



Planning Approval Consistency Assessment Form

SM-17-000001 11

Metro Body of Knowledge (MBoK)

Assessment name:	Sydney Metro West – Soil Resistivity Testing Outside Approved Construction Boundary
Prepared by:	GLC
Prepared for:	Sydney Metro
Assessment number:	GLC03
Status:	Final (October 2022)
Version:	C
Planning approval:	SSI 10038
Date required:	October 2022
iCentral number:	SM-22-00414529
© Sydney Metro 2020	

For information – do not alter:

Applicable to:	Sydney Metro
Document Owner:	Director, Environment, Sustainability & Planning
System Owner:	Deputy Chief Executive, Operations, Customer & Place-making
Status:	Final
Version:	3.0
Date of issue:	27 November 2020
© Sydney Metro 2020	

Table of contents

1. Existing Approved Project	3
2. Description of Proposed Development/Activity/Works	8
3. Timeframe.....	14
4. Site Description.....	14
5. Site Environmental Characteristics	18
6. Justification for the proposed works.....	22
7. Environmental Benefit	22
8. Control Measures.....	22
9. Climate Change Impacts.....	22
10. Impact Assessment – Construction.....	23
11. Impact Assessment – Operation	30
12. Consistency with the Approved Project.....	33
13. Other Environmental Approvals	34
Author certification	35
Appendix A – SRT Locations	37
Appendix B – Soil Resistivity Test Plan	38
Appendix C – Location of Heritage Items.....	39
Appendix D – Aboriginal and Non-Aboriginal Heritage Due Diligence	40
Appendix E – SRT Environmental Characteristics	41
Appendix F – Predictive Noise Model.....	62
Appendix G – Acid Sulfate Soil Risk Map	63
Appendix H – Native Vegetation Map	64
Appendix I – Biodiversity Briefing Note	65

The Planning Approval Consistency Assessment Form should be completed in accordance with [SM-17-00000103 Planning Approval Consistency Assessment Procedure](#).

1. Existing Approved Project

Planning approval reference details (Application/Document No. (including modifications)):

- SSI-10038 Sydney Metro West – Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process for Sydney Metro West)
- SSI-10038-Mod-1 The Sydney Metro West Westmead to The Bays and Sydney CBD - Modification 1 (Administrative Modification)
- SSI-10038-Mod-2 The Sydney Metro West Westmead to The Bays and Sydney CBD – Modification 2 (Clyde Stabling and Maintenance Facility)
- SSI-10038-Mod-3 The Sydney Metro West Westmead to The Bays and Sydney CBD - Modification 3 (Administrative Modification)

Date of determination:

- SSI 10038: 11 March 2021
- SSI-10038-Mod-1: 28 July 2021
- SSI-10038-Mod-2: 03 June 2022
- SSI-10038-Mod-3: 04 July 2022

Type of planning approval: Critical SSI (Division 5.2 “State significant infrastructure”, *Environmental Planning and Assessment Act 1979*)

Approved Project

The approved project includes the Concept and major civil construction works between Westmead and The Bays (Stage 1 of the planning approval process). This Consistency Assessment relates to Stage 1 works, as described below.

Approved Major Civil Construction Work for Sydney Metro West between Westmead and The Bays

Approved major civil construction works for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process) includes the following. Refer to Section 9 of the Environmental Impact Statement (EIS) for more detail.

- Enabling works, such as demolition, utility supply to construction sites, utility adjustments and modifications to the existing transport network

- Tunnel excavation including tunnel support activities between Westmead and The Bays
- Station excavation for new metro stations at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock and The Bays
- Shaft excavation for services facilities
- Civil work for the stabling and maintenance facility at Clyde.

Stage 1 Construction Sites and Tunnel Alignment

Sydney Metro West - Stage 1 involves major civil construction works for Sydney Metro West (Westmead to The Bays) at nine surface construction sites, including:

- Westmead Metro Station
- Parramatta Metro Station
- Clyde Maintenance and Stabling Facility
- Silverwater Services Facility
- Sydney Olympic Park Metro Station
- North Strathfield Metro Station
- Burwood North Metro Station
- Five Dock Metro Station
- The Bays Metro Station

The location and layout of these construction sites are described in Section 9 of this EIS, with the exception of:

- Westmead Metro Station which received approval for a revised construction site boundary in Consistency Assessment SMW04: Sydney Metro West – Revised Westmead Station Box (endorsed 16 February 2022); and
- Clyde Maintenance and Stabling Facility which received approval for, amongst other things, a revised layout and expanded construction site boundary in Consistency Assessment SMW01: Sydney Metro West – Tunnel boring machine drive strategy and future Rosehill crossover (endorsed 13 September 2021) and SSI-10038-Mod-2.

The location of Stage 1, including the underground tunnel and surface construction sites for the stations and services facilities are shown on Figure 1 below.

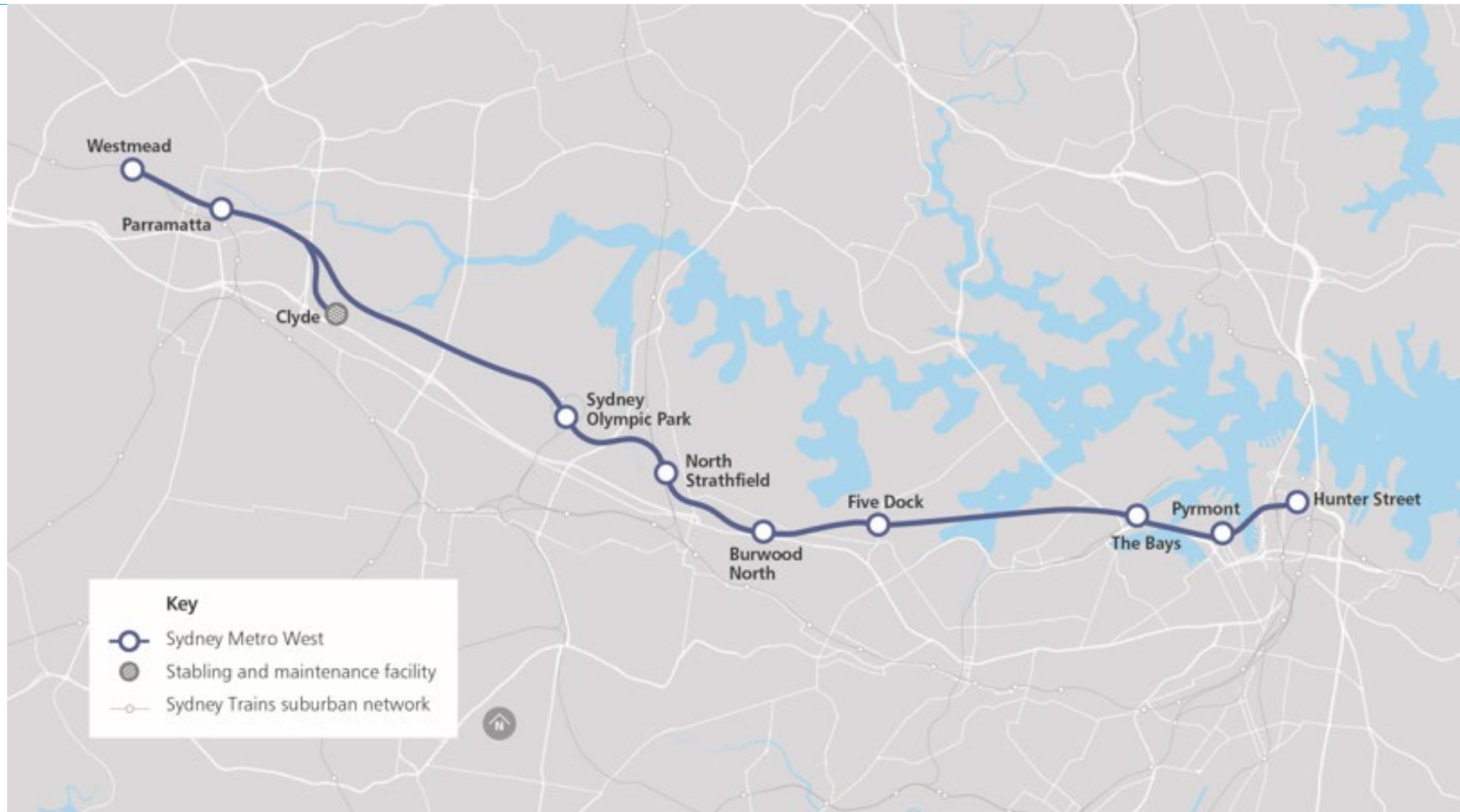


Figure 1: Location of Sydney Metro West - Stage 1

Stage 1 Delivery Phases

The Sydney Metro West - Stage 1 construction works were split into seven delivery phases, including:

- Phase A – Power Enabling Works
- Phase B1 – Central Tunnelling Early Works
- Phase B2 – Central Tunnelling Main Works
- Phase C – Parramatta and Clyde Enabling Works
- Phase D – Greater Sydney Road Works
- Phase E – Existing Rail Corridor Enabling Works
- Phase F – Western Tunnelling Works

This Consistency Assessment has been prepared to support a scope of works for soil resistivity testing (SRT), which is one aspect of the Detailed Site Investigations (DSI) required for Phase F – Western Tunnelling Works. This phase includes nine kilometres of twin railway tunnels between Sydney Olympic Park and Westmead, as well as station box excavation works, associated support works, retrieval of Tunnel Boring Machines, and construction works for the Clyde Maintenance and Stabling Facility / Rosehill Services Facility.

All SRT sites (except SRT8) (refer Figure 2 below) are located outside the surface construction site boundaries (but in the vicinity of the tunnelling alignment) as identified for the approved project. A targeted assessment of the SRT scope of works was not conducted for the approved project, and as such, the existing environment, potential impacts and additional mitigation measures (if any) for these SRT works are subject to the investigations undertaken in this Consistency Assessment.

This Consistency Assessment has been prepared using the approved project information and site descriptions for construction activities between Sydney Olympic Park and Westmead, as documented in the 'Relevant background information' section below.

Relevant background information (including EA, REF, Submissions Report, Director General's Report, MCoA):

This Consistency Assessment has been undertaken for the Sydney Metro West – Stage 1 Concept and major civil construction work for Sydney Metro. This includes consideration of the following planning approval documentation:

- Sydney Metro West - Westmead to The Bays and Sydney CBD (Concept and Stage 1) Environmental Impact Statement (15 April 2020)
- Sydney Metro West - Westmead to The Bays and Sydney CBD (Concept and Stage 1) Submissions Report (20 November 2020)
- Sydney Metro West - Westmead to The Bays and Sydney CBD (Concept and Stage 1) Amendment Report (20 November 2020)

- Sydney Metro West - Westmead to The Bays and Sydney CBD (Concept and Stage 1) Modification 1 - Administrative Modification (28 July 2021)
- Sydney Metro West - Westmead to The Bays and Sydney CBD (Concept and Stage 1) Modification 2 – Clyde Stabling and Maintenance Facility Modification Report (03 June 2022)
- Sydney Metro West - Westmead to The Bays and Sydney CBD (Concept and Stage 1) Modification 3 - Administrative Modification (04 July 2022)
- Consolidated Instrument of Approval (04 July 2022).

All documentation has been published on the Department of Planning and Environment Major Projects website located here (Major Project Number: SSI-10038): <https://www.planningportal.nsw.gov.au/major-projects/project/25631>

Other relevant documentation prepared as part of design development and construction planning include:

- Consistency Assessment SMW01: Sydney Metro West – Tunnel boring machine drive strategy and future Rosehill crossover (endorsed 13 September 2021).
- Consistency Assessment SMW04: Sydney Metro West – Revised Westmead Station Box (endorsed 16 February 2022).
- Consistency Assessment GLC02; Sydney Metro West – Clyde Dive and Portal Structure (endorsed 2 August 2022).

All proposed works identified in this assessment would be undertaken in accordance with the mitigation measures identified in the EIS, Submissions Report, Amendment Report and the Ministers Conditions of Approval (MCoA).

2. Description of Proposed Development/Activity/Works

The purpose of this Consistency Assessment is to assess the location and methodology for the proposed SRT sites, as shown on Figure 2 below. Refer to Appendix A for more detailed location and site context for each SRT site.

The proposed SRT works are required to gather data for the specification of earthing systems for the cross-passages. The SRT determines the conductivity of the soil and the data is required to design the electrical grounding for tunnel design.

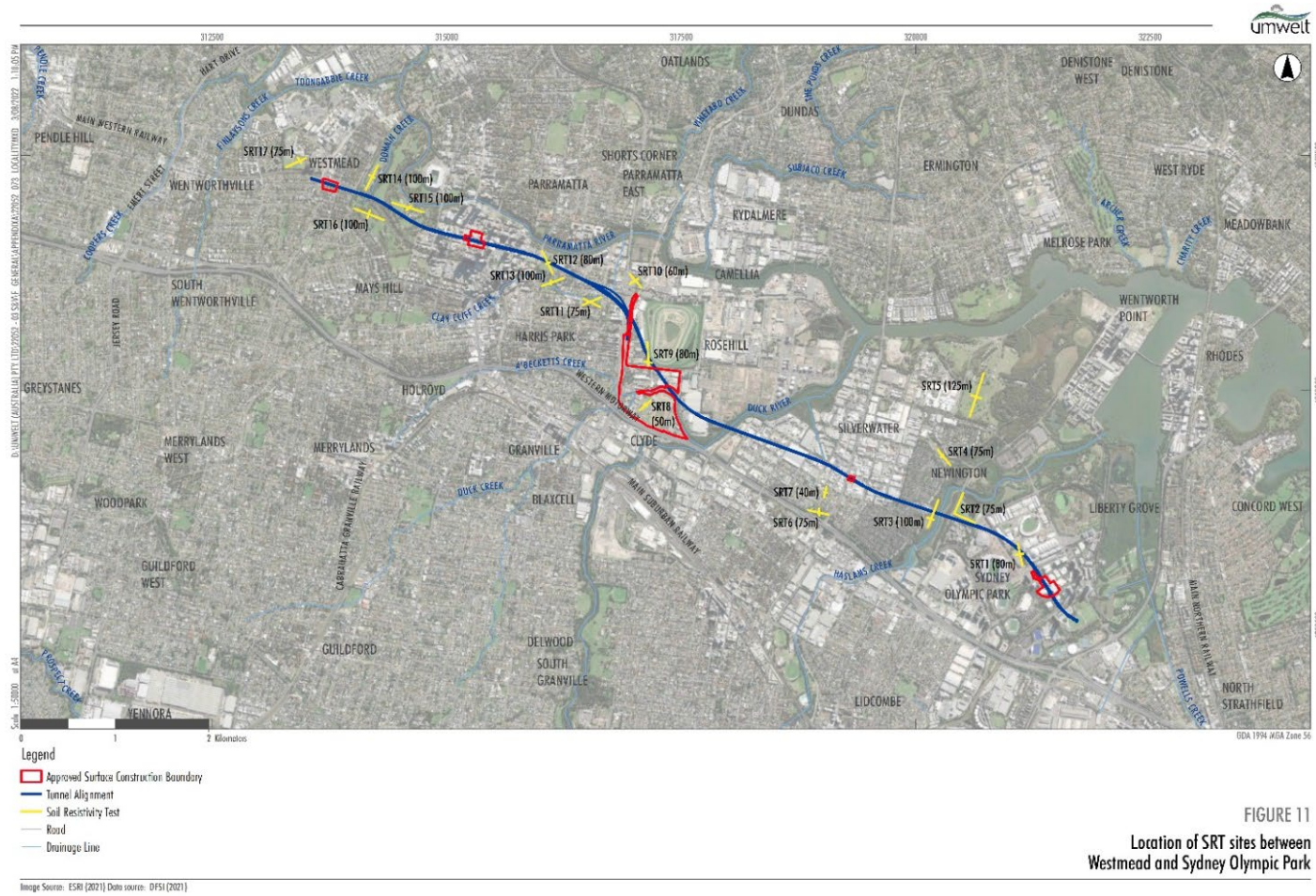


FIGURE 11
Location of SRT sites between
Westmead and Sydney Olympic Park

Figure 2: Location of SRT sites between Westmead and Sydney Olympic Park

Proposed Methodology

An Earthing Soil Resistivity Test Plan was prepared for the SRT scope of works, which is attached as Appendix B. This document details the methodology approach and process for selecting the locations for SRT sites. A summary of the SRT methodology and equipment required is provided below.

The Wenner 4 pin method shall be used in accordance with *IEEE 80 - Guide for Safety in AC Substation Grounding* for SRT using the AEMC 6472 earth testing meter and associated test electrodes and leads. The Wenner method is a simple test where earth electrodes are installed in a straight line. These electrodes are in the form of short steel rods which are pushed or hammered into the soil. The length of the rod in the soil is approximately 200mm deep (i.e. the size of a standard tent peg), and as such, no excavation of the soil is required. The SRT sites will be small, temporary work areas located near a cross passage or cross passage with sump. Hand tools will be used to install the earth electrodes (see Figure 3 and Figure 4 below).

All locations for the SRT are within parkland and grassed areas, either on public or private property. At each site, the spacings between the rods is gradually increased, such that approximately 10 tests are conducted over different spacings. Testing at each site is minor in duration (i.e. a few minutes each site), as a very low current is driven through the circuit. The initial spacing sees the rods placed along a 2 metres (m) (approx.) line. The final spacing is indicated by the yellow line on the figures in Appendix A of this Consistency Assessment where the rods may be spaced up to 200m apart, connected by the cable leads. The rods are removed after the test is completed.

Each work site will be in operation for less than one day. In total, the SRT works will take approximately 5-8 days to complete over all the sites.

Public safety measures and signage will be used at each site to reduce the potential for localised impacts. Orange safety cones will be placed around the test site to demarcate potential trip hazards. Appropriate signage will be used at each site to notify the public of the proposed works.

In summary, the methodology for the SRT works is as follows:

1. Site establishment, including placing works signage and pedestrian signage.
2. Install earth electrodes in a straight-line using hand tools. The installation method is similar to putting in tent peg.
3. Place witches hats over the electrodes to ensure public safety.
4. Undertake required tests.
5. Remove electrodes from soil.
6. Remove signage from work area.

The following equipment will be required:

- Light vehicles
- Hand tools
- Hand-held testing machine
- AEMC equipment charged
- 4 x earth stakes
- 2 x long leads
- 4 x 4m leads
- 2 x hammers
- 2 x buckets
- 2 x brush and shovel
- Health and safety documentation (i.e. SWMS/JSEA)
- Computer
- Camera
- Tape measure
- Measurement sheets



Figure 3: Example of an electrode used for soil resistivity testing



Figure 4: Example of a soil resistivity testing set up

3. Timeframe

The SRT works will take approximately 5-8 days to complete over all sites. It is expected that these works will be undertaken in October 2022, dependent on the approval timeline for this Consistency Assessment.

The SRT are anticipated to occur within the approved standard hours for the project. Should any out of hours be required, all OOHW his would be managed in accordance with the Project Noise and Vibration Management Plan, the Project EPL 21676 and the Out-of-hours Work (OOHW) Protocol.

4. Site Description

There are 17 SRT sites between Westmead and Sydney Olympic Park, all of which fall within the City of Parramatta Local Government Area. Refer to Table 1 for the site description at each SRT location and Appendix A for figures containing SRT locations. The land zoning for each site is illustrated on Figure 5.

Table 1: Site Description

SRT ID	Site Description
SRT1	This site is located within Cathy Freeman Park in Sydney Olympic Park, approximately 120m northwest of the surface construction site boundary for Sydney Olympic Park Metro Station. Stadium Australia is located to the west of the site, and Sydney Showground to the north, east and south. The site is bound by Grand Parade to the north, Showground Road to the east, Dawn Fraser Avenue to the south and Olympic Boulevard to the west. The site is situated within 'B4 – Mixed Use' zoned land under the State Environmental Planning Policy (Precincts—Central River City) 2021.
SRT2	This site is located within The Pyramid parkland in Sydney Olympic Park, approximately 800m northwest of the surface construction site boundary for Sydney Olympic Park Metro Station. Haslam Creek is located to the north and west of the site, industrial premises to the south and Qudos Bank Arena to the east. The site is bound by Hill Road to the west and Pondage Link to the south. The site is situated within 'RE1 – Public Recreation' and 'C2 - Environmental Conservation' zoned land under the State Environmental Planning Policy (Precincts—Central River City) 2021.
SRT3	This site is located within Haslam Field in Sydney Olympic Park, approximately 1.18km northwest of the surface construction site boundary for Sydney Olympic Park Metro Station. Haslam Creek is located to the north, east and south of the site, and Newington Public School to the west. The site is situated within 'RE1 – Public Recreation' zoned land under the State Environmental Planning Policy (Precincts—Central River City) 2021.
SRT4	This site is located within the Pierre De Coubertin Dog Park in Newington, approximately 1.43km northwest of the surface construction site boundary for Sydney Olympic Park Metro Station. Haslam Creek is located to the east of the site, residential buildings to the north and south, and Pierre De Coubertin Dog Park to the west. The site is bound by Avenue of Oceania to the north and Newington Boulevard to the west. The site is situated within 'RE1 – Public Recreation' and 'R3 – Medium Density Residential' zoned land under the Auburn Local Environmental Plan 2010.

SRT5	<p>This site is located within the Newington Armory in Sydney Olympic Park, approximately 1.75km northwest of the surface construction site boundary for Sydney Olympic Park Metro Station. The Newington Armory is located to the north of the site, Millennium Parklands to the east, Silverwater Correctional Complex to the west and Holker Street to the south. The site is bound by Jamieson Street to the west and Holker Street to the south.</p> <p>The site is situated within 'RE1 – Public Recreation' zoned land under the State Environmental Planning Policy (Precincts—Central River City) 2021.</p>
SRT6	<p>This site is located within Deakin Park in Silverwater, approximately 1.48km southeast of the surface construction site boundary for Clyde Maintenance and Stabling Facility. Residential properties are present to the north, west and east of the site, and the Western Motorway to the south. The site is bound by Beaconsfield Street to the north, Silverwater Road to the east and the Western Motorway to the south.</p> <p>The site is situated within 'RE1 – Public Recreation' and 'R3 – Medium Density Residential' zoned land under the Parramatta Local Environmental Plan 2011.</p>
SRT7	<p>This site is located within Hume Park in Silverwater, approximately 1.55km east of the surface construction site boundary for Clyde Maintenance and Stabling Facility. The Sydney Korean Catholic Church is located to the west of the site, residential properties to the south and east, and industrial premises to the north. The site is bound by Carnarvon Street to the north and Asquith Street to the south.</p> <p>The site is situated within 'RE1 – Public Recreation' and 'R3 – Medium Density Residential' zoned land under the Parramatta Local Environmental Plan 2011.</p>
SRT8	<p>This site is located in Clyde, within the surface construction site boundary for Clyde Maintenance and Stabling Facility within the former Sydney Speedway. Duck Creek / A'Becketts Creek is located to the north of the site, the former Sydney Speedway to the east and industrial premises to the west and south. The site is bound by Wentworth Street to the west.</p> <p>The site is situated within 'RE2 – Private Recreation' zoned land under the Parramatta Local Environmental Plan 2011.</p>
SRT9	<p>This site is located in Rosehill, within the Rosehill Gardens Racecourse, approximately 35m north of the surface construction site boundary for Clyde Maintenance and Stabling Facility. Rosehill Gardens Racecourse is located north and east of the site, horse stables for the Rosehill Gardens Racecourse to the west and industrial premises to the south. The site is bound by Unwin Street to the south.</p> <p>The site is situated within 'RE2 – Private Recreation' zoned land under the Parramatta Local Environmental Plan 2011.</p>
SRT10	<p>This site is located within cleared grassland in Rosehill, approximately 100m north of the surface construction site boundary for Clyde Maintenance and Stabling Facility (specifically the dive site). Industrial premises are located north of the site, car parking for the Rosehill Gardens Racecourse to the south, the former Camellia Railway Station to the east and the Rosehill Bowling Club to the west. The site is bound by Grand Avenue North to the north, James Ruse Drive to the west, Grand Avenue to the south and an unnamed local road to the east.</p> <p>The site is situated within 'B5 – Business Development' zoned land under the Parramatta Local Environmental Plan 2011.</p>
SRT11	<p>This site is located within the Elizabeth Farm estate in Rosehill, approximately 320m west of the surface construction site boundary for Clyde Maintenance and Stabling Facility (specifically the dive site). Clay Cliff Creek is located north of the site, Elizabeth Farm museum to the south, residential properties to the east and an aged care facility to the west. The site is bound by Alfred Street to the west, Alice Street to the south and Arthur Street to the east.</p> <p>The site is situated within 'RE1 – Public Recreation' zoned land under the Parramatta Local Environmental Plan 2011.</p>

<p>SRT12</p>	<p>This site is located within Robin Thomas Reserve in Parramatta, approximately 625m east of the surface construction site boundary for Parramatta Metro Station. Parramatta River is located north of the site, the Guardian Childcare and Education facility to the east of the site, residential properties and local businesses to the south of the site, and Albion Hotel to the west of the site. The site is bound by George Street to the north, Harris Street to the west and Hassall Street to the south.</p> <p>The site is situated within 'RE1 – Public Recreation' and 'R3 – Medium Density Residential' zoned land under the Parramatta Local Environmental Plan 2011.</p>
<p>SRT13</p>	<p>This site is located within Experiment Farm Reserve, traversing across the boundaries between Parramatta and Harris Park, approximately 745m southeast of the surface construction site boundary for Parramatta Metro Station. Clay Cliff Creek intersects the site. Residential properties are present to the west and south of the site, along Harris Street and Ruse Street. Parramatta & District Historical Society is located to the east of the site and James Ruse Reserve to the north of the site. The site is bound by Parkes Street to the north.</p> <p>The site is situated within 'RE1 – Public Recreation', 'W1 – Natural Waterways' and 'IN1 – General Industrial' zoned land under the Parramatta Local Environmental Plan 2011.</p>
<p>SRT14</p>	<p>This site is located within Parramatta Park, Parramatta, on the northern side of Railway Parade, approximately 305m northeast of the surface construction site boundary for Westmead Metro Station. The site is located within the 'West Domain' park, with Parramatta River to the east of the site and residential properties along Park Avenue to the west of the site. The site is bound by West Domain Avenue to the west and south.</p> <p>The site is situated within 'RE1 – Public Recreation' zoned land under the Parramatta Local Environmental Plan 2011.</p>
<p>SRT15</p>	<p>This site is located within Parramatta Park, Parramatta, on the northern side of Railway Parade, approximately 615m east of the surface construction site boundary for Westmead Metro Station. Parramatta River is located to the north of the site, 'Old Government House' to the south of the site and Pavilion Flat park to the east. The site is bound by Long Avenue to the west and Federal Avenue to the south.</p> <p>The site is situated within 'RE1 – Public Recreation' zoned land under the Parramatta Local Environmental Plan 2011.</p>
<p>SRT16</p>	<p>This site is located within Parramatta Park, Parramatta, on the southern side of Park Parade, approximately 270m southeast of the surface construction site boundary for Westmead Metro Station. The site is bound by Park Parade to the north, a local road accessing Parramatta Park to the east, as well as the rear of residential properties to the south and west.</p> <p>The site is situated within 'RE1 – Public Recreation' zoned land under the Parramatta Local Environmental Plan 2011.</p>
<p>SRT17</p>	<p>This site is located in Westmead, approximately 290m northwest of the surface construction site boundary for Westmead Metro Station. The site is situated within the school sporting grounds for Mother Teresa Primary School and Parramatta Marist High School (both of which have buildings located to the north of the site), bound by Alexandra Avenue to the south and Western Sydney University (Westmead campus) to the east. There are several small retail businesses and residential buildings along Bridge Road to the west.</p> <p>The site is situated within 'SP2 – Educational Establishment' zoned land under the Parramatta Local Environmental Plan 2011.</p>

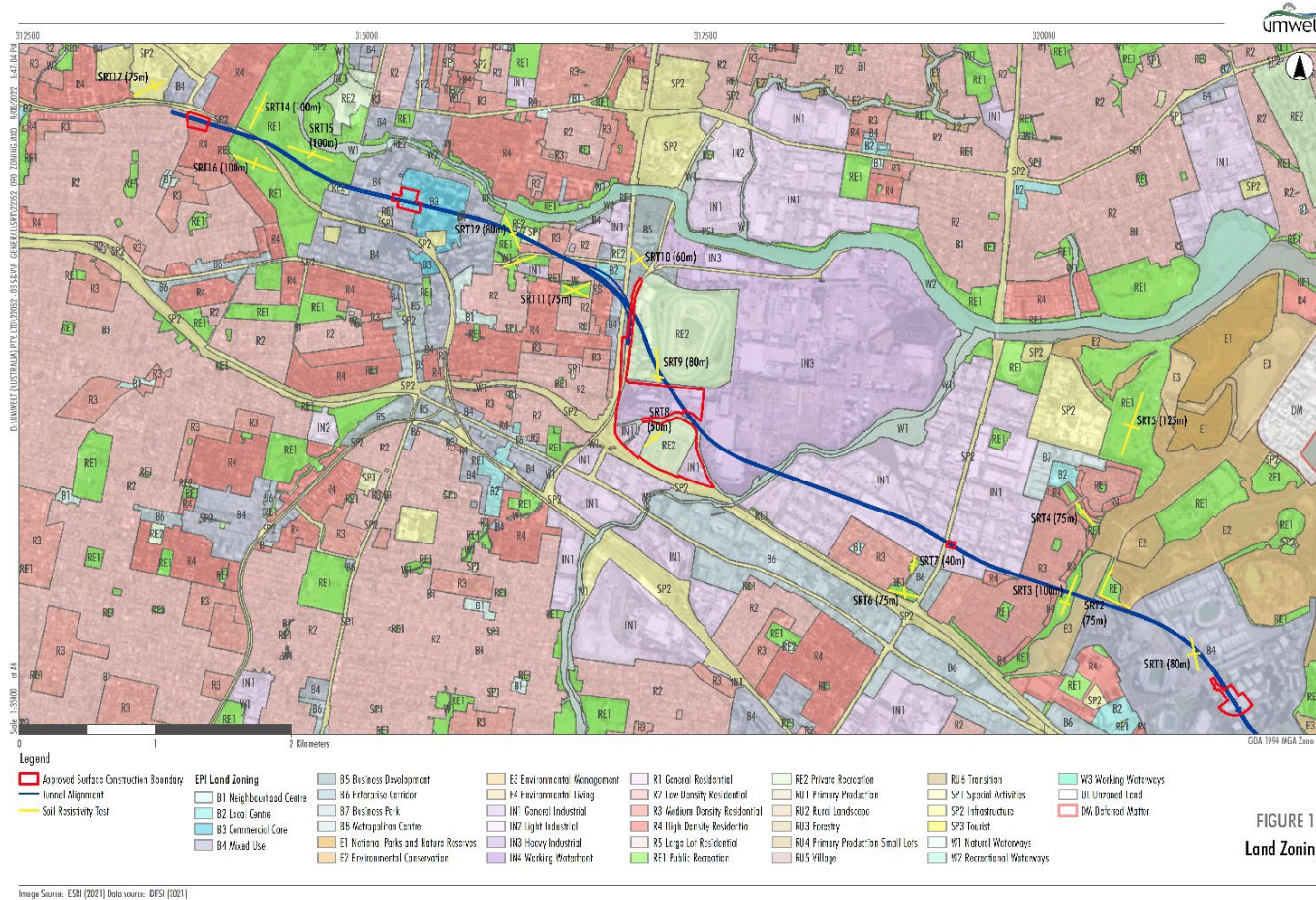


FIGURE 14
Land Zoning

Figure 5: Land Zoning

5. Site Environmental Characteristics

The proposed SRT sites are generally located in proximity to the tunnel alignment between Westmead to Sydney Olympic Park. As these sites (except SRT8) are located outside the surface construction site boundaries, environmental characteristics for each SRT site have not been previously described as part of the approved project.

A desktop assessment, review of the EIS and supporting assessments, as well as a site inspection in July 2022 at publicly assessable SRT locations was undertaken to understand the existing environment for each site and potential impacts associated with the proposed works.

A Heritage Due Diligence Assessment was also undertaken to understand the potential impacts of the proposed SRT works on the listed heritage items and Aboriginal sites within the vicinity of the proposed works, which are identified in Appendix C of this Consistency Assessment. The full Heritage Due Diligence Assessment is attached as Appendix D of this Consistency Assessment.

The surrounding environmental characteristics is described for each SRT site in Appendix E of this Consistency Assessment but summarised below for the broader SRT scope of works.

Land Use

A review of the NSW Spatial Services Historical Imagery Viewer was undertaken in August 2022 to understand the historic and current land use for each site.

The land surrounding these sites were typically used for agricultural purposes and residential areas prior to the 1950s. Parramatta CBD and Sydney Olympic Park gradually developed into commercial precincts leading up to the early 2000s. Areas around Westmead and Silverwater developed into higher density residential areas. The land surrounding the SRT sites in Clyde and Rosehill were historically used as racecourses (for horses and vehicles) and developed into industrial areas between the 1950s and 1970s.

Currently, the majority of the SRT sites sit within public grasslands surrounded by residential areas.

Non-Aboriginal Heritage

A review of the following publicly available online databases was undertaken in August 2022:

- Australian Heritage Database
- NSW State Heritage Inventory (SHI)
- Schedule 5 of relevant Local Environmental Plans (LEP)

Several SRT sites are located within Local, State, National or World heritage areas, which are illustrated in Appendix C and assessed in Appendix D. In summary, the following SRTs are located within a curtilage identified as having non-Aboriginal heritage significance:

Australian Convict Sites (Old Government House and Domain) (World heritage - 106209)

- SRT 14, SRT15

Sydney Cultural Crescent Rock Art (National heritage (Indigenous - Assessment initiated by AHC) – 106369)

- All sites

Hambleton Cottage and Hambleton Reserve (National heritage (Historic – nominated place) - 106307)

- SRT13

Parramatta Park and Old Government House (State heritage - 00596)

- SRT 14, SRT15, SRT16

Experiment Farm Cottage (State heritage - 00768)

- SRT13

Robin Thomas Reserve / Ancient Aboriginal and Early Colonial Landscape (State heritage - 01863)

- SRT12

Elizabeth Farm (State heritage - 00001)

- SRT11

Public Reserve associated with Elizabeth Farm (State heritage - 00285)

- SRT11

Sewage Pumping Station 67 (State heritage – 01643)

- SRT10

Newington Armament Depot and Nature Reserve (State heritage – 01850)

- SRT5

Olympic Cauldron at Sydney Olympic Park (State heritage – 01839)

- SRT1 (directly adjacent)

Dwelling (Local heritage – 145)

- SRT6

Explosives Store (Local heritage – 142)

- SRT4 (directly adjacent)

Aboriginal Heritage

An AHIMS extensive search was undertaken in July 2022. Site cards and archaeological reports were obtained for sites within 50m of an SRT location. Several SRT sites are located within 50m of a registered AHIMS site, which are illustrated on Appendix C and assessed in Appendix D.

In summary, the following SRTs are located within 50m of one or more AHIMS sites: SRT8, SRT10, SRT11, SRT12, SRT13, SRT14, SRT15 and SRT16.

Noise and Vibration

A site inspection was undertaken to observe the existing noise environment at and near each SRT site. No unusual noise emissions were observed and the existing environment was consistent with that of a typical residential area, within a broader commercial landscape. The Noise Management Level (NML) for each Noise Catchment Area (NCA) that the SRT sites reside within, was then established based on Technical Paper 2 (Noise and Vibration) of the EIS. These NML for each NCA (and outputs of the Appendix F noise level calculator, refer Section 10 of this Consistency Assessment) are outlined in Table 2 below. No perceptible existing vibration sources were observed at any of the SRT locations. Several SRT sites were found to be within the minimum distance to nearby sensitive receivers before exceeding the NML, which are highlighted in red.

Table 2: Noise Management Levels (NML) and Receiver Distances

Site	NCA	NML, dBA	Distance from Nearest Sensitive Receiver before exceeding NML, m	Nearest Sensitive Receiver to Site, m
SRT1	NCA08	58	30	35
SRT2	NCA08	58	30	150
SRT3	NCA07	56	36	35
SRT4	NCA07	56	36	30
SRT5	NCA07	56	36	130
SRT6	NCA07	56	36	30
SRT7	NCA07	56	36	20
SRT8	NCA07	56	36	400
SRT9	NCA07	56	36	20
SRT10	NCA07	56	36	0

SRT11	NCA04	61	24	30
SRT12	NCA04	61	24	10
SRT13	NCA04	61	24	20
SRT14	NCA01	58	30	75
SRT15	NCA01 and NCA03	58/68	30/12	15
SRT16	NCA02	59	28	40
SRT17	NCA01	58	30	50

Hydrology

The majority of SRT sites are located within 150m of a southern tributary of Parramatta River, including but not limited to Haslams Creek, Clay Cliff Creek, Duck Creek and A’Becketts Creek.

Soils and Contamination

In addition to reviewing the EIS and supporting documents, a search of the NSW EPA public registers and the NSW DPE eSPADE portal were undertaken in August 2022. The SRT sites are located on the Cumberland Plain, an extensive low-lying plain within the Cumberland Basin, within four soil landscapes; Birrong, Blacktown, Disturbed Terrain and Glenorie. Several sites are located within 250m of an area of potential contamination risk, particularly around Sydney Olympic Park, Clyde and Rosehill. No areas of acid sulfate soil risk were identified for the proposed SRT sites. Refer to Appendix G for areas of acid sulfate soil risk in context to SRT sites.

Biodiversity

A search of the NSW DPE State Vegetation Type Map was undertaken in July 2022. A site inspection was undertaken to observe ecological characteristics for each site. The majority of the SRT sites are located in cleared grassland with scattered native trees. Several SRT sites are located within 50m of a mapped Plant Community Type (PCT), including: SRT2, SRT14, SRT15, SRT16. Refer to Appendix H for the map containing PCTs within 50m of an SRT site. An additional biodiversity assessment has been carried out for SRT2 and SRT3 to address potential impacts to threatened ecological communities and species. The assessment is included in Appendix I.

Traffic, Transport and Access

Traffic, transport and access impacts were not assessed for each SRT site in this Consistency Assessment. As light vehicles will only be used for transport to each SRT site, and access to the SRT sites themselves will be on foot, the impacts are expected to be minimal (if any at all) with appropriate mitigation measures in place. Light vehicles will park in publicly available spots, either kerbside or in a parking lot. Land access agreements will be in place for each of these SRT sites prior to commencement of works.

6. Justification for the proposed works

The proposed SRT works are required to gather data for the specification of earthing systems for the cross-passages. Soil resistivity determines the level of electrical conductivity within the soil. High soil resistivity can impact the design of grounding systems that rely on the flow of electrical currents throughout the soil. Additionally, SRT works can provide information on the depth of bedrock and other geological factors. The results of SRT works will assist in understanding the geotechnical conditions of the tunnel alignment between Westmead and Sydney Olympic Park to inform the design. Without the SRT works occurring these essential engineering inputs will not be available.

7. Environmental Benefit

Due to the minor scope associated with the proposed SRT works, no significant environmental benefits are expected.

8. Control Measures

An Environment Management Plan specific to the proposed SRT works is not required. The Sydney Metro Construction Environmental Management Framework sets out the overall approach to environmental management.

The proposal would also be undertaken in accordance with the mitigation measures and the conditions of approval for the approved Sydney Metro West – Stage 1 project. The proposal would be managed in accordance with the Construction Environment Management Plan (CEMP) and CEMP Sub-plans, which must be produced in accordance with the conditions of approval for the approved project.

9. Climate Change Impacts

No change in climate change risk (as identified in the EIS) will occur as a result of the proposed SRT works.

10. Impact Assessment – Construction

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Flora and fauna	<p>No pruning or removal of any trees or vegetation is proposed under this Consistency Assessment. Tent peg-sized holes will be made in the ground where SRT works are proposed, however this is limited to cleared grassland areas.</p> <p>A biodiversity assessment is included in Appendix I for the proposed works at SRT 2 and SRT 3. Plant Community Types (PCTs) and associated threatened ecological communities (TECs) have been assessed and direct impacts to these PCTs are not expected. Assessments of significance, carried out under the BC Act and EPBC Act for PCT 4023: Coastal Valleys Swamp Oak Riparian Forest, found that the proposed works were unlikely to have a significant impact on biodiversity values within the study area.</p> <p>The assessment also identified two threatened flora species (Narrow-leafed <i>Wilsonia</i> and <i>Zannichellia palustris</i>) and two threatened fauna species (Grey-headed Flying Fox and Green and Golden Bell Frog) as having a high likelihood of occurrence within the study area.</p> <p>Narrow-leafed <i>Wilsonia</i>, <i>Zannichellia palustris</i> and the Green and Golden Bell Frog (GGBF) may be directly impacted when walking to and from site and installing the steel rods, but this likelihood is expected to be very low, with impacts if they do occur being negligible if appropriate mitigation measures are in place. Assessments of significance, carried out under the BC Act and EPBC Act for the GGBF, concluded the works are unlikely to have a significant impact on the GGBF.</p>	<p>At SRT2 and SRT4 a toolbox talk to be undertaken with all site personnel that includes information on the presence of PCT 4023 and threatened species with high likelihood of occurrence. A general inspection would also be undertaken prior to installing each steel rod to ensure no GGBF is nearby.</p> <p>At SRT2 and SRT3 hygiene controls to be implemented for all vehicles, equipment and people working in the study area ((including spray down of shoes before entering the study area) to minimise risk of transfer of frog chytrid fungus and to prevent plant disease or degradation from <i>Phytophthora</i>, Rust Fungi and other weed.</p> <p>The Sydney Metro West – Western Tunnelling Package – Flora and Fauna Management Plan (SMWSTWTP-GLO-1NL-NL000-EO-PLN-000001) will be implemented where applicable, including the procedures to follow when there is an unexpected find.</p>	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
	As such, no additional impacts to flora and fauna are anticipated as a result of the proposed SRT works.				
Water	No additional impacts to the approved project, as the proposed SRT works will not interact with surface or groundwater.	No additional measures required. The Sydney Metro West – Western Tunnelling Package – Soil and Water Management Plan (SMWSTWTP-GLO-1NL-EN-PLN-000001) and Sydney Metro West – Western Tunnelling Package – Groundwater Management Plan (SMWSTWTP-GLO-1NL-EN-PLN-000002) will be implemented where applicable.	Y	Y	
Air quality	No additional impacts to the approved project, as the proposed SRT works will not generate any dust or gaseous emissions which could impact local air quality.	No additional measures required. The Sydney Metro West – Western Tunnelling Package – Air Quality Management Plan (SMWSTWTP-GLO-1NL-NL000-AH-PLN-000001) will be implemented where applicable.	Y	Y	
Noise and vibration	Potential noise and vibrational impacts to nearby sensitive receivers from the proposed SRT works were assessed using a noise level calculator. The output of this calculator is attached as Appendix F. Plant and equipment required to undertake the proposed SRT works, including hand tools and light vehicles, were included in the noise calculator which then predicted noise levels for the proposed SRT activities. A precautionary approach was taken by including all plant and equipment at a single location such that the combined emission of all sources were assessed. The only potential noise sources	The following targeted control measures will be implemented: <ul style="list-style-type: none"> Light vehicles will not idle when not in use, particularly when parked at the site. Personnel undertaking the SRT works will not shout, swear, or use loud stereos / radios while on site. 	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
	<p>associated with the SRT works include use of light vehicles and hand tools.</p> <p>Predicted values were then compared against the NML for each NCA that the SRT sites reside within, as identified in Technical Paper 2 (Noise and Vibration) of the EIS.</p> <p>The results of the noise level calculator identified several SRT sites where the proposed works may exceed the NML at the closest and/or potentially most affected receiver/s, refer Table 2). In summary this included works at SRT3, SRT4, SRT6, SRT7, SRT9, SRT10, SRT12, SRT13, SRT15.</p> <p>However, the duration of any potential impact is very limited as work at each site is scheduled to be completed in one day only. Additionally, noise emissions are expected to be substantially reduced and impacts minimised to negligible levels with the implementation of the control measures documented in this Consistency Assessment. These measures are consistent with those prescribed for the approved project. Hence, no additional impacts to the approved project is anticipated with appropriate mitigations in place.</p> <p>There are no vibration generating activities associated with the SRT works.</p>	<ul style="list-style-type: none"> Personnel undertaking the SRT works will not drop hand tools and metal items while on site. All works will be undertaken during standard construction hours. <p>The Sydney Metro West – Western Tunnelling Package – Noise and Vibration Management Plan (SMWSTWTP-GLO-1NL-NL000-NV-PLN-000001) will be implemented where applicable.</p>			
Indigenous heritage	<p>It is acknowledged that several of the proposed locations for SRT works are located in proximity to registered Aboriginal sites. However, the SRT works are temporary and does not require any ground disturbing works. As such, there is no potential for the works to impact on areas of Aboriginal archaeological potential.</p> <p>Review of the site cards and existing condition of the AHIMS sites where works are proposed was</p>	<p>The relevant control measures identified in the Aboriginal and Non-Aboriginal Heritage Due Diligence Assessment in Appendix D will be implemented, which includes:</p> <ul style="list-style-type: none"> No unauthorised ground disturbing works will be undertaken 	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
	<p>undertaken as part of the Due Diligence assessment in Appendix D, which indicated that the nature of the works is minor, and would not result in impacts to any Aboriginal objects.</p> <p>As such, there will be no additional impacts to the approved project.</p>	<ul style="list-style-type: none"> Vehicle movements and parking should be limited to sealed roads, with parking of vehicles in designated and legal parking spaces All works will be planned to avoid accidental damage to ground surfaces through vehicle or equipment mobilisation All personnel will undertake the WTP project induction prior to commencement of works In the unlikely event that Aboriginal objects are located during the works, all activities must stop in the vicinity and the Sydney Metro Unexpected Heritage Finds Procedure will be implemented (attached in Appendix C of the Aboriginal and Non-Aboriginal Heritage Due Diligence). <p>The Sydney Metro West – Western Tunnelling Package – Heritage Management Plan (SMWSTWTP-GLO-1NL-HE-PLN-000001) will be implemented where applicable.</p>			
Non-indigenous heritage	<p>It is acknowledged that several of the proposed locations for SRT works are within the curtilage for significant and sensitive heritage items, including the World Heritage listed Australian Convict Sites (Old Government House and Domain). However the temporary works would not require the intervention</p>	<p>The relevant control measures identified in the Aboriginal and Non-Aboriginal Heritage Due Diligence Assessment in Appendix D will be implemented, which includes:</p>	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
	with any significant elements of the heritage items within the works locations, nor within the vicinity. As such, there will be no additional impacts to the approved project. The works would not have any impacts on the world or national heritage values and would therefore not require a referral to the Minister under the EPBC Act.	<ul style="list-style-type: none"> All personnel will undertake the WTP project induction prior to commencement of works In the unlikely event that historical relics are located during the works, all activities must stop in the vicinity and the Sydney Metro Unexpected Heritage Finds Procedure will be implemented (attached in Appendix C of the Aboriginal and Non-Aboriginal Heritage Due Diligence). <p>The Sydney Metro West – Western Tunnelling Package – Heritage Management Plan (SMWSTWTP-GLO-1NL-HE-PLN-000001) will be implemented where applicable.</p>			
Community and stakeholder	The majority of SRT sites are located within community infrastructure (on public open space) that is relatively quiet during the day. The sites will not be closed to the public during works, however there is a potential for short-term interference with public use of the space. The potential impact is considered minor as the duration of any potential impact is limited at each site to one day only. In addition, the low impact nature of the work would have minimal effect on other aspects such as noise and visual impacts	<p>No additional measures required. Land access approvals will be sought prior to commencement of works.</p> <p>Consultation by GLC is occurring with Parramatta City Council and stakeholders (including but not limited to Parramatta Park Trust and the Sydney Olympic Park Authority (SOPA)) for SRT works outside the approved construction site boundaries, including SRT works. Updates will be regularly provided through communication streams for the approved project.</p>	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Traffic	The use of light vehicles required to complete the proposed SRT works will not significantly increase the volume of traffic utilising local roads during the day. A maximum of two public parking spaces will be required for light vehicles at each SRT site during the proposed works. As such, no additional impacts to the approved project, as the SRT scope of works only requires light vehicles to transport to and from each site.	No additional measures required. The Sydney Metro West – Stage 1 Construction Traffic Management Framework will be implemented where applicable.	Y	Y	
Waste	No additional impacts to the approved project, as the SRT scope of works will not generate any waste.	No additional measures required. The Sydney Metro West – Western Tunnelling Package – Waste Management Plan (SMWSTWTP-GLO-1NL-NL000-WM-PLN-000002) will be implemented where applicable.	Y	Y	
Social	No additional impacts to the approved project, as the SRT scope of works will not interact with social infrastructure or communities.	No additional measures required.	Y	Y	
Economic	There may be some minor interface with business (eg Rosehill Racecourse Gardens, however the SRT scope of works will have no adverse impact on local businesses or contribute to the economical value of the project.	No additional measures required.	Y	Y	
Visual	There will be minor changes to each SRT site when works are being undertaken, however these will be temporary in nature (i.e. one day to complete works at each site) and the sites will be reinstated to their previous condition once works are completed. As such, no additional impacts to the approved project are anticipated as the SRT scope of works	No additional measures required. The Sydney Metro West – Western Tunnelling Package – Visual Amenity Management Plan (SMWSTWTP-GLO-1NL-NL000-EN-PLN-000003) will be implemented where applicable.	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
	will not permanently alter the visual landscape of each site.				
Urban design	No additional impacts to the approved project, as the SRT scope of works will not modify the existing urban design at each site.	No additional measures required.	Y	Y	
Geotechnical	No additional impacts to the approved project, as the SRT scope of works will not physically interact with geotechnical aspects of the site.	No additional measures required.	Y	Y	
Land use	No additional impacts to the approved project, as the SRT scope of works will not change the existing land use for each site.	No additional measures required.	Y	Y	
Contamination	There are no potential risks of polluting any receiving environments due to SRT works. As such, no additional impacts to the approved project are anticipated, as the SRT scope of works will not require any excavation of contaminated soil or interaction with contaminated waterways.	No additional measures required. The Sydney Metro West – Western Tunnelling Package – Soil and Water Management Plan (SMWSTWTP-GLO-1NL-EN-PLN-000001) will be implemented where applicable.	Y	Y	
Climate Change	The use of light vehicles required to access each SRT site is the only anticipated source of any greenhouse gas emissions proposed under this Consistency Assessment. As such, no additional impacts to the approved project are anticipated.	No additional measures required.	Y	Y	
Risk	No additional impacts to the approved project, as the risks associated with the SRT works are consistent with the project risks for minor activities.	No additional measures required.	Y	Y	
Other	No additional impacts to the approved project.	No additional measures required.	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Management and mitigation measures	No additional impacts to the approved project.	No additional measures required.	Y	Y	

11. Impact Assessment – Operation

As noted in Section 3.0 above, the proposed SRT works will not impact any aspects of operations and is entirely limited to the construction phase.

Furthermore, Stage 1 of the planning application for Sydney Metro West (subject of this Consistency Assessment) is for major civil construction work for Sydney Metro West between Westmead and The Bays.

As such, operational impacts of the proposal are not applicable, and therefore there are no changes from the approved project are anticipated.

Aspect	Nature and extent of impacts (negative and positive) during operation (if control measures implemented) of the proposed activity/works, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Flora and fauna	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Water	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Air quality	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Noise vibration	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during operation (if control measures implemented) of the proposed activity/works, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Indigenous heritage	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Non-indigenous heritage	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Community and stakeholder	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Traffic	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Waste	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Social	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Economic	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Visual	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Urban design	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Geotechnical	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	

Aspect	Nature and extent of impacts (negative and positive) during operation (if control measures implemented) of the proposed activity/works, relative to the Approved Project	Proposed Control Measures in addition to project COA and REMMs	Minimal Impact Y/N	Endorsed	
				Y/N	Comments
Land use	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Climate Change	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Risk	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Other	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	
Management and mitigation measures	As the scope of works are temporary and limited to the construction phase, these works will not change the operation of the approved project.	No additional measures required.	Y	Y	

12. Consistency with the Approved Project

<p>Based on a review and understanding of the existing Approved Project and the proposed modifications, is there is a transformation of the Project?</p>	<p>No. The proposal would not transform the project. The project would continue to provide major civil works between Westmead and The Bays as part of the approved project.</p>
<p>Is the project as modified consistent with the objectives and functions of the Approved Project as a whole?</p>	<p>Yes. The proposal would be consistent with the objectives and functions of the approved project.</p>
<p>Is the project as modified consistent with the objectives and functions of elements of the Approved Project?</p>	<p>Yes. The proposal would be consistent with the objectives and functions of the approved works for the project. The activities proposed to be undertaken are generally consistent with the activities identified for the approved project.</p>
<p>Are there any new environmental impacts as a result of the proposed works/modifications?</p>	<p>No. There would be no new environmental risks as a result of the proposal. All risks identified for the approved project and the proposal would be adequately addressed through the application of the mitigation measures provided in the Environmental Impact Statement, Submissions Report, Amendment Report and the Instrument of Approval.</p>
<p>Is the project as modified consistent with the conditions of approval?</p>	<p>Yes. The proposal would be consistent with the conditions of approval.</p>
<p>Are the impacts of the proposed activity/works known and understood?</p>	<p>Yes. The impacts of the proposal are understood and will be accounted for by implementing the existing mitigation measures provided in the Environmental Impact Statement, Submissions Report, Amendment Report and the Instrument of Approval for the approved project. These would be implemented through the Sydney Metro Construction Environment Management Framework, Construction Traffic Management Framework and Construction Noise and Vibration Standard, as well as the CEMP and CEMP sub-plans.</p>
<p>Are the impacts of the proposed activity/works able to be managed so as not to have an adverse impact?</p>	<p>Yes. The impacts of the proposal can be managed to avoid an adverse impact.</p>

13. Other Environmental Approvals

Identify all other approvals required for the project:

A Work Permit is required for activities within Sydney Olympic Park. GLC will seek a permit from the Sydney Olympic Park Authority (SOPA) prior to works commencing at SRT1, 2, 3 & 5.


Works within Parramatta Park require Permit to Enter. GLC will seek a permit from the Parramatta Park Trust prior to works commencing at SRT14, 15 & 16.

Author certification

To be completed by person preparing checklist.

I certify that to the best of my knowledge this Consistency Checklist:

- Examines and takes into account the fullest extent possible all matters affecting or likely to affect the environment as a result of activities associated with the Proposed Revision; and
- Examines the consistency of the Proposed Revision with the Approved Project; is accurate in all material respects and does not omit any material information.

Name:	Candice Somerville	Signature:	
Title:	Environment Approvals Manager		
Company:	GLC	Date:	12 October 2022

As an approved ER for the Sydney Metro West project, I have reviewed the information provided in this assessment. I am satisfied that mitigation measures are adequate to minimise the impact of the proposed work.

Name:	NOT APPLICABLE	Signature:	
Title:		Date:	

This section is for Sydney Metro only.

Application supported and submitted by

Name:	Yvette Buchli	Date:	14/10/2022
Title:	Associate Director – Planning Approval	Comments:	
Signature:			

Based on the above assessment, are the impacts and scope of the proposed activity/modification consistent with the existing Approved Project?

- Yes The proposed activity/works are consistent and no further assessment is required.

- No The proposed works/activity is not consistent with the Approved Project. A modification or a new activity approval/ consent is required. Advise Project Manager of appropriate alternative planning approvals pathway to be undertaken.

Endorsed by			
Name:	Ben Armstrong	Date:	15 October 2022
Title:	A/Director, Project ESP	Comments:	
Signature:			