- Works associated with the installation of mains for recycled water and potable water, including:
 - The installation of new potable water and recycled water rising mains (an extension to the existing pipelines) from the interim reservoirs to the permanent reservoirs.
 - The installation of new gravity potable water and recycled water mains from the permanent reservoirs back into the Googong Township.
 - Continue the new Stage C Network East potable water pipeline from the boundary of the Googong Foreshores to the WRP for potable water top-up of the recycled water supply.
- Works associated with the WRP, including:
 - The installation of a new recycled water tank.
 - Increasing the capacity of the recycled water pumping station at the WRP site by installing new pumps.
- Works associated with the decommissioning of the interim potable and recycled water reservoirs.

1.3 Environmental Factors & controls

The construction of the Project has the potential to impact a range of environmental factors including soil, water quality and hydrology, air quality, acoustics and vibration, unexpected contamination and hazards, flora and fauna and unanticipated heritage items. Risks associated with impacts to the environmental values at the site can be reduced and managed through implementations of Management Plans (and associated protocols/procedures) which are included in the following sections of this document.

2.0 Air Quality

As identified in the Review of environmental factors (REF) the ambient air quality of the study area is affected by the predominantly agricultural use of the surrounding area, and is considered to be good. (There are minimal odour impacts from the agricultural uses due to the low-intensity farming.) Quantitative analysis of the air quality has not been deemed necessary given the absence of prevailing factors that would alter the air quality from its relatively benign state.

- Vegetation clearing, trenching, backfilling and reinstatement.
- Wind erosion from stockpiling of excavated topsoil and trench spoil.
- Movement of vehicles and construction machinery, both within and in/out of the construction site.
- Drilling and blasting of hard rock areas.

During operation, it is unlikely that particulate matter (dust) would affect air quality within the proposal area. Odour impacts associated with the proposal are also likely to be negligible. All chemicals stored at the permanent reservoir site do not have potential odour impacts. (Air Quality – 15048, Googong Stage C Network West Final REF v4-1)

Where construction work generates dust, all reasonable and practicable measures should be taken to minimize that dust.

This can be achieved by:

1. Retaining existing vegetation where possible
2. Stripping areas progressively and only where it is necessary for works to occur
3. Dampening the ground with a light water spray (contact the EPA for requirements during extreme drought conditions)
4. Restricting vehicle movements
5. Covering the load when transporting material.
6. When an area of works is completed, the area should be re-vegetated as early as practicable.

The following Management and mitigation measures are to be taken at all times.

2.1 Air quality- Management and Mitigation Measures

Table 2 Air Quality Mitigation Measures

ID	Prior to construction	Reference	Responsibility
A1	All construction personnel will be made aware of the requirements of this plan during site inductions, toolbox talks or specific training as required.	SoC C2	Foreman and Project Engineer
A2	Ensure all petrol and diesel engine equipment arrives on site in good working condition as per Plant Safety Checklist GLA-SF-2.3-02.		Foreman and Plant Operators
A3	Review service records for hired and subcontract plant.		Foreman and Plant Operators
	During construction		Responsibility
A4	Ensure that exhaust emissions comply with Environment Protection requirements by maintaining petrol and diesel engine equipment in accordance with the service interval nominated in the relevant SWMS		Foreman and Plant Operators

A5	There will be ongoing visual monitoring of dust levels at the site		Foreman and Project Engineer
A6	Visible dust emissions from earth moving activities will be mitigated through the use of directional sprays from water carts as required	SoC C57	Foreman and Plant Operators
A7	The extent of exposed and unprotected areas will be limited by preserving existing groundcover (specifically limited to the designated footprint required) and progressive reinstatement of vegetation	SoC C55 SoC C56	Foreman and Project Engineer
A8	All haulage vehicles are to have their loads covered while transporting material to or from the construction area to prevent dust generation		Foreman and Plant Operators
A9	Loads on haul vehicles will not exceed the height of the sides and tailboards of the vehicles		Foreman and Plant Operators
A10	Construction traffic will be restricted to designated areas, which will be covered with a gravel surface where practicable, or kept damp		All Employees
A11	Any material spilt by vehicles onto public roads or other sealed pavements will be removed		Foreman and Project Engineer
A12	The use of two-stroke engines in equipment will be avoided where alternatives exist		All Employees
A13	During high wind conditions, activities that have the potential to generate excessive amounts of dust shall be halted	SoC C58	Foreman and Project Engineer
A14	Use of only non-CFC based refrigerants in any on site HVAC systems		Foreman and Project Engineer
A15	Vehicular speeds will be limited to 25km/hr on areas of unconsolidated or un-vegetated soil associated with the Project area and limits reduced during high wind conditions	SoC C54 SoC C58	All Employees
A16	In the event of a complaint, dust deposition gauges are to be installed and used for quantitative analysis of dust levels and composition		Project Engineer
	Post construction		Responsibility
A17	Revegetate disturbed areas as soon as practicable to minimise dust generation and wind erosion	SoC C56	Foreman and Project Engineer

These dust suppression measures are based on standard construction industry measures based on the 'Blue Book' (Landcom, 2004) – SoC C60

3.0 Spoil Management Plan

It is anticipated the recycled water and potable water reservoirs are proposed to be founded on competent rock which will require the excavation of rock and spoil of approximately 12,000m³. This material is planned to be used as fill around the site to create roads etc., using approximately 2,400m³. Therefore, there will be approximately 9,600m³ of excess spoil. The intention will be to use any excess spoil as fill material for other areas of the Googong development.

Disposal of Spoil

Before disposal of spoil off site, the following information must be provided to the EPA:

- Where the spoil will originate from
- Who is disposing the spoil
- Where the spoil will be taken
- The amount of spoil to be taken away
- Description of the type of spoil taken away
- Details of how records will be kept
- Timeframe to complete works to the satisfaction of the EPA.

Spoil may be taken to an approved landfill site without notice. However, if the spoil is taken to an area other than an approved landfill site, ensure the acceptor of the spoil is aware of the spoil classification.

No material from a potentially contaminated site is to be removed off-site for re-use or disposal without EPA approval.

Acceptance of Soil

Before accepting soil on site, ensure the following points are followed to reduce the risk of receiving contaminated material:

- Ensure that all fill used is virgin excavated material (e.g. clay, gravel, sand, soil or rock) that is not mixed with any other waste
- Request the supplier provide formal certification that fill is clean
- Request the supplier provide information on what activities previously occurred on site
- Check for signs of contamination, such as odours (chemical/petrol), staining from chemicals, and rubbish such as bricks, timber, Masonite, etc.
- Supervise the delivery of the material to ensure you receive only what you have ordered
- Maintain all documents and records.

No material is to be placed in a waterway without prior approval by the EPA.

Material from a known or potentially contaminated site must not be accepted without EPA approval.

4.0 Contaminated Sites

As noted in the REF, no AECs were identified in proximity to the proposed project boundary, however there is always the potential for trenching and grading activities to disturb unidentified contaminated land and adversely impact existing soil characteristics if not managed appropriately. In addition, there is the potential during construction to contaminate soils through fuel or chemical spills. Risks include contamination of soil profiles, adverse impacts on human health and consequential effects on the groundwater quality.

The IWC network West project does not anticipate to encounter contaminated sites based on the Douglas and Partners report 46285 R001, however the following is to be undertaken if found.

On discovering Asbestos, refer to the High Risk Activities Procedure in CEMP appendix 1 WHSMP .

On discovering any other potential contamination:

- Immediately isolate and cordon off the potential contaminated site, preventing entry into the area;
- Contact the EPA to advise and assist in formulating an action plan. This may include specialist consultants and subcontractors; determine whether the contamination may contain a risk to workers or the general public and liaise to formulate an action plan;
- Contact the Client’s Representative and inform them of the discovery and action to date;
- Raise an Incident Report (GLA-SF-2.2-09) and an NCA Report (GLA-QF-4.2-20).

Notifications and internal reporting are to be completed within 24 hours.

4.1 Contaminated Site and Hazardous Materials – Management and Mitigation Measures

Table 3 Contaminated Site and Hazardous Materials Mitigation Measures

ID	Prior to construction	Reference	Responsibility
CH1	All construction personnel will be made aware of the requirements of this plan through site inductions, toolbox talks or specific training. In particular, all construction personnel will be made aware of the High Risk Activities Procedure in the WHSMP	Soc C2 SoC C53	Foreman and Project Engineer
CH2	Complete the Asbestos Checklist (GLA-SF-2.2-11) to determine if any asbestos is likely to be uncovered during the project.		Project Engineer
CH3	Where possible, all refuelling will occur at designated fuel distribution points. These distribution points would be underlain by compacted earth to prevent the significant loss of fuel into the ground in the event of a spill. They would also be bunded to contain any large spills that may occur as a result of machinery or tank failure.	SoC 51	Project Engineer
CH4	Storage areas for fuels, oils and chemicals used during construction will be covered and contained within an impervious bund to retain any spills of more than 110% of the volume of the largest container in the bunded area.	SoC C50	Project Engineer
CH5	Spill response procedures and equipment for containment and recovery would be available on site.	SoC C52	Project Engineer
	During construction		Responsibility
CH6	On discovering Asbestos, refer to the High Risk Activities Procedure in the WHSMP		Project Engineer

CH7	<p>On discovering any other potential contamination:</p> <ul style="list-style-type: none"> • Immediately isolate and cordon off the potential contaminated site, preventing entry into the area; • Contact the EPA to advise and assist in formulating an action plan. This may include specialist consultants and subcontractors; determine whether the contamination may contain a risk to workers or the general public and liaise to formulate an action plan; • Contact the Client's Representative and inform them of the discovery and action to date; • Raise an Incident Report (GLA-SF-2.2-09) and an NCA Report (GLA-QF-4.2-20). • Notifications and internal reporting are to be completed within 24 hours. 	SoC C49	Foreman and Project Engineer
CH8	Isolate and contain identified areas of contaminated land with bunding		Foreman and Project Engineer
CH9	Restrict access to contaminated sites with fencing ;		Foreman and Project Engineer
CH10	Stop work, if any contaminated material, or suspected contaminated material is found during construction, and notify Guideline ACT's General Manager;	SoC C49	Foreman and Project Engineer
CH11	Report any unexpected findings of contaminated material, or suspected contaminated material to the Superintendent's Representative and Environmental Consultant;		Project Engineer
CH12	Record the location, visual appearance, odour, depth, surrounding material, mode of discovering the material and report to the Superintendent's Representative and Environmental Consultant;		Foreman and Project Engineer
CH13	Obtain expert advice in the event suspect material is encountered. There may be a requirement for a Sampling and Analysis Plan and Remedial Action Plan if contaminated material is found;		Project Engineer
CH14	Contact the EPA for their advice and assistance in formulating an action plan in accordance with ACT Regulatory requirements. This may include sampling and laboratory analysis, but could be limited to site inspections;		Project Engineer
CH15	Contact EPA (1800 838 438) to determine whether the contamination may contain a risk to workers or the general public and liaise to formulate an action plan;		Project Engineer
CH16	Obtain the Superintendent's and Environmental Consultant approvals for the proposed action plan;		Project Engineer
CH17	Remedial action is not to commence until appropriate approvals have been received;		Project Engineer
CH18	Any contaminated material from spills will be disposed of according to manufacturers and OEH requirements.		Project Engineer
CH19	Once the APPROVED action plan is implemented, document the findings in accordance with the plan and provide documentation to the relevant parties.		Project Engineer
	Post construction		Responsibility
CH20	Manage the safe removal and disposal of any contaminated material in consultation with the EPA and Worksafe ACT.		Project Engineer
CH21	Obtain receipts from appropriately licensed disposal facilities if material is required to be taken offsite.		Project Engineer

5.0 Flora and Fauna

The proposal is not likely to impact on any threatened flora or fauna species, endangered ecological communities or migratory species. Approximately 0.18ha of the TSC Act threatened ecological community Box Gum Woodland will be cleared as a result of the proposal. However the community is highly modified within the proposal area and is not likely to be significantly impacted. A total of five trees within this Box Gum Woodland would be removed as a result of the proposal. A seven part test has been undertaken for this impact on this ecological community and identified that a significant impact is unlikely and therefore a Species Impact Statement is not required. Construction activities and the disturbance of soils may encourage the spread of noxious weeds throughout the proposal area and potentially into adjacent areas, refer to the weed management plan 1.6.9 for the corresponding management and mitigation measures. (*Biodiversity – 15048, Googong Stage C Network West Final REF v4-1*)

Stage C construction has not identified any pink tale worm lizard (PTWL) habitats and therefore is highly unlikely to be encountered. If an unanticipated find of a PTWL were to occur, the GTPL approved Pink-tailed Worm-lizard Protection and Management Plan (EPBC1) and a Googong Foreshores Interface Management Strategy (EPBC2) will be implemented.

Flora (trees and other plants) will be protected from damage that:

- are shown or specified to be retained
- are beyond the limits allowed for the project
- which need not be removed or damaged for construction operations.

Trees will be protected through the use of tree fencing placed around the drip line of the trees.

Fauna

Native wildlife species are protected under the following acts:

- a) Environmental Planning and Assessment Act 1979 (NSW)
- b) Local Government Act 1993 (NSW)
- c) Native Vegetation Act 2003 (NSW)
- d) Threatened Species Conservation Act 1995 (NSW)
- e) Fisheries Management Act 1994 (NSW)
- f) Fisheries Management Amendment Act 1997 (NSW)

It is illegal for an unauthorised person to harm native wildlife. All works on site will be conducted in a manner which avoids disturbance or harm to native wildlife.

5.1 Flora and Fauna- Management and Mitigation Measures

Table 4 Flora and Fauna Mitigation Measures

ID	Prior to construction	Reference	Responsibility
FF1	The limits of vegetation clearing will be clearly marked on construction work plans and on the ground prior to clearing. Perimeter of the works is to be marked with standard temporary fencing and stakes painted	SoC C22	Foreman and Project Engineer

	white.		
FF2	Areas of protected species habitat within or adjacent to the Project area which are nominated to be protected on the Environmental Constraints Maps (CEMP Appendix 4) are to be fenced off for the duration of the construction period.		Foreman and Project Engineer
FF3	All workers will be educated as to the ecology, appearance and significance of the protected species during site inductions		Foreman and Project Engineer
FF4	Trees must be protected from damage which: <ul style="list-style-type: none"> • Are shown or specified on construction drawings to be retained; • Are beyond the Project boundary; or • Are not be removed or damaged by construction operations. 		Foreman
FF5	Within the clearing limits, mark all habitat trees to be removed (refer Environmental Constraints Map in Appendix 4). A habitat tree includes hollow bearing trees and any trees that contain nests or cavities that may act as a hollow.	SoC C22	Foreman
	During construction		Responsibility
FF6	No vegetation will be cleared beyond the boundaries marked on construction drawing and as marked on the ground.	SoC C22	Foreman and Project Engineer
FF7	All works and remediation measures are to be conducted in a manner and to a standard consistent with the requirements of appropriate legislature		Foreman and Project Engineer
FF8	Rehabilitation and revegetation of disturbed areas is to be undertaken in accordance with the Revegetation and rehabilitation protocol outlined above.		Foreman and Project Engineer
FF9	Should any threatened flora or fauna species be unexpectedly encountered, the Project Engineer and Project Ecologist will determine the significance, assess impacts and identify management measures, approvals/licences or permits required, in consultation with the Office of Environment and Heritage (OEH), Department of Primary Industries – Fisheries Conservation and Aquaculture and Department of Environment (DoE) as appropriate.		Project Engineer
FF10	If feasible and reasonable trees should be cleared between August and March outside of breeding season.	SoC C24	Project Engineer
FF11	An Ecologist is to be on site for felling of all habitat trees.	SoC C23	Project Engineer
FF12	Fell habitat trees carefully, allowing trees to be lowered to the ground.		Foreman and Project Engineer
FF13	An Ecologist is to inspect the felled habitat trees for fauna. Fauna identified should be captured, inspected for injury and relocated to suitable habitat (as identified by the Ecologist).	NA	Project Ecologist
	Post construction		Responsibility
FF14	The compound site and site access track must be fully restored on completion of construction. Restoration will include grading, scarifying, topsoiling, seeding (in accordance with the approved seed and species mixes) and mulching.	SoC C12	Foreman and Project Engineer

FF15	Where feasible the landscaping plans should provide for replanting of native species, specifically tree species that provide habitat and foraging opportunities	SoC C25	Foreman and Project Engineer
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6.0 Heritage

Should any relic, artefact or material (including skeletal remains) suspected of being of Aboriginal origin be encountered, Guideline ACT shall cease all construction work that might affect the relic, artefact or material and protect the relic, artefact or material from damage or disturbance. Guideline ACT shall notify the Client's Representative immediately.

Should any item be encountered which is suspected to be a relic of non-indigenous heritage value, Guideline ACT shall cease all construction work that might affect the item and protect the item from damage or disturbance. Guideline ACT shall notify the Client's Representative immediately.

6.1.1 Aboriginal heritage

No Aboriginal sites will be directly impacted by construction of the project. One Aboriginal site, GA6, is located twelve metres from the defined project area and is vulnerable to indirect and/or inadvertent impact during construction of the potable water and recycled water mains. Operational activities related to proposal will not impact the identified Aboriginal sites and as a precaution the following management and mitigation measures will be carried out. (*Aboriginal heritage – 15048, Googong Stage C Network West Final REF v4-1*)

6.1.2 Non-Aboriginal heritage

Site GRWH5 does not meet the criteria for heritage listing and does not meet a threshold of local significance. In addition it is unlikely that the proposed works would have direct impacts on the identified heritage item and the item would likely be removed in the near future as part of the development of the Googong Township. Therefore potential impacts on non-Aboriginal heritage are negligible. (*Non-Aboriginal heritage – 15048, Googong Stage C Network West Final REF v4-1*)

The following management plan will be carried out relating to all known and possibly unknown heritage sites.

6.2 Heritage – Management and Mitigation Measures

Table 5 Heritage Mitigation Measures

ID	Prior to construction	Reference	Responsibility
H1	All construction personnel will be made aware of the requirements of this Heritage Management Plan through site inductions, toolbox talks or specific training. All personnel will be made aware of the requirement to adhere to the UDP (1.6.8) at all times during construction.		Foreman and Project Engineer
H2	Site GA6 will be fenced for the duration of construction activities associated with the proposal. The construction of the fence should be conducted with on-site advice from the project archaeologist.	SoC C30	Project Engineer
H3	The location of all nearby heritage sites GA6, GA7, GA23, G1B AS1, GRW28, G1B AS2, GWTP1 and GWTP3 are to identified and marked on the Environmental Constraints Map (CEMP Appendix 4) and displayed in site sheds.	SoC C31 SoC C32	Foreman and Project Engineer
H4	Site staff would be advised of the location through displayed maps in site sheds and presence of Site GRWH5 and the need to avoid impacts to the area. The site should be included on all maps and plans as a no-go zone both on and off site.	SoC C 34	Foreman and Project Engineer

	During construction		Responsibility
H5	Heritage sites identified prior to construction (especially high risk sites) will be monitored as part of the weekly site environmental checklist.		Foreman and Project Engineer
H6	If any Unanticipated Aboriginal Heritage discoveries are made (i.e. moderate to high density scatters > 1 artefact /m ² , scarred trees, ochre deposits, hearths, skeletal remains), works which would potentially impact the find would stop immediately. The Unanticipated Discovery Plan (1.6.8) would be implemented. Works will not commence until appropriate steps have been followed and clearance has been received.	SoC C33	Foreman and Project Engineer
H7	If any potential European Heritage items are encountered, works which could potentially impact the find would stop immediately. The Superintendent's Representative would be notified immediately. An Archaeologist would be engaged to carry out an assessment of the heritage find. If the items were found to be of heritage significance, the Heritage Council would be notified to review and endorse the find.	SoC C33	Foreman and Project Engineer

7.0 Weed Management Plan

The purpose of this Weed Management Plan (WMP) is to describe how Guideline ACT will undertake construction activities in a manner that appropriately suppresses and inhibits the introduction and spread of weeds within the Project area.

Six species listed as Class 4 noxious weeds for the Queanbeyan LGA were recorded within or adjacent to the proposal area, including:

- African Love Grass (*Eragrostis curvula*)
- Bathurst Burr (*Xanthium spinosum*)
- Blackberry (*Rubus fruticosus*)
- Paterson’s Curse (*Echium plantagineum*)
- Serrated Tussock (*Nassella trichotoma*)
- Sweet Briar (*Rosa rubiginosa*)

Under the Noxious Weeds Act 1993, Class 4 ‘Locally Controlled Weeds’ require that the ‘growth of the plant must be managed in a manner that reduces its numbers, spread and incidence and continuously inhibits its reproduction’. (6.4.2 Weeds – 15048, Googong Stage C Network West Final REF v4-1)

7.1 Weeds – Management and Mitigation Measures

Table 6 Noxious Weed Mitigation Measures

ID	Prior to construction	Reference	Responsibility
W1	Prior to arriving to the Project site, all vehicles, machinery, equipment and materials must be free from vegetative materials and propagules.	SoC C26	Foreman and Plant Operators
W2	A vehicle brush-down/wash-down area will be provided.	NA	Foreman and Plant Operators
W3	Notify all relevant authorities, prior to commencement of any weed control activity.	SoC C26	Project Engineer
W4	Weed infested areas within the Project area or directly adjacent to the Project area should be fenced off (or otherwise demarcated) until such time as they are treated to minimise the risk of spreading through vehicle and equipment contamination.		Foreman and Project Engineer
W5	For areas where topsoil stripping is required, Guideline ACT will treat the existing vegetation (both grass cover and weeds)		Foreman and Project Engineer
	During construction		Responsibility
W6	Vehicle and machinery movements will be confined to disturbed areas and existing tracks where possible.	SoC C26	Foreman and Plant Operators
W7	Erosion and sediment control materials used on-site should be weed free (e.g. jute, hessian).		Foreman
W8	Rehabilitate and revegetate bare earth with the appropriate specified species as soon as practical		Foreman and Project Engineer

	following completion of works to minimise weed ingress.		
W9	Throughout construction, monitoring for weeds will be undertaken	SoC C26	Foreman and Project Engineer
W10	During construction, undertake noxious weed control procedures to suppress growth and spreading of weeds using appropriate methods outlined in the pesticides Act 1999 and Pesticides Regulation 2009	CoA 5	Foreman and Project Engineer
	Post construction		Responsibility
W11	Weed growth will be monitored by the landscape subcontractor and Guideline ACT throughout the consolidation period.	SoC C26	Project Engineer
W12	Weed treatment (spot spraying, manual removal) is to continue throughout the consolidation period.		Project Engineer
W13	During consolidation, if required undertake noxious weed control procedures to suppress growth and spreading of weeds using appropriate methods outlined in the pesticides Act 1999 and Pesticides Regulation 2009	CoA 5	Project Engineer

8.0 Fire Management Plan

As identified in the Review of environmental factors (REF) there is the potential for a grassfire to spread towards the permanent reservoirs site and WRP. This potential is limited by the availability of fuel influenced by season (rainfall, rates of growth and curing) and grazing by sheep.

The intensity at the asset would be limited by the fuel load available within the grassland and would be of short duration during passing of the fire front (residence time), most likely less than 5 seconds based on the available fuel load present at time of site inspection.

Above ground assets and infrastructure at both sites are rated to be of low vulnerability primarily due to the nature of construction and external materials used. The reliance on steel (non-combustible) construction and the fact that the asset is not habitable or offering protection for human life, coupled with the low consequence of impact, means that the risk of significant or costly damage, or disruption to capacity, is low. (*Bushfire assessment – 15048, Googong Stage C Network West Final REF v4-1*)

Due to the high risk outcome of bush fires in the area the following Management and Mitigation Plan is to followed throughout all stages of the project i.e. Prior to construction, During construction and Post Construction.

THE BURNING OF MATERIAL ON SITE IS STRICTLY PROHIBITED UNLESS INSTRUCTED BY NSW RURAL FIRE SERVICES.

8.1 Bush Fire Management Control Plan

Bush Fire Management Control Plan General requirements during construction check (<http://www.bom.gov.au/act/forecasts/act.shtml>) daily for information for the forecast Fire Danger Rating (FDR)

Table 7 Bush Fire Control Plan

On days of High to Very High fire danger where the FDR is HIGH or less	Responsibility
Ensure water cart (chaser vehicle) and pumps are readily available	Foreman
Assign a fire watch person to oversee operations, extinguish any fires and communicate an alarm	Project engineer
Hot Works allowed as per Guideline ACT's procedure GLA-SP-2.2.4	Project engineer
On days of Very High fire danger where the FDR is VERY HIGH or greater...	Responsibility
Ensure water cart (chaser vehicle) and pumps are readily available	Foreman
Assign a fire watch person to oversee operations, extinguish any fires and communicate an alarm	Project engineer
Hot Works allowed as per Guideline ACT's procedure GLA-SP-2.2.4	Project engineer
Plant and machinery to operate only on areas where the topsoil has been stripped	Foreman
No plant and machinery to operate within 5m of any vegetation.	Foreman and Plant Operators
If instructed by the authorities to suspend operations, park plant in the site compound and turn engines off. Keep watch over plant and site for minimum of 1 hour to ensure no fires ignite.	Foreman and Project Engineer

Toolbox all on-site personnel daily during periods of very high fire danger	Foreman
Total Fire Ban Days (note: a Total Fire Ban may be declared at FDR VERY HIGH under certain conditions)	Responsibility
Ensure water cart (chaser vehicle) and pumps are readily available	Foreman
Assign a fire watch person to oversee operations, extinguish any fires and communicate an alarm	Project engineer
No Hot works permitted on site	Project engineer
Plant and machinery to operate only on areas where the topsoil has been stripped	Foreman
No plant and machinery to operate within 5m of any vegetation	Foreman and Plant Operators
If instructed by the authorities to suspend operations, park plant in the site compound and turn engines off. Keep watch over plant and site for minimum of 1 hour to ensure no fires ignite.	Foreman and Project Engineer
Toolbox all on-site personnel daily during periods of total fire ban	Foreman

8.2 Specific Requirements from Statement of Commitments

Table 8 Fire Mitigation Measures

ID	Prior to construction	Reference	Responsibility
F1	Access tracks to be strategically placed ensuring emergency routes are available in the case of bush fires, specifically the pumping station should have a maintenance track between it and the grassland to the east.	SoC C29	Project Engineer
	During Construction		
F2	Landscape areas surrounding works are to be maintained so as to minimise fire hazards.		Foreman and Project Engineer
F3	All access roads surrounding the infrastructure are maintained as a defensible space and grasses and vegetation should be managed adjacent to these roads.	SoC C27	Foreman and Project Engineer
F4	Emergency access to the access roads around the facilities should be maintained at all times.	SoC C28	Foreman and Project Engineer
F5	The burning of material on site would be prohibited, except under the instruction of NSW Rural Fire Services.	SoC C59 SoC C73	All Employees

9.0 Unanticipated Discovery Protocols

In correlation to the Management and Mitigation of the Heritage plan (Specifically the controls to implement in case of unanticipated discovery of heritage sites) The following outlines the recommended procedures to follow for all unanticipated discoveries (as referenced in the *Googong Stage C Network West Final REF v4-1*).

9.1 Discovery of Historical or Aboriginal Artefacts

In the event that object(s) which are suspected of being Aboriginal object(s) or relic(s) are encountered during development works relating to the IWC Stage C Network West project, then the following protocol will be followed:

Table 9 Discovery of Aboriginal Artifact Protocol

Upon Discovery of Historical or Aboriginal Artefacts	Responsibility
Cease any further excavation or ground disturbance, in the area of the find(s); a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted; and b. The site supervisor and the Principal will be informed of the find(s).	Discoverer, Foreman and Project Engineer
Do not remove any find(s) or unnecessarily disturb the area of the find(s);	Foreman and Project Engineer
Ensure that the area of the find(s) is adequately marked as a no-go area for machinery or further disturbance, and that the potential for accidental impact is avoided;	Foreman and Project Engineer
Note the location and nature of the finds, and report the find to: a. Relevant project personnel responsible for project and construction direction and management, and b. Report the find to the Office of Environment and Heritage (OEH)	Foreman and Project Engineer
Where feasible, ensure that any excavation remains open so that the finds can be recorded and verified. An excavation may be backfilled if this is necessary to comply with work safety requirements, and where this action has been approved by the OEH. An excavation that remains open should only be left unattended if it is safe and adequate protective fencing is installed around it.	Foreman and Project Engineer
Following consultation with the relevant statutory authority (OEH), and, where advised, any other relevant stakeholder groups, the significance of the finds should be assessed and an appropriate management strategy followed. Depending on project resources and the nature of the find(s), this process may require input from a consulting heritage specialist.	Project Engineer
Development works in the area of the find(s) may re-commence, if and when outlined by the management strategy, developed in consultation with, and approved by the relevant statutory authority.	Project Engineer

9.2 Discovery of Suspected Human Remains

The following protocol will be actioned if suspected human material is revealed during development activities or excavations relating to the IWC Stage C Network West project:

Table 10 Discovery of Suspected Human Remains Protocol

Upon Discovery of Suspected Human Remains	Responsibility
<p>All works must halt in the immediate area of the find(s) and any further disturbance to the area of the find(s) prevented.</p> <ul style="list-style-type: none"> A. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted; and B. The site supervisor and the Principal/Project manager will be informed of the find(s). 	Discoverer, Foreman and Project Engineer
<p>If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which are not human). If conducted, this opinion must be gained without further disturbance to the find(s) or the immediate area of the find(s). (Be aware that the site may be considered a crime scene that retains forensic evidence). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.</p>	Project Engineer
<p>Immediately notify the following of the discovery:</p> <ul style="list-style-type: none"> A. The local Police (this is required by law); B. An OEH archaeologist or Aboriginal Heritage Officer; and C. The project archaeologist (if not already notified). 	Project Engineer
<p>Co-operate and be advised by the Police and/or coroner with regard to further actions and requirements concerning the find area. If required, facilitate the definitive identification of the material by a qualified person (if not already completed).</p>	Foreman and Project Engineer
<p>In the event that the Police or coroner instigates an investigation, construction works are not to resume in the designated area until approval in writing is gained from the NSW Police.</p>	Project Engineer
<p>In the event that the Police and/or Coroner advise that they do not have a continuing or statutory role in the management of the finds then proceed with the following steps:</p>	Project Engineer
<p>If the finds are not human in origin but are considered to be archaeological material relating to Aboriginal occupation then proceed with Protocol for the discovery of Aboriginal objects (other than human remains).</p>	Project Engineer
<p>If the finds are Aboriginal or probably Aboriginal in origin:</p> <ul style="list-style-type: none"> A. Ascertain the requirements of OEH, the Heritage Branch, the Project Manager, and the views of the AFG, and the project archaeologist. B. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following: <ul style="list-style-type: none"> I. Avoiding further disturbance to the find and conserving the remains in situ; Googong IWC Stage C Network West - Cultural Heritage Due Diligence Assessment 27 Navin Officer Heritage Consultants Pty Ltd June 2015 II. Conducting archaeological salvage of the finds following receipt of any required statutory approvals; III. Scientific description (including excavation where necessary), and 	Project Engineer

<p>possibly also analysis of the remains prior to reburial;</p> <p>IV. Recovering samples for dating and other analyses; and/or</p> <p>V. Subsequent reburial at another place and in an appropriate manner determined by the AFG.</p> <p>If the finds are non-Aboriginal in origin:</p> <p>A. Ascertain the requirements of the Heritage Branch, Project Manager, and the views of any relevant community stakeholders and the project archaeologist.</p> <p>B. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:</p> <ul style="list-style-type: none"> • Avoiding further disturbance to the find and conserving the remains in situ; • Conducting archaeological salvage of the finds following receipt of any required statutory approvals; • Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial; • Recovering samples for dating and other analyses; and/or • Subsequent reburial at another place and in an appropriate manner determined in consultation with the Heritage Office and other relevant stakeholders. 	
<p>If the finds are non-Aboriginal in origin:</p> <p>A. Ascertain the requirements of the Heritage Branch, Project Manager, and the views of any relevant community stakeholders and the project archaeologist.</p> <p>B. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:</p> <ul style="list-style-type: none"> • Avoiding further disturbance to the find and conserving the remains in situ; • Conducting archaeological salvage of the finds following receipt of any required statutory approvals; • Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial; • Recovering samples for dating and other analyses; and/or • Subsequent reburial at another place and in an appropriate manner determined in consultation with the Heritage Office and other relevant stakeholders. 	Project Engineer
<p>Construction related works in the area of the remains (designated area) may not resume until the proponent receives written approval in writing from the relevant statutory authority: from the Police or Coroner in the event of an investigation, from OEH in the case of Aboriginal remains outside of the jurisdiction of the Police or Coroner, and from the Heritage Branch in the case of non-Aboriginal remains outside of the jurisdiction of the Police or Coroner.</p>	Project Engineer

10.0 Environmental Monitoring

The following Environmental Monitoring procedure was extracted from Guideline ACT's Business Management System Procedure GLA-EP-3.2.1.

10.1 Inspections and Monitoring

The following table details the types of monitoring and inspections that are required under this CEMP.

Table 11 Monitoring and Inspections

Monitoring/ Inspection	Objectives	Responsibility	Output	Timing
Establishment of Erosion Controls (see Section 3.6.1)	To ensure that all erosion and sediment controls have been installed correctly and as per the approved ESCP prior to the commencement of construction.	Foreperson Project Engineer	Establishment of Erosion Controls Checklist GLA-EF-3.1-02	Prior to construction
Weekly Environmental Inspections	To monitor general environmental performance and compliance with this CEMP. To monitor the effectiveness of weed control activities. To monitor the effectiveness of erosion and sediment controls.	Foreperson Project Engineer	Site Environment Weekly Checklist GLA-EF-3.2-01	Weekly and following rainfall events.
Daily Plant and Vehicle Inspections	To ensure that plant and vehicles are in good condition prior to use, and to identify any maintenance requirements (e.g. oil leaks).	Plant/vehicle operators	Daily Plant and Vehicle Checklist GLA-SF-2.3-01	Daily, prior to use of vehicles and plant
Waste material monitoring (see Section 3.6.8)	To track the types and volumes of various wastes leaving the site	Project Engineer	Waste Management Plan GLA-EF-3.2-03	Complete for disposal of wastes

10.2 Weekly Environmental Checklist

A site environment inspection shall be completed at least once per week and after any rain event to monitor all environmental controls and their effectiveness.

The Project Engineer (PE) is responsible for ensuring the check is completed and documented by competent personnel. Any items requiring action shall be recorded using the Site Environment Weekly Checklist (**CEMP Appendix 11**).

The Foreperson is to ensure any actions raised are completed before the next inspection. After completion of appropriate action, the checklist is to be forwarded to the PE for review, signing and filing in the project file. The PE shall ensure that any actions raised have been completed.

If the issue is not addressed in a reasonable time, or if a significant breach of the environmental controls occurs, a Non Conformance/Corrective Action (NCA) Report will be issued (GLA-QF-4.2-20).

In the event of an environmental incident (e.g. Client or public complaint or EPA Warning/Fine) a Non Conformance/Corrective Action (NCA) Report will be completed (GLA-QF-4.2-20). All NCA reports are reviewed by Guideline ACT management and subsequent corrective and preventive actions are taken as required.

10.3 Auditing

Environmental management forms part of the following audits:

Project Management Plan (PMP) Audit:

The Environmental Management Plan (EMP), as part of the PMP, shall be subject to an audit at least once for each project to determine whether the provisions of the Environmental Management System are being implemented effectively and in accordance with legislative requirements. Refer to the Quality - Construction Phase - Audit Procedure (GLA QP-4.2.3) for further details.

Guideline ACT Compliance Check:

Significant aspects of the Environmental System will be monitored internally by the Systems Manager (SM) approximately once per month for each project. Refer to the Quality - Construction Phase - Audit Procedure (GLA-QP-4.2.3) for further details.

Non-conformity's or corrective actions identified in the audit will be listed and issued to the site team via GLA form GLA-QF-4.2-23. The Compliance actions list will be itemised and have a responsible person to action within a specified time frame. Closed out items shall be issued back to the Systems Manager for verification and final close out.

Appendix 9

Monthly environmental report (template)

Scope

This monthly report is to be provided to GTPL monthly to track progress on environmental performance. The report is to include relevant details including but not limited to:

- Environmental inspections.
- Environmental monitoring.
- Environmental incidents.
- Environmental non-conformances.
- Environmental audits.
- Environmental reporting against licences, approvals, permits etc.
- Planned and completed notifications to the community regarding construction activities.
- Complaints and enquiries.
- Training.

Project description

Construction of the Stage C Network is likely to take about 12 months and the following sequences of activities are anticipated:

- Establishment of the site compound within the construction footprint area.
- Clearing of existing vegetation.
- Removal and stockpiling of topsoil.
- Formation of access roads – excavation to grade as required, and importation and placement of appropriate fill for the road.
- Installation of temporary power and water supply – trench excavation and pipe laying.

10.3.4.2 Gravity Mains and Rising Mains

- DI-CL-225 Potable Water rising main from the Interim Reservoir Site to the Ultimate Reservoir Site
- DI-CL-375 Recycled Water rising main from the Interim Reservoir Site to the Ultimate Reservoir Site
- PVC-M – 250 Potable Water gravity main from the Interim Reservoir Site to the Ultimate Reservoir Site
- PVC-O – 375 Recycled Water gravity main from the Interim Reservoir Site to the Ultimate Reservoir Site
- PVC-O-450 Combined Reservoir Overflow pipe from the Ultimate Reservoir Site to the environmental discharge point

10.3.4.3 Ultimate Reservoir

The construction scope of works at the ultimate reservoir site includes the following key elements delivered on a greenfield site:

- Bulk earthworks
- 1.9 ML Potable Water Reservoir
- 4.0 ML Recycled Water Reservoir
- Chemical dosing and storage for disinfection, pH correction and dechlorination
- Potable Water Booster Pumps for site services
- Recycled Water Booster Pumps for 'off-site' irrigation of Sports fields 3 and 4 on Googong Common
- A combined reservoir overflow system
- Connections to rising and gravity mains
- Roads, hardstands, surface drainage, perimeter fencing and access gates
- Power supply to site
- Provisions for stage 'D' expansion

10.3.4.4 Water Recycling Plant Modifications

The construction scope of works at the Water Recycling Plant (WRP) includes the following key elements. WRP is an operational / brownfield site:

- 415 KL Recycled Water Tank and interconnecting pipework
- 3 new Recycled Water Transfer Pumps and interconnecting pipework, including the demolition of one of the existing pump installations to make room for one of the new pumps, and provision for stage D expansion
- DICL-375 Potable Water rising main that connects the Potable Water Top-Up Pump Station (PWTUPS) to the WRP from the ICON Revenue Site just outside the WRP fence line to the existing and the new Recycled Water Tanks

Reporting period

Period starting	Period ending

Scope of construction activities undertaken

Provide details on construction activities undertaken during the reporting period.

Area	Key activities (provide summary)

Environmental inspections

Provide details on environmental inspections undertaken during the reporting period.

Inspection type (Weekly inspection or Environmental Representative inspection)	Date	Key issues (identify key issues identified and actions taken)	Outstanding issues (identify any outstanding issues)

Environmental monitoring

Provide details on environmental monitoring undertaken during the reporting period.

Monitoring type and location (noise, vibration, water quality etc)	Date	Outcome (identify any exceedances of criteria and provide explanation)	Action taken (identify any actions taken or further action required)

Discussion of environmental monitoring results

- ... (provide summary)

Environmental incidents

Provide details on environmental incidents that occurred during the reporting period.

Incident type and location (category of incident, location and extent)	Date	Response (identify extent of environmental impacts, response, reporting)	Investigation (identify requirements for / results of investigation and further action required)

Environmental non-conformances

Identify non-conformances that occurred during the reporting period and review the non-conformance register to identify outstanding actions. Environmental incidents above are excluded from this section.

Non-conformance (provide summary)	Date	Status (closed or open)	Further action required (provide summary)

Environmental audits

Provide details on internal and external audits undertaken during the reporting period.

Audit type (<i>internal or external, provide details</i>)	Date	Undertaken by	Description	No. of non-conformances (<i>details above</i>)

Environmental reporting against licences, approvals, permits

Provide details on any other reporting undertaken during the reporting period e.g. relating to the Part 5 Project Approval, any other statutory licences or permits.

Licence, approval or permit details	Date	Reported to	Description

Completed construction notifications

Provide details of completed construction notifications undertaken during the reporting period.

Notification type	Date completed	Distributed/sent to	Description
E.g. Letter regarding blasting		Sent to sensitive receivers (list addresses) and QPRC	Letter regarding blasting activities that occurred on [date].

Planned construction notifications

Provide details of planned construction notifications for the upcoming reporting period.

Notification type	Date to be sent by	To be distributed/sent to	Description
E.g. Letter regarding blasting		Sent to sensitive receivers and QPRC	Letter regarding planned blasting activities to occur on [date].

Community complaints/enquiries

This section should provide a summary record of environmental complaints received during the reporting period and outline the response and status (open/closed).

All communication with other stakeholders/community should be recorded and provided to GTPL who will record in the IWC Project consultation manager database.

Complaint made by (list contact details)	Date of complaint	Issue raised (provide summary)	Actions taken (provide summary)	Date closed out

Training

Training type (induction, toolbox talk, other)	Date	Topics covered (provide summary)	No of personnel trained

Appendix 9

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Area	Key activities (provide summary)

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Inspection type (Weekly inspection or Environmental Representative inspection)	Date	Key issues (identify key issues identified and actions taken)	Outstanding issues (identify any outstanding issues)

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Monitoring type and location (noise, vibration, water quality etc)	Date	Outcome (identify any exceedances of criteria and provide explanation)	Action taken (identify any actions taken or further action required)

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- ... (provide summary)

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Provide details on environmental incidents that occurred during the reporting period.

Incident type and location (category of incident, location and extent)	Date	Response (identify extent of environmental impacts, response, reporting)	Investigation (identify requirements for / results of investigation and further action required)

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Identify non-conformances that occurred during the reporting period and review the non-conformance register to identify outstanding actions. Environmental incidents above are excluded from this section.

Non-conformance (provide summary)	Date	Status (closed or open)	Further action required (provide summary)

Environmental audits

Provide details on internal and external audits undertaken during the reporting period.

Audit type (internal or external, provide details)	Date	Undertaken by	Description	No. of non-conformances (details above)

Environmental reporting against licences, approvals, permits

Provide details on any other reporting undertaken during the reporting period e.g. relating to the Part 5 Project Approval, any other statutory licences or permits.

Licence, approval or permit details	Date	Reported to	Description

Completed construction notifications

Provide details of completed construction notifications undertaken during the reporting period.

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This section should provide a summary record of environmental complaints received during the reporting period and outline the response and status (open/closed).

All communication with other stakeholders/community should be recorded and provided to GTPL who will record in the IWC Project consultation manager database.

Complaint made by <i>(list contact details)</i>	Date of complaint	Issue raised <i>(provide summary)</i>	Actions taken <i>(provide summary)</i>	Date closed out

Training

Training type <i>(induction, toolbox talk, other)</i>	Date	Topics covered <i>(provide summary)</i>	No of personnel trained

Appendix 10

GLA Emergency Management Plan

PMP Appendix F - Emergency Plan

Roles

<i>Emergency Controller:</i>	Tom Darmody	0432 591 897
<i>Wardens:</i>	Shane Malec	0423 793 010
	Brendan Nucifora	0423 882 089

Project Evacuation Procedure

If an evacuation of the site is necessary, the Emergency Controller (PE/Foreman/Or position Deputy) will ensure that all personnel are verbally notified via:

- *UHF radio channel 32. Phone not to be used in the case of a Bomb Threat*

The Site Sign In/Out Register (GLA-SF-2.2-19) will be used in the event of an emergency to determine who is on site and accounted for.

Signage will distinguish assembly point location which will be:

- *TBA when site established Insert description of sign location and/or map of location. Ensure that there are contingencies for Bomb Threats this is not be the normal Evacuation Assembly Point.*

Workers shall ensure that:

1. Electrical tools and machinery are switched off prior to leaving worksite if safe to do so, and
2. Report to their Foreman at the assembly site.

The Emergency Controller or Deputised Emergency Controller shall:

1. Co-ordinate with each other to check personal numbers on site, and
2. Ensure a First Aid Kit and vehicle is available at the assembly point
3. Contact and coordinate with Emergency Services as required
4. Once the emergency has been attended to and the site is safe to return to, give the "All Clear" to personnel to go back to their duties.
5. Perform de brief for site employees and review the response to the emergency and record on Toolbox Record Form GLA SF-2.2-06.

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Emergency plans for:

Fire/Smoke Emergency

In the event of a fire on site, the following actions must be taken **(RACE)**:

- **R**emove people from the danger area (safety to self, scene and survivors in that order)
- **A**lert the Emergency Controller (and call the Fire Brigade)
 - When calling the Fire Brigade, tell them the exact location of the fire and what is on fire.
- **C**onfine the smoke and fire (restrict the spread of fire. Attempt to extinguish if safe and trained to do so)
- **E**vacuate to a safe area

Medical Emergency (DRSABCD)

Danger (ensure the area is safe for yourself, others and the patient.)

Response (check for response, 1. Ask Name, 2. Squeeze shoulders)

Send for help (dial 000 or 112 from a mobile. Ask for an ambulance)

- Advise the exact location of the emergency
- Give your name & designation to the operator

Airway (open mouth – if foreign material is present, place in recovery position. Clear airway with fingers. Note: DO NOT move the person or place into the recovery position if the injury is the result of a fall)

Breathing (check for breathing – look, listen, feel. If breathing normally place in recovery position. Continue to monitor breathing. If not breathing normally commence CPR)

C.P.R. (start CPR (only if trained to do so))

Defibrillations (apply defibrillator (if available) and follow voice prompts)

In the event of a medical/first aid emergency:

- Render assistance to the injured and make them comfortable. If the injury has resulted from a fall, DO NOT move the person(s) and where possible do not leave them unattended.
- Try and ascertain what the exact injury is and the status of the injured

External Emergency

External emergencies that may occur include:

- External damage to the site sheds
- Severe storm
- Flooding
- Bush fire
- Civil disturbance

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CIVIL DISTURBANCE, it is recommended during a demonstration or civil unrest, that every effort be made to keep un-authorized personnel out of the site.

REMEMBER

- Stay out of danger and do not take risks that endanger your and others lives
- An evacuation may be necessary depending on the nature and extent of the incident
- Always follow the advice of the responding Emergency Services at all times

ACTION PLAN

1. Assess the situation, attempt to make the area safe, but only if safe to do so
2. Report the emergency to your Emergency Controller as soon as possible
3. If required, ensure appropriate service technicians are notified of the emergency. This may include plumbers, electrician, State Emergency Service (SES) etc.)
4. Secure the area. Prevent other workers from entering the danger zone.

Armed Hold Up/Personal Threat

If you are held up or receive personal threat(s):

ARMED HOLD UP or INTRUDER ON PREMISES

- Remain calm and cooperate with offender(s). (if safe to do so)
- Do not make any sudden movements, and always convey intentions to the offender(s)
- Stay out of danger if you are not directly involved or if you cannot leave the area
- NO attempt should be made to apprehend the assailant(s) or to follow them out of the premises
- When safe to do so, alert the emergency services and request police attendance.

IN THE EVENT OF AGGRESSION OR VIOLENCE

- Attempt to diffuse the situation by quiet, understanding discussion
- Obey all intruders' instructions, if safe to do so. Only do exactly what you are told and nothing more. Do not offer any advice or additional information
- Comply with all demands. DO NOT take undue risks
- Assess the situation and decide on appropriate action to be taken
- NO attempt should be made to apprehend the assailant(s) or to follow them out of the premises
- When safe to do so, alert the emergency services and request police attendance.

Bomb Threat/Suspect Object

If you receive a bomb threat:

- Treat the bomb threat as serious until it is proven otherwise
- Remain calm and endeavor to establish with the caller where the bomb has been placed, at what time will it detonate and why you are the target.
- DO NOT hang up the phone when the call is terminated; attempt to keep the phone open for possible trace.
- At the first opportunity, notify the Emergency Controller and advise of the threat
- A search should be conducted to look for suspicious objects. Do not inform other people or visitors. Carry out the search calmly and quietly.

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- Ensure the Emergency Services (Police) are advised of the emergency.
- Do not use mobiles phones in close proximity to identified area.

Suspect objects are not likely to be found on any Guideline ACT work site. However if a suspect/suspicious object is found:

- Assess if the object is: **H** – Hidden? **O** – Obviously a bomb? **T** – Typical of its environment?
- Has there been: **U** – Unauthorised access? **P** – Perimeter Breach?
- If so, then DO NOT TOUCH, TILT, MOVE or TAMPER with the suspect object
- At the first opportunity, notify the Emergency Controller and advise them of the suspect object
- Ensure the Emergency Services (Police) are advised of the emergency
- Endeavour to prevent other people from getting near the suspect object.
- Do not use mobiles phones in close proximity to identified area.

Rescue plans for:

Confined space

Prior to any Confined Space Permit GLA-SF-2.2-12 being approved the document will need to be completed.

In the event that a worker is trapped or unconscious in a confined space:

- Contact FM/PE for assistance. FM/PE then calls 000 for emergency services.
- Initiate the Confined Space Emergency Procedure on the Permit GLA-SF-2.2-12.
- Emergency controller to coordinate rescue
- Standby person to attempt rescue if safe to do so.
- Whenever possible retrieve the worker(s) and begin Medical Procedure DRSABCD until emergency services arrive
- Provide full Factual information to emergency services and assist where possible.

Plant roll over

- Contact FM/PE for assistance. FM/PE then calls 000 for emergency services.
- First respondent is to assess whether it is safe for anybody to go into the incident zone to assist.
- Establish an exclusion zone around the roll over area and only personnel with Emergency Response Training are to enter.
- If the area is not safe wait for the Emergency rescue services. (Police/Fire/Ambulance).
- Establish whether operator is trapped or if any injuries have occurred.
- If safe to do so approach the plant proceed with Medical Emergency Procedure DRSABCD until emergency services arrive.
- Assess whether it is necessary to secure the plant to stop further movement.
- Provide all factual information to emergency services and assist where possible.

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Trench Collapse with Human Engulfment

- Trench collapse
- Operator radio's FM/PE for assistance. FM/PE then calls 000 for emergency services.
- First respondent is to assess whether it is safe for him/her to go into the incident zone to assist.
- PE or FM to assess if mechanical excavation is viable and safe to carry out and if the area is safe to do so,
- PE or FM to allocate workers to start to excavate the area, when in the zone of the trapped worker(s) use hand digging techniques if possible.
- Once the worker(s) is freed, proceed with Medical Emergency Procedure DRSABCD until emergency services arrive.
- Offer all factual information and assist when required.

Others situations to assess:

"Insert or delete as identified in Project Risk Register" e.g.;

- Electrical power lines
- Working over water
- Pressurised gas lines
- Working at heights.

The above information is to be included in the site induction

Emergency Management:

When calling Emergency Services:

1. State nature of emergency - **e.g. Fire, Accident, etc.**
2. State the address as follows, **"Insert appropriate address"**

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Emergency Telephone Contact Numbers

Ambulance		000
Police		000
Fire Brigade		000
Canberra Hospital (Emergency Dept.)		02 6244 2611
Canberra Hospital		02 6244 2222
Electricity		13 10 93
Telstra		13 22 03
Water		13 11 93
Gas		13 19 09
EPA		6207 2153
Poison Information		13 11 26
OzHelp		02 6251 4166
Guideline Head Office		6299 3262
Guideline General Manager	John Hite	0407 008 195
Work Health & Safety Manager	Stephen Solari	0413 686 374
Guideline Project Manager	Tom Darmody	0432 591 897
Guideline Foreman	Shane Malec	0423 793 010
Guideline Junior Engineer	Brendan Nucifora	0423 882 089
Guideline Leading Hand	N/A	N/A
First Aider	Shane Malec	0423 793 010

Testing of Equipment & Facilities

Resource	Response Purpose	Emergency Type	Servicing Frequency	Placement in workplace
Fixed equipment				
UHF Radios in Vehicles and Plant	Notify all with UHF connectivity that there is an emergency	All		
Portable equipment				
Air Horn	Alert people of an evacuation	Fire or Gas Leak	Test every 3 months	1 in reception & 1 in workshop
Fire extinguisher	Put out a small fire	Fire	6 monthly by: NFS	Nominated on Emergency Evacuation Plan
First Aid Kit	Treat minor injuries	Medical Emergency	6 Monthly by: St John'	Nominated on Emergency Evacuation Plan
Spill Kit	Clean up spilled	Internal	Check kit contents	Workshop

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	substances	Emergency	every 3 months or after each use by Workshop personnel	
Traffic Control Stop/Slow equipment	Control traffic in the event of an emergency that affects a public road	Public road incident/accident		Traffic Controller
Backup Communication Device e.g. mobile phones	Use to contact emergency services Also used to contact site personnel who may not have access to a UHF	All emergencies excluding Bomb Threat. Do not use mobiles in identified area.		Most people have mobile phones
MSDS Info	Info helps with how to respond to a hazardous substances incident	Internal Emergency	Check register monthly & update by Engineer	Emergency Info Box & electronic file
Emergency Facilities				
Emergency Evacuation Point	Evacuation	Evacuation	Site establishment	Site Office
First Aid Room	Treat injured person	Medical Emergency	Maintain after each First Aid treatment by First Aider	Site Compound

1) ***Information, Training and Instruction***

All Workers on site must be inducted into the Emergency Procedure for the project via the Site Induction Record Form (GLA-SF-2.2-03).

a) Emergency Response Team Training

Resource	Response Purpose	Emergency Type	Servicing Frequency
<u>Personnel</u>			
Emergency Controller	Respond to emergencies	All	Training and Meetings
First Aid Trained	Provide First Aid for a minor injury	Medical Emergency	Re-train every 3 years
Traffic Controllers	Control in the event of an emergency that affects a public road	Public road incident/accident	Re train every 3 years

Appendix 11

Weekly Checklists

SITE ENVIRONMENT WEEKLY CHECKLIST

Project Name				Project Number		
Inspection completed by (Names):				Date	/	/
Rainfall observations during week (if any) Date	/	/	Amount	mm		
Rainfall observations during week (if any) Date	/	/	Amount	mm		
Rainfall observations during week (if any) Date	/	/	Amount	mm		

Environmental Check	Action Required/ Comments	Action Complete initial & date
All silt fencing in good effective operational condition		
Sedimentation pond still effective for site and has capacity		
Adequate quantity of flocculant stockpiled on site		
Date stabilised entry/exit maintained (turned over)		
Adjoining public roads - must clear mud/dirt or dust (record action complete eg "road swept on.....")		
Dust control – dust adequately controlled		
Work area clear of rubbish		
Adequate construction waste bins provided and emptied regularly		
Recycling of construction waste adopted where appropriate		
Is contaminated waste being disposed of correctly? i.e. oil, asbestos		
All diversion drains maintained & without obstruction		
Straw bales secured in drainage lines & in good condition		
All pipelines & sumps protected from sediment?		
Tree protection installed as required		
All machinery used on site adequately silenced		
All fuel and chemical stored in correctly		
MSDS available (& current) for all fuels /chemicals		
Is the Waste Register up to date?		

NOTES:

Project Engineer CHECK: All outstanding items closed out

Name	Signature	Date / /

SAFETY INSPECTION CHECKLIST

Project Name:	Project Number:
Date of Inspection: / /	
Worker: Team Members, including workers and subcontractors	

	Item Description	Satisfactory	Action Required
1	GENERAL ITEMS		
1.01	Safe entry and exit to site		
1.02	Vehicle parking area allocated		
1.03	Plant parking area allocated		
1.04	Compound tidy		
1.05	Storage areas identified		
1.06	Security fencing maintained		
1.07	Lock up procedure		
1.08	Waste bins available and serviced (Waste removal)		
1.09	Amenities installed & maintained as per Guideline ACT minimum requirements		
1.10	Are adequate cleaning products available on site?		
1.11	No storage in sheds		
1.12	Is PPE readily available onsite		
1.13	Qualified First Aider on site (<i>write name of 1st Aid Person</i>)		
1.14	First Aid kit available & maintained		
1.15	Emergency procedure displayed		
1.16	Fire extinguishers available and suitable for the hazard		
1.17	Majority of employees trained in use of fire extinguishers		
1.18	Fuel and Chemicals stored appropriately		
1.19	Are all hazardous chemicals entered into the hazardous substances register		
1.20	Have all Safety Data Sheet (SDS) been obtained & are they current		
2	SITE SPECIFIC		
2.01	Work areas clean and tidy		
2.02	Pedestrian access ways marked & free of trip hazards		
2.03	Floor areas free of loose materials		
2.04	Pre – Excavation Checklist being used		
2.05	DBYD Plans current		
2.06	Have existing services been pegged		
2.07	Have trenches been benched, battered or shielded.		
2.08	Paraweb/Fencing erected around excavations/trenches		
2.09	Is there safe entry & exit for all trenches		
2.10	Is material/spoil kept clear of the trenches		
2.11	Workmen are protected from work outside of trench		
2.12	Backfilling carried out as soon as possible		
2.13	Is the work area kept free of water		
2.14	Is correct PPE being used		
2.15	Are regular checks performed to ensure the condition of the PPE		
2.16	Are the workers trained in the correct use of the PPE		

Appendix 12

Noise and Vibration Management Plan



Noise and Vibration Management Plan

Googong Township IWC Project: Stage C Network

Prepared by:

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Approval for Issue

Name	Signature	Date
John Hite		12/07/2016

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1.0 Introduction

1.1 Context

This Noise and Vibration Management Plan (NVMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Googong Township IWC Project Stage C Network.

Refer to Section 1 and Section 2 of the CEMP for additional detail on the scope of Stage C Network to which this NVMP applies.

This NVMP has been prepared to address the requirements of the Council Conditions of Approval (CoA), the Statement of Commitments (SoC), Googong IWC Project – Stage C Network West Review of Environment Factors (REF), submissions report, and all applicable legislation.

1.2 Background

A number of construction activities have the potential to exceed the required criteria at adjacent properties, including:

- Earthworks and concrete work stages at the WRP at two properties.
- Concrete works at the permanent reservoir site at three properties.
- Road works at one property.

However, due to the transient nature of many of the activities, the predicted maximum noise levels are only likely to be sustained at any one receiver for a relatively short period of time. All predicted construction noise levels are below the 'highly noise affect' NML target of 75dBA.

Impacts of the operation of the proposal to existing and future residential properties are expected to be negligible.

Construction activities are unlikely to have building damage impacts to adjacent buildings but some activities may cause human discomfort to some adjacent properties.

1.3 Environmental Management System overview

The overall Environmental Management System for Stage C Network and approach to managing environmental impacts during construction is described throughout the CEMP.

This NVMP is part of the environmental management framework for Stage C Network, as described in Section 1.5 of the CEMP.

2.0 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how GTPL and the contractor will manage noise and vibration impacts during construction of Stage C Network.

This Plan also assists in ensuring that the construction of Stage C Network meets the environmental objectives and targets as defined in Section 3.5 of the CEMP.

2.2 Objectives

The key objective of the NVMP is to ensure that construction noise and vibration impacts are minimised and that compliance with construction noise and vibration requirements is achieved. To realise these objectives, the following will be undertaken:

- Ensure appropriate controls and procedures are implemented during construction activities to avoid or minimise potential adverse noise and vibration impacts (refer Section 5.1).
- Ensure appropriate measures are implemented to address the relevant CoA and SoC, (refer Section 3.2 and Section 3.3).
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this Plan.

3.0 Environmental requirements

3.1 Relevant legislation and guidelines

Section 3.1 of the CEMP identifies the legal and other requirements applicable to the IWC Project and the construction of Stage C Network. This section identifies the key legislation applicable to managing noise and vibration.

GTPL has obtained an EPL (No. 20788) for construction activities and which outlines requirements for blasting and hours of operation. The conditions of the licence must be adhered to during the construction of Stage C Network (refer NV20).

3.1.1 Relevant guidelines

This NVMP has been prepared based upon the following documents:

- *Interim Construction Noise Guideline (ICNG) (DECC, 2009).*
- *Assessing vibration: A technical guideline (DECC, 2006).*
- *Australian Standard AS 2436 Guide to noise control on construction, maintenance and demolition sites (AS 2436, 2010).*
- *British Standard BS 7385 Evaluation and measurement for vibration in buildings Part 2 (BS 7385, 1993).*
- *NSW Road Noise Policy (DECCW, 2011)*
- *Development Construction Specification C101 – General (QCC, 2011).*
- *Development Construction Specification C212 – Clearing and grubbing (QCC, 2011).*
- *Development Construction Specification C220 – Stormwater Drainage (QCC, 2011).*

4.0 Environmental aspects and impacts

The following sections summarise the existing noise environment and identify the sensitive noise and vibration receivers. Identified impacts are then reviewed.

4.1 Environmental aspects

4.1.1 Existing noise environment

The existing landscape around the permanent reservoirs site, the interim reservoirs site and the location of new rising mains and pipes is primarily open grasslands that has previously been used as agricultural grazing land. This area is part of the Googong Township (refer to Figure 2-1) and will ultimately become part of the urban township.

Land on the western side of Old Cooma Road is open agricultural land with a small number of residential homesteads located in proximity to the road adjacent to the proposal area.

The area surrounding the WRP is part of the Googong Township development that is already under construction. Residential properties are built in the areas to the west and south of the WRP with an open space buffer zone between the WRP and properties (refer to Figure 3-3).

A total of 17 existing noise receivers are located in proximity to the proposal.

Figure 6-8 shows these properties, with a prefix of 'R' referring to residential properties and 'C' referring to commercial properties (C2 is the existing ICON Water Googong Water Treatment Plant and C1 is a ranger station).

Figure 1 identifies the sensitive noise and vibration receivers for the Stage C Network.

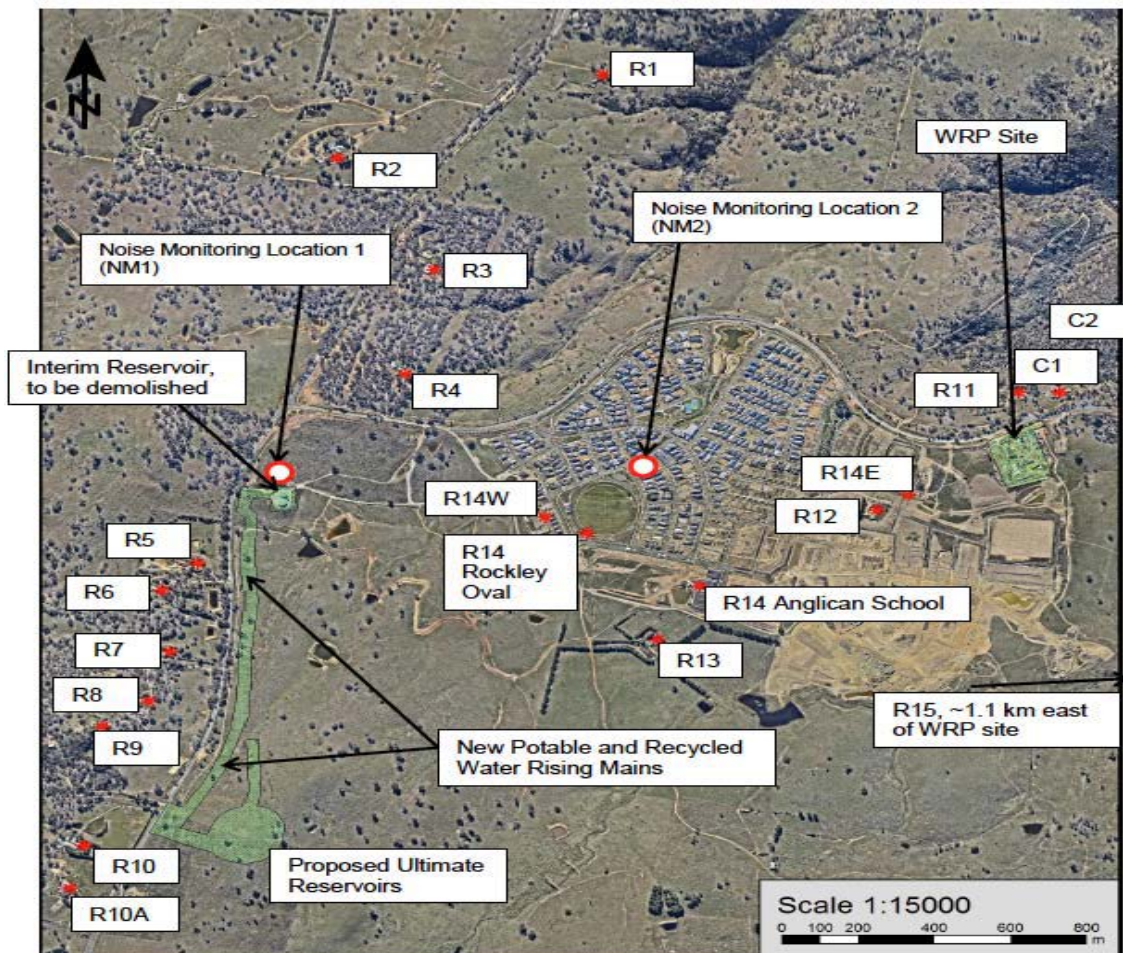


Figure 1 sensitive receivers

Noise loggers were deployed at two locations (NM1 and NM2 in **Figure 1**) from 10 June to 24 June 2015. The noise loggers were programmed to record statistical noise level indices continuously in 15 minute intervals, including LA_{max}, LA₁, LA₉₀ and LA_{eq}. A summary of the existing background noise survey is provided in Table 1.

Table 1 Unattended continuous noise monitoring

Location	Description	Noise Level Descriptor dB(A)			
		L ₁	L ₁₀	L ₉₀	L _{eq}
NM1	Day (7am to 6pm)	62	58	38	67
	Evening (6pm to 10pm)	60	54	30	51
	Night (10pm to 7am)	55	41	25	48
NM2	Day (7am to 6pm)	63	52	35	53
	Evening (6pm to 10pm)	49	40	29	44
	Night (10pm to 7am)	38	32	25	40

The Rating Background Levels (RBLs) are the median values of the LA₉₀ levels recorded over the duration of the noise monitoring for each assessment time period. Where the RBL is found to be less than 30dBA, then it is set to 30dBA. Therefore, the RBL for assessment purposes are shown in Table 2. Table 2 also notes the estimated contribution the existing industrial noise makes to this background noise level.

Table 2 Background noise levels at identified noise receivers

Location	Description	Background LA ₉₀ Noise Level, dB(A)	Estimated existing industrial LA _{eq} contribution, dB(A)
		RBL	
R1 to R9	Day (7am to 6pm)	38	<20
	Evening (6pm to 10pm)	30	<20
	Night (10pm to 7am)	30	<20
R11 to R14	Day (7am to 6pm)	35	<20
	Evening (6pm to 10pm)	30	<20
	Night (10pm to 7am)	30	<20
R15	Day (7am to 6pm)	30	<20
	Evening (6pm to 10pm)	30	<20
	Night (10pm to 7am)	30	<20

4.1.2 Construction noise criteria

Construction noise

The NSW 'Interim Construction Noise Guideline' (ICNG), (DECC, 2009) contains procedures for management of noise in relation to construction activities for residential and other sensitive receivers by defining Noise Management Levels (NMLs) and how they are applied. A summary of the derivation of NMLs from the ICNG is contained in Table 6 6 for residential receivers, Table 6 7 for sensitive receivers and Table 6 8 commercial/industrial premises.

Table 3 Interim construction noise guidelines (residences)

Time of day	Management (LAeq (15min))	How to apply
Recommended standard hours: Monday to Friday: 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL + 10dB(A)	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured LAeq (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5dB(A)	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dB(A) above the noise affected level, the proponent should negotiate with the community.

Note: Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence.

Table 4 Interim construction noise guidelines for sensitive land uses

Land use	Management Level, LAeq(15minute) (applies when properties are being used)
Classrooms at schools and other educational institutions	Internal noise level 45dB(A)

Land use	Management Level, LAeq(15minute) (applies when properties are being used)
Hospital wards and operating theatres	Internal noise level 45dB(A)
Places of worship	Internal noise level 45dB(A)
Active recreation areas ¹	External noise level 65dB(A)
Passive recreation areas ²	External noise level 60dB(A)
Community centres	Depends on the intended use of the centre. Refer to the recommended 'maximum' internal levels in AS2107 for specific uses.

¹ Characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion.

² Characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example reading and meditation.

Table 5 Interim Construction Noise Guidelines for commercial/industrial properties

Land use	Management Level, LAeq(15minute)
Industrial premises	External noise level 75dB(A)
Office, retail outlets	External noise level 70dB(A)

All construction works are proposed to be undertaken within standard operation hours (between 7am to 6pm Monday to Friday and 8am to 1pm on Saturday). Therefore the LA_{eq(15minute)} construction NML for all residential receiver locations will be a minimum of 40dBA for the 'noise affected category, and 75dBA for industrial properties and 70dBA for commercial properties.

The Anglican School Googong is open and operating and is located on Gorman Drive on the southern side of the existing Googong township. A public Googong township school is currently under construction and may be in operation during the construction timeframe. The noise criteria that would apply if in operation would be 45dBA (internal

Table 6 Project specific construction assessment criteria

Noise receivers	Description	LAeq 'Noise Affected' noise management level (NML) (RBL plus 10dB)
R1 to R9	Daytime (7am to 6pm)	48
	Evening (6pm to 10pm)	40
	Night time (10pm to 7am)	40
R11 to R14	Daytime (7am to 6pm)	45
	Evening (6pm to 10pm)	40
	Night time (10pm to 7am)	40
R15	Daytime (7am to 6pm)	40
	Evening (6pm to 10pm)	40
	Night time (10pm to 7am)	40
School classrooms	Daytime (during hours of operation)	45
C1	When in use	75
C2	When in use	70

Operational noise

The Industrial Noise Policy (EPA, 2000) provides the framework and process for deriving noise criteria with the aim of achieving the policy objectives.

For assessing intrusiveness, the background noise level must be measured. The intrusiveness criterion essentially means that the equivalent continuous noise levels (LA_{eq}) of the source should not be more than five decibels above the measured background levels (LA_{90}). Where the background level is found to be less than 30dBA, then the background is set to 30dBA.

Table 7 Project specific operational assessment criteria (intrusiveness)

Residential noise receivers	Description	$LA_{eq(15\text{ minute})}$ (RBL plus 5dB)
R1 to R9	Daytime (7am to 6pm)	43
	Evening (6pm to 10pm)	30
	Night time (10pm to 7am)	30
R11 to R14	Daytime (7am to 6pm)	40
	Evening (6pm to 10pm)	30
	Night time (10pm to 7am)	30
R15	Daytime (7am to 6pm)	30
	Evening (6pm to 10pm)	30
	Night time (10pm to 7am)	30
School classrooms	Daytime (During hours of operation)	45
C1	Daytime (During hours of operation)	70
C2	Daytime (During hours of operation)	65

The amenity assessment is based on noise criteria specific to land use and associated activities. The criteria relate only to industrial-type noise and do not include road, rail or community noise. The existing noise level from industry is measured. If it approaches the criterion value, then noise levels from new industries need to be designed so that cumulative effect does not produce noise levels that would significantly exceed the criterion.

The applicable amenity assessment criteria are outlined in Table 8.

Table 8 Amenity criteria – Recommended LA_{eq} noise levels from industrial noise sources

Type of receiver	Indicative noise amenity area	Time of day	Recommended LA_{eq} (Period) Noise Level dBA	
			Acceptable	Recommended maximum
Residence	Rural	Day	50	55

Type of receiver	Indicative noise amenity area	Time of day	Recommended LA _{eq} (Period) Noise Level dBA	
			Acceptable	Recommended maximum
		Evening	45	50
		Night	40	45
	Suburban	Day	55	60
		Evening	45	50
		Night	40	45
	Urban	Day	60	65
		Evening	50	55
Night		45	50	
School Classrooms - internal	All	Nosiest 1 hour period when in use	35	40
Hospital wards - internal - external	All	Nosiest 1 hour period when in use	35	40
			50	55
Place of worship - internal	All	When in use	40	45
Area specifically reserved for passive recreation (e.g. National Park)	All	When in use	50	55
Active recreation area (e.g. school playground, golf course)	All	When in use	55	60
Commercial premises	All	When in use	65	70
Industrial premises	All	When in use	70	75

Sleep disturbance

Criteria for assessing sleep disturbance has not been identified under the INP, therefore sleep arousal has been assessed using the guidelines set out in the NSW Road Noise Policy (RNP) (DECCW, 2010).

To avoid the likelihood of sleep disturbance the RNP recommends that the LA_{1(1 minute)} noise level is the source under consideration should not exceed the background noise level (LA₉₀) by more than 15dBA when measure outside the bedroom window of the receiver during the night-time hours (10pm to 7am). The maximum internal noise levels between 50-55dBA is applicable as it is unlikely to cause awakening reactions.

4.1.3 Vibration criteria

The effects of vibration in buildings can be divided into two main categories – those in which the occupants or users of the building are inconvenienced or possibly disturbed and those in which the integrity of the building or structure may be impacted.

Human comfort vibration

The EPA’s Assessing Vibration: A Technical Guide (DEC, 2006) provides guideline values for continuous, transient and intermittent events that are based on a Vibration Dose Value (VDV) rather than continuous vibration level. The VDV is dependent upon the level and duration of the short-term vibration event, as well as the number of events occurring during the daytime or night-time period.

The VDV’s recommended for vibration of an intermittent nature (i.e. construction works where more than three distinct vibration events occur) are described in Table 9

Table 9 Acceptable vibration dose value for intermittent vibration (m/s^{1.75})

Location	Daytime (7am to 10pm)		Night time (10pm to 7am)	
	Preferred value	Maximum value	Preferred value	Maximum value
Critical areas ¹	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Office, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

¹ Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. These criteria are only indicative.

Structural damage vibration

Structural damage vibration limits are based on Australian Standard AS 2187:Prt 2-2006, Explosives – Storage and Use – Part 2: Use of Explosives, and British Standards BS 7385 Part 2-1993 Evaluation and Measurement for Vibration in Buildings Part 2. These standards provide frequency-dependent vibration limits related to cosmetic damage, noting that cosmetic damage is very minor in nature, is readily repairable and does not affect the structural integrity of the building. The recommended vibration limits from BS7385 for transient vibration for minimal risk of cosmetic damage to residential and industrial buildings are described in Table 10.

Table 10 Transient vibration guide values for minimal risk of cosmetic damage (BS 7385-2)

Type of Building	Peak component particle velocity in frequency range of predominant pulse	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	50mm/s at 4Hz and above	
Unreinforced or light framed structures Residential or light commercial type buildings.	15 mm/s at 4Hz increasing to 20mm/s at 15Hz	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above

4.1.4 Blasting criteria

The EPA advocates the use of Australia and New Zealand Environment Conservation Council (ANZECC) 1990 guidelines for assessing potential blast emissions impacts at residential and other noise and vibration sensitive receivers. The ANZECC guidelines are based on human comfort levels and are much more stringent than those based on the potential for damage to structures. The ANZECC guidelines are summarised as follows:

- The recommended maximum level for air blast is 115dB Linear.
- The level of 115dB Linear may exceed on up to 5% of the total number of blasts over a period of 12 months. This level should not exceed 120dB Linear at any time.
- The recommended maximum for ground vibration is 5mm/s, Peak Vector Sum (PVS) vibration velocity.
- The PVS level of 5mm/s may be exceeded on up to 5% of the total number of blasts over a period of 12 months. This level should not exceed 10mm/s at any time.
- Blasting should generally only be permitted during the hours of 9am to 5pm Monday to Saturday. Blasting should not take place on Sundays and public holidays.
- Blasting should generally take place no more than once per day.

Ground borne (regenerated) noise

Ground-borne (or regenerated) construction noise can be present on construction projects where vibration from activities such as rock breaking, road heading, rotary cutting and rock drilling/sawing can be transmitted through the ground and into the habitable areas of nearby buildings. Ground-borne noise occurs when this vibration in the ground and/or building elements is regenerated as audible noise within areas of occupancy inside the buildings.

The EPA ICNG defines internal ground-borne noise goals for residential receivers of 40dB(A) $L_{Aeq(15\text{ minute})}$ during the evening 6pm to 10pm and 35dB(A) during the night-time (10pm to 7am). The goals are only applicable where ground-borne noise levels are higher than airborne noise levels.

The *Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration* (ANZECC, 1990) are used to assess potential blast emissions impacts at residential and other noise and vibration receivers. Blast impact criteria for PPV and airblast overpressure are provided in Table 11

Table 11 Blast impact criteria

Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
Residence on privately-owned land	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months

4.2 Construction activities

Key aspects of the construction of Stage C Network that could result in adverse construction noise and vibration impacts on sensitive receivers include:

- Formation of access road.
- Installation of temporary power and water.
- Site mobilisation.
- Earthworks.
- Concrete works.
- Storage installation.
- Mechanical installation.
- Electrical installation.
- Telemetry installation.
- Commissioning.
- Permanent site access.
- Demobilisation and rehabilitation.
- Blasting (if required)

Plant and equipment required to construct the Stage C Network are identified in Table 8.

4.3 Noise and vibration impacts

4.3.1 Construction noise impacts

A number of scenarios were modelled to account for different stages of construction associated with both the potable water and recycled water reservoirs at Hill 800 (and associated rising main and pipe works) and the recycled water tank at the WRP. These scenarios used typical construction equipment noise levels and construction scenarios to model expected noise levels at each of the sensitive receivers (worst case scenarios were used). As all works would be undertaken during standard operating hours, only this criteria has been considered in accordance with the INP.

Table 12 identified that predicted construction noise levels at the permanent reservoir site and Table 13 identifies the predicted construction noise levels at the WRP. This blue highlighted and bold figures show where the noise criteria may be exceeded.

Table 12 $L_{Aeq}(15minutes)$ construction noise prediction results for permanent reservoirs site

Receiver	Day time 'noise affected' NML	Stages of construction								
		Site establishment &	Clearing and stripping	Earthworks including pipe laying	Concrete	Structures	Road works	Mechanical	Electrical	Landscaping
R1	48	<30	<30	<30	31	<30	<30	<30	<30	<30
R2		<30	<30	<30	<30	<30	<30	<30	<30	<30
R3		<30	32	35	36	<30	35	<30	<30	<30
R4		30	35	38	39	32	38	<30	<30	<30
R5		37	41	44	45	39	44	34	34	36
R6		38	43	45	47	40	45	36	35	37
R7		41	45	48	49	43	48	38	38	39
R8		42	47	50	51	44	50	40	40	41
R9		41	46	48	50	43	48	39	38	40
R10		44	40	47	48	42	47	37	37	39
R11	45	<30	<30	36	31	<30	<30	<30	<30	<30
R12		<30	33	40	37	30	36	<30	<30	<30
R13		34	39	41	43	36	42	32	32	33
R14W		<30	32	40	36	<30	35	<30	<30	<30
R14E		33	38	35	42	35	40	31	30	32
R14 - Rockley Oval	60	37	33	40	41	34	40	30	<30	31
R14 - Anglican School	55 external	37	33	40	41	35	40	30	30	32
R15	40	<30	<30	30	<30	<30	<30	<30	<30	<30
C1	75	<35	<35	<35	<35	<35	<35	<35	<35	<35
C2	70	<35	<35	<35	<35	<35	<35	<35	<35	<35

Table 13 $L_{Aeq}(15minutes)$ construction noise prediction results for WRP works

Receiver	Day time 'noise affected' NML	Stages of construction						
		Amenities	Earthworks	Concrete	Structures	Mechanical	Electrical	Landscaping
R1	48	<30	33	34	<30	<30	<30	<30
R2		<30	<30	<30	<30	<30	<30	<30
R3		<30	33	34	<30	<30	<30	<30
R4		<30	33	34	<30	<30	<30	<30

Receiver	Day time 'noise affected' NML	Stages of construction						
		Amenities	Earthworks	Concrete	Structures	Mechanical	Electrical	Landscaping
R5		<30	<30	<30	<30	<30	<30	<30
R6		<30	<30	<30	<30	<30	<30	<30
R7		<30	<30	<30	<30	<30	<30	<30
R8		<30	<30	<30	<30	<30	<30	<30
R9		<30	<30	<30	<30	<30	<30	<30
R11	45	43	50	51	45	42	40	42
R12		39	46	46	41	38	35	38
R13		31	38	38	32	30	<30	<30
R14W		36	43	44	38	35	32	35
R14E		<30	33	34	<30	<30	<30	<30
R14 - Rockley Oval	60	<35	<35	<35	<35	<35	<35	<35
R14 - Anglican school	55	<35	<35	<35	<35	<35	<35	<35
R15	40	31	37	38	32	<30	<30	<30
C1	75	30	37	38	32	<30	<30	<30
C2	70	45	51	52	46	44	41	43

Table 14 Construction noise predication results for construction of rising mains and demolition of Interim Reservoir

Receiver	Day time 'noise affected' NML	Stages of construction	
		Rising main pipe laying activities	Demolition of Interim Reservoir
R1	48	37	33
R2		<30	<30
R3		45	41
R4		54	46
R5		57	52
R6		54	48
R7		55	45
R8		55	42
R9		51	41

Receiver	Day time 'noise affected' NML	Stages of construction	
		Rising main pipe laying activities	Demolition of Interim Reservoir
R10		50	40
R11	45	36	31
R12		40	35
R13		45	39
R14W		40	34
R14E		48	44
R14 - Rockley Oval	60	46	42
R14 - Anglican school	55 external	44	38
R15	40	30	<30
C1	75	<40	<30
C2	70	<40	31

Based on the results presented above, the earthworks and concrete work stages at the WRP have the potential to cause exceedance of the 'Noise Affected' NMLs at R11 and R12. In addition, the concrete works at the permanent reservoir site have the potential to exceed the 'Noise Affected' NMLs at R7, R8 and R9 by up to 3dBA, and the road works have the potential to exceed 'Noise Affected levels at R8. For the construction of the rising mains there is potential construction activities will exceed the 'Noise Affected' criteria at eight properties, and demolition of the Interim Reservoir would exceed criteria levels at one property.

However, due to the transient nature of many of the activities, the predicted maximum noise levels are only likely to be sustained at any one receiver for a relatively short period of time. All predicted construction noise levels are below the 'highly noise affect' NML target of 75dBA.

There is potential the construction traffic movement to, from and within the site may result in an increase at sensitive receivers, however this increase is expected to be temporary with vehicles passing quickly. On average the impact of construction vehicle movement may increase background noise levels by up to 1dBA, which is not perceptible to the human ear. Therefore the impact of construction traffic is minor.

4.3.1.2 Operational noise

Based on the proposed acoustically significant equipment to be used as part of the operation of the reservoirs at Hill 800, it was predicted that noise levels associated with the operation of the pumps would be less than 25dBA at all identified noise receivers. In addition, the potential for one or two noise events per night, with maximum internal noise levels of 65-70dBA, are not likely to affect health and wellbeing significantly. Therefore, the ongoing operation of the reservoirs is unlikely to pose any acoustic risk to nearby sensitive receivers.

In addition to the identified potential sensitive receivers, it is also understood that later stages of the Googong township development will be in close vicinity of the permanent reservoir. Based on a conservative

estimation, a distance of approximately 150 metres is likely to be required in order to meet the operational noise criteria for night time operation. However, with the implementation of noise barrier and/or enclosure of the proposed pumps at the reservoir site, a noise reduction of at least 10 to 15 dB can readily be achieved. This would have the potential of reducing the buffer zone distance to approximately 50 metres from the location of the noise source. For daytime operations, it is expected that the average background noise levels of an urban area would exceed the operational noise levels of the pumps and therefore would not exceed criteria at adjacent properties

4.3.2 Construction vibration impacts

There are no major vibration sources associated with general construction activities that are expected to induce ground vibration at the nearest sensitive receivers. However, there are vibration sources which have the potential to induce ground vibration over short distances to existing structures. A review of proposed construction equipment has identified the following potential sources of vibration emissions:

Compaction activities (vibratory rollers)

Ground vibration levels caused by vibratory rollers can be up to 1.5mm/s at 25 m. Table 15 below outlines safe working distances for the use of vibratory rollers adjacent to buildings (both to prevent building damage and minimising human discomfort).

Table 15 Safe working distance for vibratory rollers

Roller class	Weight range	Centrifugal force range	Distance from building	
			Building damage	Human comfort
I Very light	Less than 1.25 tonnes	10 - 20kN	3m	no effect
II Light	1 to 2 tonnes	20 - 50kN	5m	no effect
III Medium	2 to 4 tonnes	50 - 100kN	6m	12m
IV Medium Heavy	4 to 6 tonnes	100 - 200kN	12m	24m
V Heavy	7 to 11 tonnes	200 - 300kN	25m	50m
VI Very Heavy	12 tonnes and over	Over 300kN	25m	50m

To prevent adverse impacts to human comfort during the operation of vibratory machinery, very heavy rollers should not be operated within 50 metres of a building and to minimise potential for building damage should not be operated within 25 metres of a building.

All of the identified sensitive receivers are generally located at least 50 metres from the proposal construction area. The only area where works may be within 50 metres is for the installation of the in-ground water mains near the western boundary of the Googong township.

Heavy vehicle movement –

Heavy trucks passing over normal road surfaces generate relative low vibration levels, typically ranging from 0.01mm/s to 0.2mm/s at the footings of buildings located 10m to 20m from a roadway.

Very large surface irregularities (or dirt roads) can cause levels up to 5 to 10 times higher (i.e. up to 2mm/s). These levels are lower than the criteria levels outlined above. Therefore, as the closest sensitive receivers are at least 75m

away from the construction access point (Googong Road and Old Cooma Road), heavy truck traffic is not expected to cause building damage.

Rock breaking –

The typical maximum levels of ground vibration at various distances from rock breaking operations are listed in Table 6-17. Construction would be likely to be rock breaking at the permanent reservoir site. However all sensitive receivers are a minimum of 50 metres from this location, therefore the predicted vibration level would be no higher than 0.1mm/s. This is below the criteria levels therefore the use of rock breakers is not likely to cause significant vibration impacts.

Table 16 Indicative maximum ground vibration levels for rock breaking

Distance	5m	10m	20m	30m	40m	50m
Peak Vibration Level (mm/s)	4.5	1.3	0.4	0.2	0.14	0.1

Operational vibration

No operational vibration impacts are expected as a result of the proposed works.

5.0 Environmental control measures

5.1 Noise and vibration mitigation and management measures

A range of environmental requirements and control measures are identified in the various environmental documents, including the CoA, SoC. Specific measures and requirements to address noise and vibration impacts are outlined in Table 17. Responsibilities have been assigned to roles that GTPL considers will be required by the contractor. However the contractor will be responsible for confirming roles prior to the commencement of construction.

Table 17 Noise and vibration mitigation measures

ID	Measure	When to implement	Reference	Responsibility
NV1	All project personnel will be provided training on the requirements of this Plan through site inductions, toolbox talks or specific training.	Prior to construction, construction		Project Engineer
NV2	<ul style="list-style-type: none"> ▪ The contractor is responsible for consultation with nearby receivers and new incoming residents that may be affected by noise or vibration generating activities during standard construction hours prior to that activity commencing (including noisy construction activities, and other activities that may result in noise and/or vibration complaints). ▪ The notification should take the form of a written letter and must be issued prior to the works occurring. The notification letter provided to the community must include a description of the works, advise if exceedances of ICNG criteria are likely, when the works will occur and for how long. It will also include the community information line (1800 838 438), project email address (iwc@googong.net) for lodging noise complaints. ▪ The contractor will issue a copy of the notification letter for GTPL to review prior to it being distributed. The contractor will also provide details of all notification to GTPL as well as two points of contact for the works in case complaints are made to the community hotline number. 	Prior to construction, construction	SoC C13	Construction Manager Project Engineer
NV3	<p>Noise complaints will be received, recorded and investigated -</p> <p>The Environment Manger will forward any complaints to GTPL who will respond within the timeframes specified in the Complaints Management Procedure.</p> <ul style="list-style-type: none"> ▪ the initial response to complaints should be made within 48 hours of the complaint and need to be recorded in the monthly environmental report ▪ It must also include the community information line (1800 838 438), project email address (iwc@googong.net) for lodging complaints. 	Construction		Project Engineer GTPL Assistant Project Director

ID	Measure	When to implement	Reference	Responsibility
NV4	All impacted residents would be notified of the proposed works, including the nature and duration of construction activities, predicted noise levels and contact details should they have any issues with the construction activities.	Construction	SoC C15	Construction Manager Project Engineer
NV5	Construction works, other than blasting and high noise activities, will only be undertaken during the following hours (unless otherwise approved by the GTPL Assistant Project Director): <ul style="list-style-type: none"> ▪ 7:00 am to 6:00 pm, Mondays to Fridays. ▪ 8:00 am to 1:00 pm on Saturdays. ▪ At no time on Sundays or public holidays. 	Construction	SoC C14	Construction Manager
NV6	Any work generating high noise that has impulsive, intermittent, low frequency or tonal characteristics, including jack hammering, line drilling, pile driving, rock hammering, rock breaking, saw cutting, sheet piling, vibratory rolling but excluding blasting, will be undertaken (unless otherwise approved by the GTPL Assistant Project Director): <ul style="list-style-type: none"> ▪ Between the hours of 8.00 am and 6.00 pm Monday to Friday. ▪ Between the hours of 8.00 am and 1.00 pm Saturday. ▪ In continuous blocks of no more than three hours, with at least one hour respite between each block of work generating high noise impact, where the location of the work is likely to impact the same receivers. 	Construction	SoC C16	Construction Manager Project Engineer
NV7	<ul style="list-style-type: none"> ▪ In accordance with the Out of Hours Works Procedure (Appendix 1) the hours of construction activities specified in NV5 may only be varied with prior written approval from the EPA and the GTPL Assistant Project Director ▪ Requests for out of hours approval will be considered for construction activities which cannot be undertaken during standard construction hours for technical or other justifiable reasons and will be considered on a case by case or activity-specific basis. Any request to alter the hours of construction will: ▪ Be accompanied by details of the nature, need and justification for activities conducted during the varied construction hours. ▪ Include any other information necessary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact sensitive receivers. ▪ Require that affected residential receivers are informed of the timing and duration of any construction activities approved under this condition at least 48 hours before that work commences. 	Construction		Construction Manager Project Engineer
NV8	Blasting associated with the construction of Stage C Network will only occur during the following hours (unless otherwise approved by the GTPL Assistant Project Director): <ul style="list-style-type: none"> ▪ 9.00 am to 5.00 pm, Mondays to Fridays, inclusive. ▪ 9.00 am to 1.00 pm on Saturdays. ▪ At no time on Sundays or public holidays. 	Construction		Construction Manager
NV9	The contractor will prepare a Blast Management Plan for any blasting activities. The Blast Management Plan	Construction		Construction

ID	Measure	When to implement	Reference	Responsibility
	<p>will:</p> <ul style="list-style-type: none"> ▪ Undertake a vibration assessment in accordance with Assessing Vibration: A Technical Guideline (DECC, 2006) to determine if any additional mitigation measures are required. ▪ Stipulate permitted blasting hours ▪ Identify the maximum instantaneous charge (MIC) possible to ensure that vibration levels do not exceed the criteria in Table 5 and Table 6. ▪ Include procedures for notification. The notification at a minimum should take the form of a written letter and must be issued to council, emergency services and potentially affected landowners <u>two weeks</u> prior to the works occurring. The notification letter must include the time, location and frequency of the blasting. It must also include the community information line (1800 838 438), project email address (iwc@googong.net) for lodging complaints. ▪ The contractor will issue a copy of the notification letter for GTPL to review prior to it being distributed. The contractor will provide details of all notification to GTPL as well as two points of contact for the works in case complaints are made to the community hotline number. 			Manager Project Engineer
NV10	Noise monitoring at sensitive receivers will be carried out in the event of a noise related complaint. Should monitoring indicate significant exceedances of the construction noise impacts identified in section 4.3 the contractor will consult with GTPL, and implement additional and feasible mitigation measures as necessary.	Construction		Construction Manager Project Engineer GTPL Assistant Project Director
NV11	Vibration monitoring may be carried out in response to complaints, exceedances, or for the purpose of refining construction methods or techniques to minimise vibrations. Impacts will be avoided by changing work methods / equipment, or by providing some form of building protection where possible.	Construction		Construction Manager Project Engineer GTPL Assistant Project Director
NV12	Where reasonable and feasible: <ul style="list-style-type: none"> ▪ Site sheds, materials and stockpiles will be located to provide acoustic shielding.. 	Construction		Construction Manager
NV13	Compounds will be designed to promote one way traffic so that the requirement for vehicles to reverse is minimised, and noise from reversing alarms is minimised.	Pre-construction, construction		Construction Manager
NV14	Machines that are used intermittently such as dump trucks, rollers, bulldozers, excavators, bobcats, mulchers etc will be shut down when not operated for more than 15 minutes.	Construction	SoC C17	Construction Manager
NV15	Construction plant and equipment would be well maintained (including noise reduction fittings where feasible) and would be turned off when not in use to minimise noisy emissions.	Construction	SoC C14	Construction Manager
NV16	Reversing of vehicles and equipment, and use of horns will be minimised to prevent noise emissions to nearby sensitive receivers.	Construction	SoC C17	Construction Manager
NV17	The use of quacker alarms will be considered if sensitive receiver noise levels exceed tolerances in table 3 for	construction	SoC C18	Construction

ID	Measure	When to implement	Reference	Responsibility
	highly noise affected noise receiver 75dBA			Manager
NV 18	Loading and unloading will be undertaken more than 50m from sensitive receivers	Construction	SoC C19	Construction Manager
NV 19	Vibratory rollers and Rock breaking activities are not to be undertaken within 50m sensitive residential receivers	Construction	SoC C20, C21	Construction Manager

5.1.2 Noise and vibration consultation

Table 17 NV2 identifies the process and tools to liaise with the community to advise them of likely timing and duration of construction activities, including noisy activities.

Any noise or vibration specific complaints will be managed in accordance with this procedure, and with mitigation measures NV3, NV11 and NV12 in Table 17 above.

The Out of Hours Works Procedure included at Appendix 1 of this Plan outlines the process for liaising with relevant agencies to discuss the need to undertake construction activities out of hours. This may include consultation with QCC, OEH, EPA

6.0 Compliance management

6.1 Roles and responsibilities

The project team's roles and responsibilities are outlined in Section 4.1 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 5 of this Plan.

6.2 Training

All personnel working on site will undergo site induction training relating to noise and vibration issues. The induction training will address elements related to noise and vibration management including:

- Normal work hours.
- What activities can and can't take place outside of these working hours.
- The process for seeking approval for out of hours works, including consultation.
- Location of noise sensitive areas.
- The employment of reasonable and feasible noise mitigation measures.
- Roles and responsibilities of the project team related to noise and vibration.

Further details regarding induction and training are outlined in Section 5 of the CEMP.

6.3 Inspections

The Project Engineer will inspect the site regularly and keep the complaints register up to date and report on how noise complaints have been addressed in the monthly report.,

Requirements and responsibilities in relation to inspections are documented in Section 8.1 of the CEMP.

6.4 Monitoring

6.4.1 Noise monitoring

Noise monitoring will be undertaken should noise complaints be received (refer Table17, NV11). Noise monitoring will be undertaken at sensitive receivers to determine if the actual construction noise generated exceeds the predicted construction noise levels are below the 'highly noise affect' NML target of 75dBA construction noise management levels identified in Section 4.3 of this Plan.

Where noise levels are found to exceed the predicted 'highly noise affect' levels, the source of excessive noise will be identified, and any additional feasible and reasonable measures available will be implemented to either reduce noise emissions or reduce the impacts on receivers.

6.4.2 Vibration monitoring

Vibration monitoring may be carried out in response to complaints, exceedances, or for the purpose of refining construction methods or techniques to minimise vibrations (refer to Table 17 NV12).

A Blast Management Plan will be prepared upon completion of geotechnical investigations and detailed design (refer to Table 17, NV9). This Plan will include specific vibration monitoring relating to blasting.

6.5 Auditing

Internal Audits will be undertaken to assess the effectiveness of environmental controls, compliance with this Plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 8.4 of the CEMP.

6.6 Reporting

Results and outcomes of inspections (namely non-compliances), monitoring and auditing will be reported internally on a monthly basis as part of the monthly environmental report. Reporting requirements and responsibilities are documented in Section 8.5 of the CEMP.

7.0 Review and improvement

7.1 Non-conformity, corrective and preventative actions

A non-conformance is an action or omission that does not confirm with the requirements of this NVWMP or any legal and other requirements. Any member of the project team can identify a non-conformance or opportunity for improvement. Section 8.3 of the CEMP identifies the process for identifying, reporting, recording and reviewing non-conformances. This will ensure continual improvement.

7.2 Management plan update and amendment

The processes described in Section 7 and Section 8 of the CEMP (relating to incidents, inspections, monitoring and auditing) may result in the need to update or revise this Plan. This will occur as needed.

Appendix 1

Out of Hours Works Procedure

Scope

This procedure does not apply where:

- The delivery of materials is required by police or other authorities for safety reasons.
- The work is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

Procedure for inaudible out of hours work

Subject to approval by QPRC and/or the EPA, work can proceed out of standard construction hours where:

- The works do not cause construction noise to be audible at any sensitive receiver.
- A request to the Project Engineer to conduct inaudible works should be accompanied by:
 - Details of the nature and justification for activities to be conducted during the varied construction hours.
 - A qualitative noise impact assessment of predicted noise impacts at sensitive receivers.
 - Details of any proposed noise monitoring during the out of hours work.
 - Details of notification to sensitive receivers.

Complaints

Any complaints received as a result of the nominated inaudible out of hours works are to be managed by the contractor. Details of noise complaints will be managed as a Category two incident as per Section 7.2 of the Construction Environmental Management Plan (CEMP).

Procedure for audible out of hours work

Out of hours noise assessment

Where (audible) out of hours work is proposed, an out of hours work (OOHW) assessment will be prepared by the Project Engineer in consultation with GTPL. As part of the preparation of the OOHW assessment, the Project Engineer and GTPL will consult with the QPRC and/or EPA (refer below for details on consultation requirements).

The OOHW assessment will include:

- Details of the nature and justification for activities to be conducted during the varied construction hours.
- A noise impact assessment of predicted noise levels at each sensitive receiver.
- Details of any additional proposed noise monitoring.
- Evidence that appropriate consultation has been undertaken.
- Evidence that all reasonable and feasible noise mitigation measures have been put in place.

Environment Protection Authority

The Project Engineer and GTPL will consult with EPA on the proposed variation in construction times. Consultation will include but not be limited to details on predicted noise impacts at sensitive receivers and reasonable and feasible noise mitigation measures that the contractor will put in place to limit impacts.

Note that the conditions of EPL 20788 held by GTPL for construction and testing activities does not permit construction work outside standard working hours. As part of any OOHW application, GTPL may also need to also submit an application to amend its EPL to allow for changes to the licence conditions to allow for construction works outside standard hours. This would be confirmed with the EPA during consultation.

Consideration of community impacts

The contractor will review the proposed work program and where reasonable and feasible prescribe mitigation measures to minimise impacts to the community.

Issue of notification to the community

The contractor will issue a letterbox notification to affected properties at least 48 hours prior to the commencement of the proposed out of hours works, advising of the start date and expected duration of the out of hours activities (in accordance with Condition of Approval C8). The notification must also include details of the community information line (1800 838 438), project email address (iwc@googong.net) for lodging complaints.

Where the activity is deemed as having a significant affect on sensitive receivers, doorknocking and/or distribution of individual letters to affected properties should also be undertaken at least 48 hours in advance of the proposed works.

Works approval

Following completion of the appropriate community notifications, as confirmed by the Project Engineer and details provided to GTPL, the work as described in the OOHW assessment and approved by the Assistant Project Director can proceed out of standard construction hours.

Complaints

Any complaints received as a result of the works are to be managed in accordance with the Complaints Management Procedure in section 7.4.4 of the CEMP document.

Appendix 13

13A Soil and Water Management Plan,
13B Erosion and Sediment Control Plan



Soil and Water Management Plan

Googong Township IWC Project: Stage C Network

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1.0 Introduction

1.1 Context

This Soil and Water Management Plan (SWMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for Stage C Network.

Refer to Section 1 and Section 2 of the CEMP for additional detail on the scope of Stage C Network to which this SWMP applies.

This SWMP has been prepared to address the requirements of the Council Conditions of Approval (CoA), the Statement of Commitments (SoC), Googong IWC Project – Stage C Network West Review of Environment Factors (REF), submissions report, and all applicable legislation.

1.2 Background

The Stage C Network Review of Environment Factors (REF) assessed the impacts of construction and operation of the project on soil and water.

1.3 Environmental Management System overview

The overall Environmental Management System for Stage C Network and approach to managing environmental impacts during construction is described throughout the CEMP.

This SWMP forms part of the environmental management framework for Stage C Network, as described in Section 1.5.2 of the CEMP.

2.0 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how Googong Township Proprietary Limited (GTPL) and the contractor will manage soil and water issues and protect the environment during construction of Stage C Network. This Plan encompasses:

- Erosion control.
- Sedimentation.
- Spoil management.
- Groundwater.
- Water quality.
- Contamination.

This Plan also assists in ensuring that the construction of Stage C Network meets the environmental objectives and targets as defined in Section 3.5 of the CEMP.

2.2 Objectives

The key objective of the SWMP is to ensure that impacts to soil and water are minimised. To realise this objective, the following will be undertaken:

- Ensure appropriate controls and procedures are implemented during construction activities to avoid or minimise potential adverse impacts to soil and water (refer Section 5.1).
- Ensure appropriate measures are implemented to address the relevant CoA and SoC, (refer Sections 3.2 and 3.3).
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this Plan.

3.0 Environmental requirements

3.1 Relevant legislation and guidelines

Section 3.1 of the CEMP identifies the legal and other requirements applicable to the IWC Project and the construction of Stage C Network. This section identifies the key legislation applicable to managing soil and water.

3.1.1 Relevant guidelines

The following guidelines and documents have been reviewed in the preparation of this Plan:

- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000).
- *Environmental Best Management Practice guideline for Concreting contractors* (DEC, 2002).
- *Managing Urban Stormwater: Soils and Construction 'The Blue Book'* (Landcom, 2004).
- *Guidelines for Controlled Activities on Waterfront Land* (NOW, 2012).
- *Development Construction Specification C101- General* (QCC, 2011).
- *Development Construction Specification C211- Control of Erosion and Sedimentation* (QCC, 2011).

3.1.2 Discharge water quality criteria

The following discharge water quality criteria will be applied for any dewatering into the surrounding environment. Refer to Appendix 2 for details on dewatering procedure. Discharge water quality criteria have been developed in accordance with the *Blue Book* (Landcom, 2004) and *Managing urban stormwater: soils and construction, Volume 2A: Installation of Services* (DECC, 2008).

Table 1 Water quality criteria

Parameter	Criteria
pH	6.5 – 8.5
Total suspended solids	<50 mg/L
Conductivity (salinity)	<1,500 μScm^{-1}
Oil and grease	No visible

4.0 Environmental aspects and impacts

The following sections summarise existing soil and water issues identified in the environmental assessment. Identified impacts are then reviewed.

4.1 Environmental aspects

4.1.1 Existing environment

4.1.2 Landform

The area that makes up the Googong township comprises approximately 850 hectares of undulating terrain bordering a series of relatively steep gullies.

Land elevations vary from approximately 600 metres Australian Height Datum along the Queanbeyan River to 816 metres at Swan Hill, which forms part of a low series of ridges that run northwest to southeast through the centre of the wider Googong project area.

The western half of the IWC Stage C Network West proposed project boundary is located on a drainage line and the slopes and crest of Hill 800. The eastern half, i.e. the WRP, is located on upper slopes and an ephemeral drainage line.

4.1.3 Geology and soils

The soils are typically shallow and contain large quantities of bedrock gravels and cobbles, with bedrock also frequently exposed at ground level on crests and ridge slopes, or as outcrops along the creek lines and steeper ridge slopes. However, on the low gradient basal slopes and creek flats deposits tend towards deeper sandy or loamy soils.

Soils extend to a depth of approximately 0.2 to 1.1 metres until bedrock is encountered. Erosion is apparent on spur crests where bedrock is exposed, this is however uneven across these landforms and pockets of deeper soil do exist. Soils are deeper and relatively stable closer to creek lines, some bank erosion is evident within creek lines.

The proposed project boundary is predominantly located within the Burra soil landscape and Anembo soil landscape. The soil landscape characteristics for these soil types are detailed in Table 2

Table 2 Soil landscape characteristics

Soil landscape	Characteristics	Erosion potential
Burra	This landscape is characterised by undulating to rolling hills and alluvial fans associated with the weathering of the underlying Silurian volcanic units, with the ground surface almost completely cleared of woodland. The soils are described as strongly acidic with low fertility and low available water-holding capability. Subsoils also have low permeability.	Concentrated flows—moderate erosion potential.
Anembo	This landscape is characterised by undulating rises and flats over granitic material. The ground surface typically exhibits extensively cleared, open to tall open forest with woodland and low woodland in frost hollows. The area of Anembo soil landscape has been extensively cleared. Soils are with gravely low fertility and low	Non-concentrated flows—moderate erosion potential. Concentrated flows—high to very high erosion

Soil landscape	Characteristics	Erosion potential
	water-holding capacity and are prone to waterlogging. Some subsoils have very low permeability.	potential.

Source: CIC, Manidis Roberts, Googong Township Water Cycle Project Environmental Assessment, 2009

Additionally, two geotechnical investigation test pits were undertaken at the permanent reservoir site in 2009 with results outlined in Table 3.

Table 3 Geotechnical investigation test pit results

Parameter	Test Pit 1	Test pit 2
Strata overlying rock	Top soil to 0.05m Silty sandy gravel to 0.3m Sandy clay to 0.7m	Silty sandy gravel to 0.3m
Depth to rock	0.7m	0.3m
Depth to refusal	1.2m	0.6m
Rock type	Low to medium strength, highly weathered, brown medium grained DACITE, hard excavation.	Low to medium strength, high weathered, brown medium grained DACITE, hard excavation.

Source: Douglas Partners, Report on Geotechnical Investigation – Proposed Residential Subdivision, Googong Dam Road, Googong, 2009

4.1.4 Contamination

Coffey Geosciences undertook an initial contamination investigation (Stage 1 investigation) in 2004 to identify Areas of Environmental Concern (AECs) for the Googong Township Water Cycle Project Environmental Assessment. No AECs were identified in proximity to the Stage C Network West proposed project boundary.

A site survey to confirm the presence of any actual or potential contamination sites was carried out in July 2012. No additional areas of potential or actual contamination were identified.

4.2 Potential impacts

4.2.1 Construction activities and potential impacts

Construction activities that may affect soil include:

- Vegetation clearance, topsoil stripping and soil disturbance.
- Trenching and soil excavation.
- Soil contamination.

Vegetation clearing, topsoil stripping and soil disturbance

Clearing of vegetation and topsoil stripping may result in the exposure of soil horizons that are susceptible to erosion. This can lead to erosion of exposed areas; deposition of eroded sediment in waterways increasing turbidity and smothering benthic habitat and organisms.

Trenching and soil excavation

Trenching activities will be required for the installation of mains from the interim reservoir site to the permanent reservoir site, which is approximately 1.5km in length and the installation of the potable rising main to the WRP, which is approximately 150m in length. The approximate volume of spoil excavation excavated for this construction activity will be approximately 4000m³.

Additionally, the recycled water and potable water reservoirs are proposed to be founded on competent rock which will require the excavation of rock and spoil of approximately 12,000m³. This material is planned to be used as fill around the site to create roads etc, using approximately 2,400m³. Therefore, there will be approximately 9,600m³ excess spoil. The intention will be to use any excess spoil as fill material for other areas of the Googong development.

Soil erosion is most likely to occur during excavation works, particularly during any trench construction. Erosion can be from water (creating inter-rill erosion, rill and gully erosion and tunnel erosion) and wind. Potential impacts include the erosion of exposed areas, damage to retained vegetation due to eroded soils, and sedimentation of waterways increasing turbidity.

The erosion potential and excavation constraints of soil would be considered during construction planning. As noted above, the proposal is situated on the Burra or Anembo soil landscapes, which have moderate and high erosion potential respectively.

Soil contamination

As previously noted, no AECs were identified in proximity to the proposed project boundary, however there is always the potential for trenching and grading activities to disturb unidentified contaminated land and adversely impact existing soil characteristics if not managed appropriately. In addition, there is the potential during construction to contaminate soils through fuel or chemical spills. Risks include contamination of soil profiles, adverse impacts on human health and consequential affects on the groundwater quality.

The IWC network West project does not anticipate encountering contaminated sites based on the Douglas and Partners report 46285 R001. If an unanticipated find is encountered, refer procedure in CEMP appendix 8B section 9.

Figure 1 Discharge flow line

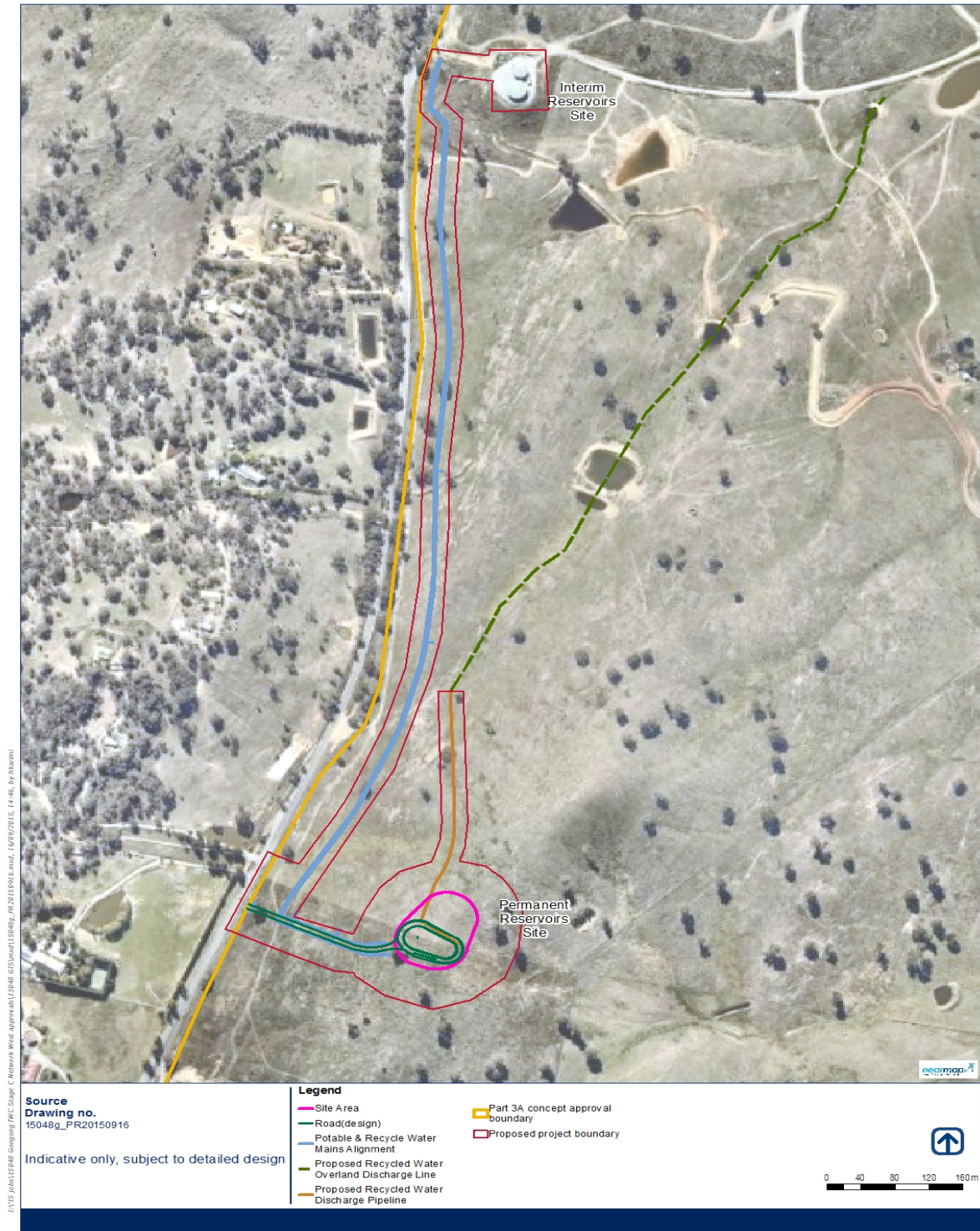


Table 4 shows the route that the excess recycled water would follow once discharged and Figure 2 shows an example of the proposed headwall and energy dissipation structure to be installed at the permanent reservoirs site.

Figure 2 Discharge dissipater example



The excess recycled water discharged into the environment will meet the water quality requirements of the Project Approval for Stage 1 and the requirement that are expected to be included in the EPL for the operation of the IWC Project. Modelling has been undertaken to predict the volumes of excess recycled water that would be discharged from the permanent reservoirs site. The results of this modelling are detailed in Section 3.5.4 of the REF, but in summary:

- Up to a maximum of 986kL of excess recycled water could be discharged in a day, but on some days no excess recycled water would be discharged. The average daily discharge is predicted to be about 159kL.
- On a monthly basis, January is predicted to have the lowest volume of excess recycled water discharged – 0.018ML or 18kL – as demand is predicted exceed supply on most days during the hottest months. July is predicted to have the highest volume of excess recycled water discharged – 11.978 ML – as demand in the colder months is predicted to be lower than supply.

Discharge of excess recycled water at these volumes has the potential to cause erosion and scouring of the drainage line between the energy dissipation structure and the township's stormwater management system. The existing farm dams and sediment basin located in the drainage line could also be damaged by excess recycled water discharges if their capacity is exceeded.

The impact of any erosion or scouring of the drainage line would be minimised by:

- The presence of the existing farm dams and sediment basin that would capture sediment washed down the drainage line in the excess recycled water flows.
- The existing stormwater management system operating within the township would capture and treat sediments prior to discharge of water to Googong Creek. This system has been designed to cater for stormwater generated from the catchment as well as the predicted excess recycled water discharges.
-

4.3 Water quality and hydrology

4.3.1 Existing environment

4.3.2 Surface water drainage

Drainage in the area consists of a number of small ephemeral and semi-permanent creeks, farm dams and depressions, shown in Figure 6-18. Records show that the area has a mean annual rainfall of just less than 600 mm, with summer thunderstorms and drought as common features. There are four main catchments in the area:

- Googong Creek catchment.
- Jerrabomberra Creek catchment.
- Montgomery Creek catchment.
- Googong Dam catchment.

These are all sub-catchments of the Queanbeyan River catchment.

4.3.3 Groundwater environment

According to SMEC (2015a), groundwater is hosted in a regionally extensive fractured-rock aquifer. Minor alluvial aquifers are located along the alignments of locally significant waterways, but these are expected to have minimal storage and not to be of significance to the assessment of the potential groundwater impacts of the IWC Project. The depth to bedrock across much of the site is expected to be between about one to two metres, with fresh bedrock encountered at shallower depths at higher elevations, and marked changes of slope. Shallow groundwater is expected to migrate along the interface between the soil horizons and relatively fresh bedrock, and to discharge to surface water streams across the site.

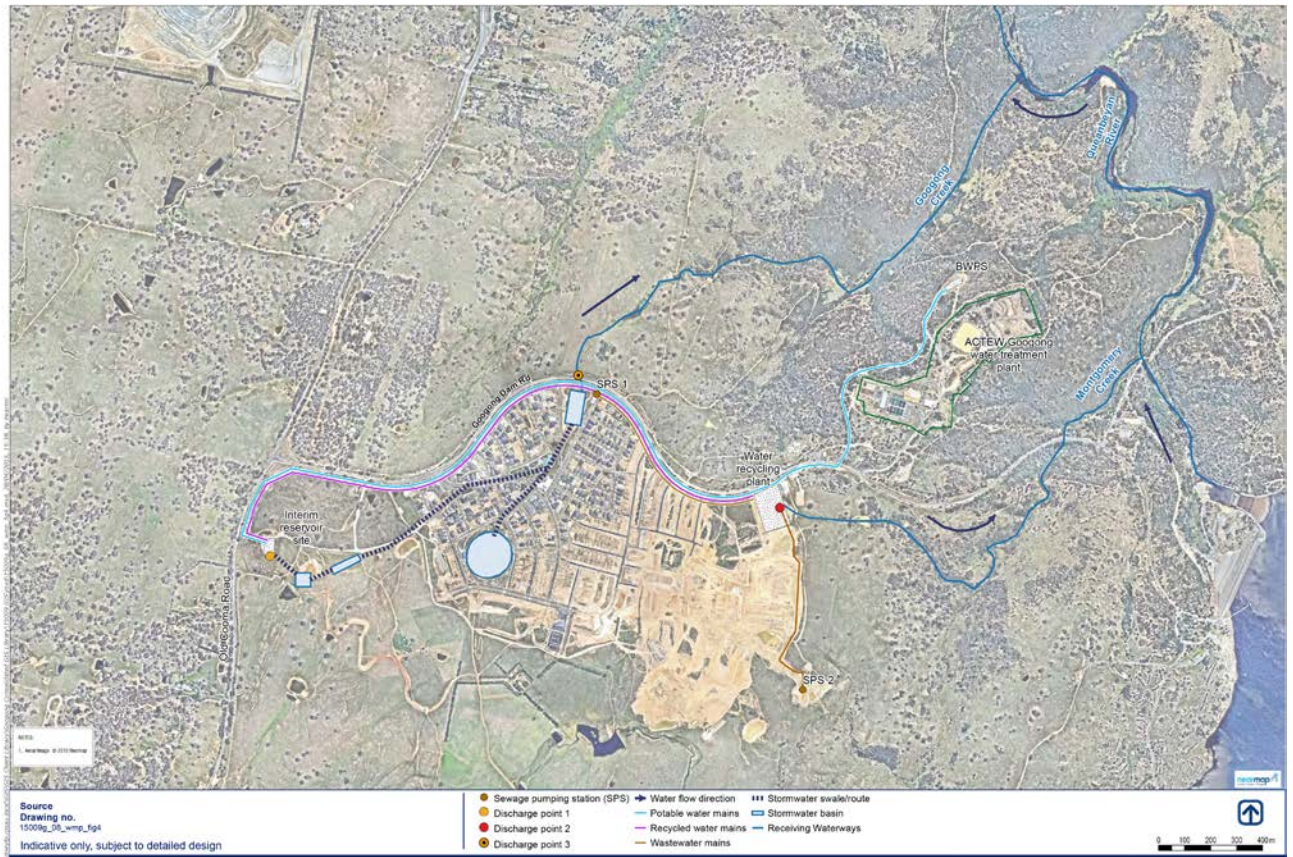
4.3.4 Existing discharge locations

The currently approved discharge location for excess recycled water is at the interim reservoirs site, which flows into Googong Creek via the stormwater management system. This discharge location is marked as 'Discharge Point 1' in Figure 6-18. The recycled water will be de-chlorinated (at the reservoirs) and discharged into the first of the stormwater ponds, it will then flow through the stormwater management system (including Beltana Pond) and into Googong Creek.

Emergency discharges from the WRP will discharge into Montgomery Creek and is marked as 'Discharge Point 2' in Figure 3. This discharge point would only be used in emergency events. Emergency discharges into Montgomery Creek would contain de-gritted and screened sewage. In the extremely unlikely event that the pumps at the sewage pumping stations were running at flood head (i.e. nominally wet weather in excess of one in ten years annual return interval (ARI)) and the manual screen in the inlet works was blocked, the sewage would be de-gritted only.

Excess recycled water produced by the WRP that does not meet the RWQMP criteria (i.e. during the process verification phase in commissioning before it is approved for use in the Township, or during the failure of a CCP during operation) will be diverted to an Off-Spec Water Tank at the WRP and then pumped along a pipeline that runs along Googong Road. The off-spec recycled water will then be discharged into Googong Creek via the existing chamber and outlet structure at Beltana Park, immediately downstream of Beltana Pond. This discharge location is marked as 'Discharge Point 3' in Figure 3. It is an EPA-licensed discharge point and recycled water discharged at this location will be required to meet the effluent criteria in CoA D5 and the other relevant conditions of the EPL.

Figure 3 Existing discharge points



4.4 Potential impacts

4.4.1 Construction

- Construction activities would require the disturbance and excavation of soils. During rain events this may cause erosion and sedimentation of drainage channels which may impact on water quality downstream.
- There is potential for accidental spills from plant or activities (e.g. hydraulic fluid or cement) during construction, which may enter the natural drainage lines causing pollution of the local waterways.
- There is potential for water used during construction activities (such as wash down bays) to run-off the construction site and enter the natural drainage lines causing pollution of the local waterways.
- The compound site would generate waste water that would need to be disposed of offsite, with the potential to spill off site and enter the local drainage lines causing pollution of the waterways.

- There would be no impacts to groundwater during construction activities as construction activities are not expected to be deep enough to impact groundwater levels.
- It is not expected that there would be any impacts to the ongoing operation of the WRP or the interim reservoir site as a result of the construction activities.

4.4.2 Groundwater

Excavation also has the potential to result in a slight increase in the localised recharge, if significant rainfall is experienced when there are a large number of trenches and/or excavations open across the site. However, increases in recharge potential are expected to be minor because:

- Trenches are generally expected to be less than five metres deep across the site.
- The depth of groundwater is expected to be around ten to 15 metres.
- Low to very low hydraulic gradients and conductivities are expected over much of the site.

4.4.3 Watercourses

The Project will cross Googong Creek. Mains pipework, including rising mains for sewage, recycled water and potable water will be installed across Googong Creek through the construction of a trench. Googong Creek is an ephemeral drainage line.

As part of the work approved under Part 4 of the EP&A Act, the existing culvert under Googong Dam Road will be extended to the south of the Project site, to join with a future stormwater basin outlet (developed as part of Neighbourhood 1A). The culvert will be installed to a depth of around 3 metres below ground level, and will be backfilled and rehabilitated to create a stable surface. The extension of the culvert will occur prior to construction of the Project.

The Project will install mains pipework at a depth of around one to two metres. The excavation will occur above the culvert extension in Googong Creek. As a result, the Project will result in a minimal disturbance to the water quality, aquatic ecology or physical characteristics of Googong Creek.

4.4.4 Water use

The total quantity of water required for construction purposes is in the order of 6000 kilolitres.

The Project will require water for the production of concrete, asphalt, dust suppression. Water for construction purposes will be preferentially sourced from existing farm dams and sediment basins, if available, and or tankering from off site sources. Should the Project require a local groundwater or surface water source of construction water, the required license or permit will be sought, as outlined in Table 5.1 (SW23).

Drinking water will likely be sourced from the adjacent ACTEW plant, and tankered to site for storage in temporary tank(s) at the compound.

4.4.5 Hydrostatic testing

The total quantity of water required for commissioning purposes is in the order of 6000 kilolitres.

Once constructed, during the commissioning phase, the mains pipelines will undergo hydrostatic testing to test the pipelines for strength and leaks. The test involves filling each pipeline with potable water to test the pipe to a specific test pressure.

Water for commissioning purposes is likely to be sourced from the ACTEW Googong water treatment plant, either via the newly construction potable water pipeline, or tankering.

Hydrostatic test water may be polluted. Typical pollutants include sediment, chlorine and high pH. Hydrostatic test water will not be discharged directly to stormwater systems or waterways. Water will be settled, pH tested and dechlorinated prior to discharge. Refer to Table 5. (SW35).

5.0 Environmental control measures

5.1 Soil and water mitigation and management measures

A range of environmental requirements and control measures are identified in the various environmental documents, including the CoA, SoC and the EA. Specific measures and requirements to address impacts on soil and water are outlined in Table 7. Responsibilities have been assigned to roles that GTPL considers will be required by the contractor. However the contractor will be responsible for confirming roles prior to the commencement of construction.

Table 4 Soil and water mitigation measures

ID	Measure	When to implement	Reference	Responsibility
Design				
SW1	Ensure that appropriate materials are used to mitigate against the corrosive impacts of high salinity.	Pre construction		Design Manager
Construction (general)				
SW2	Construction activities for Stage C Network must be undertaken in accordance of the conditions of EPL 20788. The EPL will be available for inspection by all personnel and will be kept on site at all times. The EPL will be produced to any authorised officer of the EPA who asks to see it.	Pre construction and construction		Construction Manager Project Engineer
Training				
SW3	All personnel will be required to attend the project induction training and will receive ongoing training via toolbox talks, regarding their responsibilities related to soil conservation issues, erosion and sediment control systems and the need to prevent land degradation and water pollution.	Construction		Project Engineer
Erosion and sedimentation				
SW4	Measures to ensure limited tracking of dirt off site will be implemented at access points. Where required the controls may include exit rumble grids at all points of egress onto public (sealed) roads, sweeping of sealed roads to remove deposited material where applicable, and/or stabilisation of site roads/tracks with aggregate where appropriate.	Construction	SoC C37	Construction Manager Project Engineer
SW5	During construction, Erosion and sedimentation controls will be inspected prior to and after each rain period and during periods of prolonged rainfall. Any defects will be rectified immediately. Records will be on the weekly environmental inspection checklist.	Construction	SoC C38	Project Engineer

ID	Measure	When to implement	Reference	Responsibility
SW6	<p>Site-specific Erosion and Sediment Control Plans (ESCPs) will be prepared progressively to include the management strategies and controls for all Project activities with the potential to impact on sediment loss and erosion. They will contain detailed erosion and sedimentation (ERSED) control information and will include drainage systems, location of sediment fences and other ERSED control structures, and sediment basin locations. ESCPs will be prepared in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom, 2004) and will include (but not limited to) the following measures:</p> <ul style="list-style-type: none"> ▪ Implement pollution control measures at the site to prevent the egress of material off site. ▪ Undertake regular inspections of controls to ensure they are maintained in a proper and efficient condition prior to any forecast rain events. ▪ Maintain a program of regular audits of the construction site and assessment of the activities on the site to assess existing pollution controls and implement any recommended and necessary additional measures required to minimise the potential for further water pollution events. <p>ESCPs will be submitted to the Superintendent for approval. Record of checks on weekly environmental control checklist</p>	Prior to construction, construction	SoC C35	Project Engineer
SW 7	<p>Maintain surface and soil stability during cut and fill excavation and trenching activities by implementing standard sediment and erosion control techniques such as berms and sedimentation fencing.</p> <p>Erosion within the trench would be mitigated by using trench plugs (i.e. trench/sack breakers) at appropriate intervals.</p> <p>These measures are in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom, 2004 – also referred to as 'The Blue Book').</p>	Construction	SoC C35 SoC C36	
Sediment basins				
SW8	Sediment basins will be designed and constructed in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom, 2004) and located as specified in relevant ESCPs.	Prior to construction, construction	SoC C39	Construction Manager
SW9	<p>All runoff from disturbed areas within the work site will be directed to sediment basins (or other appropriate sediment control structures).</p> <p>Sediment basins will only be discharged to receiving waters when confirmed as complying through field tests/laboratory analysis tests with discharge guidelines. Refer to Dewatering Procedure (Appendix 2).</p> <p>Laboratory analysis will be used to validate the field testing methods and results (where required).</p>	Construction	SoC C40	Construction Manager Project Engineer
Spoil management				

ID	Measure	When to implement	Reference	Responsibility
SW10	Erosion and sediment measures to secure the stockpile areas (e.g. diversions, sediment fences) will be installed prior to the commencement of spoil stockpiling activities. Record on Establishment of erosion controls checklist	Construction	SoC C41	Construction Manager Project Engineer
SW11	Stockpiles will be checked for stability weekly and after heavy rainfall. Erosion controls inspected at least weekly and maintained as required.	Construction	SoC C42	Project Engineer
SW12	Clean spoil will be reused or recycled on the Stage C Network site where possible, in preference to transporting off site, in accordance with the waste minimisation hierarchy principles of avoid, reduce, reuse, recycle or dispose.	Construction	Best practice	Construction Manager
SW13	Topsoil will be conserved, where reasonable and feasible, for use in site rehabilitation/revegetation. The top 50-100 millimetres of topsoil will be stripped, Weed infested topsoil will be reused as fill where possible, and will not be reused for landscaping without implementing weed eradication measures.	Construction	SoC C43	Construction Manager Project Engineer
SW14	No waste to be burnt onsite. Waste shall be classified and disposed of in accordance with waste management plan (refer Appendix 3 of the CEMP)	Construction	SoC 47	Project Engineer Project Engineer
Contaminated material				
SW15	If potentially contaminated land, spoil or fill is encountered works in the vicinity will be stopped or modified and will not recommence until the material has been analysed, the hazard has been assessed and appropriate action has been taken (including delineating areas of concern as required until earthworks can resume safely).	Construction		Construction Manager Project Engineer
Working in or near waterways				
SW16	Stabilise the drainage line banks, where required, by establishing rocks, sandbags/ matting to prevent scouring, ensuring that they are placed to conform as far as possible with existing contours.	Construction		Construction Manager Project Engineer
Working near groundwater monitoring bores				

ID	Measure	When to implement	Reference	Responsibility
Groundwater dewatering				
SW17	Dewatering activities will be undertaken in accordance with the Dewatering Procedure in Appendix 2	Construction		Project Engineer Project Engineer
SW18	Dewatered groundwater will not be discharged to Montgomery Creek.	Construction	N/A	Project Engineer Project Engineer
Water use				
SW19	Where available and of appropriate chemical and biological quality for its proposed purpose, water collected in sediment basins will be used in preference to potable water for construction, including dust control.	Construction		Construction Manager
SW20	Construction water will be tankered to the site or sourced from the water reticulation system within the development. All relevant licenses and permits for access to water will be sought in accordance with the relevant legislation.	Construction		Construction Manager
SW21	The carting of any water to the site must be undertaken in accordance with the <i>NSW Guidelines for Water Carters</i> (NSW Health, 2012).	Construction		Construction Manager
Chemical, fuel, wastewater management and spills				
SW22	Storage areas for fuels, oils and chemicals used during construction will be covered and contained within an impervious bund to retain any spills of more than 110% of the volume of the largest container in the bunded area. Any spillage will be immediately contained and absorbed with a suitable absorbent material. The contaminated material will be disposed of according to manufacturers and OEH requirements.	Construction	SoC C50	Construction Manager Project Engineer
SW23	Potentially hazardous and contaminating activities including major equipment maintenance/servicing, wash down of construction plant and concrete washout to be conducted in bunded areas away from watercourses and other environmentally sensitive areas.	Construction	Best practice	Construction Manager Project Engineer
SW24	Spills will be managed in accordance with the Spill Response Procedure (Appendix 1) and the Pollution Incident Response Management Plan (refer Appendix 14 of the CEMP).	Construction	SoC C52	Construction Manager Project Engineer
SW25	All plant maintenance or refuelling of mobile equipment and vehicles is to occur in locations greater than 150 metres from waterways and other environmentally sensitive areas.	Construction	Best practice	Construction Manager Project Engineer
SW26	Spill kits will be provided at each fuel/chemical storage area and where handling and use of dangerous goods occur. Staff will be provided with appropriate training in spill response. Records through toolbox talks, SDS inductions for hazardous goods.	Construction	SoC C53	Construction Manager Project Engineer
SW27	Where possible, all refuelling would occur at designated fuel distribution points. These distribution	Construction	SoC C51	Construction Manager

ID	Measure	When to implement	Reference	Responsibility
	points would be underlain by compacted earth to prevent the significant loss of fuel into the ground in the event of a spill. They would also be bunded to contain any large spills that may occur as a result of machinery or tank failure.			
SW28	In the event of soil contamination, works in the vicinity will be stopped or modified and will not recommence until the material has been analysed, the hazard has been assessed and appropriate action has been taken (including delineating areas of concern as required until earthworks can resume safely).	Construction	SoC C49	Construction Manager
Rehabilitation				
SW29	There will be progressive revegetation, stabilisation and restoration works of earthworks areas in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom, 2004).	Construction	SoC C48	Construction Manager
SW30	The site will be re-profiled to achieve soil stability and congruity with the surrounding landscape. This would be done in consideration of the landscape and open space strategy for the Googong township development. Re-seeding would be undertaken, and geotextile materials used as required.	Construction	SoC C44, C45	Construction Manager
SW31	Trenches will be backfilled and compacted in layers.	Construction	SoC C46	Construction Manager
Commissioning				
SW32	Hydrostatic test water will be dechlorinated and tested for sedimentation and pH prior to onsite reuse.	Construction (commissioning)		Construction Manager Project Engineer
Operational considerations				
SW33	Infrastructure will be constructed in accordance with the approved materials and provisions of water supply code (WSA) 03-2002 to minimise leakage from water cycle infrastructure.	Pre-construction, construction		Construction Manager

6.0 Compliance management

6.1 Roles and responsibilities

The project team's roles and responsibilities are outlined in Section 4.1 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 5.0 of this Plan.

6.2 Training

All personnel working on site will undergo site induction training relating to soil and water issues. The induction training will address elements related to soil and water management including:

- Spill response and management.
- Implementation of erosion and sediment control measures.
- Refuelling protocols.
- Appropriate transport, storage and handling and disposal of chemicals.

Further details regarding induction and training are outlined in Section 5 of the CEMP.

6.3 Inspections

Inspections of sensitive areas and activities with the potential to impact soil and water will occur for the duration of construction. Daily visual inspections of the construction site will be undertaken by the Project engineer or Foreman to identify any potential risks to soil and water quality arising from construction works, and any mitigation measures that need to be implemented to address these.

The Project engineer or Foreman will undertake weekly environmental inspections, including an inspection of soil and water management measures. This will include auditing of construction activities to ensure all mitigation measures are properly installed and working effectively. These inspections will be documented on the weekly checklist.

Requirements and responsibilities in relation to inspections are documented in Section 8.1 of the CEMP.

6.4 Auditing

Internal Audits will be undertaken to assess the effectiveness of environmental controls, compliance with this Plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 8.4 of the CEMP.

6.5 Reporting

Results and outcomes of inspections (namely non-compliances), monitoring and auditing will be reported internally on a monthly basis as part of the monthly environmental report. Reporting requirements and responsibilities are documented in Section 8.5 of the CEMP.

7.0 Review and improvement

7.1 Non-conformity, corrective and preventative actions

A non-conformance is an action or omission that does not conform with the requirements of this Plan or any legal and other requirements. Any member of the project team can identify a non-conformance or opportunity for improvement. Section 8.3 of the CEMP identifies the process for identifying, reporting, recoding and reviewing non-conformances. This will ensure continual improvement.

7.2 Management plan update and amendment

The processes described in Section 7 and Section 8 of the CEMP (relating to incidents, inspections, monitoring and auditing). This will occur as needed.

Appendix 1

Spill Response Procedure

A1 Notification requirements

Recent changes to the POEO Act require occupiers of premises, the employer or any person undertaking an activity which causes a pollution event such as a spill to immediately notify each relevant authority (the appropriate regulatory authority (ARA) is usually the EPA and the local authority is usually a local council). If the event is threatening human health or property an emergency should be raised by immediate notification of the NSW Fire Brigade or the NSW Rural Fire Service and NSW Ambulance by calling 000. There may also be a requirement to notify WorkCover Authority if personnel are injured.

Incident reporting and emergency contact details are provided in Section 7.3 of the CEMP respectively.

A1 Spill containment kit

At any site where there is a significant risk/consequence of a spill, an appropriate spill kit(s) is to be available (different kinds are available for different pollutants). The Project Engineer can provide advice on purchasing the correct spill kit.

A1 Procedure

Spill procedure steps

Step 1 – Assessment of the spill

- Stop all work in the affected area.
- Ensure the safety of all workers, visitors and the public in the vicinity of the spill/leak.
- Immediately notify the Project Engineer and/or Construction Manager.
- Cordon off the area around the spill/leak to stop foot/vehicle passage through the affected area.
- Conduct a short assessment of the affected area and notify the Project Engineer of the results of this assessment. The assessment should include consideration of the:
 - » Quantity of the substance spilt.
 - » Type of substance (i.e. corrosive, poisonous, flammable etc).
 - » Location, and potential impact on the environment, and the health and safety of personnel.
 - » Whether the spill is manageable and the best method of clean up (only after referring to the relevant safety data sheet (SDS)).
 - » Photographs of the location and extent of the spill.
- Refer to the container label or SDS for detailed information on the substance spilled and to determine the appropriate personnel protective equipment (PPE) and clean up/storage and disposal requirements.
- Where the spill is not manageable and presents an immediate danger to people, property or the environment, the following needs to be determined:
 - » Whether sufficient spill control equipment and materials, and personal protective equipment exist on site to deal with the spillage.
 - » Whether attempts to deal with the spill on site would pose any risk to employee safety.
 - » Whether the site's waste management contractor should be contacted for clean up, removal and safe disposal of the spilt substance.

Step 2 – Notification of Emergency Services

Where it is determined that the spill cannot be managed by the resources on site, efforts shall be made (only where safe to do so) to protect stormwater drains and sensitive areas. Notify the NSW Fire Brigade or NSW Rural Fire Service (phone 000).

Step 3 – Spill management

- Personal protective equipment (PPE):
 - » Prior to any clean-up, appropriate personal protective PPE is to be worn as per the SDS. No clean up should occur without the correct PPE.
 - » Control the source.
 - » Stop the source of the spill/leak if it is safe to do so.
- Protect drains, channels or other pathways for environmental reasons:
 - » If there is a possibility that the spill/leak will contaminate a greater area or move off site, protect drains, channels or other pathways for environmental release.
 - » If required, geo-fabric, absorbent materials, booms and sandbags should be placed around drains and grates.
- Contain the spread of the spill:
 - » Stop the spill/leak from spreading by using absorbent materials from spill kit (ie booms, pads, pillows, granules etc) sand bagging, spoil or impermeable silt sausages, any handy physical barrier.
 - » Place booms around outside edges of spilled/leaked substance. Ensure booms are overlapped to prevent leakage.
 - » Ensure there are no gaps between the boom and the affected surface.

Step 4 – Spill clean up

- Deploy booms first to contain spill. Deploy booms first to contain or divert spill from waterway.
- If the booms alone cannot absorb the spill/leak, then use absorbent granules to soak up spilled liquid. Granules are quick and absorbent, good for small spills.
- Lay down pads or pillows. Pillows are best for thickly spread liquids. Pads are best for thinly spread liquids.
- Reduce the size of the spill/leak by gently pushing the booms towards the centre of the spill.

Step 5 – Disposal of material used in clean up

- Booms, pads, pillows, gloves and absorbent granules to be placed in yellow waste bag found within spill kit. These are then to be disposed of to the contaminated waste bin.
- Spilled liquid waste to be placed into a labelled sealed container

Consult with the Project Engineer to determine the appropriate testing and classification of the waste material – implement the Waste Classification procedure where appropriate.

Step 6 – Notification and review (refer also Section 7 of the CEMP)

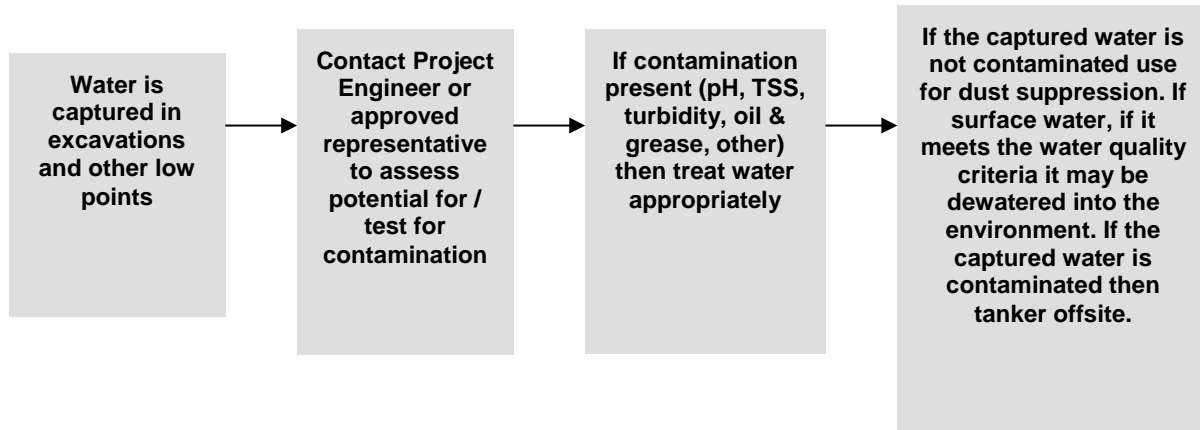
- After cleaning up the spill/leak, notify the Construction Manager and/or Project Engineer as soon as possible to:
 - » Record the incident and the mitigation measures employed on the incident register.
 - » Ensure that any clean up materials are replaced.
 - » Implement non-conformance and corrective action and record on the non-conformance register.

Appendix 2

Dewatering Procedure

A1 Procedure

The dewatering of water capture points (including excavations, sediment basins and general low points on the alignment) is required to allow for continued work in construction areas.



1. Identifying dewatering points

This procedure relates to all water capture points and includes locations such as sediment basins, below ground excavations where groundwater or stormwater has been captured, or above ground water capture points (e.g. depressions on the alignment).

Water captured at the surface will be tested to determine if it meets onsite water use or environmental discharge requirements. If the water is found to be contaminated then it will be tankered offsite to an appropriate waste facility or approval to discharge will be sought from the EPA.

In the event that the construction works intercept groundwater and the excavation requires dewatering, the water will be tested to determine if it meets onsite water use requirements. If the water is found to be contaminated then it will be tankered offsite to an appropriate waste facility. Groundwater from dewatering will not be discharged into Montgomery Creek.

2. Assessing contamination

Potential contamination could be from numerous sources. The most likely sources will be Total Suspended Solids (TSS), oil and grease and pH.

3. Treating contaminated water

The treatment of contaminated water would be done in accordance with the relevant legislation and guidelines. In summary, pH can be raised or lowered using lime or diluted hydrochloric acid, TSS can be treated using gypsum, and oil and grease can be cleaned up by spill booms.

The timing of water treatment will depend on if, and what treatment is required. Where TSS treatment is required, transfer to a treatment basin shall occur first as solids will be stirred up during transport/pumping.

Where only pH neutralisation is required, treatment can be done at any point.

4. Water treatment

pH

If the pH of sediment pond water is outside the range of 6.5-8.5, it will need to be treated to bring it within the acceptable range.

- If the water pH is above 8.5, hydrochloric acid is used to lower the pH:
 - A 500-millilitre dose of acid lowers 7000 litres of water by a pH of approximately 1.5.
 - To treat water with acid, safety requirements must be followed as outlined in relevant Safety Data Sheets (SDS) and Environmental Work Method Statements (EWMS).
- If the water pH is below 6.5, a base such as agricultural lime, with a pH of about 8.2, will be used to raise the pH.

Suspended Solids (TSS)

If the TSS of water is greater than 50 mg/L a flocculent should be used as follows:

- Treating water with flocculent (eg gypsum, liquid alum or flocculent blocks) will make the sediments drop to the bottom. Water retention tanks also have internal baffles installed to further assist with reducing the sediment load. Dosing rates of 30 kilograms per 100m³ will be used and application methods will be applied as per methods recommended in the Blue Book (Landcom, 2004). Note that an even application over the captured water is essential for effective flocculation. Apply evenly in water and wait for the sediment to settle out.
- Only environmentally safe flocculants are to be used based on the Project Engineers' review of SDS information.

Hydrocarbons

- If an oily sheen is found on the surface of the water absorbent material from a spill kit will be used to absorb and skim off the sheen prior to discharge.

5. Dewatering

Where dewatering is required, the quantity and quality of water is to be considered. For large quantities or poor quality, as assessed by the Project Engineer, the water will be preferentially removed by water trucks and used for onsite dust suppression or pumped/carted to sediment basins or points for discharge. The water must be tested by an Project Engineer or approved representative on the day of discharge.

Where the amount of water is considered to be minor and the environmental impact is considered negligible, based on sample results, following approval from the Project Engineer or approved representative, water is to be released through appropriate erosion and sedimentation controls (sediment trap or fence, mulch or grass filters).

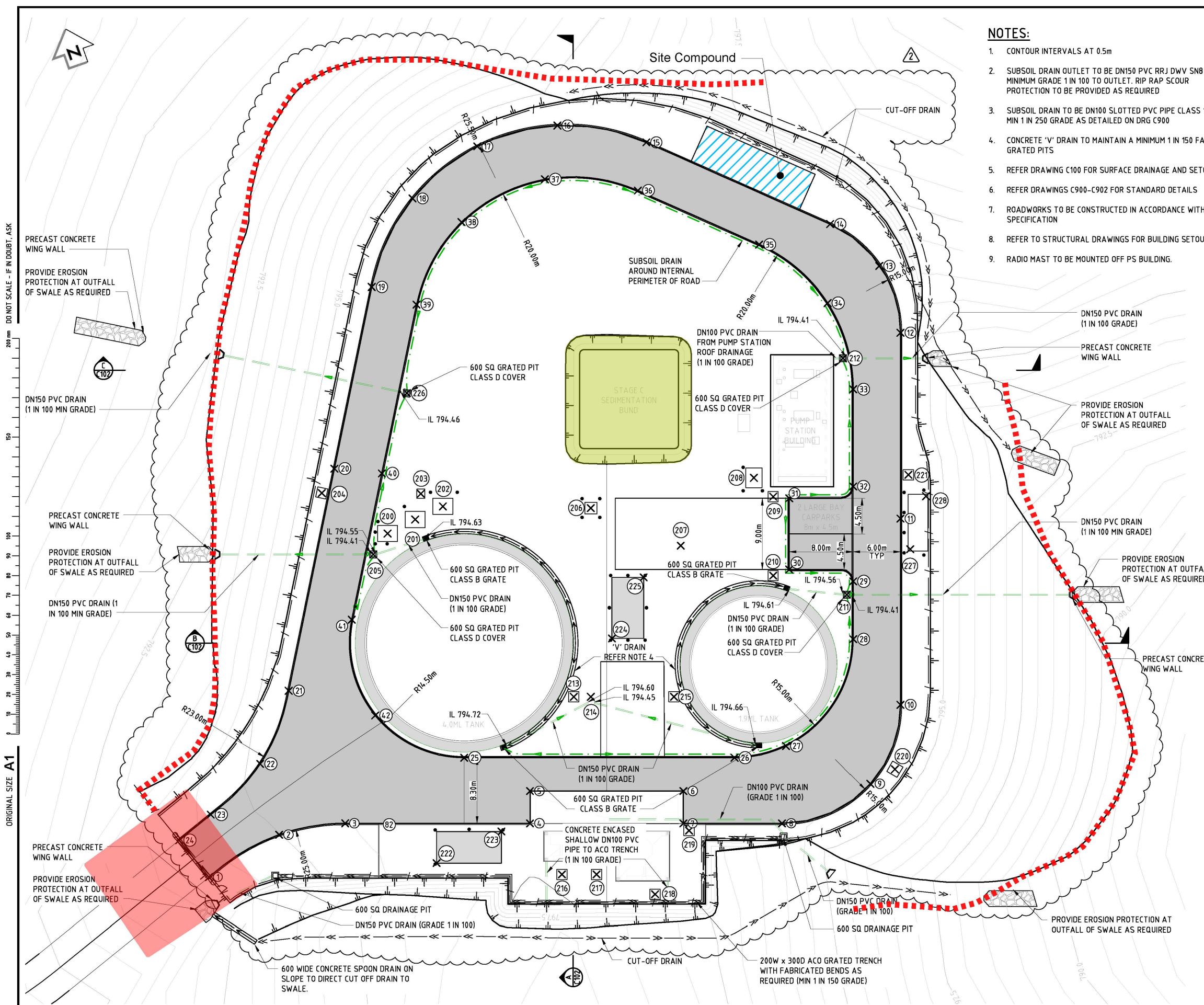
Pumps must only be operated by dedicated dewatering crews who have been toolboxed on this procedure. During dewatering pumps must be manned at all times to ensure that sediment is not picked up during discharge and water is discharged through erosion and sedimentation controls.

6. Document results

Any water test results should be stored and included in the Monthly environmental report.

7. Water quality criteria for discharge

Parameter	Criteria
pH	6.5 – 8.5
Total suspended solids	50 mg/L
Conductivity (salinity)	<1,500 μScm^{-1}
Oil and grease	No visible



- NOTES:**
- CONTOUR INTERVALS AT 0.5m
 - SUBSOIL DRAIN OUTLET TO BE DN150 PVC R/R DWV S/N8 PIPE, MINIMUM GRADE 1 IN 100 TO OUTLET. RIP RAP SCOUR PROTECTION TO BE PROVIDED AS REQUIRED
 - SUBSOIL DRAIN TO BE DN100 SLOTTED PVC PIPE CLASS 1000, MIN 1 IN 250 GRADE AS DETAILED ON DRG C900
 - CONCRETE 'V' DRAIN TO MAINTAIN A MINIMUM 1 IN 150 FALL TO GRATED PITS
 - REFER DRAWING C100 FOR SURFACE DRAINAGE AND SETOUT
 - REFER DRAWINGS C900-C902 FOR STANDARD DETAILS
 - ROADWORKS TO BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATION
 - REFER TO STRUCTURAL DRAWINGS FOR BUILDING SETOUT.
 - RADIO MAST TO BE MOUNTED OFF PS BUILDING.

- LEGEND:**
- TOP OF EMBANKMENT
 - NEW FENCELINE / BOUNDARY
 - SUBSOIL DRAIN
 - SUBSOIL DRAIN OUTLET (REFER NOTE 2)
 - 'V' DRAIN (MIN 1 IN 150 FALL TO SUMPS)
 - ACO GRATED TRENCH
 - CUT-OFF DRAIN
 - PRECAST CONCRETE WING WALL
 - Stabilised Site Entry
 - Silt Fence
 - Sediment Pond

SETOUT DATA

ROAD SETOUT				STRUCTURE SETOUT			
POINT NO.	EASTINGS	NORTHINGS	ELEVATIONS	POINT NO.	EASTINGS	NORTHINGS	DESC
1	701560.84	6076900.70	794.30	200	701596.62	6076934.08	PIT
2	701571.01	6076902.78	794.99	201	701600.51	6076934.58	PIT
3	701579.36	6076901.35	795.47	202	701604.36	6076934.99	PIT
4	701601.41	6076893.54	795.81	203	701602.27	6076937.42	SLAB
5	701602.77	6076897.41	795.81	204	701590.48	607694.168	PIT
6	701621.06	6076890.94	795.80	205	701594.04	6076932.20	PIT
7	701619.70	6076887.07	795.80	206	701621.94	6076928.54	PIT
8	701631.45	6076882.91	795.52	207	701631.08	6076920.26	PIT
9	701643.67	6076883.91	795.46	208	701642.66	6076925.27	PIT
10	701650.59	6076892.06	795.41	209	701644.16	6076922.20	PIT
11	701658.43	6076914.22	795.41	210	701640.83	6076912.80	PIT
12	701666.27	6076936.38	795.41	211	701648.82	6076997.42	PIT
13	701666.53	6076945.21	795.41	212	701658.33	6076935.76	PIT
14	701662.44	6076952.27	795.41	213	701611.95	6076906.79	PIT
15	701643.96	6076969.76	795.41	214	701614.00	6076906.07	PIT
16	701634.06	6076975.52	795.42	215	701623.91	6076902.57	PIT
17	701623.64	6076976.41	795.43	216	701603.06	6076886.11	PIT
18	701613.72	6076972.93	795.44	217	701607.18	6076884.66	PIT
19	701605.12	6076964.12	795.45	218	701613.33	6076879.83	PIT
20	701593.02	6076944.05	795.42	219	701620.07	6076885.98	PIT
21	701578.22	6076919.53	795.39	220	701647.20	6076884.61	PIT
22	701571.72	6076912.01	795.17	221	701661.21	6076919.11	PIT
23	701563.69	6076908.05	794.64	222	701588.59	6076892.75	SLAB
24	701558.84	6076906.33	794.30	223	701597.65	6076893.79	SLAB
25	701596.32	6076904.14	795.73	224	701618.98	6076912.13	SLAB
26	701628.56	6076892.74	795.74	225	701625.32	6076918.06	SLAB
27	701635.19	6076891.97	795.70	226	701604.84	6076950.00	PIT
28	701647.70	6076901.88	795.59	227	701658.30	6076910.17	PIT
29	701650.13	6076908.74	795.59	228	701662.42	6076915.82	PIT
30	701643.01	6076912.85	795.67				
31	701646.01	6076921.34	795.67				
32	701654.13	6076920.06	795.59				
33	701658.23	6076931.64	795.59				
34	701658.81	6076942.99	795.59				
35	701653.12	6076952.83	795.59				
36	701640.93	6076964.37	795.59				
37	701630.31	6076969.64	795.60				
38	701618.56	6076968.05	795.61				
39	701609.73	6076960.14	795.61				
40	701598.47	6076941.49	795.60				
41	701588.73	6076925.35	795.58				
42	701587.49	6076912.94	795.66				

NOTE: ROAD SETOUT POINTS TO EDGE OF SEAL

REV	DESCRIPTION	JZ	MR	CW	DATE
2	APPROVED FOR CONSTRUCTION				14.06.16
1	ISSUED FOR CONSTRUCTION	GH	PA	AS	22.01.16

DESIGNED	DATE
George Homan	10.15
George Homan	10.15
Steve Coyle	25.01.16
Peter Allen	26.01.16
Peter Allen	26.01.16
Ari Shammay	27.01.16

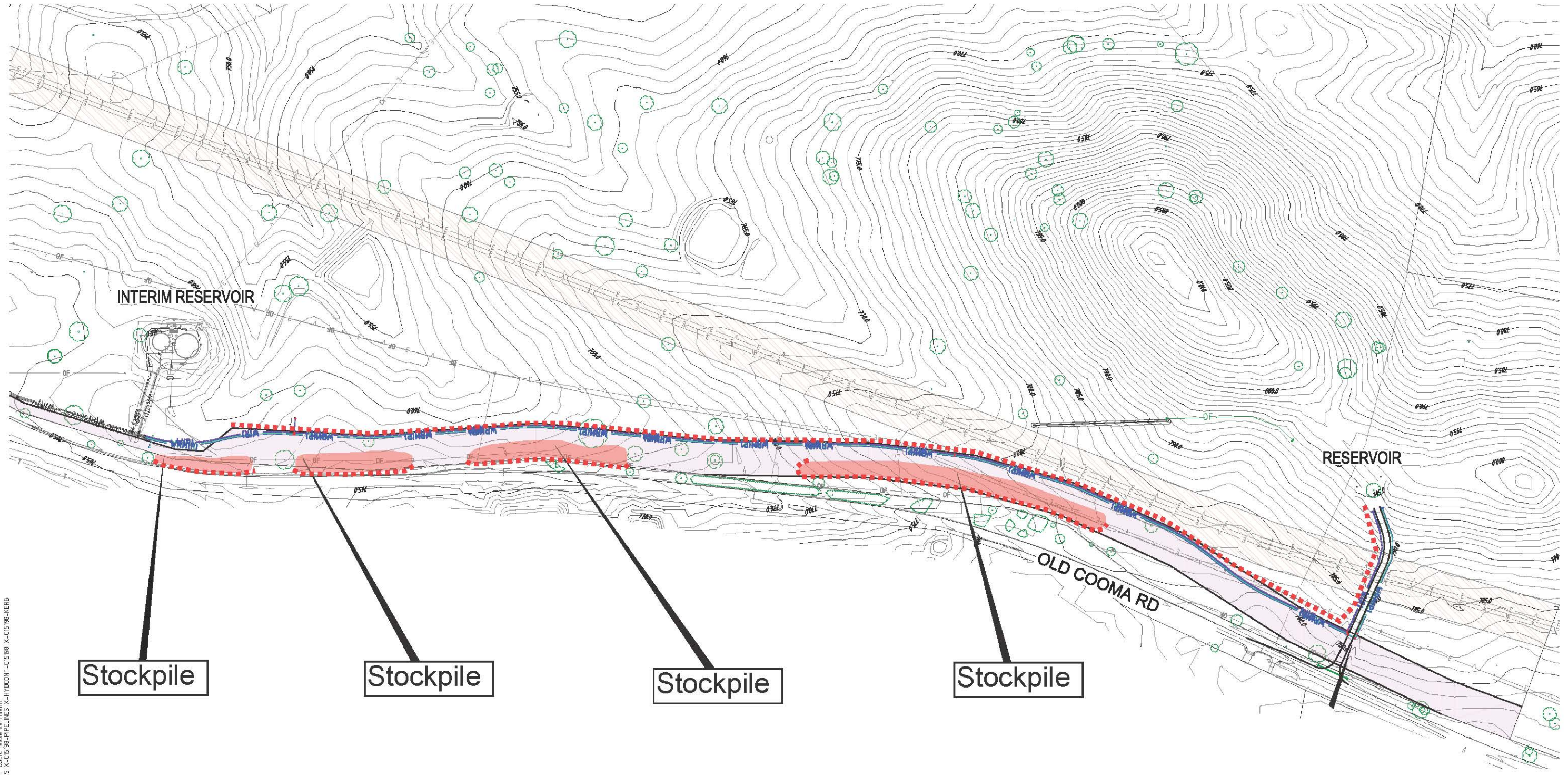


Client: **GOOGONG**

GOOGONG STAGE C - NETWORK WEST

ROAD AND DRAINAGE SETOUT

Status Stamp	FOR CONSTRUCTION
Date Stamp	
Scales	1 : 250
Drawing No.	83500349-07-001-C101
Rev.	2



Stockpile

Stockpile

Stockpile

Stockpile

Legend:

- Stockpile
- Silt Fence

Notes:

1. Erection of sediment and erosion controls will be in accordance with the requirements of the Blue Book
2. All stockpiles will be surrounded on the downstream by silt fencing
3. As stipulated in the CEMP documentation, sediment and erosion controls will be monitored prior and post rain events (see Appendix 11 of CEMP)

SCALE 1:250

FILE: H:\P15\15_000198-Phase2\150198-WEST - DETAIL DESIGN\C15198\104-GA.dwg 6th Nov 2016 2:10:11 USER: issa.katmann
 Xrefs: X:\A1\C15198-X-SURVEY-C15198-X-BASE-C15198-X-CT1140-2-IR PAD SITE X-CT1140-EX-PIPELINES X-CT15198-PIPELINES X-CT15198-KERB

REV	ISSUE	DESIGN	DRAWN	CHECK	APPROVED	DATE	DESCRIPTION
A		CO	JK	JL	[Signature]	10/11/2015	AMENDMENT DETAILS
B		CO	CO	JL	[Signature]	23/02/2016	DETAILS REMOVED/MOD
C		CO	CO	JL	[Signature]	19/03/2016	SHRUB DETAIL AMENDMENT
D		CO	JK	JL	[Signature]	30/06/2016	APPROVED FOR CONSTRUCTION

WPAE No.	
PROJECT No.	

AS PLOT 1:4,000

SCALE (METRES)

AS PLOT 1:2,000

AS PLOT 1:1,000

CONSULT AUSTRALIA

CLIENT

PROJECT

GOOGONG TOWNSHIP
IWC STAGE C
NETWORK WEST
(WATER)

DRAWING TITLE

GENERAL ARRANGEMENT PLAN

DRAWING NUMBER

C15198-104+

AMEND.

C

Appendix 14

Pollution Incident Response Management Plan



Pollution Incident Response Management Plan

Googong Township IWC Project: Stage C Network

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Report Number: 15048
Version / Date: v2-0 / July 2016

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2.0	Draft for submission	JH	BN	12/07/2016

Approval for Issue

Name	Signature	Date
John Hite		12/07/2016

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Appendix 1 PIRMP Test Register
Appendix 2 EPL #20788

1.0 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. 20788) to allow for the construction of the Stage C Network (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 construction of Stage C Network, as part of the Googong Township Integrated Water Cycle (IWC) Project and should be read in conjunction with the Construction Environment Management Plan (CEMP).

The Stage C Network CEMP is the key document in the Environmental Management System (EMS) for construction works and is required as per the IWC Project Conditions of Approval (CoA). The EMS structure, which includes this PIRMP is outlined in Figure 1 and described in more detail in Section 1.6 of Stage C Network CEMP.

The objectives of this PIRMP are to:

- Ensure comprehensive and timely communication about a pollution incident to staff at the premises, the Environment Protection A 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 construction 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, the contractor will be responsible for the review and implementation of this Plan and related environmental documents based on detailed construction information.

1.3 Definition of 'pollution incident'

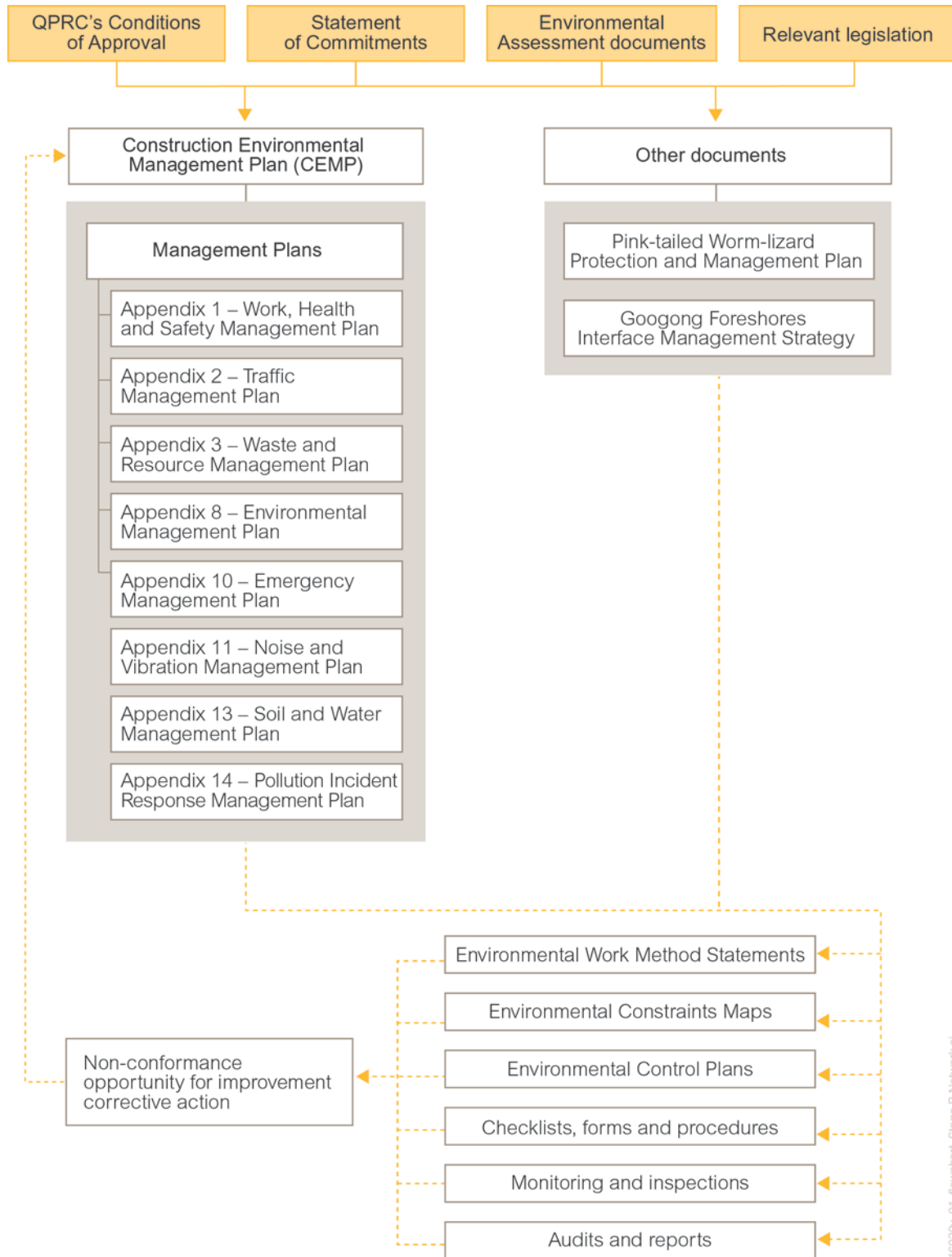
The POEO Act defines a pollution incident as:

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.



16029v_01_flowchart_Stage B Network.ai

Figure 1 Environment Management System for Stage C Network

2.0 Project description

2.1 General features

Construction of Stage C Network West works will include the following:

- Works associated with the installation of a potable water and a recycled water reservoir at Hill 800, the permanent reservoirs, including a recycle water discharge pipeline for any excess recycled water that needs to be released from the recycled water reservoir.
- Works associated with the installation of mains for recycled water and potable water, including:
- The installation of a new potable water and recycled water rising mains (an extension to the existing pipelines) from the interim reservoirs to the permanent reservoirs.
- The installation of a new gravity potable water and recycled water mains from the permanent reservoirs back into the Township.
- A new potable water pipeline from the boundary of the Googong Foreshores to the WRP for potable water top-up. The upstream parts of this pipeline located within the Googong Foreshores, are part of the Stage C Network East.
- Works associated with the WRP, including:
- The installation of a new recycled water holding tank.
- Expanding the recycled water pumping station at the WRP site.
- Works associated with the decommissioning of the interim potable and recycled water reservoirs. The site layout of Stage C Network is provided in Figure 2.

2.2 Construction activities

2.2.1 Pre-construction activities

- Identification of the locations of existing underground services.
- Survey to finalise alignment of underground infrastructure.
- Erection of temporary fencing and installation of temporary gates to define the construction corridor.
- Installation of appropriate environmental management controls including erosion and sediment control.

2.2.2 Construction activities

Construction of the Stage C Network is likely to take about 12 months and the following sequences of activities are anticipated:

- Establishment of the site compound within the construction footprint area (refer Figure 2).
- Clearing of existing vegetation.
- Removal and stockpiling of topsoil.
- Formation of access roads – excavation to grade as required, and importation and placement of appropriate fill for the road.
- Installation of temporary power and water supply – trench excavation and pipe laying.

2.2.2.1 Gravity Mains and Rising Mains

- DICL-225 Potable Water rising main from the Interim Reservoir Site to the Ultimate Reservoir Site
- DICL-375 Recycled Water rising main from the Interim Reservoir Site to the Ultimate Reservoir Site
- PVC-M – 250 Potable Water gravity main from the Interim Reservoir Site to the Ultimate Reservoir Site
- PVC-O – 375 Recycled Water gravity main from the Interim Reservoir Site to the Ultimate Reservoir Site
- PVC-O-450 Combined Reservoir Overflow pipe from the Ultimate Reservoir Site to the environmental discharge point

2.2.2.2 Ultimate Reservoir

The construction scope of works at the ultimate reservoir site includes the following key elements delivered on a greenfield site:

- Bulk earthworks
- 1.9 ML Potable Water Reservoir
- 4.0 ML Recycled Water Reservoir
- Chemical dosing and storage for disinfection, pH correction and dechlorination
- Potable Water Booster Pumps for site services
- Recycled Water Booster Pumps for 'off-site' irrigation of Sports fields 3 and 4 on Googong Common
- A combined reservoir overflow system
- Connections to rising and gravity mains
- Roads, hardstands, surface drainage, perimeter fencing and access gates
- Power supply to site
- Provisions for stage 'D' expansion

2.2.2.3 Water Recycling Plant Modifications

The construction scope of works at the Water Recycling Plant (WRP) includes the following key elements. WRP is an operational / brownfield site:

- 415 KL Recycled Water Tank and interconnecting pipework
- 3 new Recycled Water Transfer Pumps and interconnecting pipework, including the demolition of one of the existing pump installations to make room for one of the new pumps, and provision for stage D expansion
- DICL-375 Potable Water rising main that connects the Potable Water Top-Up Pump Station (PWTUPS) to the WRP from the ICON Revenue Site just outside the WRP fence line to the existing and the new Recycled Water Tanks

2.2.3 Commissioning

There are two stages of commissioning:

Separable Portion 1: Construction of all Stage C works – including Reservoir site, all rising main / gravity mains, HV supply, all works within the WRP and any pre-commissioning that can be conducted without use of the infrastructure included in the Stage C East scope of works.

Separable portion 2: Testing, wet commissioning, cut over of Stage C Works and process proving.

2.3 Identification of pollution hazards

The management plans attached to the CEMP identify environmental and safety aspects associated with the construction of Stage C Network. The plans that identify potential hazards relevant to pollution are outlined in the next sections.

2.3.1 Soil and water

The Soil and Water Management Plan (Appendix 13 of the Stage C Network CEMP) details risks to soil and water. Section 4.3 of the Soil and Water Management Plan identified the following pollution hazards:

- Vegetation clearing, topsoil stripping and soil disturbance.
- Storage of fuel and chemicals.
- Refuelling.
- Earthworks increasing the risk of erosion and sedimentation.
- Commissioning (including hydrostatic testing) and release of treated water to the environment.

Waterways are at particular risk of pollution incidents with two key areas of potential risk:

- Potential for accidental spills from plant or activities (e.g. hydraulic fluid or cement) during construction, which may enter the natural drainage lines causing pollution of the local waterways.
- Potential for water used during construction activities (such as wash down bays) to run-off the construction site and enter the natural drainage lines causing pollution of the local waterways.

2.3.2 Hazards and risks

The GLA SWMS and Risk Register (Appendix 6 of the Stage C Network CEMP) details environmental hazards, risks and safety issues for Stage C Network. Table 7 of the GLA SWMS and Risk Register identified the following pollution hazards (refer to the GLA SWMS and Risk Register (Appendix 6 of the Stage C Network CEMP) for further details on the likelihood of these hazards):

- Safety hazards and risks as a result of construction (bushfire, personal safety and security, chemical storage).
- Plant and equipment emissions affecting local air quality.
- Changes to groundwater flows and quality due to construction activities.
- Surface water quality impacts due to construction (dewatering, sediment runoff, chemical spills etc).

- Contamination of land or soils due to chemical spills.

2.3.3 Waste and resources

The Waste and Resource Management Plan (Appendix 3 of the Stage C Network CEMP) details risks around waste and resources. Section 4.1 of the Waste and Resource Management Plan identified the following pollution hazards:

- Liquid waste:
 - Concrete slurries drilling muds, lubricants.
 - Liquid waste from human waste storage facilities (sewage) Fuels, oils, greases, engine coolant.
- Hazardous waste:
 - Adhesives, lubricants, cleaning agencies, water treatment chemicals and other plastic material.
- General solid waste:
 - Non-recyclable and other putrescible general solid waste.
 - Spoil, concrete, metallic materials, brick, rubble, soils.
 - Drained and crushed oil filters, rags and other absorbent material that do not contain free liquids.

2.4 Pre-emptive measures

A list of pre-emptive actions (also referred to as mitigation measures) is listed in of each management plans listed in Section 3.1. GTPL will be responsible for implementing the mitigation measures to minimise or prevent the risk of pollution incidents from occurring.

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).

3.0 Inventory of pollutants

The GLA SWMS and Risk Register (Appendix 6 of the Stage C Network CEMP) requires that that a Safety Data Sheet (SDS) and a Hazardous and Dangerous Substances Register be kept on site at all times as well as an inventory (register) of the pollutants on site.

The Project Engineer will:

- Ensure a current (within five years of the date of issue) SDS is available for all products and substances to be used for the work activity.
- Review the SDS to determine if the product or substance is classified as hazardous before a product or substance is used for the work activity.
- 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;

The Project Engineer 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.

4.0 Safety equipment

A list of pre-emptive actions (or mitigation measures) to be implemented during construction of Stage C Network to minimise or prevent the risks to human health and the environment is outlined in GLA SWMS and Risk Register (Appendix 6 of the Stage C Network CEMP). The appendix 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.

Further measures and requirements are detailed in the GLA Work Health and Safety Management Plan (Appendix 1 of the Stage C Network CEMP) specifically regarding PPE and Site Safety Equipment.

5.0 Maps

The following maps have been included in this Plan:

Figure 2 – Stage C Network West Environmental Constraints Map (Reservoir Sites)

Figure 3 – Stage C Network West Environmental Constraints Map (WRP Site)

Figure 2 - Stage C Network West Environmental Constraints Map (Reservoir Sites)

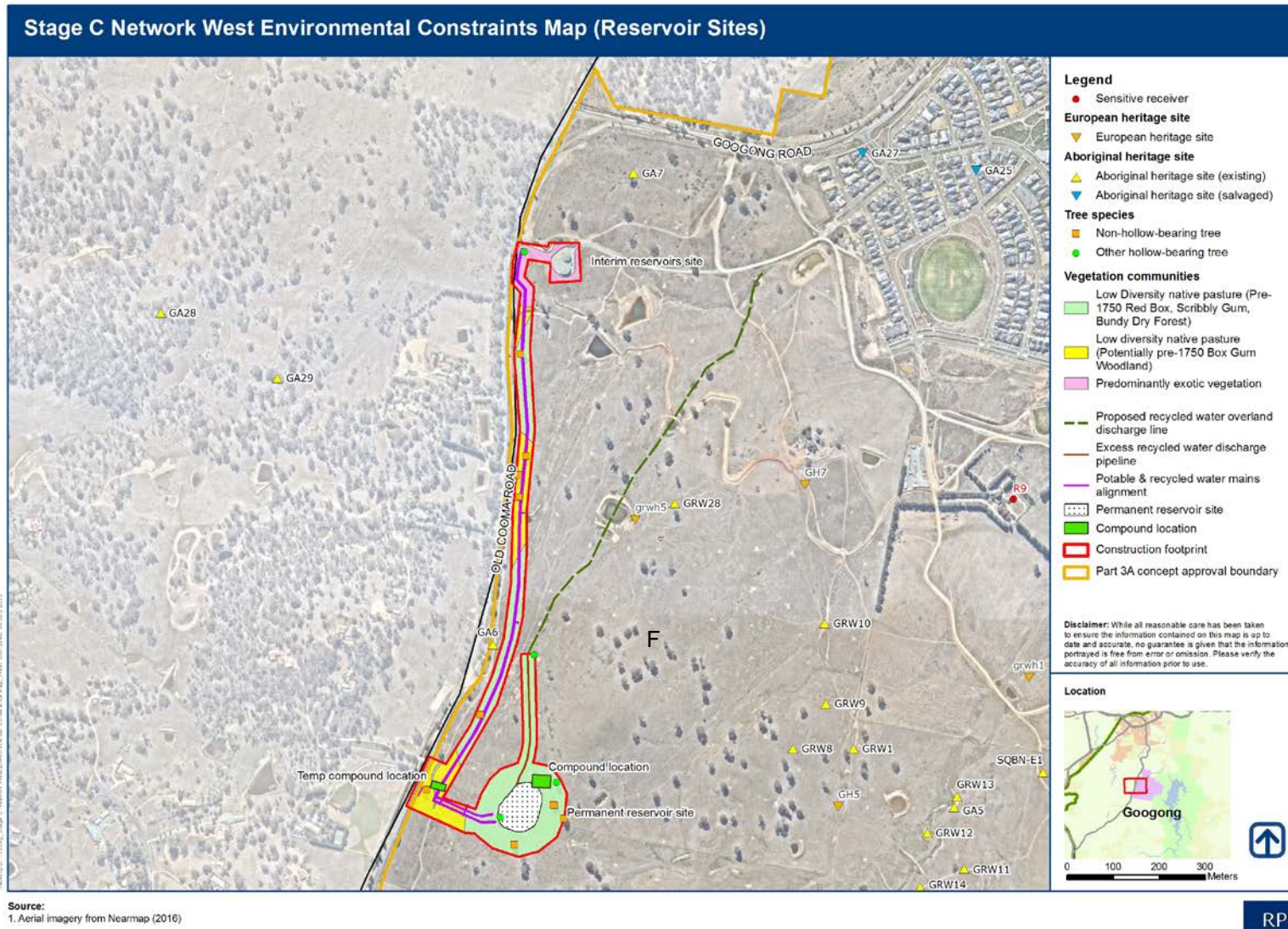
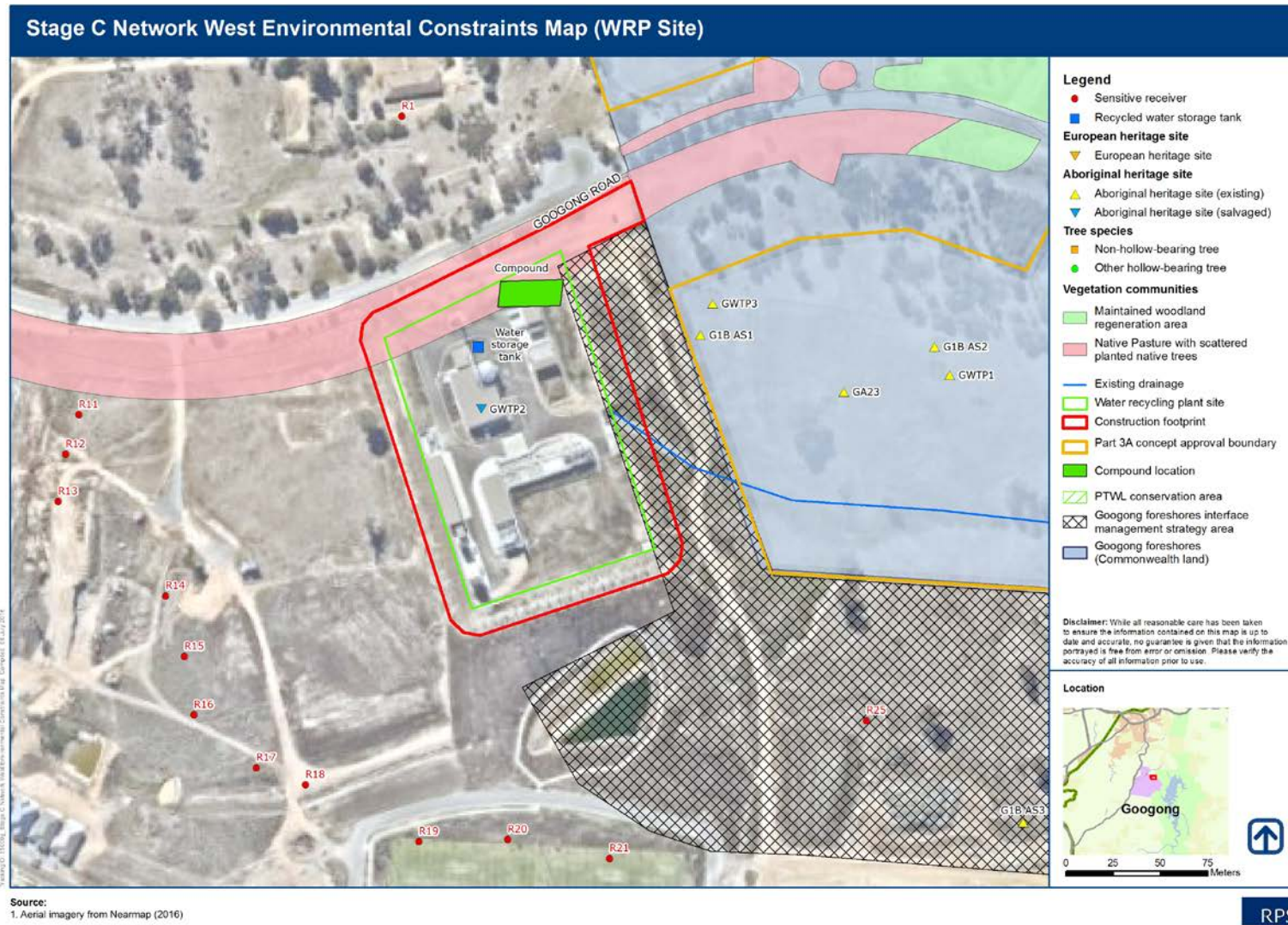


Figure 3 - Stage C Network West Environmental Constraints Map (WRP Site)



6.0 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.

6.1 Classification of environmental incidents

The Stage C Network CEMP classifies two categories of environmental incidents. These are detailed in the sections below.

6.1.1.1 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.

6.1.1.2 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.

6.2 Incident management response

The incident management response is detailed below. In the event of a spill or a hazardous substance incident the following procedures will be implemented to contain or clean up the spill:

- Dangerous Goods Hazardous Substances Management Procedure (Appendix 1 WHSMP ~~of the Hazards, Risk and Safety Management Plan~~). Section 2.12.1 Hazardous Substances, of the CEMP
- Spill Response Procedure (Appendix 2 of the Soil and Water, Management Plan).

6.2.1.1 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.
- Project personnel to immediately notify the Project Engineer.
- Project Engineer to immediately notify the GTPL Assistant Project Director and the Site Superintendent (refer to Section 7.3).
- GTPL to immediately notify the EPA and QPRC (and others as required) for pollution incidents causing or threatening material harm (refer to Section 7.3).
- GTPL to immediately notify QPRC (and others as required) for all other category one incidents.
- Project Engineer to complete an incident report and record in the incident register (to be developed and

managed by the contractor) and submit report to GTPL within two days.

- GTPL and contractor to investigate incident (root cause analysis) and implement any opportunities for improvement (as soon as practical, but within one week) (refer Section 7.3)
- GTPL to issue copy of incident report and root cause analysis to QPRC (and others as required) for their consideration (within seven days). Environment Manager to complete an incident report and record in the incident register (to be developed and managed by the contractor) and submit report to GTPL within two days.
- GTPL and contractor to investigate incident (root cause analysis) and implement any opportunities for improvement (as soon as practical, but within one week) (refer Section 7.4 of the CEMP).
- GTPL to issue copy of incident report and root cause analysis to GTPL Assistant Project Director (and others as required) for their consideration (within seven days).
-

6.2.1.2 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.
- Project personnel to immediately notify the Project Engineer.
- Project Engineer to immediately notify the GTPL Assistant Project Director and the Site Superintendent (refer to Section 7.3).
- Project Engineer to complete an incident report and record in the incident register (to be developed and managed by the contractor) and submit report to GTPL within two weeks.
- GTPL and contractor to investigate incident (root cause analysis) and implement any opportunities for improvement (as soon as practical, but within one week) (refer Section 7.3).
- GTPL to report on category two incidents to EPA in the Annual Return.

6.3 Incident reporting

The Project Engineer must immediately notify GTPL and the Site Superintendent of any environment incidents immediately and in writing within 24 hours of the incident occurring.

GTPL and/or the Site Superintendent 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 5).

All incident recording, management and reporting will be in accordance with the requirements of the conditions of approvals and EPL 20788, which documents GTPL's:

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

6.3.1 **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) in accordance with Section 148 of the POEO Act and Condition R2 of EPL 20788.

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 to each relevant authority 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:

- QPRC.
- EPA.
- Ministry of Health.
- WorkCover.
- Fire and Rescue NSW.

An environment incident report (in accordance with the reporting requirements of EPL 20788) will be prepared by the contractor and provided to GTPL and the Site Superintendent 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 of the amended POEO Act and Condition R3 of EPL 20788:

- 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.

6.3.2 All other Category one incident reporting

For all other Category one incidents, GTPL will notify QPRC and any relevant agencies as soon as practicable after GTPL become aware of the incident.

An environment incident report will be prepared by the contractor and provided to GTPL and the Site Superintendent 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 QPRC, and any relevant agencies, a detailed incident report and copy of the root cause analysis investigation.

6.3.3 Category two incident reporting

An environment incident report will be prepared by the contractor and provided to GTPL and the Site Superintendent 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 QPRC through the six-monthly construction compliance reports. They will also be reported to the EPA through the Annual Return in accordance with Condition R1 of EPL 20788.

Figure 4 Incident reporting flowchart

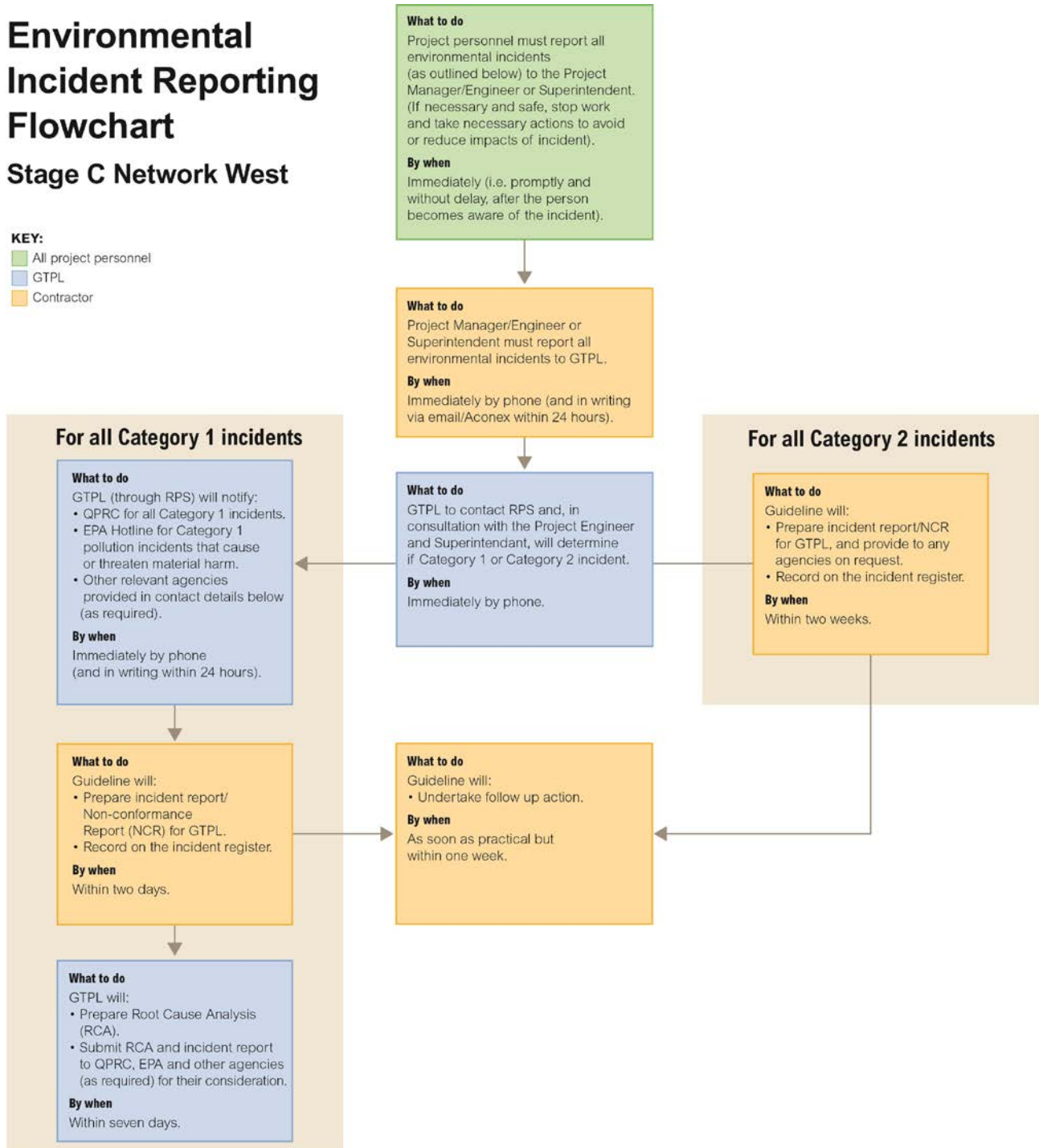
[Liaise with RPS to update, to be printed and posted up in the site office]

Environmental Incident Reporting Flowchart

Stage C Network West

KEY:

- All project personnel
- GTPL
- Contractor



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.
- Harm to the environment is material if it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not neutral OR it results in actual or potential loss or property of an amount, or amounts in aggregate exceeding \$10,000.
- 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

PROJECT TEAM

Name	Phone	Email
GUIDELINE/BLACK MOUNTAIN		
John Hite (Project Manager)	0407 008 195	john.hite@guidelineact.com.au
Tom Darmody (Project Engineer)	0432 591 897	tom.darmody@guidelineact.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

Queanbeyan-Palerang Region Council (QPRC)		
Andre Pretorius (Manage Water & Sewerage)	0418 250 863	andre.pretorius@qprc.nsw.gov.au
EPA		
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	

OTHER AGENCIES

NSW Rural Fire Service	000
Southern NSW Local Health District Public Health Unit	(02) 6080 8900
WorkCover NSW	131 050

Information as of July 5, 2016

7.0 Emergency contact details

Table 1 Emergency contacts

Emergency contact/organisation	Name	Contact details
GTPL Assistant Project Director	Craig Harris	0409 999 059
Project Manager	John Hite	0407 008 195
Project Engineer	Tom Darmody	0432 591 897
Site Superintendent	Jeff Gardner	0432 565 123
NSW EPA	Pollution line	131 555
NSW EPA (South East region)	Julian Thompson	(02) 6229 7002
QPRC	Andre Pretorius	0418 250 863
	N/A	(02) 6285 6000 After hours (02) 6298 1234
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
Queanbeyan Hospital	N/A	(02) 6298 9211
NSW Rural Fire Service	N/A	000 (or 112 from mobiles)
Gas/electricity	N/A	131 909
Icon Water	N/A	(02) 6248 3111
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

8.0 Emergency response and minimising harm to persons

The objectives of the GLA WHS Management Plan (Appendix 1) will be communicated to all project team members and persons working on site.

Emergency controllers/fire wardens are to be assigned specific responsibilities and are to be trained, where necessary, in the evacuation procedures and the use of any specialised emergency response equipment (e.g. fire extinguishers, spill kits, etc.). Spill management will be undertaken in accordance with the SWMP (Appendix 13) of the CEMP and the Environmental Management Plan (Appendix 8B) of the CEMP.

9.0 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. In the unlikely event of a pollution incident that could result in impacts outside the Stage C Network 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 (eg follow up letters/emails, or website update).

10.0 Staff training

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

- A project site induction, including environmental roles and responsibilities.
- Toolbox talks.
- Environmental awareness training for specific issues.

The Project Engineer will undertake training and maintain a register of all project site inductions and environmental training carried out will be maintained.

The GLA SWMS and Risk Register (Appendix 6 of the Stage C Network CEMP) and GLA Environmental Management Plan (Appendix 8B of the Stage C Network CEMP) provide specific details on induction training related to safety and environmental issues.

11.0 Testing and review

11.1 Testing of the PIRMP

11.1.1 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 construction of Stage C Network.
- Every 12 months thereafter, while construction continues, and
- Within 1 month of any Category One pollution incident during the construction of Stage C Network.

11.1.2 Records

Testing of the PRIMP will involve:

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

The Project Engineer will record the outcomes of each test by the using the register included at Appendix2. If the test identifies any shortcomings, especially in the implementation of the Spill Response Procedure or Dangerous Goods Hazardous Substances Management Procedure, this PIRMP will be corrected and/or appropriate non-conformance actions will be undertaken in accordance with the Stage C Network CEMP. This would include any non-conformance or opportunities for improvement to be recorded through the non-conformance register.

Appendix 1

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 2

EPL #20788

(See Appendix 7A of the Stage C Network CEMP)