



Parramatta Light Rail Stage 2 Enabling Works Utilities Management Strategy (UMS)

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Definitions

Term	Meaning
AHIMS	Aboriginal Heritage Information Management System
AMS	Activity Method Statements
ASP	Accredited Service Provider
BCS	Biodiversity Conservation and Science group of the NSW Department of Climate Change, Energy, the Environment and Water
BYDA	Before You Dig Australia
CCS	Community Communication Strategy
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan
Ch	Chainage
Construction	Includes Work required to construct the CSSI as defined in the Project Description described in the documents listed in Condition A1 including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding Low Impact Work which is carried out or completed prior to approval of the CEMP and work approved under a Site Establishment Management Plan
CEP	Communications and Engagement Plan
CSSI	Critical State Significant Infrastructure
CTE	Coal Tar Enamel
CUD	Combined Utility Drawings
DPHI	Department of Planning, Housing and Infrastructure
DPI Fisheries	Department of Primary Industries – Fisheries
ECM	Environmental Control Map
EIS	Environmental Impact Statement Parramatta Light Rail Stage 2
EMF	Electromagnetic field
Environmental Assessment Documentation	The set of documents that comprise the Division 5.2 Approval: • Transport for NSW (November, 2022), Environmental Impact Statement (EIS) • Transport for NSW (October, 2023) Response to Submissions Report (Submissions Report) • Transport for NSW (October, 2023) Amendment Report (AR) The documents that comprise the EPBC Act referral: • Referral 2022/09300, to construct approximately 10 km long dual-track light rail line to connect Stage 1 of the Parramatta Light Rail network to Sydney Olympic Park, in NSW • Notification of referral decision and designated proponent - controlled action; date of decision 30 September 2022; ID: 2022/09300
Environmental aspect	Defined by AS/NZS ISO 14001:2016 as an element of an organisation's activities, products or services that can interact with the environment



Term	Meaning
Environmental impact	Defined by AS/NZS ISO 14001:2016 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects
Environmental objective	Defined by AS/NZS ISO 14001:2016 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve
Environmental target	Defined by AS/NZS ISO 14001:2016 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
Environmental Representative	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. A key point of contact for the Planning Secretary in relation to environmental performance of the CSSI.
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	NSW Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
EPBC CoA	Condition of Approval of the Parramatta Light Rail Stage 2 Environmental Planning and Biodiversity Conservation Act 1999 (EPBC) 2022/09300
ER	Environmental Representative
ESMS	Environment and Sustainability Management System
E&TP	Excavation & Trenching Permit
FFMP	Construction Flora and Fauna Management Sub-plan
IC	Independent Certifier
Infrastructure Approval	State Significant Infrastructure (SSI) 10035 Parramatta Light Rail Stage 2, determined on 22 February 2024
ITS	Intelligent Transport System
MCoS	Minimum Conditions of Satisfaction
NBN	National Broadband Network
NDD	Non-Destructive Digging
Non-compliance	An occurrence, set of circumstances or development that is a breach of the Infrastructure Approval.
NSW CoA	Condition of Approval of the State Significant Infrastructure (SSI) 10035 Parramatta Light Rail Stage 2
OOHW	Out-of-hours work
Planning Secretary	Planning Secretary of the DPHI (or nominee, whether nominated before or after the date on which the Infrastructure Approval was granted)
PLR	Parramatta Light Rail
PLR2 – EW	Parramatta Light Rail Stage 2 – Enabling Works
Project, the	Parramatta Light Rail Stage 2 – Enabling Works
SAD	Safe Approach Distance
SMART	Specific, Measurable, Achievable, Realistic and Timely



Term	Meaning
SMS	Safety Management Study
SOPA	Sydney Olympic Park Authority
SPR	Scope and Performance Requirements
SSI	State Significant Infrastructure
TCS	Traffic Control Signal
TfNSW	Transport for NSW (the proponent)
UMM	Updated Mitigation Measures
WHS Act	Work Health and Safety Act 2011
Work	Any physical activity for the purpose of the CSSI including Construction and Low Impact Work
WRA	Workplace Risk Assessments
WRMP	Construction Waste and Resources Management Sub-plan





1. Introduction

1.1. Context

Transport for New South Wales (TfNSW) have engaged John Holland to design and construct the Parramatta Light Rail Stage 2 Enabling Works (PLR2 – EW or the ‘Project’) as part of the Stage 2 extension of the Parramatta Light Rail network (PLR Stage 2).

This Utilities Management Strategy (UMS or Strategy) has been prepared in accordance with Ministers Conditions of Approval (NSW CoA) E130 to describe how utility work will be defined and managed. This Strategy provides the management measures to be implemented to manage dust, noise, traffic, access, lighting and other relevant impacts associated with utility work.

This Strategy has been prepared to address the requirements of the:

- State Significant Infrastructure (SSI) 10035 Parramatta Light Rail Stage 2, determined on 22 February 2024 (Infrastructure Approval), including NSW CoA
- Parramatta Light Rail Stage 2 *Environmental Planning and Biodiversity Conservation Act 1999* (EPBC) 2022/09300 approved September 2022, including Conditions of Approval (EPBC CoA)
- Environmental Impact Statement (EIS), Response to Submissions Report (Submissions Report), and Amendment Report, including the Updated Mitigation Measures (UMMs) (collectively referred to as Environmental Assessment Documentation)
- Contractual requirements, including the PLR2 – EW Project Deed and TfNSW Specifications
- Applicable legislation.

1.2. Background

1.2.1. Parramatta Light Rail – Stage 2

Parramatta Light Rail (PLR) will deliver an integrated light rail service that supports the population and employment growth expected throughout the Greater Parramatta and Olympic Peninsula. It will integrate with existing and future modes of transport including buses, trains, ferries and active transport (pedestrian and cycle networks), as well as Sydney Metro services and the road network.

Stage 2 will connect the Parramatta CBD and Stage 1 to Camellia, Rydalmere, Ermington, Melrose Park, Wentworth Point, Sydney Olympic Park and the Carter Street precinct in Lidcombe (Figure 1).

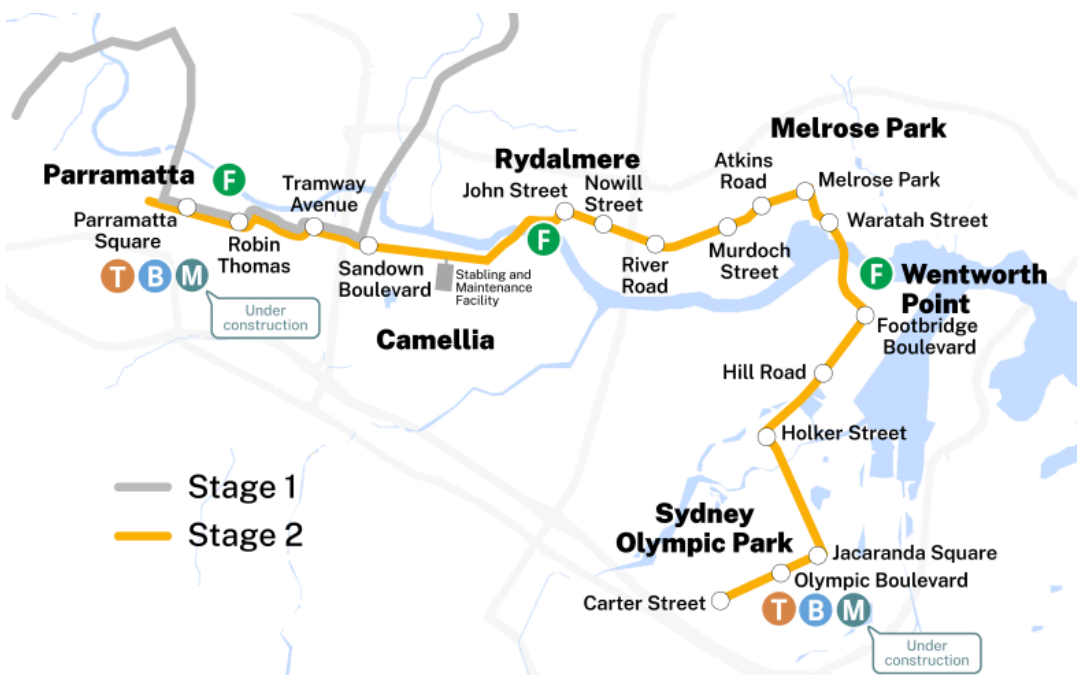


Figure 1 – Overview of the Parramatta Light Rail Stage 2 (Source: TfNSW)





1.2.2. Statutory context

PLR Stage 2 is subject to an approval under Division 5.2 the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) as Critical State Significant Infrastructure (CSSI). PLR Stage 2 is also a controlled action under Section 75 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requiring a separate approval from the Australian Minister for the Environment and Water.

PLR Stage 2 was assessed as part of an EIS, Submissions Report, and Amendment Report, which are herein referred to as the Environmental Assessment Documentation. UMMs are nominated in these assessments to manage the identified impacts.

Approval for PLR Stage 2 under the EP&A Act was granted by the Minister for Planning and Public Spaces on 22 February 2024 (SSI-10035). Approval for PLR Stage 2 under the EPBC Act was granted by the Australian Government on 19 April 2024 (EPBC 2022/09300).

1.2.3. Delivery strategy

Construction of the PLR Stage 2 will be staged to align with the procurement and delivery strategy, and achieve project completion in the minimum, practically reasonable time. PLR Stage 2 will be constructed in two stages:

- Stage A – Bridge between Melrose Park and Wentworth Point (PLR2 – EW)
- Stage B – Main alignment construction works and supply, operate and maintain system works.

1.3. PLR2 – Enabling Works (the Project)

1.3.1. Key features of the Project

The PLR2 – EW includes the delivery of a public and active transport bridge across the Parramatta River and approaches between Wentworth Point and Melrose Park (Figure 2). The bridge over the Parramatta River requires a 320m span over a bend in the Parramatta River to clear environmentally sensitive mangroves and provide an underpass access for road and active transport to established recreational facilities. The key features of the PLR2 – EW scope of works is provided in Table 1.



Figure 2 – Location of the PLR Stage 2 Enabling Works





Table 1 – Key features of the PLR2 EW scope of works

Worksite	Scope	Description
Melrose Park	Utilities	- Investigations of utility assets and preparation of Safety Management Study applications for working around the Viva Energy fuel pipeline - Relocation and/or protection of utility services
	Site establishment and temporary works	- Establishment of the main site compound and environmental controls - Construction of hardstand for piling platform and crane pad - Construction of temporary boat and trailer carpark to enable ramp access on weekends and public holidays
	Main construction	- Relocation of the existing Viva Energy fuel pipeline to enable bulk earthworks, foundation treatments, and construction of new car park - Construction of drainage - Construction of Light Rail track slab
Bridge Works	Access tracks and working platforms	- Installation of erosion and sediment controls, salvage of recorded midden, and progressive clearing of mangroves to root level - Construction of temporary rock causeways in Parramatta River to enable access to Pier 1 and Pier 2 (subject to separate approvals)
	Main construction	- Installation of piling and caps - Construction of blade walls at piers using pre-assembled formwork - Construction of pier head in three phases: base slab, webs and diaphragms, and top slab - Installation of bridge deck superstructure
	Finishing works	- Installation of barrier - Completion of final levelling and grouting of the steel railing - Installation of the underdeck drainage on the Light Rail side - Construction of reinforced concrete upstands (cast in situ) with conduit/cable separators - Installation of multi-function poles - Surfacing of bridge deck prior to Light Rail track slab construction
Wentworth Point	Site establishment and temporary works	- Establishment of site compound and environmental controls - Clearing and grubbing of vegetation
	Utilities	- Decommission redundant Ausgrid transition point at Hill Road - Relocation and/or protection of utility services
	Main construction	- Construction of elevated structure spanning the landfill and tie into Sekisui House - Construction of remaining spans to tie into Hill Road (including earthworks for new bus corridor and pavement widening on Hill Road) - Road works (drainage, pavements and signalised intersection)
Track	Track slabs	- Pouring of concrete at Melrose Park and Maritime Bridge - Installation of rail
Finishing and demobilisation	Landscaping and finishing works	- Installation of architectural treatments, urban design features, landscaping, street furniture, paving, signage, and pavement marking - Defect rectification and demobilisation



1.3.2. PLR2 – EW staging

The Staging Report identifies that the PLR2 – EW will be carried out in Substages, including:

- Substage A1 – Pre-construction and Low Impact Works
- Substage A2 – Preliminary Construction
- Substage A3 – Main Construction

Section 3 of the Construction Environmental Management Framework (CEMF) provides details of the activities to be carried out under each Substage.

This Strategy is applicable to Substages A1, A2 and A3 where utility work is undertaken.

1.4. Strategy scope

The Environmental Assessment Documentation identified a need for the adjustment and protection of various utility assets within and adjacent to the PLR2 – EW alignment. The scope of this UMS is to describe how John Holland will manage all utility works, including:

- Relocation or protection of utilities that are directly or potentially impacted by the PLR2 – EW
- Construction of additional temporary and operational utility connections and new drainage infrastructure to service the delivery and operation of the PLR2 – EW.

In accordance with the Infrastructure Approval, utility works that are not 'low impact' are considered 'construction' and are to be managed in accordance with the Construction Environmental Management Plan (CEMP) and associated Sub-plans.

This Strategy provides a description of the utility works to be undertaken as part of the PLR2 – EW and provides measures to be implemented to manage dust, noise, traffic, access, lighting and other relevant impacts associated with utility work. This Strategy is consistent with the CEMF and in the preparation and ongoing implementation of this Strategy, SMART (Specific, Measurable, Achievable, Realistic and Timely) principles have been considered and applied.

All John Holland employees, contractors and consultants at workplaces under the control of John Holland are required to operate fully under the requirements of this Strategy and related environmental management documentation, over the full duration of the construction program. This Strategy may also apply to person/s, contractors, consultants and suppliers where compliance with this Strategy is a term of their engagement or association with John Holland.

If at any time any part of this Strategy or actions under it is, or becomes illegal, invalid, or void under the law of any jurisdiction, then that part of this Strategy will be severed and will not apply.

1.5. Environment and Sustainability Management System

To achieve the intended environmental performance outcomes, John Holland have established, implemented, maintained and continually improved an Environment and Sustainability Management System (ESMS) in accordance with the requirements of ISO14001:2016. The John Holland ESMS, will be adopted as the guiding environmental management framework for the PLR2 – EW.

The ESMS consists of governance documentation, incorporating environmental management plans, policies, procedures, and tools including:

- **John Holland Environment Policy.** Outlines the commitments and intentions established by John Holland as a business to ensure environmental performance and targets are achieved. The John Holland Environment Policy applies to PLR2 – EW
- **The CEMP.** This overarching environmental management plan details the processes and procedures to be implemented during construction of the PLR2 – EW to comply with applicable NSW CoA, EPBC CoA, UMMs, legislative obligations and contractual requirements
- **Environmental Management Sub-plans.** These documents describe procedures and controls for specific environmental aspects requiring more rigorous management strategies during construction



- **Environmental Control Maps (ECMs).** Reflecting the outcomes of activity specific risk assessments, ECMs depict the relevant environmental constraints for an activity and risks and controls on site-specific maps
- **Environmental Work Method Statements.** Management measures identified in this Strategy may also be incorporated into site or activity specific Environmental Work Method Statements (EWMS) for activities assessed as having high environmental risk. EWMS incorporate appropriate mitigation measures and controls and identify key procedures to be used concurrently with this Strategy. Construction personnel undertaking a task governed by an EWMS must undertake the activity in accordance with the mitigation and management measures identified in the EWMS.
- **Procedures, strategies, and protocols.** Detailed procedures for inclusion in work packs. Detailed procedures, strategies and protocols have been/will be developed as required.

1.5.1. Interactions with other management plans, strategies and documentation

This Strategy has the following interrelationships with other management plans and documents:

- Communications and Engagement Plan (CEP) – details procedures and processes for community notification, consultation and complaints management
- Safety Management Plan – provides the framework for managing safety including details of procedures and protocols to manage potential impacts to workers
- Quality Plan – describes the process for managing non-conforming work practices and initiating corrective / preventative actions or system improvements
- Construction Sustainability Management Plan – describes how PLR2 – EW will meet its sustainability targets and objectives, including during the delivery of utility work.

1.6. Consultation and approval

1.6.1. Stakeholder consultation

Reflecting the requirements of the Infrastructure Approval and Environmental Assessment Documentation, and in particular NSW CoA E130, this Strategy has been prepared in consultation with City of Parramatta Council, City of Ryde Council, Sydney Olympic Park Authority (SOPA) and relevant utility providers, as per evidence provided in Appendix C

Ongoing consultation between TfNSW, other PLR contractors, nearby construction projects, stakeholders, the community and relevant agencies as required regarding the management of impacts from utility works will be undertaken during the PLR2 – EW. The process for the consultation will be consistent with the Community Communication Strategy (CCS) and as described in the CEP.

1.6.2. Strategy endorsement and approval

On completion of stakeholder consultation, this Strategy will be endorsed by the Environmental Representative (ER) and submitted to the Planning Secretary for approval at least one month before the commencement of utility work.

This Strategy, as approved by the Planning Secretary, including any minor amendments approved by the ER, will be implemented for the duration of the PLR2 – EW.

Nothing in the Infrastructure Approval permits the carrying out of any utility work not required for the purpose of the CSSI.





2. Environmental requirements

In accordance with NSW CoA A7, references in the terms of this Strategy to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Australian Standards or policies in the form they are in as at the date of the Infrastructure Approval (CSSI-10035), unless otherwise approved or required by the Planning Secretary.

2.1. Relevant legislation and guidelines

2.1.1. Legislation

This Strategy has been prepared in accordance with the:

- *Biodiversity Conservation Act 2016*
- *Biosecurity Act 2015*
- *Contaminated Land Management Act 1997*
- *Electricity Supply Act 1995*
- EP&A Act
- EPBC Act
- *Gas Supply Act 1996*
- *Heritage Act 1977*
- *National Parks and Wildlife Act 1974*
- *Pesticides Act 1999*
- *Pipelines Act 1967*
- *Privacy and Personal Information Protection Act 1998*
- *Protection of the Environment Operations Act 1997*
- *Roads Act 1993*
- *Sydney Water Act 1994*
- *Telecommunications Act 1997*
- *Water Act 1912*
- *Water Management Act 2000*
- *Work Health and Safety Act 2011* (WHS Act).

2.1.2. Guidelines and standards

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

- AS/NZS 1158-2022: Lighting for Roads and Public Spaces
- AS/NZS 4282-2019: Control of the obtrusive effects of outdoor lighting
- AS/NZS 4801-2001: Safety Management Systems
- AS/NZS ISO 14001-2016: Environmental Management Systems (EMS)
- AS/NZS ISO 19011-2014: Guidelines for Auditing Management Systems
- AS/NZS ISO 9001-2015: Quality Management Systems
- Interim Construction Noise Guideline (DECC, 2009)
- *Managing Urban Stormwater: Soils and Construction Volume 1*, Landcom, (4th Edition) March 2004 (reprinted 2006) (the “Blue Book”)



- *National Light Pollution Guidelines for Wildlife* (AG DCCEEW, 2023)
- TfNSW Environment and Sustainability Policy (January 2020)
- TfNSW guidelines:
 - Air Quality Management Guideline (EMF-AQ-GD-0063)
 - Chemical Storage and Spill Response Guidelines (EMF-EM-GD-0137)
 - Concrete Washout Guidelines (DMS-SD-112)
 - Construction Noise and Vibration Guideline (Public Transport Infrastructure) (EMF-NV-GD-0060) (CNVG)
 - Environmental Control Map Guideline (EMF-EM-GD-0148)
 - Fauna Management Guideline (DMS-SD-113)
 - Non-road diesel plant data collection workbook (EMF-AQ-TT-0062)
 - Pesticide use notification plan (EMF-BP-PS-0095)
 - Procedure for Aboriginal cultural heritage consultation and investigation (RMS 11.012-SBN 9781922040183)
 - Unexpected Heritage Items Procedure (EMF-HE-R-0076)
 - Vegetation Management (Protection and Removal) Guideline (DMS-SD-111)
 - Water Discharge and Reuse Guideline (DMS-SD-024)
 - Water Sensitive Urban Design Guideline (DMS-SD-106)
 - Weed Management and Disposal Guideline (DMS-SD-110)
- Woo-la-ra Triangle Transport Landfill Site Remediation Action Plan (TfNSW, 2024).

2.2. NSW CoA and UMMs

The primary NSW CoA of relevance to the development of this Strategy are listed in Table 2. A cross reference is also included to indicate where the NSW CoA is addressed in this Strategy or other Project management documents. Secondary NSW CoA and UMM of relevance to this Strategy are listed in Appendix A Secondary environmental requirements.





Table 2 – Primary NSW CoA

NSW CoA	Condition	Reference	How addressed
E130	A Utilities Management Strategy must be prepared in consultation with relevant Council(s), SOPA (in Sydney Olympic Park) and relevant utility providers and implemented for all utility work undertaken as a result of the CSSI. The Strategy must identify how utility Work will be defined and managed. The Utilities Management Strategy must include: (a) a description of all utility Work to be undertaken; and (b) management measures to be implemented to manage dust, noise, traffic, access, lighting and other relevant impacts associated with utility Work. The Utilities Management Strategy must be submitted to the Planning Secretary for approval at least one (1) month before the commencement of utility Work.	Section 1.6.1 Section 1.6.2 Section 4 Section 5 Section 6 Section 7 Appendix C	This Strategy has been prepared in consultation with the agencies and council(s) nominated in CoA E130 as described in Section 1.6.1. A description of the utility work to be undertaken during the PLR2 – EW is provided in Section 4. The management measures to be implemented during utility work is provided in Section 5, along with the key roles and responsibilities for the implementation in Section 6. This Strategy must be endorsed by the ER and submitted to the Planning Secretary for approval at least one month before the commencement of utility work as outlined in Section 1.6.2. Requirements for the continual review and improvement of this Strategy are outlined in Section 7.





3. Utility Works Approach

Utility works can be defined as any physical activity for the purpose of the Project involving the protection, adjustment or relocation of a utility asset.

3.1. Low impact utility work

Low impact utility work is work that is determined by the ER to have minimal environmental or community impact. Where low impact utility work is proposed, a Low Impact Work application is required to be developed and endorsed by the ER prior to commencement.

It is noted that the following activities are not considered to be low impact utility work:

- Where threatened species or threatened ecological communities (within the meaning of the *Biodiversity Conservation Act 2016* or *Environment Protection and Biodiversity Conservation Act 1999*) are affected or potentially affected, unless otherwise determined by the Planning Secretary, following consultation with Heritage NSW, Biodiversity Conservation and Science group of the NSW Department of Climate Change, Energy, the Environment and Water (BCS) or Department of Primary Industries Fisheries (DPI Fisheries) (in the case of impact upon fish, aquatic invertebrates or marine vegetation); and
- Any work undertaken outside the hours specified in NSW CoA E31 that exceeds noise management and vibration levels as identified in NSW CoA E33(b).

3.2. Utility work areas

The utility work described in this Strategy is subject to final design, confirmation of site conditions, provision of as-built information for existing utilities, and consultation with utility providers.

The Environmental Assessment Documentation identifies that utility works will generally be contained within the Project site; however, the final treatment could include the requirement for some works (such as connection works, usually within the road reserve or easements) in locations outside the Project site. The potential for utility works outside of the Approved Project boundary is also recognised in the Infrastructure Approval. Specifically, the flexibility provisions of NSW CoA A8 permit utility and lighting works that are within one kilometre of the Project Site where determined by the ER to have no more than a minor impact.

Where utility works are required outside the Project site, an assessment of environmental constraints and risks will be undertaken to confirm the environmental management measures that are to be applied. If additional environmental impacts are identified, existing management measures will be reviewed and, if necessary, modified to minimise potential impacts. Utility work which is determined to have more than a minor impact by the ER will be subject to an assessment of consistency with the Environmental Assessment Documentation and Infrastructure Approval. A modification application to the Planning Secretary, in accordance with the EP&A Act, would be required where this utility work is not considered consistent. Utility work which is required outside of the Project site may also result in an update of the CEMP and Sub-plans, as appropriate.

The assessment of environmental constraints and risks for utility works required outside of the Project site will consider:

- Obtaining agreements with utility service providers, effective co-ordination of utility adjustment works and consideration of appropriate route options. This will be managed by the PLR2 – EW Utilities Team
- Stakeholder and community consultation and notification, undertaken in compliance with the CCS and CEP
- The need for obtaining any additional approvals and update to environmental management documentation, as required.





3.3. Identifying utility conflicts

The interface and management of PLR2 – EW with existing and proposed utilities will occur through coordination with asset owners and service providers during the design and construction phases of the Project. The key interface areas for PLR2 – EW are Mary Street, Waratah Street and Wharf Road in Melrose Park, and Hill Road in Wentworth Point.

Interface management requires early engagement and coordination with asset owners and service providers to resolve design issues, clarify spotter requirements, communicate program milestones, and confirm resourcing. Coordination with asset owners and service providers will include (but not be limited to):

- Design and approvals
- Program
- Quotes
- Utility crew resourcing
- Long-lead time items
- Attendance requirements
- Cut-overs.

Alterations to utilities will be determined by negotiation with the asset owners and service providers, and ongoing consultation to ensure that any disruption to services resulting from the PLR2 – EW is avoided where practical and communicated appropriately to the affected customers.

The existing third-party utilities located within the Project site can broadly be categorised as electrical, telecommunications, gas, water, fuel, sewer and stormwater. Some of these assets will require protection, adjustment and relocation to facilitate construction of the PLR2 – EW. Table 3 identifies a list of key utility asset owners within the Project site with assets potentially affected by PLR2 – EW.

Table 3 – Key utility asset owners within the Project site

Utility Asset Owner	Type of Asset
Ausgrid	Electricity (low voltage, 11kV), electricity sub transmission (33kV) and electricity transmission (132kV)
Endeavour Energy	Electricity (low voltage, 11kV) and electricity sub transmission (33kV)
City of Parramatta Council	Stormwater, low voltage electricity, street lighting
City of Ryde	Stormwater, low voltage electricity, street lighting
Jemena	Gas
NBN Co	Telecommunications (fibre optic and copper)
Optus	Telecommunications (fibre optic)
Sydney Olympic Park Authority	Stormwater / sewer / water, leachate drains, low voltage electricity
Sydney Water	Stormwater / sewer / water
Telstra	Telecommunications (fibre optic and copper)
Viva Energy	Fuel line

The main causes by which a utility conflicts with the Project are:





- Direct physical conflict between the proposed works and existing utility asset
- Finished surface levels are modified vertically such that an existing utility will have insufficient cover or is too deep
- The force exerted by proposed work activities exceeds the utility threshold level
- Vibration and/or settlement introduced by work activities exceeds the utility threshold level
- The position of the existing utility asset is such that operations and maintenance activities of the utility authority requires interaction with the PLR2 – EW infrastructure.

To determine which utility assets require modification, John Holland have undertaken a conflict assessment to identify assets that conflict with the proposed PLR2 – EW design. The conflict assessment has been informed by:

- Before You Dig Australia (BYDA) data searches
- Review of plans and drawings
- Site inspections
- Utility survey information.

Investigations will continue, in consultation with utility asset owners and service providers, and with relevant landowners throughout the delivery phase, to identify the utility services likely to be impacted by the PLR2 – EW. Further investigations include:

- Use of electronic tracing and ground penetrating radar
- Surface level surveys
- Potholing and trenching using non-destructive excavation methods.

3.4. Unknown utilities

During the delivery of the PLR2 – EW there is a likelihood of finding unknown and unidentified utility assets. John Holland will undertake a comprehensive subsurface utility investigation for each area of works, as required, following a due diligence assessment of available information. This may include liaison with asset owners and service providers, review of redundant asset records where available, and additional site investigation works to determine information about the unknown asset, such as:

- Asset owner
- Asset type
- Confirm if the asset in current use, for future use, or abandoned
- Prove that the asset is safe to remove if removal is required to complete works.

There is a remaining risk that unknown and unidentified utility assets will be encountered during works required for PLR2 – EW. Where this occurs, works are required to cease around the asset until the asset is positively identified as a condition of the 'Permit-to-Disturb'. The asset owners and service providers are to be contacted to determine if the asset can be positively identified. If the asset type and owner cannot be identified by representatives of the asset owners and service providers, the asset will be traced using non-destructive excavation techniques until the following is found:

- The end of the service pipe or conduit
- A fitting or joint that can be used to positively identify the asset type
- A pit or manhole from which the asset originates.

Once the asset has been identified, advice will be sought from the asset owner to determine the appropriate course of action. If the asset is believed to be redundant then the asset owner or John Holland will prove the asset using varying techniques specific to the asset type.





3.5. Management approach for utility services

The following hierarchy will be applied for managing utility assets on PLR2 – EW:

- Avoid or minimise impacts on utility services where practicable
- Retain and protect utility services if and where required
- Relocate utilities, including removing utility services and re-laying those services in a designated utility service corridor in a different location within or immediately adjacent to the Project site where practicable. If a service needs to be relocated outside the Project site, locations within an existing road reserve, infrastructure corridor or open space would be preferred
- Remove any redundant utility services as agreed with the appropriate utility service provider.

This approach does not allow for the upgrading of utility services apart from any upgrades required to manage potential impacts arising from the PLR2 – EW such as upgrades to drainage infrastructure or power supply connections.

As part of the assessment process, any feasible options for relocating utility services would be identified and evaluated before a preferred option is selected. Management measures would be adopted to minimise the potential environmental and community impacts associated with the preferred option. Where works are required outside the Project site, these will also be subject to review of potential environmental impacts and approvals.

3.6. Excavation & Trenching Permit process

The John Holland Excavation & Trenching Permit (E&TP) will be used during the PLR2 – EW to control the ground penetration process. The E&TP ensures that every known or possible utility risk is analysed, controlled and that responsibilities are assigned to relevant personnel. No ground penetrating work will start without an approved E&TP. The E&TP will also outline the requirements of high-risk utilities that require spotters to be present during Non-Destructive Digging (NDD) or mechanical excavations.

The E&TP will only be active for as long as the BYDA drawings are current. BYDA drawings are valid for a maximum of 28 days from any requested date. BYDA drawings will need to be updated every 28 days, as will the E&TP.

3.7. Limits of encroachment on utilities

It is mandatory that John Holland complies with utility authorities' requirements, and for that reason they have been included in this Strategy.

All the utility services that are expected to be encountered along the PLR2 – EW alignment are listed in Table 4. In addition, each of the utility authorities have set safe encroachment distances to their services, based on the type of service and associated hazards and risk levels.

Table 4 – Encroachment requirements

Asset owner	Description of asset	Safe Approach Distances (SADs)	Representative required to work within SADs	Outage required
Jemena	LP gas	300mm	No	
Jemena	HP gas (secondary)	3m	Yes	
VIVA	Fuel Main	3m 20m (Notification)	Yes	
Sydney Water	Water main	300mm	No	
Sydney Water	Sewer main	300mm	No	



Asset owner	Description of asset	Safe Approach Distances (SADs)	Representative required to work within SADs	Outage required
Ausgrid	132Kv Transmission Underground	4m (Notify) 2m (SADs)	Yes	Yes – situation depending
Ausgrid	132kv transmission Overhead	3m (SADs) Refer to Table 5	Yes	Yes – situation depending
Ausgrid	11kv distribution	300mm	No	Yes – situation depending
Ausgrid	415V local distribution	300mm	No	
Endeavour Energy	Up to and including 132kV (Ordinary Persons) (Overhead)	3m Refer to Table 6	Yes	Yes – situation depending
Endeavour Energy	Underground Assets	0.6m	No	
TPG/AAPT	Fibre optic	1m	No	
NBN Co	Fibre optic	1m	No	
Telstra	Fibre optic Copper	1m	No	
SOPA Communications	Fibre optic	1m (assumed)	No (assumed)	Assumed in line with all other telecommunications – Will confirm with SOPA
SOPA	Leachate Drain	5m	No	

Note: Sourced from Work Near Underground Assets – Guide – Safework NSW 2007, Before you Dig Australia, Ausgrid - NS156, WHS-PR-E4-2-002_Safeguarding_Buried_Services

Table 5 – Ausgrid Overhead Safe Approach Distances (For ordinary persons)

Nominal phase to phase a.c. voltage (volts)	Approach distance (m)
Up to and including 132,000	3.0
Above 132,000 up to and including 330,000	6.0
Above 330,000	8.0
Nominal pole to earth d.c. voltage (volts)	Approach distance (m)
Up to and including +/- 1500 Volts	3.0

Note: Special approach distances apply for scaffolding work (Chapter 6) and/or work near low voltage overhead service lines (Chapter 8) – refer WorkCover – Work Near Overhead Power Lines Code of Practice.





Table 6 – Endeavour Energy Overhead Safe Approach Distances (For Ordinary Persons)

Nominal Voltage (a.c volts)	Safe Approach Distance (mm)	
	Authorised Person	Instructed Person
Up to and including 1,000	500	1000
Above 1,000 up to and including 22,000	700	1200
Above 22,000 up to and including 66,000	1000	1500
Above 66,000 up to and including 132,000	1500	2000
Above 132,000 up to and including 220,000	2500	3000
Above 220,000 up to and including 330,000	3000	3500
Above 330,000	4000	4500





4. Project Utility Works

Utility relocation scopes identified as part of the initial design for PLR2 – EW are summarised below and detailed in the sections that follow:

- 132kV Ausgrid overhead transmission line relocation
- VIVA Energy fuel main relocation
- Jemena high-pressure secondary mains
- Jemena medium pressure cut and cap isolated main (Waratah Street)
- Telstra conduit relocation on Mary Street (including NBN and TPG within the Telstra ducts)
- Endeavour Energy 11kV low voltage and streetlighting relocation (Waratah Street)
- Sydney Water DN150 relocations and DN100 cut and cap water mains (Mary Street)
- Sydney Water DN250 and DN300 water main relocations (Hill Road)
- Sydney Water sewer main relocation (Hill Road)
- Ausgrid low voltage and street lighting relocation (Hill Road)
- Temporary construction utility connects (power and potable water)
- Operational power supply
- Operational stormwater alterations.

The utility work scopes detailed in this Strategy are indicative only and may be modified in response to detailed design, site investigations and the outcomes of consultation with asset owners and service providers.

4.1. Ausgrid 132kV transmission line relocation

An existing Ausgrid 132kV overhead transmission line traverses over the Parramatta River within the Project site from Wharf Road, Melrose Park to Wentworth Point and eventually to Hill Road. The transmission cables connect between several overhead towers and to a transition point near Hill Road where the cables connect underground.

This 132kV overhead transmission line runs along the majority of the PLR2 – EW alignment and is a significant Project constraint. As detailed in the Environmental Assessment Documentation, the Approved Project includes the relocation of a portion of this transmission line to achieve sufficient safety approach distance between the light rail alignment and the transmission line.

As detailed in the Ausgrid electrical safety rules, the “safe approach distances for ordinary persons” is the minimum safe approach distance which must be maintained for Ausgrid assets. For 132kV overhead transmission lines, the minimum safe approach distance is three metres. This clearance only applies to overhead transmission lines. Where this clearance is not maintained, the overhead transmission line must be isolated and earthed prior to breaching the clearance to ensure the safety of workers. As the permit holder, authorised Ausgrid staff must be present on site during relocation works.

For the underground section of the Ausgrid 132kV transmission line, any excavation within four metres of the underground transmission line requires notification to Ausgrid Development. Any excavation within two metres also requires an authorised Ausgrid spotter to be present on site during the works. This Ausgrid requirement forms part of the E&TP process.

Consultation with Ausgrid will be undertaken during detailed design to identify relevant safety controls to be applied to the proposed scope of works near to the Ausgrid 132kV transmission line. Any metallic asset proposed to be installed as part of PLR2 – EW within four metres of the Ausgrid 132kV transmission line will require a ratings assessment and is generally not permitted.

Due to the presence of the Ausgrid 132kV transmission line throughout the Project site and multiple interfaces with the minimum safe approach distances, early discussions have occurred with Ausgrid





and will continue during the PLE2 – EW design. These early discussions will allow for opportunity engineering to reduce the need for Ausgrid standby officers for low risk works within the minimum safe approach distance zone.

To manage the Project program risks for this significant constraint, the initial design for 132kV overhead transmission line relocation has been advanced by TfNSW in consultation with Ausgrid. The initial design is provided in Appendix B.

The PLR2 – EW will be designed in accordance with *Non-Ionising Radiation Protection Guidelines for Limiting Exposure to Time Varying Electric and Magnetic Fields* (ICNIRP, 2010) and Australian Standard AS 2067:2016 *Substations and high voltage installations exceeding 1 kV* to minimise the risk associated with electro-magnetic field exposure.

4.2. VIVA Energy fuel main relocation

4.2.1. Recoverable Works Agreement

A Recoverable Works Agreement (RWA) has been established with VIVA Energy Australia to guide works within the RWA Site Boundary (Figure 3). Any proposed PLR2 – EW works within the RWA Site Boundary must be reviewed by VIVA Energy Australia as possible threats to the high pressure fuel line. All proposed works within the RWA Site Boundary must be provided to the VIVA Energy Australia third-party engineer for review and approval, and in some cases, addressed through a SMS workshop. The steps required to be undertaken are listed below and detailed within the VIVA Third Party Project Governance Guideline Document:

- Engage VIVA Energy Australia third-party engineer
- VIVA Energy Australia third-party engineer to review PLR2 – EW early work packages to understand what needs to be submitted to VIVA Energy Australia for approval and which aspects are subject to an SMS
- Any early works that are exempt from a SMS can be submitted within a construction excavation procedure for approval by VIVA Energy Australia
- Site investigations (potholing) to be undertaken on the VIVA Energy Australia high pressure fuel line by approved NDD contractors to ascertain Class A Data to feed into the Project brief, noting that this requires approval by VIVA Energy Australia and Freyssinet Spotters
- Provide required potholing and A Class data to VIVA Energy Australia to feed into the Project brief and SMS
- VIVA Energy Australia third-party engineer and John Holland to develop a Project brief for submission to VIVA Energy Australia
- Once the Project brief has been reviewed by VIVA Energy Australia, an SMS can be booked in to work through Project scope of works.

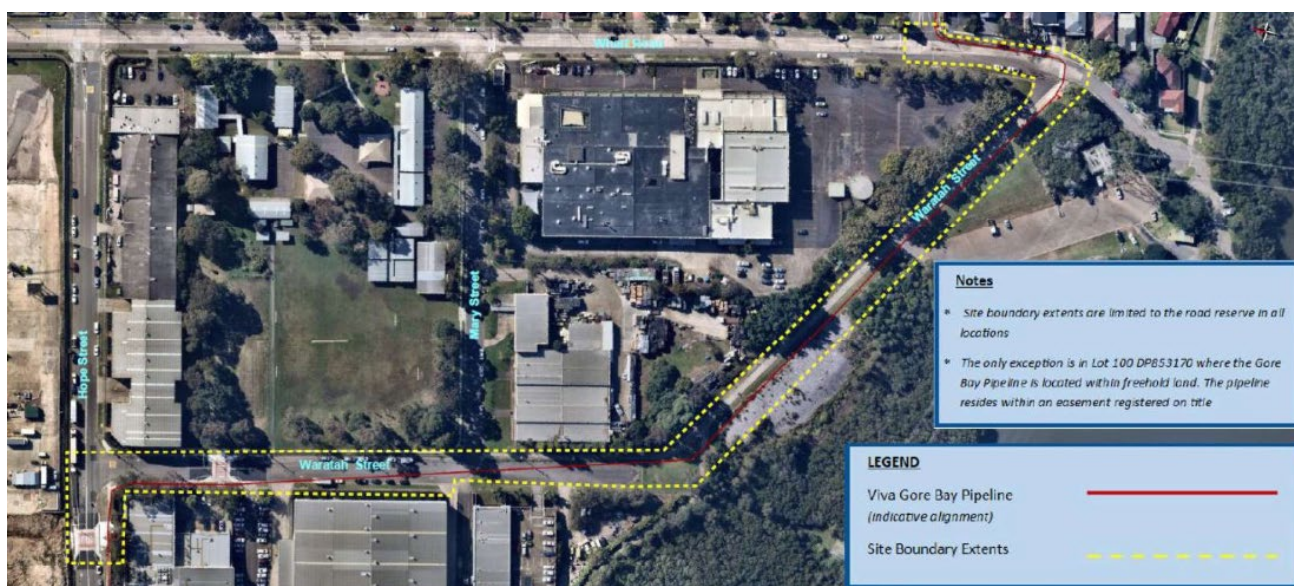


Figure 3 – Recoverable Works Agreement Site Boundary nominated by VIVA Energy Australia

4.2.2. VIVA Gore Bay Pipeline

A VIVA Energy Australia high pressure fuel line (VIVA Gore Bay Pipeline) is currently located along Waratah Street from Mary Street to Wharf Road, Melrose Park. This high pressure fuel line is a significant constraint to PLR2 – EW and will be relocated outside of the proposed PLR2 – EW alignment. Permanent or temporary protection will be determined in consultation with VIVA Energy Australia and in accordance with the RWA.

To manage the Project program risks for this significant constraint, the initial designs for the proposed relocation have been advanced by TfNSW in consultation with VIVA Energy Australia. The proposed relocation for the high pressure fuel line is via Mary Street and Wharf Road, to a connection point in Andrew Street, Melrose Park. The initial design (Appendix B) is subject to a Consistency Assessment in development by TfNSW.

Consultation will continue to be undertaken with VIVA Energy Australia and the VIVA Energy Australia third-party engineer to identify all proposed PLR2 – EW works within the notification zone of the existing high pressure fuel line. All proposed works within the notification zone are required to be included within construction execution procedure documents which are subject to review during an initial Safety Management Study (SMS).

The VIVA Energy Australia high pressure fuel line can only be exposed under the direct supervision of an authorised VIVA Energy Australia patrolman. Once the patrolman issues a Permit to Work, excavation can begin. Any works within three metres of the high pressure fuel line require a patrolman to be present on site and valid Permit to Work prior to commencement.

All excavation proposed within the RWA Site Boundary will be undertaken in accordance with:

- The E&TP process
- A SMS (approved by VIVA Energy Australia)
- VIVA Energy Australia NSW Conditions for Works near pipelines (SC-PIP-0012-FM)
- VIVA Energy Australia PIP-P003 Procedure.

When excavating within the three metre clearance distance, John Holland will adhere to the following additional procedures:

- NDD techniques will be used and the pressure wand / nozzle tip shall be a rotary or fan style
- A minimum of 200mm distance must be maintained between the nozzle tip and subsoil (i.e. nozzle shall not touch or be inserted into soil)



- Due to known Coal Tar Enamel (CTE) coating, NDD is to stop at a minimum of 500mm from the pipeline. The remaining distance is to be exposed via hand digging
- Water jet pressure shall not exceed 2,000 PSI (13500 kPa)
- If heater water is used during excavation, the temperature shall not exceed 45 degrees Celsius
- Water jet pressure shall be reduced to 500 PSI (3,500 kPa) at minimum 500mm from top of pipe
- NDD vacuum equipment shall not come into contact with the coating system
- The use of NDD to expose the pipeline shall only occur upon the written approval by authorised VIVA Energy Australia personnel
- Following the exposure of the pipeline, the NDD operator shall stop works to allow authorised VIVA Energy Australia personnel to inspect the coating for signs of damage
- Any coating damage caused by NDD works shall be repaired in accordance with the VIVA Energy Australia PIP-P003 Procedure prior to reinstatement
- Backfilling of the work area is to be in accordance with the requirements of the VIVA Energy Australia PIP-P003 Procedure.

If any permanent protection is required, VIVA Energy Australia must examine the pipeline coating for pipeline sections that are proposed to be protected. This will be completed by authorised VIVA Energy Australia personnel as per their requirements. The purpose of this inspection is to:

- Visually check the current integrity of the pipeline protective coating or wrapping
- Check the condition of any exposed pipeline welds, particularly at bends
- Undertake a spark test on the exposed pipeline (around the whole pipe that will be exposed)
- Confirm the condition of the asset and protection material, and to assess its remaining life, relative to the design life of the infrastructure.

Rectification works will be undertaken by an authorised VIVA Energy Australia contractor if a condition assessment deems this necessary.

When the high pressure fuel line is to be backfilled, John Holland will undertake these works with Shannon Group Services (VIVA Energy Australia's Accredited Contractor). Washed Sydney sand will be used to 500mm above the high pressure fuel line. Backfill for the top metre, as measured from the foundation level, will be compacted to AS1289 specification requirements, with a specific compaction methodology that incorporates designated plant requirements as per the approved construction execution procedure.

4.3. Jemena high-pressure secondary mains

The existing Jemena secondary high pressure gas main along Hill Road, Wentworth Point, requires relocation as part of the PLR2 – EW. This Jemena secondary high pressure gas main is an isolated main meaning that it is treated as a live but has no gas running through it. As such, it will be cut and capped at two locations and then removed to allow for other utility relocations and the proposed PLR2 – EW alignment.

An authorised Jemena Permit Issuer will be required onsite when working within the immediate vicinity of any secondary main, to ensure that the following requirements are met:

- Jemena Permit Issuer will locate and mark out primary or secondary steel mains
- Potholing on a secondary steel main must be approved by a Jemena Permit Issuer
- Potholing trucks must be set to below 2000 psi to ensure gas mains protective coating is not damaged (800 psi for pipe known to be coated coal tar enamel)
- Any excavation works within two metres of a high-pressure secondary gas main must be supervised by a Jemena Permit Issuer





- If encroachment of the Safe Approach Distances (i.e. within one metre of a live secondary main) is required, the Jemena Permit Issuer can instruct the crew to excavate up to 300mm of the live main. Excavation that is any closer must be undertaken by hand or NDD.

4.4. Jemena medium pressure cut and cap isolated main

There is potentially an isolated Jemena medium pressure main that exists on Waratah Street, Melrose Park. Potholing and investigation works be undertaken to confirm whether the main is redundant or isolated.

The investigations will be undertaken with a Jemena representative on site to confirm the status of the main. No further actions are required if the main is confirmed as redundant. If the investigations confirm that the main is isolated, then further action may be required to cut and cap the main at the Approved Project boundary.

4.5. Telstra conduit relocation

There is an existing Telstra conduit crossing Mary Street at the intersection of Mary Street and Waratah Street, Melrose Park. The conduit, including National Broadband Network (NBN) and TPG services within the Telstra ducts, will require relocation.

These relocation works will be non-contestable and undertaken by Telstra. John Holland will engage with Telstra to confirm the extent of works needing to be undertaken prior to Telstra undertaking the works.

4.6. Endeavour Energy 11kV (low voltage) and streetlighting relocation

There are existing Endeavour Energy assets located on Waratah Street, Melrose Park that will be removed and/or relocated as part of the PLR2 – EW.

The existing low voltage asset, currently overhead, and will be decommissioned and relocated underground on Waratah Street up to the closest existing Endeavour Energy pole. The streetlighting on Waratah Street will similarly be decommissioned and replaced as part of the PLR2 – EW.

All Endeavour Energy relocations are contestable works that can be undertaken by a Level 1 Accredited Service Provider (ASP). Prior to any relocation/disconnection works being undertaken by a Level 1 ASP, a design will be developed by a Level 3 ASP and approved by Endeavour Energy.

4.7. Sydney Water DN150 relocations and DN100 cut and cap water mains

There are currently Sydney Water watermains crossing the intersection of Mary Street and Waratah Street, Melrose Park. All existing watermains shall be relocated and any watermains that are confirmed to be disused will be cut and capped for removal or abandonment. The extent of relocation works is dependent on the clash identified between the watermains and the proposed infrastructure for the PLR2 – EW.

Any watermain works will only proceed following Sydney Water approval of all designs.

As required by UMM HR5, trial valve shutdowns on the Sydney Water potable water trunk mains will be undertaken to confirm the condition and functionality of the nearest valves to the Project site and whether any repairs or rectification works are required to the existing assets. This will be undertaken by Sydney Water.

4.8. Sydney Water DN250 and DN300 water main relocations (Hill Road)

There are currently Sydney Water watermains crossing Hill Road and running parallel to Hill Road, Wentworth Point. All existing watermains will be relocated and any watermains that are confirmed to be disused will be cut and capped for removal or abandonment. The extent of relocation works will be dependent on the clash identified between the watermains and the proposed infrastructure for the PLR2 - EW. Watermain works will only proceed following Sydney Water approval of all designs.





4.9. Sydney Water sewer main relocation

There are currently Sydney Water sewer mains running parallel to Hill Road, Wentworth Point. The sewer mains shall be relocated along Hill Road. The extent of relocation works will be dependent on the clash identified between the sewer mains and the proposed infrastructure for the PLR2 – EW. Sewer main works will only proceed following Sydney Water approval of all designs.

4.10. Ausgrid low voltage and street lighting relocation

There is currently Ausgrid low voltage and streetlighting infrastructure located along Hill Road, Wentworth Point. A portion of this low voltage network will need to be relocated along Hill Road due to clashes between the assets and the proposed kerbing and pavement works on Hill Road and the Footbridge Boulevard/Hill Road intersection.

All Ausgrid relocations are contestable works that can be undertaken by a Level 1 ASP. Prior to any relocation/disconnection works being undertaken by a Level 1 ASP, a design will be developed by a Level 3 ASP and approved by Ausgrid.

Any works undertaken within 2 metres of the existing 132kV underground transmission line on Hill Road will require approval from Ausgrid and an Ausgrid spotter to be present on site.

4.11. Temporary construction utilities

To enable the delivery of the PLR2 – EW, temporary ancillary facilities will be established within the Approved Project boundary in Melrose Park and Wentworth Point. Temporary utility connections are required to support the operation of the ancillary facilities.

4.11.1. Temporary power supply

The existing Endeavour Energy low voltage network in Waratah Street, Melrose Park will be utilised to provide a temporary connection to the Melrose Park ancillary facility. At the Hill Road, Wentworth Point ancillary facility, in connection will be made with the nearby Ausgrid low voltage network which meets the required load draw requirements.

A Level 2 ASP contractor will install the temporary power connection points and applications to connect will be submitted through the standard Ausgrid or Endeavour Energy application to connect processes.

4.11.2. Temporary construction potable water supply

A temporary water supply from the Sydney Water network is proposed to provide a potable water connection to the Melrose Park and Wentworth Point ancillary facilities. A Level 2 ASP contractor will be engaged to apply to connect the ancillary facilities to the Sydney Water potable water network via the standard Sydney Water application process.

4.12. Operational power supply

Permanent power supply is required for the following PLR2 – EW infrastructure:

- Low voltage supply for streetlighting
- Low voltage supply for Traffic Control Signal (TCS) sites
- Low voltage supply for Archer Park Amenities Block
- Low voltage supply for proposed Intelligent Transport System (ITS) infrastructure.

These various power supply requirements will have different asset owners and therefore will require a different supply point for each connection.

All power supply points will be developed throughout the various design gates for each design package including connection points, locations and all related power connection details.





Operational power supply is not part of the PLR2 – EW scope and will be established as part of the Stage 2B main portion of works.

4.13. Operational stormwater alterations

New and modified stormwater drainage infrastructure is required as part of PLR2 – EW, including:

- Installation of new underground pipes and culverts
- Installation of new pits, outlet head walls etc.
- Installation of new stormwater drainage treatment including gross pollutant traps and jellyfish style treatments
- Installation of surface spoon drains
- Installation of track/aco drain tram crossings.

Operational stormwater drainage works can be divided across the following sections of the Project:

- Northern section of the Parramatta River (Melrose Park):
 - Mary Street intersection (Chainage (Ch) 6920 to Ch 7135)
 - Melrose Park Development
 - Between Ch 7135 and the crest of the proposed bridge (Ch 7460).
- Southern section of the Parramatta River (Wentworth Point):
 - Between the crest of the proposed bridge (Ch 7460) to Ch 7940
 - Overflow at the Sekisui development interface
 - Hill Road intersection (Ch 7940 to Ch 8100).
- Bridge drainage
- Track drainage.

All operational stormwater drainage infrastructure will be developed through the detailed design gates for the stormwater drainage design package.



5. Environmental management and mitigation measures

5.1. Potential impacts

The potential impacts of utility works, detailed in Table 7, are likely to be short-term and localised in the immediate vicinity of the applicable utility work area. The proposed safeguards to manage these impacts are described in Section 5.2.

Table 7 – Potential impacts from utility works

Aspect	Potential impacts from utility works
Traffic	- Traffic generated by worker vehicles and personnel impacting on the local road network - Car parking required by workers - Closure of roads or traffic lanes and associated diversions of traffic and traffic delays - Temporary restricted access to some areas of on-street parking - Temporary closure of sections of footpaths or cycle paths and associated diversions - Temporary relocation of public transport stops - Potential impacts on property access (e.g. driveways).
Air Quality	- Generation of dust from excavation areas and/or stockpiles - Tracking of soil from plant and equipment onto the local road network - Odour from the disturbance of acid sulfate soils, contaminated soil and/or contaminated groundwater - Emissions from plant and equipment, including heavy vehicles.
Noise and vibration	- High noise generating activities such as concrete cutting and breaking, trenching, joint pit construction and road paving - Generation of noise during out-of-hours works (OOHW) resulting in sensitive receiver impacts, including possible sleep disturbance - Vibration intensive works that may occur near sensitive receivers and sensitive building structures, such as heritage listed items.
Biodiversity	- Impacts on native flora, threatened flora species and/or ecological communities (if present) as a result of removal of trees and vegetation such as from within road reserves or public open space areas - Impacts on native or threatened fauna species (if present) as a result of removal of potential foraging habitat or shelter - Impacts on native or threatened fauna species (if present) as a result of noise and lighting - Spread of noxious weeds and pathogens.
Non-Aboriginal Heritage	- Direct impacts on listed heritage items, including structural vibration impacts - Direct impacts on unexpected archaeological finds in the unlikely event that this occurs.
Aboriginal Heritage	- Direct impacts on Aboriginal Heritage Information Management System (AHIMS) registered archaeological sites (if present) - Direct impacts on areas identified as containing potential archaeological deposits - Direct impacts on unexpected archaeological finds in the unlikely event that this occurs.





Aspect	Potential impacts from utility works
Visual	- Views from sensitive receivers of trench excavation, stockpiles, laydown areas and plant equipment - Views of overhead wiring changes - Removal of trees or vegetation from within road reserves or open space areas - Light spill and glare impacting on residential properties during night works.
Land Use and Socio-Economic	- Impact on property access (e.g. driveways) noting that existing property access will be maintained other than for short periods during the works as agreed in consultation with the property owner(s) - Impact on access to areas of public open space - Impact on sensitive land uses such as schools and child care centres - Amenity impacts on residential land uses adjacent to the work areas - Temporary disruption to services such as power and water supply during the works - Generating employment opportunities for workers during the delivery of the works - Indirect economic benefits for some business during delivery of the works.
Soil and Water	- Potential erosion and sedimentation risks from excavation and earthworks - Dewatering of excavated trenches may be required as a result of rainfall - In some locations groundwater may be intercepted and dewatering may be required during the excavation of trenches - Potential disturbance of acid sulfate soils and exposure to air (if present) - Spills of hydraulic oils and fuels from vehicles and plant equipment - Disturbance of contaminated soils.
Contamination	- Disturbance of asbestos and other potential contaminants in cabling, conduits and pipes - Mobilisation of contamination in soils by earthworks and movement of plant and equipment - Mobilisation of contaminants in exposed soils by rainfall or surface water run-off - Encountering contaminated groundwater during excavation of trenches - Spills of hydraulic oils and fuels from vehicles and plant equipment
Waste	- Excess spoil generated during trench excavation - Classification and disposal of waste.
Electric and magnetic fields (electrical only)	Potential generation of Electromagnetic Fields (EMF) from power supply connections or relocations of Ausgrid or Endeavour Energy electrical infrastructure.

5.2. Management Measures

All utility works undertaken for the PLR2 – EW must be undertaken in accordance with the Infrastructure Approval (including NSW CoA) (Section 2 and Appendix A) and generally in accordance with the Environmental Assessment Documentation, including UMMs (Appendix A). These requirements generally relate to design, and the development of this Strategy.





In accordance with the Infrastructure Approval, utility works that are consistent with the definition of Low Impact Works may be undertaken prior to the approval of the CEMP and Sub-plans. As outlined in Section 3.1, where low impact utility work is proposed, a Low Impact Work application will be developed for the specific activity and endorsed by the ER prior to commencement. Site-specific mitigation and management measures for the proposed works will be determined as part of the Low Impact Work application and informed by the:

- NSW CoA
- EPBC CoA
- Environmental Assessment Documentation, including UMM
- CEMF, including standard management and mitigation measures
- Contractual requirements, including the PLR2 – EW Project Deed and TfNSW Specifications
- Applicable legislation.

Utility works that are not defined as Low Impact Works will be managed in accordance with the CEMP and Sub-plans which are to be endorsed by the ER or approved by the Planning Secretary (as relevant). Table 8 below provides reference to the source of where management and mitigation measures are documented, which will be applied during all works associated with this UMS during Construction. It should be noted that there may be mitigation measures included in other documentation that may also apply, and the below list is not proposed to be exhaustive, but rather a reference list.

Table 8 Source for management measures

Aspect	Reference to source of mitigation measures
Traffic	▪ Traffic, Transport and Access Management Sub-Plan ▪ Construction Parking Strategy
Air Quality	▪ Air Quality Management Sub-plan ▪ Construction Air Quality, Odour and Landfill Gas Monitoring Program ▪ Odour Management Strategy
Noise and vibration	▪ Noise and Vibration Management Plan ▪ Noise and Vibration Monitoring Program ▪ Construction Noise and Vibration Impact Statement
Biodiversity	▪ Flora and Fauna Management Plan ▪ Green and Golden Bell Frog Management Plan ▪ Unexpected Threatened Species & Ecological Communities Finds Protocol ▪ Clearing and Grubbing Environmental Work Method Statement
Non-Aboriginal Heritage	▪ Heritage Management Plan
Aboriginal Heritage	▪ Heritage Management Plan
Visual	▪ Construction Environmental Management Plan ▪ Flora and Fauna Management Plan





Aspect	Reference to source of mitigation measures
Land Use and Socio-Economic	- Construction Environmental Management Plan - Community Communication Strategy
Soil and Water	- Soil and Water Management Plan - Surface Water Quality Monitoring Program - Erosion and Sediment Control Plans
Contamination	- Soil and Water Management Plan - Surface Water Quality Monitoring Program - Air Quality Management Sub-plan - Construction Air Quality, Odour and Landfill Gas Monitoring Program - Odour Management Strategy - Acid Sulfate Soils Management Plan - Unexpected Contaminated Finds Procedure
Waste	Waste Management Plan
Electric and magnetic fields (electrical only)	Utilities Service Management Plan





6. Roles and responsibilities

Specific roles and responsibilities related to the planning and management of utility works are detailed in this section.

6.1. Utilities Project Manager

The responsibilities of the Utilities Project Manager include:

- Manage the Utilities Treatment Delivery Program
- Coordinate all utility works, including treatment identification, design approvals, construction, commissioning and handover
- Communicate with the executive and senior managers of utility service providers and with construction personnel, to identify and manage work area priorities
- Attend regular meetings with utility authorities to ensure effective management of design issues, procurement priorities, schedules and requirements between stakeholders, including Ausgrid, VIVA Energy Australia, Sydney Water, Jemena, Endeavour Energy, Telstra and other telecommunication authorities
- Manage utility risk with early identification of any unknown and out of position utilities, implement mitigation measures, and interface with key utility stakeholders
- Secure timely service approvals from relevant authorities
- Facilitate weekly team meetings
- Maintain Project records on milestones, utility events and commercial issues
- Communicate the status of utility works and providers to TfNSW, providing sufficient notice to allow the TfNSW Representative to attend meetings with utility providers or authorities as required
- Inform asset owners that major works are occurring in the vicinity of their assets, and ensure staff adhere to owners' requirements
- Prepare, obtain approval for, and implement this Strategy, and ensure all future revisions and updates of the Strategy are implemented in a timely manner
- Develop and implement Workplace Risk Assessments (WRAs) in relation to utility works
- Ensure each utility design accounts for asset owners' specifications
- Oversee the development of E&TP documents, and ensure it is deployed correctly throughout the PLR2 – EW
- Ensure compliance with the *Work Health and Safety Act 2011* (WHS Act), regulations, standards and codes
- Ensure surveillance audits are carried out during all phases of the PLR2 – EW
- Ensure John Holland achieves the Minimum Conditions of Satisfaction (MCoS)
- Ensure site safety hazard inductions and pre-briefs are carried out in accordance with the WHS Management Plan, and communicate safety policies and relevant utility management procedures to employees and contractors
- Coordinate independent surveillance audits during all phases of work, to ensure controls in this Strategy are followed
- Review and approve Activity Method Statements (AMSs) for all utility related activities
- Implement and contribute to utility investigations
- Provide the required resources to safely manage all Project utility activities
- Ensure utilities management emergency procedures are correctly implemented





- Ensure compliance with specific safe working procedures and instructions, and advise stakeholders of non-compliance
- Ensure work areas, work methods, materials, plant and equipment relating to all work near utilities comply with safety legislation, regulations, standards and codes
- Drive a culture of utility awareness by facilitating workshops, training, toolbox talks and briefings.

6.2. Utilities Permit Controller

The responsibilities of the Utilities Permit Controller include:

- Manage the E&TP process
- Ensure an E&TP is developed and implemented for all Project works, and that E&TP controls are correctly implemented
- Provide final sign-off for each permit that will be used on the alignment
- Ensure all BYDA information is current and easily accessible to the construction team
- Ensure all services have been physically exposed, inspected and verified prior to approving any permit; work cannot commence without approval
- Ensure investigations, including desk studies and onsite investigations, are carried out in accordance with this Strategy
- Ensure all construction activities near services are in accordance with utility authority standards and the requirements of this Strategy
- Ensure compliance with the regulations, standards and codes of the WHS Act
- Ensure independent surveillance audits are carried out during all phases of work
- Monitor works to ensure that all permits and processes are being followed
- Understand the program of works to pre-empt the requirement for permits and excavation plans
- Administer E&TP training for all engineers, supervisors and responsible persons
- Complete incident reports and carry out investigations
- Monitor the creation of the E&TP and Excavation Plan from start to finish
- Ensure as-built information is collected and included in the design model and that the design model is maintained
- Drive a culture of utility awareness by facilitating workshops, training, toolbox talks and briefings.

6.3. Utilities Design Coordinator

The responsibilities of the Utilities Design Coordinator include:

- Report to the Utilities Project Manager on status of design
- Manage all utility design packages and utility designers, driving integration between disciplines
- Manage utility design risk with early identification of any unknown and out of position utilities and implement any mitigation measures advised by the utility owners
- Manage Level 3 ASP and secure timely authority approvals in relation to contestable designs
- Manage, monitor and update the utility design program
- Ensure Safety in Design is at the forefront when designing utilities
- Attend regular meetings with the Utilities Project Manager and utility authorities to ensure effective management of design issues
- Attend weekly senior leadership meetings with the Utilities Project Manager





- Coordinate regular meetings with the construction team to ensure a common understanding of design issues and program requirements
- Understand staging of utility diversions
- Coordinate utility designs with other design packages and work to resolve clashes between disciplines, including other utilities
- Maintain Project records including design milestones
- Ensure that each utility design is consistent with asset owner specifications
- Ensure that as-built information is collected and included in the 3D design model
- Meet with the relevant asset owners on a regular basis to discuss design progress, program and departures from standards
- Undertake reviews of utility designs against the permanent design.

6.4. CAD Modeller / Surveyor

The responsibilities of the CAD Modeller / Surveyor include:

- Work with design/survey team to ascertain as-built data of located/potholed utilities and newly installed utilities
- Manage and update the utilities model and Combined Utility Drawings (CUDs)
- Assist the Utilities Permit Controller with E&TPs, and the utilities construction team with cross-sections from the model.

6.5. Environment and Sustainability Manager

The Environment and Sustainability Manager is required to assist the Utilities Project Manager as required to identify and mitigate the environmental impacts of utility works. The Environment and Sustainability Manager is also responsible for identifying and attaining any additional approvals required to facilitate utility works.

6.6. Communications and Stakeholder Manager

As required by NSW CoA B1 to B4, community and stakeholder engagement, including management of complaints, will be undertaken in accordance with the CCS.

Where reasonable and feasible route options exist for the utility works, consultation will be undertaken with key stakeholders (including property owners and local businesses). The feedback received from any consultation process will be considered when determining a preferred route.

Community and stakeholders who may be affected by utility works will be notified of the works a minimum of seven days prior to commencement.





7. Quality Management

7.1. ITPs and Quality Documentation

All utility relocation works shall be captured with relevant ITPs and checklists as required depending on the type of relocation.

The standard of all utility ITPs shall be as per TfNSW G7 and M209 unless an asset owner specific ITP is required for a particular ITP. Individual ITPs will not be created for each utility relocation however each relocation will have its own G7 ITP.

Sydney Water- Sydney Water will be an exception to the above where they shall have their own stamped specific ITPs for the case numbers developed for the project and will not utilise a standard G7 ITP.

Endeavour Energy and Ausgrid-All electrical relocations shall have the relevant network standard ITPs and checklists for all relocations as per Endeavour Energy and Ausgrid requirements.

Two of the more significant relocations shall have specific ITPs created for the relocations as per asset owner requirements:

- Viva Relocation- Viva Relocation scope shall have specific Viva ITPs created as per Viva specifications and requirements in line with Australian Standards and Viva PIP procedures and specifications.
- Ausgrid 132kV relocation shall have specific Ausgrid ITPs as per the relevant network standards for transmission works.



8. Review and improvement

8.1. Continual improvement

Continual improvement of this Strategy will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets. The continual improvement process will be undertaken on at least an annual basis to ensure that John Holland:

- Identify opportunities for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvements
- Make comparisons with objectives and targets.

8.2. Strategy review and amendment

Ongoing review of this Strategy, and any modifications or refinements to the PLR2 – EW project scope, may result in the need to update or revise this Strategy.

Minor revisions of the Strategy may be approved by the ER, whilst revisions not considered minor in nature will be submitted to the Planning Secretary for approval in accordance with NSW CoA E130. A copy of the updated Strategy and changes will be distributed to all relevant stakeholders.



Appendix A Secondary environmental requirements

Secondary requirements that are related, but not specific to, the development of this Strategy are outlined in this appendix. Cross references are provided to indicate where the requirements are addressed in this Strategy or other Project management documents. This includes:

- Secondary NSW CoA which are listed in Table 9
- Secondary UMM which are listed in Table 10.





Table 9 – Secondary Conditions of Approval

NSW CoA	Condition	Reference	How addressed
B6	The following information must be available to facilitate community enquiries and manage complaints one month before the commencement of Work and for 12 months following the completion of construction:	CCS CEP	The requirements of this NSW CoA will be satisfied by TfNSW prior to commencement of Work and maintained for 12 months following completion of construction. Refer to the CCS and CEP for further details on communication processes.
	(a) a 24- hour telephone number for the registration of complaints and enquiries about the CSSI;		
	(b) a postal address to which written complaints and enquires may be sent;		
	(c) an email address to which electronic complaints and enquiries may be transmitted; and		
	(d) "a mediation system for complaints unable to be resolved.		
	This information must be accessible to all in the community regardless of age, ethnicity, disability or literacy level.		
B7	A Complaints Register must be maintained recording information on all complaints received about the CSSI during the carrying out of any Work and for a minimum of 12 months following the completion of construction. The Complaints Register must record the:	Community Communication Strategy	The requirements of this NSW CoA will be satisfied by TfNSW prior to commencement of Work and maintained for 12 months following completion of construction. Refer to the Community Communication Strategy for further details on the Complaints Register.
	(a) number of complaints received;		
	(b) the date and time of the complaint;		
	(c) the method by which the complaint was made;		
	(d) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;		
	(e) nature of the complaint;		
	(f) means by which the complaint was addressed and whether resolution was reached, with or without mediation; and		
	(g) "if no action was taken, the reason(s) why no action was taken.		





NSW CoA	Condition	Reference	How addressed
E46	All work undertaken for the delivery of the CSSI, including those undertaken by third parties (such as utility relocations), must be coordinated to ensure respite periods are provided. This must include: (a) rescheduling work to provide respite to impacted noise sensitive land use(s) so that the respite is achieved in accordance with the respite periods identified in Condition E34(c); or (b) the provision of alternative respite or mitigation to impacted noise sensitive land use(s); and (c) the provision of documentary evidence to the AA in support of any decision made in relation to respite or mitigation. The consideration of respite must also include all other CSSI, State Significant Infrastructure and State Significant Development projects which may cause cumulative and/or consecutive impacts at receivers affected by the delivery of the CSSI.	CCS Noise and Vibration Management Plan (NVMP) OOHW Protocol	Any utility works undertaken outside of standard construction works will be coordinated to ensure respite periods detailed in the OOHW Protocol are adhered to, and all mitigation measures detailed in the NVMP are implemented.
E47	Mitigation measures such as temporary alternative accommodation or other agreed mitigation measures, must be offered / made available to residents affected by out-of-hours work (including where utility works are being undertaken for the CSSI or under a road occupancy licence) where the construction noise levels at the property boundary are between: (a) 10:00pm – 7:00am, Monday to Friday (b) 10:00pm Saturday – 8:00am Sunday (c) 6:00pm Sunday and public holidays – 7:00am the following day unless the following day is a Saturday, then to 8:00am; are predicted to exceed the NML by 25 dB(A) or are greater than 75 dB(A) (Laeq(15min)), whichever is the lesser; and the impact is planned to occur for more than two (2) nights over a seven (7) day rolling period. The NML must be reduced by 5 dB(A) where the noise contains particularly annoying characteristics and may be increased by 10 dB(A) if the property has received at-property acoustic treatment	CCS NVMP OOHW Protocol	Any utility works undertaken outside of standard construction works will be coordinated to ensure respite periods detailed in the OOHW Protocol are adhered to, and all mitigation measures detailed in the NVMP are implemented.
E83	The Proponent must identify the utilities and services (hereafter “services”) potentially affected by construction to determine requirements for diversion, protection and/or support. Alterations to services must be determined by negotiation between the Proponent and the service providers. The Proponent in consultation with service providers must ensure that disruption to services resulting from the CSSI is avoided where practical and advised to customers.	Section 3 Section 3.3	Ongoing consultation with utility providers will be undertaken by the John Holland Utilities Team to ensure this NSW CoA is adhered to.





NSW CoA	Condition	Reference	How addressed
E84	Access to all utilities, open space and properties must be maintained during Construction, where practicable, unless otherwise agreed with the relevant utility owner, landowner or occupier.	CCS Construction Traffic, Transport and Access Management Sub- plan	Any changes to availability of utilities will be undertaken in consultation with relevant utility owners, landowner or occupier.
E131	Nothing in this approval permits the carrying out of any utility work not required for the purpose of the CSSI.	Section 3	Only utility works required to be undertaken for the CSSI will be completed as part of PLR2 – EW.

Table 10 – Secondary Updated Mitigation Measures

UMM	Measure	Reference	How addressed
NV14	A survey will be undertaken to identify vibration sensitive receivers (including buildings, structures, utilities, remediation infrastructure, heritage items or sites and equipment) within 200 metres of the project site. Vibration criteria will be identified based on relevant standards or manufacturer's data. Where vibration criteria are not available, conservative criteria will be used. Appropriate measures will be developed and implemented where potential exceedances of the criteria are identified.	NVMP Land Use Survey	A detailed Land Use Survey will be undertaken and included in the NVMP, which will detail the process for identifying appropriate vibration criteria.
LP9	The location of all utilities and services, and requirements for access to, diversion, protection and/or support, will be confirmed prior to construction. This will include (as required) undertaking utilities investigations, including intrusive investigations, and consultation and agreement with service providers.	Section 3	Utility investigations are planned to be undertaken prior to construction that has the potential to impact the utility or access to the utility.
LV5	The design will continue to be refined to avoid or minimise impacts on trees. Any tree within the project site boundary, that will not be directly impacted by infrastructure or utility works, will be assessed for retention through careful consideration of design and construction methods. This will include consideration of the following options: - operational requirements in relation to tree locations - adjustments to the design to avoid impacting trees (such as opportunities for localised narrowing of footpaths, use of porous pavement) - reduction in the standard offset distances required for underground services - consideration of the health of each tree, including its vigour and likely ability to survive in-situ pruning or transplanting.		





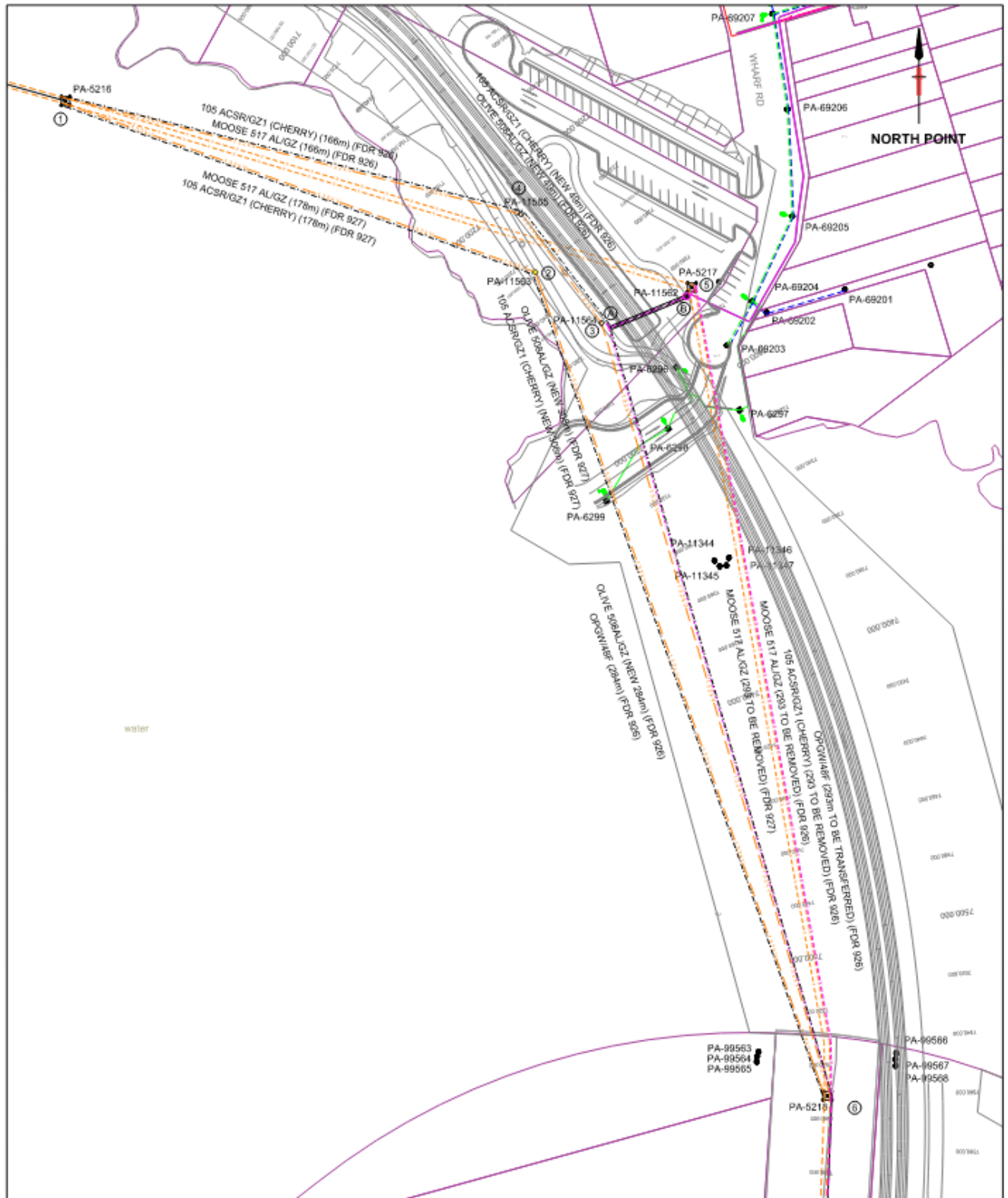
UMM	Measure	Reference	How addressed
HR1	The project will be designed in accordance with <i>Non-Ionising Radiation Protection Guidelines for Limiting Exposure to Time Varying Electric and Magnetic Fields</i> (ICNIRP, 2010) and Australian Standard AS 2067:2016 <i>Substations and high voltage installations exceeding 1 kV</i> to minimise the risk associated with electro-magnetic field exposure.	Section 4	This condition is a technical requirement that will be addressed in the detailed design and the relevant Environment and Sustainability Design Review Reports.
HR5	Valve shut downs on the Sydney Water drinking water trunk mains will be undertaken to confirm the condition and functionality of the nearest valves to the project site and whether any repairs or rectification works are required to the existing assets.	Section 4	This condition is a technical requirement that will be addressed in the detailed design and the relevant Environment and Sustainability Design Review Reports.
HR6	An incident and emergency response plan will be prepared to include the process to be followed in the event of an incident involving critical utilities such as the Sydney Water drinking water trunk mains, Jemena high pressure gas pipelines and fuel pipelines. The plan will be developed in consultation with the service providers and incorporate the findings from the utility investigations, the condition assessment of the Sydney Water drinking water trunk mains, and the safety management study (mitigation measure HR7).	Incident and Emergency Response Plan	The Incident and Emergency Response Plan will detail appropriate response to any events involving critical utilities.
HR7	A safety management study will be undertaken to identify potential risks, including those associated with proposed alterations, to the gas and fuel pipelines in accordance with Australian and New Zealand Standard AS/NZS 2885.6:2018 <i>Pipelines—Gas and liquid petroleum, Part 6: Pipeline safety management</i> . The outcomes of the safety management study will be incorporated in construction planning and design development.	Safety Management Study	A Safety Management Study will be undertaken as part of the detailed design documentation to identify potential risks, including those associated with proposed alterations, to the gas and fuel pipelines.





Appendix B Novated Utility Relocation Designs Summary

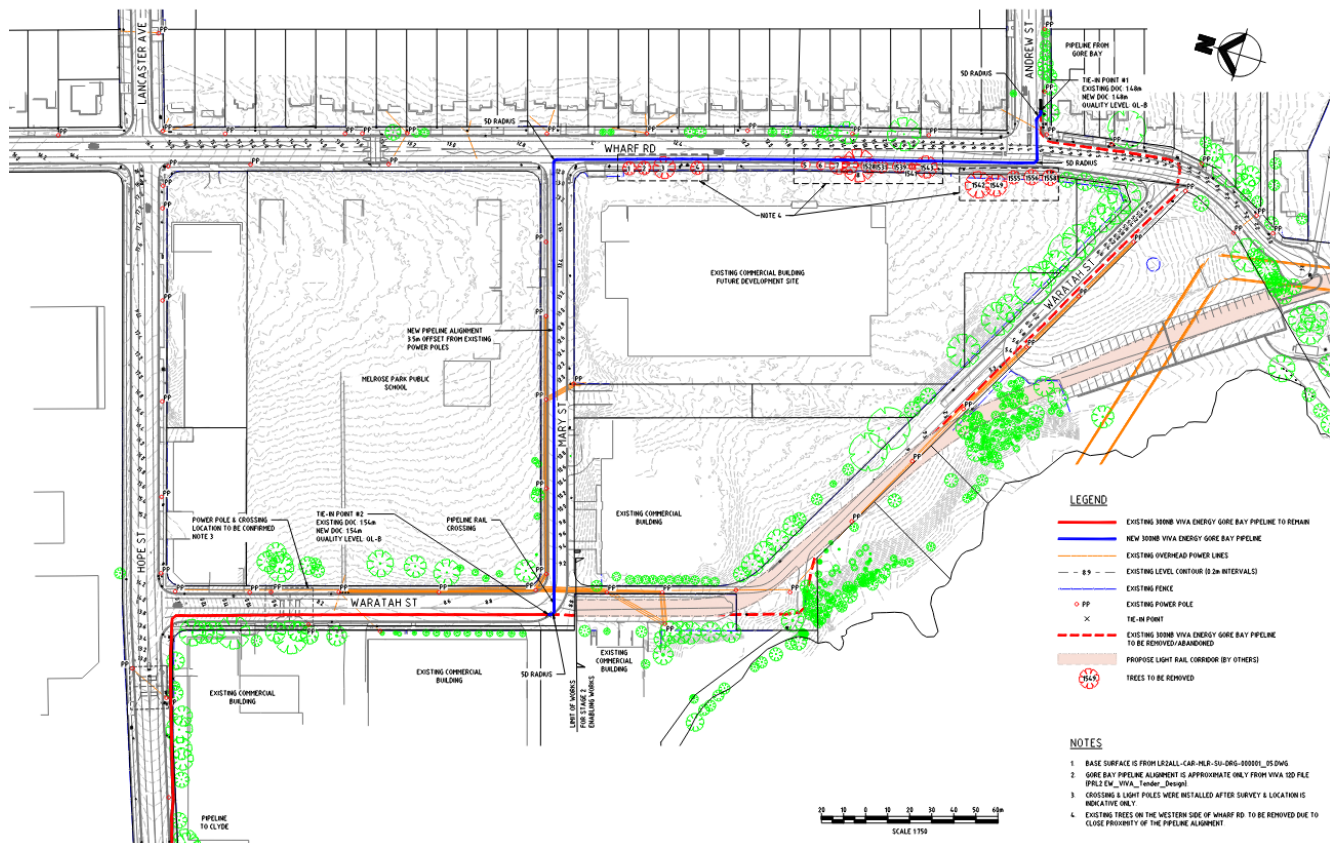
(a) Ausgrid 132kV Overhead Relocation



OVERALL CONSTRUCTION PLAN
 SCALE 1:1000



(b) Viva Energy Australia Fuel Main Relocation





Appendix C Consultation Report

