Sydenham To Bankstown - Southwest Metro – Conversion and Station Works Package 3
Soil and Water Management Plan

Sydney Metro Integrated Management System (IMS)

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NOTE - This Construction Soil and Water Management Plan was prepared by Sydney Metro for the purposes of a previous planned procurement for the Southwest Metro project in the first instance. In the second instance JHLORJV have updated this Construction Soil and Water Management Plan to be specific to the SWM3 scope of works and to be implemented by Interface Contractors.

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Document Control

Title	Southwest Metro – SWM3 Soil and Water Management Plan
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Version Control

Revision	Date	Description
00	04/06/2024	Submitted to Sydney Metro and ER
01	21/06/2024	Updated with Sydney Metro and ER comments
02	23/07/2024	JHLORJV transferred to new template, Updated with Sydney Metro and ER comments, Updated with comments following Consultation with IWC, CBCC, EPA
03	13/09/2024	Updated with comments following Consultation with DPHI and DCCEEW Water
04	24/06/2025	General update to make consistent with CEMP, review of ERSED controls and more accurately defining inspections around ERSED controls and rain events
05	05/04/2026	Updated with Water Management (General) Regulation 2025, including removal of requirement to report on aquifer interference policy

Terms and Definitions

Terms	Definitions
AEP	Annual exceedance probability
ARI	Average Rainfall Intensity
AS	Australian Standard
ASS	Acid Sulfate Soils
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes.
CoA	Conditions of Approval (SSI-8256)
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
CSSI	Critical Station Significant Infrastructure
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPHI	Department of Planning Housing & Infrastructure (DPHI) formerly Department of Planning, and Environment (DPE)
DPHI - Water	Department of Planning Housing & Infrastructure (DPHI) Water
ECM	Environmental Control Map
EIS	Environmental Impact Statement
EP&A Act	Environment Planning and Assessment Act 1979 (NSW)
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence under the POEO Act
ER	Environmental Representative
ESCP	Erosion and sediment control plan
ERSED	Erosion and sedimentation
IMS	Sydney Metro Integrated Management System
ISO	International Standardization Organisation
IWC	Inner West Council
NEPM	National Environment Protection Measures
NRAR	Natural Resources Access Regulator (formerly DoI Water)
NSW	New South Wales
OCCS	Sydney Metro Overarching Community Communication Strategy
OCP	Organochlorine Pesticides
OPP	Organophosphorous Pesticides
OEH	NSW Office of Environment and Heritage (formerly DECC, now DCCEEW)
OOHW	Out-of-Hour Works
PASS	Potential Acid Sulfate Soils
PCB	Polychlorinated biphenyls
POEO Act	Protection of Environment Operations Act 1997 (NSW)
PPE	Personal Protective Equipment

Terms	Definitions
Proponent	The person or organisation identified as the proponent in Schedule 1 of the planning approval. In this case Transport for NSW
REMM	Revised Environmental Mitigation Measure
SDS	Safety Data Sheet
Secretary	The Secretary of the Department of Planning, Industry and Environment
SM	Sydney Metro
SMEW	Southwest Metro Early Works
SPIR	Submissions and Preferred Infrastructure Report
SSI	State Significant Infrastructure
SWMP	Soil and Water Management Plan
SWMS	Safe Works Method Statement
TRH	Total Recoverable Hydrocarbons
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TfNSW	Transport for New South Wales.
VENM	Virgin Excavated Natural Material

1. Introduction

1.1. Context and scope of this Sub-plan

This Soil and Water Management Plan (SWMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for Sydenham to Bankstown – Southwest Metro Conversion and Station Works Package Scope 3 (SWM3 the Project).

This SWMP has been prepared to address requirements of the Conditions of Approval (CoA) SSI-8256 granted 12 December 2018 (and updated on 22 October 2020 in response to Mod-1) by NSW Department of Planning, Housing & Infrastructure (DPHI), the Revised Environmental Mitigation Measures (REMM), and the Sydney Metro Construction Environmental Management Framework (CEMF).

This SWMP describes how JHLORJV proposes to manage soil and water during the construction of the Project. Operational management measures do not fall within the scope of this Plan and therefore are not included.

1.1.1. Relationship of City with Southwest Project Area

Sydney Metro have prepared a Consistency Assessment in the lead up to the transition from the construction phase to the operational phase of the S2B project titled: Sydenham to Bankstown - Final track configuration works to complete the connection between Marrickville Station and Sydenham Station.

The purpose of the Planning and Consistency Assessment (PACA) is to conduct works outside of the CSSI 8256 Project Area and to present a more detailed understanding of the final track configuration/corridor works between Marrickville Station and Sydenham Station and demonstrate how this scope of works is consistent with the works undertaken under CSSI_8256 Planning Approval.

Both the Chatswood to Sydenham and Sydenham to Bankstown projects include corridor works to connect the two projects at a location near Meeks Road (Figure 2b of this CEMP). Given that the final track configuration/corridor works must be completed in a consistent manner across the C&SW alignment and do not clearly start and stop at the construction boundaries identified in the planning approvals, Sydney Metro is proposing for the S2B contractor to deliver the Corridor works under one planning approval (CSSI_8256) – delivering all the necessary corridor works between Marrickville and Sydenham stations to connect the projects, including works in project areas across both the CSSI_7400 and CSSI_8256.

This CSWMP has included assessment context around CSSI 7400 existing environment from the Sydenham Station Upgrade Project (SMu), however the general assessment area from CSSI8256 does include SWM3 area within the CSSI7400 Project Boundary.

Figure 1 Sydney Metro Marrickville to Sydenham Site Layout (source: Sydney Metro City & Southwest - Sydenham to Bankstown -Planning Approval Consistency Assessment Form: Final track configuration works to complete the connection between Marrickville Station and Sydenham Station, October 2023.)

1.2. Project background

The Sydney Metro City and Southwest - Sydenham to Bankstown Upgrade Environmental Impact Statement (EIS) (GHD/AECOM September 2017) assessed the impacts of construction and operation on soil, contamination, surface and groundwater within Chapter 20 (Soils and contamination) and Chapter 21 (Hydrology, flooding and water quality). The Sydney Metro City and Southwest - Sydenham to Bankstown Upgrade Submissions and Preferred Infrastructure Report (SPIR) (GHD/AECOM June 2018) was prepared in response to the submissions received during the EIS exhibition period. The SPIR revised the scope of the Sydenham to Bankstown Upgrade project, resulting in a reduction of potential hydrology, flooding and water quality impacts during construction. However, the SPIR concluded that potential soil and contamination impacts related to construction of the preferred project would not differ substantially from those of the exhibited project that were described in the EIS.

Please refer to Section 1 of the CEMP for the Project Description.

1.3. Objectives and targets

This SWMP provides the basis for the management of soil and water in order to minimise the risk of impact during works. The objectives and targets of soil and water management and mitigation are outlined below:

Table 1: Soil and water objectives and targets

Objective	Target
Minimise pollution of surface water through appropriate erosion and sediment control.	Erosion and sediment controls are to be inspected on the following basis; • Weekly during environmental inspection/ Prior to a rainfall of >20mm in a 24 hour period, where forecasted • Following a rainfall event of >20mm in a 24 hour period • Daily Records of inspections will be maintained by the JHLORJV. All water will be tested (and treated if required) prior to discharge from the site in order to determine compliance with the parameters outlined in the Sydney Metro – Water Discharge or Reuse Procedure (refer to Section 5.2) and JHLORJV EPL 21147. No water will be discharged from the site without written approval of the Contractor's Environment Manager (or delegate). No pollution incidents resulting in environmental harm or regulatory action.
Maintain existing water quality of surrounding surface watercourses	Water quality monitoring to be undertaken in accordance with the frequencies committed to in Section 6 and to show that the Project's works have not impacted baseline water quality (ie water quality not to worsen from baseline readings) No pollution incidents resulting in environmental harm or regulatory action.
Source construction water from non-potable sources, where feasible and reasonable	Produce a Water Balance Study prior to Construction

These objectives conform to Sydney Metro objectives as described in the CEMF.

1.4. Consultation

CoA C3(b) requires that the SWMP be prepared in consultation with the relevant Councils, NSW EPA, DPHI Water and DCCEEW.

CoA C8(b) requires that the Water Quality Monitoring Program, included in this SWMP, is prepared in consultation with relevant Councils. REMM FHW4 also requires the Water Quality Monitoring Program to be developed in consultation with NSW Environment Protection Authority (EPA).

CoA C10 states that Construction Monitoring Programs must be developed in consultation with relevant government agencies as identified in Condition C8(b) and must include reasonable information requested by an agency to be included in a Construction Monitoring Programs during such consultation. Details of all information requested by an agency including copies of all correspondence from those agencies, must be provided with the relevant Construction Monitoring Program.

As such the following stakeholders have been consulted in developing this SWMP:

- NSW DCCEEW Water;
- NSW EPA;
- Inner West Council (IWC)
- Canterbury Bankstown City Council (CBCC)

A summary of the consultation is provided below and in Appendix D.

Table 2: Consultation carried out in the development of this Plan

No.	Agency Consultation	Date submitted	Key issues raised	SWMP Section Reference
Conditions of Approval				
C3(b) & C8(b)	IWC	26/07/2024	No comments, Council is satisfied that this plan is appropriate.	NA
C3(b) & C8(b)	CBCC	26/07/2024	The attached report provides details on how the site will be managed in accordance with "Managing Urban Stormwater- Soils and Construction, Volume 2D, Main road construction" (DECC 2008) and Managing urban stormwater: soils and construction- Volume 1	Refer to S 5.1.4 of the SWM3 CSWMP Erosion and Sediment Control Plans (ESCP) will be developed for the Project sites in accordance with the requirements of Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Managing Urban Stormwater: Soils and Construction Volume 2A (DECC 2008) (the "Blue Book').
	EPA	26/07/2024	The EPA acknowledges that your planning consent states that the CEMP Sub-plans are to be prepared in consultation with the EPA, however the EPA generally does not review management plans.	Refer to Section 2.2 for information on EPL 21147
C3(b) & C8(b)	DCCEEW	26/07/2024	Applicability of exemptions and WAL requirements for SSI rail infrastructure projects is being resolved.	Groundwater may be intercepted, however it is unlikely that dewatering would exceed three megalitres of groundwater per year. A licence would be obtained if required. Refer to Section 5.5.1 added to demonstrate commitment to reaching an agreement if a WAL is required or an exemption cannot be obtained.

2. Legal and approval requirements

The SWMP addresses applicable requirements within the following documents:

- The Sydney Metro *City and Southwest - Sydenham to Bankstown Upgrade Conditions of Approval SSI-8256*, determined 12 December 2018;
- The Sydney Metro *City and Southwest - Sydenham to Bankstown Upgrade Environmental Impact Statement*, September 2017;
- The Sydney Metro *City and Southwest - Sydenham to Bankstown Upgrade Submissions and Preferred Infrastructure Report*, dated June 2018;
- The Sydney Metro *City and Southwest - Sydenham to Bankstown Upgrade Bankstown Station Modification Report* May 2020;
- The Sydney Metro *Sydenham to Bankstown Staging Report*;
- The Sydney Metro *Construction Environmental Management Framework v3*.

The Compliance Matrix in Section 2.2 provides a comprehensive list of compliance requirements, environmental documents and the contract documents.

Table 3 below details the legislation and planning instruments considered during development of this Plan.

Table 3: Legislation and Planning Instruments

Legislation	Description	Relevance to this Plan
Contaminated Land Management Act 1997	This Act provides for a process to investigate and remediate land that has been contaminated and presents a significant risk of harm to human health. Section 60 of the Act is a "Duty to Report Contamination". This duty applies to owners of land and persons who become aware their activities have contaminated the land.	This Plan defines how the Project will manage works to comply with this Act
Environmental Planning and Assessment Act 1979 (EP&A Act)	This Act establishes a system of environmental planning and assessment of development proposals for the State.	The approval conditions and obligations are incorporated into this SWMP.
Protection of the Environment Operations Act 1997 (POEO Act)	This Act includes all the controls necessary to regulate pollution and reduce degradation of the environment, provides for licensing of scheduled development work, scheduled activities and for offences and prosecution under this Act.	This Plan defines how the Project will manage works to comply with this Act.
Water Management Act 2000 Water Management (General) Regulation 2018	This Act and Regulation provide for the protection, conservation and ecologically sustainable development of water sources of the State and in particular to protect, enhance and restore water sources and their associated ecosystems.	The Department of Climate Change, Energy, the Environment and Water is responsible for issuing all controlled activity approvals in accordance with the Water Management Act 2000 for work carried out on waterfront land. Waterfront land is the bed of any river, lake or estuary, and the land within 40 metres of the highest

Legislation	Description	Relevance to this Plan
		bank of the river, the shore of the lake or the mean high-water mark of the estuary. The Water Management (General) Regulation 2025 (the Regulation) specifies a number of exemptions. A summary of exemptions is listed below and relate to: — taking water from a water source — approved development — maintenance and repairs — directions — other matters Under Section 64(1) and Schedule 4 – section 49 of the Act the exemption applies to any kind of controlled activity carried out by a body wholly owned by the State or the Commonwealth and established or continued for a public purpose. The exemption only applies if: • The activity does not cause a change in the course of a river • The body has considered the environmental impact of the activity and is satisfied that the activity is not likely to significantly affect the environment. • There is no effect of the activity on any wilderness area, as defined in the Wilderness Act 1987, within the locality of the proposed activity. The proposed controlled activities include; • Water take (dewatering pits and excavations) • Working within 40 metres of the highest bank of the river • Installation of ERSED controls within the river None of the proposed controlled activities will cause a change in the course of the river.

Legislation	Description	Relevance to this Plan
		By following the processes and procedures within the CEMP and Sub Plans, all matters affecting or likely to affect the environment by reason of that activity would be mitigated as assessed to the fullest extent possible within the EIS. No wilderness area within Project Area. Sydney Metro is a NSW Government agency. It is part of the Transport for NSW cluster. It is subject to the control and direction of the Minister for Transport in the exercise of its functions. It is listed as a public transport agency under the Act. Sydney Metro is wholly owned by the NSW Government, but it collaborates with private entities under contractual arrangements to deliver and operate the metro system. The CEMP and Sub Plans have considered the environmental impact of the proposed controlled activities. The assessed activities are not likely to significantly affect the environment.

2.1. Guidelines

Additional guidelines and standards to the management of soil and water include:

- Landcom (2004). Managing Urban Stormwater: Soils and Construction. (Volume 1 of the 'Blue Book');
- DECC (2008). Managing Urban Stormwater: Soils and Construction. Volume 2D: Main Road Construction. (Volume 2D of the 'Blue Book');
- ANZECC (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality (collectively known as the 'ANZECC Guidelines');
- ANZECC (2000). Australian and New Zealand Guidelines for Water Quality Monitoring and Reporting (collectively known as the 'ANZECC Guidelines');
- ANZG (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality (known as 'ANZG Guidelines');

- NSW Fisheries (2004). Guidelines for Controlled Activities, Policy and Guidelines for Fish-Friendly Waterway Crossings;
- NSW Fisheries (1999). Policy and Guidelines for Design and Construction of Bridges, Roads, Causeways, Culverts and Similar Structures;
- ASSMAC (1998). Acid Sulphate Soil Manual. Acid Sulphate Soil Management Advisory Committee, NSW;
- Sydney Metro - Water Discharge or Reuse Procedure;
- Guidelines for the Management of Acid Sulphate Materials: Acid Sulphate Soils, Acid Sulphate Rock and Monosulfidic Black Ooze, RTA;
- NSW Environmental Protection Authority - Assessing and Managing Acid Sulphate Soils;
- Environment Protection Authority, Victoria Information Publication 655 - Acid Sulphate Soil and Rock;
- State Environmental Planning Policy (SEPP 2021) - Resilience and Hazards
- Acid Sulphate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998);
- National Environment Protection (Assessment of Site Contamination) Amendment Measure (No. 1) 2013; and
- NSW EPA (2014) Waste Classification Guidelines – Part 1: Classifying Wastes.

2.2. Conditions of Approval

This Sub-plan will be reviewed and endorsed by the Independent Environmental Representative (ER) in accordance with CoA-A26. Sydney Metro will also review the Plan in accordance with condition 3.3e) of the Construction Environmental Management Framework (CEMF).

In accordance with CoA-C6 the Sub-plan must be submitted to the Secretary one month prior to the commencement of Construction. Construction must not commence until the Secretary has approved the Sub-plan in accordance with CoA-C7.

In accordance with CoA-C11 the Water Quality Monitoring Program will be endorsed by the ER and then submitted to the Secretary for approval at least one (1) month before commencement of Construction or within another timeframe agreed with the Secretary.

In accordance with CoA-C12 Construction must not commence until the Secretary has approved all of the required Construction Monitoring Programs, including the Water Quality Monitoring Program, and all relevant baseline data for the specific construction activity has been collected.

The CoA and REMM relevant to this SWMP are listed in Table 4 below. In accordance with CoA C4, the relevant requirements of the CEMF have also been included in Table 4. Table 4 also provides a cross reference to demonstrate where the relevant requirement is addressed in this SWMP or other management documents.

Please refer to Appendix A for all other CoA, REMM and CEMF requirements relevant to the development of this Plan.

Table 4: SWMP Compliance Matrix

No.	Requirement	Reference	How addressed?
Conditions of Approval			
C3	The CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan and be consistent with the CEMF and CEMP referred to in Condition C1: (b) Soil and water — Relevant council(s), DoI, OEH	Section 1.4 Appendix D	This Plan has been prepared in accordance with this condition and describes how JHLORJV proposes to manage soil and water during construction of the Project. This plan has been provided to IWC & CBCC and DCCEEW for consultation.
C4	The CEMP Sub-plans must be prepared in accordance with the CEMF	This Table	Table 4 demonstrates how this plan has been prepared in accordance with the relevant requirements of the CEMF.
C5	Details of all information requested by an agency to be included in a CEMP Sub-plan as a result of consultation, including copies of all correspondence from those agencies, must be provided with the relevant CEMP Sub-Plan.	Section 1.4 Appendix D	This plan has been provided to IWC & CBCC DPHI Water for consultation. Refer to Section 1.4 and Appendix D for a summary of consultation undertaken in the development of this Plan.
C6	Any of the CEMP Sub-plans may be submitted along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before Construction.	Refer to section 1.2 of the CEMP	This Plan will be submitted for approval to DPHI prior to the final submission of the CEMP for DPHI approval.
C7	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, including any minor amendments approved by the ER must be implemented for the duration of Construction. Where Construction of the CSSI is staged, Construction of a stage must not commence until the CEMP and CEMP Sub-plans for that stage have been approved by the Planning Secretary.	Refer to section 1.2 of the CEMP	Construction will not commence until the CEMP and all CEMP Sub-plans have been approved by DPHI. The CEMP and Sub-plans will be implemented for the duration of construction.
C8	The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each to compare actual performance of Construction of the CSSI against the predicted performance. (b) Water Quality — Relevant council(s)	Section 1.4 Section 6 Appendix D	The Water Quality Monitoring Program has been prepared in accordance with this condition and describes how JHLORJV proposes to monitor water quality during construction of the Project. The monitoring program has been provided to IWC & CBCC for consultation.
C9	Each Construction Monitoring Program must provide:	-	-

No.	Requirement	Reference	How addressed?
	(a) details of baseline data available; (b) details of baseline data to be obtained and when;	Section 6.3	Details of the surface water baseline data available, as well as data to be obtained and when, during the development of the Water Quality Monitoring Program are presented in Section 6.3.
	(c) details of all monitoring of the project to be undertaken;	Section 6.4	The details of monitoring to be undertaken by the Project is described in Section 6.4 of this Plan.
	(d) the parameters of the project to be monitored;	Section 6.5	The parameters to be monitored by the Project are described in Section 6.5 of this Plan
	(e) the frequency of monitoring to be undertaken; (f) the location of monitoring;	Section 6.6	The frequency and location of monitoring to be undertaken by the Project is described in Section 6.6 of this Plan
	(g) the reporting of monitoring results;	Section 6.8	Section 6.8 of this plan details the reporting of monitoring results.
	(h) procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory; and	Section 6.9	Procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory are presented in Section 6.9 of this Plan.
	(i) any consultation to be undertaken in relation to the monitoring programs.	Section 1.4 Appendix D	Section 1.4 of this Plan details the consultation undertaken during the development of the Water Quality Monitoring Program.
C10	The Construction Monitoring Programs must be developed in consultation with relevant government agencies as identified in Condition C8 of this approval and must include reasonable information requested by an agency to be included in a Construction Monitoring Programs during such consultation. Details of all information requested by an agency including copies of all correspondence from those agencies, must be provided with the relevant Construction Monitoring Program.	Section 1.4 Appendix D	The Water Quality Monitoring Program has been prepared in accordance with this condition and describes how JHLORJV propose to monitor surface water quality during construction of the Project. The monitoring program has been provided to IWC and CBCC for consultation.
C11	The Construction Monitoring Programs must be endorsed by the ER and then submitted to the Planning Secretary for approval at least one (1) month before the commencement of Construction.	Section 2.2	The Water Quality Monitoring Program has been endorsed by the ER. The Water Quality Monitoring Program will be submitted to DPHI as part of this Soil and Water Management Plan, for approval no later than one month prior to the commencement of construction activities.

No.	Requirement	Reference	How addressed?
C12	Construction must not commence until the Planning Secretary has approved all of the required Construction Monitoring Programs.	Section 2.2	Construction will not commence until the CEMP and Sub-plans, including relevant construction monitoring programs have been approved by DPHI.
C13	The Construction Monitoring Programs, as approved by the Planning Secretary including any minor amendments approved by the ER must be implemented for the duration of Construction and for any longer period set out in the monitoring program or specified by the Planning Secretary, whichever is the greater.	Section 6.9	The Water Quality Monitoring Program will be implemented for the duration of construction as detailed in Section 6.1 of the Water Quality Monitoring Program.
C14	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.	Section 6.1, 6.4 and 6.8	Section 6.8 details the reporting requirements and the frequency required for this reporting.
C15	Where a relevant CEMP Sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-plan.	Section 6	The Water Quality Monitoring Program is incorporated in Section 6 of this this Plan.
Revised Environmental Mitigation Measures			
FHW4	A construction water quality monitoring program would be developed and would commence prior to construction, to monitor water quality at identified discharge points. The program would include relevant water quality objectives, parameters, and criteria and specific monitoring locations identified in consultation with DPI (Water) and the EPA.	Section 1.4 and 6	The Water Quality Monitoring Program has been prepared in accordance with this condition and describes how JHLORJV propose to monitor surface water quality during construction of the Project. The monitoring program has been provided to IWC & CBCC, DPHI Water and EPA for consultation.
Construction Environmental Management Framework			
15.2 (a)	Principal Contractors will develop and implement a Soil and Water Management Plan for their scope of works. The Soil and Water Management Plan will include as a minimum:	This SWMP	-
	• The surface water and flooding mitigation measures as detailed in the environmental approval documentation.	Section 5.3 Appendix A	Section 5 of this Plan summarises the surface water and flooding mitigation measures as detailed in the environmental approval documentation.

No.	Requirement	Reference	How addressed?
	• details of construction activities and their locations, which have the potential to impact on water courses, storage facilities, stormwater flows, and groundwater;	Section 4	Section 4 of this Plan details the Project's construction activities and which have the potential to impact upon soil and water.
	• surface water and ground water impact assessment criteria consistent with the principles of the Australian and New Zealand Environment Conservation Council (ANZECC) guidelines;	Section 2.1 Section 5.2.2 Section 5.4	Section 2.1 includes the guidelines that have been considered in the development of this Plan, including ANZECC. Section 5.2.2 of this Plan outlines the offsite discharge criteria to be utilised on this Project Section 5.4 of this Plan outlines the management of groundwater, consistent with the ANZECC guidelines.
	• management measures to be used to minimise surface and groundwater impacts, including identification of water treatment measures and discharge points, details of how spoil and fill material required by the SSI will be sourced, handled, stockpiled, reused and managed; erosion and sediment control measures; salinity control measures and the consideration of flood events;	Section 5 CEMP Appendix E	Section 5 of this Plan outlines the management measures to be implemented to minimise soil and water impacts. Refer to Appendix E of the CEMP for the Waste and Spoil Management Procedure
	• a contingency plan, consistent with the Acid Sulfate Soils Manual (EPA 1998), to deal with the unexpected discovery of actual or potential acid sulfate soils, including procedures for the investigation, handling, treatment and management of such soils and water seepage;	Section 5.11	Section 5.11 of this Plan outlines how acid sulfate soils or potential acid sulfate soils are to be investigated, handled, treated and the management of such soils and water seepage.
	• management measures for contaminated material (soils, water and building materials) and a contingency plan to be implemented in the case of unanticipated discovery of contaminated material, including asbestos, during construction;	Section 5.7 Section 5.8 Section 5.9 Section 5.10 Section 5.11	Section 5.7 to 5.11 include the measures for the management of contaminated materials and the procedure to be implemented if unexpected contamination is encountered during construction.
	• a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often this monitoring would be undertaken, the locations where monitoring would take place, how the results of the monitoring would be recorded and reported, and, if any exceedance of the criteria is detected how any noncompliance can be rectified;	Section 6	The Water Quality Monitoring Program in Section 6 of this Plan details how often monitoring would be undertaken, the locations of monitoring, the recording and reporting of results and adaptive management should exceedances be identified.

No.	Requirement	Reference	How addressed?
	• The requirements of any applicable EPL conditions.	Section 2.3 Appendix A	Section 2.3 and Appendix A of this Plan outlines the requirements of any applicable EPL conditions.
	• The responsibilities of key project personnel with respect to the implementation of the plan.	Section 2.4	Section 2.4 outlines the responsibilities of key personnel with respect to the implementation of this Plan.
	• Procedures for the development and implementation of progressive erosion and sediment control plans.	Section 5.1.4	Section 5.1.4 outlines the development and implementation of progressive erosion and sediment control plans.
	• Identification of locations where site specific Stormwater and Flooding Management Plans are required.	-	Stormwater and Flooding Management Plans will be developed by JHLORJV prior to Construction where constructions sites are within the 100 year ARI +10% increase in rainfall flood zone.
	• Compliance record generation and management.	Section 8 Section 10.2	Section 8 and 10.2 of this Plan describe compliance record generation and management.

2.3. JHLORJV Environment Protection Licence 21147

The SWM3 portion of the S2B works will be delivered in accordance with the LOR EPL 21147, under Scheduled Activity 33; Railway Activities – Railway Infrastructure Construction.

It is noted that this EPL also includes the Sydenham Station Junction works, occurring under the Sydney Metro City and Southwest - Chatswood to Sydenham Planning Approval (CSSI_7400), refer to section 2.4.1 of the CEMP for more information. Refer to S3.4.2 of the CEMP for Interface Contractors implementation of the approved Environmental Plans.

Compliance with all relevant licence conditions will be tracked and monitored.

For any works being undertaken under EPL 21147, if an inconsistency is identified (with the planning approval), JHLORJV will consult with Sydney Metro and the ER to determine whether the works can be carried out through an approved path. Should a variation to the licence be required, JHLORJV will consult with the EPA.

The environmental authority or licence includes specific minimum requirements which are addressed within this CEMP through the Environmental Procedures and specifically included in ERAPs. These will be addressed and implemented by JHLORJV as the project progresses.

A copy of relevant Permits, Licences and Development Consents will be kept on site as controlled documents in the project's Document Management System.

Note: No elements of the SWM3 Project's scope will require the use of the Sydney Trains' EPL 12208.

2.4. Roles and Responsibilities

The roles and responsibility of key personnel with respect to soil and water management are as follows in Table 5.

Table 5: Roles and Responsibilities

Roles	Responsibilities
Project Director	Managing the delivery of the Project including overseeing implementation of the soil, water and groundwater management Act as Contractor's Representative
Environment Manager	Oversee the implementation of all soil, water and groundwater management initiatives Responsible for managing ongoing compliance with the CoA, REMM and environmental document requirements Monitoring and report and soil and water management during construction
Commercial Manager	Ensure that relevant soil, water and groundwater management requirements are considered in procuring materials and services
Construction Managers **Site Superintendent**	Manage the delivery of the construction process, in relation to soil, water and groundwater management across all sites in conjunction with the Environment Manager
Sustainability Manager	Track and report soil and water elements against sustainability targets
Environment Coordinator	Manage the on-ground application of soil and water management measures during construction (e.g. erosion and sediment control, water treatment and monitoring)

Roles	Responsibilities
	Monitor and report on soil and water management during construction
Project Engineer	Implement soil and water management activities during construction works
Site Foreman (Site Superintendent)	Monitor and report on erosion and sediment controls during construction works

Independent Environmental Representative (ER)	• Receive and respond to communication from the Planning Secretary in relation to the environmental performance of the CSSI;
	• Consider and inform the Planning Secretary on matters specified in the terms of this approval;
	• Consider and recommend to the Proponent any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community;
	• Review documents identified in Conditions C1, C3 and C8 and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this approval and if so:
	  ○ (i) make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary), or
	  ○ (ii) make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Planning Secretary for information or are not required to be submitted to the Secretary);
	• Regularly monitor the implementation of the documents listed in Conditions C1, C3 and C8 to ensure implementation is being carried out in accordance with the document and the terms of this approval;
	• As may be requested by the Planning Secretary, assist the Department in the resolution of community complaints;
	• Consider any minor amendments to be made to the documents listed in Conditions C1, C3 and C8 and any document that requires the approval of the Planning Secretary that comprise updating or are of an administrative or minor nature and are consistent with the terms of this approval and the documents listed in Conditions C1, C3 and C8 or other documents approved by the Planning Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval; and
	• Prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an Environmental Representative Monthly Report detailing the ER's actions and decisions on matters for which the ER was responsible in the preceding month. The Environmental Representative Monthly Report must be submitted within seven (7) days following the end of each month for the duration of the ER's engagement for the CSSI.

It is noted that the site team, including JHLORJV Environmental Manager, Environmental Coordinator, Construction Manager and Site Foreman/Site Superintendent will attend site inspections with the ER upon request.

The ER may request information relating to soil and water management from JHLORJV, the primary contact being the Environmental Manager.

2.5. SWM3 Sustainability Requirements

Sustainability is crucial for protecting the environment during construction. By integrating sustainable practices, construction projects can significantly mitigate their environmental impact, conserve natural resources, and promote ecological balance. The following requirements are SWM3 contractor sustainability contractual requirements and requirements from the ISC Sustainability rating.

2.5.1. SWTC Sustainability Contractual Requirements

This section contains the sustainability requirements for soil and water management that the SWM3 contractor must comply with during the SWM3 contractor activities. This includes the Appendix B07 requirements relating to the design and construction elements of the SWM3 works.

Table 6 SWTC Sustainability Contractual Requirements

Category	Deed Clause	Contract Wording
Scope	1.2 (a)	F. waste and materials: Recycle or reuse 90 per cent of recyclable construction and demolition waste. Recycle or reuse 60 per cent of office waste during the construction phase. Recycle or reuse 80 per cent of the waste generated during operations. Recycle or reuse 65 per cent of office waste during operations.
Scope	1.2 (a)	H. biodiversity conservation: Minimise vegetation clearing. Native landscaping targets to be established.
Scope	1.2 (a)	I. pollution control: Zero major pollution incidents.
Water efficiency	2.4.1 (a)	(a) The SWM3 Contractor must minimise water demand including total water consumption and potable water consumption during the operations phases by: (i) using water efficient controls, fixtures and fittings; (ii) harvesting rainwater where feasible; (iii) using water from recycled water networks where available; and (iv) collecting, treating and reusing stormwater and wastewater, where feasible.
Water efficiency	2.4.1 (b)	(b) The SWM3 Contractor must not use potable water as a substitute for non-potable water where on-site of local sources of non-potable water are suitable for the SWM3 Contractor's Activities and are available.

Category	Deed Clause	Contract Wording
Water sensitive urban design	2.4.2 (a)	(a) The SWM3 Contractor must adopt an integrated approach to urban water cycle management during design and construction to minimise impacts on stormwater quality.
Waste	2.5.1 (a)	(iii) sufficient on-site storage space for the safe storage of recyclable waste and general waste prior to collection for treatment and disposal.
Waste	2.5.1 (b)	(b) The SWM3 Contractor must: (i) minimise the generation of waste; and (ii) demonstrate waste minimisation, recycling and resource recovery through delivery refinement, construction planning and construction methods.
Waste	2.5.1 (f)	(f) The SWM3 Contractor must avoid the production of hazardous waste where practicable.
Spoil management	2.5.4 (b)	(a) The SWM3 Contractor must identify and implement initiatives to both reduce spoil quantities which will be generated during the performance of the SWM3 Contractor's activities and beneficially reuse 100% of reusable spoil, including topsoil. (b) Beneficial reuse of spoil must be in accordance with the following spoil reuse hierarchy, in order of preference: (i) within the project; (ii) environmental works; (iii) other development projects; (iv) land restoration; and (v) landfill management.
Spoil management	2.5.4 (c)	(c) The SWM3 Contractor must utilise or reuse appropriate site-won materials onsite.
Pollution control	2.7 (a)	(a) The SWM3 Contractor must identify and implement pollution control initiatives in design and construction which target zero major pollution incidents.

2.5.2. Infrastructure Sustainability Council Requirements

To achieve an "Design & As-built" ISC Rating Scheme (V1.2) rating of at least 65 for the constructed SWM3 Works. Below is the list of ISC requirements related to this CSWMP.

- Man-4: Inspections and Audits:
    - At least 90% of weekly internal sustainability inspections of site management must be completed.
- Wat-1: Water use monitoring and reduction
    - Monitoring and modelling of water use is undertaken.

- Where activities permit, changing activity schedules to match local conditions and increasing the effectiveness of the water use.

- Wat-2: Replace Potable Water
  - Substituting potable water with appropriate locally water sourced non-potable water.

- Dis-1: Receiving Water Quality
  - Minimising adverse impacts to receiving water environmental values.
  - Monitoring of water discharges and receiving waters is undertaken at appropriate intervals and at times of discharge during construction.

- Was-1: Waste Management
  - Waste monitoring and management must be reviewed or audited annually by a suitably qualified professional.
  - Auditing of waste to final destination must be undertaken at least 6 monthly for construction.

- Was-2: Diversion from Landfill:
  - The following target for landfill diversion have been achieved or bettered: 80 to less than 100% by volume of Spoil, 50 to 90% by volume of inert and non-hazardous waste and 40 to 60% by volume of office waste.

- Lan-3: Contamination and remediation (refer to CEMP Appendix N S2B Contamination management)
  - Site assessment follows the recommended approach in Schedule A 'Recommended general process for assessment of site contamination' of National Environment Protection (Assessment of Site contamination) Measure 1999.
  - Remediation options are identified and selected using a sustainability hierarchy.

The Contract & MR-Sy Requirements specify that stormwater quality targets must be met to ensure the water is suitable for either reuse or discharge into local streams and waterways. This involves adhering to specific standards and guidelines to maintain water quality, thus protecting the environment and ensuring the sustainable use of water resources.

3. Existing Environment

The following sections summarise what is known about the factors influencing soils and water within and adjacent to the Project. The information within the section is high-level in nature and not exhaustive. JHLORJV will be responsible for reviewing all available information and managing any environmental risks accordingly.

The key reference document is Chapters 20 and 21 of the EIS.

3.1. Topography

3.1.1. Existing Soil Landscape

The Project area traverses four soil landscape types identified by the Sydney 1:100,000 Soil Landscape Series Sheet 9130 (Herbert, 1983). These include Birrong, Gymea, Blacktown and Glenorie soil units. The likely extent of the soil units in relation to the SWM3 works are displayed in Figure 2 & Figure 3.

These soil landscape types are described as follows:

3.1.1.1. Birrong

- Extensively cleared tall open forest and woodland Soils – deep (> 250 cm) yellow podzolic soils and yellow solodic soils on older alluvial terraces
- Limitations – localised flooding, high soil erosion hazard, saline subsoils, seasonal waterlogging, and very low soil fertility.

3.1.1.2. Gymea

- Soils – shallow to moderately deep yellow earths and earthy sands on crests and on the inside of benches.
- Limitations – high soil erosion, rock outcrop, shallow highly permeable soil, and very low soil fertility.

3.1.1.3. Blacktown

- Soils – shallow to moderately deep hard setting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines
- Limitations – moderately reactive, highly plastic subsoil, with low fertility and poor drainage.

3.1.1.4. Glenorie

- Soils – shallow to moderately deep Yellow Podzolic Soils and Gleyed Podzolic Soils along drainage lines.
- Limitations – high soil erosion hazard, localised impermeable highly plastic soil, moderately reactive.

Additionally, a further soil landscape type is identified west of Bankstown station – Glenorie, however these soils are mapped as falling just outside of the project area.

It is noted that the Project site is highly disturbed and soils on the site likely include imported materials.

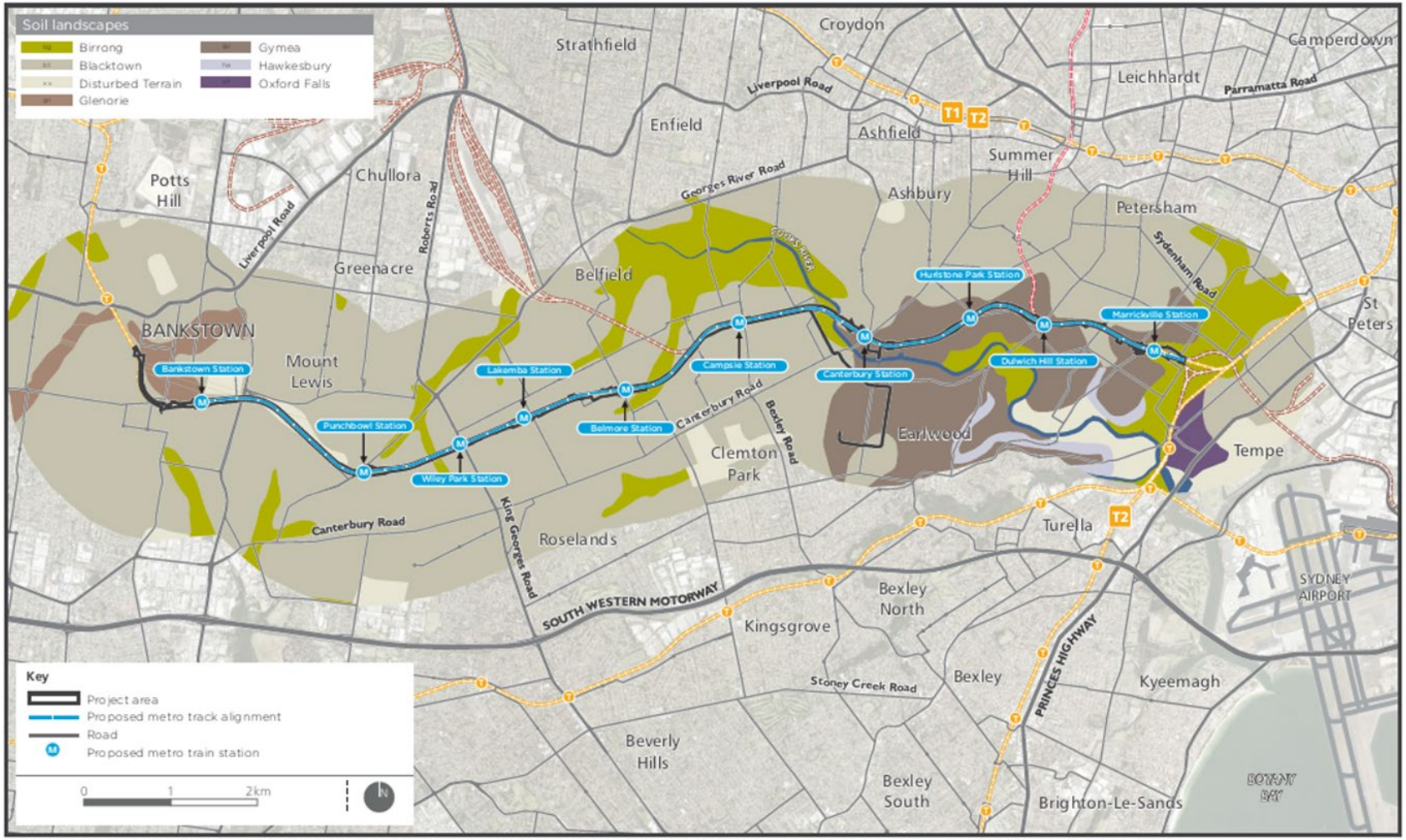


Figure 2 Soil landscapes for Sydney Metro alignment from Marrickville to Bankstown. Source: Sydney Metro City and Southwest EIS Sydenham to Bankstown (CSSI8256)

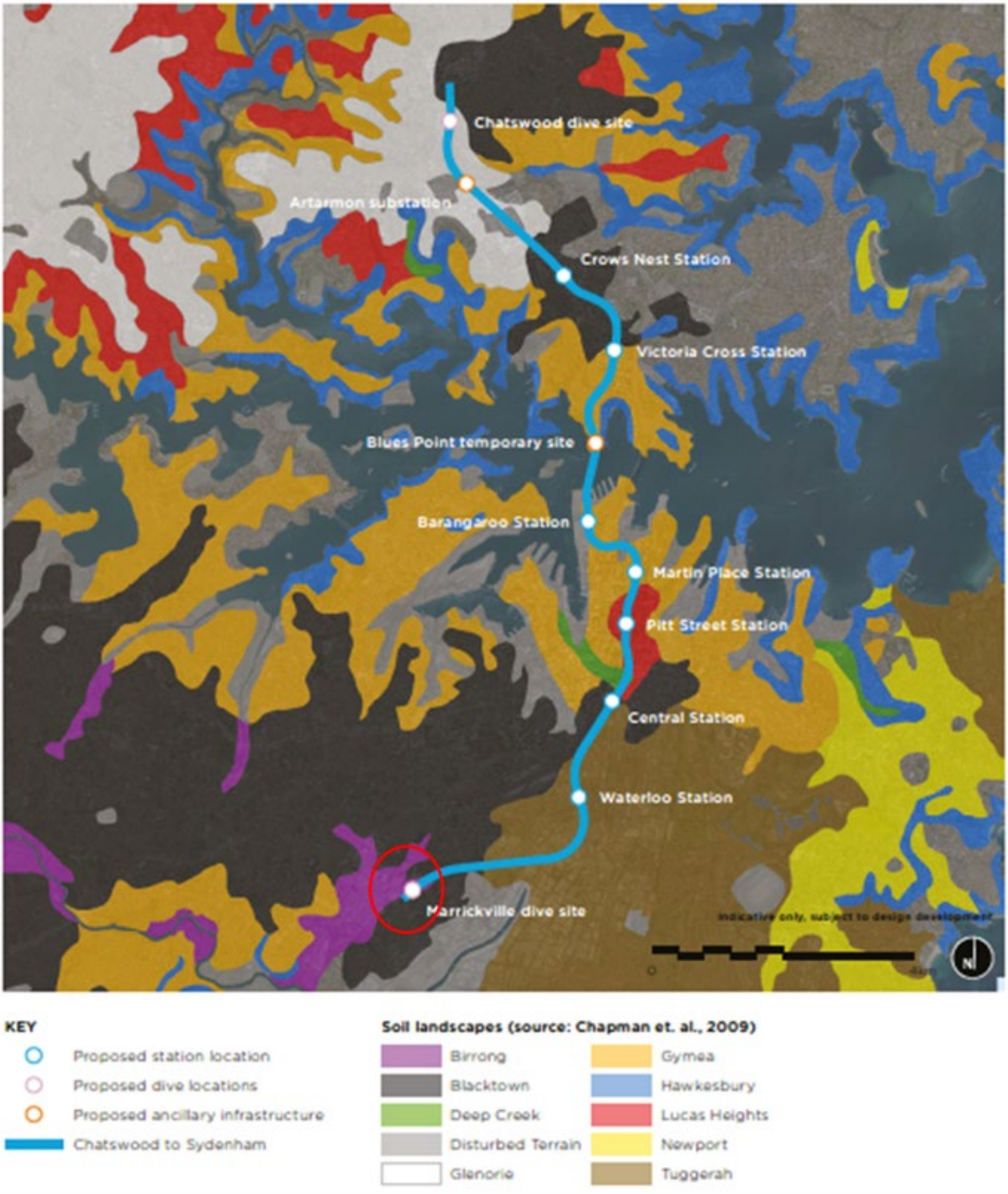


Figure 3 Soil units within the Sydney Metro City & Southwest Chatswood to Sydenham Project Area (CSSI7400)

3.2. Geology

The Project area traverses a number of regional geological units identified by the Sydney 1:100,000 Geological Sheet 9130 (Herbert, 1983).

Section 20.2.2 of the Sydney Metro City and Southwest – Sydenham to Bankstown - Environmental Impact Statement (EIS) (Table 20.2) identifies the following regional geological units within the SWM3 Project footprint;

- Fill – located through numerous parts of the site, particularly within embankments
- Quaternary Sediments – alluvium and estuarine deposits near Marrickville Station and the Cooks River
- Wianamatta Group – includes Ashfields shales near Canterbury Station
- Mittagong Formation – between Dulwich Hill and Canterbury
- Hawkesbury Sandstone – between Marrickville and Canterbury
- Dykes – Volcanic intrusions at Marrickville and Canterbury

3.2.1.1. Geotechnical Report

Geotechnical investigations indicate that typical layers found on the Project site include;

- Fill material
- Residual fill & Alluvium
- Ashfield Shale (Canterbury)
- Mittagong Formation (Marrickville to Canterbury)
- Minchinbury Sandstone (Wiley Park to Punchbowl)
- Bringelly Shale (overlaying Minchinbury Sandstone between Wiley Park and Punchbowl)
- Hawkesbury Sandstone

Depths of the above layers vary over the site. It is likely that the majority of the SWM3 works will occur within fill and residual soils. Piling related to retaining wall and platform works may penetrate to layers of Ashfield Shale.

3.2.2. Soil salinity

Salinity in the Project area was considered within the Sydney Metro City and Southwest – Sydenham to Bankstown - EIS. The EIS found that there was evidence of soil salinity within the SWM3 area, specifically to the West of Punchbowl Station (Figure 4). The EIS states "…potential saline soils are located west of Punchbowl Station. The remainder of the Project area is not mapped as having salinity potential. However, there may be areas of salinity potential in these areas."

Excavation would be undertaken in areas with high to moderate potential for salinity surrounding Bankstown and Punchbowl stations. Impacts may occur as a result of the erosion and off-site transport of saline sediments, resulting in impacts on the receiving environment. Due to some areas shown as having a salinity potential, REMM SC3 is relevant to the SWM3

scope and as such, for areas with potential soil salinity, JHLORJV will undertake testing to confirm presence of salinity prior to ground disturbance. In cases where saline soils are encountered, they are to be managed in accordance with Site Investigations for Urban Salinity (DLWC, 2002) including applying the following mitigation measures:

- Minimising water infiltration
- Landscaping using native plants
- Retention (where practicable) of deep-rooted vegetation
- Minimising soil disturbance such as compaction, cut and fill
- Inclusion of saline and sodic soils within the erosion and sediment control plans (ESCPs).

Note, works within the identified saline areas include fencing, overhead wire installation which will have limited impacts on the soil and groundwater.

The Geotechnical Interpretive Report – Bankstown Station (Metron T2M, 2020) includes an investigation undertaken into the salinity of soils within the vicinity of Bankstown Station. The report has found that risks associated with salinity are low. During construction JHLORJV will monitor for signs of salinity, such as waterlogged soil, salt crystals, increased soil erosion.

3.2.3. Acid sulfate soils

Acid sulphate soils (ASS) are the common name given to naturally occurring sediments and soils containing iron sulphides (principally iron sulphide or iron disulphide or their precursors). Exposure of the sulphide in these soils to oxygen as a result of drainage or excavation leads to the generation of sulphuric acid. Areas of acid sulphate soils can typically be found in low-lying and flat locations that are often swampy or prone to flooding.

In accordance with the Australian Soil Resource Information System (CSIRO, 2015) parts of the Project area has been deemed to have a high potential for the presence of ASS, particularly the area near the Cooks River. Refer to Figure 4 for mapping.

Sydney Metro City & Southwest Sydenham to Bankstown upgrade: Technical Paper – Contamination Assessment Report (GHD, 2017) has reviewed available information on ASS and states:

“Marrickville Station to Section D (country side of Hurlstone Park Station) – A review of the mapping indicates that there is unlikely to be occurrences of ASS.

Canterbury Station – The western quarter of the Canterbury Station has been mapped as ‘disturbed terrain’; and there is potential for ASS to depths varying between 2 and 4 m below ground level.

Section E (country side of Canterbury Station to city side of Campsie Station) –The eastern half of section E has been mapped as having a low risk of acid sulphate soils (at two to four metres below ground surface) and ‘disturbed terrain’ on the western and eastern sides of the Cooks River, respectively.

Campsie Station to Section K (Bankstown Station) – A review of the mapping indicates that there is unlikely to be occurrences of ASS.”

City & Southwest, Sydney Metro Sub-portion 2 - Sydenham to Bankstown Targeted Contamination Assessment (GHD, 2017) indicates that 3 samples within the SWM3 Project

area are to be considered Potential Acid Sulphate Soils (PASS) following Chromium Reducible Sulphur (SCR) testing. The three samples were taken from the Marrickville area at a depth of 2-3m. Excavations within these areas are not expected to exceed 1.5m. As such, JHLOR does not expect to encounter PASS in these areas. A number of samples within the vicinity of the Cooks River (BH072/2-2.1m, BH073/2-2.1m & BH074/3.1-3.2m) identify a range of liming rates from 1 to 8.8kg CaCO3/t for PASS. It is noted that these samples did not exceed the SCR ASS criteria and are therefore not considered PASS.

The Sydney Metro Track Condition Assessment – Environmental Site Assessment (GHD, 2017) does not include an assessment of ASS.

3.2.3.1. Acid sulfate soils in the CSSI 7400 Sydenham Station Upgrade area

The Preliminary Contamination Report (GHD, 2017) found that ASS and PASS were detected on the project site between 0.5m and 4.2m below ground level within the Sydenham Signal Centre and the Sydney Trains Geotechnical Office site. The Combined Phase I Preliminary Site Investigation & Phase II Detailed Site Investigation (ADE, Feb 2019)11 Sydenham Rd found that PASS was detected on the project site between 0.1, and 2.2m BGL.

Further investigations undertaken for the project site Sydenham Station and Junction Works Contamination Assessment Report (AGJV, 2018) has indicated that PASS is present within 3 boreholes. The report states;

“Alluvium soil at BH053 (depth 6 m), BH309 (depth 4 m) and BH310 (depth 1.5 m) is considered as PASS and require detailed management plan if excavated soil is more than 1,000 tonnes.

Noting the presence of PASS at these locations within the SMu site, materials that requires offsite disposal should be assessed for the ASS and liming will be required prior to off-site disposal if ASS is found.”

Note that BH053, BH309 & BH310 are within the vicinity of the Sydenham Equipment Centre.

JHLOR will undertake field PASS indicator tests at a rate of 1 test per 200m3 of material taken from these locations where spoil is to be reused on site. Testing for ASS/PASS will also be included within any waste classification suite for any spoil taken from these locations.

The above reports, and implementation of the above measures, would meet the requirements of REMM SC2

JHLORJV’ management of ASS and PASS will occur in accordance with Section 5.11 of this Plan.

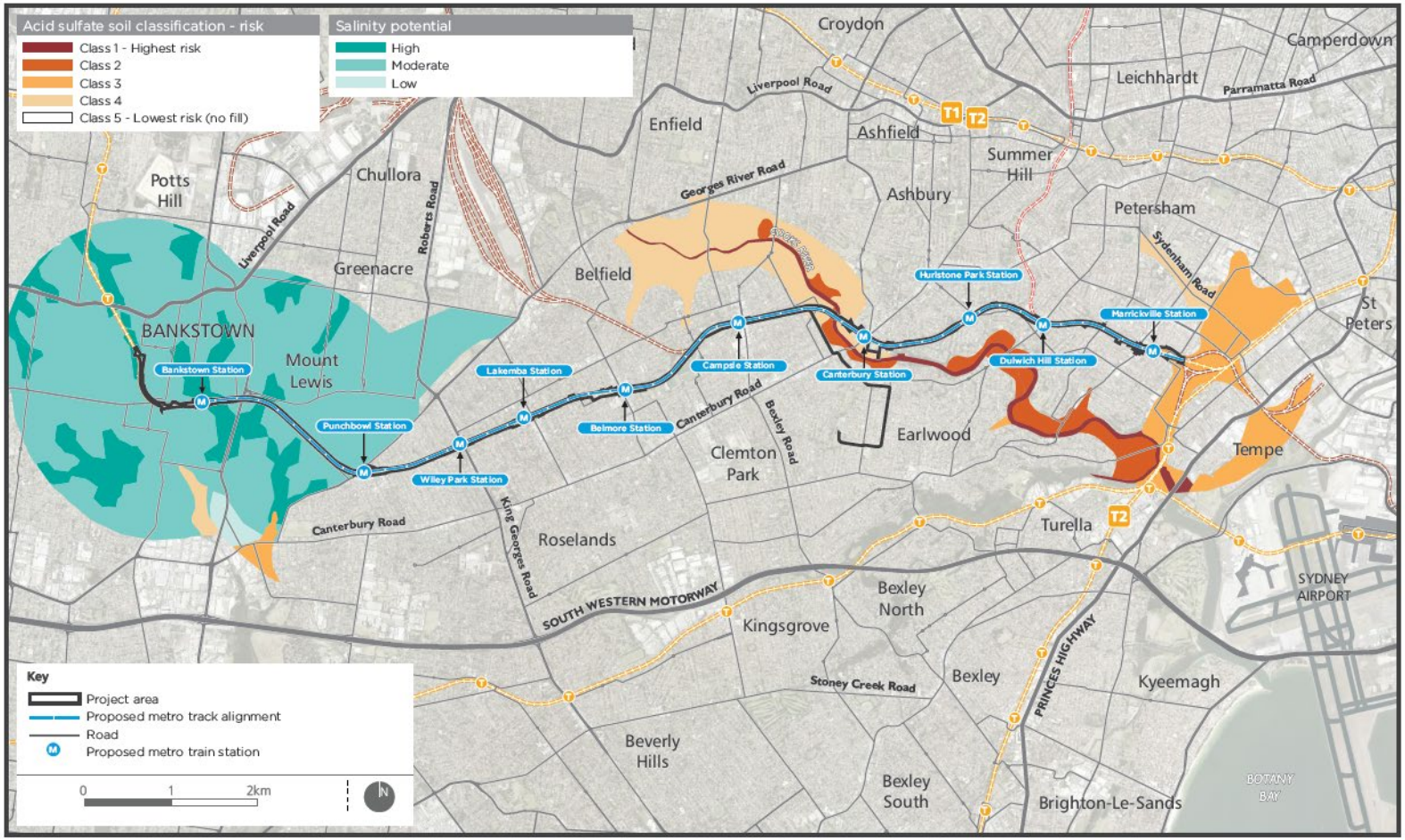


Figure 4 Salinity potential and ASS risk.

Applicable to both City and Southwest project Area the SWM3 works are proposed to occur within.

3.3. Contamination

The Sydenham to Bankstown rail corridor has been part of an operational rail corridor for more than 130 years. A Phase 1 contamination assessment for the existing rail corridor between Sydenham and Bankstown Stations was carried out by GHD as part of the development of the EIS. The Phase 1 assessment included a desktop review and site visit. Chapter 20 of the EIS references the preliminary site assessment which concluded; *"that there is a risk of contamination along the length of the project area, albeit a low to medium risk for the majority of the project area, with potential contamination sources being historical rail activities, and commercial and residential land use in surrounding areas."* Contaminants of potential concern (COPC) associated with the use of railway include:

- Asbestos;
- Hydrocarbons;
- Heavy metals; and
- Herbicides.

Areas identified in the EIS with a medium to high contamination risk along the Sydenham to Bankstown rail corridor are detailed in Table 7 below. This table identifies that the nearest medium to high contamination risk site in relation to the SWM3 Scope of works.

Table 7: Areas with a medium to high contamination risk along the rail corridor

Location	Potential contamination sources	Potential contaminants present	Location in relation to the nearest Project site
Between Sydenham and Marrickville stations (CSSI7400)	• Previous site investigations identified asbestos in soil and petroleum aromatic hydrocarbons in groundwater north of the project area, at 361 Victoria Road	Within the vicinity of 361 Victoria Road: • Asbestos in soil • Petroleum aromatic hydrocarbons in groundwater	Approximately 150m east of the Marrickville Station site
Sydenham Station (CSSI 7400)	• SRA Land 117 Railway Road, Sydenham identified as other industry	• Heavy Metals	50m south west of Sydenham Station
Between Campsie and Belmore stations (triangular area within the rail corridor)	• Historical rail activities • Historical commercial and residential land use	• Arsenic in ballast • Asbestos • Hydrocarbons (including chlorinated hydrocarbons in fill) • Heavy metals (including in groundwater) • Herbicides	> 1km east of the Lakemba Station site
Between Punchbowl and Bankstown stations (car park at North Terrace)	• Historical rail activities • Historical commercial and residential land use	• Asbestos • Hydrocarbons (in soil and groundwater) • Heavy metals • Herbicides	>3km west of the Lakemba Station site

As outlined in Section 3.4, there is the possibility that the Project will interact with petroleum aromatic hydrocarbon impacted groundwater. Contamination will be managed in accordance with the Unexpected Contaminated Land Procedure and Asbestos Finds Procedure; as per CoA E39 and CoA E40 and the mitigation measures outlined in Section 5 of this Plan.

Chapter 20 of the EIS states that no sites listed on the EPA's contaminated land register are located within 100 metres of the Sydenham to Bankstown rail corridor. However, four sites which have been notified to the EPA are located within 100 metres of the rail corridor. These are listed in Table 8 below.

Table 8: Registered of notified contaminated sites

Suburb	Site name and address	Site activity	Contamination status	Location in relation to the nearest Project site
Sydenham	SRA Land 117 Railway Road	Identified as other industry	Heavy Metals	50m south west of Sydenham Station final conversion works
Marrickville	XPT Maintenance Centre, Marrickville	Identified as other industry	Groundwater contamination	200m from laydown area
Marrickville	2 Carrington Road, Marrickville	Unclassified	Unspecified	50m from laydown area
Belmore	348 Burwood Road, Belmore	Unclassified	Unspecified	200m from station works

In accordance with REMM SC5, a detailed contamination assessment was undertaken to confirm the nature and extent of contamination, specific requirements for further investigation and to decide management requirements of any contamination.

While REMM SC5 only talks about medium areas of medium to high risk contamination, Phase 2 contamination testing has been undertaken across the rail corridor and at stations due to the history of the rail corridor and surrounding development. These assessments include;

- City & Southwest, Sydney Metro Sub-portion 2 - Sydenham to Bankstown Targeted Contamination Assessment (GHD 2017)
- Sydney Metro City and Southwest Sydney Metro, Sub-portion 1: Sydenham to Bankstown Station Platforms Contamination Assessment (GHD 2017)
- Southwest Corridor Conversion Enabling Works – Tranche 1B Contamination Assessment Report (AGJV 2019)
- Bankstown Station and Additional Corridor Works BAC DPK 003 Contamination Assessment Report (AGJV, 2022) (updated to Rev F for SWM3 in 2024)

Refer to each of these reports for data associated with soil contamination.

The EIS also notes areas of medium to high contamination risk within the JHLORJV footprint (Table 7). It is noted that asbestos is commonly found through-out rail corridors. Any asbestos finds will be managed under the Unexpected Contaminated Land Procedure and Asbestos Finds Procedure (Appendix B), as per CoA-E39 & CoA-E40.

Table 9 summarises exceedances of screening criteria within 100m of the Project sites, as published in the Targeted Contamination Assessment (GHD 2017).

Table 9 Targeted Contamination Assessment exceedances in proximity to the Project

ID	Targeted infrastructure	Summary of exceedance of screening criteria
		Section A
BH001	Subsurface drainage	Concentration of TRH >C16-C34 (4,800 mg/kg) (depth of 0.4-0.5 m) exceeded the management limit for commercial / industrial land use (coarse soil) (3,500 mg/kg)
		Marrickville
BH013	Drainage infrastructure and new transport corridor alignment	Concentration of lead (3,400 mg/kg) exceeded the HIL-D (1,500 mg/kg) (depth of 1-1.1 m)
		Section B
BH017 BH019 BH022 BH025	Attenuation basin	Concentrations of lead exceeded the HIL-D (1,500 mg/kg) at • BH017 (depth of 0.8-1.0 m): 1,600 mg/kg • BH019 (depths of 0.0-1.0 and 1.2-2.2 m): 2,400 mg/kg and 2,400 mg/kg • BH025 (depth of 0-0.8 m): 2,200 mg/kg Concentration of benzo(a)pyrene toxic equivalence quotient (TEQ) were at HIL-D (40 mg/kg) at BH022 (depth of 1.0-1.2 m)
BH026 BH027/ BH027A	Embankment excavation	Chrysotile asbestos was detected as loose fibre bundle at BH026 (depth of 0.1-0.2) Chrysotile asbestos was detected in fibre cement fragments at BH027 (depth of 0.1- 0.2 m) Chrysotile, amosite and crocidolite asbestos was detected in fibre cement material at BH027A (depth of 0.3 m)
		Canterbury
BH064	Station and pedestrian access structure	Chrysotile and amosite asbestos was detected in fibre cement material at BH064
		Section E & Section F
BH077	Active rail corridor	Chrysotile and amosite asbestos was detected in fibre cement material at BH077 Chrysotile and amosite asbestos was detected as loose fibre bundles at BH077 (depth of 0.1-0.2 m)
		Campsie
BH085	New platforms alignment	Chrysotile and amosite asbestos was detected in fibre cement fragments at BH085 (depth of 0.1-0.2 m)
		Section F
BH096	Drainage infrastructure	Chrysotile asbestos was detected in plaster-like fragments and in the form of loose fibre bundles at BH096 (depth of 0.1- 0.2 m)
		Belmore
BH107	Station and pedestrian access structure	Chrysotile asbestos was detected in fibre cement fragments at BH107 (depth of 0.1-0.2 m)
		Wiley Park
BH135	Curt around station	Chrysotile and amosite asbestos was detected in fibre cement fragments at BH135 (depth of 0.1 m)
		Section I
BH151	Embankment works	Chrysotile asbestos was detected in fibre cement fragments at BH151 (depth of 0.1-0.2 m)

Note: Sampling location, ID can be found in Targeted Contamination Assessment (GHD 2017) - Appendix A.

Asbestos was detected in eight sampling locations across the investigation area. Whilst fragments of asbestos containing materials were reported at limited locations during the investigation works, it is noted that observation of ACM fragments in boreholes can be limited owing to the investigation methodology and given the presence of demolition rubble in the fill matrix, the potential for ACM in fill material across the investigation area cannot be discounted.

Concentration of lead was reported at 3,400 mg/kg at BH012 at a depth of 1.0 to 1.1 m, which was designated to target enclosed structures and new station platforms in Section A, exceeded the adopted screen health investigation level (1,500 mg/kg) for commercial / industrial land use.

Concentrations of lead were reported at 1,600, 2,400, 2,400 and 2,200 mg/kg at BH017, BH019 and BH025 at depths between surface and 2.2 m exceeded the adopted screen health investigation level (1,500 mg/kg) for commercial / industrial land use. These boreholes were designated for an attenuation basin at McNeilly Park at Marrickville.

Concentrations of benzo(a)pyrene TEQ was reported at 40 mg/kg at BH022 at a depth of 1 to 1.2 m. BH022 was also designated for the attenuation basin at McNeilly Park at Marrickville.

In addition, the concentration of TRH >C16-C34 was reported at 4,800 mg/kg at BH001 (depth of 0.4-0.5 m), exceeded the management limit for commercial / industrial land use. BH001 was designated for a subsurface drainage in Section A.

Concentrations of COPC in other completed sampling locations were below the adopted human investigation and screening levels for commercial and industrial land use.

Based on the results of the contamination assessments, a Remediation Action Plan is not required in accordance with REMM SC7*;*

"In the event a Remediation Action Plan is required, it would be developed in accordance with Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning and Environment Protection Authority, 1998) and a NSW Environment Protection Authority Accredited site auditor would be engaged to audit the works."

It is noted that the construction process may lead to the disturbance and mobilisation of existing contamination, or may result in the addition of new contamination to soil, surface water or groundwater via spills or leaks of fuels, oils or other hazardous materials. The risk of contamination arising through the construction process will be mitigated by implementing the mitigation measures as described within Section 5 of this Plan.

3.3.1. Compliance of REMM SC5

In order to comply with REMM SC5 JHLORJV completed contamination testing at the following locations prior to Construction. Further contamination investigations will occur in the vicinity, as required to JHLORJV's scope of works as part of SWM3:

- Between Campsie and Belmore stations (triangular area within the rail corridor) - a baseline contamination assessment was prepared (SSJ-25-18923.LTR2.v1f). Any spoil removed from the area is to undergo a separate waste classification.348 Burwood Road, Belmore - a WorkCover dangerous goods report (454315_results_29_1_2021_5_46_45_167) indicated that the facility had approval for storage of 1000L Petrol and 500kg of mixed gases. The file indicates flammable liquid storage may also have taken place.

- North Terrace carpark area - targeted testing undertaken within Sydenham to Bankstown Targeted Contamination Assessment (GHD, 2017) indicates that the area is classified as General Solid Waste. JHLOR undertook testing on material removed from the carpark and found that the material was GSW.

3.3.2. Hazardous materials

A hazardous materials assessment of buildings and structures was conducted by GHD in September 2016, which focused on stations along the rail corridor - *City and Southwest Metro Asset Condition Assessment – Hazardous Materials Assessment (GHD 2016)*. The scope of this assessment was limited to a visual re-inspection of previously identified hazardous materials and an inspection, with limited sampling, for potential hazardous materials not noted on existing registers.

The assessment inspected the following locations relevant to this Project:

- Bankstown Station – Concourse.
- Belmore Station – Concourse, Station Master's Office, Station Building, Shops adjacent to Station.
- Campsie Station – Concourse, Station Master's Office, Station Building.
- Canterbury Station – Concourse, Station Master's Office, Station Building.
- Dulwich Hill Station – Concourse, Main Station Building.
- Hurlstone Park Station – Concourse, Station Master's Office, Station Building.
- Lakemba Station – Concourse, Concourse Station Building, Station Building.
- Marrickville Station – Platform Building, Booking Office, Former Platform Building.
- Punchbowl Station – Concourse.
- Sydenham Station – Main Building, Platform, Platform Concourse/ Walkway, Main Building, Plumber's Store.
- Wiley Park Station – Concourse, Station Building.
- Punchbowl Sectioning Hut.
- Canterbury Sectioning Hut.
- Belmore Substation.

For the purposes of GHD's assessment, the hazardous materials assessed included:

- Asbestos containing materials;
- Synthetic mineral fibre;
- Polychlorinated biphenyls (PCB) capacitors within light fittings;
- PCB oils within transformers and other electrical equipment; and
- Leaded paint systems and lead contaminated dust.

The report summarised that the following materials were identified or presumed as containing asbestos:

- Flat asbestos cement sheeting;
- Corrugated asbestos cement sheeting;
- Asbestos containing cement sheeting debris;
- Asbestos containing vinyl floor tiles;
- Asbestos containing gaskets;
- Asbestos containing textile wrap;
- Asbestos containing fuse;
- Asbestos containing resinous board; and
- Asbestos containing pipe conduit.

The assessment assigns the asbestos instances a 'Very High Risk' status as refurbishment and/or demolition related activities are likely to impact on these instances.

Other hazardous materials that were identified include:

- Synthetic mineral fibres in insulation to underside of roof, acoustic ceiling tiles and insulation to ceiling cavities;
- Polychlorinated Biphenyls (PCB) capacitors within fluorescent light fittings;
- PCB oil within transformers;
- Leaded paint systems to interior and exterior surfaces; and
- Lead-contaminated dust.

The assessment assigned the above instances a 'Very High Risk' status as refurbishment and/or demolition related activities are likely to impact on these instances.

This assessment was undertaken only in nominated areas where access was readily available. In accordance with REMM SC6, JHLORJV will conduct hazardous materials surveys for all proposed demolition activities, and for utility adjustments as required, prior to these works commencing.

All reasonable and feasible management recommendations outlined in City and Southwest Metro Asset Condition Assessment – Hazardous Materials Assessment (GHD 2016) will be implemented by JHLORJV.

3.4. Groundwater

Chapter 21 of the Sydney Metro City & Southwest: Sydenham to Bankstown EIS makes the following statements in regards to groundwater;

- *"The groundwater level along most of the project area was recorded at between about 2.3 metres below ground level (to the east of the project area in Marrickville) and about 10.3 metres below ground level (near Bankstown Station)."*
- *"Groundwater has been observed discharging from open cuttings along the rail corridor. The surface groundwater system is likely to be recharged by rainfall and percolation from irrigation of residential gardens and open spaces, as well as incidental runoff from impervious surfaces, such as roads and footpaths."*

- *"Quaternary alluvium underlies the Cooks River and its tributaries and forms an aquifer. Groundwater is also present within localised alluvial deposits in some gullies. Groundwater salinity within the Quaternary alluvium and localised alluvial deposits is expected to vary from lower salinity in the upper reaches of the Cooks River, to higher salinity in the lower reaches due to mixing and tidal influences."*

An assessment of groundwater quality from previous studies is included within the City & Southwest, Sydney Metro Sub-portion 2 - Sydenham to Bankstown Targeted Contamination Assessment (GHD, 2017) has noted the following;

- LNAPL were identified in one well near the site at 361 Victoria Rd, Marrickville. The Project site is down gradient to the impacted well and a well closer to the Project site reported TPH concentrations less than the laboratory limits of reporting.
- Slightly elevated levels of copper, zinc and chromium were identified in groundwater between Campsie and Belmore Stations.
- Testing at a public car park at North Terrace, northeast of the station precinct found petroleum hydrocarbons within shallow soils and in groundwater at the site at concentrations below the adopted investigation levels.

Testing of groundwater within the City & Southwest, Sydney Metro Sub-portion 2 - Sydenham to Bankstown Targeted Contamination Assessment (GHD, 2017) found;

- "*All groundwater samples reported one or more analysed metal (copper, mercury, nickel or zine) concentrations above the groundwater investigation level (GIL) for protecting freshwater aquatic ecosystems. These elevated heavy metal concentrations are likely representing the background levels of the groundwater aquifer in the investigation area and the Sydney basin*"
- Concentrations of TRH, BTEX, PAHs, OCP, OPP and PCB in all groundwater samples were below the adopted health screening criteria for commercial and industrial land use and the adopted GIL
- pH of groundwater was between pH 4.4 and pH 6.7

An analysis of groundwater from the *Bankstown Station and Additional Corridor Works BAC DPK 003 Contamination Assessment Report (AGJV, 2022)* showed:

- Concentrations of BTEXN and TRH in groundwater samples were below health the screening criteria in relation to a potential vapour intrusion pathway.
- Concentrations of metals (lead and manganese) in groundwater samples collected in June 2022 exceeded the health screening criteria in relation to direct contact pathway for recreational water use. The criteria for recreational water were considered in the absence of more specific construction / industrial land use criteria for heavy metals and to give context to the water quality sampled. Recreational screening criteria assumes an ingestion exposure scenario (i.e. drinking 200 ml water per day).
- Concentrations of metals (cadmium, chromium, copper, lead, manganese, nickel and zinc) were above the screening criteria for protection of aquatic ecosystems based on a 95% species protection level.

Due to the depth of excavations associated with the Project, there is the possibility that contaminated groundwater may be encountered. Additional groundwater investigations will be carried out by JHLORJV in areas where there is the potential for interacting with groundwater, prior to these works commencing.

Should groundwater be encountered during works it will be managed and should that groundwater need to be dewatered, the primary approach would be to dewater the groundwater by vacuum truck and dispose of at an appropriately licenced facility. Discharge to a nearby water body will remain an option if ANZG/ANZECC Guideline criteria is met, however due to the small volumes expected it is unlikely the will be a feasible option.

It is noted that construction processes, if not managed appropriately, could lead to contamination of groundwater via spills and leaks. Management measures outlined in Section 5 will mitigate the risk of impact to groundwater quality.

3.5. Surface water

3.5.1. Catchments and waterways

The Project sites form part of the overall Cooks River catchment with water from the area discharging into the Cooks River via local stormwater drainage or overland flow. The catchment area and waterways is highly urbanised with mixed residential, commercial and industrial properties. Waterways within this catchment are largely artificial, hard-lined (e.g. concrete channel, piped channel, brick channel) stormwater channels, with the exception of the Cooks River.

The EIS states *"The Cooks River catchment, located in the inner to middle south-western suburbs of Sydney, has an area of about 102 square kilometres. The majority of the catchment is highly developed. The Cooks River itself is about 23 kilometres long, and flows from Chullora in the west to Botany Bay in the east. The river discharges into the north of Botany Bay, near Sydney Airport. The river is tidally influenced as far as South Enfield. Major tributaries of the river include:*

- Coxs Creek
- Cup and Saucer Creek
- Wolli Creek
- Alexandra Canal
- Muddy Creek
- Eastern Channel
- Western Channel."

It is noted that in accordance with REMM FHW7, works within or near watercourses (including the Cooks River) would be undertaken with consideration given to the NSW Office of Water's guidelines for controlled activities. The Water Management (General) Regulation 2025 (the Regulation) specifies a number of exemptions.

The exemptions that can apply to any person and relate to:

- taking water from a water source
- approved development
- maintenance and repairs
- directions
- other matters

Under Section 64(1) and Schedule 4 – section 49 of the Act the exemption applies to any kind of controlled activity carried out by a body wholly owned by the State or the Commonwealth and established or continued for a public purpose.

The exemption only applies if:

- the activity does not cause a change in the course of a river
- the body has considered the environmental impact of the activity and is satisfied that the activity is not likely to significantly affect the environment.

By endorsing the CEMP and Sub Plans, Sydney Metro has considered the environmental impact and is satisfied that the activity is not likely to significantly affect the environment for the purpose of obtaining the objective of the Environmental Planning and Assessment Act 1979 Section 5.5 – Duty to Consider Environmental & consider the effect of the activity on any wilderness area, as defined in the Wilderness Act 1987, within the locality of the proposed activity.

The SWM3 footprint is limited to the existing stations and the rail corridor between Sydenham and Bankstown stations. The Project does not propose any direct impacts or modifications to existing watercourses. The closest Project worksite to an existing watercourse is the bridge work adjacent to Wairoa St, Canterbury, which is located approximately 1m from the Cooks River. No ground disturbance is proposed. The next closest is the Canterbury Compound which is approximately 100m from the cooks River and is separated by intervening street and vegetated park area.

Figure 5 indicates the catchments and stream order of waterways for the area, as published in the EIS.

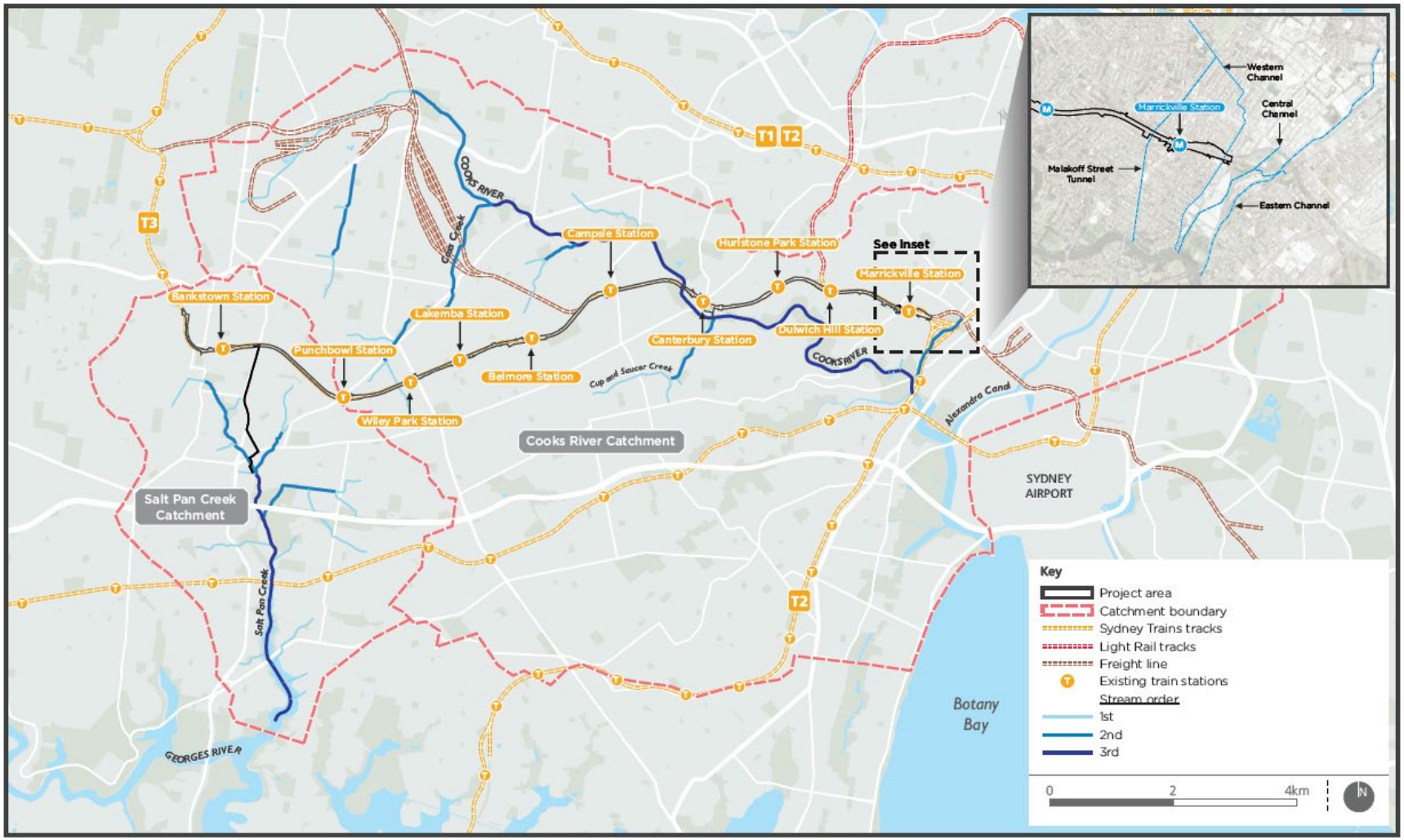


Figure 5 Catchment area and watercourse locations.

3.5.2. Surface water quality

Water courses within the catchment are heavily urbanised, with stormwater collected by developed stormwater networks and the Cooks River. Surface water quality in the project area is influenced by several factors including:

- Current and former polluting land uses within the catchment;
- Stormwater and sewage overflows and leachate from contaminated and/or reclaimed land;
- Urbanisation of the catchments and subsequent reduction in permeable area, increasing run-off and pollutant loads entering waterways; and
- Illegal dumping.

Water quality is measured on an ongoing basis for the wider Cooks River catchment by the NSW DPHI as part of the Beachwatch programme. The monitoring point is at Kyeemagh Baths at the mouth of the Cooks River in Port Botany. Water quality within the Cooks River catchment is influenced by stormwater, fertilisers, industrial discharges and sewage contamination.

Limited background water quality data is available for the Cooks River through monitoring undertaken by the Cooks River Alliance. However, the most recent data available is from 2013/2014 and monitoring was not undertaken in close proximity to the Project area.

As the Project works are not within the proximity of any first, second or third order streams, minimal impacts to surface water quality are predicted. Refer to Section 5 for erosion and sediment controls measures to be implemented during construction.

3.6. Flooding

the management measures outlined in Section 5.4 will be implemented by JHLORJV during the construction planning and construction phase of the Project to minimise flooding impacts.

The EIS states “The project involves upgrading rail infrastructure in areas subject to regular existing flooding – particularly in Marrickville.”

A number of flood related structures and components are located within the Marrickville area, including local stormwater systems, trunk drainage and flood storage. In particular, McNeilly Park, located adjacent to the rail corridor on the downside, country side of Marrickville Station acts as a flood storage area for the local catchment.

In regards to the Marrickville area the EIS states “The Marrickville Valley Flood Study (NSW Government and Sydney Water, 2013) notes that the existing rail corridor and surrounds near Marrickville Station are susceptible to flooding, with flooding predicted to occur in events as frequent as the 39 per cent Annual Exceedance Probability (AEP). Flood depths in the rail corridor are estimated to be up to one metre in a one per cent AEP event near the Illawarra Road bridge. Most of the rail corridor between Livingstone Road and Illawarra Road, and a section of corridor about 150 metres east of Marrickville Station, is identified as a high flood hazard area during the one per cent AEP event.”

SWM3 works within the rail corridor throughout Marrickville and adjacent to McNeilly Park are minor in nature, consisting of the installation of security fencing and overhead wire infrastructure. The works will remove a negligible amount of storage area from the catchment and will not restrict overland flow. As such, SWM3 works should have a negligible impact on flooding within the area.

In regards to the remainder of the Cooks River Catchment where SWM3 will occur, the EIS states "In other areas of the catchment, the draft Overland Flow Study Canterbury LGA Cooks River Catchment (Cardno, 2016) indicates that a section of the existing rail corridor located east of Canterbury Station is subject to flooding during the five per cent AEP event. The study also identifies that sections of the rail corridor 100 metres east of Canterbury Station and 100 metres west of Campsie Station are high flood hazard areas during the one per cent AEP event. The majority of the remainder of the rail corridor is either not classified as a flood hazard, or is classified as a low flood hazard in short sections." Works to occur within these areas are minor in nature and of short duration/intermittent. The scope of the works consists of the installation of security fencing and overhead wire infrastructure approximately 5m from the banks of the Cooks River. The works will have negligible impact on landform and storage area within the catchment and will not restrict overland flow. As such, SWM3 works will have negligible impact on flooding within these areas.

The EIS describes flooding within the Salt Pan Creek Catchment as follows "Mapping undertaken for the Salt Pan Creek Stormwater Catchment Study (Bankstown City Council, 2011a) indicates the potential for flooding of the rail corridor during the one per cent AEP event at several locations. The mapping indicates:

- Ponding on the north side of the rail corridor adjacent to Marion Street in Bankstown near the intersection with Bungalow Crescent, in events as frequent as a 63 per cent AEP event.
- Flooding and surface ponding from the local drainage network near the rail corridor on Olympic Parade and short sections of North Terrace and South Terrace in Bankstown during the one per cent AEP event.
- Downstream of the rail corridor, a number of residential properties would be impacted by flooding in events as small as the 18 per cent AEP event.

The report also identifies velocity-depth information for the rail corridor between Punchbowl Station and west of Bankstown Station. A section of the rail corridor 400 metres west of Punchbowl Station is likely to be associated with a low flood hazard. Shorter sections of the corridor, about 200 metres in length, around Stacey Street and to the east of Bankstown Station, are likely to be classified as low flood hazard areas." Bankstown Station Rail line mostly in fill with limited potential for flooding of rail corridor. The SWM3 works will not occur within areas as described within the three dot points above. Works will occur between Punchbowl Station and Bankstown Station. The works to occur within these areas are minor in nature and include fencing, GST, Station, track, civil works and installation of overhead wire infrastructure. SWM3 works is likely to have negligible impact on flooding within these areas.

CoA-E8 states 'The location of Construction compounds must not worsen the existing flooding characteristics of the area' and REMM FHW5 states "Detailed construction planning would consider flood risk for all compounds and work sites. This would include identification of measures to not worsen existing flooding characteristics.

Not worsen is defined as:

- a maximum increase in flood levels of 50 mm in a one per cent AEP event
- a maximum increase in time of inundation of one hour in a one per cent AEP event
- no increase in the potential for soil erosion and scouring from any increase in flow velocity in a one per cent AEP flood event"

When determining potential locations for proposed compounds and worksites, JHLOR will review and consider existing flood information from multiples sources, including the Sydney Metro City & Southwest Sydenham to Bankstown EIS Technical Paper 8 – Hydrology,

Flooding and Water Quality Assessment, Council Flood Studies and Local Environmental Plan Flood Maps. JHLOR will undertake further assessment where compounds or worksite are proposed for areas of flooding, to ensure conditions are not worsened in accordance with REMM FHW5. Assessments will be provided to the ER for review.

JHLORJV will limit construction compounds and worksites in areas of known high flooding potential, such as Marrickville, within the rail corridor 100m to the east of Canterbury Station and 100m to the west of Campsie Station and in the vicinity of low lying areas near Marion Street and Greenwood Ave Bankstown (noting that laydown and a Minor Ancillary Facility may be set up at the Sydney Trains laydown area at Marion Street & Depot Place within the area at the top of the embankment). Stockpiling of spoil and quarry materials will occur outside of these areas. Worksites in these areas will be minor in nature with a small amount of materials used to construct GST, GLT and security fencing. These materials will be stored in laydown areas outside of the flood prone areas, where possible. Any plant or equipment will be stored outside flood prone areas where possible. This includes catchment storage, retention of flood waters or an increase to water velocities within overland flows or through culverts. Where materials are proposed to be stored within areas that may flood it is noted that the size and nature of the construction components, plant and equipment will lead to negligible impacts to existing (pre-Construction) flooding. Any site offices or ancillary facilitates would be located on piers or stilts above the known 10% AEP flood level.

JHLORJV has established a compound within the Bankstown Station carpark on North Terrace, Bankstown. The Salt Pan Creek Catchments Floodplain Risk Management Study and Plan (Bewsher 2013) indicates that the area is subject to minor flooding during the 100yr ARI event.

The Study indicates that flood water within the carpark could reach up to 100mm in depth in the location of the compound. As such, compound facilities have been constructed on stilts greater than 100mm high to mitigate impacts to flooding as required by CoA-E8, REMM FHW5 and REMM FHW6.

REMM FHW6 states “The site layout and staging of construction activities will:

- avoid or minimise obstruction of overland flow paths and limit the extent of flow diversion required
- consider how works would affect the existing stormwater network such that alternatives are in place prior to any disconnection or diversion of stormwater infrastructure.”

JHLORJV will mitigate the risk to overland flow paths and the existing stormwater network. The majority of works (Civil, Rail, Bridge, Asset and Station) will not impact on overland flow routes or local drainage. Where necessary, JHLOR will mitigate impacts to overland flows by enacting temporary measures such as diversion pipes, installed for short lengths and as required. Diversion of overland flow through pipes or berms is a preferred method within Managing Urban Stormwater: Soils and Construction for limiting erosion and sedimentation impacts. Where temporary diversion measures will be utilised, temporary works design will be undertaken to ensure the measures are appropriately sized.

In regards to REMM FHW5 and FHW6 it is noted that Section 7.4.2 of the SPIR states “the need to undertake further assessment works regarding the potential impacts of the flooding management system is no longer relevant to the preferred project and no further flood modelling or assessment is proposed as part of detailed design.”

REMM FHW7 states “works within or near watercourses (including the Cooks River) will be undertaken with consideration given to the NSW Office of Water’s guidelines for controlled

activities." The Cooks River, in the vicinity of the Canterbury (Cooks River) Underbridges, is a tidally influenced fourth order stream formed by concrete channel walls on each bank. As such, in accordance with the guidelines for controlled activities, the riparian corridor (RC) and vegetated riparian zone (VRZ) extend 40m from each channel wall. It is noted that the area is a highly disturbed and urbanised, with minimal remaining riparian vegetation on the downstream side of the Canterbury Underbridges. The proposed controlled activities are exempt as follows and include;

- Water take (dewatering pits and excavations)
- Working within 40 metres of the highest bank of the river
- Installation of ERSED controls within the river

None of the proposed controlled activities will cause a change in the course of the river.

By following the processes and procedures within the CEMP and Sub Plans, all matters affecting or likely to affect the environment by reason of that activity would be mitigated as assessed to the fullest extent possible within the EIS.

No wilderness area within Project Area.

The CEMP and Sub Plans have considered the environmental impact of the proposed controlled activities. The assessed activities are not likely to significantly affect the environment.

The guidelines objectives are addressed by the mitigation measures in Section 6 of this Plan.

Where feasible and reasonable, detailed design will result in no net increase in stormwater runoff such that the Project will not increase downstream flood risks. Further details on the REMMs (including REMM FHW1 and REMM FHW3) and other conditions relating to design for flooding are included the relevant Design Report Refer to Appendix A Compliance Matrix for details.

4. Environmental aspects and impacts

4.1. Construction activities

Key construction activities that could result in adverse impacts to soils and surface water include:

- Vegetation clearing and topsoil stripping;
- Bulk earthworks;
- Construction and use of site accesses;
- Drainage works;
- Material stockpiling including the treatment of acid sulfate soil and rock;
- Water use; and
- Operations at site compounds including fuel and chemical storage, refuelling and chemical handling.

The key aspects and potential impacts associated with the management of soil and water during the delivery of the Project are listed in Table 10.

Table 10: Aspects and potential impacts

Aspects	Potential impacts
Discharge of contaminated water from within site boundary during rainfall **Concrete washout**	• Contamination of adjacent watercourse • Contamination of soils
Dust generated by vehicles	• Potential pollution of waterways and air
Vegetation clearing and topsoil stripping	• Sediment degrading surrounding environment • Runoff entering drainage lines causing pollution and impacting aquatic life in the catchment • Potential loss of seedbank in topsoil
Earthworks / Embankment works/ Platform excavation works / Service building works	• Potential spread of contamination into soils /surface or groundwater • Personnel exposure to contaminants • Sediment degrading surrounding environment • Change to flooding characteristics
Flooding of worksites	• Contamination of floodwaters by sewage, fuels and/or chemicals onsite
Leaks or spillages of fuels, oils and grease from construction plant and equipment and at compounds	• Contamination of soil • Contamination of watercourse, riparian environment and groundwater ecosystems • Personnel exposure to contaminants
Disturbance of Potential Acid Sulphate soils and Actual Acid Sulphate Soils during excavations.	• Mobilisation of metals within runoff to levels toxic to natural systems • Release of acidic runoff
Modifications to natural hydrology or water quality from excavations	• Localised pollution of waterways • Potential loss of surface flow from existing drainage lines

Aspects	Potential impacts
Sediment laden runoff during rainfall	• Runoff entering drainage lines causing pollution and impacting aquatic life in Cooks River
Sediment tracking onto public roads from vehicles leaving site	• Potential impact on traffic safety • Potential for sediment laden runoff during rainfall • Potential for generation of dust
Storage of hazardous chemicals and dangerous goods	• Contamination as a result of a spill • Impact to watercourses from pollution
Construction laydown spills	• Contamination of soils • Potential for pollutants to wash into drainage system • Sediment laden/ contaminated runoff entering drainage system • Potential for contamination of floodwaters by sewerage, fuels and/or chemicals onsite
Inappropriate management (handling, stockpiling, transport and disposal) of identified contamination or contaminated materials encountered during construction works (e.g. excavation)	• Potential for spread of contamination (soil/water) • Personnel exposure to contaminants • Local media coverage • Fines and prosecution from Regulatory Authorities

It is noted that groundwater impacts are not captured in Table 10 as groundwater is not anticipated to be impacted by the works. Further information regarding groundwater management is included in the Groundwater Management Procedure included in Appendix E of the CEMP.

Some impacts on soil and water attributable to the Project are anticipated. Section 5 provides a suite of mitigation measures that will be implemented to avoid or minimise those impacts. No stormwater storage structures are anticipated to be impacted by the Project works.

5. Soil and water management

5.1. Erosion and sediment control

5.1.1. General principles

Environmental protection during construction will involve the installation, use and maintenance of a number of temporary erosion and sediment control measures as required in accordance with the following principles:

- Before undertaking any construction work (including any earthmoving or vegetation removal works), implement all soil and water management works required to minimise pollution of waters;
- All erosion and sediment controls will be installed in accordance with best-practice guidelines such NSW Blue Book Volumes 1 and 2D (Landcom, 2004 and DECC, 2008);
- Erosion and sedimentation mitigation measures would be installed and maintained for the duration of the Project's works;
- Minimise loss of topsoil where practicable;
- Maintaining ground cover for as long possible to prevent erosion and sedimentation;
- Diversion of 'clean' run-off from offsite around or through the worksite without it contacting exposed soils or mixing with 'dirty' onsite water and maintaining existing drainage infrastructure wherever possible;
- Installation of any permanent scour protection measures required for the operational phase would occur as soon as practical;
- Minimisation of soil erosion and mobilisation of sediment during rain events;
- Use of suitable sediment retention structures and control measures to filter or retain mobilised sediment generated during rain events over surface disturbances. For consistency with CSSI 7400 (in the absence of a prescribed capacity in CSSI 8256) measures would be designed as a minimum for the 80th percentile; 5-day rainfall event. For Sydney this is 29.7mm;
- Maximum sediment capture through effective positioning of temporary erosion and sediment control structures;
- Progressive rehabilitation and/or stabilisation of completed areas to minimise erosion hazard, as soon as practicable;
- Regular inspection and maintenance of all erosion and sediment controls to ensure they are effective;
- Use of water efficient fittings and fixtures where reasonable and feasible for temporary site facilities;
- Targeted training on ERSED principles for JHLORJV' key staff;
- Ensure that any road, footpath, shared path or cycleway which is open to the public is at all times kept free of mud, dirt, dust, deleterious material, debris, obstructions and trip hazards arising from the Project activities in accordance with the Project Approval;

- Utilisation and maintenance of appropriate site exit controls. This may include wheel wash facilities. These measures would be put in place to mitigate the risk of any loss of fuels, lubricants, load or other substances;
- Any spillage or build-up of such material or debris will be cleaned up as soon as practicable;
- Diversion of run-off from areas of exposed soil to appropriate sediment control devices as much as practicable; and
- Installation of erosion controls in the base of drains used to divert runoff, to minimise erosion of sediment from the drain.

5.1.2. Resources

Ultimate responsibility for erosion and sediment control will rest with the construction personnel within the construction team, led by Construction Managers, who will be responsible for the installation and maintenance of erosion and sediment controls. This will include (although is not limited to):

- Hard standing and deployment of spray-on soil stabilisers as required;
- Installation, cleaning and maintenance of controls such as sediment fences, gravel socks, inlet filters, straw bales, sandbags etc;
- Installation of temporary drain and channel liners (e.g. geofabric, jute matting etc); and
- All dewatering activities.

Relevant personnel will receive training and ongoing toolbox talks on installation and maintenance of erosion and sediment controls.

5.1.3. Sediment basins

Due to the limited earthworks proposed as part of this Project, and limited space within the rail corridor and station locations, sediment basins are not anticipated to be required during the Construction stage. Erosion and sediment impacts should be sufficiently mitigated by other measures as outlined in Section 5.1.4.

Should JHLORJV propose to use sediment basins to manage soil and water throughout their works, this SWMP will be updated to include this.

5.1.4. Erosion and Sediment Control Plans

Erosion and Sediment Control Plans (ESCP) will be developed for the Project sites in accordance with the requirements of Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Managing Urban Stormwater: Soils and Construction Volume 2A (DECC 2008) (the “Blue Book’). The ESCPs will typically contain the following key management measures, as applicable to the works:

Site entry and access requirements

- Establish stabilised access points with rumble grids or wheel washes to prevent mud tracking on roads;
- Clearly delineate access points;
- Use of street sweepers;

- Longer term and/or heavily used haul roads would generally be sealed. Sealed haul roads will be regularly cleaned;
- Unsealed haul roads would be regularly damped down with fixed or mobile sprinkler systems;
- Appropriate site speed limits would be imposed and signed on haul routes; and
- Exclusion zones would be designated on construction sites to limit disturbance.

Soil stripping and stockpiling

- Stockpile areas are to be established within approved low-hazard areas clear of watercourses, stormwater drainage lines/culverts and not within the dripline of any retained trees where feasible and reasonable;
- Diversion drains/bunds are to be installed on the high side of stockpiles if run—off from upslope lands could impact on the stockpile;
- As much as is feasible, mulched vegetation, topsoil and subsoil (if applicable) are to be stockpiled separately;
- Any contaminated material stockpiles (i.e. asbestos, contaminated soil) will be covered on-site and short-term material stockpiles (>5 days not in use) with potential to generate dust will be wetted down or covered to prevent fugitive dust emissions or run-off during wet weather. Long-term stockpiles (>30 days) will be stabilised and /or covered in accordance with “Blue Book” requirements;
- Topsoil and mulch stockpiles will be constructed to no more than 2m in height where possible;
- Stockpiles will be battered down to a maximum slope of 2:1 (H:V) where space permits; and
- Material transport from site to surrounding pavement surfaces would be minimised

Dust control

- Dust suppression will be carried out whenever necessary to minimise sediments becoming air borne due to wind erosion; and
- Wherever possible, water detained onsite will be re-used for dust control.

Stabilisation

- Undertake progressive stabilisation of ground surfaces as quickly as possible as they are completed rather than at the end of the works program;
- Progressively revegetate disturbed areas utilising appropriate species in those areas to be revegetated;
- Temporary ground covers such as hydraulic soil stabilisers or geotextile fabric will be used as much as possible to stabilise batters, stockpiles and large surface areas; and
- Scour protection and energy dissipation would be used around discharge points at local points to reduce erosion where necessary.

Sediment controls

- Locations of nearest existing drainage channels and stormwater inlets to the works will be displayed on the ESCP;

- Sediment controls will be installed around stormwater inlet pits where appropriate and where they will not cause or exacerbate flooding. Traffic management and safety will need to be considered if installing such devices on or near live traffic;
- Maximise the diversion of turbid construction runoff into sediment retention devices such as sediment sumps, sediment fences and other sediment traps;
- Mulch bunds will not be used in concentrated flow areas or if they have the potential to result in tannin leachate into waterways;
- All erosion and sediment controls will be inspected by the Environmental Manager (or delegate) at least weekly, before forecast rainfall exceeding 20 mm in 24 hours, after rainfall exceeding 20 mm in 24 hours and before a site closure of two days or more. Maintenance will be carried out as required prior to the next forecast rainfall event;
- Site supervisors will undertake daily erosion and sediment control checks and record any issues within site diaries. Site supervisors will ensure controls are maintained and in working order;
- Concrete washout will be confined to designated concrete washout locations or using a Concrete Waste Separation Unit (CWSU), which allows for recycling of concrete waste;
- Clean water diversions will be constructed and stabilised around work areas; and
- No stockpiles of materials or storage of fuels or chemicals will be located adjacent to the existing culverts.

Water storage

- Although sediment basins are not required for the site, some water may be stored for treatment before discharge or re-use. In particular, water within excavations that does not meet the criteria for discharge may be pumped into storage tanks or an impermeable bund for treatment, allowing works to recommence in parallel with water treatment.

ESCPs will provide guidance on the installation of control measures, as per the Blue Book.

As the works will mainly occur under rail possessions (i.e. short term works, over a limited area) JHLORJV will develop a series of ESCPs for the works as they progress. This series of ESCPs will focus on the erosion and sediment risks for each work front as they are established and closed out.

JHLORJV will engage an ERSED Specialist Consultant to review initial site controls and where activities are deemed high risk by the Environmental Manager, ESCPs will be developed. Sydney Metro's Principal Contractor will incorporate any feasible and reasonable recommendations made by the ERSED Specialist.

All ESCPs prepared for the Project will require sign-off by the Environmental Manager (or delegate) prior to implementation. As a minimum, the work sites that would require ESCPs to be developed are included as hold points in Section 10.1.

JHLORJV will comply with CoA E38, which states *"All reasonable practicable erosion and sediment controls must be installed and appropriately maintained to minimise water pollution. When implementing such controls, any relevant guidance in the Managing Urban Stormwater series must be considered."*

REMM SC1 states *"Erosion and sediment control measures would be implemented in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater: Soils and Construction Volume 2A (DECC, 2008). Measures would be designed as a minimum for the 80th percentile, five day rainfall event."* JHLORJV will comply with this REMM as it applies to the works, all measures will be installed in accordance with this documentation (e.g. sediment fence, rock check dams, batter protection etc.). It is noted that the "measures" to be designed in accordance with the 80th percentile, five day rainfall event are the different types of sediment basins described under the Managing Urban Stormwater guidelines. As stated in Section 5.1.3, it is unlikely that sediment basins would be implemented during the construction of the Project. As such, the part of REMM SC1 that states *"Measures would be designed as a minimum for the 80th percentile, five day rainfall event"* is not relevant to the Project works. Should JHLORJV propose to use sediment basins to manage soil and water throughout their works, this SWMP will be updated to include this.

In accordance with REMM FHW8, erosion and sediment mitigation measures would be installed and maintained for the duration of the Construction period.

5.2. Surface water management

The Project site forms part of the greater Cooks River catchment. Specific Water Quality Objectives have been derived for the catchment in line with the NSW Water Quality Objectives. Catchment mapping classifies the Project site as a waterway that is *"affected by urban development"*. The water quality objectives for the catchment include the protection of:

- Aquatic ecosystems - Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term
- Visual amenity – Aesthetic qualities of waters
- Secondary contact recreation - Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed.

5.2.1. Reuse

Where practicable, any water collected in pits, excavations / work sites will be reused within, the Premises (e.g. dust suppression, watering retained vegetation). The Sydney Metro - Water Discharge or Reuse Procedure regulates both onsite reuse and offsite point source discharge. Prior to any discharge off the premises, or reuse within the premises, the JHLORJV Environment Manager or Coordinator (or delegate authorised by the Environment Manager/Coordinator) is to sign off that the water is suitable for reuse or discharge. Refer to Section 10.1 for hold points.

5.2.1.1. Onsite reuse

For onsite reuse, the following criteria will be utilised:

- pH – 6.5 to 8.5;
- No visible oil and grease;
- No potential for water to leave the premise;
- No surface runoff will be generated from the reuse (reuse includes dust suppression, watering retained vegetation etc.); and

- No potential for water to reach any watercourse.

5.2.2. Offsite discharge

Offsite discharge may be required from time to time during SWM3 works. In the first instance, water will be re-used on-site in accordance with the Sydney Metro – Water Discharge or Reuse Procedure (SM-17-00000098) as detailed in Section 5.2.1.1.

No water will be discharged off site until it has been tested and a permit to discharge is approved by the Environmental Manager (or delegate). Refer to Section 10.1 for hold points. All water discharges will be documented using Sydney Metro's Water Discharge or Reuse Approval Form or site-specific equivalent.

To avoid potential breaches of section 120 of the POEO Act, any water discharged from site to stormwater (via EPL discharge point) must comply with JHLORJV EPL 21147 condition L1.1. To achieve this, prior to any discharge offsite, a risk assessment must be done and include an assessment of known contamination. In areas of known contamination and specifically prior to using EPL discharge point 8 the requirements of *Licence variation 1618703 for EPL 21147* must be met. This would include a Water Discharge Impact Assessment (WDIA) to identify potential contaminants within the work site and validate the water quality of the receiving water body. The outcome of the WDIA may trigger a more comprehensive monitoring program subject to frequency of discharge and volume. Refer to Section 6.

Water quality testing will be undertaken prior to discharge offsite in accordance with JHLORJV EPL 21147 and the Sydney Metro – Water Discharge or Reuse Procedure for the following parameters and monitored 24 hours prior to discharge for batch or on a daily basis continuous discharge. Refer to Table 11: Criteria for offsite discharge for testing criteria for offsite discharge as published in the Sydney Metro – Water Discharge or Reuse Procedure.

Table 11: Criteria for offsite discharge

Parameter	Criterion	Method	Time prior to discharge
Oil and grease	None visible	Visual inspection	< 1 hour
pH	6.5 – 8.5	Probe/Meter	< 1 hour
Total Suspended Solids (TSS)	<50 mg/L	Meter/grab sample	< 1 hour/ <24 hours

In accordance with REMM FHW10, discharges from construction water treatment devices would be monitored to ensure compliance with the discharge criteria, as stated above.

The Water Quality Monitoring Program, as included within Section 6, will be implemented to monitor impacts on surface resources during construction.

Should offsite discharge be required, JHLORJV will be responsible for identifying and proposing suitable discharge points. This Sub-plan will be revised to include any discharge points to be utilised by JHLORJV. JHLORJV will consult with the relevant Council prior to discharge in Council stormwater assets where the capacity of the stormwater system may be reduced during wet weather. It is noted that volume of stormwater captured and discharged offsite is expected to be negligible and that under most circumstances the capacity of the system would be sufficient.

5.3. Potable water

In-line with the CEMF the following water resource management objectives will apply to the construction of the Project:

- Minimise use of potable water; and
- Maximise opportunities for the reuse of rainwater, stormwater, wastewater and groundwater.

JHLORJV will undertake a Water Balance Study to meet these objectives. The Water Balance Study will be completed prior to the commencement of construction and will estimate the quantities, types and potential sources of water that will be required for the Project. The study will identify the best opportunities to use non-potable water (where available) instead of potable water and minimise the quantities of both potable and non-potable water which will be consumed.

The water balance study will consider the following:

- Site facilities;
- Dust control for construction activities;
- Subgrade treatments;
- Trenching activities;
- Piling activities;
- Landscape establishment; and
- Water demand ongoing for operation and maintenance.

Measures to minimise water consumption are identified in the Sustainability Management Plan. Examples of initiatives that will be investigated and implemented where practicable include:

- Installing water efficient controls, fixtures and fittings in temporary facilities;
- Harvesting and reusing rainwater from roofs of temporary facilities and operation facilities;
- Using non-potable water sources for dust suppression during construction;
- Using water efficient construction methods and equipment;
- Specifying within supply chain contracts that offsite batching plant concrete production operation water is recycled, suitably treated and incorporated into concrete production that is supplied the Project;
- Maximise the use of stormwater in the urban design; and
- Include a drought tolerant planting schedule in the urban design.

5.4. Flooding management

As outlined in Section 3.6, the construction of the Project should have a negligible impact on flooding within the catchment, with minimal loss of flood storage and minimal changes or restrictions to existing flood regimes. However, in accordance with CoA E9, where the works will worsen flooding impacts, JHLORJV will be responsible for implementing measures to address those impacts.

In accordance with CoA E8, the location of JHLORJV construction compounds will not worsen the existing flooding characteristics of the area. Detailed construction planning would consider flood risks for all compounds and work sites. This would include identification of measures to not worsen existing flooding characteristics. In accordance with REMM FHW5, not worsen is defined as:

- A maximum increase in flood levels of 50mm in a one per cent AEP event;
- A maximum increase in time of inundation of one hour in a one per cent AEP event;
- No increase in the potential for soil erosion and scouring from any increase in flow velocity in a one per cent AEP flood event.

When determining potential locations for proposed compounds and worksites, JHLORJV will review and consider existing flood information from multiples sources, including *the Sydney Metro City & Southwest Sydenham to Bankstown EIS Technical Paper 8 – Hydrology, Flooding and Water Quality Assessment*, Council Flood Studies and Local Environmental Plan Flood Maps. JHLORJV will undertake further assessment where compounds or worksite are proposed for areas of flooding, to ensure conditions are not worsened in accordance with REMM FHW5.

In addition, JHLORJV will implement the following measures to mitigate impacts of flooding on the Project in accordance with REMM FHW6:

- The site layout and staging of construction activities would;
  - Avoid or minimise obstruction to overland flow paths and limit the extent of flow diversion required
  - Consider how works would affect the existing stormwater network such that alternatives are in place prior to any disconnection or diversion of stormwater infrastructure;
- Stockpiling and storage of materials to occur outside potential flood areas;
- Temporary facilities and hazardous material storage to be above flood levels;
- Maintain overland flow paths;
- Monitoring of rainfall will be undertaken in accordance with Water Quality Monitoring Program;
- Construction equipment (or excess material) would be removed from prone areas where significant events are predicted;
- Site sheds and chemical stores will be constructed above the 10 year ARI level;
- Site inspections will be completed to ensure ERSED controls are place prior to the event;
- Where applicable, temporary levees or bunds would be strategically placed to contain potential flooding impacts resulting from any temporary works on the floodplain and minimise the risk to surrounding properties which might otherwise be affected;
- Stockpiles will be located away from areas subject to concentrated overland flow; and
- In the event of an emergency the requirements set out in the Emergency Response Plan will be implemented.

5.5. Groundwater management

The Project's construction activities are anticipated to have negligible impacts to the groundwater table and local groundwater hydrology. Any potential impacts on groundwater will be considered and managed through each site's ESCP.

Some groundwater seepage into excavations may occur and will be managed as detailed in the Groundwater Procedure included in Appendix E of the CEMP to ensure the protection of any groundwater dependent ecosystems (GDEs) and wetlands is achieved at a local scale. JHLORJV have predicted a worst-case scenario of up to 200,000L of groundwater maybe encountered across the whole alignment (Sydenham to Bankstown). This is a conservative number and can also be affected by weather. Should groundwater be encountered the most likely approach would be off-site disposal as liquid waste in accordance with the NSW EPA Waste Classification Guidelines, 2014. Due to the likely high total suspended solids (TSS) content of groundwater, on site treatment is unlikely, however the approach would be to dewater the groundwater to land within the project area (refer to S5.2), if ANZG/ANZECC Guideline criteria is met as well as the on-site reuse criteria. Due to the limited groundwater take, this volume should not contribute to an exceedance of the Long-term average annual extraction limit (LTAAEL) that is protected for environmental benefit under Section 5(3) of the Water Management Act and following the water sharing management principles. No extraction is proposed within a Botany Sands Management Zone.

5.5.1. Aquifer Interference Policy

Under the Water Management (General) Amendment (Exemptions for Infrastructure) Regulation 2025, public authorities are exempt from requiring an access licence for the taking of water associated with the construction of essential infrastructure and are not subject to the following conditions if related to essential infrastructure- rail:

(a) record in the approved form and manner the amount of water taken within 24 hours of the water being taken, and

(b) keep the record for 5 years after the record is made, and

(c) give a copy of the record to the Minister in an approved manner—

(i) not later than 28 days after the end of the water year in which the water was taken, or

(ii) by an earlier date if notified in writing by the Minister.

The Water Management (General) Amendment (Exemptions for Infrastructure) Regulation 2025 was Gazetted 6 June 2025.

5.6. Refuelling, chemicals and spill management

JHLORJV will ensure hazardous chemicals and dangerous goods will be stored and used onsite in accordance with the following protocols:

- In accordance with CoA E41, dangerous goods, as defined by the *Australian Dangerous Goods Code*, will be stored and handled strictly in accordance with:
  - All relevant Australian Standards;
  - For liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and

  - The Environment Protection Manual for Authorised Officers: Bunding and Spill Management technical bulletin (EPA, 1997).

- In accordance with REMM HRS4 all hazard chemicals and dangerous goods that may be required for construction and operation would be stored and managed in accordance with the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005) and the Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (Department of Planning, 2011);
- Hazardous chemicals and dangerous goods will be stored onsite in lockable containers, in their original receptacles;
- Emergency spill kits would be kept on-site at all times. All staff would be made aware of the location of the spill kit and be trained in its use;
- All hazardous chemicals and dangerous goods will be clearly labelled and will have Safety Data Sheets (SDS) affixed or available nearby. The SDS will be used to determine compatibility of hazardous chemicals to be stored together, i.e. no flammables with corrosives, not all corrosives compatible with each other etc;
- A bund sized to 110% of the largest stored receptacle will be established around any storage area for hazardous chemicals and dangerous goods ;
- Storage and handling of flammable or combustible liquids will be in accordance with EES Group guidelines for Bunding and Spill Management, as well as AS 1940-1993 – The Storage and Handling of Flammable and Combustible Liquids;
- An up-to-date register of hazardous chemicals and dangerous goods will be kept onsite at all times;
- Hazardous chemicals and dangerous goods will only be used onsite as required, in accordance with the manufacturer/supplier instructions;
- Any substances with the potential to impact water quality will be assessed by the Environment Manager to determine what environmental safeguards or procedures are required for that substance to minimise the risk of environmental harm;
- The use of any hazardous chemicals and dangerous goods that could result in a spill will be undertaken away from drainage or stormwater lines and, wherever possible, within defined bunds;
- All spills or leakages will be immediately contained and absorbed. Routine inspections of all construction vehicles and equipment would be undertaken for evidence of fuel/oil leaks;
- Vehicles and machinery would be properly maintained to minimise the risk of fuel/oil leaks;
- In the event of a spill, the Spill Management Procedure to be prepared by JHLORJV will be implemented. As set out in Section 3.10 of the CEMP, the management of environmental incidents where material harm to the environment is caused or threatened will be managed in accordance with Sydney Metro's Environmental Incident and Non-compliance Reporting Procedure; and
- Construction plant, vehicles and equipment would be refuelled off-site, or in designated re-fuelling areas located at a minimum distance of 50 metres from drainage lines or waterways, where possible.

5.7. Contamination Management

Site investigation findings outlined in Section 3.3 have found no significant contamination with the Project site to date therefore not triggering requirements for further investigation or a RAP, as per REMM SC7. Should additional contamination testing indicate the presence of contamination at levels that require a RAP, JHLORJV will develop and implement the RAP.

The following mitigation measures will be implemented by JHLORJV to mitigate risks associated with contamination across the Project sites:

- Known contamination areas will be clearly demarcated on site and within Environmental Control Maps (ECMs) – these will be updated during course of the Project if areas of potential contamination are identified;
- Known and potential contamination would be assessed, managed and/or remediated in accordance with the Unexpected Contaminated Land Procedure and Asbestos Finds Procedure (refer to Appendix B) and the Waste and Spoil Management Procedure in Appendix E of the CEMP for appropriate waste classification and removal of material off-site and in accordance with its classification status to an EPA licenced facility or facility that can lawfully accept the waste;
- Appropriate environmental controls/measures will be included on ECMs and ESCPs and implemented to manage and prevent the spread of contamination. Typical examples of controls/measures would include (although is not limited to):
    - Segregating contaminated material to minimise cross contamination (where safe to do so);
    - Establishing suitable lining prior to stockpiling;
    - Signposting;
    - Covering material; and,
    - Implementing measures outlined within Section 5.11 of this plan for ASS/PASS.
- Identifying reporting requirements, including requirements under the *Contaminated Land Management Act 1997*, when contamination is encountered;
- Providing inductions and toolbox talks detailing the correct response when contaminated material is encountered.

Where contamination is encountered, workers will apply the appropriate Personal Protective Equipment (PPE). The appropriate PPE will depend on the contaminant type and the works to be undertaken. Appropriate PPE will be decided upon in consultation with an Occupational Hygienist.

5.8. Unexpected finds

REMM SC8 states that in the event of unexpected finds of contamination or asbestos the works would cease and Unexpected Contaminated Land Procedure and Asbestos Finds Procedure (refer Appendix B) will be implemented. In accordance with CoA E40, the Unexpected Contaminated Land Procedure and Asbestos Finds Procedure will be implemented throughout Construction.

In brief, the following would occur:

- Cease work in the area of concern immediately;

- Isolate the area with barrier tape or any other physical barrier to prevent workers from entering the potentially contaminated location;
- Report the area of concern to the Environmental Manager and WHS Manager immediately. Nearby work groups would be notified;
- Environmental Manager will engage a suitably qualified contamination consultant inspect the site and carry out an initial assessment of the nature and extent of the contamination;
- The Contamination Consultant will advise what management is required in accordance with this plan, any Planning Approval requirements and the contamination report prepared;
- Hazardous materials surveys would be undertaken during detailed design for utility adjustments as required.

5.9. Asbestos

Identified fragments of Asbestos Containing Material (ACM) on the surface and within stockpiles on site will be managed in accordance with the measures above, the Project's Health and Safety Management Plan, Asbestos Management Plan and task specific Asbestos Removal Control Plan. The unexpected contamination finds procedure will also be implemented as per Section 5.8.

Removal of ACM will be by a licenced asbestos removal contractor who will produce the following:

- Asbestos removal licences for workers performing the removal works;
- A task specific Safe Work Method Statement (SWMS);
- Evidence of notification to the relevant authority and asbestos removal permit;
- Where there is uncertainty as to whether the exposure standard may be exceeded, or if it is likely to be exceeded, then air monitoring must be performed by a competent person who is independent of the removalist;
- At the completion of the removal works a clearance certificate must be obtained from a competent person;
- A waste disposal certificate must be provided by the removalist following the completion of the works to prove that any asbestos containing material removed from the site has gone to a licenced landfill facility;
- Unless a specific exemption exists, asbestos waste must be tracked using the NSW EPA's WasteLocate. Evidence of this is to be provided by the asbestos removalist.

Safety considerations relating to contamination and asbestos are to be included within the JHLORJV Health & Safety Management Plan & Occupational Health Hygiene Welfare Management Plan. Task specific Asbestos Removal Control Plans will be developed for the works if asbestos is encountered.

Where asbestos is encountered, workers will apply the appropriate PPE. Appropriate PPE will be decided upon in consultation with an Occupational Hygienist.

5.10. Salinity

In accordance with the findings of the EIS, the potential for salinity issues on the majority of the Project site is low. Saline soils may be encountered between Punchbowl and Bankstown. In accordance with REMM SC3, JHLOR will undertake further testing to confirm the presence of salinity (prior to ground disturbance) and determine the degree of salinity within soils that may be impacted by the works. Should salinity be identified during the Project works further investigation is to occur, and measures will be put in place to protect building materials, vegetation and landscaping in accordance with *Site Investigations for Urban Salinity* (DLWC, 2002). The following mitigation measures will be applied:

- Minimising water infiltration
- Landscaping using native plants
- Retention (where practicable) of deep-rooted vegetation
- Minimising soil disturbance such as compaction, cut and fill
- Inclusion of saline and sodic soils within the ESCPs.

Note, works within the identified saline areas include fencing, overhead wire installation and combined service route (CSR) works which will have limited impacts on the soil and groundwater. Piling for the SMC & BEW may encounter saline soils and spoil will be stockpiled in the Depot Place, South and North Terrace compounds for waste classification testing and disposal.

5.11. Acid sulfate soils

As stated in the EIS and site contamination reports, ASS and PASS have been identified along the Sydenham to Bankstown rail corridor (refer to Section 3.2.3 and Figure 4). In accordance with REMM SC2, prior to ground disturbance in high probability ASS areas, testing will be carried out to determine the presence of ASS. Ongoing testing will occur as per the field and laboratory testing requirements outlined below.

If ASS are encountered, they will be managed in accordance with the *Acid Sulfate Soil Manual* and *Waste Classification Guidelines – Part 4: Acid Sulfate Soils*.

General mitigation measures for working with ASS and/or PASS include:

- Spoil to be managed in accordance with the Waste and Spoil management procedure within Appendix E of the CEMP;
- Areas of ASS and PASS should be included on ECMs and any mapping included in the permit to disturb;
- Plan works to minimise disturbance to areas of ASS and PASS;
- Excavation of ASS or PASS will not occur until an appropriate storage/treatment area is established. This includes the establishment of erosion and sediment controls in the vicinity of the storage/treatment area;
- Field testing for suspected ASS or PASS at a rate of 1 sample per 200m^3 of excavated material from low, medium or high risk areas or where previous testing has indicated the presence of PASS or ASS;
- Field testing will be undertaken with the use of Hydrogen Peroxide based on Appendix I of the Acid Sulfate Soils Assessment Guidelines (Ahern et al, 1998a).

Soils that record a pH of below 4, following oxidation with H2O2, will be managed as ASS;

- 10% of samples will be sent for laboratory analysis using the chromium reducible suite (Scr) method to confirm the peroxide screening test results and to confirm the required liming rate;
- PASS will be kept wet to prevent oxidation;
- ASS or PASS stockpiles will be located at least 50m away from drainage lines, unless a risk assessment is undertaken to prove that risks associated with the stockpile storage area are minimal;
- ASS or PASS that will be treated is to be stockpiled separately in a bunded stockpile area. Treatment will occur in accordance with the soil ASS Treatment Plan as described within Appendix C;
- Treatment rates will be determined by laboratory analysis. Estimated treatment rates are included in Section 5.11.1;
- Testing will occur to validate any treatment of ASS or PASS;
- Any surface water captured within the ASS/PASS storage bund or treatment pad area, or excavation where ASS/PASS is present will be tested in accordance with the Sydney Metro Water Discharge and Re-use Procedure to mitigate impacts on water quality and aquatic environments; and
- Inductions and toolbox talks related to the management of ASS and PASS.

A register of ASS testing will be maintained by the JHLORJV. A register of ASS/PASS stockpiles, including liming of these stockpiles, will also be maintained.

Complete records of all testing, treatment and monitoring will be kept by JHLORJV including:

- The lime register;
- Results of pH and verification testing;
- Waste classification reports; and
- Verification testing reports (if required).

5.11.1. Treatment and liming

Sampling undertaken within the *City & Southwest, Sydney Metro Sub-portion 2 - Sydenham to Bankstown Targeted Contamination Assessment* indicated that the liming rate for ASS or PASS soils on site will be between 1 and 8.8 kg $CaCO_3$/tonne. Liming rates would be confirmed by a Waste Classification Report for any material encountered.

When treating ASS / PASS onsite the following shall apply:

- Any ASS/PASS material shall be treated when there is sufficient quantity – generally in 100m^3 batches;
- A bunded impervious pad (treatment pad) shall be created for the treatment of extracted ASS. The area shall be selected to ensure no impact to other environmental aspects or elements;
- A compacted bund wall of no less than 500mm shall be constructed around the entire perimeter of the ASS treatment pad. The bund should be surface limed to neutralise

any runoff from stockpiled materials. The location of the bund and treatment pad will be identified on the ECM and is to be a minimum of 50m away from any waterway;

- The base of the treatment pad shall have a minimum of 300mm of clay or plastic lining and be dressed with a layer of lime or crushed limestone of at least 200mm thickness. This is to be established prior to stockpiling and/or placement of ASS materials at this location. A sump shall be constructed at the lowest point on the inside of the bund to contain runoff from the treatment. The sump shall be limed if required to neutralise runoff from stockpiled materials. If the water is to be discharged from this it must comply with the requirements outlined in Section 5.2 of this Plan;
- The treatment pad shall be graded so that all surface water flows to the sump;
- The bund will be covered at the end of each day or in the event of any rainfall.

5.11.2. Waste classification and offsite disposal

Prior to removal from the treatment area, treated materials shall be validated at 1 random test per 200m^3 or each batch of soil treated (whichever is less) to ensure effectiveness of treatment.

A batch of soil is defined as soil from one location that has a different liming rate to the rest of the soil on the treatment pad. Should the treated ASS remain above the guideline requirements, further treatment shall be conducted for the balance of lime required.

Once ASS is treated, tested and validated as per the guidelines, the material will no longer be considered ASS. As such, the material can be placed as non-structural fill (where appropriate).

Excavated surfaces will be treated with lime and tested to ensure ASS does not pose a risk to the installation of services.

It is currently the intention that treated materials be reused on site, as far as is practicable, as fill material above the groundwater table. However, should this not be possible, or volumes of excavated material be in excess of that which can be reused, the treated soil will be disposed of to an appropriately licensed landfill following a waste classification by an appropriately qualified environmental consultant.

The waste classification and disposal will be undertaken in accordance with relevant standards and requirements, including the NSW EPA (2014) Waste Classification Guidelines – Part 1: Classifying Wastes. It is noted that the treated soil cannot be classified as virgin excavated natural material (VENM) as per the NSW DECC (2014) requirements.

6. Water quality monitoring program

6.1. Overview

JHLORJV will monitor the effectiveness of measures for managing soil and water impacts during the construction of the Project. This will be achieved through implementation of a Water Quality Monitoring Program as detailed in this section, and regular inspections of control measures and their effectiveness.

The methodology below forms the Water Quality Monitoring Program to be implemented, to comply with CoA C8 to C15 and REMM FHW4. This monitoring program has been prepared to satisfy CoA C8(b) and REMM FHW4, in consultation with IWC, CBCC, NSW DCCEEW Water, DPHI Water and NSW EPA. See Section 1.4 for summary of consultation undertaken.

Section 21.4.1 of the EIS states “Where discharge to surface watercourses is required, a monitoring program will be implemented as part of the construction environmental management plan to assess water quality prior to discharge.”

In the first instance JHLORJV will manage water on-site in accordance with the Sydney Metro – Water Discharge or Reuse Procedure and will not discharge to surface watercourses.

In the event that off-site discharge is required, to avoid the potential of a breach to S120 of the POEO Act, a Water Discharge Impact Assessment (WDIA) would be conducted to identify potential contaminants within the work site and validate the water quality of the receiving water body. The outcome of the WDIA may trigger a more comprehensive monitoring program subject to frequency of discharge and volume.

Currently no off-site discharge is proposed, as such monitoring within the identified watercourses is not applicable to the SWM3 works.

No groundwater monitoring is proposed as part of this Project as Appendix C of the Staging Report Rev 08 states that Section 7.2 of the CEMF is not applicable to the Project due to limited impacts. Due to the low risk of water quality issues, JHLORJV will take an assurance approach to water quality monitoring, rather than sampling major water bodies. JHLORJV will fulfil the requirement for water quality monitoring by implementing an environmental condition survey of major drainage crossings and outlets (prior to Construction works occurring in an area) and post-rainfall event inspections.

The monitoring program will be in place and implemented prior to any on or off-site discharge and for the duration of the Project works.

In accordance with CoA C14, results of this monitoring program will be submitted to the Planning Secretary, relevant regulatory agencies including the NSW EPA and IWC and CBCC in the form of a Construction Monitoring Report. The Construction Monitoring Report will be submitted on a six-monthly basis from the commencement of construction.

In accordance with CoA C15 the water quality monitoring program has been incorporated into this plan.

This monitoring program addresses the Project’s construction phase monitoring until the cessation of the Project and handover to Sydney Metro. It is noted that monitoring being undertaken by follow-on contractors or works packages will be detailed in their respective management plans, and is outside the scope of this Plan.

6.2. Monitoring purpose, objectives and scope

As outlined in Section 3.5 no watercourses will be directly impacted or modified by the Project's works. Treated construction water may be discharged into existing stormwater systems during the delivery of the Project.

JHLORJV focus in relation to water quality management during construction is on prevention of pollution – minimising the risk of polluted, sediment-laden or contaminated water leaving the premises, by implementing a comprehensive management and monitoring regime on site.

Surface water quality monitoring of the receiving environment to define suitable standards or benchmarks for water quality discharges from the Project's works is not proposed given:

- Waterways in proximity to the Project sites are highly modified due to the urbanised nature of the surrounding area;
- Waterways detailed in Section 3.5 are typically greater than 100m away from the worksites and connected via stormwater systems;
- The stormwater system collects and transfers water from large urbanised catchment areas, as such there is the potential for contaminants to enter the stormwater systems and waterways from many different sources.
- Water quality in urban areas in proximity to the Project is highly variable and changes according to prevailing weather patterns and day-to-day during rainfall.

As outlined in Section 6.3, pre-construction monitoring data, if available will be obtained from the previous Principal Contractor where monitoring may be required.

6.3. Available baseline data

Water quality is measured on an ongoing basis for the wider Cooks River catchment by the NSW OEH as part of the Beachwatch programme. The monitoring point is at Kyeemagh Baths at the mouth of the Cooks River in Port Botany. This monitoring point is considered to be too far away from the Project sites to provide data that is useful for background information.

Limited background water quality data is available for the Cooks River through monitoring undertaken by the Cooks River Alliance. However, the most recent data available is from 2013/2014 and monitoring was not undertaken in close proximity to the Project site.

The Southwest Metro Early Works (SMEW) project conducted water quality monitoring at the Cooks River, adjacent to the rail corridor for the purpose of establishing baseline water quality data from May 2019 to September 2020 at quarterly intervals and also during a number of rainfall events. These monitoring locations (on Broughton Street, Canterbury) are located approximately 150m from the nearest works at Canterbury Station. It is noted that the data captured as part of the monitoring indicates that the water quality within the Cooks River at the monitoring location exceeds several of the ANZECC criteria regularly, including; pH and turbidity. Due to fluctuating results, they offer little in terms of interpretation or predictable trends.. No further baseline water quality monitoring is proposed by the Project.

6.4. Construction water quality monitoring

Chapter 21.4.1 of the EIS states that *"where discharge to surface watercourses are required, a monitoring program would be implemented as part of the construction environmental management plan to assess water quality prior to discharge".* Further, as outlined in Section 3.5 no watercourses will be directly impacted or modified by the Project's works. Treated

construction water may be discharged into existing stormwater systems during the delivery of the Project. As such, water quality will be monitored to ensure any discharge from the Project's construction sites is in accordance with the Sydney Metro – Water Discharge or Reuse Procedure and to identify potential non-compliances before they occur.

Water quality monitoring will be undertaken for controlled discharges offsite to ensure compliance with the discharge criteria defined in Section 5.2.2 as well as a WDIA to ensure the appropriate due diligence is conducted to mitigate risks of breaching S120 of the POEO Act. Monitoring and analysis of data will be carried out by a competent person. Evidence of competence will be retained.

In the event discharge to stormwater is required, it would primarily be undertaken using existing stormwater drainage pits (once the relevant discharge criteria are met), to mitigate the risk of downstream erosion. There are currently eight (8) discharge points included in EPL 21147 (Table 11). It is not anticipated that these points will be required for use. Based on a risk assessment, any new discharge locations for stormwater may require an update to the EPL with a new discharge point. The EPL would be updated to include any new discharge requirements and any discharges would be undertaken in accordance with the EPL conditions.

In accordance with CoA C14, results of this monitoring program will be submitted to the Planning Secretary, relevant regulatory agencies such as the NSW EPA, IWC and CBCC in the form of a Construction Monitoring Report. The Construction Monitoring Report will be submitted on a six-monthly basis from the commencement of Construction.

It is the responsibility of the JHLORJV Environmental Manager to ensure all monitoring is performed according to these requirements.

6.5. Monitoring parameters

JHLORJV will monitor site water prior to any discharge from site as outlined in Section 5.2.2. This will ensure that any water that is discharged is compliant with the requirements and would not impact the water quality within the receiving catchment. The monitoring parameters have been established in EPL 21147 Section 2: concentration limits and compliance with S120 of the POEO Act.

In addition, JHLORJV will undertake environmental condition surveys on major drainage crossings and outlets within localised catchments where works are to occur. The surveys will include a photo of the drainage outlets during dry, and where possible, wet weather. JHLORJV will record any particular noteworthy conditions related to water quality (e.g. turbid water observed and the source of the turbid water where visible, litter, discolouration, visible oils or sheens).

Environmental condition survey information will be collected and stored on the JHLORJV document management system.

6.6. Monitoring frequency and locations

As described in Section 6.4, water quality monitoring will be conducted for controlled discharges offsite to ensure that discharges from the Project sites are in accordance with the water quality criteria. The frequency of offsite discharges and associated monitoring will be following LOR EPL 21147 condition M2- 24 hours prior to batch discharge, daily for continuous discharge.

The planned monitoring locations and monitoring schedule are set out in Table 12 below. Once JHLORJV is engaged, JHLORJV will be responsible for nominating suitable discharge

locations listed in LOR EPL 21147 condition P1 and ensure compliance with the discharge criteria defined in Section 5.2.2.

Table 12:Water quality monitoring schedule

EPA ID	Monitoring Location	Trigger for Monitoring	Monitoring schedule
1	Eastern Channel adjacent to corridor and Sydenham Pit Up stream between (Easting 330640.51, Northing 6245668.257, MGA56, GDA94) and (Easting 330521.077, Northing 6245897.75, MGA56, GDA94).	Any Water Discharge Activity	Less than 24hours prior to controlled discharge and daily for any controlled discharge.
2	Pit within platform of Sydenham Station (Easting: 30504.634, Northing: 6245850.91, MGA56, GDA94)		
3	Eastern Channel adjacent to Sydenham Signalling Centre (Easting: 330224.294, Northing: 6245646.956, MGA56, GDA94)		
4	Stormwater pit in cess area. Easting: 330426.727 Northing: 6245758.670 (GDA94, MGA56)		
5	Charles Street Canterbury stormwater pit. Easting: 25796.33 Northing: 6246193.798 (MGA56, GDA94)		
6	Railway Corridor stormwater pit. Easting: 325721.302 Northing: 6246226.499 (MGA56, GDA94)		
7	Nowra St, Canterbury stormwater pit. Easting: 325529.162 Northing: 6246307.054 (MGA56, GDA94)		
8	Stormwater pit on kerbside gutter at South Terrace, Bankstown. (Easting: 318572.203, Northing: 6245216.438, MGA56, GDA94)		

6.7. Meteorological monitoring

Meteorological data will be checked to assist with managing impacts and identify potential non-compliances.

Weather data including daily weather conditions and forecasts may be obtained from the Bureau of Meteorology website (http://www.bom.gov.au/places/nsw). In the absence of electronic meteorological information, the Site Supervisor, Site Engineers and Environmental Coordinator will monitor rainfall events on site.

The criteria for monitoring rain events and the associated response is provided in Table 13 .

Table 13: Meteorological monitoring program

Event	Criteria	Response
Rain event	>20mm in 24 hours	• Inspect any rumble grid and wheel-wash facilities • Inspect adjacent roads for signs of mud tracking • Inspect site sediment and erosion controls for effectiveness/ maintenance • Inspect outlets to determine any change in water quality

Visual inspections as outlined in Table 13 will include the following monitoring parameters:

- Water clarity and colour;
- Odour;
- Description of flow and quantity;
- Oil and grease determination;
- Details of any foreign objects within the water; and
- Visible runoff (into the water body).

JHLORJV will maintain a record of inspections (including photographs) on their document management system.

6.8. Reporting

CoA C14 states that *"The results of the Construction Monitoring Programs must be submitted to the Secretary for information, and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program"*.

Relevant agencies are identified within CoA C8(b). As such, a Construction Monitoring Report will be submitted on a six monthly basis to the following agencies;

- DPHI;
- Inner West Council
- Canterbury Bankstown City Council

The Independent Environmental Representative will review the Construction Monitoring Report prior to submission to the DPHI, IWC & CBCC. JHLORJV will participate in further consultation with these agencies where any relevant water quality issues are identified by the monitoring.

6.9. Adaptive management

Where water quality issues are visibly observed, or if water quality monitoring results indicate that discharge criteria are not being achieved or are otherwise unsatisfactory, then appropriate additional mitigation measures will be investigated and implemented. Work methods and management practices will be assessed and revised or adapted when necessary. These measures may include:

- Additional, more frequent or extended water quality monitoring;
- Amending monitoring locations and parameters where necessary
- Inspection of work site to identify possible sources of excess sediment or other contaminants;
- Inspection of ERSED and other environmental controls for condition, suitability, effectiveness and compliance with the applicable ESCP;
- Repair, replace or reinstate any deficient ERSED controls;

- Implement additional or enhanced ERSED controls where necessary, which may include;
    - Enhanced use of soil stabilisers to minimise erosion;
    - Stabilisation of exposed ground and drainage channels by means of geofabric, crushed rock or hydroseeding;
    - Water velocity control measures such as rock check dams or earth bunds;
    - Additional sediment-trapping devices, such as double-layer barriers at drainage points;
    - Stabilisation of vehicle and pedestrian routes with crushed rock, roadbase or spray seal;
- Review construction practices and amend where necessary, such as management of stockpiles, ceasing activities during rain events, access road maintenance;
- Investigation and advice from subject-matter experts such as a soil conservationist;
- Review and update ESCP to include any additional or enhanced control measures; and
- Additional training and/or awareness for the JHLORJV' staff and sub-contractors.

Any minor changes made to the Water Quality Monitoring Program will be subject to ER review and approval in accordance with CoA C13. Changes other than those of a minor nature will require approval from the Planning Secretary.

7. Training

All personnel working on site will undergo site induction training relating to soil and water management issues. The training will cover the following issues such as:

- Legislative requirements (POEO Act, EPL etc.) including Section 120;
- Erosion and sedimentation control planning and hold points;
- Duty to notify of environmental harm (or the potential for it) including chain of reporting;
- Spill containment and management procedure;
- Storage and use of hazardous chemicals and dangerous goods;
- Water discharge and reuse procedure;
- Maintenance of environmental controls (e.g. erosion and sediment controls);
- Contamination and Unexpected Finds.

Detailed training will be provided to key personnel regarding erosion and sediment control. This training will include:

- Legislation as it applies to erosion and sediment control;
- Basics of soil management, handling and stockpiling;
- Appropriate use, installation and maintenance of various erosion and sediment control techniques;
- Effective site rehabilitation and stabilisation;
- Use of erosion control techniques such as geotextiles, organic fibre mats, mulches and soil polymer stabilisers;
- Preparing, reading and interpreting ESCPs;
- Typical controls around existing drains and maintenance of controls;
- Relevant sampling, testing and reporting requirements;
- Toolbox talks will also be used to further reinforce awareness of Soil and Water issues.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

8. Monitoring, auditing and reporting

During typical site inspections and/or frequency stipulated on the ERSED Plan, JHLOR will inspect ERSED controls to ensure capacity is adequate for any major rainfall events forecasted (>20mm, in 24 hours). Following rain events of greater than 20mm in a 24-hour period, JHLOR will undertake post rainfall inspections of monitoring locations to determine if there is any change in water quality post a significant first flush. An 'event' is defined as the first 20mm rainfall event within a 24-hour period. In the case of multiple consecutive events, only the first will be monitored. Monitoring will resume after a seven day period of no rain. Monitoring locations for post rain inspections are indicated in Appendix E. Visual inspections will include the following monitoring parameters:

- Water clarity and colour
- Odour
- Description of flow and quantity
- Oil and Grease determination
- Details of any foreign objects within the water, and
- Visible runoff (into the water body)

JHLOR will maintain a record of the inspections (including photographs) within the S2B Project drive.

Where water quality issues are visibly observed JHLOR will investigate further to determine if the source of the issue is related to JHLOR construction activities (where possible, noting safe access limitations).

The JHLOR Environmental Manager or delegate will discuss changes in water quality associated with Construction with the JHLOR Construction Team to determine if further controls may be implemented, noting that any controls must be feasible and reasonable.

Once works in a particular area have been completed and any disturbed ground (from the works) reinstated to a suitable condition the associated monitoring within the particular area will cease. ERSED controls maybe left in situ if required. It is noted that post-rainfall inspections within 24 hours of some drainage crossings and outlets may not be possible in some circumstances, including:

- Where there are safety concerns, or access is restricted due to rail safe working requirements
- Where erosion and sediment controls prevent access to an outlet and removing those controls would present a risk to water quality (e.g. removing drain guards).

Weather monitoring will be conducted using data from the Canterbury Racecourse weather station, accessed via the bureau of Meteorology website (http://www.bom.gov.au).

JHLORJV will regularly review the Project activities to ensure compliance with this Plan. A regular inspection, program for soil and water will be conducted as follows:

- Details of daily inspections undertaken by the Site Supervisor will be logged in their respective site diaries;
- Routine weekly inspections are to be conducted to monitor erosion and sediment controls in active worksites. Weekly inspections will be documented;
- Pre/Post inclement weather events will be recorded within the Inclement Weather Inspection Form; and

Typical records generated and maintained will include:

- Copies of current ESCPs for all active construction sites;
- Records of soil and water inspections undertaken;
- Observations and works undertaken to repair and/or maintain soil and water management works;
- Records of testing of any water prior to discharge;
- Records of the release of the hold point to discharge water from the construction site to the receiving environment;
- Records of water quality monitoring and results;
- Unexpected finds; and
- Records for contamination management – soil classification, spoil tracking, disposal dockets, remedial action plans, occupational hygienist clearances, and Site Auditor sign-offs.

As stated in Section 6.8, the results of the Water Quality Monitoring Program will be provided to DPHI, IWC and CBCC, in the form of a Construction Monitoring Report. The Construction Monitoring Report will be produced and submitted on a six monthly basis, within 6 weeks of the end of each monitoring period. The Construction Monitoring Report will include a summary of monitoring undertaken, an overview of the results, analysis of the results and raw data from monitoring.

Complaints and enquiries relating to soil and water management will be managed in accordance with the Sydney Metro Overarching Community Communication Strategy (OCCS) and Section 3.7 of the CEMP.

Incidents, non-conformances and non-compliances that relate to soil and water management will be managed in accordance with Section 3.10 of the CEMP.

9. Review and improvement

The SWMP will be reviewed on a six-monthly basis and earlier if required taking into account below:

- The status and progress of The Project's activities;
- Changes in the design, delivery and operations processes and conditions;
- The adaptive Water Quality Monitoring Program and results;
- Lessons learnt during delivery and operations;
- Changes in other related Project Plans;
- Requirements and matters not covered by the existing Project Plans;
- Changes to Project Plans as directed by Sydney Metro's Representative under the Deed;
- Where deemed appropriate in relation to items raised within inspections or audits;
- Lessons learnt from incident, events or near misses;
- Feedback from Compliance Tracking Reports; and
- Feedback on Construction Monitoring Program results.

10. SWMP administration

10.1. Hold points

Soil and water management pre-construction and construction hold points are included within Table 14 .

Table 14: SWMP hold points

Item	Process Held	Acceptance Criteria	Approval Authority
CEMP and Sub-plans	Site activities (Prior to construction commencement)	Site specific CEMP and Sub-plans (including this SWMP) have been developed, reviewed, endorsed by the ER and approved by DPHI.	ER Endorsement DPHI Approval.
Reuse or Discharge of water	Dewatering activities (During construction)	Implementation of requirements within Section 5.2 of this plan, prior to any discharge off the premises or reuse within the premises.	Environmental Manager or Coordinator
Water Quality Monitoring Program Amendments (CoA C13)	Amendments to Water Quality Monitoring Program (during construction, as per CoA C13)	Amendments have been reviewed and approved for implementation	ER Endorsement and Approval
Specific Environmental Control Maps (ECMs)/ progressive ESCPS	[STAGE OF WORKS]	ECMs/PESCPs are developed with site specific environmental controls/mitigation measures with site supervisor/engineers for work activities and are to be implemented prior to works commencing (or a new work stage as appropriate)	Environmental Manager or Coordinator

10.2. Records

Records associated with this management plan and monitoring programme will be maintained in accordance with Section 3.16 of the CEMP.

Appendix A – Other Conditions of Approval, Revised Environmental Mitigation Measures and CEMF Requirements Relevant to this Plan

Other relevant CoA relevant to the development of this Plan

CoA No.	Condition Requirement	Document Reference
E8	The location of Construction compounds must not worsen the existing flooding characteristics of the area.	Sections 3.6 & 5.4
E9	Where the CSSI will worsen flooding impacts, the Proponent is responsible for implementing measures to address those impacts.	Section 5.4
E38	All reasonably practicable erosion and sediment controls must be installed and appropriately maintained to minimise water pollution. When implementing such controls, any relevant guidance in the Managing Urban Stormwater series must be considered.	Section 5.1.4
E39	An Unexpected Contaminated Land Procedure and Asbestos Finds Procedure must be prepared and must be followed should unexpected contaminated land or asbestos be excavated or otherwise discovered during Construction.	Section 3.3 Section 5.8 Appendix B
E40	The Unexpected Contaminated Land Procedure and Asbestos Finds Procedure must be implemented throughout Construction.	Section 5.4 Section 5.8 Appendix B
E41	Dangerous goods, as defined by the Australian Dangerous Goods Code, must be stored and handled strictly in accordance with: (a) All relevant Australian Standards; (b) For liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and (c) The Environment Protection Manual for Authorised Officers: Bunding and Spill Management technical bulletin (EPA, 1997). In the event of an inconsistency between the requirements listed from (a) to (c) above, the most stringent requirement shall prevail to the extent of the inconsistency.	Section 5.6

REMM relevant to the development of this Plan

REMM No.	REMM Requirement	Timing	Document Reference
Soils and contamination			

REMM No.	REMM Requirement	Timing	Document Reference
SC1	Erosion and sediment control measures would be implemented in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater: Soils and Construction Volume 2A (DECC, 2008). Measures would be designed as a minimum for the 80th percentile, five day rainfall event.	Design/pre-construction	Section 5.1.4
SC2	Prior to ground disturbance in high probability acid sulfate areas, testing would be carried out to determine the presence of acid sulfate soils. If acid sulfate soils are encountered, they would be managed in accordance with the Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998) and the Waste Classification Guidelines - Part 4: Acid Sulfate Soils (EPA, 2014).	Design/pre-construction	Section 5.11
SC3	Prior to ground disturbance in areas of potential soil salinity, testing would be carried out to confirm the presence of saline soils. If saline soils are encountered, they would be managed in accordance with Site Investigations for Urban Salinity (DLWC, 2002).	Design/pre-construction	Section 3.2.2 Section 5.10
SC4	WorkCover dangerous goods searches would be carried out for properties that have potential contamination near Belmore Station, to provide additional site characterisation and identify the risk of contamination in these areas	Design/pre-construction	Section 3.3 Section 5.6
SC5	Prior to ground disturbance, a detailed contamination assessment would be undertaken in areas with a medium to high risk of contamination, to confirm the nature and extent of contamination, specific requirements for further investigation and remediation, and/or management requirements of any contamination.	Design/pre-construction	Section 3
SC6	Hazardous materials surveys would be undertaken during detailed design for all proposed demolition activities, and for utility adjustments as required.	Design/pre-construction	Section 3.3.2
SC7	In the event a Remediation Action Plan is required, it would be developed in accordance with Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning and Environment Protection Authority, 1998) and a NSW Environment Protection Authority Accredited site auditor would be engaged to audit the works.	Design/pre-construction	Section 3.3

REMM No.	REMM Requirement	Timing	Document Reference
SC8	In the event that indicators of contamination are encountered during construction (such as odours or visually contaminated materials), work in the area would cease, and the finds would be managed in accordance with the unexpected contamination finds procedure.	Construction	Section 5.8 Appendix B
Hydrology, flooding and water quality			
FHW1	Where feasible and reasonable, detailed design would result in no net increase in stormwater runoff rates in all storm events, unless it can be demonstrated that increased runoff rates as a result of the project would not increase downstream flood risk.	Design/pre-construction	Section 3.6
FHW2	Detailed design of the project would, as required at Bankstown between Stacy Street and Marion Street, take into account the impact of overland flooding for the full range of flood events up to the Probable Maximum Flood level.	Design/pre-construction	Section 3.6
FHW3	The project would be designed in accordance with water quality design criteria based on the Water Sensitive Urban Design Guideline (Roads and Maritime, 2017) to ensure there is minimal potential for water quality impacts, including incorporating water sensitive urban design elements.	Design/pre-construction	REMM FHW3 relates to the Project's design and is not relevant to the content of this SWMP.
FHW5	Detailed construction planning would consider flood risk for all compounds and work sites. This would include identification of measures to not worsen existing flooding characteristics. Not worsen is defined as: • a maximum increase in flood levels of 50 mm in a one per cent AEP event • a maximum increase in time of inundation of one hour in a one per cent AEP event • no increase in the potential for soil erosion and scouring from any increase in flow velocity in a one per cent AEP flood event.	Construction	Section 5.45.3
FHW6	The site layout and staging of construction activities would: • avoid or minimise obstruction of overland flow paths and limit the extent of flow diversion required • consider how works would affect the existing stormwater network such that alternatives are in place prior to any disconnection or diversion of stormwater infrastructure.	Construction	Section 5.4

REMM No.	REMM Requirement	Timing	Document Reference
FHW7	Works within or near watercourses (including the Cooks River) would be undertaken with consideration given to the NSW Office of Water's guidelines for controlled activities.	Construction	Section 3.5.1
FHW8	Erosion and sediment mitigation measures would be installed and maintained for the duration of the construction period.	Construction	Section 5.1
FHW9	The water quality monitoring program would continue during construction, to monitor water quality at identified discharge points.	Construction	Section 6 Section 6.4
FHW10	Discharges from construction water treatment devices would be monitored to ensure compliance with the discharge criteria in the environment protection licence.	Construction	Section 5.2.2
Hazards, risks and safety			
HRS4	All hazardous substances that may be required for construction and operation would be stored and managed in accordance with the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005) and the Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (Department of Planning, 2011).	Construction and operation	Section 5.6

CEMF requirements relevant to the development of this Plan

CEMF Section	CEMF Requirement	Document Reference
15.1 (a)	The following soil and water management objectives will apply to construction: • Minimise pollution of surface water through appropriate erosion and sediment control. • Maintain existing water quality of surrounding surface watercourses. • Source construction water from non-potable sources, where feasible and reasonable.	Section 1.3 Table 1
15.2 (b)	Principal Contractors will develop and implement progressive erosion and sediment control plans (ESCPs) for all active worksites in accordance with Managing Urban Stormwater: Soils & Construction Volume 1 (Landcom, 2004) (known as the "Blue Book"). The ESCPs will be approved by the Contractor's Environmental Manager (or delegate) prior to any works commencing (including vegetation clearing) on a particular site. Copies of the approved ESCP will be held by the relevant Contractor personnel including the Engineer and the Site Foreman.	Section 5.1.4

CEMF Section	CEMF Requirement	Document Reference
15.2 (c)	ESCPs will detail all required erosion and sediment control measures for the particular site at the particular point in time and be progressively updated to reflect the current site conditions. Any amendments to the ESCP will be approved by the Contractor's Environmental Manager (or delegate).	Section 5.1.4
15.2 (d)	Principal Contractors will develop and implement Stormwater and Flooding Management Plans for the relevant construction sites. These plans will identify the appropriate design standard for flood mitigation based on the duration of construction, proposed activities and flood risks. The plan will develop procedures to ensure that threats to human safety and damage to infrastructure are not exacerbated during the construction period.	Stormwater and Flooding Management Plans will be developed by JHLORJV prior to Construction where constructions sites are within the 100 year ARI +10% increase in rainfall flood zone.
15.2 (e)	Principal Contractors will undertake the following soil and water monitoring as a minimum: • Weekly inspections of the erosion and sediment control measures. Issues identified would be rectified as soon as practicable. • Additional inspections will be undertaken following significant rainfall events (greater than 20 mm in 24 hours). • All water will be tested (and treated if required) prior to discharge from the site in order to determine compliance with the parameters of the EPL. No water will be discharged from the site without written approval of the Contractor's Environmental Manager (or delegate). This is to form a HOLD POINT.	Section 1.3 Section 6 Section 10.1
15.2 (f)	The following compliance records will be kept by the Principal Contractors: • Copies of current ESCPs for all active construction sites. • Records of soil and water inspections undertaken. • Records of testing of any water prior to discharge. • Records of the release of the hold point to discharge water from the construction site to the receiving environment.	Section 10.2

15.2 (g)	The following water resources management objectives will apply to the construction of the project:
	• Minimise demand for, and use of potable water.
	• Maximise opportunities for water re-use from captured stormwater, wastewater and groundwater.
	• Examples of measures to minimise potable water consumption include:
	  • Water efficient controls, fixtures and fittings in temporary facilities.
	  • Collecting, treating and reusing water generated in tunnelling operations, concrete batching and casting facility processes.
	  • Using recycled water or treated water from onsite sources in the formulation of concrete.
		Refer to Sustainability Management Plan
		Section 5.3

CEMF Section	CEMF Requirement	Document Reference
	• Harvesting and reusing rainwater from roofs of temporary facilities. • Using water from recycled water networks. • Collecting, treating and reusing groundwater and stormwater. • Using water efficient construction methods and equipment. • Providing designated sealed areas for equipment wash down.	
15.3 (a)	Examples of surface water and flooding mitigation measures include: • Clean water will be diverted around disturbed site areas, stockpiles and contaminated areas. • Control measures will be installed downstream of works, stockpiles and other disturbed areas. • Exposed surfaces will be minimised, and stabilised / revegetated as soon feasible and reasonable upon completion of construction. • Dangerous good and hazardous materials storage will be within bunded areas with a capacity of 110 per cent of the maximum single stored volume. • Spill kits will be provided at the batch plants, storage areas and main work sites.	Section 5

The table below presents the compliance matrix for the EPL 21147 Clauses relating to construction soil and water.

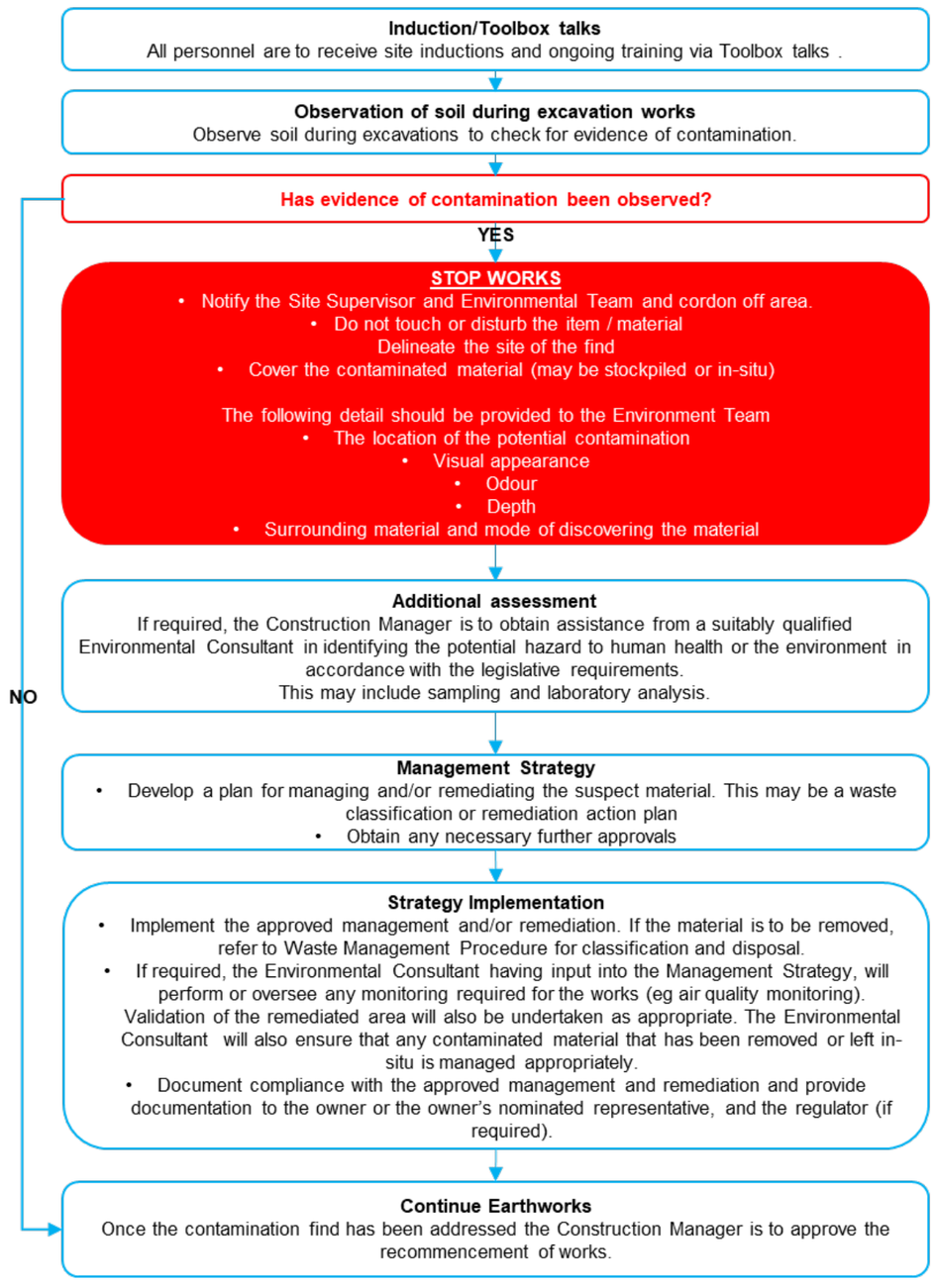
EPL Clause	Requirement / Measure	Document Reference
Pollution of waters		
L1.1	Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.	Section 2 Section 5
Concentration Limits		
L2.1	For each monitoring\discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point [Point 1 to 8], or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.	Section 2, 5 and 6
L2.2	Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.	Section 2, 5 and 6
L2.3	To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those	Section 2, 5 and 6

EPL Clause	Requirement / Measure	Document Reference
	specified in the table\s	
L2.4	Water and/or Land Concentration Limits	Section 2, 5 and 6
Erosion and sediment control		
O5.1	All feasible and reasonable erosion and sediment controls are to be implemented to minimise sediment (including dust) leaving the premises and are to be implemented before any soil disturbance or vegetation clearing commences	Section 5.1
O5.2	All erosion and sediment controls at the premises must be maintained until all disturbed areas are stabilised.	Section 5.1
05.3	The erosion and sediment controls to be implemented are to include but not be limited to: a) minimising the area of exposed soil as much as practicable, including stabilising disturbed areas as soon as practicable; and b) diversion of run-off from land upslope of the premises or undisturbed portions of the premises away from areas of soil disturbance as much as practicable; and c) diversion of run-off from areas of exposed soil to appropriate sediment control devices as much as practicable; and d) installing erosion controls in the base of drains used to divert runoff, to minimise erosion of sediment from the drain	Section 5.1
O5.4	Erosion and sediment controls are to be selected, installed and maintained taking into consideration the guidance in “Managing Urban Stormwater – Soils and Construction, Volume 2D, Main road construction” (DECC 2008) and “Managing urban stormwater: soils and construction – Volume 1” (Landcom 2006).	Section 5.1
O5.5	The licensee must inspect the operation of all erosion and sediment controls installed on the premises and undertake any works required to repair and/or maintain these controls: a) at least weekly; b) daily during periods of rainfall that causes runoff to occur; and c) prior to any site closure of greater than 24 hours.	Section 5.1 & 6
O5.6	The licensee is required to prepare an erosion and sediment control strategy document. The licensee must ensure that: a) The document describes all erosion and sediment controls (including those relating to the minimisation of mud tracking from the premises) to be implemented at the site; and b) The document is prepared before the controls are implemented; and c) A copy of the document is kept at the premises until the licences is surrendered; and d) The document includes an assessment of how the reasonable and feasible erosion and sediment controls (including those relating to the minimisation of mud tracking from the premises) were selected; and e) The document is updated prior to any changes to the erosion and sediment controls.	S5.1

EPL Clause	Requirement / Measure	Document Reference
O5.7	The licensee must record all inspections of erosion and sediment controls, including observations on the condition of the controls, and works undertaken to repair and/or maintain the controls. These records are to be kept on the premises.	S5.1
O5.8	All stockpiled material must be stabilised as soon as practicable if the stockpile has been left in-situ for greater than 5 days.	S5.1
O5.9	A water quality sampling point is to be located on the discharge pipe from any sediment basin or other water treatment device and: a) The licensee must ensure that a sign is located at the discharge point noting the discharge point number identified under this licence; and b) A safe access path is to be provided to the sampling point to readily allow for the collection of samples.	S5 & S6

Appendix B – Procedures

UNEXPECTED CONTAMINATED LAND AND ASBESTOS FINDS PROCEDURE



RESPONSIBILITY

- ENVIRONMENT TEAM, CONSTRUCTION TEAM
- CONSTRUCTION TEAM
- ENVIRONMENT TEAM, CONSTRUCTION TEAM, SITE SUPERVISOR
- CONSTRUCTION MANAGER, ENVIRONMENTAL CONSULTANT
- ENVIRONMENT TEAM, ENVIRONMENTAL CONSULTANT
- ENVIRONMENT TEAM, CONSTRUCTION TEAM, ENVIRONMENTAL CONSULTANT
- CONSTRUCTION MANAGER

Indicators of Contamination:

Examples of materials that could include the presence of contamination include (but are not limited to):

- Asbestos cement fragments or other potentially asbestos containing materials
- Odorous or stained soil
- Buried chemical drums or containers
- High proportion of waste materials or building debris
- Tarry or ashy material
- Brightly or unusually coloured material
- A yellow and/or red mottling in the soil profile indicates there may be Acid Sulphate Soils (ASS).

Asbestos

Asbestos finds are to be managed in accordance with the SWMP and Project Health and Safety Management Plan.

Acid Sulfate Soils (ASS)

ASS are naturally occurring soils, sediments or organic substrates that are formed under waterlogged conditions in coastal areas. When exposed to air after being disturbed, soils containing iron sulfides produce sulfuric acid and often release toxic quantities of iron, aluminium and heavy metals.

If ASS is encountered, possible management strategies include:

- Modifying the works to avoid the area of ASS where possible
- Delineation and removal to a suitably licenced facility
- Onsite treatment to neutralise the ASS, which could include the application of lime in accordance with recommendations of the Environmental Consultant.

Note: The management of any ASS needs to include appropriate erosion and sedimentation controls to minimise the potential for pollution to waters. Refer to the SWMP.

Management and Disposal of Contaminated Material

Specific approval may be required to implement management strategies and a Safe Work Methods Statement (SWMS) must be prepared prior to undertaking any remediation work, except in emergency situations.

Contaminated material will be disposed of in accordance with the Waste and Spoil Management Procedure (Refer Appendix E of the CEMP).

Appendix C – Acid Sulfate Soils Treatment Process

8.4.5 Soil treatment procedure

Acid sulfate soil material should be placed on the treatment pad (see Figure 8-1) or fill area in layers up to 300 mm thick. Thinner layers of soil can be more easily and thoroughly dried and mixed; 300 mm is suggested as a maximum, not only to prevent inadequate mixing but to prevent equipment from bogging and to allow compaction to improve strength, thus minimising subsidence and heave when filling. Once the ASS is dry enough to work, the appropriate amount of neutralising agent, calculated to include the safety factor, should be spread. The ASS may need reworking several times to achieve adequate mixing of the neutralising agent and/or drying of the soil.

The treated layer will require verification testing (see section 8.2 and ASS tips 13 and 14) to confirm whether enough neutralising agent has been incorporated into the soil. Treated and verified soil should be subsequently compacted before treatment of the next layer begins, or when moved to the permanent placement area if first mixed on temporary treatment pads. Compaction is not necessary if the treated soil is permitted to be disposed of or reused elsewhere.

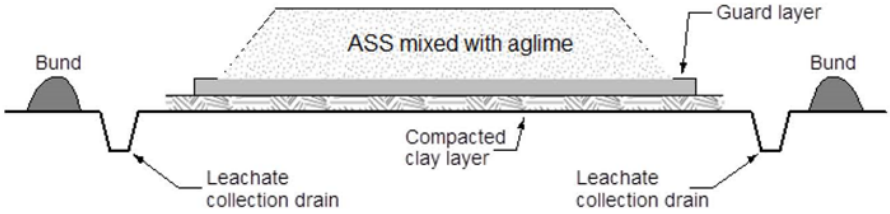


Figure 8-1: Schematic cross-section of a treatment pad, including a compacted clay layer, guard layer, leachate collection system and containment with bunding

Where soil mixing machinery (e.g. Figure 8-2) is used, soil treatment should still be carried out in a bunded and sealed area as per section 8.4.3. Treated batches should be spatially arranged in such a manner that re-treatment is easy in cases of verification test failure.

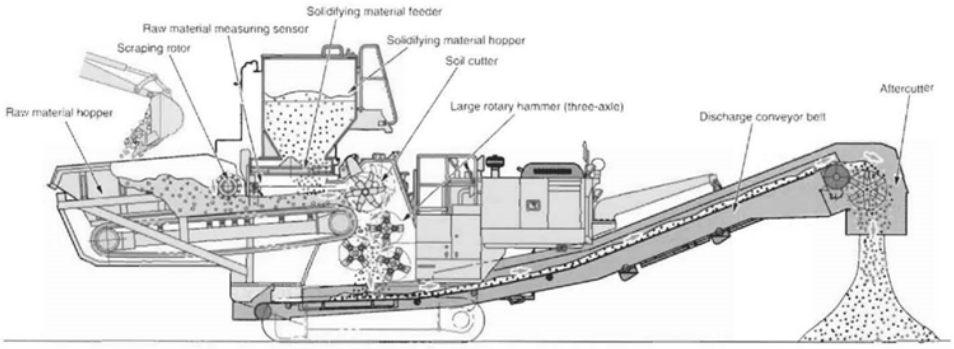


Figure 8-2: Cross-sectional view of soil mixing machinery (Komatsu, 2003). Note that soil treatment with such machinery should be carried out in an appropriately contained area, including bunding and measures to prevent leachate infiltration.

Source: Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines

Appendix D – Consultation Register

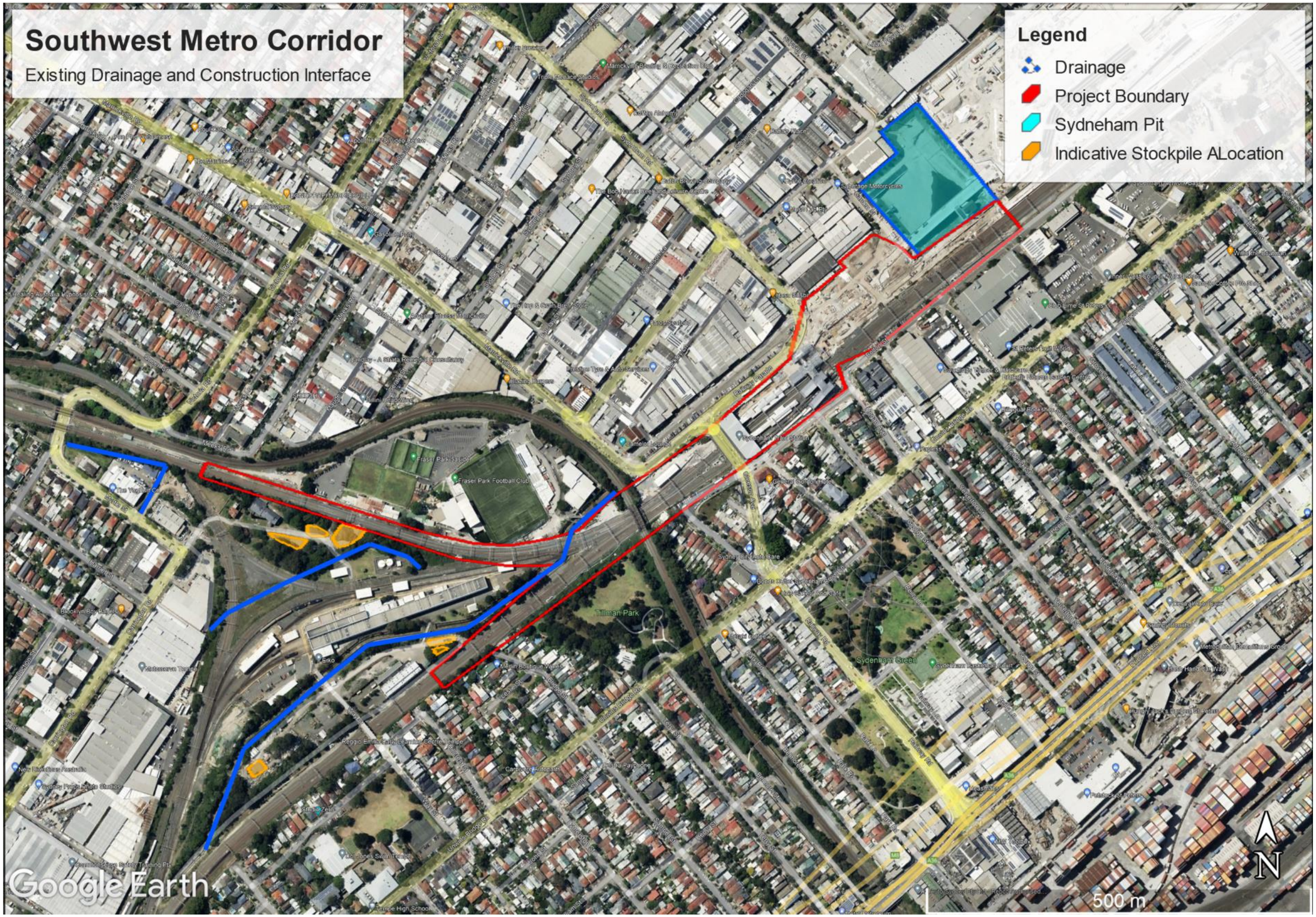
Agency	Comment	Project Response
Canterbury Bankstown City Council	The attached report provides details on how the site will be managed in accordance with "Managing Urban Stormwater- Soils and Construction, Volume 2D, Main road construction" (DECC 2008) and Managing urban stormwater: soils and construction- Volume 1	Refer to S 5.1.4 of the SWM3 CSWMP Erosion and Sediment Control Plans (ESCP) will be developed for the Project sites in accordance with the requirements of Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Managing Urban Stormwater: Soils and Construction Volume 2A (DECC 2008) (the "Blue Book').
Inner West Council	Soil and Water Management Plan • No comments, Council is satisfied that this plan is appropriate.	NA
EPA	Thank you for sending through your request for the EPA to review CEMP Sub-plans as per CSSI 8256, Condition of Approval CoA C3. The EPA acknowledges that your planning consent states that the CEMP Sub-plans are to be prepared in consultation with the EPA, however the EPA generally does not review management plans. The role of the EPA is to regulate environmental protection licences and to set objectives for environmental protection and management, and not to be directly involved in the development of strategies to comply with such objectives. It is the responsibility of the licensee to ensure that any plans prepared for management of sites covered by EPL 21147 are compliant with licence conditions and the Protection of the Environment Operations Act 1997. Southwest Metro Conversion and Station Works Package 3 (SWM3) The EPA acknowledges that the inclusion of the Southwest Metro Conversion and Station Works Package 3 (SWM3) onto EPL 21147 has occurred without the requirement to vary the licence. If you have any questions please get in touch. Thank you.	Refer to Section 2.2 for information on EPL 21147
DEECCW Water	1. There are no volumes referenced in the documents for maximum annual groundwater take, however groundwater interception is predicted. This information is critical to address the NSW Aquifer Interference Policy (2012), to understand the applicability of exemptions from the need to hold a Water Access Licence, to clarify the assessment	1. Volume is under 3ML/ water year. Predicted to be under 200,000L for the water year. Refer to Section 5.5.

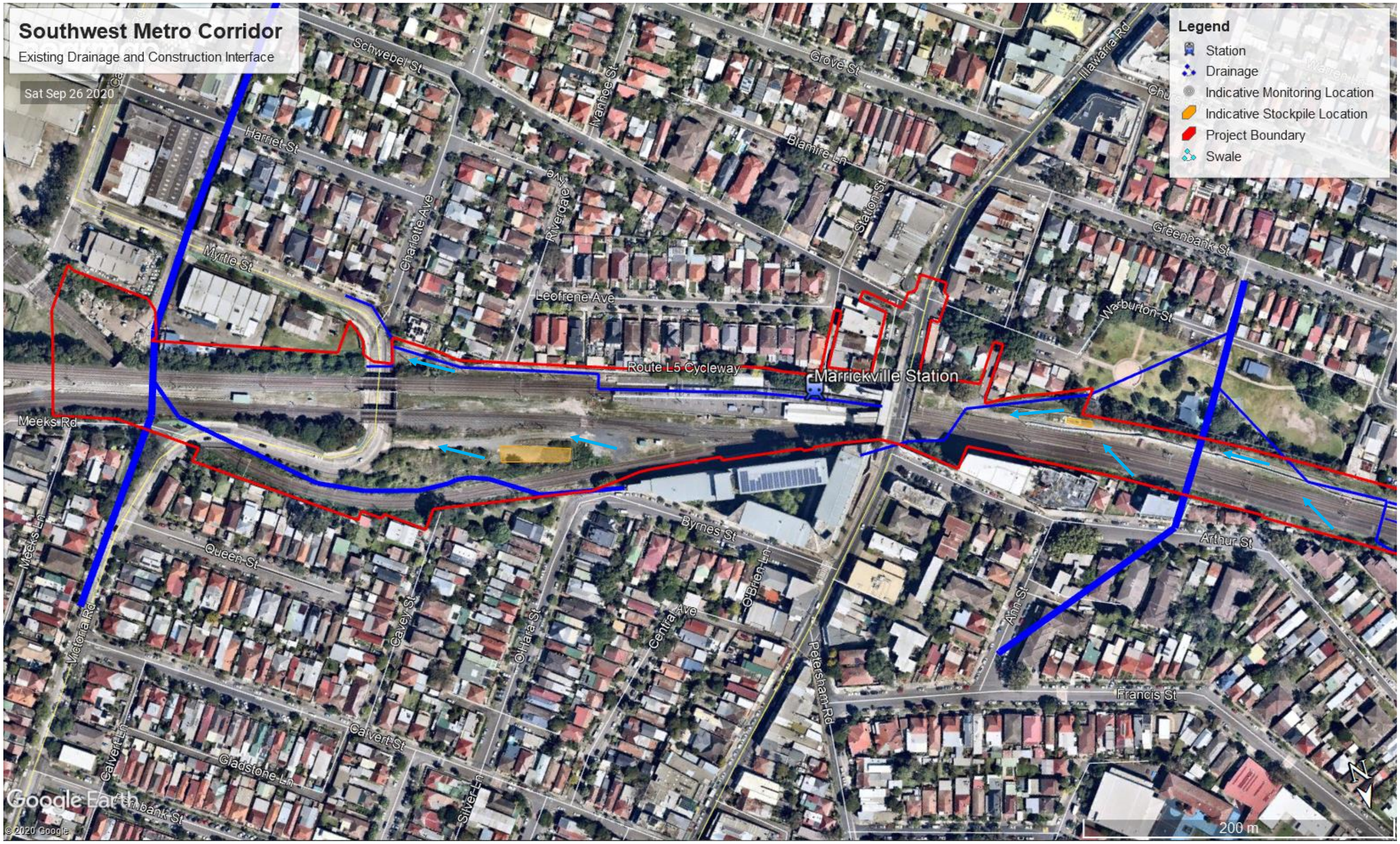
Agency	Comment	Project Response
	requirements, and also for verification against with actual recorded groundwater take during construction. 2. Table 3 of the SWMP refers to Transport Authorities being exempt from a WAL, however this exemption does not apply for this project. Please be advised the exemption under Clause 3 of Schedule 4, Part 1 of the Water Management (General) Regulation 2018 provides for transport authorities for construction and maintenance of rail infrastructure where they have been assessed under section 5.5 of the Environmental Planning and Assessment act 1970. However this exemption does not apply to SSI projects as they are not assessed under section 5.5 of the EP&A Act. 3. There is ongoing discussions between the executive of Sydney Metro and DCCEEW Water seeking a resolution to the applicability of exemptions and WAL requirements for SSI rail infrastructure projects. This is an issue DCCEEW Water is actively considering. 4. A WAL exemption may be applicable if the groundwater take is less than or equal to 3ML per year. This is under Clause 7 of Schedule 4 of the Water Management (General) Regulation 2018. To claim this exemption the following must be met as set out in Clause 21(5) of the WM Reg 2018, and metering/recording of groundwater take is a key part: o The water is not taken for consumption or supply, o The person claiming the exemption keeps a record of water taken under the exemption and provides this to the Minister within 28 days of the end of the water year; and o The records are kept for 5 years. 5. Further information on WAL exemptions can be found at the following link: https://water.dpie.nsw.gov.au/__data/assets/pdf_file/0010/547903/when-can-I-take-water-without-an-access-licence.pdf 6. Table 1 and section 5.2.2 refer to a water balance study to be prepared prior to construction. DCCEEW Water supports the preparation of this study as early as possible to confirm water demands, to identify secure water supply sources and to obtain relevant agreements/licences.	Section 5.5.1 also added to demonstrate commitment to reaching an agreement if a WAL is required or an exemption cannot be obtained. 2. Table 3 has been updated to remove reference to repealed sections of the Water Act (Part 3 & 4). this section will be updated when the outcome fo the discussions in item 3. has been completed. 3. Noted. 4. Table 3.2 of the EIS states: the aquifer interference approval provisions of the Water Management Act have not commenced, and licensing of these activities is carried out under Part 5 of the Water Act. A licence under Part 5 is required for dewatering activity that would require the extraction of more than three megalitres of groundwater per year. Excavation would be undertaken to construct the project. Although groundwater may be intercepted, it is unlikely that dewatering would exceed three megalitres of groundwater per year. A licence would be obtained if required. Refer to Section 5.5.1 added to demonstrate commitment to reaching an agreement if a WAL is required or an exemption cannot be obtained. 5. Noted.

Agency	Comment	Project Response
		6. The Water Balance Study was completed by AGJV as part of the design process for the Project.

Appendix E – Post Rainfall Inspection Locations

(Reused from SWMC)

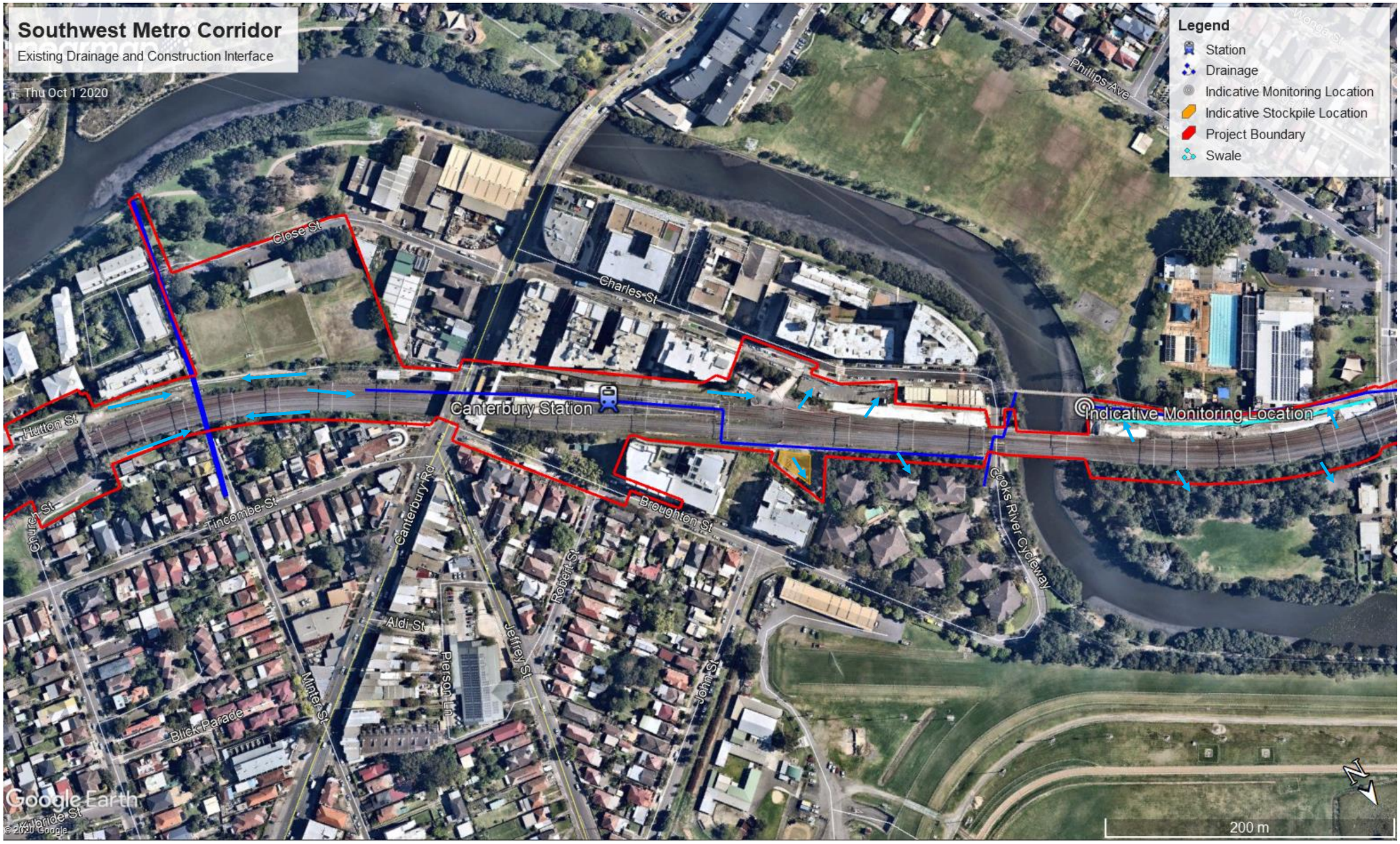

Southwest Metro Corridor
Existing Drainage and Construction Interface
Legend
Drainage
Project Boundary
Sydneham Pit
Indicative Stockpile ALocation
Google Earth
500 m
N


Southwest Metro Corridor
Existing Drainage and Construction Interface
Sat Sep 26 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Schwebel St
Harriet St
Myrtle St
Charlotte Ave
Riverdale Ave
Nannine St
Grove St
Illawarra Rd
Blamire Ln
Station St
Greenbank St
Warburton St
Leofrene Ave
Route L5 Cycleway
Marrickville Station
Meeks Rd
Meeks Ln
Queen St
Victoria Rd
Calvey St
O'Hara St
Byrnes St
O'Brien Ln
Central Ave
Petersham Rd
Ann St
Arthur St
Francis St
Calvert St
Calvert Ln
Gladstone Ln
Silver Ln
Google Earth
© 2020 Google
200 m
N

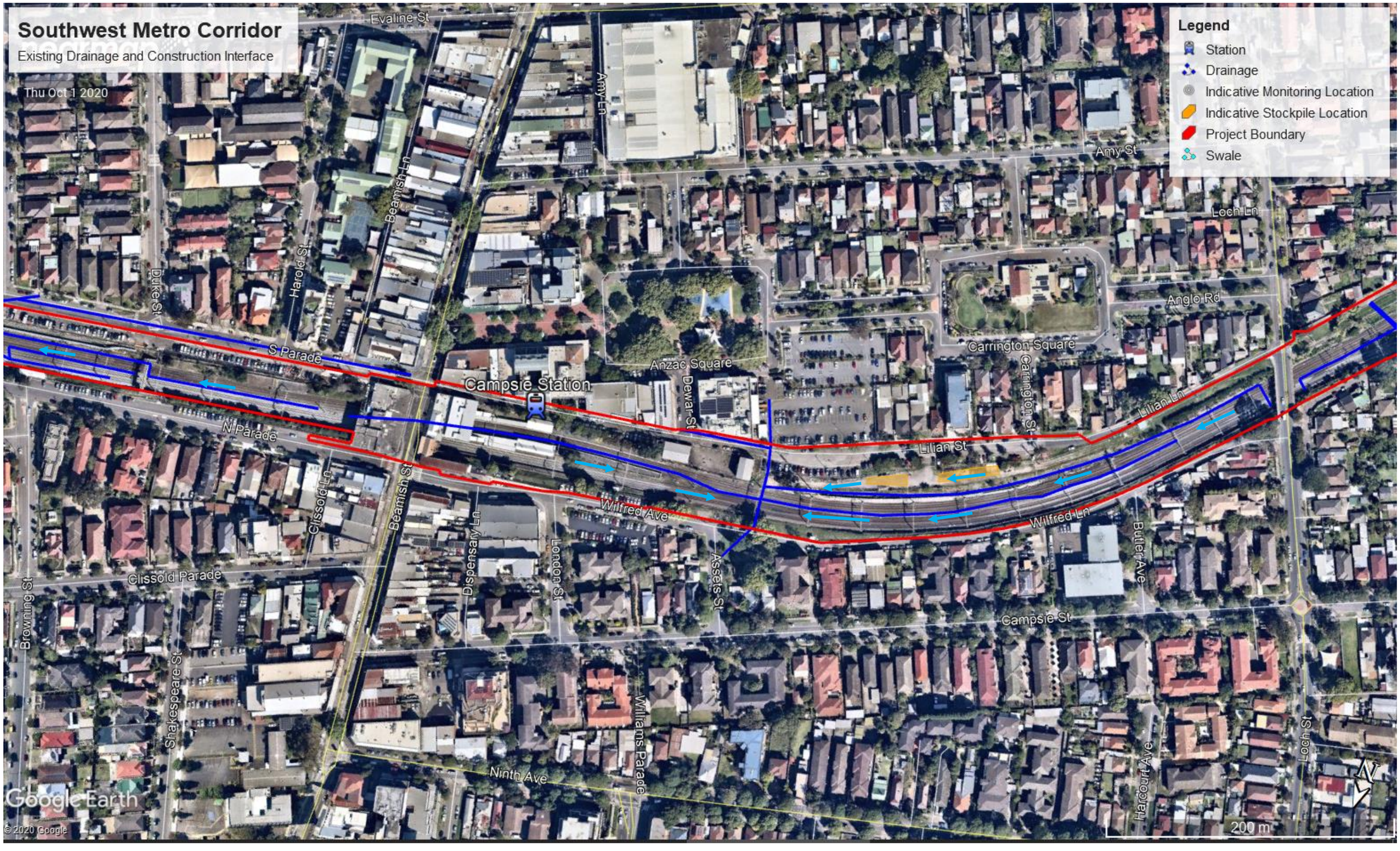

Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Warren Rd
Beauchamp St
Wrights Ave
Moyes St
Greenbank St
Moncur St
Tamar St
Osgood Ave
Wicks Ave
School Parade
Dudley St
Wardell Rd
Kays Ave E
Albermarle St
Jersey St
Livingstone Rd
Randall St
Route L9 Cycleway
Wilga Ave
Kays Ave W
Keith St
Arthur St
Marrickville Ave
Hollands Ave
Robert Ln
Robert St
Pine St
Challis Ave
Margaret St
Google Earth
© 2020 Google
200 m

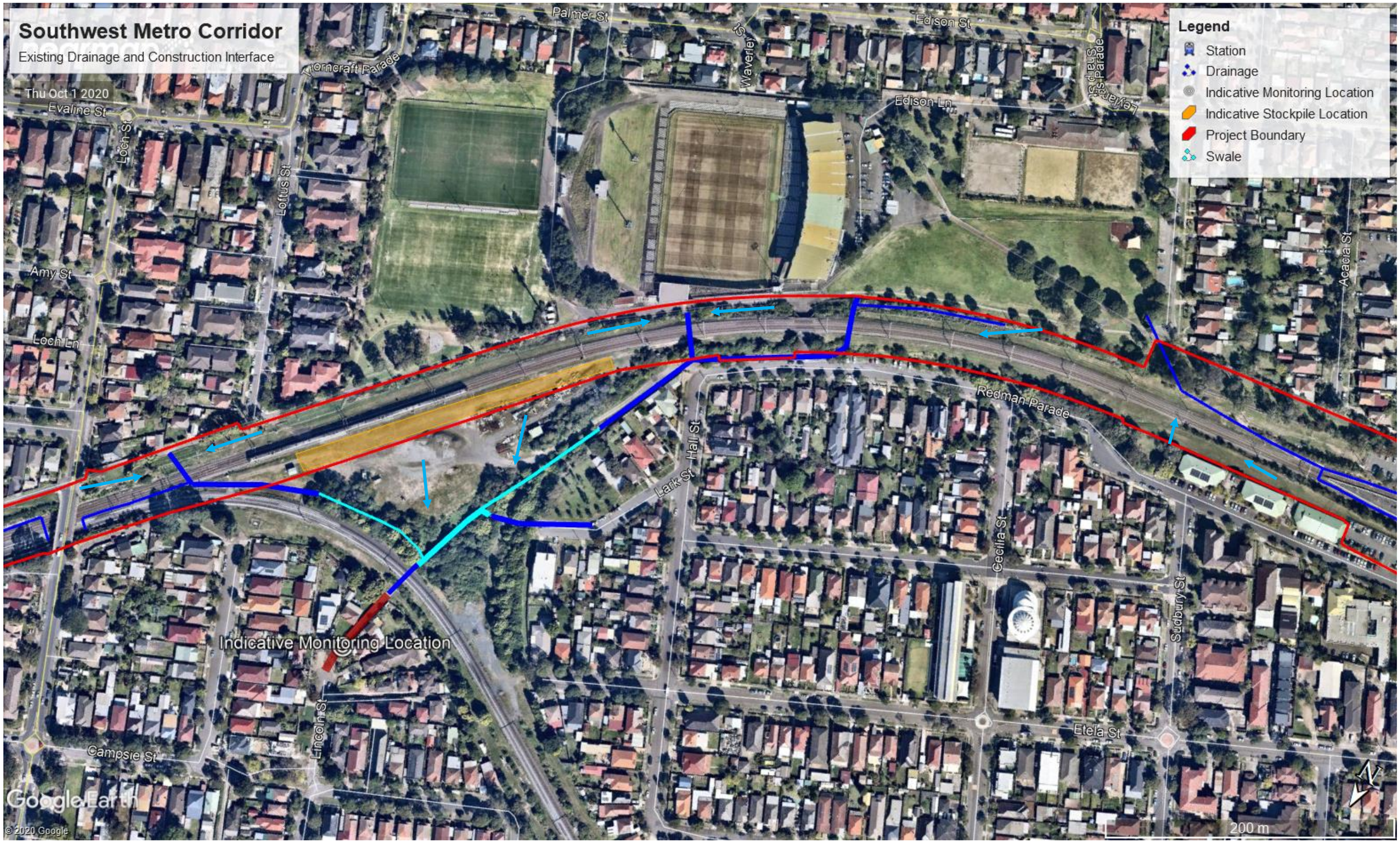

Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Riverside Crescent
Tennyson St
Garnet St
Balfour St
Murray Ln
Ewart St
Dulwich Hill Station
Ewart Ln
Foss St
Crispin St
Duntroon St
Indicative Monitoring Location
Bedford Crescent
Wargeil Ln
Keith Ln
Keith St
Ness Ave
The Parade
Hampden St
Hercules St
Terrace Rd
Terrace Ln
Myra Rd
Garnet Ln
Google Earth
© 2020 Google
200 m
N


Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Indicative Monitoring Location
Hurlstone Park Station
Hurlstone Ave
Smith Ave
Keri Ave
Starkey St
Duntroon St
Hopetoun St
Burnett St
Foord Ave
Railway St
Hutton St
Canberra St
Kilbride St
Crinan St
Marcia Ln
Mill Ln
Mill St
Dunstaffenage St
Acton St
Canterton St
Mefford St
Euston Rd
Marcia St
Fernhill St
Floss St
Church St
Google Earth
© 2020 Google
200 m
N

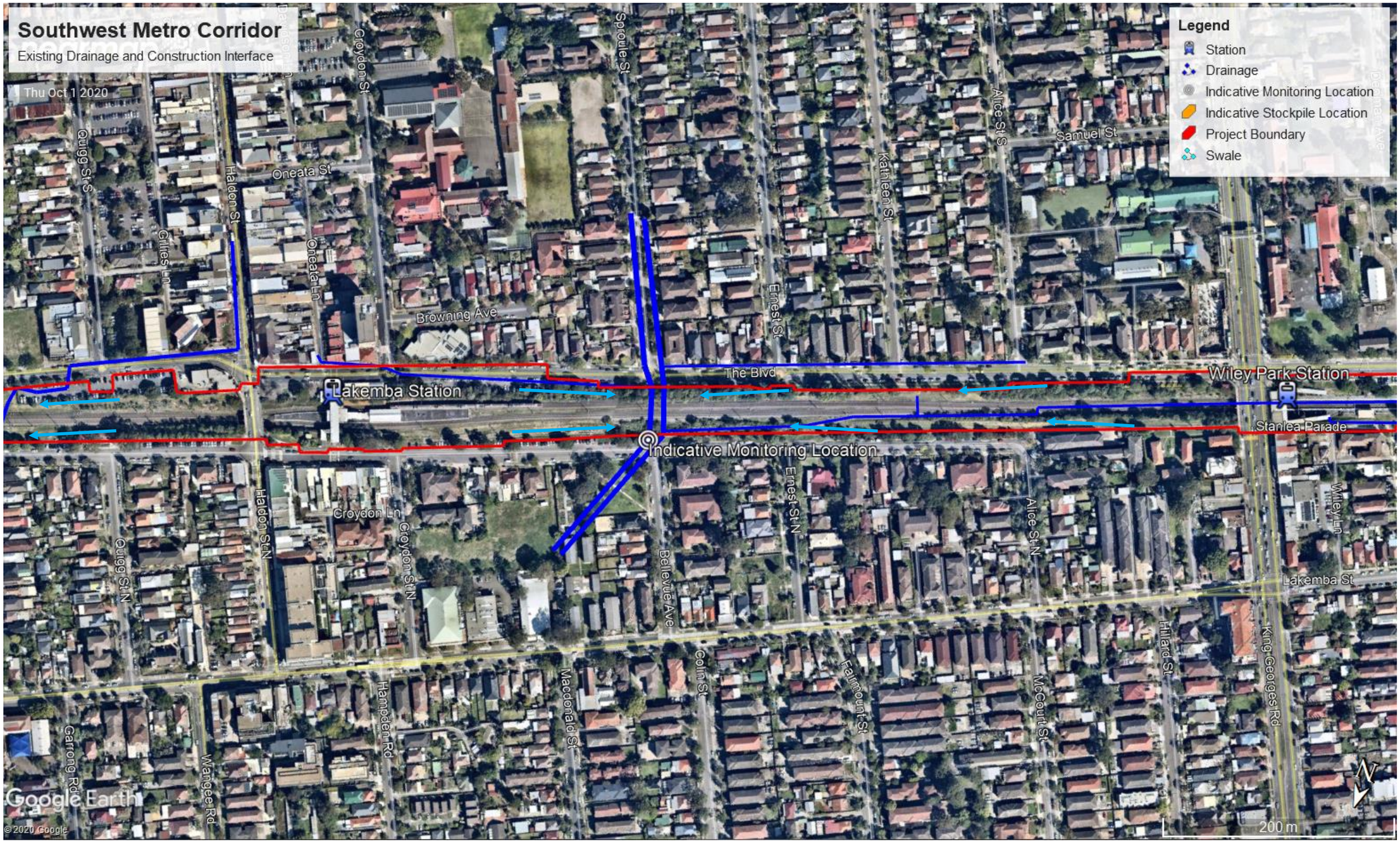

Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Close St
Charles St
Phillips Ave
Canterbury Station
Indicative Monitoring Location
Hutton St
Tincombe St
Canterbury Rd
Broughton St
Cooks River Cycleway
Robert St
Aldi St
Jeffrey St
John St
Pierson Ln
Minter St
Blick Parade
Kilbride St
Google Earth
© 2020 Google
200 m
N


Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Indicative Monitoring Location
Warrigal St
Redman St
Park St
Phillips Ave
Warringa Ln
Oswald Ln
Oswald St
Charles St
Evaline St
Gould St
Duke St
Wairoa St
Wairoa Ln
Campsie Ln
Wonga Ln
S Parade
E Parade
N Parade
Nowra Ln
Nowra St
Bellombi St
Moore St
Frederick St
Clissold Parade
Browning St
Cooks River Cycleway
Google Earth
©2020 Google
200 m
N

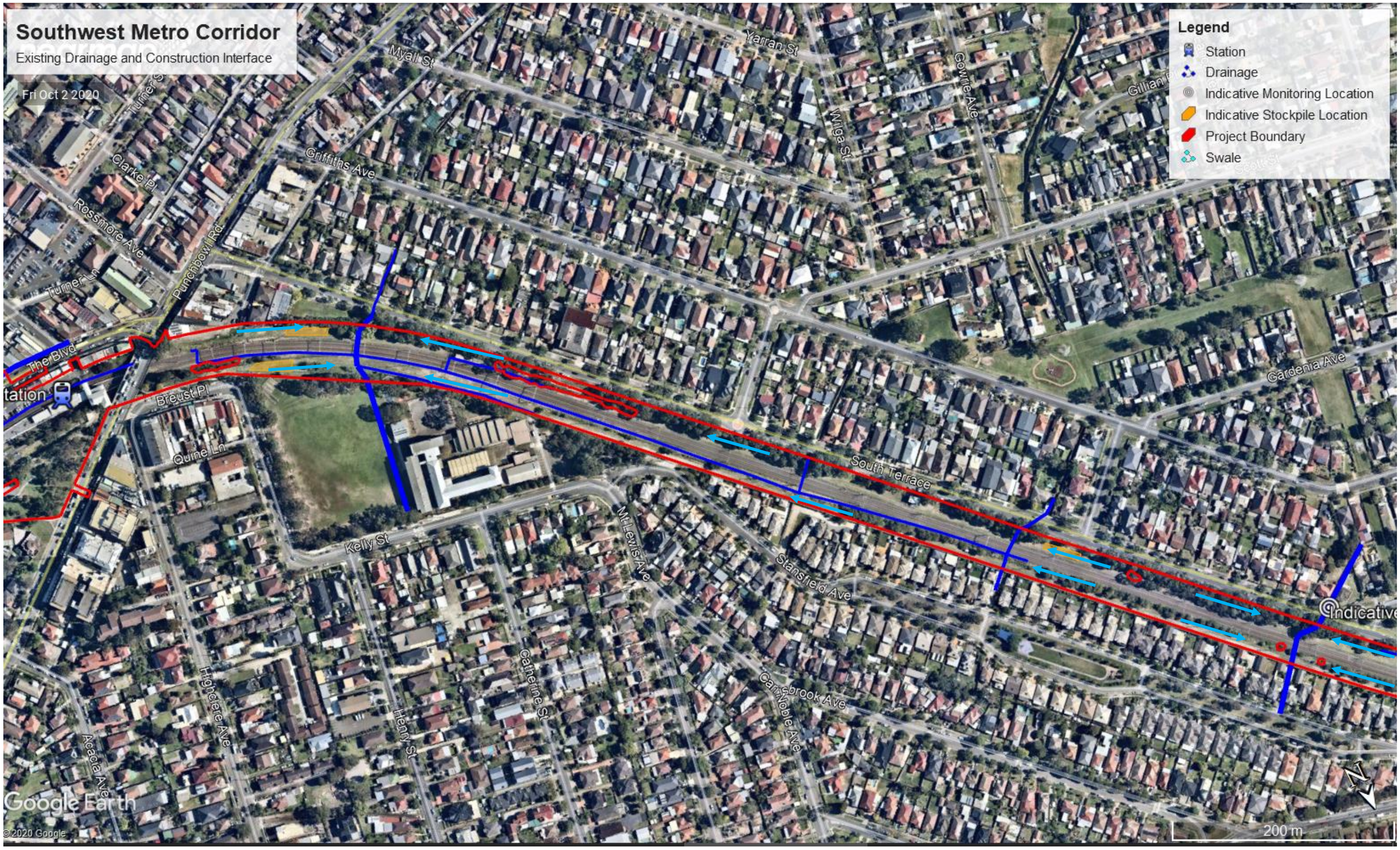

Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Evaline St
Amy Ln
Amy St
Beamish Ln
Loch Ln
Harold St
Duke St
Anglo Rd
S Parade
Carrington Square
Anzac Square
Campsie Station
Dewar St
Carrington St
Lilian Ln
N Parade
Lilian St
Clissold Ln
Beamish St
Wilfred Ave
Wilfred Ln
Butler Ave
Dispensary Ln
London St
Assets St
Clissold Parade
Browning St
Shakespeare St
Campsie St
Williams Parade
Ninth Ave
Harcourt Ave
Loch St
Google Earth
© 2020 Google
200 m
N

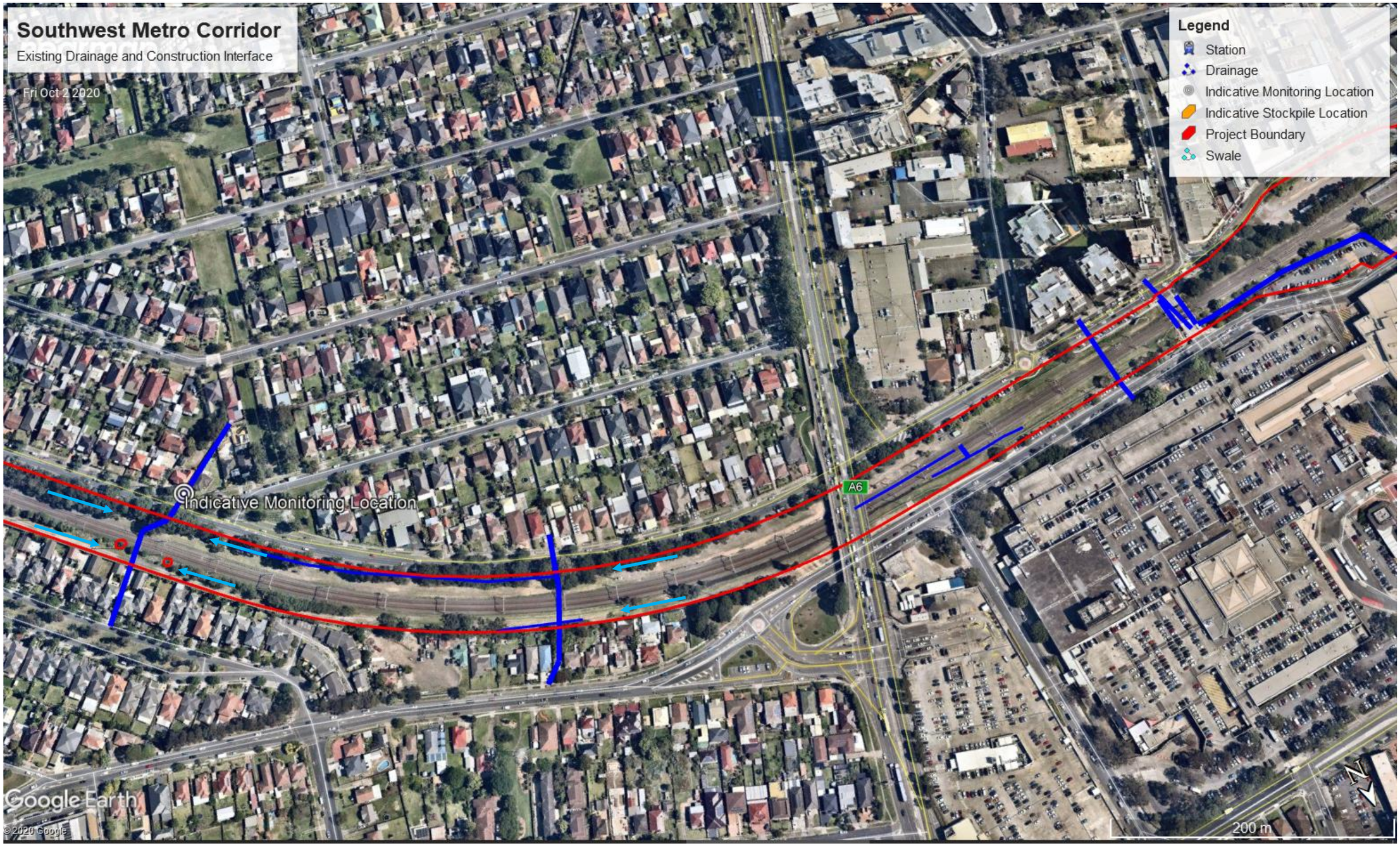

Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Palmer St
Edison St
Edison Ln
Evaline St
Loch St
Loftus St
Amy St
Loch Ln
Redman Parade
Lark St
Hall St
Cecilia St
Stanley St
Acacia St
Etela St
Campsie St
Lincoln St
Indicative Monitoring Location
Google Earth
© 2020 Google
200 m


Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Belmore Station
Marie St
Gillies St
Collins St
Paragon Ln
Gladstone St
Bridge Ln
Bridge Rd
Moreton St
Dennis St
The Blvd
Burwood Rd
Railway Parade
Wortley Ave
Rachel Ln
Ceary Ave
Ceary Ln
Brande St
Station Rd
Taylor St
Redman Ln
Belmore Ave
Etela St
St Clair Street
Oxford St
Lakemba St
Yarrick Rd
Google Earth
© 2020 Google
200 m


Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Croydon St
Sproule St
Alice St S
Samuel St
Quigg St S
Haldon St
Oneata St
Giles Ln
Oneata Ln
Browning Ave
Kathleen St
Ernest St
The Blvd
Lakemba Station
Wiley Park Station
Stanlea Parade
Indicative Monitoring Location
Haldon St N
Croydon Ln
Croydon St N
Ernest St N
Alice St N
Wiley Ln
Quigg St N
Bellevue Ave
Lakemba St
Hilard St
King Georges Rd
Hampden Rd
Macdonald St
Colin St
Fairmount St
McCourt St
Garrong Rd
Wangee Rd
Google Earth
© 2020 Google
200 m


Southwest Metro Corridor
Existing Drainage and Construction Interface
Thu Oct 1 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Hillcrest St
Renown Ave
Faux St
Robinson St S
Rosemont St S
Dudley St
The Broadway
Matthews St
Rossmore Ave
Stanlea Parade
Indicative Monitoring Location
Van Dyke Pl
Turner Ln
Urunga Parade
The Blvd
Punchbowl Station
Punchbowl Rd
Rickard St
Highclere Ave
Breust Pl
Quine Ln
Kelly St
Lakemba St
Shadforth St
Connella St
Gyn St
Defoe Ln
Defoe St
Robinson St N
Rosemont St N
Waratah St
Acacia Ave
Google Earth
© 2020 Google
200 m
N


Southwest Metro Corridor
Existing Drainage and Construction Interface
Fri Oct 2 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Myall St
Yarran St
Gowrie Ave
Wiga St
Griffiths Ave
Clarke Pl
Rossmore Ave
Punchbowl Rd
Turner Ln
The Blvd
Breust Pl
Quine Ln
South Terrace
Gardenia Ave
Kelly St
Mt Lewis Ave
Stansfield Ave
Carbrook Ave
Carr Noble Ave
Catherine St
Henry St
Highclere Ave
Acacia Ave
Google Earth
© 2020 Google
200 m


Southwest Metro Corridor
Existing Drainage and Construction Interface
Fri Oct 2 2020
Legend
Station
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Swale
Indicative Monitoring Location
A6
Google Earth
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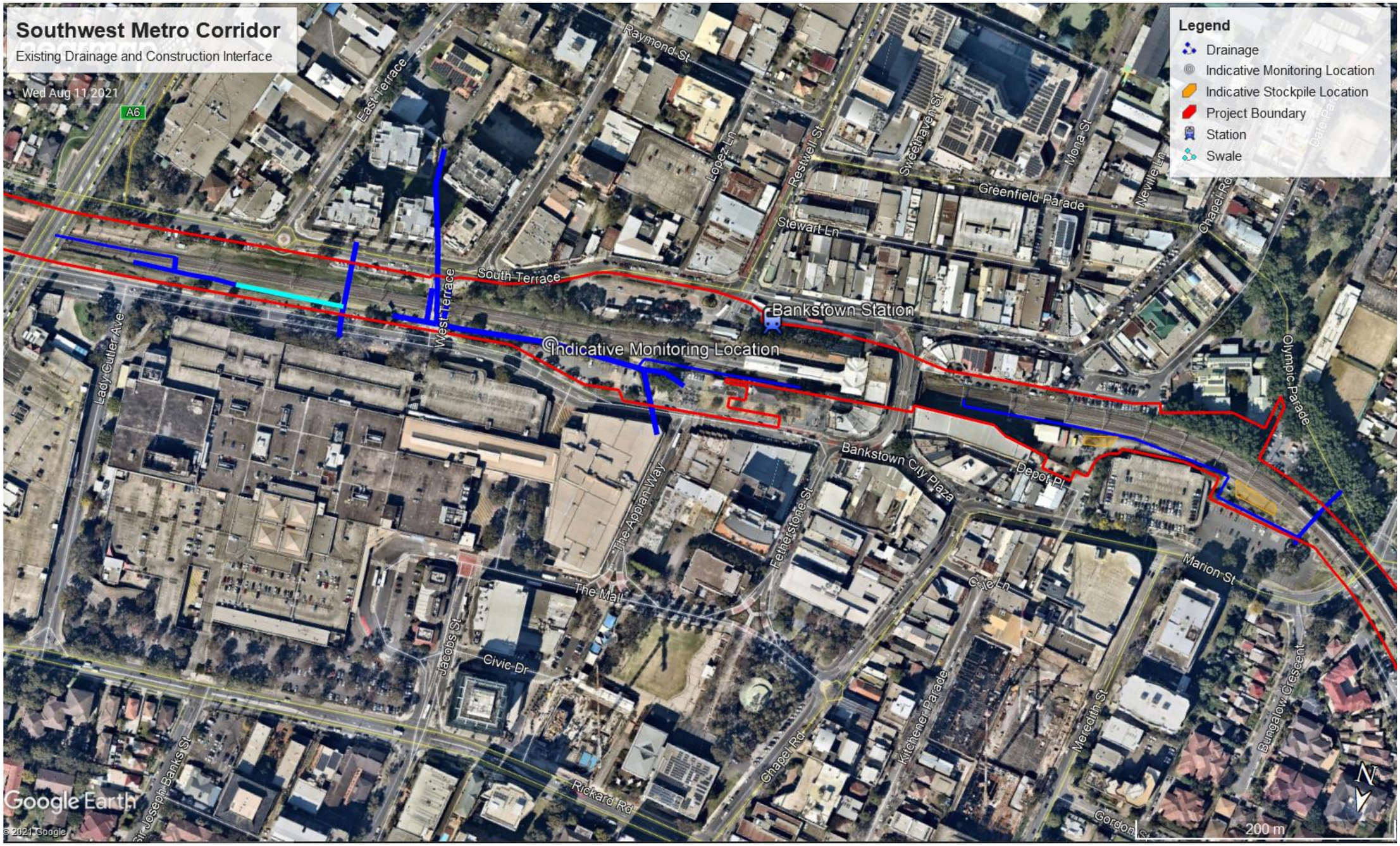
200 m
N


Southwest Metro Corridor
Existing Drainage and Construction Interface
Wed Aug 11 2021
Legend
Drainage
Indicative Monitoring Location
Indicative Stockpile Location
Project Boundary
Station
Swale
Bankstown Station
Indicative Monitoring Location
Raymond St
East Terrace
Lopez Ln
Reswell St
Sweetnaven St
Mona St
Greenfield Parade
Stewart Ln
South Terrace
West Terrace
Lady Cutler Ave
Olympic Parade
Bankstown City Plaza
Depot Pl
The Appian Way
Fetherstone St
Marion St
The Mall
Jacobs St
Civic Dr
Chapel Rd
Kitchener Parade
Meredith St
Bungalow Crescent
Rickard Rd
Sir Joseph Banks St
Gordon St
Google Earth
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200 m
N