Pre-Construction Minor Works Approval Form

Minor Works are defined as any low impact activities that are undertaken prior to the commencement of 'construction' as defined in the project's applicable planning approval. However if Minor Works affect or potentially affect heritage items, threatened species, populations or endangered ecological communities, these works are defined as 'construction' unless otherwise determined by the applicable planning authority.

Minor Works approvals do not remove any obligation to comply with the project's applicable planning approval conditions (including requirements prior to 'any works' commencing) or obtain any other applicable permits, licenses or approvals as necessary.

This application and all supporting information must be submitted to TfNSW/the Environmental Representative as one (1) PDF file at least 10 business days prior to the commencement of the proposed Minor Works.

Part 1: Application	
Contractor:	John Holland & Laing O'Rourke joint venture (JHLOR)
Project:	Bankstown and Additional Corridor Works (BAC)
Application Title: (e.g. Smith St trenching works)	Pre-construction Minor Works – Utility relocation & Connection Works
Application Number:	SMC-PCMW-004 Document number: SMCSWSSJ-JHL-WBK-EM-REC-000005
Application Date:	31/08/2022
Planning Approval:	The Sydney Metro City & Southwest – Sydenham to Bankstown - Environmental Impact Statement, dated 07/09/2017; The Sydney Metro City & Southwest – Sydenham to Bankstown – Submissions and Preferred Infrastructure Report 06/2018; The Sydney Metro City & Southwest – Sydenham to Bankstown – Instrument of Approval, dated 12/12/2018, superseded by CSSI 8256 MOD 1 determined 22/10/2020
Minor Works Categories: • Highlight as applicable. • If Items 4, 8 or 11 are applicable, this form must be endorsed by an Environmental Representative.	1. Survey, survey facilitation and investigations works (including road and building dilapidation survey works, drilling and excavation). 2. Treatment of contaminated sites. 3. Establishment of ancillary facilities (excluding demolition), including construction of ancillary facility access roads and providing facility utilities. 4. Operation of ancillary facilities that have minimal impact on the environment and community. 5. Minor clearing and relocation of vegetation (including native). 6. Installation of mitigation measures, including erosion and sediment controls, temporary exclusion fencing for sensitive areas and acoustic treatments. 7. Property acquisition adjustment works, including installation of property fencing and utility relocation and adjustments to properties. 8. Utility relocation and connections. 9. Maintenance of existing buildings and structures. 10. Archaeological testing under the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010) or archaeological monitoring undertaken in association with other Minor Works to ensure there is no impact on heritage items. 11. Any other activities that have minimal environmental impact, including construction of minor access roads, temporary relocation of pedestrian and cycle paths and the provision of property access.

Planning Authority Determination: Will the proposed works affect or have the potential to affect heritage items, threatened species, populations or endangered ecological communities?	*If 'Yes', this completed form must be endorsed by an Environmental Representative, approved by TfNSW and submitted to the applicable planning authority to determine that the works are not defined as 'construction'.* No.

Part 2: Details

Describe the proposed Minor Works:

Including work methodologies, site location(s) and site description(s) (e.g. landscape type, waterways, etc.).

2.1 Description of Proposed Minor Works

Scope 1: Survey and investigation- Design Investigation Works

Site investigation works are required to determine site conditions from a contamination, geotechnical, service and utility perspective. There are numerous locations to be investigated through Non-Destructive Digging (NDD) and auger methods. The survey and investigation consist of;

- Survey Set Outs/Service
- Geotechnical investigation- determining geotechnical soil profile
- Contamination investigation- collecting spoil samples for laboratory analysis
- Signal investigation works

Between WE13 & WE15 (24/09/2022 & 09/10/2022 generally 06:00 to 18:00, however contingency for 24/7 OOHW subject to OOHW Approval)**:**

Lakemba and Punchbowl NDD investigation works are proposed to be completed at 23 footing locations between Sydney Trains CH 15km 216 to CH 18km 404 and CH 18km 232 to CH 19km 000.

Campsie, Belmore NDD investigation works are proposed to be completed at footing locations between Sydney Trains CH 13km 350 to CH 15km 703.

Canterbury NDD investigation works are proposed to be completed at footing locations between Sydney Trains CH 10 km 300 to CH 9 km 978.

Hurlstone Park Design Investigation Works occurring From Foord Ave to Floss St, ST CH 9km 030 to ST CH 8km 666 (Country to city)

Marrickville NDD investigation works are proposed to be completed at footing locations between Sydney Trains ST CH 6km 755 to ST CH 6km 426 (Country to city).

Scope 2: Utility relocation and connection- Bankstown CSR Works

Between WE13 & WE15 (24/09/2022 & 09/10/2022 generally 06:00 to 18:00, however contingency for 24/7 OOHW subject to OOHW Approval)**:**

Several sections of Combined Service Route (CSR) will be installed under this Pre-Construction Minor Works Approval (PCMWA). This activity includes installation of Galvanised Steel Trough (GST) posts. The proposed activity is located at Bankstown and will not impact LEP or S170 heritage fabric.

- Sydney Metro UP Platform temporary works- GST strapped on the edge of track sleeper (From ST CH 18km 460 to CH 18km 685).
- Permanent structures to house existing Sydney Trains utilities.
  - GST on the Downside of ST Station platform (Critical Section from ST CH 18km 798 to CH18km 869)- potholes/auger spaced at 2m intervals, excavation down to 1.7m (+/-300mm)
  - Cable Ladder from Upside GST to Station - Countryside fixing to under bridge- no visual impact, not heritage fabric
  - ULX2 Construction-1.6m deep open cut excavation (tracks not being removed so no tamping/regulating), volume ~ 24 cube.

Scope 3: Survey and investigation Overhead Footings Investigation Works

Between WE13 & WE15 (24/09/2022 & 09/10/2022 generally 06:00 to 18:00, however contingency for 24/7 OOHW subject to OOHW Approval):

ST CH 19km 000 at Bankstown to ST CH 18Km 823 at Bankstown

ST CH 17km 898 at Bankstown to ST CH 16Km 137 at Punchbowl

ST CH 15km 703 at Belmore to ST CH 13km 350 at Wiley Park

ST CH 12km 625 at Belmore to ST CH 11Km 549 at Campsie

ST CH 10km 300 at Canterbury to ST CH 9km 135 at Hurlstone Park

ST CH 8km 390 at Hurlstone Park to ST CH 7km 186 at Marrickville

Numerous locations to be investigated for future overhead footings through Non-Destructive Digging (NDD) and auger methods. NDD investigation works will occur within the railway cess.

- Survey to mark out footing location
- Vac Truck to pothole 1.5m at location
- As built service (if found during potholing)

2. Work Methodologies

Site investigation and utility relocation and connection works are required as part of the design staging process for the Bankstown Additional Corridor Works (BAC). Refer to Appendix 4 for the proposed detailed work methodologies

Scope:	**ST Chainage**	**Environmental constraints assessed within chainage extents to be avoided ('no-go' areas) or mitigated**
1. Design Investigation Works	ST CH 18km 404 to ST CH 15km 216 ST CH 19km 000 to ST CH 18km 232 ST CH 18km 853 to ST CH 10km 300 CH 10 km 300 to CH 9 km 978 ST CH 9km 030 to ST CH 8km 666 ST CH 6km 755 to ST CH 6km 426	City Side (Marrickville) • Marrickville AMZ • Albermarle St heritage conservation area • Garnet St TEC • Canterbury AMZ • Belmore Potential Aboriginal Archaeological Deposit (PAD) • Belmore AMZ • Railway Parade TEC • Lakemba AMZ • Country side of Lakemba White Ibis Roosting Colony • Wiley Park TEC and White Ibis Roosting Colony • Urunga Parade TEC • Punchbowl Potential Aboriginal Archaeological Deposit (PAD) • Breust St TEC (including *Acacia Pubescens*) • South Terrace TEC and new growth TEC (city side of Scott St) including *Acacia Pubescens* • Carnation Ave TEC • North Terrace White Ibis Roosting Colony • Country side (Bankstown)
2.Bankstown CSR Works	ST CH 18km 460 to CH 18km 685 ST CH 18km 798 to CH18km 869	
3.Overhead Footings Investigation Works	ST CH 19km 000 to ST CH 18km 232 ST CH 17km 898 to ST CH 16Km 137 ST CH 15km 703 to ST CH 13km 350 ST CH 12km 625 to ST CH 11Km 549 ST CH 10km 300 to ST CH 9km 135 ST CH 8km 390 to ST CH 7km 186	

As part of this PCMWA the potential impacts of the above investigation works are assessed based on the areas within the above chainages to ensure a practical flexibility during the works and maintaining a low overall risk. The locations of the investigation works are indicative at the time of this assessment. The exact locations will be determined on the day of the investigation, however will remain within the

assessed chainages and will avoid areas of environmental constraint. Please refer to the Environmental Control Map (ECM) for potential environmental constraints. The ECMs form part of the work pack. In the unlikely event works are required within the environmental constraints, further assessment will be undertaken.

It is noted that the works will occur on Sydney Trains assets, not third-party utilities, as such these works are excluded from the Utility Management Strategy requirements.

This is consistent with the approach taken within the SWMC Utility Management Strategy Plan.

2.4 Description of Works

Site investigation works are required as part of the design staging process for the BAC.

The proposed works are identified above as scope 1 to 3 and the methodologies are outlined in Appendix 4. The investigation and service relocation works are located between ST CH 6km 426 at Marrickville and ST CH19Km 000 at Bankstown. "No-go" areas comprise of Threatened Ecological Communities (TEC), Ibis roosting habitat as identified in Appendix 1 Environmental Control Map (ECM).

It is the intention of this PCMW to gain approval for the activities listed to occur between ST CH 6km 426 at Marrickville and ST CH19Km 000 at Bankstown, except where the constraints listed within the description and risk assessment prevent this (i.e. approval of this PCMW does not remove the requirement for external approvals such as Road Occupancy Licenses or relevant items under the Planning Approval such as the Tree Report, Archaeological Method Statements etc.

2.41 "No-go" Areas

"No-go" areas comprise of Threatened Ecological Communities (TEC), Ibis roosting habitat as identified in Appendix 1 Environmental Control Map (ECM). Works will not occur within areas of threatened species, populations or endangered ecological communities.

It is noted that all activities within Scope 1, 2 & 3 will occur outside of any archaeological investigation zones as identified within the Archaeological Assessment and Research Design Report (AARD) and Archaeological Method Statement, except at Lakemba, Belmore, Canterbury and Marrickville in which case an archaeologist will be present.

Within the rail corridor works will not impact upon any heritage fabric- buildings, structures or landscaping. Surfaces will be re-instated to the pre-existing condition after works.

Works will occur within the station precincts at Bankstown, Punchbowl and Lakemba Belmore, Campsie, Canterbury, Hurlstone Park, Marrickville railway station curtilages which are all located within the Project area and are listed within LEPs and on the RailCorp S170 register (except, Belmore and Marrickville, which are S60 State Heritage Register Railway Station Groups). Survey & Inspections, contamination and geotechnical testing is proposed to occur within these areas. Works will not impact upon any heritage fabric- buildings, structures or landscaping. Surfaces will be re-instated to the pre-existing condition after works.

Works will not occur within the extents of Potential Archaeological Deposits (PADs) for indigenous archaeology, as identified within the Aboriginal Cultural Heritage Assessment Report (ACHAR).

No works will occur within known contaminated areas except for the purpose of investigation.

There will be no removal or pruning of trees or vegetation (with the exception of exotic grasses and weeds) as part of the works. Any removal or pruning of trees will be subject to a separate PCMW. Trees will be delineated with flagging and bollards in areas where JHLOR is conducting works in the vicinity, for the duration of those works. Restrictions on removing vegetation and trees will be briefed to those involved with the works.

Any works on local roads associated with the below will only occur with the appropriate approvals (Road Occupancy Licenses, standing plant permit etc.) from the appropriate road authority.

Survey activities (including, visual inspections of overhead wire structures, geographical survey, scanning, dilapidation surveys, ground penetrating radar) will occur across the project and project surrounds as required. Survey will occur using hand tools and site utes. Survey activities that do not include any physical impacts such as installation of survey control points, would occur throughout the corridor including within state heritage curtilages, Archaeological Management Zones, EECs (e.g. scanning, dilapidation surveys)

Inspections will occur within the Project site and surrounds. Bridge inspections will occur at bridges within the Project footprint. An Elevated Work Platform and hand tools would be used as part of the inspections.

2.4.2 Erosion & Sediment Controls

Erosion and sediment controls will be installed as required for the invasive investigation works such as excavation test pits and boreholes. This scope does not trigger an extensive Erosion and Sediment Control Plan (ESCP), however the following Erosion and Sediment Control (ersed) materials will be on hand as part of an Erosion and Sediment Controls Spot List. Controls that would be on hand include;

- Coir logs/silt socks
- Sandbags
- Geofabric
- Drain guards
- Drainage rock/ballast for surface stabilisation
- Concrete washout for overburden from GST footings
- Delineation and flagging
- Sediment fence

2.4.3 Groundwater

Investigation data in the form of two test pits (Q1, 2020) and one borehole (Q1, 2022) in close proximity to the ULX was reviewed. The maximum depth of the ULX excavation is 20.16mAHD (1.6-2m from top of rail). The 24 cube ULX excavation is above the known groundwater table at RL 17.6m AHD which was sampled/tested in 2022. Shallow seepage was encountered at BN_TP029 at RL 20.7m(AHD). A consistent water table within the soil could not be identified when reviewing the logs of the investigations. The ground water comments on the two test pit logs related to localised perched water. It is likely some seepage maybe encountered during excavation, however this will be minor and is not anticipated to have draw down implications. If groundwater is encountered, this would be managed using a vacuum truck. The groundwater removed by the vacuum truck will be stored at Belmore Triangle.

2.4.4 Fauna and Flora Protection

No tree pruning or removal is required for the proposed works. Delineation and signage will be installed around areas of vegetation to be protected. Delineation would occur via bollards and flagging or temporary fencing as appropriate ie in close proximity to the proposed works. Seven Threatened Ecological Communities (TEC) have been identified between ST CH 6 Km 426 and ST CH19Km 000, two of which contain *Acacia Pubescens*. The works will avoid these areas.

Three White ibis colonies have been identified between ST CH 6 Km 426 and ST CH19Km 000. The works will avoid these areas.

Workers would be notified during pre-start regarding the white ibis colonies. No works are being carried out in close proximity of the habitat.

2.4.5 Laydown

To support the above activities laydown areas within the rail corridor, as identified within the EIS & SPIR will be used. Any laydown area within an environmentally sensitive area (e.g. 'no go' areas or vegetation) will be included in a separate PCMW Approval. Laydown will be used to store materials such as GST post and trough and also excavated material. All excavated material will be stockpiled and tested prior to any removal from site.

The establishment of compounds will be the subject of a different PCMW (and any other ancillary facility assessment) as required.

Storage of material will be ongoing in laydown areas such as Belmore Triangle, however access to these areas will only occur during standard construction hours unless otherwise approved within an OOHW Approval.

Some intermittent noise would be generated at the laydown areas, however as the areas will be used minimally, noise impacts are expected to be low overall.

Any excavated material will not be removed from site until adequate testing has been completed. Excavated spoil will be stockpiled at Belmore Triangle.

2.4.6 Activity Support

The following support will be provided to activities completed as part of this Minor Works proposal

- A street sweeper will be used to maintain the site and surrounding roads if required
- A water cart or trailer will be used to mitigate the effects of dust if required.
- Site utes will be used to access site.
- Noise associated with this work will be transient and is expected to be low impact overall. Monitoring would occur as identified by the noise model, both continuous real time and attended.

2.4.7 Plant List

Plant and equipment anticipated to be used during the investigative works include:

- Excavators (5t, 6.5t and 17t) with bucket and auger attachments
- Drill rig
- Vacuum truck
- Site utes
- 2 tonne tipper
- Handheld compactor/whacker packer
- Hand tools
- Water cart/trailer
- Hi-rail Vac Truck
- Hi-rail Excavator
- King Vac
- Bogie
- Hydrema Materials include:
- GST Post and Trough
- Engineering fill for borehole/test pit reinstatement
- Concrete

2.4.8 Working Hours

The works are proposed to be undertaken during the WE13 to WE15 shutdown (24/09/2022 to 09/10/2022) 24/7 works for the full duration. All listed activities would need to occur on or adjacent to the existing rail line. Works of such nature can only be undertaken during a rail possession, for worker safety reasons. All activities listed above would be undertaken as part of Out of Hours Works, as required. The works would be undertaken in accordance with the conditions within Laing O'Rourke EPL 21147.

In accordance with CoA-E20(c) work may be undertaken outside of standard construction hours "where different construction hours are permitted or required under an EPL in force in respect of the CSSI". As the EPL has been granted to Laing O'Rourke, JHLOR are the authorised to assess, approve and undertake works in accordance with the conditions of EPL.

A copy of the JHLOR OOHW Permit will be completed prior to any works outside of standard construction hours. A copy of any OOHW Permit produced for Pre-Construction works will be provided to the ER for written confirmation that any works undertaken outside of standard construction hours are low impact and are consistent with the terms of this PCMWA.

JHLOR will mitigate impacts by applying the additional mitigation measures within the Sydney Metro Construction Noise and Vibration Strategy.

2.4.9 Overburden and spoil management

Excavated material will be stored in allocated bays and stabilised prior to removal. All material that requires off-site disposal to be appropriately tested and classified against the Waste Classification Guidelines (NSW EPA, 2014) including Resource Recovery Exemptions. Spoil and other materials will be stockpiled at Belmore Triangle within the project boundary.

2.4.10 General Notes

All plant would access site via existing Sydney Trains access gates.

Note that these activities are subject to change based on construction progress. Any changes would be subject to revision and approval of this PCMWA. The above list

	does not include activities approved under any other Pre-construction Minor Works Approval form. These works will not include adjustment to third party utilities, as such the Utility Management Strategy document will not be required to proceed with these works. JHLOR is responsible for the actions of its employees, workers and subcontractors. JHLOR is not responsible for the actions of other parties including but not limited to Sydney Trains and utility owners.
Planned Commencement Date:	24/7 works subject to OOHW Approvals between WE13 (24/09/2022) to WE15 (09/10/2022) shutdown. Due to the uncertainty around the industrial actions, the scope of works within this PCMWA require contingency period. The works may occur on other dates up until 31/10/2022. The dates and times at this stage are unknown. The environmental mitigations will remain applicable throughout the contingency period. If the proposed works occur in different noise periods to the current assessment, those scenarios will be remodeled. Community notification will be revised once dates are finalised.
Local Sensitivities: Describe the presence (if any) of local sensitive environmental areas and community receptors	The investigation and utility relocation works are proposed to occur within the vicinity of Bankstown Station, part of the T3 rail corridor between ST CH 6 Km 426 at Marrickville and ST CH 19 Km 000 at Bankstown. The T3 line runs adjacent to several land zoning types including industrial, business and community, infrastructure, residential and recreational. The proposed works at Bankstown Station, under this MWA, are not in the vicinity of any sensitive receivers such as Medical, Child Care, Education or Place of Worship. The proposed works location is surround by numerous local roads and includes underpass (West Terrace) and overpass (Bankstown City Plaza). Local waterways such as channels, culverts and stormwater systems are present along the alignment. Works under this MWA are in the vicinity of an open channel culvert which runs adjacent to the rail corridor. This sits between Bankstown Station Carpark and the rail corridor, running from West Terrace underpass to The Appian Way. Most vegetation in the investigation area comprises exotic or planted native species on highly modified landforms. It is noted there are several Sydney Turpentine – Ironbark Forest trees that meet the definition of an Endangered Ecological Community under the Threatened Species Conservation Act 1995 (enforced at the time of assessment under the EIS). There are also several threatened species of plant (*Angophora costata, Eucalyptus saligna & Pittosporum undulatum*) and known habitat resources (White Ibis roosting colonies between the rail corridor and North Terrace Bankstown, Wiley Park and Lakemba). The proposed works under this MWA are not in the vicinity of any Endangered Ecological Communities and will not pose impacts to any of the tree types mentioned above. As seen in Appendix 3, the proposed works under this MWA fall in the vicinity of s170 & LEP Heritage Register Areas, however there will not be any impact to heritage fabric. Visual impacts will also be limited due to the location of the GST install, location of the GST install is limited to the rail corridor itself.

Part 3: Environmental Risk Assessment and Management

Prepare an Environmental Risk Assessment (in accordance with the Sydney Metro Risk Management Standard) and an Environmental Control Map for the proposed Minor Works and attach as Appendix 1.

If an Environmental Risk Assessment and/or an Environmental Control Map for the proposed Minor Works is/are already contained in existing documentation, attach the relevant section(s) as Appendix 1.

Documentation: List any existing documents (including those referenced above) that the proposed Minor Works will be undertaken in accordance with and attach as Appendix 2 (e.g. plans, procedures, procedures, etc.).	2 Appendix 1: Environmental Risk Assessment 3 Appendix 2: ECM for the proposed works 4 Appendix 3: Heritage Curtilage – Bankstown and Lakemba Railway Station Group & Groundwater information 5 Appendix 4: EPL 21147 OOH Approval 6 Appendix 5: Community Notifications 7 Appendix 6: Environmental Representative Supporting Letter.

Part 4: Workforce Notification	
How will the environmental and community risks and associated mitigation measures of the proposed Minor Works be communicated to the contractor's workforce?	A site induction will be provided to all personnel working on the project site. The induction will include relevant environmental aspects and risks associated with works on the project site. Toolbox talk topics will include environmental risks such as the effects of noise and vibration on sensitive receivers. Threatened ecological species as specified in the local sensitivities section and the no-go zones in place. Inform them of potential contaminations and assure they understand the unexpected finds procedure. Works will be undertaken in accordance with a Safe Works Method Statement (SWMS) depending on whether work meets the definition of High Risk Construction Works in accordance with Clause 291 WHS Regulation. SWMS will include the identification and assessment of environmental risks as related to the specific scope of works. SWMS will be reviewed by the JHLOR Environmental Manager or a competent person.

Part 5: Community Consultation	
What community consultation has been undertaken already?	Comms notification (including specific notification for respite offers (RO)) for scope 1,2 & 3 works will be sent out 7 days prior to works commencing on the 24/09/2022. If works are moved to the contingency period, notification will be issued in the appropriate time frame of no more than 7 days prior to the works commencing.
What community consultation is planned to be undertaken?	Any works to occur outside of standard construction hours will be notified in accordance with the Additional Mitigation Measure requirements specified in the Sydney Metro Construction Noise and Vibration Strategy. No works will occur unless it is included within a notification and appropriate notification period. Communications Strategy. Any notification will be prepared and approved by Sydney Metro based on information from JHLOR. JHLOR will consult with sensitive receivers regarding OOHW in accordance with CoA-E23. Sensitive receivers as identified within the EIS, will be consulted prior to works, including out of hours works.
If drafted already, attach applicable Community Notification in Appendix 3.	

Part 6: Contact Details

Nominate contractor's project manager, environmental and communications contact(s).

Name:	Yuga Balakrishna	**Position:**	Project Leader	**Phone:**	0438 656 587
	Lucas Dobrolot		Environmental Manager		0422 417 385
	Andie Pitsiatari		Community Place Manager		0429 378 336

Part 7: Signature

This signature acknowledges that the proposed Minor Works will be undertaken in accordance with this application, have minimal environmental impact and are not defined as 'construction' in accordance with the applicable planning approval.

Name:	Lucas Dobrolot		
Signature:		**Date:**	11/08/2022

Determination Page

(TfNSW/Environmental Representative Use Only)

Endorsement/Approval

These signatures represent formal endorsement/approval for the proposed Minor Works to commence in accordance with this application and the applicable planning approval requirements (subject to any determination from the applicable planning authority as may be required by the planning approval conditions).

	TfNSW Principal Manager, Communication & Engagement – Endorsement (required for all applications)	**TfNSW Principal Manager, Sustainability, Environment & Planning** – Approval (required for all applications)	**Environmental Representative** – Endorsement (required as necessary in accordance with the applicable planning approval, optional for all other circumstances)
Signature:			
Name:	Neil Dix	Dylan Jones	Jo Heltborg
Date:	23/09/2022	23/09/22	23/9/2022
Comments:		Signed on behalf of Fil Cerone - Director ESP	*Supporting letter attached as Appendix 4 if necessary.*
Conditions:			*Supporting letter attached as Appendix 4 if necessary.*

☐	Approved (by TfNSW)
☒	Endorsed (by Environmental Representative)
☐	Rejected

Appendix 1: Work areas, Environmental Risk Assessment

PCMWA 004 Risk Assessment for Scope 1,2,3 works

The Risk Assessment has been undertaken in accordance with the requirements of the *Sydney Metro Risk Management Standard*.

Note; **C** = Consequence & **L** = Likelihood as per *Sydney Metro Risk Management System – Appendix A Sydney Metro Risk*

Aspect	Potential Environmental Impact	Initial Risk Rating			Control Measures	Residual Risk Rating		
		C x	L =	Risk		C x	L =	Risk
Survey, survey facilitation and investigations works (including road and building dilapidation survey works, drilling and excavation) Utility relocation and connections.								
Not identifying appropriate approvals, licenses or permits required and proceeding without them.	Works delayed, infringements, prosecution, poor community relations and reputational loss, remediation work.	**C5**	**L3**	**Med**	• Review the project EIS, modification and statutory documentation for requirements relevant to the BAC works. • Conduct works in accordance with this preconstruction minor works approval • Review EPL 21147 for conditions of work	**C5**	**L5**	**Low**

Noise from general construction activities resulting in impact to residents.	Disturbance to residents or neighbouring businesses. Potential for complaints	**C5**	**L4**	**Low**	• Conduct works in accordance with the conditions within Laing O'Rourke EPL 21147
					• Mitigation measures to be implemented in accordance with the Sydney Metro Construction Noise Strategy, including appropriate notification.
					• Out of Hours work Permit for any Out of Hours Work –to be provided to ER as assurance prior to OOHW commencing
					• Respond to community enquiries and complaints in accordance with Sydney Metro requirements and Community & Stakeholder Manager (Sydney Metro)
					• Implement noise mitigation strategies for out of standard hours work based on noise modelling
					• Monitor noise to validate predictions
					• Where possible, night works should be programmed to undertake noisy activities prior to 10pm.
					• Control Measures in accordance with EPA Interim Construction Noise Guidelines;
					  ○ Well maintained plant
					  ○ Plant is used as far as possible from sensitive receivers
					  ○ Construction equipment fitted with non-tonal reversing alarms (Quackers)
					  ○ Regular compliance checks on the noise emissions of all plant and machinery used
					  ○ Follow work practices addressed in the Interim Construction Noise Guidelines (ICNG) for night and day works as per tables 4, 5, 6, 7, 8, 9 and 10.
					Prestart to include:
					• Distance between noisy plant items and nearby noise sensitive receivers would be maximised and equipment orientated where possible to reduce noise.
					• On site behaviours to be considered, no shouting, slamming doors, dropping objects or equipment etc
						C5	**L5**	**Low**

Noise during works required to be undertaken out of standard construction hours.	Disturbance to residents or neighbouring businesses with potential for complaints.	**C5**	**L4**	**Low**	3. Conduct works in accordance with the conditions within Laing O'Rourke EPL 21147
					4. Mitigation measures to be implemented in accordance with the Sydney Metro Construction Noise Strategy, including appropriate notification.
					5. Out of Hours work Permit for any Out of Hours Work –to be provided to ER as assurance prior to OOHW commencing
					6. Respond to community enquiries and complaints in accordance with Sydney Metro requirements and Community & Stakeholder Manager (Sydney Metro)
					7. Implement noise mitigation strategies for out of standard hours work based on noise modelling
					8. Monitor noise to validate predictions
					9. Where possible, night works should be programmed to undertake noisy activities prior to 10pm.
					10. Control Measures in accordance with EPA Interim Construction Noise Guidelines;
					  a. Well maintained plant
					  b. Plant is used as far as possible from sensitive receivers
					  c. Construction equipment fitted with non-tonal reversing alarms (Quackers)
					  d. Regular compliance checks on the noise emissions of all plant and machinery used
					  e. Follow work practices addressed in the Interim Construction Noise Guidelines (ICNG) for night and day works as per tables 4, 5, 6, 7, 8, 9 and 10.
					3 Prestart to include:
					• Distance between noisy plant items and nearby noise sensitive receivers would be maximised and equipment orientated where possible to reduce noise.
					• On site behaviours to be considered, no shouting, slamming doors, dropping objects or equipment etc
						C5	**L4**	**Low**

Aspect	Potential Environmental Impact	Initial Risk Rating			Control Measures	Residual Risk Rating		
		C x	L =	Risk		C x	L =	Risk
Sediment laden runoff from construction works leaving site.	Degradation of local watercourses and open channel adjacent to Bankstown Railway Station. Increased turbidity in local water ways resulting in impact on aquatic life. Fines for sediment escaping site.	C5	L4	Low	• ERSED risks are proportional to weather events, therefore weather will be monitored • Erosion and Sediment Control Plan (ERSED) to be implemented • Ensure measures are inspected and maintained as the works progress and also prior to and post rainfall events	C5	L5	Low
Waste disposal during construction.	Incorrect disposal of waste (preclassified, construction and demolition etc, further costs incurred for classifications and disposal, fines may be issued.	C5	L4	Low	• Identify opportunities to incorporate recovered materials into the permanent works • Provide facilities on site for source separation and recycling • Waste for disposal must be classified in accordance NSW EPA waste classification guidelines • Ensure accurate waste records are retained • Removal of wastes from the site would only be undertaken by a licensed contractor as required by the POEO Act and with appropriate approvals, if required, for contaminated materials, etc.	C5	L5	Low
Earthworks spoil disposal.	Incorrect classification of waste (spoil) resulting in incorrect / illegal disposal/re-use. Contamination of soil/water. Failure to beneficially re-use waste materials.	C4	L3	Med	• Separation of waste on site. • Tracking of disposal processes. • All contamination hotspots would be clearly marked in the field (where possible). Hot spots will be shown within contamination mapping (ECM) and will be included in the Permit to Disturb process. • All excavated material will be stockpiled at Belmore Triangle for waste classification testing and disposal. • All material to be recovered off-site to be appropriately tested and classified and sent to a facility that can legally accept the waste classification	C4	L5	Low
Management of known contaminated or untreated materials	Mixing of spoil with potentially different classifications leading to cross contamination	C5	L3	Med	• Identify any contamination hotspots and incorporate procedures for these locations into construction documentation. • Implement unexpected finds procedures. • Prestart to include unexpected finds procedure. • Monitor excavation/auger spoil for unexpected contamination in accordance with the Unexpected Finds Procedure and separate as required. • Stockpile material separately based on ECM known classifications excavation in areas of know contamination without further assessment and management	C5	L5	Low
Potential for discovery of unexpected, contaminated material during excavation/auguring.	Health effects resulting from airborne contamination, e.g. asbestos. Complaints received from odours released during excavations. Classification of spoil is changed and disposal options altered, costs incurred associated with disposal of higher classification of waste	C4	L4	Med	• If contaminated soil is encountered, all works are to stop in the vicinity of the find and investigations commence • Induct personnel on location, type, nature, concentration of contaminants on site if found • Monitor excavation/auger spoil for unexpected contamination in accordance with the Unexpected Finds Procedure and stockpile separate as required	C4	L5	Low
Encountering asbestos / contaminated material on site.	Inappropriate storage, transfer or disposal of materials causing further contamination.	C4	L4	Med	• Inspections of excavated and filled surfaces would be made during construction to determine the presence of visible asbestos • Conduct further site investigations to determine the presence and extent of contamination prior to construction works commencing • Contaminated soils would not be stockpiled on the structural fill layer or formation layers to avoid cross contamination • Implementation of the Unexpected Finds Procedure • Monitor piling spoil for unexpected contamination in accordance with the Unexpected Finds Procedure and separate as required • -If hazardous material is suspected, stockpile onto a bunded location	C4	L5	Low
Inappropriate storage of hazardous substances, leaking plant and equipment and spillage from refueling.	Localised ground contamination / pollution of stormwater and requiring clean-up and/or receiving fines. Risk of igniting volatile substances. Unauthorised access to site / potential vandalism/damage leading to pollution.	C4	L4	Med	• Induction, toolbox talks and training on appropriate handling and storage of liquids • All storm water drains should be identified prior to works and refuelling to occur away from these areas • Storage areas to be away from identified sensitive areas and appropriately bunded • Plans showing storage locations and associated controls e.g. spill kits, etc. (Environmental Control Maps). • Training in use of spill kits • Contingency plans would be developed to deal with any spills which might occur during construction. • Clearly label containers • Regular auditing and inspection of storage areas and materials • Make storage areas restricted access areas • Reduce/eliminate need for hazardous substances • Ensure all work sites are secure before leaving the site	C4	L5	Low

Aspect	Potential Environmental Impact	Initial Risk Rating			Control Measures	Residual Risk Rating		
		C x	L =	Risk		C x	L =	Risk
Survey, survey facilitation and investigations works (including road and building dilapidation survey works, drilling and excavation) Utility relocation and connections.								
Fuel contaminated runoff from construction works leaving site.	Fuel contaminated runoff entering stormwater or waterways (i.e. polluting not compliant with discharge criteria).	**C4**	**L3**	**Med**	• All storm water drains should be identified prior to works and controls implemented. • No refueling in the vicinity of the open culvert at Bankstown Station Carpark. • Appropriate bunding/storage of substances. • Toolbox on site procedures for sediment controls and chemical storage. • Educate site staff on project conditions and consequences of prosecution.	**C4**	**L5**	**Low**
Excavation near protected trees/vegetation or roosting habitat	Damage to roots/root structures, distress to fauna or habitat loss	**C4**	**L4**	**Med**	• Site inspections to include review of protected tree/vegetation species during excavation works • Toolbox talks/training to include details of nearby protected species • Prior to commencing, trenching or excavation to be investigated if in the vicinity of protected species. Where possible excavation works will be modified to avoid damage to roots • Employees to receive suitable environmental inductions as per the CEMP (Section 10) • Implement controls within ERAP 1-Biodiversity • If works need to be complete in close proximity of threatened species, or roosting habitat an ecologist is to be present during works • Demarcation, no-go zones and environmental sensitive spots are clearly marked and protected • Workers are alerted, properly inducted about the specified risk to fauna zones during pre-start • All personnel attending site will be advised of controls and management for TEC/ Protected vegetation and habitat during the onsite induction. • Regular inspections of worksite for specified threatened fauna • If threatened flora or fauna species are identified as being potentially impacted by the works, work in the vicinity of these species would stop immediately. spotter/catcher/botanist would be engaged to survey the site and advise on species management	**C4**	**L5**	**Low**
Excavations, potholing, auguring	Dust activity near residential and commercial premises, complaints received.	**C4**	**L4**	**Med**	• Prestart to discuss mitigating and managing Dust • Provide dust mitigation measures through water sprays/misting as required • Cover stockpiles that are not to be worked on for a period of greater than 10 days	**C4**	**L5**	**Low**
Water Management	Discharge of water that does not meet water quality parameters Excessive draw down causing settlement issues	**C4**	**L4**	**Med**	• Prestart to include water discharge requirements for ULX works • Minor amounts of groundwater that may be encountered as part of these works will be removed as liquid waste via vacc truck • Review investigation works regarding groundwater potential • Surface water needs to be removed by vacuum truck and stored at Belmore Triangle	**C4**	**L5**	**Low**
Exhaust from plant and equipment.	Emissions resulting in air pollution.	**C5**	**L4**	**Med**	• Inductions and toolbox training on Dust and Air Quality Management • Well maintained plant/ equipment and pre-start checks and servicing • Non-complaint vehicles removed from site / repaired	**C5**	**L5**	**Low**
Unexpected heritage items encountered.	Work delays, additional studies, approvals required, damage to heritage item.	**C4**	**L3**	**Med**	• Prestart to include heritage management protocols • If unexpected heritage items are encountered, utilise the Sydney Metro Unexpected Heritage Finds procedure • Label any known heritage items on Environmental Control Maps • If suspected heritage item encountered. Works to stop immediately and Environment Manager contacted • Clearly highlight no-go zones on the ECM and include in work pack for each team	**C4**	**L5**	**Low**
Works near heritage building / AMZ areas	Damage to heritage fabric of heritage items by Project works	**C4**	**L3**	**Med**	• Archaeological oversight during Excavation work within AMZs of MED-HIGH potential	**C4**	**L5**	**Low**

Aspect	Potential Environmental Impact	Initial Risk Rating			Control Measures	Residual Risk Rating		
		C x	L =	Risk		C x	L =	Risk
Survey, survey facilitation and investigations works (including road and building dilapidation survey works, drilling and excavation) Utility relocation and connections.								
Impact to Heritage Structures	Damage to station fabric and other heritage items by works and construction traffic. Visual impacts. Impacts to potential Archaeological items	**C4**	**L3**	**Med**	• Prestart to includes heritage management protocols • If unexpected heritage items are encountered, utilise the Sydney Metro Unexpected Heritage Finds procedure • Label any known heritage items on Environmental Control Maps • If suspected heritage item encountered. Works to stop immediately and Environment Manager contacted • Clearly highlight no-go zones on the ECM and include in work pack for each team • Work under the direction of the Excavation Director in accordance with the AMS • Demarcation of worksites and communicate it clearly with all construction personnel • Incorporated CSR into design to avoid heritage structures	**C4**	**L5**	**Low**
Loss of on-streetcar parking in adjacent residential streets and commercial areas during construction.	Loss of parking availability to adjacent residential and commercial properties could result in community complaints.	**C4**	**L4**	**Med**	• Community notifications in accordance with Sydney Metro Community Consultation Strategy. • Site vehicles shall be parked within the rail corridor and not affect public parking within 400m of station areas • where feasible site workers to use public transport, carpool and leave vehicles at site compounds rather than work sites	**C4**	**L5**	**Low**
General construction traffic disturbing public access between local roads.	Disturbance to local residents resulting in complaints being made, limited access, potential for delays at local road access points resulting in complaints.	**C4**	**L4**	**Med**	• Deliveries of plant and materials shall be undertaken outside of peak periods where possible • Site vehicles shall be parked within the rail corridor and not affect public parking within 400m of station areas • Scheduled road movements shall be minimised where possible • Clear notifications / signage.	**C4**	**L5**	**Low**
Management of heavy/ construction vehicles and access routes. Heavy vehicles used for the delivery of excavators, drill rig as well as vacuum truck, water cart/trailer, hi-rail vac truck, bogie and hydrema.	Complaints from sensitive receivers due to increased level and frequency of noise.	**C4**	**L4**	**Med**	• Deliveries of plant and materials shall be undertaken outside of peak periods where possible • Site vehicles shall be parked within the rail corridor and not affect public parking areas • Scheduled road movements shall be minimised where possible • Designated haulage and access routes • Implement measures outlined within TCP, Pedestrian management with traffic controller in place where required	**C4**	**L5**	**Low**
Truck deliveries out of normal working hours	Un-approved deliveries resulting in non- conformance with project requirements. Noise impact to community / potential complaints.	**C4**	**L4**	**Med**	• Personnel training of noise awareness to community included in induction and • Induction on Construction Hours for deliveries • Communication of delivery times to suppliers and the use of voyage control • Community Notifications on project activities occurring locally • Code of conduct / selection criteria in place for subcontractors • Out of hours works approval where required • Approved traffic/access routes • Planning and staging of works in approved hours as much as practical	**C4**	**L5**	**Low**
Pedestrian/Cyclist access	Disruption of pedestrian and/or cyclist access while the plant/vehicles are accessing site. No closures required.	**C4**	**L4**	**Med**	• Clear signage • Spotters being used while plant is entering and leaving	**C4**	**L5**	**Low**
Site investigation activity	Surrounding aesthetic temporary (or permanently) altered during construction Lighting towers used during out of hours works may spill on nearby residents. Impacts to residents in properties adjacent to rail corridor.	**C4**	**L4**	**Med**	• The work area shall be maintained in an orderly manner • Lighting required during night works shall be directed towards the work area and are from adjacent sensitive receivers • Shade cloth • Screening on double stack buildings where possible and in consultation with impacted residents	**C4**	**L5**	**Low**

Sydney Metro Risk Matrix

A1 Consequence Table

Consequence Table						
Rating	C6	C5	C4	C3	C2	C1
Descriptor/ Impact Area	Insignificant	Minor	Moderate	Major	Severe	Catastrophic
Health and Safety (Injury and Disease)	Illness, first aid or injury not requiring medical treatment.	Illness or minor injuries requiring medical treatment.	Single recoverable lost time injury or illness, alternate/restricted duties injury, or short-term occupational illness.	1-10 major injuries requiring hospitalisation and numerous days lost, or medium-term occupational illness.	Single fatality and/or 10-20 major injuries/permanent disabilities/chronic diseases.	Multiple fatalities and/or >20 major injuries/permanent disabilities/chronic diseases.
Environment	No appreciable changes to environment and/or highly localised event.	Change from normal conditions within environmental regulatory limits and environmental effects are within site boundaries.	Short-term and/or well-contained environmental effects. Minor remedial actions probably required.	Impacts external ecosystem and considerable remediation is required.	Long-term environmental impairment in neighbouring or valued eco . Extensive remediation required.	Irreversible large-scale environmental impact with loss of valued eco .
Customer Experience/ Operational Reliability	Short duration disruptions affecting part of one transport mode.	Minor disruptions affecting several parts of one transport mode.	Serious disruptions affecting operation of one complete transport mode.	Major disruptions affecting operations of one transport mode with network-wide effects on one or more other modes of transport.	Short duration shutdowns or substantial disruptions affecting multiple transport modes with sector-wide cascading effects.	Extensive shutdowns or extended disruptions with economy-wide effects.
Government/ Stakeholder / Public Trust/ Confidence	Negative article in local media. No discernible reaction/apprehension. Goodwill, confidence and trust retained.	Unease – Series of negative articles in local/state media. Confidence remains with some minor loss of goodwill or trust. Recoverable with little effort or cost. Some continuing scrutiny/attention.	Disappointment – Extended negative local/state media coverage. Confidence and trust dented but are quickly recoverable at modest cost within existing budget and resources.	Concern – Short-term negative state/national media coverage. Confidence and trust are diminished but are recoverable with time, staff effort and additional funding.	Displeasure – Extended negative state/national media coverage. Confidence and trust are damaged but recoverable at considerable cost, time and staff effort.	Outrage – Material change in the public perception of the organisation. Confidence and trust are severely damaged, possibly irreparably, and full recovery both questionable and costly.
Regulatory or Legal Breach	Low-level non-compliance with legal and/or regulatory requirement or duty by individuals or TfNSW.	Minor non-compliance with legal and/or regulatory requirement or duty. Investigation and/or report to authority.	Moderate non-compliance. Subject to comment and monitoring from applicable regulator. Small fine and no disruption to services.	Major breach resulting in enforcement action and/or prohibition notices. Substantial fine and no disruption to services.	Substantial breach resulting in prosecution, fines and/or litigation. Licence or accreditation restricted or conditional affecting ability to operate.	Prosecution leading to imprisonment of TfNSW executive. Loss of operating licence.
Management Effort/ Organisational Fatigue	An event, the impact of which can be absorbed as part of normal activity.	An event, the impact of which can be absorbed but some additional management effort is required.	An event, the impact of which can be absorbed but much broader management effort is required.	Major event which can be absorbed, but substantial management effort is required.	Severe event which requires extensive management effort but can be survived.	Catastrophic event with the clear potential to lead to the collapse of the organisation.
Benefit Realisation of Initiative, Program or Project	No time delay with initiative or project but it will incur a slight decrease in the benefits realised.	Minor delay with the initiative and/or a minor decrease in the benefits realised; or minor delay on the project or another project, with no public implications.	Several delays with the initiative and/or moderate decrease in benefits realised; or completion date missed for non-critical path project.	Major delays with the initiative and/or major decrease in benefits realised; or publicly announced portion/milestone missed or final completion date missed with demonstrable mitigating external circumstances.	Severe delays with initiative, which impacts across divisions and/or significant decrease in benefits realised; or publicly announced portion/milestone missed or final completion date missed on critical path project.	Failure to realise benefits of the initiative which adversely affects the enterprise-wide operations of TfNSW; or publicly announced portion/ milestone significantly missed or final completion date significantly missed on critical path project.
Budget, Costs or Revenue	< $100k	$100k – $1m	$1m – $10m	$10m – $50m	$50m – $100m	> $100m

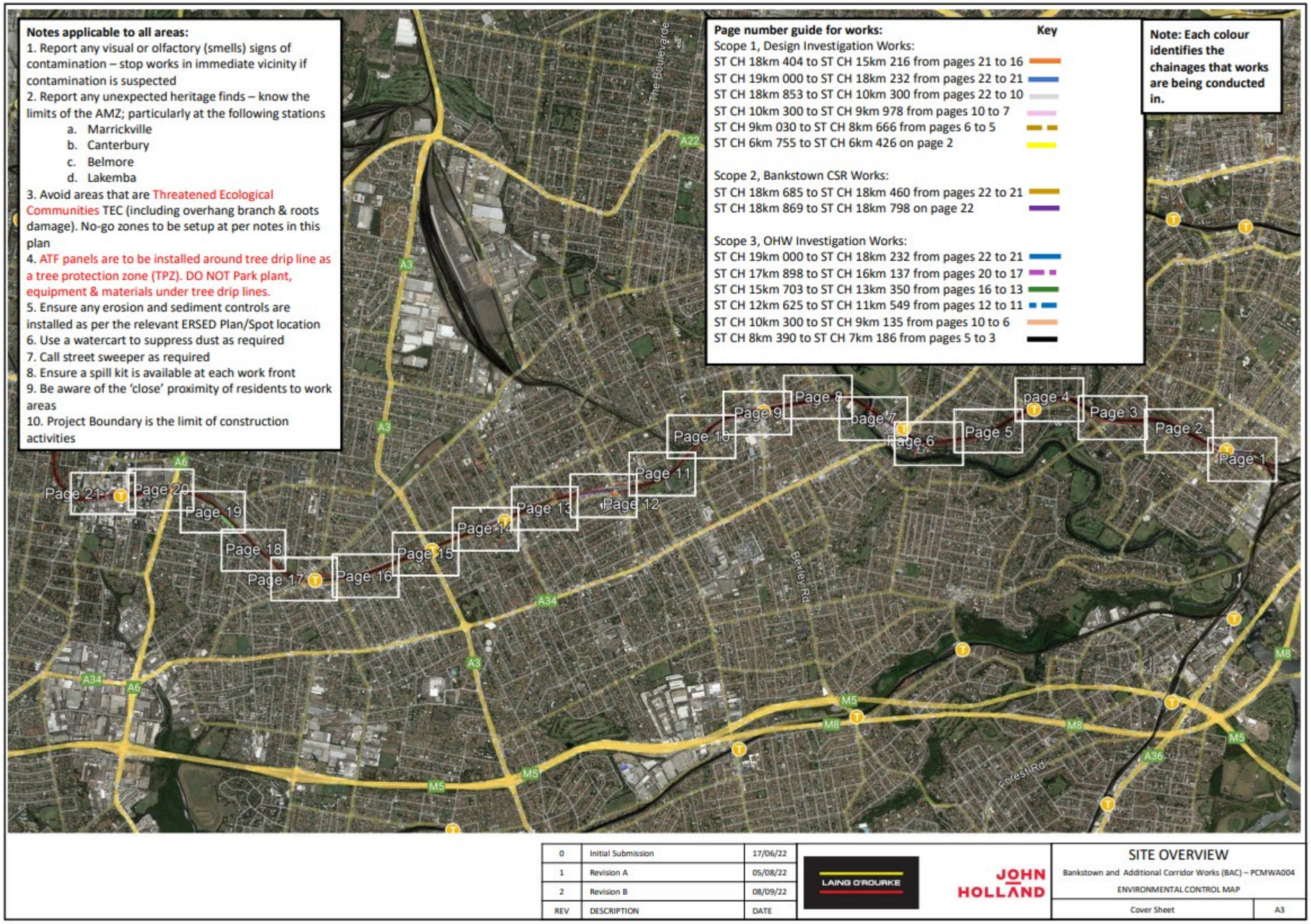
A2 Likelihood Criteria

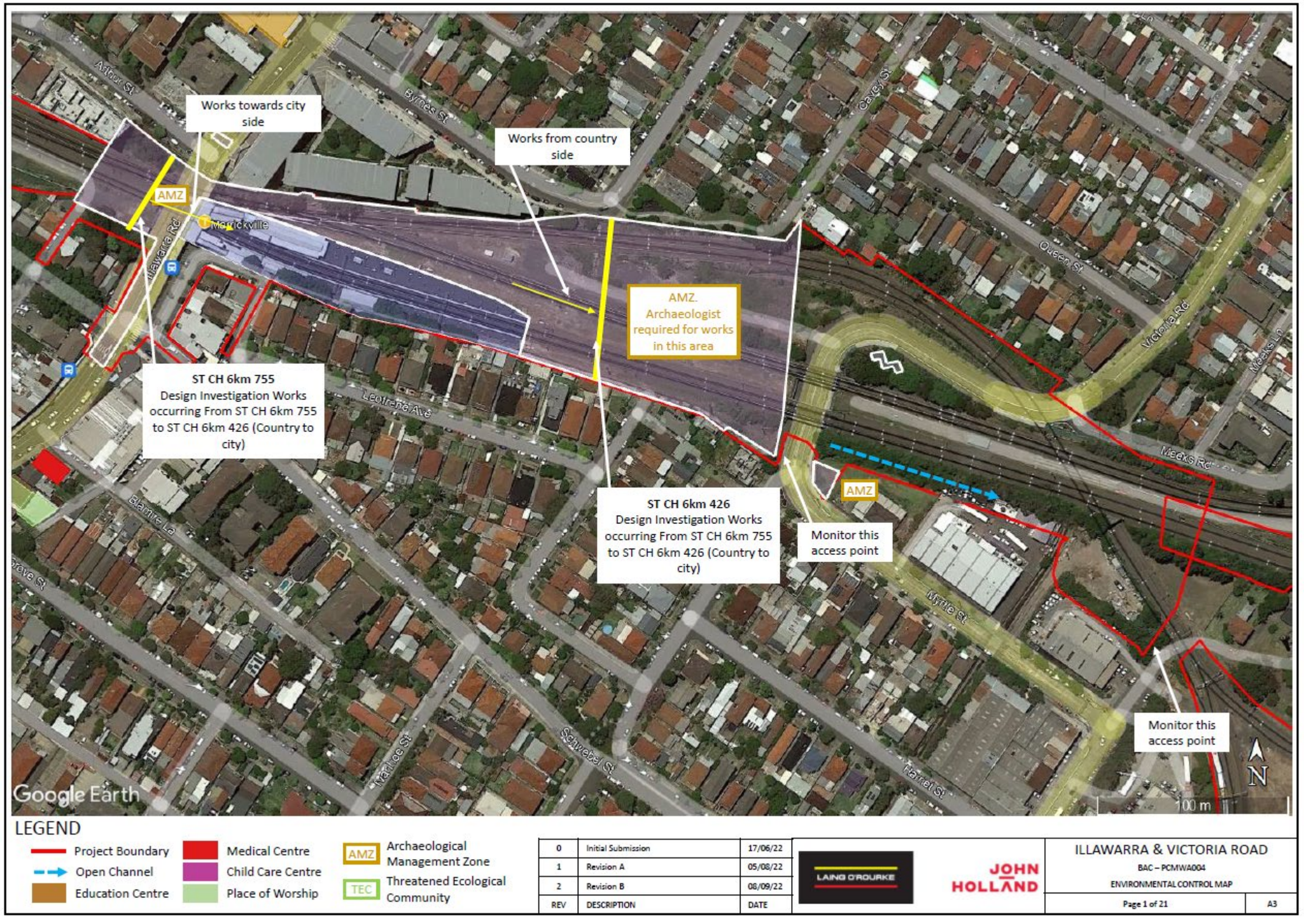
Likelihood						
Rating	L6	L5	L4	L3	L2	L1
Descriptor/ Definition	Almost Unprecedented	Very Unlikely	Unlikely	Likely	Very Likely	Almost Certain
Qualitative Expectation	Not expected to ever occur during time of activity or project	Not expected to occur during the time of activity or project	More likely not to occur than occur during time of activity or project	More likely to occur than not occur during time of activity or project	Expected to occur occasionally during time of activity or project	Expected to occur frequently during time of activity or project
Sydney Metro Probability Analysis	<10%	10-25%	25-50%	50-75%	75-90%	>90%
Quantitative Frequency	Less than once every 100 years	Once every 10 to 100 years	Once every 1 to 10 years	Once each year	1-10 times every year	10 times or more every year

A3 Risk Matrix

Risk Rating: Very High – A – 31-36 High – B – 22-30 Medium – C – 11-21 Low – D – 1-10			CONSEQUENCE					
			Insignificant	Minor	Moderate	Major	Severe	Catastrophic
			C6	C5	C4	C3	C2	C1
LIKELIHOOD	Almost certain	L1	20	22	29	32	34	36
	Very Likely	L2	14	18	23	28	31	35
	Likely	L3	9	12	16	24	27	33
	Unlikely	L4	6	7	11	17	25	30
	Very Unlikely	L5	3	4	8	13	19	26
	Almost Unprecedented	L6	1	2	5	10	15	21

Appendix 2: Environmental Control Map





LEGEND

- Project Boundary
- Open Channel
- Education Centre
- Medical Centre
- Child Care Centre
- Place of Worship
- AMZ — Archaeological Management Zone
- TEC — Threatened Ecological Community

REV	DESCRIPTION	DATE
0	Initial Submission	17/06/22
1	Revision A	05/08/22
2	Revision B	08/09/22

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ILLAWARRA & VICTORIA ROAD
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LIVINGSTONE ROAD BRIDGE
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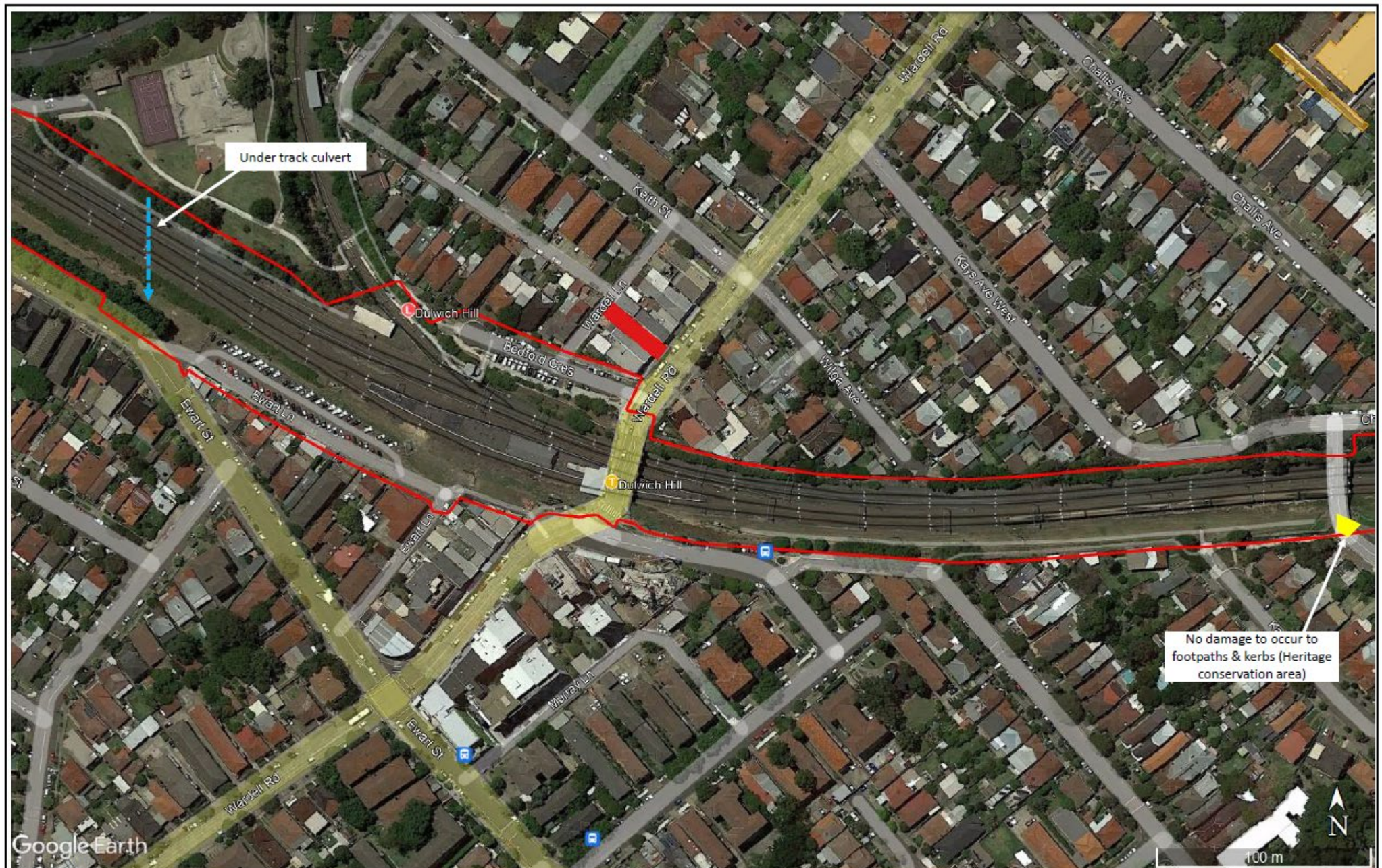

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ALBERMARLE ST & WARDELL RD
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EWART & GARNET ST
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FOORD AVE BRIDGE
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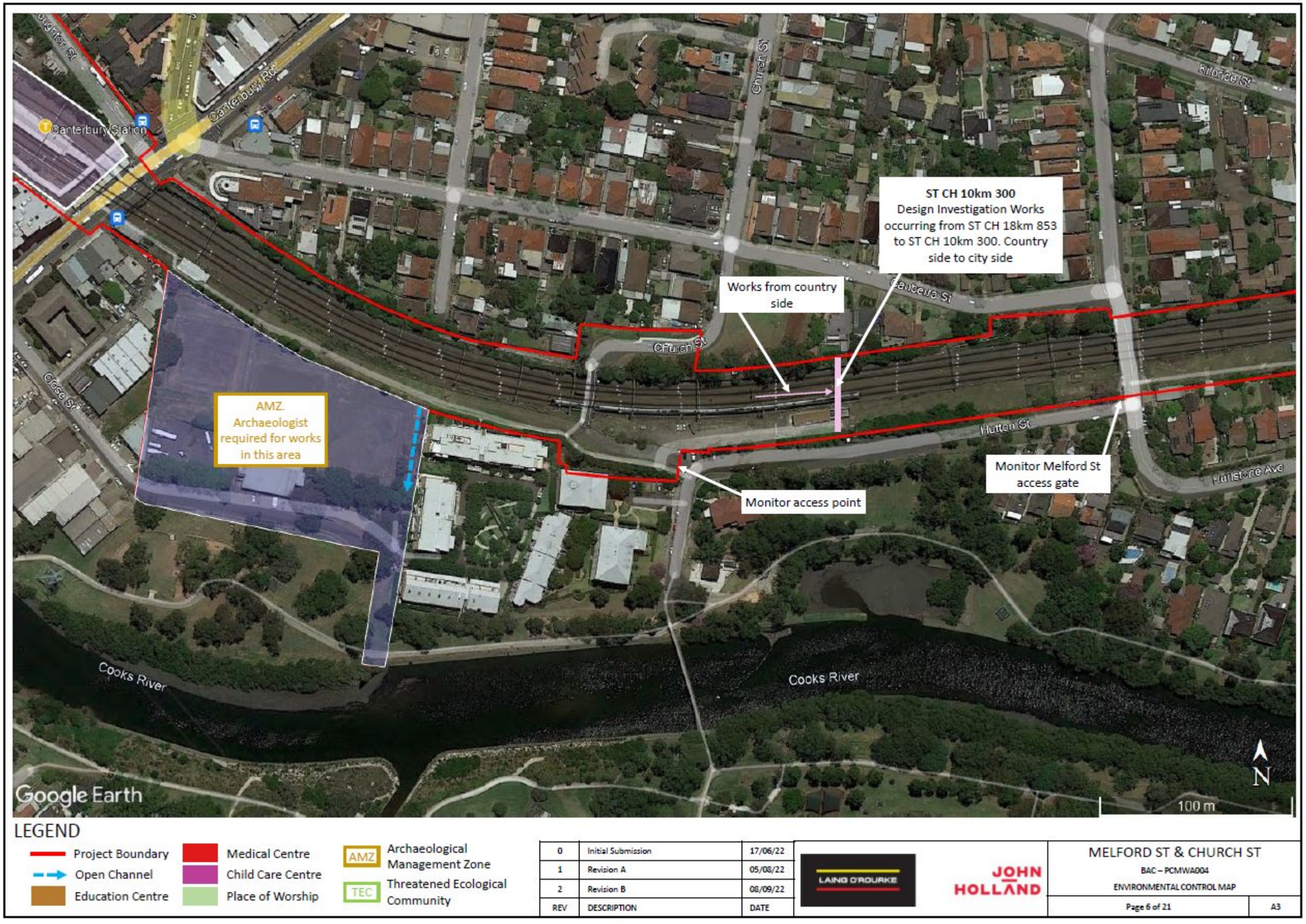

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MELFORD ST & CHURCH ST
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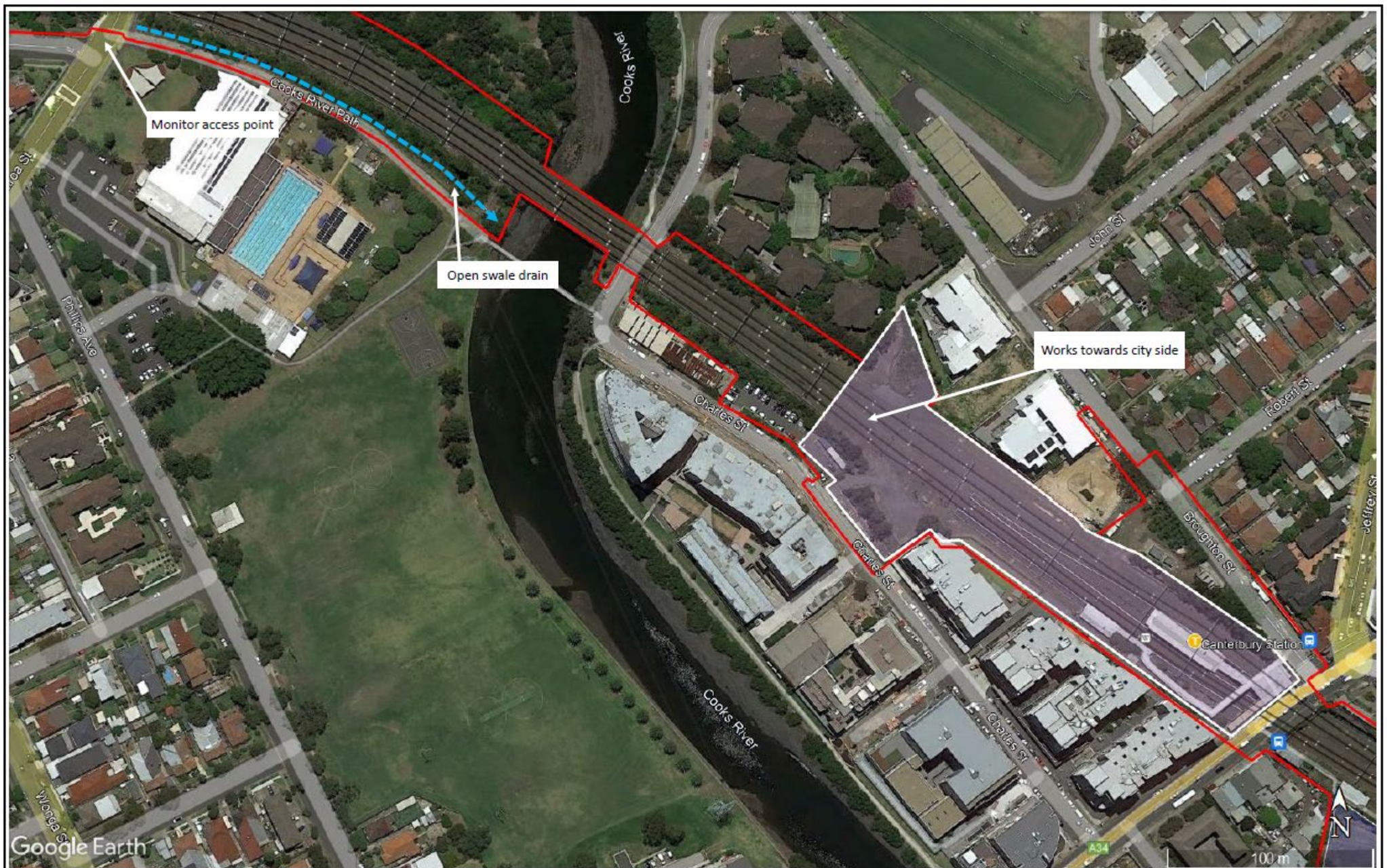

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CANTERBURY STATION & COOKS RIVER
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S PARADE & NOWRA LANE
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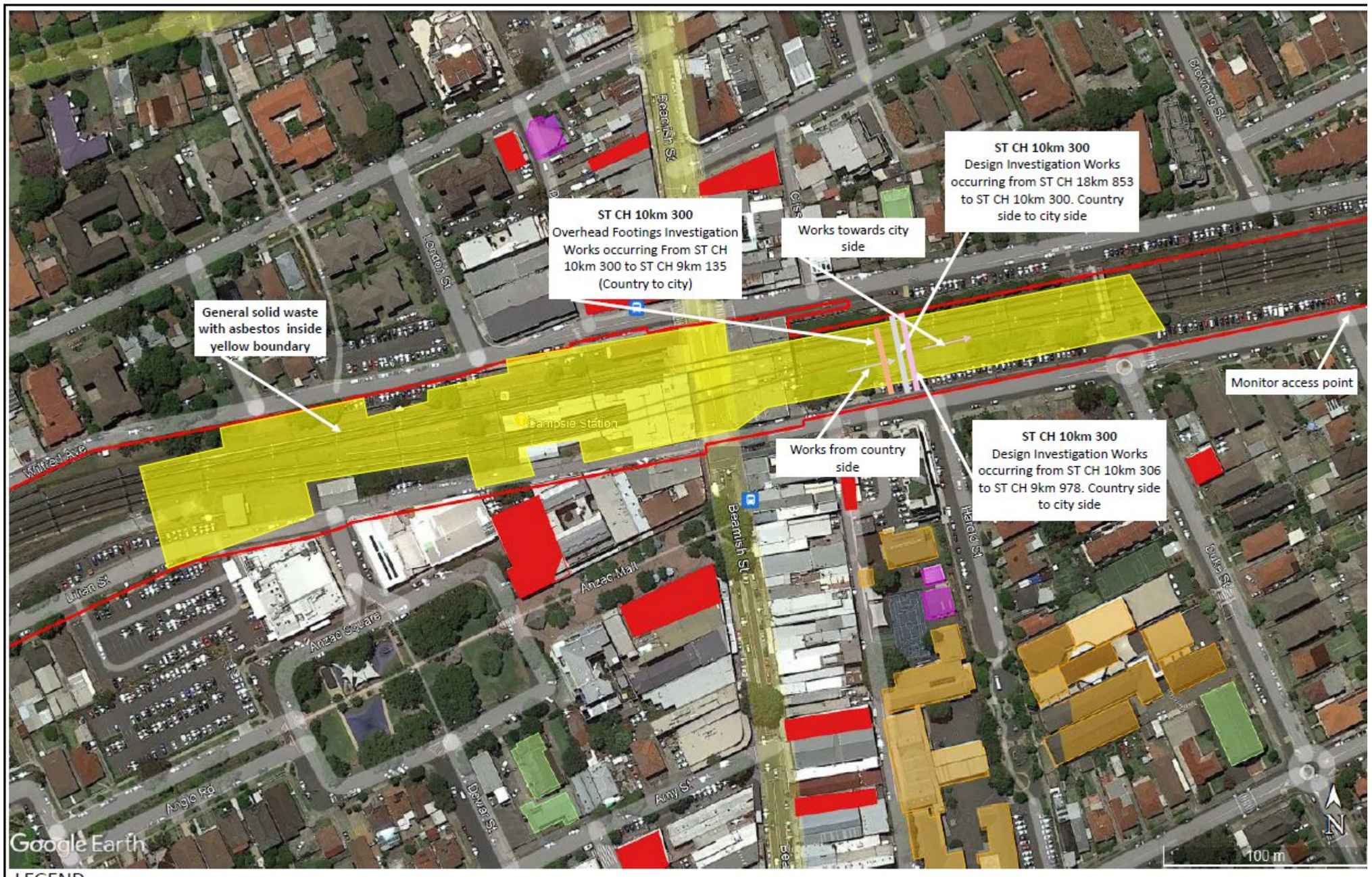

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CAMPSIE STATION
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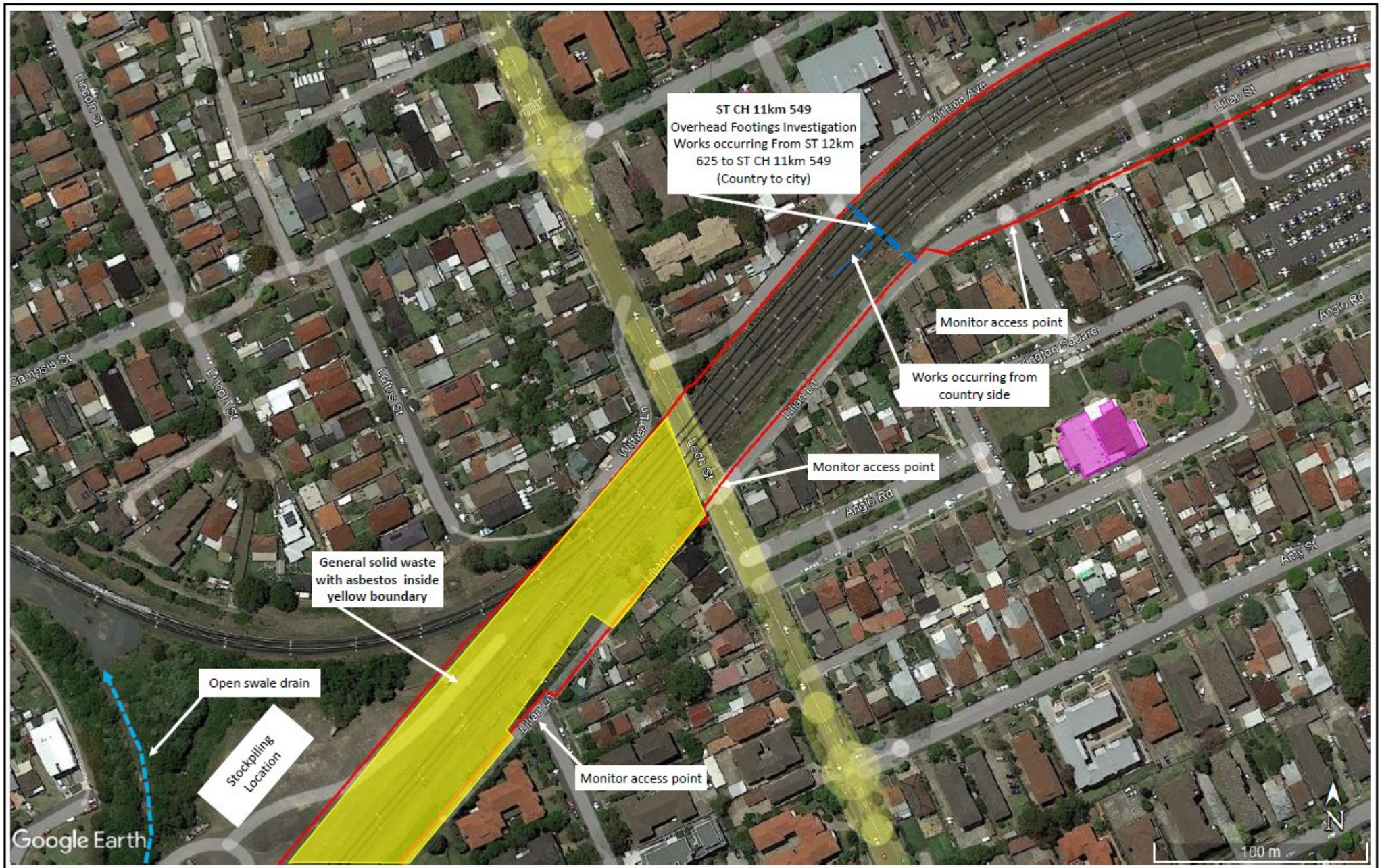

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LOCH ST & BELMORET
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BELMORET & REDMAN PDE
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BELMORE STATION
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BELMORE TO LAKEMBA STATION
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LAKEMBA STATION
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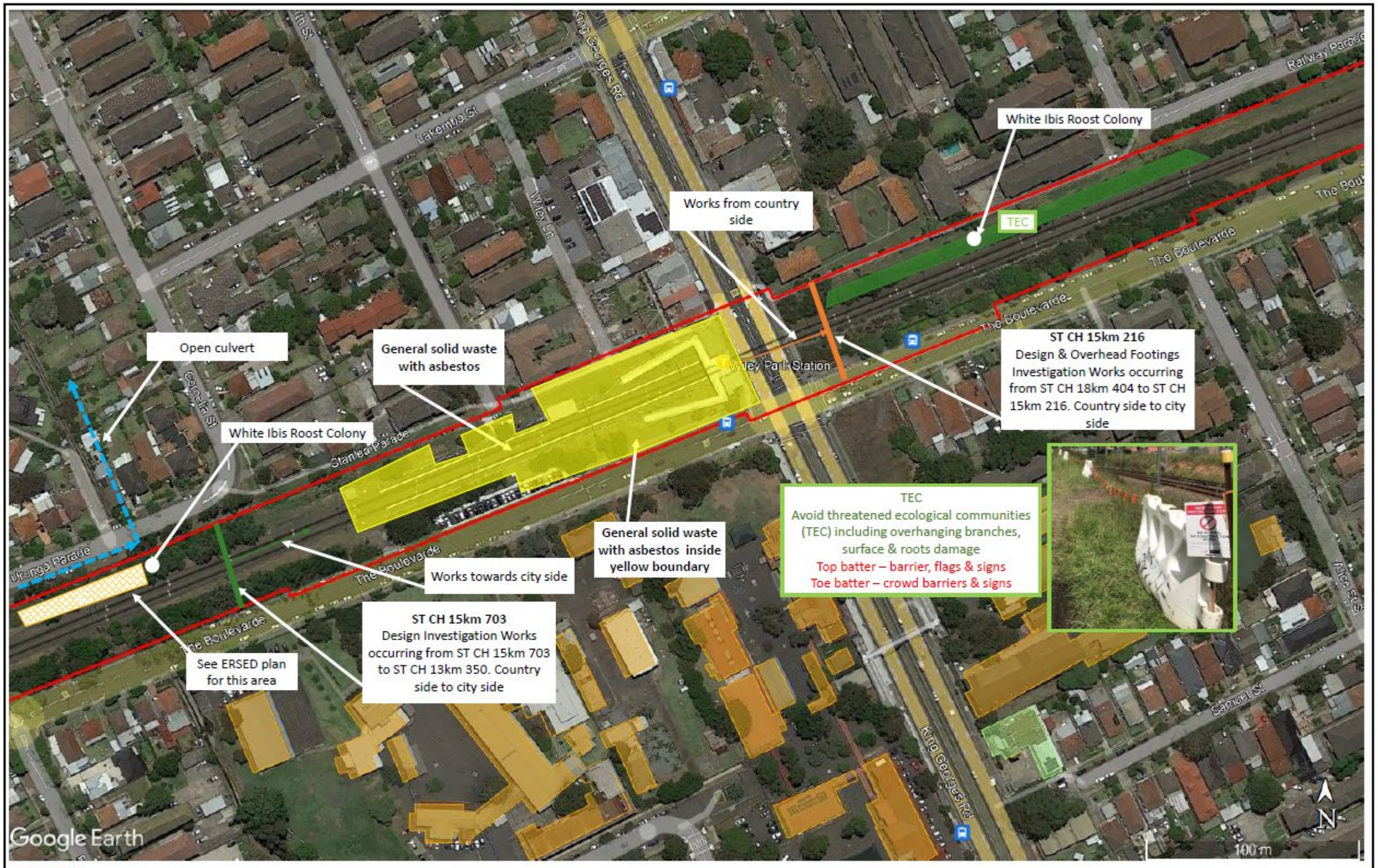

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WILEY PARK STATION
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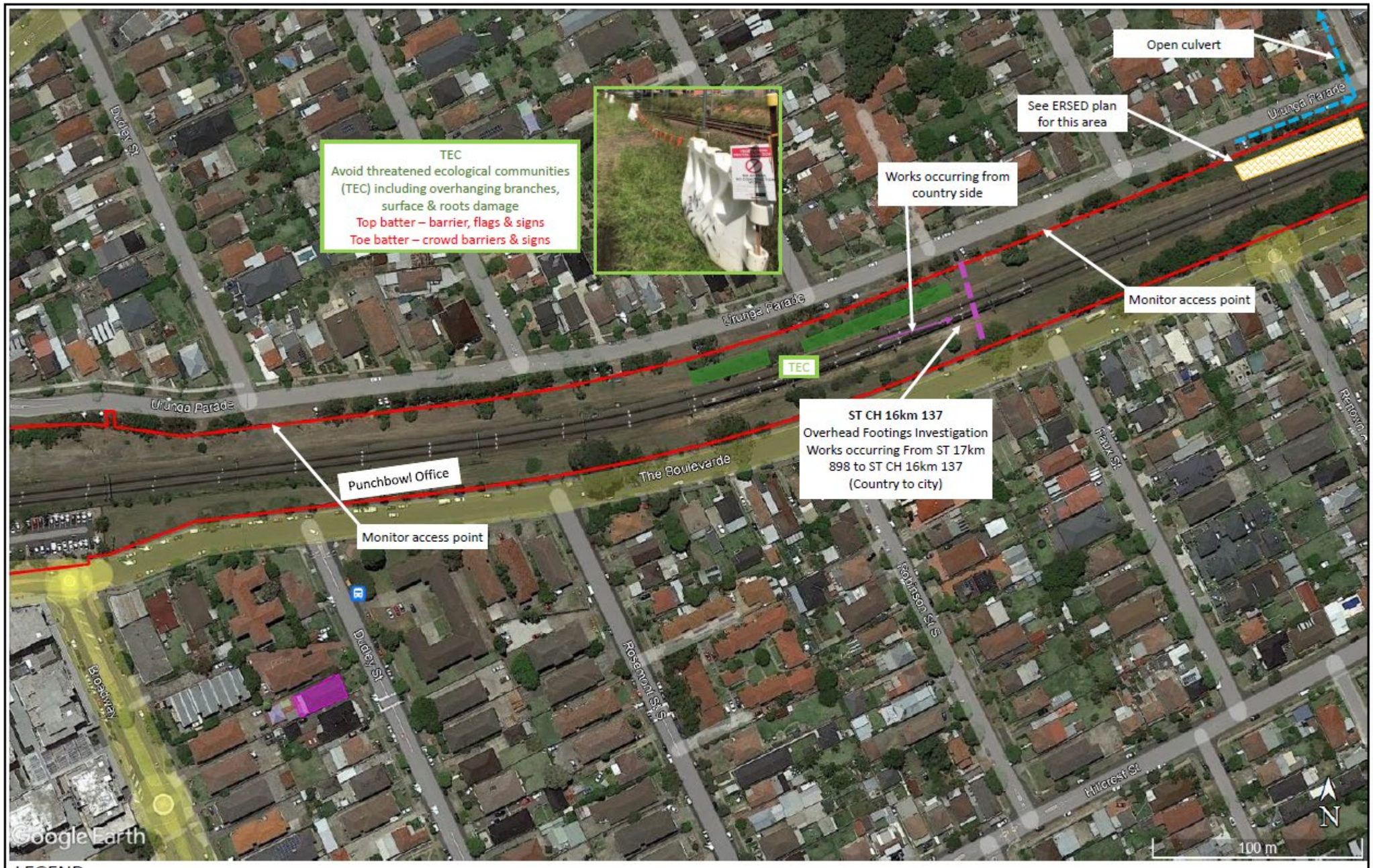

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WILEY PARK TO PUNCHBOWL STATION
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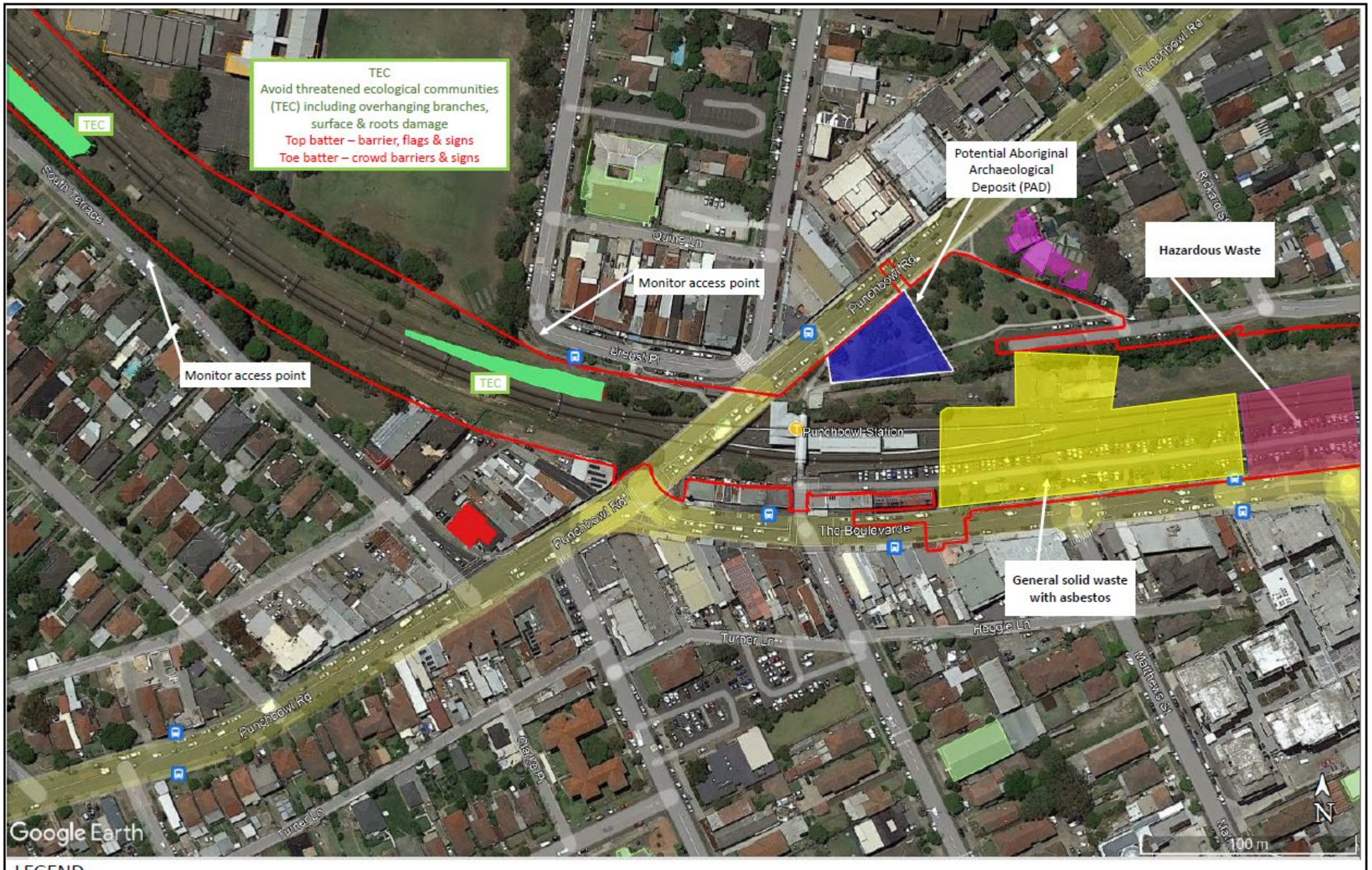

LEGEND

- Project Boundary
- Open Channel
- Education Centre
- Medical Centre
- Child Care Centre
- Place of Worship
- AMZ — Archaeological Management Zone
- TEC — Threatened Ecological Community

REV	DESCRIPTION	DATE
0	Initial Submission	17/06/22
1	Revision A	05/08/22
2	Revision B	08/09/22

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PUNCHBOWL STATION
BAC – PCMWA004
ENVIRONMENTAL CONTROL MAP
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PUNCHBOWL TO BANKSTOWN
BAC – PCMWA004
ENVIRONMENTAL CONTROL MAP
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LEGEND

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PUNCHBOWL TO BANKSTOWN
BAC – PCMWA004
ENVIRONMENTAL CONTROL MAP
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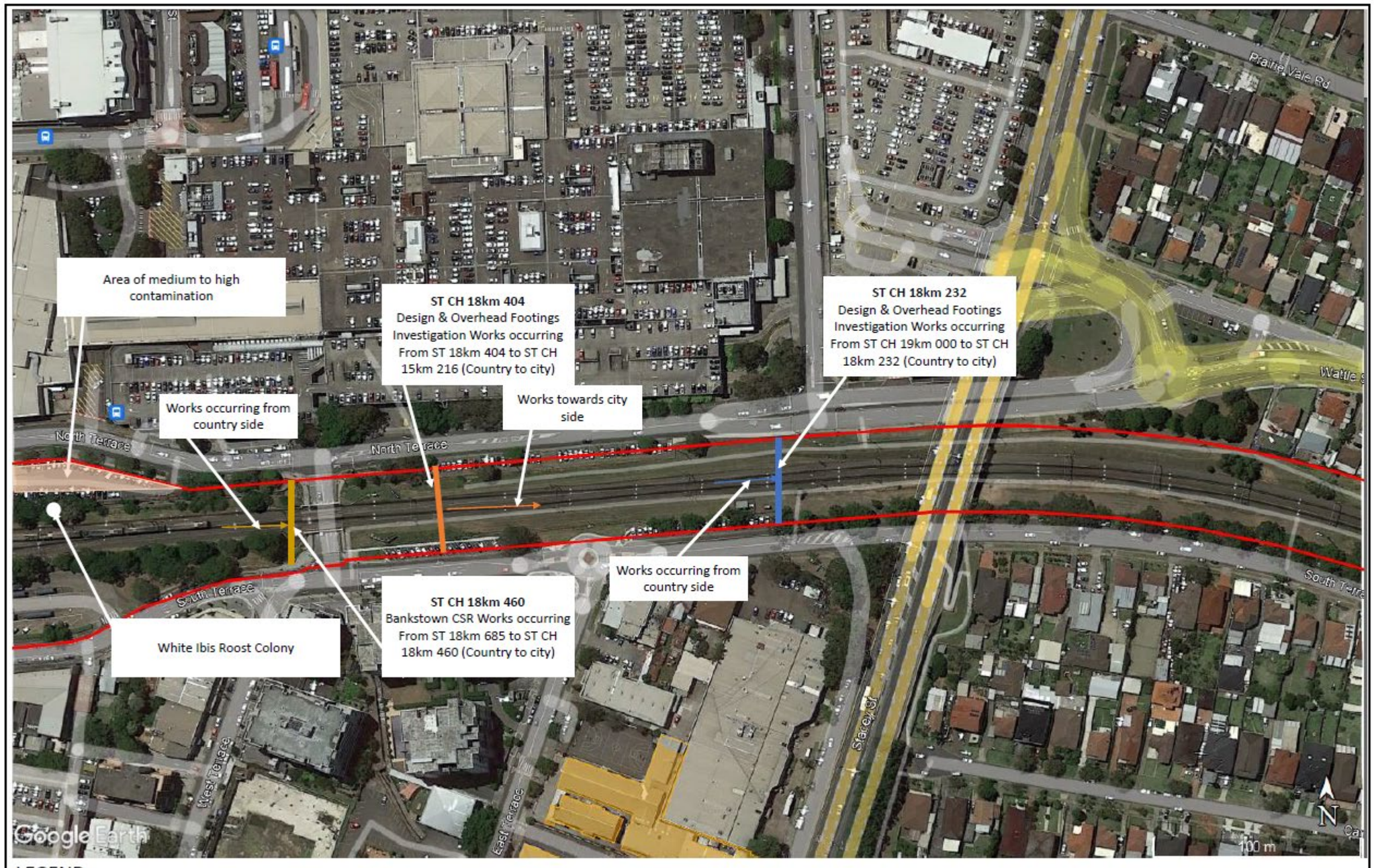

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SOUTH & NORTH TERRACE
BAC – PCMWA004
ENVIRONMENTAL CONTROL MAP
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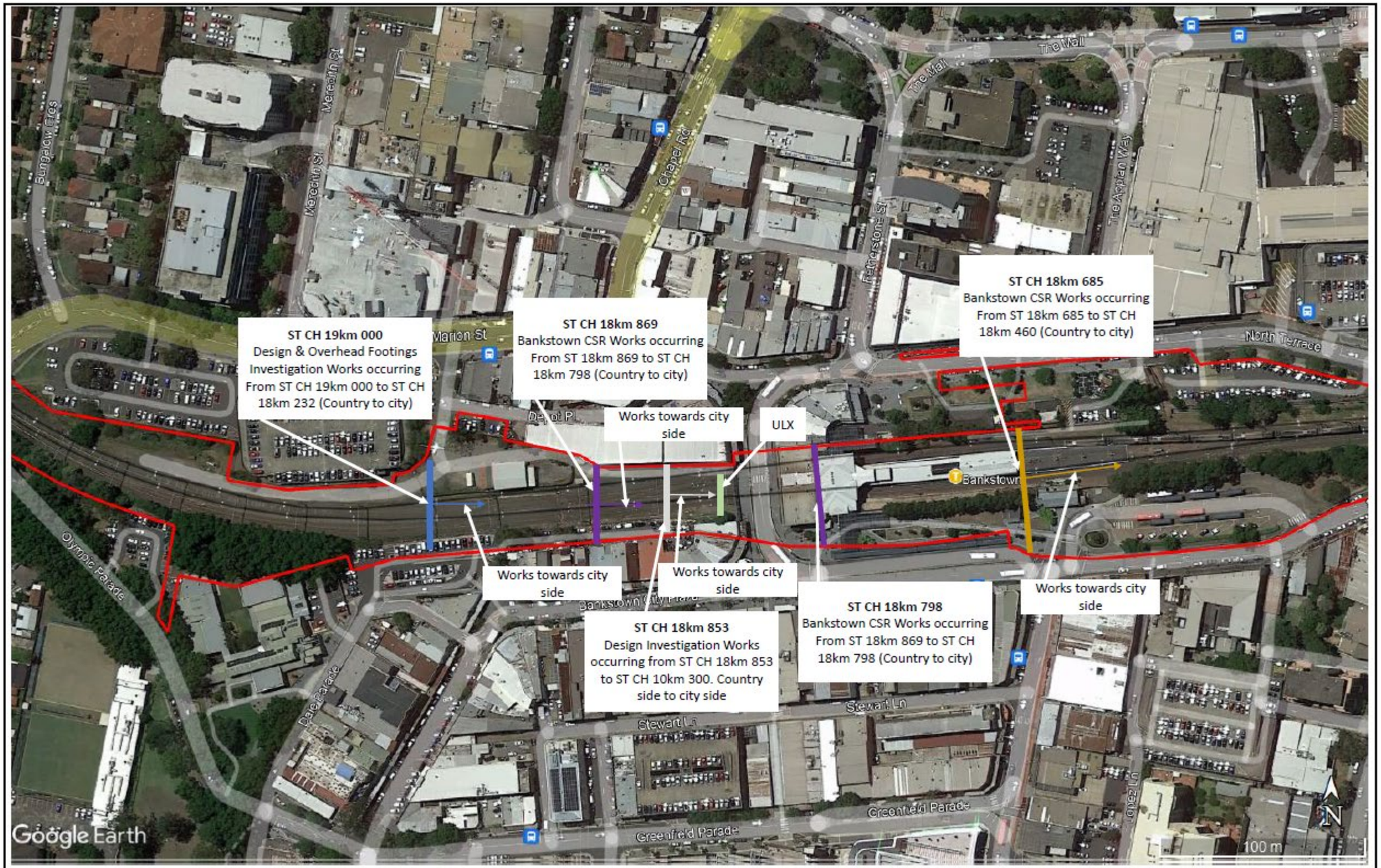

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BANKSTOWN STATION
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Appendix 3: Heritage Curtilage – Bankstown and Lakemba and Marrickville Railway Station Group and Consideration of groundwater impacts

Figure 24: Heritage curtilage Bankstown Railway Station Group

artefact

Heritage Curtilages Lakemba Station

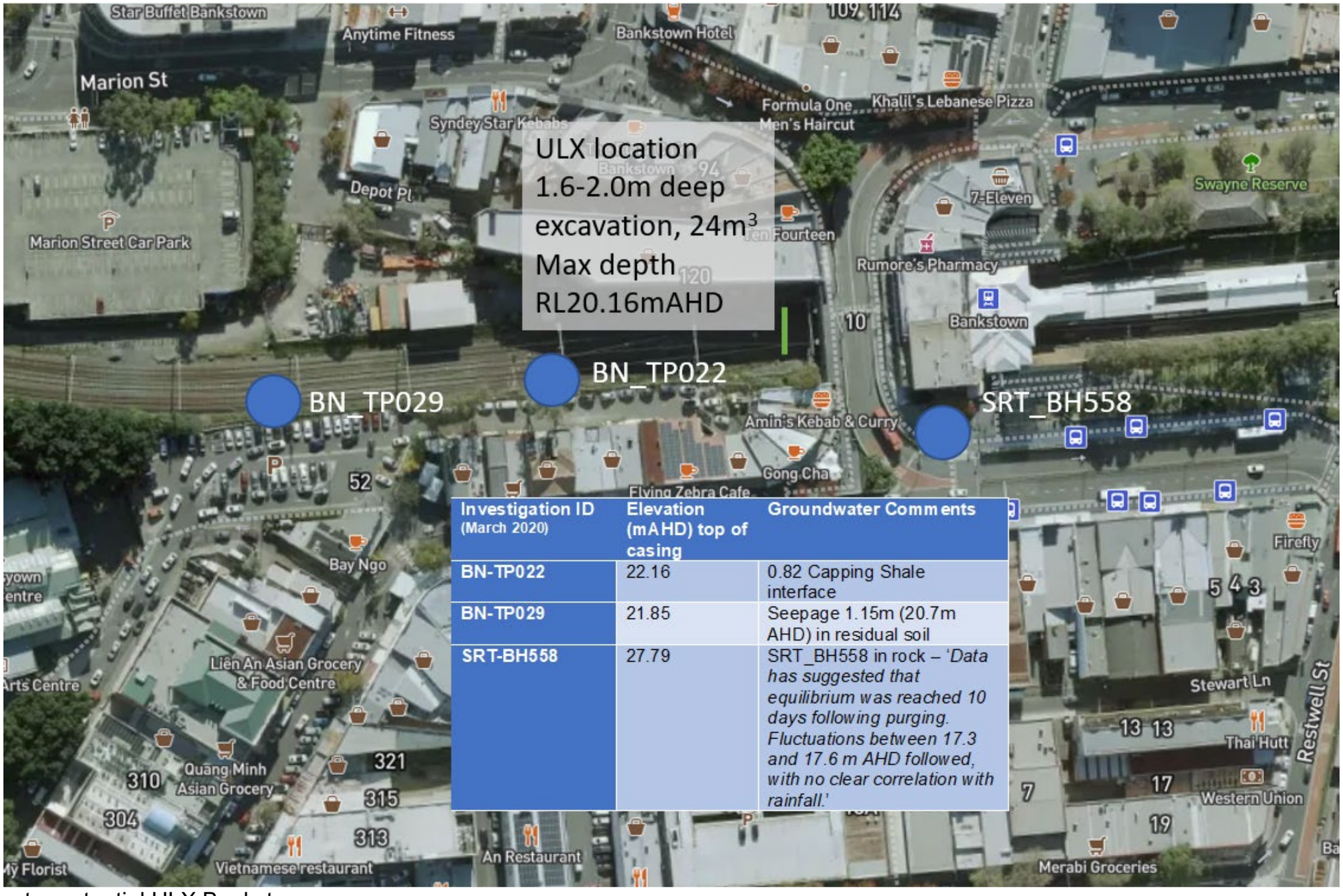
19052 Southwest Metro Corridor

LGA: Canterbury-Bankstown & Inner West

Scale: 1:1250
Size: A4
Date: 09-10-2020

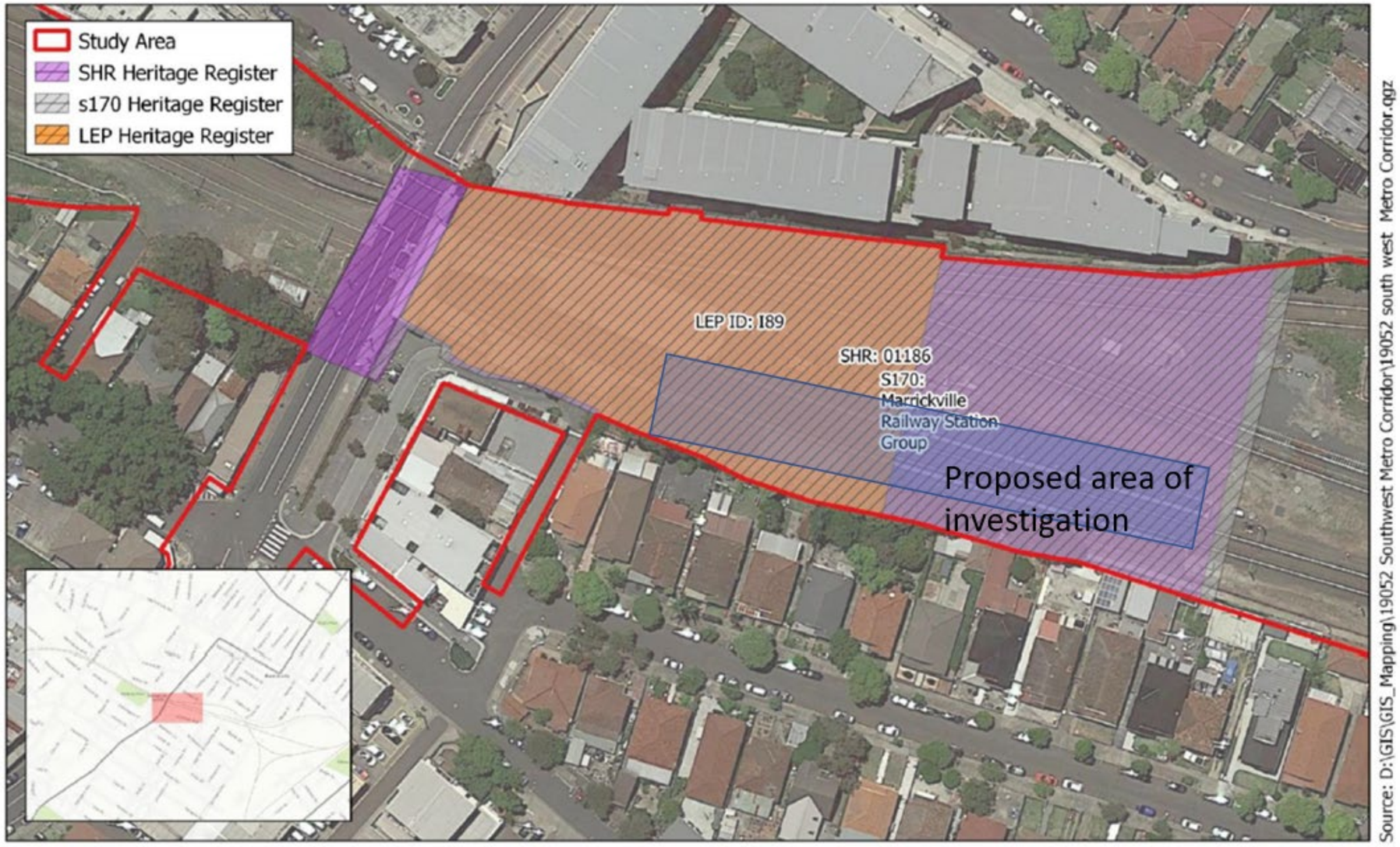
0 20 40 m

Archaeologist to be present for works at Lakemba



Investigation ID (March 2020)	Elevation (mAHD) top of casing	Groundwater Comments
BN-TP022	22.16	0.82 Capping Shale interface
BN-TP029	21.85	Seepage 1.15m (20.7m AHD) in residual soil
SRT-BH558	27.79	SRT_BH558 in rock – '*Data has suggested that equilibrium was reached 10 days following purging. Fluctuations between 17.3 and 17.6 m AHD followed, with no clear correlation with rainfall.*'

Groundwater potential ULX Bankstown



Archaeologist to be present for works at Marrickville

Archaeologist to be present for works at Canterbury

Appendix 4: In-depth Works Information

Scope 1: Design Investigation Works

Activity	Method	Main Plant	Relevant Environmental Aspects
Utility Potholing	4 Scrape ballast off with a 6.5T excavator (200-400mm) 5 NDD Vac truck to remove capping until service is exposed (if required) 6 Geotech/contamination team to take samples 7 Reinstate capping material 8 Compact using plate compacter 9 Reinstate Ballast 10 Depth of potholing is 1.5m below ground level	• Hi-rail Vac Truck • Hi-rail Excavator with auger head or bucket attachment • Plate compacter	• Noise & Vibration • Contamination Management • Unexpected Finds
Geotech	Same method as utility potholing above, the depth differs. 2.5m depth below the ballast, testing is complete near west terrace, the plan is to tag rock so it may be deeper.	• Hi-rail Vac Truck • Hi-rail Excavator with auger head • Plate compacter	• Noise & Vibration • Contamination Management
Contamination	Same as utility potholing, the depth is 1.5 – 2.0m below the ballast.	• Hi-rail Vac Truck • Hi-rail Excavator with auger head • Plate compacter	• Noise & Vibration • Contamination Management

Scope 2: Bankstown CSR Works

Temp CSR	• Scrape off the ballast shoulder (approximately 200-300mm depth from the surface) • On foot labourers install tuff duct to railway sleepers	• Hi-rail 6.5T excavator • Bogie • Plate compacter	• Noise & Vibration • Contamination Management • Unexpected finds
DOWN & UP Track GST	• NDD 300mm diameter post holes • Posts are spaced ~2m intervals • Excavation for GST post, drill 1.7m± 0.3m deep • Concrete bags by labourers on foot used to concrete for GST post • On foot labourers install GST trough • Excavator will assist in installation of heavier elements	• Hi-rail 17T Excavator • Vacuum truck • Hydrema • Hi-rail EWP • Concrete mixer	• Noise & Vibration • Contamination Management • Unexpected Finds • Heritage and European Heritage Assessment
ULX Works	• Excavating across track (Both UP & DOWN track) to approximately 2m depth at ST CH18 820 (refer to ECM) • On foot labourers install conduits • Precast pits installed using the plant list provided • Backfill trench with stabilized sand & rail capping using the plant list provided	• 2x Hi-rail 6.5T excavator • Hydrema • Plate compacter • Hand tools	• Noise & Vibration • Contamination Management • Unexpected Finds

Scope 3: Overhead Footings Investigation Works

NDD Investigation Works	• Survey to mark out footing location • Vac Truck to pothole 1.5m at location • As-built service (if found during potholing) • Reinstate with capping and ballast.	• Hi-rail Vac Truck • Hi-rail 5T Excavator • Vac Truck • 5T Excavator • 2 x Bogies	• Noise & Vibration • Contamination Management • Unexpected Finds

Appendix 5: EPL 21147 OOH Approval

Appendix 6: Community Notification