Parramatta Light Rail Stage 2 Enabling Works

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Contract Number: **PD-22-12894**

Document Name: **Construction Water Reuse Strategy**

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Document History and Status

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A	21/01/2025	Nina van Rij	Sajitha Srivelan	For stakeholder review
B	25/02/2025	Sajitha Srivelan	Colm Kennedy	Response to TfNSW / ER comments
C	10/03/2025	Sajitha Srivelan	Colm Kennedy	Response to TfNSW / ER comments

Approval Record

Function	Position	Name	Signature	Date
Approved By	Sustainability Manager	Sajitha Srivelan		19/03/2025
Authorised By	Project Director	Paul Dalziel		20/3/2025

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Glossary & Abbreviations

Abbreviations	Meaning
AMS	Activity Method Statement
ANZG	Australian and New Zealand Guidelines for Fresh and Marine Water Quality
ARI	Average recurrence interval
ASS	Acid Sulfate Soil
Assessments related to*	Hydrodynamics and water quality impacts Hydrodynamics relates to the motion of water within the river, including how flows, velocities and water depths may be affected by structures, boundaries or changes in surrounding catchments (relevant project phase is Construction).
	Surface water impacts Assesses construction and operational impacts related to local runoff and stormwater management
	Groundwater impacts Assesses construction and operational impacts to local and regional groundwater sources from proposed activities.
BoM	Bureau of Meteorology
CEMP	Construction Environmental Management Plan
Compliance audit	Verification of how implementation is proceeding with respect to a Construction Environmental Management Plan (CEMP) (which incorporates the relevant approval conditions).
CoA	Minister's Conditions of Approval
CoPC	Contaminants of Potential Concern
COPC	City of Parramatta Council
CSMP	Construction Sustainability Management Plan
CPESC	Certified Professional in Erosion and Sediment Control
CSSI	Critical State Significant Infrastructure
CWRS	Construction Water Reuse Strategy (this strategy)
D&C	Design and construct
DEC	Department of Environment and Conservation
DECCW	Department of Environment, Climate Change and Water
DPHI	NSW Department of Planning, Housing and Infrastructure
DPI	Department of Primary Industries
EA	Environmental Assessment
EIS	Environmental Impact Statement
EM	Environment Manager
EMS	Environmental Management System
Environmental aspect	Defined by AS/NZS ISO 14001:2015 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.

Abbreviations	Meaning
Environmental incident	An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment.
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental policy	Statement by an organisation of its intention and principles for environmental performance.
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
EWMS	Environmental Work Method Statement
GMR	Global Mandatory Requirements (John Holland)
HDD	Horizontal Directional Drilling
HEPA	Heads of EPAs Australia and New Zealand
IS v2.1	Infrastructure Sustainability Version 2.1
ISC	Infrastructure Sustainability Council
JH	John Holland (the Principal Contractor)
L/s	Litres Per Second
Non-compliance	Failure to comply with the requirements of the Project approval or any applicable licence, permit or legal requirements.
Non-conformance	Failure to conform to the requirements of Project system documentation including this CEMP or supporting documentation.
NRAR	NSW Natural Resources Access Regulator
OWRS	Operational Water Reuse Strategy
PASS	Potential acid sulfate soils
PFAS	Per-and poly-fluoroalkyl substances
PLR2-EW	Parramatta Light Rail Stage 2 Enabling Works
Project, the	Parramatta Light Rail Stage 2 Enabling Works
RAP	Remediation Action Plan
SMART	Specific, Measurable, Achievable, Realistic and Time-bound
SOPA	Sydney Olympic Park Authority
SWMP	Construction Soil and Water Management Sub-plan
TfNSW	Transport for New South Wales
UMM	Updated Mitigation Measures

1. Introduction

1.1. Background

Transport for New South Wales (TfNSW) have engaged John Holland to deliver the Parramatta Light Rail Stage 2 Enabling Works (PLR2 – EW, the Project) as part of the overall Stage 2 extension of the Parramatta Light Rail. As part of these works, John Holland and its subcontractors will undertake systems engineering, assurance and design in accordance with the PLR2 – EW Contract.

1.2. Purpose

The Construction Water Reuse Strategy (CWRS, the Strategy) has been developed to meet the Conditions of Approval (CoA) for the Parramatta Light Rail Stage 2 – Enabling Works (PLR2-EW) Project (the Project). The CWRS outlines the water usage requirements and reuse options for the construction phase of PLR2 - EW. Water reuse is limited to the following sources encountered within the Project's boundaries:

- Stormwater run-off;
- Harvested rainfall;
- Groundwater encountered through excavation;
- Water reused from an onsite construction activity for another purpose; and
- Treated non-potable water accessed through an established pipeline.

Water reuse may need to consider requirements for:

- Surface works;
- High materiality, activity specific conditions (e.g. concrete curing)
- Stormwater runoff management during surface works construction activities; and
- Rainwater harvesting and management.

This CWRS does not consider:

- Treatment and reuse of onsite sewerage due to space and cost restraints; and
- Operational water reuse.

An Operational Water Reuse Strategy (OWRS) will be prepared separately prior to commencement of operations of the Project in accordance with CoA E110.

1.3. Project Overview

The PLR Stage 2 Enabling Works (PLR2 – EW) includes a public and active transport bridge across the Parramatta River and approaches between Wentworth Point and Melrose Park.

The objectives of the PLR2 - EW are to:

- Commence the delivery of the PLR Stage 2;
- Provide a transport connection for bus, active transport (cyclists and pedestrians) and light rail link between Melrose Park and Wentworth Point to Sydney Olympic Park and adjacent precincts;
- Address immediate transport constraints in Wentworth Point; and
- Provide an integrated design solution that reflects and compliments the character and values of the adjacent precincts.

A map of the PLR2 – EW in relation to PLR Stage 2 is provided below in Figure 1.

Figure 1: Map of the PLR Stage 2 Enabling Works

The PLR2 – EW Scope of Works to be delivered is provided in the Scope and Performance Requirements (SPR) and generally includes the following:

Infrastructure Works

- A new combined bus and future light rail bridge across the Parramatta River between Melrose Park and Wentworth Point, including an active transport link separated from the roadway with an integrated rest area, alignment length of approximately 1.2 km;
- All temporary works items to support construction activities;
- Earthworks and geotechnical investigations and design;
- Utility works;
- Track form, inclusive of rail;
- Road works;
- Active transport links;
- Civil works;
- Drainage works;
- Urban design & landscape.

System Provisions for future rail systems including:

- Connection cables, earthing and bonding, and local cable routes (conduits only);
- Combined Services Route (CSR), inclusive of containment for signalling, communications and control systems;
- Stray current and electrolysis test points; Overhead wiring pole foundations and masts (multifunctional poles).

Design only for rail systems (within the extent of the Site Access Schedule) including:

- Overhead wiring (OHW) jewellery, wires and bonding connections;
- Stops spatial envelopes and stop infrastructure including service connections;
- Data and communications cables;
- Traction power cables and connections;
- Passenger assets and information systems cabling and containment only.

1.4. Construction Water Reuse Strategy Development and Submission

The CWRS has been developed in line with:

- Minister's Conditions of Approval (CoA, E110) and updated mitigation measures (UMMs);
- TfNSW Water Discharge and Reuse Guideline Version 4.1;
- Scope and Performance Requirements (SPR) Appendix G and H;
- Infrastructure Sustainability Council Technical Manual Version 2.1, Wat-1 and Wat-2; and
- All applicable legislation.

The CWRS will be made publicly available prior to the start of construction. The OWRS will be prepared prior to commencement of operations of PLR2-EW.

1.5. Relationship to Other Plans

This CWRS details opportunities, management measures, and the Project's commitment to harvest, reuse and recycle water where feasible. Whilst the CWRS is not directly linked to the CEMP nor the SU-0005 Water Balance Model and Report, information from both documents has been considered and incorporated throughout this document to ensure a comprehensive and considered approach is achieved. Documents considered include:

- Construction Soil and Water Management Sub-plan (SWMP) – details controls and management measures related to the potential impact of the project on soils and contamination.
- Construction Flora and Fauna Sub-plan (FFMP) – details controls and management measures related to the potential impact of the project on biodiversity, including provision of controls around waterways
- SU-0005 Water Balance Study and Report – details potential initiatives to minimise water usage and maximise non-potable water use, and water quantities.
- Construction Sustainability Management Plan (CSMP) – details requirements of the Infrastructure Sustainability Version 2.1 (IS v2.1) rating tool.

2. Objectives & Targets

This CWRS is applicable to the construction stage of work associated with PLR2-EW and applies to John Holland and its subcontractors. Key objectives and targets are shown below.

2.1. Objectives

The key objectives of this CWRS are:

- Identify and assess feasibility of water harvesting, reuse, and recycling options available to the Project.
- Promote adoption of options that have a financial payback period of less than two years.
- Eliminate, reduce, and/or substitute potable water with alternative sources wherever possible.
- Minimise environmental and community impacts from water use, extraction and harvesting of water sources.

2.2. SMART Targets

The Project has developed Specific, Measurable, Achievable, Relevant, and Time-bound (SMART) targets to meet the SPR and IS requirements relevant to water reuse. SMART targets for water reuse are shown in Table 2-1.

Table 2-1: Water Reuse SMART Targets

Water Reuse Objective	SMART Target
Identify and assess water harvesting, reuse, and recycling options available to the Project.	Prior to construction main works the Project will identify water harvesting, reuse, and recycling options available. These will be assessed using a multicriteria analysis.
Promote adoption of options that have a financial payback period of less than two years.	Socialise all feasible opportunities (as identified in this Strategy) with the John Holland Construction Team prior to construction main works.
Eliminate, reduce, or substitute potable water with alternative sources wherever possible.	The Project will source >50% of all construction water from non-potable sources compared to the verified base case footprint where practicable.
	The Project will achieve a >15% reduction in overall water usage over the infrastructure lifecycle of the asset compared to the verified base case footprint.
Minimise environmental and community impacts from water use, extraction and harvesting of water sources.	Development of a Construction Water Reuse Strategy (this Strategy), prior to construction and Operational Water Reuse Strategy prior to operation.

3. Project Legislative and Guidance Requirements

The following sections summarise the project-specific, legislative, and government requirements applicable to this CWRS.

3.1. Project Specifications and Plans

The Project specifications and plans relevant to the CWRS include:

- TfNSW Scope and Performance Requirements (SPR) (6720321) – Appendix G and H
- TfNSW Water Discharge and Reuse Guideline DMS-SD-024;
- PLR2-EW Exhibit A - Management Requirements (IPD-22-12894);
- PLR2-EW Construction Environmental Management Plan (PLR2EW-JHGRP-NWW-PM-PLN-000013);
- PLR2-EW Soil and Water CEMP Sub-plan (PLR2EW-JHGRP-NWW-PM-PLN-000030);
- PLR2-EW Flora and Fauna CEMP Sub-plan (PLR2EW-JHGRP-NWW-PM-PLN-000029);
- PLR2-EW Construction Sustainability Management Plan (PLR2EW-JHGRP-NWW-PM-PLN-000025);

3.2. Guidelines and Standards

The main guidelines, specifications and policy documents relevant to this CWRS include:

- Australian Guidelines for Water Recycling Stormwater Harvesting and Reuse, National Water Quality Management Strategy, Document No 23, July 2009, (NWQMS 2009);
- DECC (2022). Approved Methods for the Sampling and Analysis of Water Pollutants in NSW;
- EPA NSW Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 - The stormwater order 2014;
- EPA NSW Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 - The treated drilling mud order 2014;
- Landcom (March 2004). Managing Urban Stormwater: Soils and Construction (4th Edition) (reprinted 2006), Volume 1 (the “Blue Book”);
- NRAR (2018). Guidelines for controlled activities on waterfront land – Riparian Corridors;
- NSW DPI (2013). Policy and guidelines for fish habitat conservation and management (update 2013);
- NSW DPI (2012). Guidelines for controlled activities on waterfront land;
- NSW Office of Water (2012). NSW Aquifer Interference Policy;

3.3. Water Reuse Requirements

The following section will outline how the CWRS addresses the requirements set out in the Conditions of Approval, SPR Appendix G and H, and IS V2.1 credits Wat-1 and Wat-2.

3.3.1. Conditions of Approval

Table 3-1 below provides a summary of the CoA relevant to water reuse and how these items are addressed in this CWRS.

Table 3-1: Minister's Conditions of Approval

Condition	Condition Requirement	Document Reference
E110	A Water Reuse Strategy must be prepared, which sets out options for the reuse of collected stormwater and groundwater during construction and operation. The Water Reuse Strategy must include, but not be limited to:	This Strategy
	a) evaluation of reuse options;	Section 8
	b) details of the preferred reuse option(s), including volumes of water to be reused, proposed reuse locations and/or activities, proposed treatment (if required), and any additional licences or approvals that may be required;	Section 7 and 8.2
	c) measures to avoid misuse of recycled water as potable water;	Section 9.2.2
	d) consideration of the public health risks and potential environmental harm from water recycling; and	Section 5.6 and Section 9.2.3
	e) a time frame for the implementation of the preferred reuse option(s).	Section 8.2
	The Water Reuse Strategy must be prepared based on best practice and advice sought from relevant agencies, as required. The Strategy must be applied during construction and operation.	Section 3 details guidelines and legislative requirements adhered to and Section 6 details best practice and advice sought.
	Justification must be provided to the Planning Secretary if it is concluded that no reuse options prevail.	N/A – options are available
	A copy of the Water Reuse Strategy must be made publicly available	This document will be made available on the project website.

3.3.1.1. Updated Mitigation Measures (UMMs)

Updated mitigation measures (UMMs) were included in the EIS and Amendment Report. Compliance with these UMMs where it pertains to construction water reuse is shown below in Table 3-2.

Table 3-2: UMM's

Ref	Mitigation Measures	Reference	Evidence
W3	The location and specification of water quality treatment measures will be determined with reference to the NSW and project-specific water quality objectives and existing water quality.	Erosion and Sediment Control Plans	Water quality treatment measures will be described in the erosion and sediment control plans (ESCPs) and will be limited to sedimentation basins, and similar controls. Project-specific water quality objectives will be determined in consultation with the NSW EPA.
W9	A soil and water management plan will be prepared as part of the CEMP and implemented during construction. The plan will detail processes, responsibilities and measures to manage potential soil and water quality impacts during construction, including measures to minimise the potential for pollutants to enter surface	Appendix B of the CEMP - Soil and Water Management	The Soil and Water Management Plan has been prepared, which satisfies this UMM as it applies to the Project.

Ref	Mitigation Measures	Reference	Evidence
	water and groundwater. The plan will be prepared in accordance with relevant guidelines and standards, including Managing Urban Stormwater–Soils and Construction -Volume 1 (Landcom, 2004) and Volume 2D Main Road Construction (DECC, 2008) (the Blue Book), Best Practice Erosion and Sediment Control (International Erosion Control Association (Australasia), 2008), and Sydney Olympic Park Authority Policy-Stormwater Management and Water Sensitive Urban Design (Sydney Olympic Park Authority, 2016) (for works in Sydney Olympic Park).	Plan (SWMP)	
W10	Discharge to surface water will be undertaken in accordance with Water Discharge and Reuse Guideline DMS-SD-024 version 4.1 (Transport for NSW, 2019), and project specific objectives.	Section 5, Table 17 (SW11) of the SWMP	The requirements of this UMM are included in Section 5, Table 17 of the SWMP and implementation will be evidenced by ECMs and site inspections.
W11	A water quality monitoring program will be developed and implemented as part of the soil and water management plan to monitor potential surface water quality impacts. The program will define: Monitoring parameters Monitoring locations Frequency and duration of monitoring The monitoring program will include monitoring prior to the commencement of construction to validate the baseline water quality of potential receiving waters and confirm project-specific water quality criteria. Water quality monitoring will continue for a minimum of 12 months following the completion of construction, or until affected watercourses are rehabilitated to an acceptable condition (or as otherwise required by any project conditions of approval). The monitoring program will assess compliance with the project-specific water quality objectives and the efficacy of the mitigation measures and will include a trigger response action plan. It will be developed in consultation with the NSW EPA, City of Parramatta Council and Sydney Olympic Park Authority.	Appendix B of the SWMP – Surface Water Quality Monitoring Program	The requirements of this UMM are addressed in Appendix B: Surface Water Quality Monitoring Program of the SWMP
W14	Works within or near watercourses will be undertaken with consideration of the Guidelines for watercourse crossings on waterfront land (DPI, 2012) and Guidelines for controlled activities on waterfront land–Riparian corridors (DPE, 2022).	Section 5, Table 17 (SW07) of the SWMP	Works on or near waterfront land will have regard to the requirements of this UMM. The requirements of this UMM are included in Section 5, Table 17 (measure SW07) of the SWMP

Ref	Mitigation Measures	Reference	Evidence
CS9	The preferred methods to manage and dispose of contaminated materials and groundwater will be confirmed following further geotechnical and contamination investigations and incorporated into the waste and resource management plan (mitigation measure WR3).	Section 5, Table 17 (measure SW27) of the SWMP	The preferred methods to manage and dispose of contaminated materials and groundwater will be determined in a RAP that will be developed if contamination is identified.
CS12	Temporary storage and containment systems for the stockpiling of contaminated material during construction will be designed to be impervious to the materials stored, resistant to fire (where required), prevent cross contamination of clean fill, covered to prevent contact with rainfall (when required), and managed and maintained to prevent any release of liquids and contaminated run-off to stormwater drains, waters and land.	Section 5, Table 17 (measure SW26) of the SWMP	Suitable areas within the approved project boundary will be established for the temporary storage and containment of contaminated material during construction

3.3.2. SPR Appendix G and H

Table 3-3 identifies and shows compliance with the SPR requirements relevant to the CWRS.

Table 3-3: Contract Requirements

Contract Section	Requirement	Reference
Appendix G	The Contractor must develop a Construction Water Re-use Strategy that details the Contractor's approach to, subject to other requirements of the deed, prioritising onsite re-use of captured or surplus water and groundwater in preference to disposal, including: [946614]	This Strategy
	The captured or surplus water and groundwater must be suitable for or can be made suitable for the intended reuse in accordance with relevant Authority Approvals; [946615]	This Strategy, Section 4.2
	Where Authority Approvals do not regulate the reuse of water, the captured or surplus water and groundwater must be suitable for or can be made suitable for the intended reuse in accordance with the applicable NSW Water Quality and River Flow Objective/s; [946616]	SWMP, Section 5, Table 17 (measure SW27)
	The strategy must be provided to the Principal 30 days prior to commencement of any Contractor's Activities on the Site; [946617]	This Strategy
	The strategy may be included in other relevant environment construction management documents and submitted to the Principal in accordance with timeframes of the other relevant document; and [946618]	This Strategy is currently a standalone document and will be submitted to the Principal in accordance with timeframes specified.
	The strategy must be implemented by the Contractor throughout the period of Contractor's Activities on the Site. [946619	Construction and through Activity

Contract Section	Requirement	Reference
		Method Statements (AMSs).
Appendix H	The Contractor must: [946872]	
	demonstrate a minimum of 50% of all construction water to be from non-potable sources; [946876]	Section 7, Appendix B
	achieve a minimum of 50% of all construction water to be from non-potable sources. [946881]	
	Minimise water demand, including total water consumption and potable water consumption during construction of the Enabling Works by: [946882]	Section 4.1
	harvesting rainwater and including adequate storage; [946884]	Section 4.2.2 and Section 8.2
	using recycled water where available; and [946885]	Section 4.2.5
	collecting, treating, and reusing stormwater and wastewater. [946886]	Section 8.2
	meter water supply from utilised recycled water networks, potable and non-potable sources during construction and make this information available to the Principal as requested. [946887]	Section 9
	identify opportunities for use of non-potable water at onsite and offsite concrete batching plants whilst meeting relevant concrete specifications. [946889]	Table 4-1

3.4. Infrastructure Sustainability v2.1

Table 3-4 below details the Infrastructure Sustainability (IS) credit requirements relevant to the CWRS.

Table 3-4: IS v2.1 Credit Requirements

Credit	Target	Requirement		Reference
Wat-1	15% reduction in water demand from Base Case scenario	DL1.1	Modelling of water demand has been completed for operational and construction impacts.	This Strategy, Section 7
		ABL1.1	Water reduction opportunities identified in the construction phase have been assessed and feasible options identified.	SU-0005 Water Balance Study and Report
		DL1.2	Water use avoidance and reduction opportunities have been fully investigated across the infrastructure life cycle and included in design and construction planning.	Construction Sustainability Management Plan (CSMP), Appendix E
		DL1.2/MS 1.2a	Opportunities to avoid and reduce water use in construction and operations must be assessed using multi-criteria options assessment. Assessment criteria must include any material environmental and social impacts, energy use and whole of life costing.	
		DL1.2/MS 1.2b	Feasible options must be incorporated into the final design and construction planning	To be addressed in Design Reports and AMSs
		DL1.3	Modelling demonstrates a reduction in water demand compared to the Base Case. For	SU-0005 Water Balance Study and Report

Credit	Target	Requirement		Reference
			reductions >0% up to 30%, fractions of levels may be achieved on a sliding scale.	
		ABL1.2 / ABL1.3	Monitoring of water consumption during the construction period has been undertaken. Monitoring and modelling demonstrate a reduction in water demand. For every percentage point reduction >0% up to 30%, fractions of levels may be achieved on a sliding scale.	This Strategy, Section 9
		ABL1.4	Handover documentation related to operational water use reductions have been provided to the operator.	OWRS will be prepared prior to commencement of operations and handed over to TfNSW
Wat-2	50% reduction in potable water use from Base Case Scenario	DL1.1/MS 1.1a	Available and appropriate water sources for the asset have been identified and formally assessed. After water demand requirements for the asset have been quantified across the full life cycle (Wat-1, DL1.1), an initial assessment must be conducted to identify available water sources to meet those requirements, and include: ▪ All legal water source options available to the project site e.g. potable, non-potable, recycled or reclaimed water, bore water, collected rainwater, water extracted from waterways or dams ▪ Water source options for each water end use (construction and operations) ▪ The risks and opportunities for each option for each water source, including the full life cycle impacts from extraction to discharge including appropriate levels of environment impact assessment (e.g. for groundwater) ▪ How the particular source of water can impact the environment or community once it is discharged ▪ Site assessments where additional information is required to perform the options assessment.	This Strategy, Section 8
		DL1.1/MS 1.1b	For alternative water source options that are identified (as above) as having an acceptable risk in relation to the project, a formal assessment considering material environmental, social and economic aspects and whole of life costing must be undertaken and feasible options identified.	This Strategy, Section 8
		DL1.1/MS 1.1c	The assessments must be prepared or reviewed by a suitably qualified professional.	This Strategy, Document History and Status

Rev	Date
A	21/01/2025
B	25/02/2025
C	10/03/2025

Credit	Target	Requirement		Reference
				Approval Record, SQP – Saji Srivelan, PLR2-EW Sustainability Manager
		DL1.2	Feasible alternative water source options with a financial payback of two years or less have been implemented.	This Strategy, Section 8
		DL1.3	The percentage substitution of residual water demand (Wat-1) using alternative water sources has been modelled.	This Strategy, Section 7

4. Water Characteristics

Over the course of construction, several water sources will be utilised. The Project will adopt the Water Use and Sourcing Hierarchy illustrated in Figure 2 to assess and select water sources.

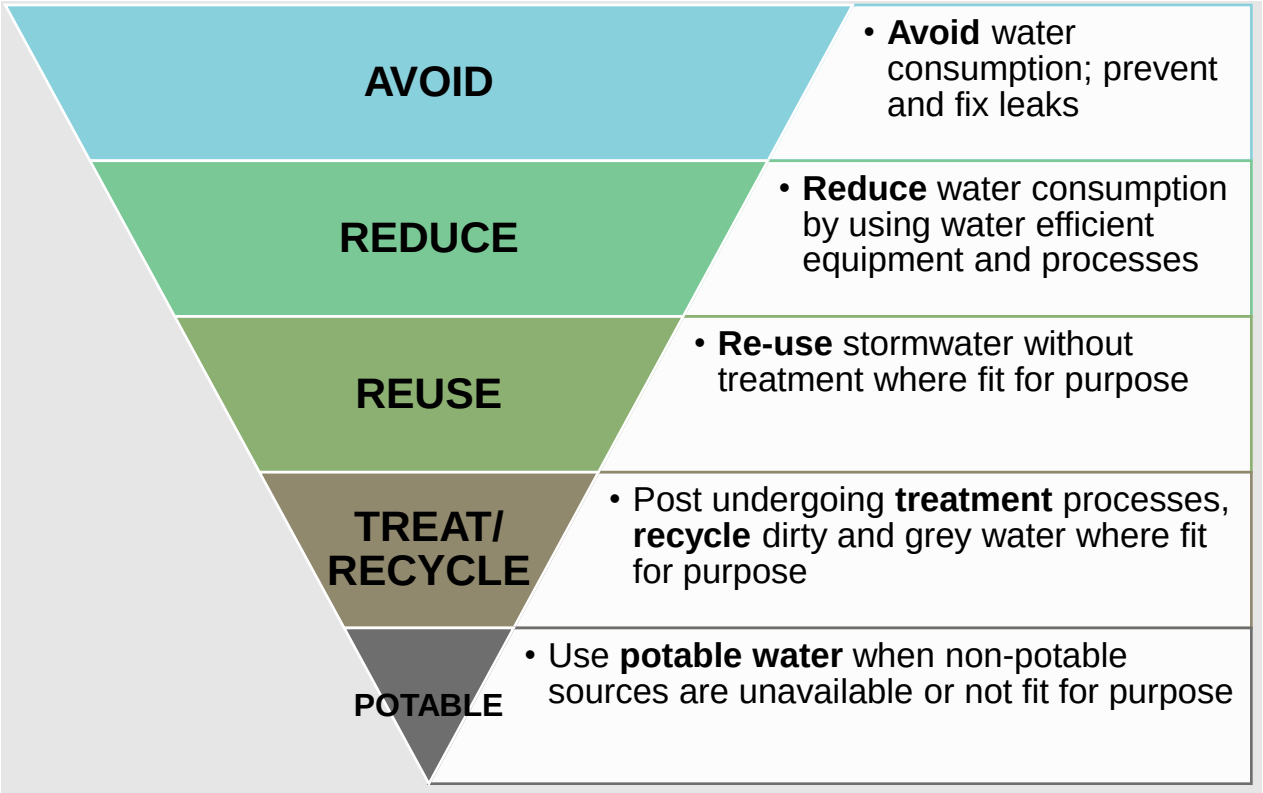

Figure 2: Water use and sourcing hierarchy

The definition of potable and non-potable water has been obtained from the ISC v2.1 Technical Manual. The definition of stormwater has been obtained from the NSW Environment Protection Authority (EPA). These definitions are detailed below:

- **Potable Water:** High quality water that is suitable, safe, and approved for domestic consumption as set and regulated by national health and water quality standards. Potable water may also be referred to as town water or reticulated water.
- **Recycled Water:** Lower quality treated water suitable for purposes other than domestic consumption, such as toilet flushing, irrigation, or dust suppression.
- **Re-used Water:** Water captured from construction activities (e.g. concrete cutting) and reused for the same activity or another suitable activity where high-quality water is not required.
- **Stormwater:** Stormwater means rainfall that runs off urban surfaces such as roofs, pavements, carparks, roads, gardens, and vegetated open spaces.

4.1. Water Uses

Through construction, water demand and quality required will vary. The activities requiring water includes:

- Dust suppression for exposed surfaces, stockpiles, and haul roads;
- Street sweeping;
- Compaction and earthworks;
- Concrete curing;
- Site facilities – toilets, showers, kitchen taps, cleaning, and drinking
- Non-destructive digging

- Wheel wash / washdown

Activities requiring during defects liability period (post construction) includes:

- Hydrostatic testing of pipelines (e.g. Viva fuel pipeline, water mains); and
- Irrigation for establishing and maintaining landscaping during Defects Liability Period (DLP).

The Project has developed a preliminary water model (Section 7) for construction activities only to indicate potential water uses and develop potential reduction and reuse opportunities to increase water resilience. A complete water model that includes consideration of the PLR2-EW infrastructure lifecycle will be provided in SU-0005 Water Balance Study and Report. Some the key opportunities identified to minimise potable water use include:

- Installation of water-efficient controls, fixtures and fittings (e.g. spring-loaded taps);
- Harvesting stormwater and including adequate storage;
- Utilising recycled water where available;
- Seek to utilise dewatered water for dust suppression and watering of landscaping.

4.2. Water Sources

Water supplied during the construction phase of the Project will be provided from a combination of existing utilities and harvested stormwater runoff. These are detailed below.

4.2.1. Existing Utilities

All construction sites have access to potable water through metered connections from the Sydney Water network. The existing utilities have been mapped as shown in Figure 3 below (dark blue lines denoting the existing water pipeline). Through review of the existing utility network, it has been identified that there is a recycled water network located along Hill Road (within the project boundary) is within a feasible pumping distance for the southern end of the Project.

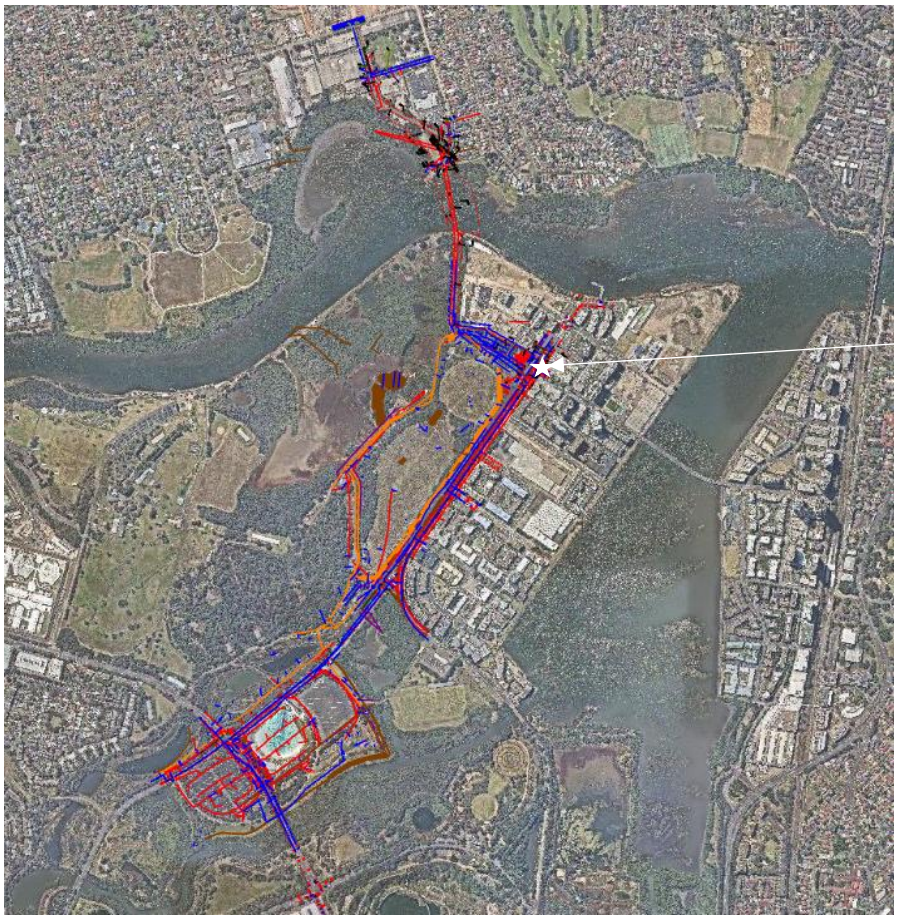

Figure 3: Existing utilities – extract from Project ARCGIS Map

4.2.2. Stormwater

The Project has identified that stormwater can be harvested from site compound roofs and temporary sediment basins during the construction period of the Project. These are explored below.

4.2.2.1. On-Site Sediment basins

Sizing and positioning of sediment basins will be determined in line with the Bluebook and in consultation with the Project Soil Conservationist. The current planned basin design period is for a 85th percentile, 5-Day rainfall event, providing only 5 days in which the Project may hold water prior to needing to return capacity to the temporary sediment basin. The time constraint enforced by the Project Environment Protection License (EPL) and Bluebook prohibits the Project from storing and utilising water captured within the Project's sediment basis for ongoing reuse opportunities.

4.2.2.2. Rainwater Tanks

The Project has identified that there is an opportunity to utilise rainwater tanks for the main site compound ablution. Site planning will require review to ensure no space constraints limit installation of rainwater tanks.

4.2.3. Concrete Waste Water

Concrete wastewater, a biproduct of the concrete placement process, commonly referred to as concrete washout, refers to water that is generated during the mixing, pouring, and cleaning of concrete equipment and tools. This type of wastewater varies significantly in quality and may contain numerous additives, including chemicals from concrete admixtures, cement particles, suspended solids, and substances that can alter pH levels. During the construction phase, concrete wastewater will be generated from several sources including:

- Washout water - washout water is generated from cleaning concrete equipment, such as mixers, pumps, and trucks, and after the concrete has been poured.

- Concrete cutting and grinding - when concrete is cut or ground during construction or demolition activities, wastewater can be generated.
- Concrete curing water - concrete curing involves maintaining adequate moisture and temperature conditions to ensure proper hydration and strength development. The water utilised for curing must be clean water and curing compounds used must conform to AS 3799 (Liquid membrane-forming curing compounds for concrete).

Due to risk of contaminants, this water is unlikely a viable source for water reuse.

4.2.4. Groundwater

The EIS for PLR2 indicates that the groundwater is likely to be contaminated. Due to this, the risk to operational health and safety (OH&S) makes this water source not viable for reuse. Groundwater will be managed in accordance with the Project SWMP.

4.2.5. Local Waterways & Neighbouring properties

Local waterways and water tanks on neighbouring properties have been assessed as potential water sources for the Project. Water will not be extracted from local waterways without obtaining all required approvals and/or receiving written acknowledgement of public authority exemptions from the regulator (NSW Natural Resources Access Regulator (NRAR)). Express permission from property owners will be sought and appropriate water testing implemented prior to utilisation of water from privately owned water tanks.

4.3. Construction Activity Water Quality Requirements

This section will detail the water quality suitability requirements for each activity identified. Assessment of water quality requirements aids the assessment of applicability of potable water substitution where water demand cannot be minimised. Water quality requirements are based on:

- Project personnel health, safety, and wellbeing;
- Public health, safety, and wellbeing;
- Economic feasibility and return on investment;
- Relevant permanent or temporary design and manufacturers specifications;
- Availability and quality of non-potable water;
- Site footprint and storage capacity; and
- Environmental legislative and approval limitations and restrictions.

Table 4-1 shows the water quality requirements that each construction activity requires to identify where it is feasible to substitute potable water for non-potable water.

Table 4-1: Water quality requirements for construction activities

Activity	Water Quality Requirement
Dust suppression for exposed surfaces, stockpiles, and roads	Non-potable – Where there is no interface and/or interaction with workers or the public Potable – Where there is interface and/or interaction with workers or the public
Compaction and earthworks	Non-potable Potable water - To be used where there isn't feasible access to non-potable water.
Concrete curing and green cutting	Non-potable Potable water - To be used where there isn't feasible access to non-potable water.

Activity	Water Quality Requirement
Site facilities – toilets, showers, kitchen taps, cleaning, and drinking	Non-potable for toilets Potable water - Showers, kitchen taps, cleaning, and drinking
Non-destructive digging	Non-potable – Where there is no interface and/or interaction with workers or the public Potable - To be used where there isn't feasible access to non-potable water.
Wheel wash / washdown	Non-potable – Where there is no interface and/or interaction with workers or the public Potable – Where there is interface and/or interaction with workers or the public or vegetation is used for consumption.

A full feasibility assessment considering environmental, social, and economic factors for water sources where substitution is not limited by water quality requirements is shown in Table 8-2.

5. Considerations

When considering water reuse in construction, it is essential to assess the quality of the water available, potential risk of contaminants, and the intended reuse application. Certain types of construction water may not be suitable for reuse due to availability, contamination or poor quality. Several potential reuse options regarding contaminated and quality of water are discussed below, including limitations and opportunities of pursuing water reuse. The following considerations were taken into account when evaluating re-use options available:

- Climatic and seasonal conditions;
- Soil conditions (contamination and saline content)
- Site footprint and storage capacity;
- Accessibility and extraction capability;
- Water quality; and
- Public health.

5.1. Climatic and seasonal conditions

Construction for PLR2-EW is anticipated to span from February 2025 to September 2027. During this time, seasonal changes and weather events may influence the availability and quality of water for reuse. To help anticipate availability of water for reuse, construction phase rainfall forecasts from the most relevant localised Bureau of Meteorology (BOM) station will be used (Sydney Olympic Park Station, ID: 066212).

5.2. Soil Conditions

5.2.1. Contaminated soils and groundwater

On the Project there is a potential risk associated with excavation causing contact with contaminated soil and groundwater. Chapter 18 of the PLR2 EIS indicates areas with potential acid sulfate soils and saline soils. Surface water runoff that comes into contact with disturbed contaminated soils and groundwater can cause movement of pollutants through stormwater runoff, which can increase contaminant levels in nearby water bodies.

5.2.2. Saline soils

The potential for impacts due to the presence of saline soils for the Project is considered low. Any potential impacts would be temporary and managed by implementing standard best-practice erosion and sediment control measures. If encountered, saline soil conditions also present difficulties for water reuse due to elevated salt levels in the soil profile. A high salinity can adversely impact water quality and hinder effective water reuse in several ways:

- Salinity has the potential to damage foundations of infrastructure, make soils unsuitable for re-use as fill, and may affect landscaping.
- Saline soil and water have the potential to damage concrete and metal structures, including bridge piers and foundations.
- Runoff from exposed saline soils can dissolve and mobilise salts and cause their accumulation in other areas. Excessive concentrations of salt in such areas can affect plant growth and soil chemistry.

5.3. Water storage capacity

Rainwater runoff from site shed roof canopies may be captured in rainwater tanks for use in toilet flushing, cleaning, and dust suppression. The capacity of rainwater storage at each of the compound areas will depend on available space and the size of roof catchment. Installation of rainwater tanks will be subject to a return on investment (ROI) assessment analysis per site. Volume of rainwater available is shown in Table 5-1 below.

Table 5-1: Potential Volume of Rainwater Collected

Site Compound	Roof Space (m2)	Potential Rainwater Capture (kL/annum)
Compound 1 – Melrose Park	142	138.5
Compound 2 – Wentworth Park	271	264.5
Compound 3 -Hill Road	451	440.2

Further, onsite rainfall detention is considered under an EPL as discussed in Section 4.2.2.1. An EPL includes specific construction-phase erosion and sediment control requirements and water protection requirements. Stormwater runoff will generally be captured in drains, creeks, stormwater systems, basins, trenches and open excavations and would be managed in accordance with an EPL. The capture, harvesting and reuse of all rainwater and stormwater will be undertaken in accordance with the following industry best practice guidelines:

- Australian Guidelines for Water Recycling
- Stormwater Harvesting and Reuse (NWQMS 2009)
- NSW EPA resource recovery order - Stormwater Order 2014.

Storage of captured stormwater within the OSD, sub-basins, trenches and sumps will be monitored and assessed during construction as the ability to adjust storage capacities on site may change with construction staging.

5.4. Water Quality

Water can be reused on-site for many purposes such as dust suppression. Potable water contaminated by use in activities such as non-destructive digging, stockpile management, surface washing, grit blasting, drilling, washing vehicles and plant typically has limited opportunities for reuse due to potential contamination risks. Contaminated site water must be treated to an acceptable standard as outlined in the Construction Soil and Water Management Sub-Plan (SWMP) if it is to be re-used on site and/or discharged from the site to the environment. If water is unsuitable for reuse and cannot be treated, it will be taken to a licensed waste facility for disposal to prevent migration of contaminates via leaching, overland flow or subsurface flow which may cause localised soil, surface water or groundwater contamination and result in possible downstream ecological impacts. The process that the Project will follow to determine discharge requirements is shown in Figure 4.

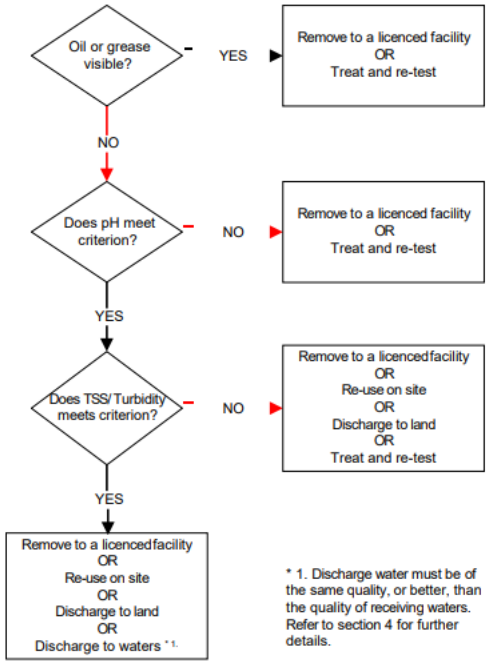

Figure 4: Flowchart for testing water to determine removal, reuse, treatment and discharge options (Water Discharge and Reuse Guideline v.4.1)

5.5. Accessibility and Availability

All water sources have been assessed for accessibility and availability as part of the Project's multi-criteria water source opportunity assessment (Section 8.1). Consideration has been given to whether the water source identified is readily accessible by users, has the potential to cause unintended delays, and/or may cause cost escalation due to increase vehicular movements by subcontractors. Assessment of availability of identified water sources considers the quantity of water required and its end-use to provide confirmation that extraction from identified water source is logistically and technically feasible.

5.6. Public Health

Occupational health and safety impacts associated with construction water reuse have been considered. This includes assessment of whether harm to human health may be caused to the public and workers due to construction water reuse.

6. Consultation

6.1. Recycled water network

John Holland is has engaged in discussions with Sydney Olympic Park Authority (SOPA) to obtain access to the purple pipe, a recycled water network asset owned by SOPA. A request will be sent to Sydney Water to allow the Project to tap into the main recycled water line. This collaboration aims to utilise recycled water for various activities, including street sweeping and dust suppression. Refer to Appendix A for consultation with SOPA.

6.2. Best practice and industry advice

John Holland has an extensive breadth of experience in sustainability and water reuse initiatives for civil infrastructure projects. The extent of this combined industry knowledge and experience is reflected in the detailed initiatives identified, explored, and evaluated through qualitative and quantitative assessment in Section 8. The Project has consulted with the following projects in the development of the strategy:

- Upper South Creek Advanced Water Recycling Centre and Pipelines
- Sydney Gateway Project
- M7/M12 Project

In line with CoA E110, this Water Reuse Strategy has been developed based on best practice and ongoing consultation with relevant agencies will be undertaken throughout construction to ensure that any advice is incorporated into this Strategy and applied during construction. Engagement will be managed with the following agencies:

- TfNSW
- NSW EPA
- City of Parramatta Council
- City of Ryde Council
- Sydney Olympic Park Authority (SOPA)

7. Total Water Consumption

The below quantities have been based on the tender bill of quantities and estimates where quantities were not provided at tender. The quantities below will be updated after finalisation of SU-0005 Water Balance Study and Report at the Detailed Design Review (DDR) phase of the Project. The tender estimate assumes that all water will come from existing utility connections for potable water, however it has been noted where potable water may be able to be replaced. See Table 7-1 below.

Table 7-1: Summary of Water Consumption

End-use	Non-Potable, kL	Potable, kL	Comment
Dust Suppression	5,101	2,186	Assumption made that 70% compliance by water carts is achieved if below dependencies are reconciled. Dependent on: • Agreement with Sydney Water to allow use of recycled water pipeline. Traffic management plan is reviewed to ensure access to Hill Road is provided for carts.
Street Sweeping	2,119	908	
Earthworks and compaction	0	6,563	Assumption that due to risk of contact with workers, non-potable water is unlikely to be pursued in this application.
Concrete curing	0	208	Conservative assumption that due to risk of potential contaminants in non-potable water reacting with concrete, this is unlikely to be pursued.
Site Compounds (toilets)	4,811	1,203	Assumption that 80% of the water required utilises non-potable water. Dependent on rainwater harvesting tank installation in a timely manner at all site compounds.
Site Compounds (amenities)	0	6014	None of this water can be substituted due to risk to human health.
Non-destructive digging (potholing)	0	172	Water unlikely to be reused due to contaminated ground conditions.
Wheel wash / washdown	0	292.9	Opportunity to seek substitution
Total (kL)	**12,031**	**17,547**	**29,579 (total)**
***Replacement (%)**	**52%**		

*Percentage replacement has been calculated by $\% = 100 \times \frac{Quantity\ of\ water\ substituted}{Quantity\ of\ water\ available\ for\ substitution}$

Analysis of Table 7-1 shows that the primary consumption of water during the construction phase is associated with site amenities followed by dust suppression. The Project will continue to evaluate the feasibility of various potential opportunities for water reuse as opportunities arise. After the completion of SU-0005 Water Balance Study and Report, a refined version of this strategy will be developed and an update to percentage replacement achievable will be provided. Note that the quantities used to estimate reduction are early tender quantities and will be subject to change.

8. Evaluation of Water Reuse Options

The subsequent assessment provides a comprehensive overview of the Project's identification and assessment of non-potable water sources for potential reuse, along with the status of implementation. A feasible opportunity is considered one that:

- Is a significant water demand in the construction phase; significance being defined by as a source that provides >5% of total water footprint;
- Delivers positive reduction in potable water demand and promotes water reuse;
- Has a financial payback period of less than two years;
- Shows that the risks for each water source option has been evaluated and is an acceptable level.
- Has no long-term adverse impacts on the environment and the community.
- Are considered logistically and technically possible, posing an acceptable risk for the Project; and
- Have identified benefits that outweigh the whole of life costs.

The criteria used to assess each potential option are shown in Table 8-1 below.

Table 8-1: Criteria for water source assessment

Aspect	Criteria	Description
Economic	Availability	Quantity of water available must match volume of water required for end-use and be logistically and technically feasible
	Economic	The capital cost of the source and/or treated water must outweigh the whole of life costing and have a financial payback period of less than two years.
	Accessibility	The water source must be readily accessible by users and not cause unintended program delays and/or does not cause cost escalation due to increased vehicular movements.
Social	Community impact	Use of the water source should not have a long term adverse impact to the community.
	Occupational Health & Safety	Water source usage must not cause harm to human health.
Environmental	Environmental Impact	Water source usage must not have a long-term adverse impact to receiving environment or cause undue energy draw (e.g. excessive pumping outweighing environmental benefit of reuse)
Governance	Risk and opportunity	The risks and opportunities for each option for each water source, including assessment of the full life cycle impacts from extraction to discharge and including appropriate levels of environment impact assessment have been considered.

8.1. Assessment

The water sources identified for the Project have been evaluated as per Table 8-2 below.

Table 8-2: Evaluation of potential reuse options

Source	End Use	Availability	Economic	Accessibility	Community Impact	OH&S	Environmental Impact	Risk / Opportunity
Existing Utilities (potable water pipeline)	All construction activities	✓	✓	✓	✓	✓	✓	Opportunity to substitute some potable water where high water quality isn't required.
Existing Utilities (recycled water pipeline)	Dust suppression Street Sweeping	✓	✓	—	✓	✓	✓	Opportunity to expand to other end uses. Risk that request to tap into network is declined by Sydney Water.
Groundwater	N/A – risk of harm	✓	✗	✓	✗	✗	✗	Risk of environmental contamination, and risk to personnel health – both public and project. No opportunity to remediate for use due to space constraints and cost.
Stormwater (Rainwater tanks)	Site amenities – toilet flushing	✓	✓	—	✓	✓	✓	Opportunity to use as water source for other end uses if accessibility for construction vehicles is enhanced to allow tapping into water tanks.

Source	End Use	Availability	Economic	Accessibility	Community Impact	OH&S	Environmental Impact	Risk / Opportunity
Stormwater (On-site sediment basins)	Dust suppression	—	—	—	✓	✓	✓	Opportunity to oversize OSDs to allow reuse of excess water in construction activities. Water unlikely to cause risk to environment upon discharge for dust suppression.
Concrete wastewater	Concrete cutting	✓	✓	—	✓	—	—	Potential risk during discharge of concrete debris impacting workers. Appropriate controls to be put in place.
Water extracted from waterways	N/A – risk of harm	✓	✗	✓	✗	✗	✗	Extracting water from the Parramatta River is considered high risk due to the heavy metal content in the river. Extraction may also inadvertently cause negative environmental impact to aquatic environment.

8.2. Assessment Outcome

The Project is dedicated to utilising non-potable water sources and maximising water reuse whenever feasible. As outlined in this Strategy, the Project is currently focused on implementing and further evaluating viable water reuse opportunities. As the Project design and construction progresses, John Holland will collaborate closely with TfNSW and engage with key stakeholders to identify and implement additional opportunities where possible for water reuse. The current identified opportunities are shown in Table 8-3 below. A final version of this strategy will be made publicly available.

Table 8-3: Assessment Outcome

Water Source	End Use	Outcome	Timeframe	Comment
Existing utilities (potable water pipeline)	All activities	Viable	Immediately	N/A
Existing utilities (recycled water pipeline)	Dust suppression, street sweeping	Viable	Hill Road site possession	Sydney Water approval required.
Groundwater	N/A	Not viable	N/A	N/A
Stormwater (Rainwater tanks)	Site amenities	Viable	Site establishment (February – March 2025)	Rainwater tanks to be installed at all three site compounds
Stormwater (OSDs)	Dust suppression	Potentially Viable	OSD installation	Review of EPL conditions and space constraints.
Concrete wastewater	Concrete cutting	Potentially Viable	Bridge works Landscaping / Paving	Review controls to allow capture of water, prevent harm to workers and prevent harm to the environment.
Water extracted from waterways	N/A	Not viable	N/A	Contaminated waters.

Key limitations that must be addressed prior to committing to water reuse and rainwater harvesting initiatives include:

- Establishment with Sydney Water that recycled water main on Hill Road can be used.
- Installation of rainwater tanks at each site compound.

9. Monitoring and Management

The Project will monitor and manage implementation of non-potable water use to ensure all opportunities to substitute potable water are achieved without risk to human health and the environment.

9.1. Monitoring

The Project's water usage will be measured and monitored during Construction and recorded monthly. The water usage data will be checked annually to identify any unexpected discrepancies in the data. Measurement and tracking will occur through the following measures:

- Water meters and sub-meters at key water use points.
- Invoices
- Water cart load tracking and reuse estimates.
- Project collation and evaluation of data through data collection portals (sub-contractors), water registers and dashboards.
- Water discharge forms

Table 9-1 Water data capture sources to be monitored during the Project.

Resource Type		Source/s	Responsible Party	Frequency
Water	Potable water	Project invoices	JH Commercial Team	Quarterly
		Subcontractor monthly reports	Sub-contractor	Monthly
		Water meter reads and smart meter dashboard.	Site personnel & Environment & Sustainability team	Monthly
	Non-potable water	Water meter reads (recycled water network)	Site personnel & Environment & Sustainability team	Monthly
		Modelled consumption estimates (where water meter reads are unavailable)	Modelling consultant	DDR
		Subcontractor monthly reports	Environment & Sustainability team	Monthly
		Water Discharge Forms	Environment & Sustainability team	Monthly

Data captured will feed into the reports developed for the Project. These are detailed in Table 9-2 below.

Table 9-2 Project's sustainability reporting requirements

Reporting Requirement	Description	Frequency
Client		
Monthly Sustainability Progress Reporting	A monthly summary of key deliverables, data, risks, innovations/opportunities and performance summary in meeting sustainability requirements and targets will be provided to TfNSW.	Monthly
Public Reporting		
Annual Sustainability Report	An annual sustainability report will be prepared for John Holland and include a performance update of sustainability requirements, implementation of strategies, targets and initiatives, climate change risks assessments, greenhouse gas reduction initiatives, life cycle assessments, sustainability in procurement and corrective actions taken where non-conformances are identified. The report will be prepared annually by 31 August.	Annual
Infrastructure Sustainability Council		
ISC rating submissions	John Holland is required to obtain a minimum Silver IS v2.1 rating for the Project for the Design and As-Built phases. Sustainability data captured by John Holland will be used to support the preparation and evidence towards the Project ISC rating submissions.	End of Design and Construction phases

9.2. Management

This section will outline how implementation of construction water reuse options will be managed.

9.2.1. Communicating Expectations

Activities where non-potable water (stormwater, recycled water, reused water) can be used are outlined in Table 4-1 and viable opportunities are shown in Table 8-2. Communication of expectations to use non-potable water for viable options will occur via:

- Inclusion in subcontractors' scope of works during the procurement process;
- Reiteration during subcontractor mobilisation meetings; and
- Inclusion of action in Activity Method Statement (AMS) for relevant scope of works.

9.2.2. Preventing Water Misuse

Further to the UMMs, to avoid the misuse of non-potable water as potable water, measures to be implemented include:

- Use of non-potable can only occur for specific activities where non-potable water is suitable as communicated via contract scope of works and relevant AMS.
- Where non-potable water is used, clear labelling of cart and/or tank for "NON-POTABLE WATER" will be implemented.

9.2.3. Ensuring Public Health

Consideration of risks to public and worker health associated with reusing water on site has been assessed. High risk water reuse activities that have the potential to cause harm to public health or cause negative environmental impact have been identified to include:

- Discharge into receiving waters;
- Street sweeping on public roads;
- Dust suppression at site entries / close to delineation fencing; and
- Concrete waste water reuse for cutting in close proximity to workers.

To minimise this risk, the following actions will be implemented:

- The Project will not discharge into receiving waters.
- Street sweeping using low velocity hoses will be used to prevent splash back.
- Spray of water during street sweeping and dust suppression will be minimised when there is high use of road. Wheel wash will be used as preferential method to minimise water spray.
- Workers implementing any concrete water recycling will wear appropriate PPE to ensure no risk of contact between skin and water being reused.

Appendix A: SOPA Consultation

From: Tina Tang
To: Karlson Koo-JHG; Maria Rigoli
Cc: Hassan.Narimani@sopa.nsw.gov.au; Sajitha Srivelan-JHG
Subject: RE: PLR2EW Recycled Water for Construction Activities - Purple Pipe - SOPA
Date: Tuesday, 21 January 2025 8:22:00 AM
Attachments: image002.png
image003.png

HI Karlson,
Yep, we have made enquiries internally and there is a qualified response .
The operations staff have advised it is acceptable and suggest you request a tap in through Sydney Water to connect to main recycled water line serving the Wentworth point precinct. While we have network , it is controlled in accordance with the irrigation schedule and in a drought, we may shut down certain lines to manage water.

Regards
Tina

Tina Tang
Director
jattca property solutions

NED **Bridge Housing**

T: +61 411 408 281
E: ttang@jattca.com.au
A: PO Box 141, Spit Junction, NSW 2088

From: Karlson Koo-JHG <Karlson.Koo@jhg.com.au>
Sent: Tuesday, 21 January 2025 7:47 AM
To: Maria Rigoli <maria.rigoli@sopa.nsw.gov.au>; Tina Tang <ttang@jattca.com.au>
Cc: Hassan.Narimani@sopa.nsw.gov.au; Sajitha Srivelan-JHG <Sajitha.Srivelan@jhg.com.au>
Subject: RE: PLR2EW Recycled Water for Construction Activities - Purple Pipe - SOPA

Hi Maria, Tina,

Any chance getting feedback from SOPA regarding to the recycled water usage? We have a water usage planning meeting today.

Thanks in advance.

Regards

Karlson Koo
Third Party Interface Manager
Parramatta Light Rail 2 – Enabling Works

JOHN HOLLAND

5 Rider Boulevard, Rhodes
NSW 2138
M. 0410 358 272
W. johnholland.com.au

From: Karlson Koo-JHG
Sent: Friday, 17 January 2025 4:11 PM
To: Maria Rigoli <maria.rigoli@sopa.nsw.gov.au>; T Tang <ttang@jattca.com.au>
Cc: Hassan.Narimani@sopa.nsw.gov.au
Subject: PLR2EW Recycled Water for Construction Activities - Purple Pipe - SOPA

Hi Maria, Tina,

I would like to enquire the opportunity to use the SOPA recycled water pipeline along Hill Road for our construction activities.

- Can we use the recycled water for activities such as:
  - Temp site facility toilets;
  - Fill up our dust suppression and street sweeping carts; and/or
  - Hoses for general construction works?
- We can get our plumber to make connection if we are allow to use the asset

Appreciate your feedback by next Tuesday 21st Jan.

Regards

Karlson Koo
Third Party Interface Manager
Parramatta Light Rail 2 – Enabling Works

JOHN HOLLAND

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From: Sajitha Srivelan-JHG <Sajitha.Srivelan@jhg.com.au>
Sent: Friday, 17 January 2025 3:52 PM
To: Karlson Koo-JHG <Karlson.Koo@jhg.com.au>

Cc: Anthony Scerri-JHG <Anthony.Scerri@jhg.com.au>; Nina Van Rij-JHG <Nina.VanRij@jhsw.com.au>; Colm Kennedy-JHG <Colm.Kennedy@jhg.com.au>
Subject: Purple Pipe - SOPA

Hi Karlson,

As discussed, we have a query about the purple pipe (recycled water pipe) that's along Hill Road. Could we please check with our SOPA counterparts if:

- Is the purple pipe a SOPA asset?
- How we can connect to the pipe to allow use of recycled water?
    - i.e. do we need to submit a form, is there an existing connection etc.

Be great if we can get an answer ASAP – the water reuse strategy is due Tues.

Thanks!

Regards,

Saji Srivelan
Sustainability Manager
Parramatta Light Rail 2 – Enabling Works

JOHN HOLLAND

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Appendix B: Water Balance Summary – Tender BoQ

Sum of Curr Qty	Column Labels										
Row Labels	**conntn**	**day**		**ea way**	**each**	**hour**	**item**	**kL**	**L**	**week**	**Grand Total**
Compaction / Earthworks								6,562.95			6,562.95
Concrete curing								208.44			208.44
Dust suppression								7,287.32			7,287.32
Site facilities								12,028.83			12,028.83
(blank)		1.38	26.00	2.00	8.00	9,361.01		1.38	22,928.67	38,835.33	13.87	71,177.63
Grand Total		**1.38**	**26.00**	**2.00**	**8.00**	**9,361.01**		**1.38**	**49,016.22**	**38,835.33**	**13.87**	**97,265.18**

Xmas shutdown	
	23-Dec
	5-Jan

STREET SWEEPING		
Metric	**Quantity**	**Units**
Construction start	Apr-25	-
Construction completion	Sep-27	-
Weeks	126	weeks
Capacity	8	kL
Number of loads per week	3.00	/week
Total Water Required	**3,027**	**kL**

POT HOLING					
Pot holing start	14-Jan	28-Nov	27-Nov	19-Feb	11-Jun
Pot holing finish	12-Feb	13-Jan	5-Dec	11-Mar	24-Jun
Number of days	22.00	32.00	7.00	15.00	10.00
Daily use for NDD (kL)	2	2	2	2	2
NDD (kL)	44	64	14	30	20
Total Water (kL)	172.00				

SUMMARY				
Activity	**% Non-potable**	**Non-Potable**	**Potable**	**Total**
Compaction / Earthworks	0%	-	6,563	6,563
Concrete curing	0%	-	208	208
Dust suppression	70%	5,101	2,186	7,287
Site facilities (toilets)	80%	4,811	1,203	6,014
Site facilities (sinks)	0%	-	6,014	6,014
Street Sweeping	70%	2,119	908	3,027
Non-destructive digging	0%	-	172	172
Wheel wash / washdown	0%	-	293	293
Totals	-	12,031	17,547	29,579
%Reduction	**52%**			

WASHDOWN		
Quantity	**Unit**	**Comment**
292.9	kL	1% of construction activity water use