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:	METRON T2M
Project:	Southwest Metro Design Services (SMDS)
Application Title: (e.g. Smith St trenching works)	Utility and Sanitary Pipe Investigations - Dulwich Hill, Hurlstone Park, Campsie, Wiley Park, Punchbowl Stations, Corridor and surrounds
Application Number:	SMDS-PCMW-006
Application Date:	Rev00:18.03.2020 Rev01:27.03.2020 Rev02:27.03.2020 Rev04:27.04.2020
Planning Approval:	• Sydney Metro City and Southwest – Sydenham to Bankstown – Environmental Impact Statement (EIS) • Sydney Metro City and Southwest – Sydenham to Bankstown – Submissions and Preferred Infrastructure Report (SPIR) • Sydney Metro City and Southwest Infrastructure Approval SSI-8256
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 investigation 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:	*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'.*

Will the proposed works affect or have the potential to affect heritage items, threatened species, populations or endangered ecological communities?	Heritage Two heritage impact assessments (HIA) were undertaken by Artefact Heritage to provide summaries of the historical and archaeological research discussed in the previously prepared heritage reports for the Sydney Metro City and Southwest – Sydenham to Bankstown Project (refer to Appendix 5 – *The Heritage impact assessment report for utility service investigation and Heritage impact assessment report for sanitary pipe survey [revised 16.04.2020*]). Based on the HIAs, it is anticipated that the proposed works (utilities and sanitary pipe investigation works) would not likely result in adverse impacts to heritage significant archaeological remains. The proposed works would be conducted in accordance with the mitigation measures outlined in the Heritage Impact Assessments for the works at Dulwich Hill, Hurlstone Park, Campsie, Wiley Park and Punchbowl stations. A separate Minor Works Approval will be prepared to assess activities at Marrickville, Canterbury, Belmore and Lakemba Stations. Metron T2M will implement the Sydney Metro Unexpected Finds Procedure V2.0 throughout the investigation works. Biodiversity The proposed works are not located in areas of threatened species, populations or endangered ecological communities as shown in the Environmental Sensitive Receivers Map in Appendix 1. No vegetation clearing is required for the works.

Part 2: Details

Describe the proposed Minor Works: Including work methodologies, site location(s) and site description(s) (e.g. landscape type, waterways, etc.).	**Site Description Overview:** This overview is based on information from the Environmental Impact Statement (EIS) and Submissions and Preferred Infrastructure Report (SPIR). The proposed works are to occur within and surrounding the T3 Line Dulwich Hill, Hurlstone Park, Campsie, Wiley Park, Canterbury and Punchbowl stations. These stations are comprised of station buildings, overbridges, overhead wiring structures, track, services and ballast. The stations are adjacent to a number of land zoning types, business and community, infrastructure and residential. The vegetation in the proposed investigation area is exotic or planted native species on highly modified landforms. Refer to Appendix 1. **Description of Works** These investigation works are critical to the design development phase and are required early on to inform the design. Without this information, detailed design cannot proceed effectively. Investigations will be carried out in the rail corridor and at some locations outside of the rail corridor, as shown in Appendix 1. The proposed works methodologies are outlined in greater detail below. **Sanitary pipe investigations** Sanitary pipe investigation works assessed under this form (for non-State Heritage Listed Stations) at Hurlstone Park and Campsie Stations would involve “toilet break-ins” as a preferred works method, as this method is generally less physically intrusive and more cost effective. Should this method prove unsuccessful at either of these locations, then potholing would be undertaken as a secondary option. Proposed toilet break-in and secondary option pothole locations at both Hurlstone Park and Campsie Stations are provided in Appendix 1. Work methods and potential equipment used for “toilet break-ins” are provided below: *Toilet Break In* • Remove the sealant or cement from the base of the toilet pan, remove the toilet pan, CCTV Survey and possible water jetting. • Upon completion, toilet pan to be replaced to the as found condition The following equipment for toilet break in activities would likely include: • Chisel and hammer for break in • Cementing hand tools for sealing the pan following investigation to ensure no residual dilapidation. • Portable water jetting unit *Potholing*

Potholing is proposed for all other remaining sanitary pipe investigations as outlined in environmental control maps provided in Appendix 1. The potholing work method and equipment for sanitary pipe investigation potholing is provided below:

- A Safety, Health & Environment and Safe Work Method Statement (SHEWMS) will be issued prior to undertaking works
- The track monitoring and track protection officer will be organized prior to the investigation works
- A site walk over inspection will be carried out prior to commencement of the investigation program
- Dial Before You Dig plans and Detailed Site Survey (DSS) plans will be obtained for all test locations
- A certified locator will identify utilities locations by using the non-invasive methods (e.g. GeoScan) prior to commence the potholing (excavation) works. This will eliminate a risk of damage to utilities which potentially could be located close to target test locations
- Non-destructive digging using vac-truck located nearby (hose up to 100m) and/or manual hand tools to excavate to underside of sanitary pipe. Surveyor to register required details of pipework
- If local pit entry is not available, the pipe will be broken into to facilitate CCTV of pipe condition
- If pipe breakage is required from the pothole locations, the maximum safe depth for the investigation is limited to 1.5m below the ground level.
- Potholes locations may require relocation due to unforeseen factors such as close proximity of other services or to be complied in conjunction with a pipe break in location. No vegetation clearing will be undertaken
- The spoil soils will be assessed for contamination by qualified ADE Environmental Consultant and will be disposed off-site appropriately
- All equipment (Drain Cleaning Unit, CCTV rod camera and CCTV tractor camera) for CCTV survey will be brought into work's zone by hand and will require use of Sydney train lifts (where applicable). Small tools may also be brought in using current Sydney trains access gates at the discretion of the Protection Officer
- Some potholing works will be conducted by means of hand tools (shovel, wheelbarrow, crowbar, pick) and mechanical tools (sawcut, whacker packer) and labour. The required equipment will be brought into the work's zone manually and will require use of Sydney train lifts (where applicable). If there are no lifts located at the train stations, other accessible means such as ramp and stairs will be used for transporting tools. Small tools may also be brought in using current Sydney trains access gates at the discretion of the Protection Officer
- Once all information is gathered, pipework will be repaired, and the excavated pits will be backfilled. Reinstatement of all excavations will include and combination of excavated materials and stabilized sand to asset owners' specifications and compacted to ensure solid foundation. Bitumen will be reinstated with cold mix to match the existing pavement thickness. The removed asphalt at all stations will be replaced to pre-exiting conditions (to match existing asphalt surface).

The following equipment will be used:

- Hand digging equipment (e.g. shovels, crowbar, trowel)
- Concrete saw
- Plate compactor or whacker packer
- CCTV rod camera and CCTV tractor camera
- Supporting vehicles.

Utility investigations

- Utilities investigations would involve potholing within the locations indicated in the environmental control maps provided at Appendix 1. The proposed works method and potential equipment to be used is provided below.A certified locator will identify utilities locations by using the non-invasive methods (e.g. GeoScan) prior to commence the potholing (excavation) works. This will eliminate a risk of damage to utilities which potentially could be located close to target test locations
- Road to be cut if necessary, using a road saw. Not all potholes will be undertaken on the road, some are planned in the corridor hence a road saw will not be necessary

	• The excess spoil soils will be assessed for contamination by qualified ADE Environmental Consultant and will be disposed off-site appropriately. • NDD potholing plant to safely expose utilities • Utilities to be surveyed to G73 standard • Reinstatement of all excavations will include and combination of excavated materials and stabilized sand to asset owners' specifications and compacted to ensure solid foundation. Bitumen will be reinstated with cold mix to match the existing pavement thickness. The removed asphalt at all stations will be replaced to pre-exiting conditions (to match existing asphalt surface). The following equipment will be used: • Hand digging equipment (e.g. shovels, crowbar, trowel) • Survey hand tools • Concrete saw • Plate compactor or whacker packer • Vacuum truck • Supporting vehicles. **Working Hours** The proposed works will be undertaken predominately during standard construction hours: *Monday to Friday between 7am and 6pm and Saturday between 8am and 6pm*. Work outside of standard working hours will be managed under the Out of Hours Works Approval and in accordance with the Sydney Metro City & Southwest Out of Hours Work Protocol.
Planned Commencement Date	The proposed works are scheduled for commencement on ***6 April 2020***.
Local Sensitivities: Describe the presence (if any) of local sensitive environmental areas and community receptors	**T3 Line between Sydenham Station and Bankstown Station** • Local environmental areas and sensitive receivers are presented in Appendix 1. • There are a number of residential properties located within close proximity to the corridor as identified in Appendix 1. Noise and air quality impacts from survey works are expected to be minor. • Metron T2M prepared a high-level review summary of previous ground contamination, potential acid, sulphate soils and hazardous material investigative works that have been undertaken and reported on by others and made available to Metron T2M by Sydney Metro (Metron T2M, 23.09.2019). The information relevant to the proposed works are provided in greater detail below. Railway stations along the Sydenham to Bankstown line have been used for railway purposes for more than 70 years. There is a potential risk of contamination within the investigation area, with potential contamination sources being historical rail activities, and commercial land use in surrounding areas. Potential contaminants include: ○ Asbestos ○ Petroleum Hydrocarbons ○ Heavy Metals ○ Solvents ○ Herbicides. GHD undertook several contamination assessments in 2017. GHD prepared a targeted contamination assessment report dated 20 November 2017 for areas of the proposed investigation works around the rail corridor and stations of the T3 Line between Sydenham Station and Bankstown Station. The report included the information from 173 sampled locations along the railway corridor. Contamination (lead, benzo(a)pyrene and hydrocarbons) in excess of human health investigation levels and screening levels for commercial / industrial land use was reported at six sampled locations between Sydenham and Campsie stations. AGJV conducted further contamination investigation in 2019. AGJV's investigation included contamination assessment and waste classification of soil around the rail corridor between Sydenham Station and Junction interface and Campsie Station. The report identified that contaminants of potential concern in fill soil are below the adopted human health screening criteria for commercial/ industrial land use and adopted management limits. This report concluded that there is a low potential risk to metro construction workers and intrusive maintenance workers (via inhalation of soil vapour, ingestion and direct contact of soils) within the project area. Also, the assessment reported that a single asbestos containing material fragment of

	the 34 investigation locations. Given the presence of fill material across the project area and depth of filling encountered at some of the investigation locations, the presence of asbestos within fill across the project footprint cannot be discounted. There is potential acid sulphate soil risk throughout the Project alignment. Appendix 1 displays the location of potential acid sulphate soils along the project corridor. The Unexpected Finds procedure (Appendix 2) will be followed should unexpected contaminated land or asbestos be encountered during the proposed works. If any accidental spill occurs this will be managed in accordance with the contractor spill response procedure. All site vehicles will be checked for spill kits prior to the commencement of the proposed works. • The proposed works would result in neutral to negligible adverse impacts to heritage significant fabric. As such, these works would be considered Low Impact environmental activities, and can be progressed in advance of the preparation of the overall Construction Environmental Management Plan (CEMP) for the project works (refer to Appendix 5 – The Heritage impact assessment report for utility service investigation and Heritage impact assessment report for sanitary pipe survey). • As the works are not taking place within the heritage curtilage of any item listed on the State Heritage Register and are not located in any areas of identified archaeological potential, no consultation with Office of Environment and Heritage (now Department of Premier and Cabinet - Heritage)is required to approve the proposed works. • A number of areas of threatened ecological communities and threatened plant species (Acacia pubescens) have been identified along the rail corridor. No invasive works will occur within these areas and the survey work will not require the removal or trimming of any vegetation along the corridor. • Investigative works may occur in the vicinity of local stormwater systems. There is a low erosion and sedimentation risk associated with the proposed survey work. Stockpiled material will be stored out of drainage channels and covered during inclement weather Where, possible, no roadways or footpaths will be closed as part of the works. If roadways or footpaths are required to be closed, the appropriate traffic/pedestrian control plan will be prepared with all required approvals gained (including Road occupancy licenses (ROL) and road occupancy permits (ROP)).

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.).	A map showing the local sensitivities discussed in Part 2 will be provided to the survey teams to ensure impacts are avoided. The map is provided in Appendix 1. The mitigation measures developed as part of the environmental risk assessment (provided in Appendix 1) will be provided to survey teams as part of the pre-survey induction. Works will also be undertaken in accordance with the: – *The Unexpected Finds Procedure is provided in Appendix 2.* – *The Sydney Metro Belmore to Bankstown monthly notifications for /May 2020 and Sydney Metro Sydenham to Campsie monthly notifications for May 2020 are provided in Appendix 3.* – *Heritage Impact Assessment Reports for the proposed works is provided in Appendix 5.*

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. A copy of all induction records will be provided to Sydney Metro upon request.

Part 5: Community Consultation	
What community consultation has been undertaken already?	The Sydney Metro monthly notifications for Sydenham to Campsie and Belmore to Bankstown for April/May 2020 include reference to the activities proposed (included in Appendix 3)
What community consultation is planned to be undertaken?	All further works beyond May 2020 will be included within subsequent monthly notifications and additional targeted notifications, as required by the Sydney Metro OCCS. In accordance with the Sydney Metro OCCS, 7 days notification will be given to the community prior to works starting. Canterbury Bankstown Council and Inner West Council will be notified of any works taking place outside of the rail corridor.
If drafted already, attach applicable Community Notification as Appendix 3.	

Part 6: Contact Details					
Nominate contractor's project manager, environmental and communications contact(s).					
Name:	Luke Palmer	**Position:**	Project Manager	**Phone:**	[redacted]
	Ben Fethers		Environmental Manager		[redacted]
	Sushane Perera		Communications Manager		[redacted]

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:	Ben Fethers		
Signature:		**Date:**	27/04/2020

Determination Page

(TfNSW/Environmental Representative Use Only)

12. 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:	MAY LI FOONG	Fil Cerone	
Date:	28/4/2020	30 April 2020	
Comments:			*Supporting letter attached as Appendix 4 if necessary.*
Conditions:	As per Part 5		*Supporting letter attached as Appendix 4 if necessary.*

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

Appendix 1: Environmental Risk Assessment and Environmental Control Maps

Aspect	Potential environmental impact	Initial risk rating			Control measures	Residual risk rating		
		Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
Air quality and noise emissions	Noise and air quality impacts on nearby sensitive receivers.	5	3	Moderate	• Site equipment is to be turned off when not in use • Stockpiles are to be covered during windy weather • Visual observation of dust emissions will trigger dust suppression mitigation strategies, including wetting of the excavation area • Induction and pre-start briefing to include noise mitigation and "good neighbour" approach • Follow the appropriate approval process and submit OOHW applications for Environmental Representative approval. • Mitigation measures to be implemented in accordance with the Sydney Metro City & Southwest Construction Noise and Vibration Strategy (CNVS), including appropriate notification.	5	4	Low
Mobilisation of contamination	Local contamination and health risk to surveyors	4	4	Moderate	• Surveyors will be vigilant for hazardous materials (e.g. asbestos, hydrocarbons, lead, benzo(a)pyrene, acid sulphate soils) that may be uncovered during investigations • Unexpected finds procedure (Appendix 2) will be followed. Reference to this procedure will be included within the contractor induction material • No refueling will occur in the work area	4	5	Low

Aspect	Potential environmental impact	Initial risk rating			Control measures	Residual risk rating		
		Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
					• Spill kits will be kept near to work areas at all times and trained staff present in case of a spill			

Work in heritage areas	Potential impacts to heritage may occur as a result of investigation works.	4	3	Moderate	• Environmental sensitivities maps will be provided to surveyors as part of the site induction process to ensure heritage areas are avoided.
					• Significant fabric (such as platform coping or station platform buildings) near to areas of potholing should be protected from splash excavation material during the works. This would ensure that outer surfaces are kept clean during works.
					• Following the completion of works, all areas of investigation should be made good to restore the platform surfaces to their original appearance. This would include:
					  • Cleaning all asphalt, concrete and brick surfaces that may have been dirtied during works
					  • Ensuring that platform asphalt surfaces are reinstated following the completion of backfilling so that they match surrounding asphalt surfaces
					• Potholing locations should not be moved from the proposed locations outlined in the HIA's (Appendix 5)
						4	5	Low

Aspect	Potential environmental impact	Initial risk rating			Control measures	Residual risk rating		
		Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
					• Works will be undertaken in accordance with the Sydney Metro City and Southwest Unexpected Finds Procedure V2.0 for heritage The following recommendations are provided in order to mitigate heritage impacts to elements of significant heritage value at Hurlstone Park and Campsie stations: • Where toilet pans meet original painted brickworks (Hurlstone Park, Platform 2 building), the removal of the toilet asset should be conducted by hand in order to prevent additional penetrations to the original fabric of the building. Original wall penetrations should be utilised if hand tools are required • Toilet pans should be reinstated when removed. If a pan is unable to be reinstated, opportunities exist to replace the element, where possible. • Works located within the platform 2 building at Hurlstone Park should be conducted with the protection of the original elements located within the surrounding rooms; original toilet stalls, urinals, walls and associated fabric should not be directly impacted by the proposed works. If elements of high heritage value are damaged during the course of the proposed works, the			

Aspect	Potential environmental impact	Initial risk rating			Control measures	Residual risk rating		
		Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
					elements should be assessed by a suitably qualified heritage professional and the element should be repaired or conserved in situ. • Although the proposed works located within the platform 1 building at Hurlstone Park and the Campsie platform 1 and 2 buildings have been assessed as a neutral impacts, the surrounding elements should be protected during works to prevent cracking or breaking of other elements within the localised areas (tiles, doors, etc)			
Work in biodiversity areas	No impact to biodiversity. Invasive works will not be undertaken in designated biodiversity areas. No vegetation will be impacted by the survey work.	6	6	Low	• Environmental sensitivities maps will be provided to surveyors as part of the site induction process to ensure biodiversity areas are avoided • Survey locations will be moved to grassed areas and unvegetated land to preclude the requirement for trimming, removal or impact to other vegetation by the works	6	6	Low
Erosion and sedimentation control	Runoff of excavated materials into the local stormwater system. Potential for escape of contaminated materials causing local contamination.	4	4	Moderate	• Stockpiled material will be stored out of drainage channels and covered during inclement weather	4	5	Low

Aspect	Potential environmental impact	Initial risk rating			Control measures	Residual risk rating		
		Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
Transport and access	Negative impact to local roads, parking and footpaths from closures or obstructions during survey work.	5	5	Low	• Personnel will park within the rail corridor where possible. • Personnel will minimise the number of vehicles used to travel to the site • Personnel will park legally and observe restrictions at all times • If investigation works impact footpaths and roads, works will be carried out under a council-approved traffic control plan (TCP), using traffic controllers to manage pedestrian and vehicle flow • Road occupancy licenses (ROL) will be acquired from RMS for all investigations on RMS roads within 100m of a traffic light where road or lane closures are required • Road opening permits (ROP) will be acquired from council for all intrusive investigation in council land • Controls will be implemented in accordance with the ROL/ROP/Traffic Control Plan (TCP) • Personnel will be inducted on the required control measures that must be implemented • Where possible survey work in roadways will be undertaken in off peak times to minimise congestion	5	6	Low
Service strike	Damage to services during excavation which cause an environmental incident	4	4	Moderate	Prior to any ground disturbance works, a service locator will check each excavation site is clear	4	5	Low

Aspect	Potential environmental impact	Initial risk rating			Control measures	Residual risk rating		
		Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
					of services and provide a permit to excavate: • Service locator and surveyor will check all excavation locations with DSS and locating equipment to identify areas clear of services • Where there is a clash of services and proposed excavation site the excavation site will be moved to a services-free area • Excavation area will be sprayed with spray paint by service locator once confirmed clear, approx. 1m square section			
Waste	Improper management of waste could result in an environmental incident	4	4	Moderate	The following measures would be implemented: • Induction of staff will include waste management practices • Non-liquid excess soil and wastes will be bagged and removed from site. • Liquid wastes will be collected during work in a mud tank prior to disposal at a licenced facility • Excess soil and waste will be tested in accordance with the Waste Classification Guidelines (NSW EPA, 2014) prior to disposal. • Wastes will be lawfully transported and disposed of.	4	5	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/apprehensi on. 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

Environmental Sensitivities Maps

Southwest Metro Design Services

Environmental Sensitivities: Utilities and MEP Map

- Stations
- Corridor Boundary
- Potholes (approx. locations)
- Toilet Break-In (approx. locations)
- Utilities (approx. locations)

AGJV Contamination (approx. locations)

- General solid waste
- General slid waste w asbestos
- Restricted solid waste

GHD 2017 Contamination (approx. locations)

- General solid waste
- General solid waste w asbestos
- Hazardous waste
- Restricted solid waste
- Not completed

Threatened Species Sightings

- Grey-Headed Flying-Fox
- Ibis
- Acacia Pubescens
- Acacia Pubescens Patches
- Potential Acid Sulphate Soil
- S170 Heritage
- Archaeological Management Zone
- Potential Archaeological Deposit
- State Heritage
- Local Heritage
- Conservation Areas

Threatened Ecological Community

- Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest (ME004, Moderate/good)
- Degraded Turpentine - Grey Ironbark open forest on shale (ME041, Moderate/good-poor)
- Turpentine - Grey Ironbark open forest on shale (ME041, Moderate/good-medium)

1 cm = 30 meters

GDA 1994 MGA Zone 56

28/04/2020

0 0.045 0.09 0.18

Kilometers

Southwest Metro Design Services

Environmental Sensitivities: Utilities and MEP Map

- Stations
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- Potholes (approx. locations)
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- Utilities (approx. locations)

AGJV Contamination (approx. locations)

- General solid waste
- General slid waste w asbestos
- Restricted solid waste

GHD 2017 Contamination (approx. locations)

- General solid waste
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- Hazardous waste
- Restricted solid waste
- Not completed

Threatened Species Sightings

- Grey-Headed Flying-Fox
- Ibis
- Acacia Pubescens
- Acacia Pubescens Patches
- Potential Acid Sulphate Soil
- S170 Heritage
- Archaeological Management Zone
- Potential Archaeological Deposit
- State Heritage
- Local Heritage
- Conservation Areas

Threatened Ecological Community

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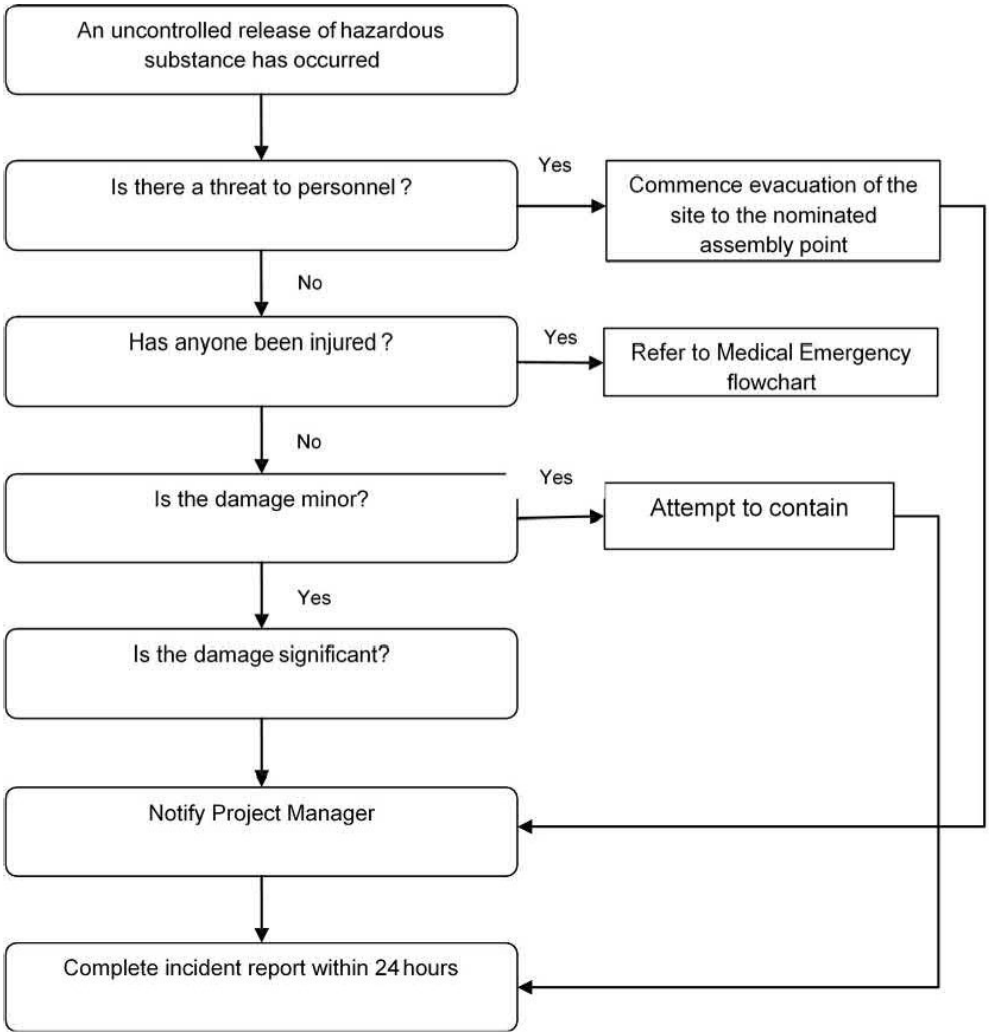

An uncontrolled release of hazardous substance has occurred
Is there a threat to personnel ?
Yes
Commence evacuation of the site to the nominated assembly point
No
Has anyone been injured ?
Yes
Refer to Medical Emergency flowchart
No
Is the damage minor?
Yes
Attempt to contain
Yes
Is the damage significant?
Notify Project Manager
Complete incident report within 24 hours

Appendix 3: Community Notification

Notification – Bankstown Line metro upgrade

May 2020

Sydney Metro is Australia's biggest public transport project.

Services started in May 2019 in the city's North West with a train every four minutes in the peak. Metro rail will be extended into the CBD and beyond to Bankstown in 2024. There will be new CBD metro railway stations underground at Martin Place, Pitt Street and Barangaroo and new metro platforms under Central.

In 2024, Sydney will have 31 metro railway stations and a 66 km standalone metro railway system – the biggest urban rail project in Australian history. There will be ultimate capacity for a metro train every two minutes in each direction under the Sydney city centre.

The upgrade of the T3 Bankstown Line to metro standards between Sydenham and Bankstown received planning approval on 19 December 2018.

Sydney Metro will continue to undertake work across its projects in accordance with current Government advice, and will continue to implement social distancing and travel and hygiene measures to protect employees and members of the community. Continuing with these works is critical to ensuring project continuity, and the project team will continue to review and assess activities in line with any further updates.

Some of this work may be noisy, however we will take every possible step to minimise noise. Access to buildings and driveways will be maintained at all times.

Bankstown Line metro upgrade

In May, early work will continue along the T3 Bankstown Line between Sydenham and Campsie stations (weather and site conditions permitting). Access to the rail corridor will be via existing corridor/pedestrian access gates. **Day work will be during project standard construction hours Monday to Friday 7am-6pm and Saturday 8am-6pm.**

Detail of day work (along rail corridor from Sydenham to Campsie)

Activities will include:

- Site establishment work including installation of haul roads and temporary fencing
- Locating and confirming underground services using hand held equipment and non-destructive digging close to and in the rail corridor
- Station investigations and non-intrusive pipe inspections on platforms between Marrickville to Campsie
- Geotechnical/site investigations, tree assessments and topographic/ scanning surveys inside the rail corridor and in nearby public areas
- Minor devegetation and clearing throughout the rail corridor where required
- Installation of cable routes and security fencing
- Spoil and waste removal through rail access gates along the rail corridor near Ewart Street (Dulwich Hill), Randall Street and Kays Avenue (Marrickville), Charles, Wairoa, Broughton Street (Canterbury), and South Parade (Campsie)
- Rail embankment work including piling and earthworks between Campsie and Canterbury
- Storage of materials adjacent to Broughton Street, Canterbury
- Cable route work including installation of galvanised steel troughing (GST) in the rail corridor adjacent to Keir Avenue and Foord Avenue, Hurlstone Park
- Geotechnical investigations for three new substations at Dulwich Hill, Canterbury and Campsie, including using a trailer with drill rig to take core soil samples and using vacuum trucks to remove excavated soil
- Geotechnical investigations for the new bulk power supply route from the Ausgrid substation in Hughes Park to Campsie Station (please see map overleaf).

Out-of-hours work

Due to the nature of some activities and for the safety of workers, some work will occur outside standard construction hours when trains are not running. Some equipment will also be delivered outside standard construction hours in line with Transport for NSW requirements for transporting oversized vehicles.

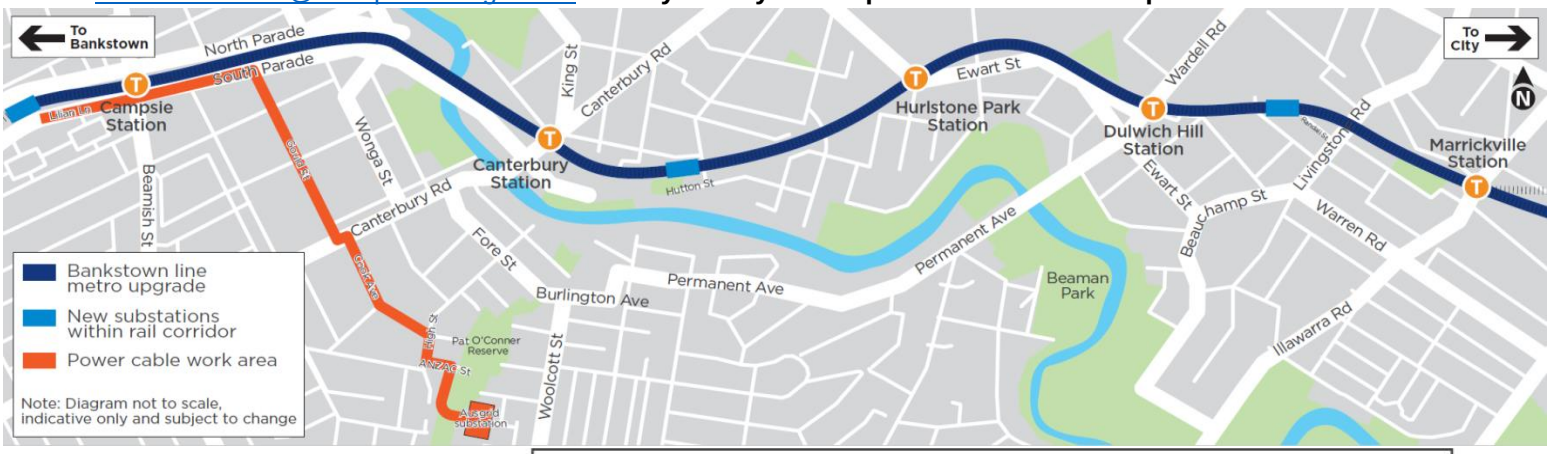
Date / time	Detail of work (along the rail corridor from Sydenham to Campsie)
Weeknights	• Site/geotechnical investigations and surveys inside the rail corridor, on station platforms and in nearby public areas • Locating and confirming underground services close to the rail corridor and in nearby public areas • Rail embankment work between Campsie and Canterbury for no more than three nights in a row between the hours of 6pm and 9pm

During scheduled rail shutdown weekends:
From **1am Saturday 2 May** to **2am Monday 4 May 2020,** and
from **1am Saturday 23 May** to **2am Monday 25 May 2020**
	• Site/station investigations, tree assessments and topographic/ scanning surveys in the rail corridor and in nearby public areas
	• CCTV pipe inspections on station platforms between Marrickville to Campsie
	• Installation of fencing in the rail corridor, Marrickville (between Fraser Park and Victoria Road bridge)
	• Rail embankment and earth works between Canterbury and Campsie
	• Rail corridor works adjacent to Broughton Street, Canterbury (near Cooks River). This includes a **road closure on Broughton Street rail underbridge section**
	• Installation of cable routes and GST in the following locations:
	  ○ Adjacent to Foord Avenue, Hurlstone Park. This includes a **road closure at Foord Avenue rail underbridge section**
	  ○ Cooks River bridge, Canterbury
	  ○ In the rail corridor adjacent to Lilian Street, Campsie.

Equipment used for all the above work will include hand held equipment, light vehicles, vacuum suction trucks, mulcher, piling rig, dump trucks, excavators, crane trucks, drilling rig, lifting machinery, elevated work platform, concrete trucks, concrete pumps, rollers, forklift, water cart and power tools.

Keeping you informed

Properties close to the rail corridor will receive notifications when construction work is scheduled to occur. If you have any questions about the **bulk power supply route/ substations** please contact us and ask for **Grace.** For all other works please ask for **Melanie.** You can contact us on **1800 171 386** (24 hour community information line) or e-mail SouthwestMetro@transport.nsw.gov.au. **Thank you for your cooperation while we complete this essential work.**



Contact us

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Sydney Metro City & Southwest, PO Box K659, Haymarket NSW 1240

If you need an interpreter, contact TIS National on 131 450 and ask them to call 1800 171 386

sydneymetro.info

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The upgrade of the T3 Bankstown Line to metro standards between Sydenham and Bankstown received planning approval on 19 December 2018.

Sydney Metro will continue to undertake work across its projects in accordance with current Government advice, and will continue to implement social distancing and travel and hygiene measures to protect employees and members of the community. Continuing with these works is critical to ensuring project continuity, and the project team will continue to review and assess activities in line with any further updates.

Bankstown Line metro upgrade

In May, early work will continue along the T3 Bankstown Line between Belmore and Bankstown stations (weather and site conditions permitting). Access to the rail corridor will be via existing rail corridor and pedestrian access gates.

Some of this work may be noisy, however we will take every possible step to minimise noise such as switching off equipment when not in use and installing non-tonal reversing beepers on vehicles.

Day work

- Work will be carried out during **project standard construction hours Monday to Friday 7am - 6pm and Saturday 8am - 6pm.**

Location	Detail
Whole rail corridor (Belmore to Bankstown)	Activities will include: • Locating and confirming underground services which will involve using hand held equipment and non-destructive digging close to and inside the rail corridor • Site/ station investigations, tree assessments and topographic/ scanning surveys in the rail corridor and in nearby public areas • Geotechnical investigations for two new substations at Lakemba and Punchbowl, including using a trailer with a drill rig to take core soil samples and using vacuum trucks to remove excavated soil • Geotechnical investigations (boreholes/ test pits) and drainage surveys in and around Bankstown station • Non intrusive pipe inspections on station platforms between Belmore to Punchbowl

Out-of-hours work

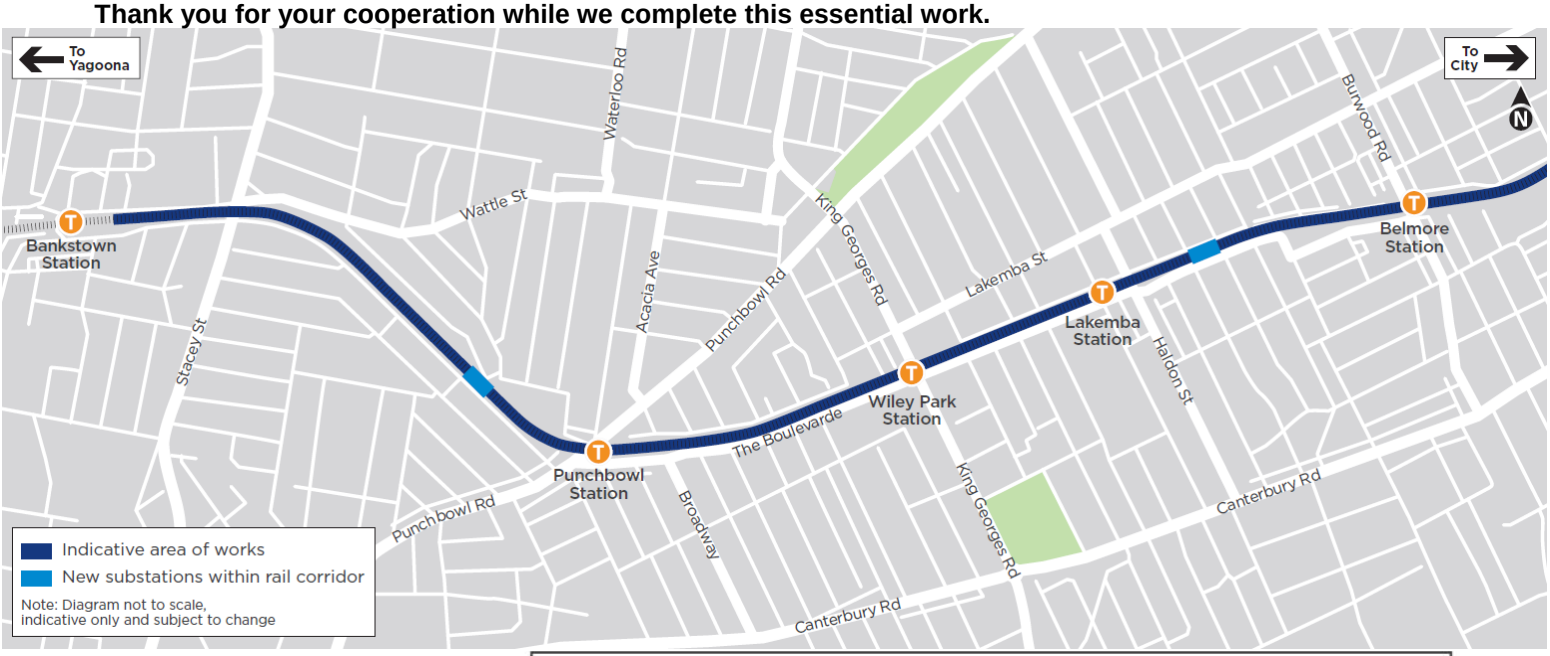
Due to the nature of some activities and for the safety of workers, some work will occur outside standard construction hours when trains are not running.

Date/ time	Detail
Weeknights	Activities along the rail corridor from Belmore to Bankstown will include: • Site/geotechnical investigations and topographic surveys inside the rail corridor, on station platforms and in nearby public areas • Locating and confirming underground services close to and inside the rail corridor
During scheduled rail shutdown weekends: From **1am Saturday 2 May** to **2am Monday 4 May 2020,** and from **1am Saturday 23 May** to **2am Monday 25 May 2020**	Activities along the rail corridor from Belmore to Bankstown will include: • Locating and confirming underground services close to and inside the rail corridor • Geotechnical investigations (boreholes/ test pits) and drainage surveys in and around Bankstown station • Site/ station investigations, tree assessments and topographic/ scanning surveys in the rail corridor and in nearby public areas • CCTV pipe inspections on station platforms between Belmore to Punchbowl

Equipment used for all the above work will include vacuum trucks, medium rigid trucks and hand tools. Access to buildings and driveways will be maintained at all times. Where temporary footpath or lane closures are required, signage and traffic control will be in place for the safety of pedestrians and motorists.

Keeping you informed

Properties close to the rail corridor will receive notifications when construction work is scheduled to occur. If you'd prefer to receive updates by e-mail, please contact us using the details below. If you have any questions about the **substations** please contact us and ask for **Grace.** For **all other works please ask for Melanie**. You can contact us on **1800 171 386 (24 hour community information line)** or e-mail **SouthwestMetro@transport.nsw.gov.au.**
Thank you for your cooperation while we complete this essential work.



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Appendix 2: Environmental Management Documentation

Unexpected Finds

In the case that an environmental consultant is not available for oversight, workers will be vigilant for hazardous materials that may be uncovered during investigations. Unexpected finds include, but are not limited to, odour, visual contamination, acid sulfate soils, deleterious material inclusions, asbestos containing material, Underground Storage Tanks (USTs) or any other suspect materials. Any unexpected finds will be reported to the Contractor's on-site manager immediately. Additionally, the site owner/occupier should be informed as soon as practical following an unexpected find.

If hazardous materials are uncovered / discovered during excavations the Contractor shall:

- Cease all work in that vicinity (and fence the area if appropriate)
- Remove workers from the vicinity
- An experienced environmental consultant / occupational hygienist should be contacted to assess the potential risks associated with the Unexpected Finds and provide appropriate management options
- Investigate the nature of the risk of the materials, determine the appropriate response and document the actions in accordance with contractual obligations.
- In the event of a serious unexpected find, which could cause harm to human health and/or the environment, TfNSW and the NSW EPA may need to be informed.
- The risks posed by the removal works to Aboriginal or European heritage are expected to be minimal. However, in the event potential heritage items are encountered during excavations, works will cease, and the Site Supervisor notified.

Appendix 4: Environmental Representative Supporting Letter

Appendix 5: Heritage Impact Assessment

17 April 2020

Ben Fethers
Environmental Consultant
Arcadis

Dear Mr Fethers,

Re: Sydney Metro City and Southwest Design – Revised heritage impact assessment for soil resistivity testing, Marrickville and Canterbury Stations

Project background

The proposed Sydney Metro City and Southwest project (the project) involves upgrading the 10 existing stations from Marrickville to Bankstown (inclusive), and the 13 kilometre long section of the Sydney Trains T3 Bankstown Line between west of Sydenham Station and west of Bankstown Station, to improve accessibility for customers and enable conversion of the line to metro standards. The project would enable Sydney Metro to operate beyond Sydenham, to Bankstown.

As part of the preparation of the Environmental Impact Statement (EIS) and Submissions and Preferred Infrastructure Report (SPIR), Artefact Heritage (Artefact) prepared non-Aboriginal archaeological assessments which outlined areas of potential significant non-Aboriginal archaeological remains at several of the stations on the T3 Bankstown Line.

The Critical State Significant Infrastructure (CSSI) project was approved by the Minister for Planning on 12 December 2018. As part of the Revised Environmental Mitigation Measures (REMM) for the project, NAH12 indicates that mitigation measures outlined in the Non-Aboriginal archaeological assessments[1][2] for the project must be adhered to during design, investigation and construction works for the project.

As part of investigative works for the project, Mott MacDonald are proposing to conduct service location and assessments at a number of locations throughout the proposed project area. Potholing service investigation works at Marrickville, Canterbury, Belmore and Lakemba Stations would be conducted in areas identified in SPIR assessments as archaeologically sensitive at these stations. This memo provides an assessment of built heritage and archaeological impacts for the potholing and service location works and outlines management guidelines for conducting the works in these areas.

[1] Artefact 2018a *Sydney Metro City & Southwest Sydenham to Bankstown Upgrade – Submissions and Preferred Infrastructure Report Non-Aboriginal Heritage Assessment*. Report to Transport for NSW.
[2] Artefact 2018b. *Sydney Metro City & Southwest Sydenham to Bankstown Upgrade – Historical Archaeological Assessment & Research Design*. Report to Transport for NSW.

Proposed works

Mott MacDonald are proposing to undertake service location works through potholing service investigation works at Marrickville, Dulwich Hill, Canterbury, Belmore, Lakemba, Wiley Park and Punchbowl railway stations.

Works would consist of non-destructive digging (NDD) excavation work, using high pressure water and vacuum suction (vacuum truck) excavation, as well as manual hand digging. Excavation works would be conducted to locate sanitary service pipes identified from Detailed Site Survey (DSS) plans for each station. Once sanitary pipes have been located during potholing excavation, some pipes may be opened to allow the insertion of drain cameras which would be extended into services to inspect their internal condition.

The proposed works at Hurlstone Park station include the removal of redundant toilets within the station platform buildings 1 and 2 for CCTV survey. The toilets would then be reinstated to these areas. Water jetting is proposed as a contingency measure if a pipe blockage is encountered. If these works are unable to be completed, the proposed works would revert to platform potholing and conducted under the above methodology. Additional potholing to Platform 2 may also be required if there are blockages that cannot be cleaned.

The proposed works at Campsie station include the removal of redundant toilets within the station platform buildings 1 and 2 for CCTV survey. The toilets would then be reinstated to these areas. Water jetting is proposed as a contingency measure if a pipe blockage is encountered. If these works are unable to be completed, the proposed works would revert to platform potholing and conducted under the above methodology.

Previous assessments

This heritage assessment is based on historical and archaeological research provided in the previously prepared heritage reports for the Sydney Metro City and Southwest – Sydenham to Bankstown Project. The current assessment provides summaries of the historical and archaeological research prepared in these two reports but does not reproduce the historical context for these reports here. As such, this report should be read in conjunction with previously prepared heritage reports. Reports referenced in this assessment include:

- *Sydney Metro City & Southwest – Sydenham to Bankstown Non-Aboriginal Heritage Impact Assessment* (Artefact 2017)
- *Sydney Metro City & Southwest – Sydenham to Bankstown Historical Archaeological Assessment & Research Design* (Artefact 2018a)

This memo only assesses service location and assessment works that have been proposed to be conducted within the defined precinct boundaries of the Marrickville to Punchbowl station sites for the Sydney Metro City and Southwest project.

Authorship

This report was prepared by Sarah Hawkins and Sophie Barbera (Heritage Consultants) with management input and review from Duncan Jones (Principal).

Built heritage impact assessment

Direct (physical) impacts to heritage significant fabric

The proposed works would involve NDD and hand excavation at limited areas within the station platforms at all stations (potholing) to locate sanitary service pipes, with the exception of Hurlstone Park and Campsie stations. Once located, some of these pipes may be opened and telescopic drain cameras inserted to inspect the interior pipe condition.

The proposed works at Hurlstone Park and Campsie stations includes the removal and reinstatement of toilets assets located in the station platform 1 and 2 buildings. Water jetting is proposed as a contingency measure if a pipe blockage is encountered. If these works are unable to be completed, the proposed works at both stations would revert to the proposed potholing works outlined above.

The potholing locations at each station (including the potential locations at Hurlstone Park and Campsie stations) are located within platforms or within the rail corridor. No potholing works are anticipated to take place in areas which would require the removal or alteration of significant heritage fabric.

Table 1 summarises heritage significant fabric located in or near the area of works at each station and outlines any direct (physical) impacts to heritage significant fabric at each station.

Table 1: Summary of direct heritage impacts

Station and significance	Significant fabric near area of works	Discussion of direct (physical) heritage impacts	Summary of impact
Marrickville Station **State**	• Platform 1 and 2 (Exceptional) • Platform 1 Building (Exceptional) • Platform 2 Building (High) • Platform 2 Booking Office (Exceptional)	The proposed works on platform 1 and 2 would involve removal of the asphalt on the platform surface for the assessment, recording and measurement of pipes within the platform. While the platform coping is considered exceptional significance fabric, asphalt surfaces and subsurface platform fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. Proposed works would not impact any original brick coping, drains, or door thresholds on either platform, or significant fabric associated with the platform buildings.	Neutral
Dulwich Hill Station **Local**	• Platform 1/2 (High) • Platform Building (High) • Stairs (Moderate)	The proposed potholing works would involve removal of the asphalt on the platform surface for the assessment, recording and measurement of pipes within the platform and cable feeding through extant service networks. While the platform coping is considered high significance fabric, asphalt surfaces and subsurface platform fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. Proposed works would not impact any significant fabric associated with the platform building (high significance), or the stairs (moderate) significance.	Neutral

Hurlstone Park Station **Local**	• Platform 1 (High) • Platform 2 (High) • Platform 1 Building (High) • Platform 2 Building (High)	The proposed works include the removal of toilet pans located within the station platform buildings. The removal would allow access for a CCTV survey to be undertaken. The toilet pans would then be reinstated. While the toilets are elements of little heritage value, they are located within buildings that have been identified as elements of high heritage value, particularly the redundant male toilets within the platform 2 building, which includes original toilet stalls and urinals. The proposed removal and reinstatement of the assets have the potential to impact the original walls of the men's and women's toilets within the platform 2 building, which consist of exposed painted brickwork. Due to the modifications with the areas surrounding the proposed works, the proposed works to the assets within the platform 1 building would not result in any direct adverse impacts to heritage fabric. Recommendations are provided below in order to mitigate any direct heritage impacts the removal and reinstatement of these elements may cause. Water jetting of the toilets may be utilised as a contingency measure to remove blockages. This would not result in any adverse impacts to the asset. In the event that the above methodology is unable to be undertaken, the proposed potholing works have been also been assessed. Platform coping for platforms 1 and 2 were both identified as being of high significance fabric. The proposed potholing works would involve removal of the asphalt on the platform surface for the assessment, recording and measurement of pipes within the platform. While the platform coping is considered high significance fabric, asphalt surfaces and subsurface platform fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. Furthermore, it is not expected that the works would impact any significant fabric associated with the platform buildings (high significance), or the stairs (high significance).	Removal and reinstatement of assets (Platform 1 Building) – Neutral Removal and reinstatement of assets (Platform 2 Building) – Negligible Water Jetting – Neutral (potential impact) Potholing works - Neutral
Canterbury Station **State**	• Platform 1 (High) • Platform 1 Building (Exceptional) • Platform 2 (High) • Platform 2 Building (High)	Platform coping for platforms 1 and 2 were both identified as being of high significance fabric. The proposed potholing works would involve removal of the asphalt on the platform surface for the assessment, recording and measurement of pipes within the platform. While the platform coping is considered high significance fabric, asphalt surfaces and subsurface platform fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. It is not expected that the proposed works would impact any original brick coping, drains, or door thresholds on either platform. Furthermore, it is not expected that the works would impact any significant fabric associated with the platform 1 building (exceptional significance) or the platform 2 Station building (high significance).	Neutral

Campsie Station **Local**	• Platform 1 (High) • Platform 2 (High) • Platform 1 Building (High) • Platform 2 Building (High)	The proposed works include the removal of toilet pans located within the station platform buildings. The removal would allow access for a CCTV survey to be undertaken. The toilet pans would then be reinstated. While the toilets are elements of little heritage value, they are located within buildings that have been identified as elements of high heritage value. However, due to the alterations and modifications within the areas of the proposed works, the works would not result in any direct adverse impacts to elements of heritage value. Water jetting of the toilets may be utilised as a contingency measure to remove blockages. This would not result in any adverse impacts to the asset. In the event that the above methodology is unable to be undertaken, the proposed potholing works have been also been assessed. Platform coping for platforms 1 and 2 were both identified as being of high significance fabric. The proposed potholing works would involve removal of the asphalt on the platform surface for the assessment, recording and measurement of pipes within the platform. While the platform coping is considered high significance fabric, asphalt surfaces and subsurface platform fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. It is not expected that the proposed works would impact any original brick coping, drains, or door thresholds on either platform. Furthermore, it is not expected that the works would impact any significant fabric associated with the platform buildings which are of high significance.	Removal and reinstatement of assets (Platform 1 Building) – Neutral Removal and reinstatement of assets (Platform 2 Building) – Neutral Water Jetting – Neutral (potential impact) Potholing works -= Neutral (potential impact) Additional excavations - Neutral
Belmore Station **State**	• Platform 1/2 (High) • Platform 1/2 Building (Exceptional)	The car park areas on both the northern and southern sides of the railway corridor do not hold heritage significance or significant fabric, nor does the Belmore Training Facility. Service location works to the north of the station would take place near the locally significant Inter-War Bus Shelter and Lavatories heritage item (Canterbury LEP 2012 I29) but would not physically alter or impact this item. Platform coping for platform 1 was identified as being high significance fabric. The proposed potholing works would involve removal of the asphalt on the platform surface for the assessment, recording and measurement of pipes within the platform. While the platform coping is considered high significance fabric, asphalt surfaces and subsurface platform fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. Furthermore, it is not expected that the works would impact any significant fabric associated with the platform building, which is of exceptional significance.	Neutral

Lakemba Station **Local**	• Platform 1/2 (High) • Platform 1/2 Building (High)	Platform coping was identified as being high significance fabric. The proposed potholing works would involve removal of the asphalt on the platform surface for the assessment, recording and measurement of pipes within the platform in five locations at the western end of the platform building and platform. While the platform coping is considered high significance fabric, asphalt surfaces and subsurface platform fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. It is not expected that the proposed works would impact any original brick coping, drains, or door thresholds on either platform. Furthermore, it is not expected that the works would impact any significant fabric associated with the platform building, which is of high significance.	Neutral
Wiley Park **Local**	• Platform 1 (High) • Platform 2 (High) • Platform 1 Building (High) • Platform 2 Building (High)	Platform coping on both platforms was identified as being high significance fabric. The proposed potholing works would involve removal of the asphalt on the platform surface for the assessment, recording and measurement of pipes within the platform. This would occur in two locations at the northern side of the platform 1 building. While the platform coping is considered high significance fabric, asphalt surfaces and subsurface platform fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. Works would also not involve modifying any physical portion of either the platform 1 or platform 2 station buildings.	Neutral
Punchbowl **Local**	• Platform (High) • Toilet Block on Platform (Moderate) • Platform Building (Moderate)	Platform coping was identified as being high significance fabric. The proposed potholing works would involve removal of the asphalt on the platform surface for the assessment, recording and measurement of pipes within the platform. Four potholes would be created, with one located at the northern side of the stairs, one at the north-west corner of the platform buildings, one at the north-eastern corner of the platform buildings, and one at the far eastern end of the platform. While the platform coping is considered high significance fabric, asphalt surfaces and subsurface platform fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. Works would also not involve modifying any physical portion of either the platform station buildings.	Neutral

Indirect (visual) impacts to heritage significance of

It is expected that the proposed works would replace the removed asphalt surfaces at all stations to their pre-existing condition following the completion of works. So long as reinstated platform surfaces are made good to match existing asphalt surfaces, the proposed works would not result in any adverse indirect (visual) heritage impacts at any station.

Archaeological impact assessment

Scope of assessment

The Archaeological Assessment and Research Design report (ARD) prepared for the Submissions and Preferred Infrastructure Report (SPIR) for the project provided a detailed archaeological assessment for the Metro South West line. This report determined that the only railway stations which had potential for significant archaeological remains were Canterbury, Belmore, Marrickville and Lakemba. The following archaeological impact assessment is provided only for these stations.

The full historical background and land use phases for each railway station can be found within the SPIR ARD report. Information provided here has been derived from this report.

This assessment of archaeological impacts refers only to areas of predicted significant archaeological remains which are situated in the same location as the proposed potholing works.

Marrickville Station

The proposed potholing works would take place within an area of predicted significant archaeological potential associated with the construction and use of the station between 1894 and 1939. The SPIR ARD report defined the following remains may be located within the area of potholing at Marrickville Station:[3]

- Archaeological remains associated with the early phase of railway infrastructure such as culverts, ceramic service pits, utilities such as woodstave sewer or ceramic pipes; brick drainage pits, electrical conduits and pits, stanchion bases, sleepers and rail track.
- Identified remains of original stone copings, earlier alignment of platforms, foot-scrapers, buried services, original lever set, footings of former platform stairs, platform brick dwarf walls, and building footings
- Moderate potential for footings of former platform canopies

These remains were predicted to be of local heritage significance. The location of potholing works in relation to predicted archaeological features at Marrickville Station is illustrated in Figure 1 below.

Potholing works would be located in areas where existing sanitary service pipes are suspected to be located, and as such, archaeological deposits or features are not anticipated in areas which have already been ground disturbed. While there is a moderate potential for archaeological remains to be located throughout the station platform areas, it is anticipated that the presence of these service pipes would have reduced the degree of archaeological potential in the localised areas where potholing would be conducted.

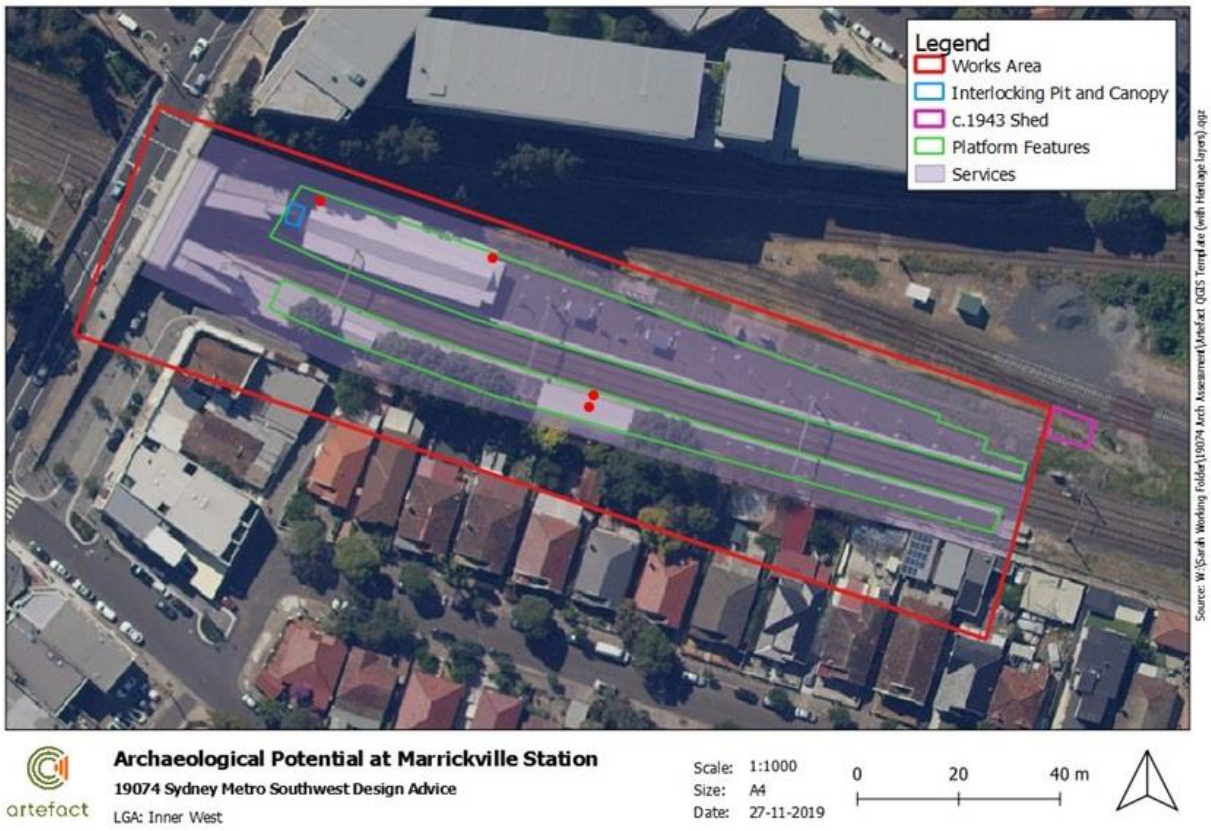
Potholing works are limited in size and vacuum truck and manual excavation work would not likely adversely impact any buried structural remains. Significant artefactual remains, which may be impacted by vacuum truck excavation, are not predicted to be located within the areas of potholing. Overall, the potholing works would result in a negligible impact to predicted significant archaeological remains at Marrickville Station.

These potholing works would take place within an area identified as Management Zone 1 within the SPIR ARD report. Ground disturbing works in this area would have to adhere to methodologies

[3] Artefact 2018a: Table 3-4.

provided in a work specific Archaeological Method Statement (AMS), which is provided at the end of this report.

Figure 1. Areas of archaeological potential at Marrickville Station, location of potholing shown as red circles



Canterbury Station

The proposed potholing works would take place within an area of predicted significant archaeological potential associated with the construction and use of the station between 1895 and 1943. The SPIR ARD report defined the following remains may be located within the area of potholing at Canterbury Station:[4]

- Archaeological remains and evidence of early railway construction including rails, refuse pits, drains and timber sleepers
- Archaeological remains of former platform structures
- Archaeological remains of the former race platform and retaining wall
- Archaeological remains of the storage sidings for the Canterbury Racecourse special trains and the shunting of the local goods sidings
- Archaeological remains of early infrastructure such as culverts, tanks, drains (brick, stone or concrete), electrical conduits and pits, sleepers, signalling equipment and rail track
- Archaeological remains associated with the early phase of minor railway buildings (such as toilets) prior to track realignment such as postholes, brick footings, former floor surfaces, and early infrastructure such as ceramic service pipes, brick drainage pits, electrical conduits and pits, stanchion bases, sleepers and rail track
- It is unlikely that artefact-bearing deposits associated with the early station accumulated or survived subsequent development and upgrades

These remains were predicted to be of local heritage significance. The location of potholing works in relation to predicted archaeological features at Canterbury Station is illustrated in Figure 2 below.

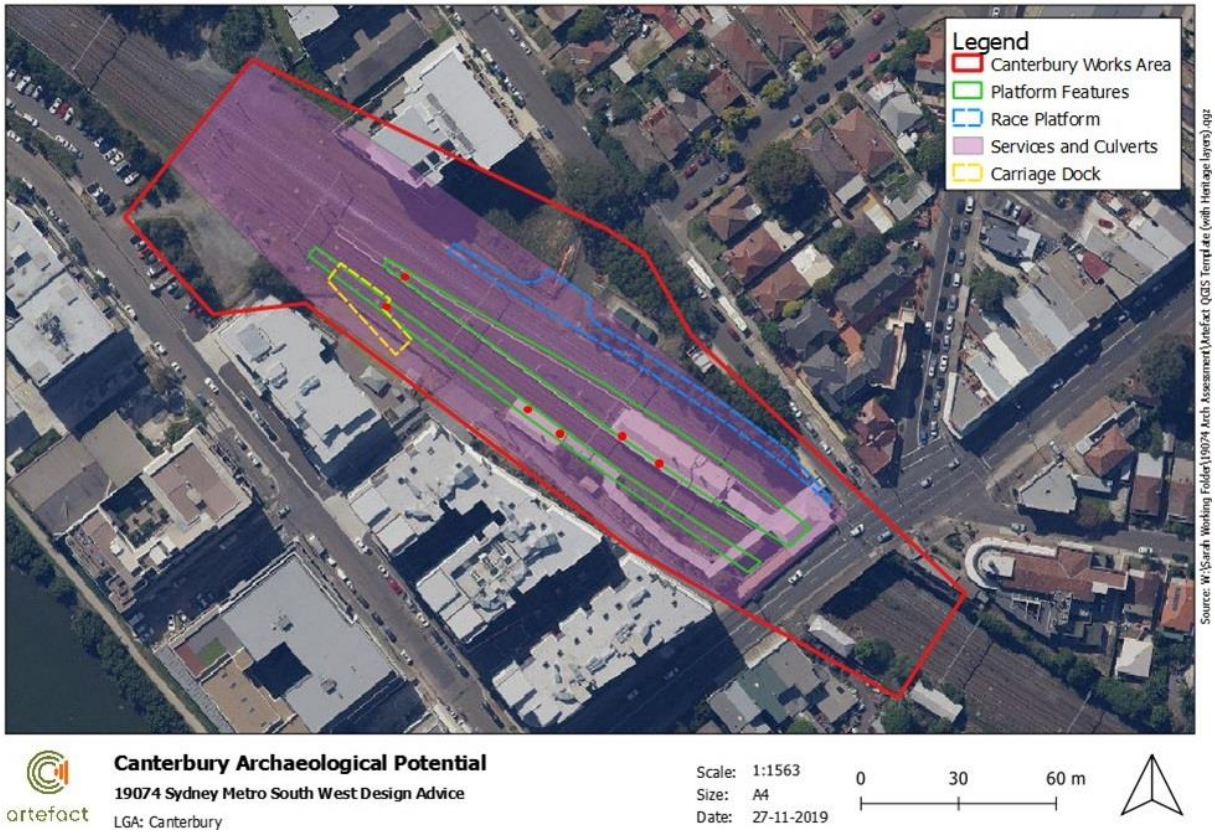
Potholing works would be located in areas where existing sanitary service pipes are suspected to be located, and as such, archaeological deposits or features are not anticipated in areas which have already been ground disturbed. While there is a moderate potential for archaeological remains to be located throughout the station platform areas, it is anticipated that the presence of these service pipes would have reduced the degree of archaeological potential in the localised areas where potholing would be conducted.

Potholing works are limited in size and vacuum truck and manual excavation work would not likely adversely impact any buried structural remains. Significant artefactual remains, which may be impacted by vacuum truck excavation, are not predicted to be located within the areas of potholing. Overall, the potholing works would result in a negligible impact to predicted significant archaeological remains at Canterbury Station.

These potholing works would take place within an area identified as Management Zone 2 within the SPIR ARD report. Ground disturbing works in this area would have to adhere to methodologies provided in a work specific AMS, which is provided at the end of this report.

[4] Artefact 2018a: Table 4-3.

Figure 2. Archaeological Potential at Canterbury Station (pothole locations in red)



Belmore Station

The proposed potholing works would take place within an area of predicted significant archaeological potential associated with the construction and use of the station between 1880 and 1930. The SPIR ARD report defined the following remains may be located within the area of potholing at Belmore Station:[5]

- Archaeological features associated with continued grazing and farming include fence line and shed postholes, field drains, isolated artefact scatters and drains or culverts
- Archaeological remains of early infrastructure such as ceramic service pipes, brick drainage pits, electrical conduits and pits, stanchion bases, sleepers and rail track
- Archaeological remains located on the 1925 plan such as converter room, coal bin, ash pit, lamp shed, auto box, land agent, boot maker, toilets, and brick culvert. Archaeological remains could include footings, cuts of the pit, drains, ceramic service pipes, and the brick culvert.

These remains were predicted to be of local heritage significance. The location of potholing works in relation to predicted archaeological features at Belmore Station is illustrated in Figure 3 below.

Potholing works would be located in areas where existing sanitary service pipes are suspected to be located, and as such, archaeological deposits or features are not anticipated in areas which have already been ground disturbed. While there is a moderate potential for archaeological remains to be

[5] Artefact 2018a: Table 5-3.

located throughout the station platform areas, it is anticipated that the presence of these service pipes would have reduced the degree of archaeological potential in the localised areas where potholing would be conducted.

Potholing works are limited in size and vacuum truck and manual excavation work would not likely adversely impact any buried structural remains. Significant artefactual remains, which may be impacted by vacuum truck excavation, are not predicted to be located within the areas of potholing. Overall, the potholing works would result in a negligible impact to predicted significant archaeological remains at Belmore Station.

These potholing works would take place within an area identified as Management Zone 2 within the SPIR ARD report. Ground disturbing works in this area would have to adhere to methodologies provided in a work specific AMS, which is provided at the end of this report.

Figure 3. Archaeological potential at Belmore Station (pothole locations in red)

Lakemba Station

The proposed potholing works would take place within an area of predicted significant archaeological potential associated with the construction and use of the station between 1909 and 1919. The SPIR ARD report defined the following remains may be located within the area of potholing at Lakemba Station:[6]

[6] Artefact 2018a: Table 6-3.

- Archaeological remains associated with the first timber island platform and initial railway infrastructure such as brick drainage pits, electrical conduits and pits, stanchion bases, timber footings and postholes, sleepers and rail track.

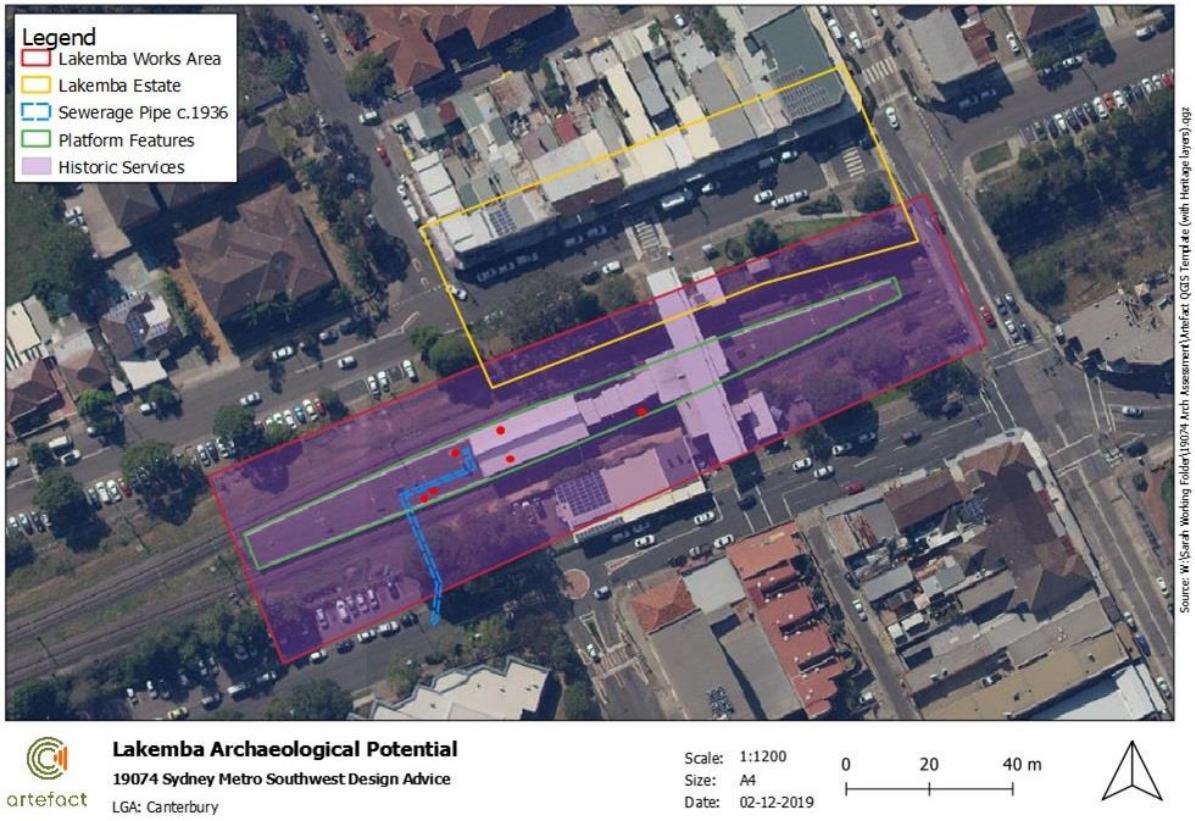
These remains were predicted to be of local heritage significance. The location of potholing works in relation to predicted archaeological features at Lakemba Station is illustrated in Figure 4 below.

Potholing works would be located in areas where existing sanitary service pipes are suspected to be located, and as such, archaeological deposits or features are not anticipated in areas which have already been ground disturbed. While there is a moderate potential for archaeological remains to be located throughout the station platform areas, it is anticipated that the presence of these service pipes would have reduced the degree of archaeological potential in the localised areas where potholing would be conducted.

Potholing works are limited in size and vacuum truck and manual excavation work would not likely adversely impact any buried structural remains. Significant artefactual remains, which may be impacted by vacuum truck excavation, are not predicted to be located within the areas of potholing. Overall, the potholing works would result in a negligible impact to predicted significant archaeological remains at Lakemba Station.

These potholing works would take place within an area identified as Management Zone 2 within the SPIR ARD report. Ground disturbing works in this area would have to adhere to methodologies provided in a work specific AMS, which is provided at the end of this report.

Figure 4. Archaeological potential at Lakemba Station (pothole locations in red)



Approval pathway

Low impact activities

The instrument of approval for the project was approved on 12 December 2018, and provides the following description of low impact activities in that document:[7]

> *(b) investigations including investigative drilling and excavation;*
>
> *(i) archaeological testing under the Code of practice for archaeological investigation of Aboriginal objects in NSW (DECCW, 2010) or archaeological monitoring undertaken in association with (a)-(h) above to ensure that there is no impact on heritage items*

The instrument of approval also states that:

> *However, where heritage items on the State heritage register, areas of known or expected archaeological potential, … are affected by any low impact activity, that activity is construction, unless otherwise determined by the Planning Secretary, following consultation by the Proponent with OEH (*Office of Environment and Heritage – now Department of Premier and Cabinet [DPC] Heritage*)….*

The potholing works are being conducted for service investigation for sanitary services. The proposed works would result in neutral to negligible adverse impacts to heritage significant fabric and negligible impacts to predicted archaeological resources. As such, these works would be considered Low Impact environmental activities, and can be progressed in advance of the preparation of the overall Construction Environmental Management Plan (CEMP) for the project works.

As such, consultation should be conducted with DPC Heritage for the potholing works at the following State heritage registered stations, where works are also taking place within areas of identified non-Aboriginal archaeological potential:

- Marrickville Station
- Canterbury Station
- Belmore Station.

DPC Heritage should also be consulted for potholing works at the Lakemba Station, as potholing works would take place within an area of identified archaeological potential.

Following confirmation that the works are approved as low impact activities, the potholing works should be conducted in accordance with the management strategy outlined in the archaeological method statement provided below. The potholing works should also adhere to the following management recommendations for works at all stations:

[7] NSW Planning and Environment, 12 December 2018. *Infrastructure Approval for SSI 8256*. Accessed online at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8256.

- Significant fabric (such as platform coping or station platform buildings) near to areas of potholing should be protected from splash excavation material during the works. This would ensure that outer surfaces are kept clean during works.
- Following the completion of potholing works, all areas of investigation should be made good to restore the platform surfaces to their original appearance. This would include:
    - Cleaning all asphalt, concrete and brick surfaces that may have been dirtied during works
    - Ensuring that asphalt surfaces are reinstated following the completion of backfilling so that they match surrounding asphalt surfaces
- Potholing locations should not be moved from proposed locations outlined in this document. Should potholing locations be changed, this assessment would need to be revised and consultation with DPC Heritage may need to be repeated prior to works proceeding.

Archaeological management zones

Marrickville Station

Potholing works at Marrickville Station would be conducted within an area identified as Zone 1 within the SPIR ARD report. This indicates that works would have the potential to result in direct impacts to significant archaeological remains. An archaeological method statement must be prepared for works in this area once the construction methodology and assessment of impacts are known.

Non-Aboriginal archaeological test or salvage excavation within this area was recommended in the SPIR ARD report. However, as the works would result in a negligible direct impact to archaeological remains, and the small scope of the ground disturbing works (potholing), this assessment recommends archaeological monitoring as a strategy better suited to managing potential inadvertent archaeological impacts during potholing works.

Canterbury, Belmore and Lakemba Stations

Potholing works at Canterbury, Belmore and Lakemba Stations would be conducted within areas identified as Zone 2 within the SPIR ARD report. This indicates that works would have the potential to result in impacts to significant archaeological remains. An archaeological method statement must be prepared for works in this area once the construction methodology and assessment of impacts are known. Archaeological investigation is likely required.

Due to the negligible degree of impact on predicted archaeological remains, and the small scope of ground disturbing works (potholing), archaeological monitoring is recommended archaeological management during the works.

Archaeological method statement

Archaeological monitoring

All potholing works would be archaeological monitored. Archaeological monitoring involves the nominated archaeologist/s being present during ground disturbance works which may impact on locally significant archaeological remains. If archaeological remains are encountered, works in the immediate area would cease until the archaeologist/s has adequately investigated and recorded the

remains. Truncated and disturbed remains, which are not significant or do not have research potential, such as former rail infrastructure would be recorded and removed if necessary.

All subsurface remains would be archaeologically recorded. Archaeological recording would involve photographing the proposed works and writing a monitoring diary detailing the occurring works and any archaeological finds. Any archaeological remains would be photographed in situ and significant remains would be illustrated in plan form by the archaeologist.

In the event that significant and intact remains not identified in the ARD or this archaeological assessment are encountered during works, all excavation works would cease, the remains protected, further assessment undertaken, and DPC Heritage would be notified. If significant archaeological remains are identified which would be impacted by further potholing works, the potholing works may no longer be classified as low impact activities and further assessment and archaeological investigation would be required.

Archaeologists would not be required to monitor backfilling, reinstatement of asphalt and other ground surfaces, or any drain camera investigation works which do not involve any ground excavation.

Conclusions and Recommendations

The proposed works would involve potholing excavation within the station platform areas at seven heritage listed railway stations on the T3 Bankstown Line. These works would not result in adverse impacts to heritage significant fabric.

The proposed works at Hurlstone Park and Campsie stations would involve minor works to toilet assets (removal and reinstatement), which have been assessed as elements of low heritage value. However, these works may generate associated impacts to elements of high heritage value (station toilet walls and building fabric). As such, recommendations are provided below in order to mitigate any adverse impacts to these elements. Additionally, the report has outlined the direct heritage impacts that may be generated if the preferred methodology for the stations are unable to be undertaken. These works (water jetting, potholing, excavation) would not result in any adverse impacts to heritage significant fabric.

The proposed works would involve potholing excavation within four areas where the potential for locally significant archaeological remains have been identified. The proposed works would not likely result in adverse impacts to heritage significant archaeological remains. Stations where potholing works would be conducted within archaeologically sensitive areas are:

- Marrickville Station
- Canterbury Station
- Belmore Station
- Lakemba Station

These works would be classified as low impact environmental activities under the instrument of approval for the project. As works at Marrickville, Canterbury and Belmore stations are taking place within the curtilage of heritage items listed on the State Heritage Register, and works at Lakemba would take place in an area of predicted significant archaeological remains, DPC Heritage should be consulted to confirm that these works would be considered low impact environmental activities.

During potholing works, the following recommendations are provided to ensure that inadvertent impacts to significant fabric and archaeological remains occurs:

- A program of archaeological monitoring must be conducted, in accordance with provisions approved in the archaeological assessment and research design report for the project, for ground disturbing works at Marrickville, Canterbury, Belmore and Lakemba Stations.
- Significant fabric (such as platform coping or station platform buildings) near to areas of potholing should be protected from splash excavation material during the works. This would ensure that outer surfaces are kept clean during works.
- Following the completion of potholing works, all areas of investigation should be made good to restore the platform surfaces to their original appearance. This would include:
    - Cleaning all asphalt, concrete and brick surfaces that may have been dirtied during works
    - Ensuring that asphalt surfaces are reinstated following the completion of backfilling so that they match surrounding asphalt surfaces
- Potholing locations should not be moved from proposed locations outlined in this document. Should potholing locations be changed, this assessment would need to be revised and consultation with DPC Heritage may need to be repeated prior to works proceeding.

During internal station works at Hurlstone Park and Campsie stations, the following recommendations are provided in order to mitigate heritage impacts to elements of significant heritage value.

- Where toilet pans meet original painted brickworks (Hurlstone Park, Platform 2 building), the removal of the toilet asset should be conducted by hand in order to prevent additional penetrations to the original fabric of the building. Original wall penetrations should be utilised if hand tools are required
- Toilet pans should be reinstated when removed. If a pan is unable to be reinstated, opportunities exist to replace the element, where possible.
- Works located within the platform 2 building at Hurlstone Park should be conducted with the protection of the original elements located within the surrounding rooms; original toilet stalls, urinals, walls and associated fabric should not be directly impacted by the proposed works. If elements of high heritage value are damaged during the course of the proposed works, the elements should be assessed by a suitably qualified heritage professional and the element should be repaired or conserved *in situ*.
- Although the proposed works located within the platform 1 building at Hurlstone Park and the Campsie platform 1 and 2 buildings have been assessed as a neutral impacts, the surrounding elements should be protected during works to prevent cracking or breaking of other elements within the localised areas (tiles, doors, etc)

14 February 2020

Jonathan Steele
Senior Environmental Consultant
Mott MacDonald

Dear Mr Steele,

Re: Sydney Metro City and Southwest Design – Heritage impact assessment for utility service investigation

Project background

The proposed Sydney Metro City and Southwest project (the project) involves upgrading the 10 existing stations from Marrickville to Bankstown (inclusive), and the 13 kilometre long section of the Sydney Trains T3 Bankstown Line between west of Sydenham Station and west of Bankstown Station, to improve accessibility for customers and enable conversion of the line to metro standards. The project would enable Sydney Metro to operate beyond Sydenham, to Bankstown.

As part of the preparation of the Environmental Impact Statement (EIS) and Submissions and Preferred Infrastructure Report (SPIR), Artefact Heritage (Artefact) prepared non-Aboriginal archaeological assessments which outlined areas of potential significant non-Aboriginal archaeological remains at several of the stations on the T3 Bankstown Line.

The Critical State Significant Infrastructure (CSSI) project was approved by the Minister for Planning on 12 December 2018. As part of the Revised Environmental Mitigation Measures (REMM) for the project, NAH12 indicates that mitigation measures outlined in the Non-Aboriginal archaeological assessments[1][2] for the project must be adhered to during design, investigation and construction works for the project.

As part of investigative works for the project, Metron T2M are proposing to conduct service location and assessments at a number of locations throughout the proposed project area. Potholing service investigation works at Marrickville, Lakemba and Canterbury Stations, as well as in the area between Church Street and Hutton Street in Canterbury, would be conducted in areas identified in SPIR assessments as archaeologically sensitive at these stations. Additional works would occur at Dulwich Hill Station but are not located in an archaeologically sensitive area. This memo provides an assessment of built heritage and archaeological impacts for the potholing and service location works and outlines management guidelines for conducting the works in these areas.

[1] Artefact 2018a *Sydney Metro City & Southwest Sydenham to Bankstown Upgrade – Submissions and Preferred Infrastructure Report Non-Aboriginal Heritage Assessment*. Report to Transport for NSW.
[2] Artefact 2018b. *Sydney Metro City & Southwest Sydenham to Bankstown Upgrade – Historical Archaeological Assessment & Research Design*. Report to Transport for NSW.

Proposed works

Mott MacDonald are proposing to undertake service location works through potholing service investigation works at Marrickville, Dulwich Hill, Canterbury, and Lakemba Stations, and between Church and Hutton Street in Canterbury.

Works would consist of non-destructive digging (NDD) excavation work, using high pressure water and vacuum suction (vacuum truck) excavation, as well as manual hand digging. Excavation works would be conducted to locate sanitary service pipes identified from Detailed Site Survey (DSS) plans for each station. Once sanitary pipes have been located during potholing excavation, some pipes may be opened to allow the insertion of drain cameras which would be extended into services to inspect their internal condition.

Previous assessments

This heritage assessment is based on historical and archaeological research provided in the previously prepared heritage reports for the Sydney Metro City and Southwest – Sydenham to Bankstown Project. The current assessment provides summaries of the historical and archaeological research prepared in these two reports but does not reproduce the historical context for these reports here. As such, this report should be read in conjunction with previously prepared heritage reports. Reports referenced in this assessment include:

- *Sydney Metro City & Southwest – Sydenham to Bankstown Non-Aboriginal Heritage Impact Assessment* (Artefact 2017)
- *Sydney Metro City & Southwest – Sydenham to Bankstown Historical Archaeological Assessment & Research Design* (Artefact 2018a)

This memo only assesses service location and assessment works that have been proposed to be conducted within the defined precinct boundaries of the Marrickville, Dulwich Hill, Canterbury and Lakemba Station sites for the Sydney Metro City and Southwest project.

Authorship

This report was prepared by Sarah Hawkins (Heritage Consultant) and Jayden van Beek (Senior Heritage Consultant), with management input and review from Duncan Jones (Principal).

Built heritage impact assessment

Heritage listings

The proposed works would be undertaken with the curtilages of the following items listed on statutory heritage inventory registers:

Table 1: Heritage items

Item	Suburb	Significance	Listing
Marrickville Railway Station Group	Marrickville	State	• State Heritage Register (SHR 01186) • RailCorp s.170 heritage inventory register (SHI 4801091) • Marrickville LEP 2011 (I89)
Dulwich Hill Railway Station Group	Dulwich Hill	Local	• RailCorp s.170 heritage inventory register (SHI 4801909)
Canterbury Railway Station Group	Canterbury	State	• State Heritage Register (SHR 01109) • RailCorp s.170 heritage inventory register (SHI 4801100)
Lakemba Railway Station Group	Lakemba	Local	• RailCorp s.170 heritage inventory register (SHI 4801916) • Canterbury LEP 2012 (I143)

Direct (physical) impacts to heritage significant fabric

The proposed works would involve NDD and hand excavation at limited areas across the rail corridor and some station areas (potholing) to locate utility service pipes. Utility service pipes, once uncovered, would not be modified or impacted in any way.

The potholing locations at each station are located within platforms or within the rail corridor. No potholing works are anticipated to take place in areas which would require the removal or alteration of heritage significant fabric.

Table 2 summarises heritage significant fabric located in or near the area of works at each station and outlines any direct (physical) impacts to heritage significant fabric at each station.

Table 2: Summary of direct heritage impacts

Station and significance	Significant fabric near area of works	Discussion of direct (physical) heritage impacts	Summary of impact
Marrickville Station **State**	• Platform 2 (Exceptional) • Platform 2 Building (High) • Platform 2 Booking Office (Exceptional)	The proposed works at Marrickville Station are primarily located within the grassed area of the rail corridor and the pedestrian walkway directly adjacent to Platform 2. The proposed works would involve excavations in the grassed surface and the removal of the concrete/asphalt surface of the footpath for the assessment, recording and measurement of suspected pipes. However, although the works are located directly adjacent to Platform 2 (fabric of exceptional significance) and the Platform 2 Building (fabric of high significance), the rail corridor and walkway are not part of these elements and are not considered to be significant fabric. The works would not impact on any original brick coping or the surface of the platform itself, and the pipes are located behind the Platform 2 Building and the investigation would stop before the Platform 2 Booking Office. Overall, it is not expected that the proposed works would impact significant fabric associated with the heritage item.	Neutral
Dulwich Hill Station **Local**	• Overbridge (Moderate)	The Overbridge was identified as being fabric of moderate significance. The proposed potholing works would involve the removal of the concrete surface of the pedestrian footpath on the Overbridge in two locations for the assessment, recording, and measurement of an Ausgrid Electrical cable along the eastern side of the bridge. While the Overbridge is considered moderately significant fabric, this significant element is associated with the brick abutments and concrete deck; existing wearing surfaces and any subsurface fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element.	Negligible
Canterbury Station **State**	• Overbridge (High)	The c.1917 Overbridge was identified as being fabric of high significance. The proposed potholing works would involve the removal of the asphalt surface of the Overbridge in two locations for the assessment, recording, and measurement of an Ausgrid Electrical cable along the southern pedestrian footpath of the bridge. While the Overbridge is considered high significance fabric, asphalt surfaces and subsurface road fill materials are not heritage significant fabric and the works would not physically impact the heritage significance of this element. It is not expected that the proposed works would impact any original brick or concrete decking, girders, or the parapet walls.	Negligible

Lakemba Station **Local**	•	Not applicable	The proposed works are located along the embankment to the south of the rail corridor. The embankment is not part of the listed heritage curtilage and as a result the proposed works would primarily be located outside of the heritage curtilage of Lakemba Station. Furthermore, the rail corridor is not considered to significant fabric and the proposed works would not extend to Platform 1. As a result, it is not expected that the works would impact any significant fabric associated with the heritage item.	Neutral

Indirect (visual) impacts to heritage significance

It is expected that the proposed works would replace the removed asphalt, concrete, and grassed surfaces at all stations to their pre-existing condition following the completion of works. So long as reinstated surfaces are made good to match existing surfaces, the proposed works would not result in any adverse indirect (visual) heritage impacts at any station.

Archaeological impact assessment

Scope of assessment

The Archaeological Assessment and Research Design report (ARD) prepared for the Submissions and Preferred Infrastructure Report (SPIR) for the project provided a detailed archaeological assessment for the Metro South West line. This report identified significant archaeological remains at Canterbury, Belmore, Marrickville and Lakemba Stations, as well as near the rail corridor footbridge between Church Street and Hutton Street in the wider Canterbury Station precinct. The following archaeological impact assessment is provided only for these stations and areas. Utility investigations being undertaken at other locations have not been assessed for archaeological impacts as no remains have been predicted at these other locations.

The full historical background and land use phases for each railway station can be found within the SPIR ARD report. Information provided here has been derived from this report.

Marrickville Station

Potential archaeological remains at Marrickville Station

The ARD has previously predicted archaeological remains of local significance to be present at Marrickville Station. A summary of the relevant archaeological potential and significance of predicted remains is provided in Table 3, and the location and of these archaeological resources for significant phases is provided in Figure 1.

The ARD identified the area of the proposed potholing works as having moderate to high potential to contain archaeological remains of local significance. In particular the location of the proposed potholing is situated in the former location of the coal loading and storing facilities within the rail corridor. It was assessed that there was low potential for archaeological remains associated with these to be present, and it was assessed that the archaeological remains were unlikely to reach the threshold of local significance. The proposed potholing is also located adjacent to Platform 2 which could contain evidence such as earlier platform alignments or footings. It was assessed that there was moderate to high potential for archaeological remains associated with earlier platform infrastructure to be present, and these remains would likely reach the threshold of local significance. However, the proposed potholing works are situated within the rail corridor and walkway adjacent to

Platform 2 and do not extend into the platform. Therefore, as the proposed works do not extend into the platform it is not expected that evidence of earlier platform infrastructure would be present within the area of proposed works.

Table 3: Summary of areas with potential for significant archaeological remains for Marrickville Station[3]

Phase	Archaeological Resource	Potential	Significance
1 (1788-1850s)	• Archaeological features associated with land clearance such as tree boles, evidence of dairy farming and market gardening including fence line postholes, former shed postholes, brick or paved yard surfaces, field drains, isolated artefact scatters.	Nil to Low	Unlikely to reach threshold for Local significance
2 (1850s – 1890s)	• Archaeological features associated with farming such as fence or shed postholes, field drains and isolated artefacts, drains or culverts associated with the former creek.	Nil to Low	Unlikely to reach threshold for Local significance
3 (1890s – 1920s)	• Archaeological remains associated with the early phase of railway infrastructure such as culverts, ceramic service pits, utilities such as woodstave sewer or ceramic pipes; brick drainage pits, electrical conduits and pits, stanchion bases, sleepers and rail track. • Identified remains of original stone copings, earlier alignment of platforms, footscrapers, buried services, original lever set, footings of former platform stairs, platform brick dwarf walls, and building footings. • Moderate potential for footings of former platform canopies. • Low potential for former level crossing at the current Illawarra Road overbridge. • Archaeological remains of the former Earlwood tram line that ran across Illawarra Road overbridge such as tram tracks and associated infrastructure.	Moderate to High	Local
	• Low potential for footings of former coal loading and storage facilities. • Low potential for archaeological remains of the former sleeper bridge such as bridge footings.	Low	Unlikely to reach threshold for Local significance
4 (1930s – Present)	• Archaeological remains associated with upgrades such as utilities and drainage. • Footings associated with the commuter car parking structure and the Illawarra Road footbridge. • Footings of signalling huts and boxes.	Moderate to High	Unlikely to reach threshold for Local significance

[3] Artefact 2018a: Table 3-4.

Archaeological management strategy for works at Marrickville Station

The ARD has assessed potential impacts to archaeological resources at Marrickville Station from the main works required for renovations to Marrickville Station for the Sydney Metro City & Southwest Project. The archaeological management policies for these works are outlined in Table 4 and the location of the archaeological management zones are illustrated in Figure 2.

Table 4: Summary of archaeological management requirements at Marrickville Station Catchment[4]

Phase	Potential Archaeology	Management Zone	Mitigation
1 (1788-1850s)	Nil to low potential for archaeological features associated with land clearance such as tree boles, evidence of dairy farming and market gardening including fence line postholes, former shed postholes, brick or paved yard surfaces, field drains, isolated artefact scatters. Unlikely to reach the threshold for local significance.	3	Unexpected Finds Procedure
2 (1850s – 1890s)	Nil to low potential for archaeological features associated with farming such as fence or shed postholes, field drains and isolated artefacts, drains or culverts associated with the former creek. Unlikely to reach the threshold for local significance.	3	Unexpected Finds Procedure
3 (1890s – 1920s)	Moderate to high potential for potentially local significant archaeological remains associated with the early phase of railway infrastructure such as culverts, ceramic service pits, brick drainage pits, electrical conduits and pits, stanchion bases, sleepers and rail track. Identified remains of original stone copings, earlier alignment of platforms, footscrapers, buried services, original lever set, footings of former platform stairs, platform brick dwarf walls, and building footings. Moderate potential for footings of former platform canopies Low potential for former level crossing at the current Illawarra Road overbridge. Moderate potential for archaeological remains of the former Earlwood tram line that ran across Illawarra Road overbridge such as tram tracks and associated infrastructure	1	• AMS • Salvage Excavation
	Low potential for footings of former coal loading and storage facilities. Low potential for archaeological remains of the former sleeper bridge such as bridge footings.	3	Unexpected Finds Procedure

[4] Artefact 2018a: Table 3-5.

Phase	Potential Archaeology	Management Zone	Mitigation
4 (1930s – Present)	Moderate to high potential for archaeological remains associated with upgrades such as utilities and drainage, footings of signalling huts and boxes, and footings associated with the commuter car parking structure and the Illawarra Road footbridge. Unlikely to reach the threshold for local significance.	3	Unexpected Finds Procedure

Figure 1. Areas of archaeological potential at Marrickville Station, location of potholing shown as a red dashed line / red arrow

Figure 2: Marrickville Station Catchment archaeological management zones, location of potholing shown as a blue dashed line / blue arrow

Marrickville Station archaeological impact assessment

The proposed potholing works are located on the southern edge of the rail corridor at Marrickville Station, and would be conducted to identify the location and integrity of an existing sewer line in this location. Potholing in this area would be conducted at approximately every 20 metres over a length of ground approximately 160 metres in extent.

Significant archaeological remains in this potholing area are largely associated with physical remains of former infrastructure, identified in the 1918 railway plan for Marrickville Station. It is possible that services that are being sought may be remnant utility services identified on early historical plans and may themselves be of significance.

The proposed potholing would not involve penetrating into services at any point and is being conducted to confirm locations previously identified on Detailed Site Survey (DSS) plans. As such, the works would likely result in negligible impacts to significant archaeological remains.

It is illustrated in Figure 2 that the location of the proposed works is mapped within Management Zone (MZ) 1 and MZ 2. Further archaeological management of these works would be required.

Canterbury Station

Potential archaeological remains at Canterbury Station

The ARD has previously predicted archaeological remains of State and local significance to be present at Canterbury Station. A summary of the relevant archaeological potential and significance of predicted remains is provided in Table 5, and the location and of these archaeological resources for significant phases is provided in Figure 3.

The proposed potholing works at Canterbury Station would be restricted to the Canterbury Road overbridge. The ARD report identified the area of the overbridge as having nil to low potential to contain archaeological remains and no specific archaeological features were identified in the proposed location of the potholes. The area of archaeological potential associated with the 1843 plan is situated below the overbridge and does not extend to the overbridge itself (Figure 3). As a result, it is not expected that significant archaeological remains would be located in the location of the proposed works.

Table 5: Summary of areas with potential for significant archaeological remains for Canterbury Station[5]

Phase	Archaeological Resource	Potential	Significance
1 (1788-1841)	• Archaeological features associated with land clearance such as tree boles, evidence of estate farming activities such as fence line postholes, former shed postholes, field drains, isolated artefact scatters.	Nil to Low	Unlikely to reach threshold for Local significance
2 (1841 – 1855)	• Archaeological remains of outbuildings, landscape modifications, fence lines, drains and other structural remains associated with the Australasian Sugar Company works. • Archaeological remains of the outbuildings such as footings, timber slabs remnants, underfloor	Moderate to High	Potentially State

[5] Artefact 2018a: Table 4-3.

Phase	Archaeological Resource	Potential	Significance
	deposits, post holes, artefact deposits, cess pits, wells, cisterns, fencelines, and yard surfaces. • Evidence of small scale mining activities. • Archaeological evidence of farming includes fence line postholes, former shed postholes, brick or paved yard surfaces, field drains, isolated artefact scatters. • Archaeological remains of early residential cottages including wells, cisterns and refuse pits.		
3 (1855 – 1895)	• Archaeological remains of early residential cottages including wells, cisterns and refuse pits. • Archaeological remains of outbuildings, landscape modifications, fence lines, drains and other structural remains associated with the Blackett and Co Canterbury Engineering Works.	Moderate to High	Potentially Local
4 (1895 – 1943)	• Archaeological remains and evidence of early railway construction including rails, refuse pits, drains and timber sleepers. • Archaeological remains of former platform structures. • Archaeological remains of the former race platform and retaining wall. • Archaeological remains of the storage sidings for the Canterbury Racecourse special trains and the shunting of the local goods sidings. • Archaeological remains of early infrastructure such as culverts, tanks, drains (brick, stone or concrete), electrical conduits and pits, sleepers, signalling equipment and rail track. • Archaeological remains associated with the early phase of minor railway buildings (such as toilets) prior to track realignment such as postholes, brick footings, former floor surfaces, and early infrastructure such as ceramic service pipes, brick drainage pits, electrical conduits and pits, stanchion bases, sleepers and rail track. • It is unlikely that artefact-bearing deposits associated with the early station accumulated or survived subsequent development and upgrades.	Moderate	Potentially Local
5 (1943 – Present)	• Archaeological remains associated with upgrades such as utilities and drainage.	Moderate to High	Unlikely to reach threshold for Local significance

Archaeological management strategy for works at Canterbury Station

The ARD has assessed potential impacts to archaeological resources at Canterbury Station from the main works required for renovations to Canterbury Station for the Sydney Metro City & Southwest Project. The archaeological management policies for these works are outlined in Table 6 and the location of the archaeological management zones are illustrated in Figure 4.

Table 6: Summary of archaeological management requirements at Canterbury Station Catchment[6]

Phase	Potential Archaeology	Management Zone	Mitigation
1 (1788-1841)	Nil to low potential for archaeological features associated with land clearance such as tree boles, evidence of estate farming activities such as fence line postholes, former shed postholes, field drains, isolated artefact scatters. Unlikely to reach the threshold for local significance.	3	Unexpected Finds Procedure
2 (1841 – 1855s)	Moderate to high potential for potentially State significant archaeological remains of outbuildings, landscape modifications, fence lines, drains and other structural remains associated with the Australasian Sugar Company works. Archaeological remains of the outbuildings such as footings, timber slabs remnants, underfloor deposits, post holes, artefact deposits, cess pits, wells, cisterns, fencelines, and yard surfaces. Evidence of small scale mining activities, archaeological evidence of farming includes fence line postholes, former shed postholes, brick or paved yard surfaces, field drains, isolated artefact scatters. Archaeological remains of early residential cottages including wells, cisterns and refuse pits.	1	• AMS • Salvage Excavation
3 (1855 – 1895)	Moderate to high potential for potentially locally significant archaeological remains of early residential cottages including wells, cisterns and refuse pits. Archaeological remains of outbuildings, landscape modifications, fence lines, drains and other structural remains associated with the Blackett and Co Canterbury Engineering Works.	1	• AMS • Salvage Excavation
4 (1895 – 1943)	Moderate potential for locally significant archaeological remains and evidence of early railway construction including rails, refuse pits, drains and timber sleepers. Archaeological remains of former platform structures. Archaeological remains of the former race platform and retaining wall. Archaeological remains of the storage sidings for the Canterbury Racecourse special trains and the shunting of the local goods sidings. Archaeological remains of early infrastructure such as culverts, tanks, drains (brick, stone or concrete), electrical conduits and pits, sleepers, signalling equipment and rail track.	1	• AMS • Salvage Excavation

[6] Artefact 2018a: Table 4-4.

Phase	Potential Archaeology	Management Zone	Mitigation
	Archaeological remains associated with the early phase of minor railway buildings (such as toilets) prior to track realignment such as postholes, brick footings, former floor surfaces, and early infrastructure such as ceramic service pipes, brick drainage pits, electrical conduits and pits, stanchion bases, sleepers and rail track. It is unlikely that artefact-bearing deposits associated with the early station accumulated or survived subsequent development and upgrades.		
5 (1943 – Present)	Moderate to high potential for archaeological remains associated with upgrades such as utilities and drainage. Unlikely to reach the threshold for local significance.	3	Unexpected Finds Procedure

Figure 3. Archaeological Potential at Canterbury Station, location of potholing shown as red circles / red arrows. The location of the potholing between Church Street and Dutton Street (assessed separately below) is shown as a yellow line / yellow arrow

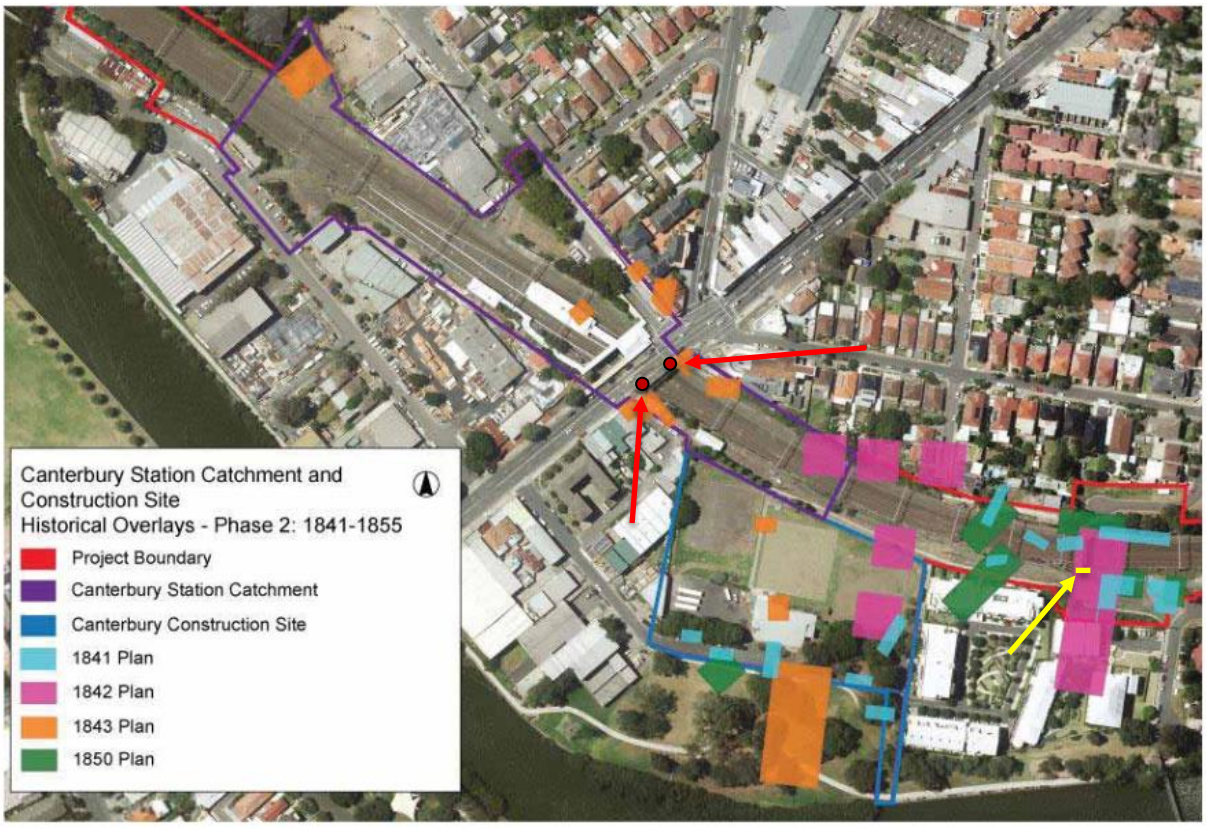
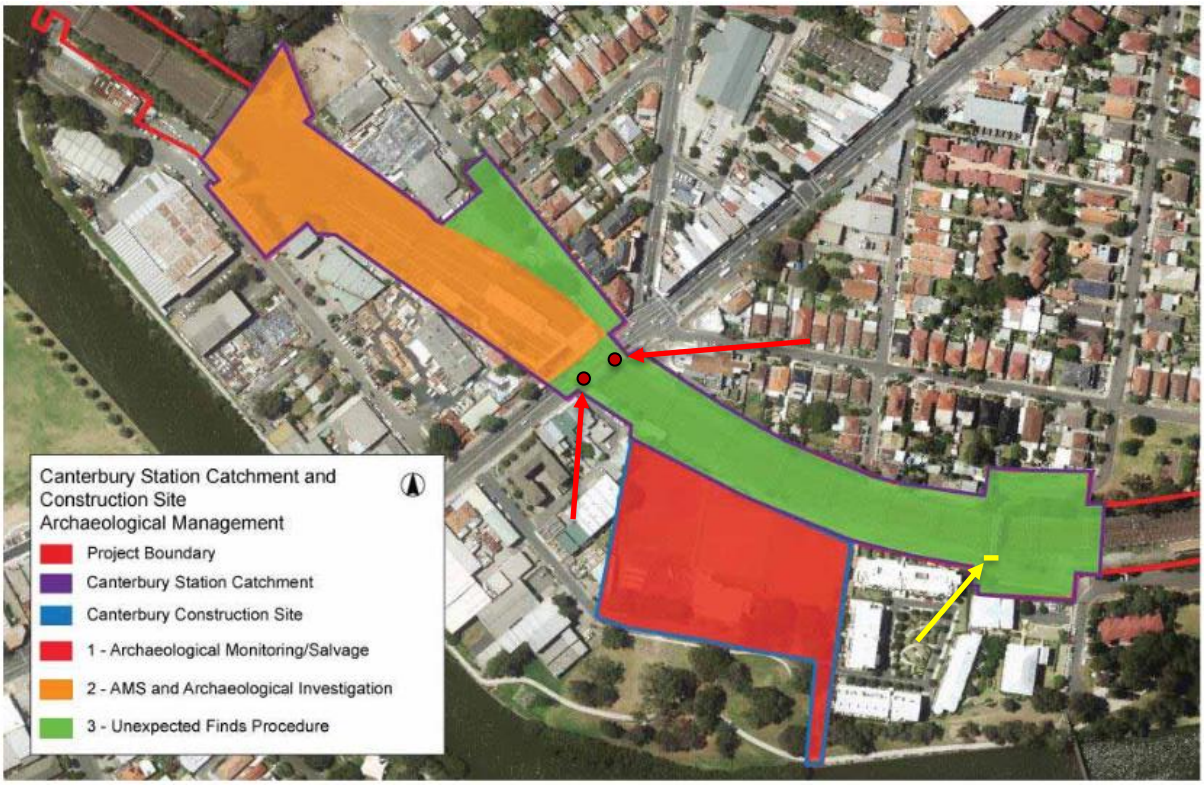


Figure 4: Canterbury Station Catchment archaeological management zones, location of potholing shown as red circles / red arrows. The location of the potholing between Church Street and Dutton Street (assessed separately below) is shown as a yellow line / yellow arrow



Canterbury Station archaeological impact assessment

The proposed potholing would be limited to the Canterbury Road overbridge. This area has been assessed as having nil to low potential to contain archaeological remains associated with pre-rail structures and occupation. However, the investigation locations are situated on the current Canterbury Road overbridge over the rail corridor, in an area where all archaeological remains would have been removed during the construction of the railway line in the 1890s.

As the investigation locations would be situated within the footpath of the current Canterbury Road overbridge, they would be located in modern fabric elevated several metres above the disturbed ground of the active rail corridor. As such, the archaeological zone mapping provided in Figure 4 above provides the archaeological potential for remains located *underground*.

The potholing works on the Canterbury Road bridge therefore would result in neutral impacts to significant remains. Per the ARD the location of the proposed works is within MZ 3 (Figure 4).

Canterbury Station Precinct between Church Street and Hutton Street

Potential archaeological remains at Canterbury Station Precinct between Church and Hutton Streets

The ARD has previously predicted archaeological remains of State and local significance to be present at Canterbury Station. A summary of the relevant archaeological potential and significance of predicted remains is provided in Table 5, and the location and of these archaeological resources for significant phases is provided in Figure 4.

The proposed potholing works at Canterbury Station between Church Street and Hutton Street are situated within the former footprint of a c.1842 structure associated with the Australasian Sugar

Company works (Phase 2). The ARD identified that there was moderate to high potential for archaeological remains associated with Phase 2, including evidence of former structures, outbuildings, footings, postholes, deeper subsurface features (cesspits or wells), and artefact deposits, to be present in some locations at Canterbury Station. The ARD also identified that archaeological remains associated with Phase 2 could potentially reach the threshold of State significance. However, due to the expected disturbances associated with the construction of the railway corridor, it was assessed that the potential for intact remains associated with Phase 2 to be present near the rail corridor at Canterbury Station, including the location of the proposed potholing between Church Street and Hutton Street, was low.

However, as the proposed potholing is located on top of the embankment adjacent to the rail corridor rather than within the rail corridor itself, there may be slightly higher potential for significant archaeological remains to have survived in that location.

Archaeological management strategy for works at Canterbury Station between Church and Hutton Streets

The ARD has assessed potential impacts to archaeological resources at Canterbury Station from the main works required for renovations to Canterbury Station for the Sydney Metro City & Southwest Project. The archaeological management policies for these works are outlined in Table 6 and the location of the archaeological management zones are illustrated in Figure 4.

Canterbury Station, between Church and Hutton Streets, archaeological impact assessment

The proposed potholing between Church Street and Hutton Street is situated within the former footprint of a c.1842 structure associated with the Australasian Sugar Company works (Phase 2), and intact archaeological remains associated with this former structure could potentially reach the threshold of State significance. However, the proposed potholing is located in the area of lower archaeological potential due to the expected impacts associated with the construction of the rail corridor. Furthermore, the potholing works would be located in areas where existing Ausgrid Electrical cables are suspected to be located, and as such, archaeological deposits or features are more likely to have been disturbed and/or removed in these localised areas. In addition, the ground disturbance caused by the potholing works would be limited in size and the use of a vacuum truck and manual excavation would further reduce the risk of archaeological impacts to archaeological remains even if they were predicted to be located within this area.

Overall, there is generally low potential that the proposed works between Church Street and Hutton Street is likely to result in negligible impacts to significant archaeological resources at the Canterbury Station precinct.

Per the ARD the location of the proposed works is within MZ 3 (Figure 4).

Lakemba Station

Potential archaeological remains at Lakemba Station

The ARD has previously predicted archaeological remains of local significance to be present at Lakemba Railway Station. A summary of the relevant archaeological potential and significance of predicted remains is provided in Table 7, and the location and of these archaeological resources for significant phases is provided in Figure 5.

The ARD identified the area of the proposed potholing works as having low to moderate potential to contain archaeological remains of local significance. In particular the proposed potholing is situated in the vicinity of Platform 1, which could contain evidence of the first timber island platform and initial railway infrastructure such as timber footings and postholes, brick drainage pits, sleepers and rail track. However, the proposed potholing works would be limited to the embankment on the other side of the rail corridor from the platform and would not extend into the rail corridor or the platform

structure. The ARD did not identify any specific archaeological features within the embankment. Therefore, as the proposed works do not extend into the platform or rail corridor it is not expected that evidence of earlier platform or rail infrastructure would be present within the area of proposed works.

Table 7: Summary of areas with potential for significant archaeological remains for Lakemba Station[7]

Phase	Archaeological Resource	Potential	Significance
1 (1788-1880s)	• Initial land owners associated with moderately sized grants used for agricultural and pastoral purposes. • Archaeological features associated with low intensity land use such as timber getting, grazing and farming include tree boles, fence line postholes, field drains and isolated artefact scatters.	Nil to Low	Unlikely to reach threshold for Local significance
2 (1880 – 1909)	• Establishment of the Taylor House (Lakemba), stables and potential outbuildings. • Archaeological features associated with farming activities, domestic and agricultural structures, refuse pits and drains or culverts.	Low	Potentially Local
3 (1909 – 1919)	• Archaeological remains associated with the first timber island platform and initial railway infrastructure such as brick drainage pits, electrical conduits and pits, stanchion bases, timber footings and postholes, sleepers and rail track.	Low to Moderate	Potentially Local
4 (1919 – Present)	• Archaeological remains associated with station and rail corridor upgrades such as utilities and drainage.	Moderate	Unlikely to reach threshold for Local significance

Archaeological management strategy for works at Lakemba Station

The ARD has assessed potential impacts to archaeological resources at Lakemba Station from the main works required for renovations to Lakemba Station for the Sydney Metro City & Southwest Project. The archaeological management policies for these works are outlined in Table 8 and the location of the archaeological management zones are illustrated in Figure 6.

[7] Artefact 2018a: Table 6-3.

Table 8: Summary of archaeological management requirements at Lakemba Station Catchment[8]

Phase	Potential Archaeology	Management Zone	Mitigation
1 (1788-1880s)	Nil to low potential for archaeological remains associated with the initial land owners associated with moderately sized grants used for agricultural and pastoral purposes. Archaeological features associated with low intensity land use such as timber getting, grazing and farming include tree boles, fence line postholes, field drains and isolated artefact scatters. Unlikely to reach the threshold for local significance.	3	Unexpected Finds Procedure
2 (1880 – 1909)	Low potential for locally significant archaeological remains associated with the establishment of the Taylor House (Lakemba), stables and potential outbuildings. Archaeological features associated with farming activities, domestic and agricultural structures, refuse pits and drains or culverts.	3	• Unexpected Finds Procedure
3 (1909 – 1919)	Low to moderate potential for locally significant archaeological remains associated with the first timber island platform and initial railway infrastructure such as brick drainage pits, electrical conduits and pits, stanchion bases, timber footings and postholes, sleepers and rail track.	1	• AMS • Salvage Excavation
4 (1919 – Present)	Moderate potential for archaeological remains associated with station and rail corridor upgrades such as utilities and drainage. Unlikely to reach the threshold for local significance.	3	Unexpected Finds Procedure

Lakemba Station archaeological impact assessment

The proposed potholing would be limited to the embankment to the south of the rail corridor. This area is located on the opposite side of the rail corridor as the platform, which is the main area of archaeological potential, and no specific archaeological features were identified within the embankment. Furthermore, the potholing works would be located in areas where existing utility pipes are suspected to be located, and as such, archaeological deposits or features are more likely to have been disturbed and/or removed in these localised areas. In addition, the ground disturbance caused by the potholing works would be limited in size and the use of a vacuum truck and manual excavation would further reduce the risk of archaeological impacts to archaeological remains even if they were predicted to be located within this area.

Overall, it is expected that the proposed works would result in neutral impacts to significant archaeological resources at the Lakemba Station precinct.

It is illustrated in Figure 6 that the location of the proposed works is mapped within MZ 1, which requires further archaeological management. However, due to the specific degree of previous ground disturbance in this location, particularly with the presence of existing utility services, impacts to archaeological remains is not expected. However, due to the low potential for significant remains to be located in this area, further archaeological management is required.

[8] Artefact 2018a: Table 6-4.

Figure 5. Archaeological potential at Lakemba Station (pothole locations in red)

Figure 6: Lakemba Station Catchment archaeological management zones, location of potholing shown as red dashed lines / red arrows

Archaeological management and mitigation measures

While the proposed potholing works at Marrickville, Canterbury, and Lakemba Stations would be conducted in areas which have been designed as requiring the preparation of Archaeological Method Statement (AMS) reports, the predicted archaeological impacts associated with most of the proposed locations have been assessed as neutral to negligible. In accordance with the archaeological management methodology outlined in the Archaeological Research Design (ARD) for the project:

"An AMS would be prepared prior to construction works with the potential to impact archaeological resources".[9]

As the proposed potholing works have been assessed to not cause any impacts to significant archaeological resources identified in archaeological assessments previously prepared for the project, an AMS is not required to be prepared prior to the works taking place at Canterbury Station.

Works at Marrickville Station, Lakemba Station and in the Canterbury Station precinct between Church Street and Hutton Street, while they would not likely impact archaeological remains, would be taking place within an area of predicted archaeological sensitivity. While the degree of impact is considered negligible at most, as service location works would be taking place in areas where services are suspected of being located, the predicted archaeological sensitivity must be managed with an AMS in accordance with the environmental approvals for the project. As such, an AMS has been prepared for these works to take place in the section below.

Archaeological Method Statement

Archaeological monitoring

Due to the low level of risk that the proposed potholing at Marrickville and Lakemba Stations, as well as at the Canterbury Station precinct between Church Street and Hutton Street, have the low possibility of harming archaeological remains in archaeologically sensitive areas.

As such, ground disturbing works at Marrickville Station, Lakemba Station and within the Canterbury Station precinct between Church Street and Hutton Street should be archaeologically monitored.

Archaeological monitoring involves the nominated archaeologist/s being present during ground disturbance works which may impact on locally significant archaeological remains. If archaeological remains are encountered, works in the immediate area would cease until the archaeologist/s has adequately investigated and recorded the remains. Truncated and disturbed remains, which are not significant or do not have research potential, such as former rail infrastructure would be recorded.

As all potholing works would involve non-destructive (vacuum truck) excavation, and predicted remains are expected to be structural and not artefactual in nature, impacts to structural remains would not occur. No significant structural remains would be removed as part of the proposed works. Should structural remains be located within an excavation area at a level above where service identification works seek to excavate to, the potholing location would be horizontally moved to avoid significant structural remains, under the supervision of the monitoring archaeologist.

All subsurface remains would be archaeologically recorded. Archaeological recording would involve photographing the proposed works and writing a monitoring diary detailing the occurring works and any archaeological finds. Any archaeological remains would be photographed *in situ* and significant remains would be illustrated in plan form by the archaeologist.

[9] Artefact 2018b, p. 128.

In the event that significant and intact remains not identified in the ARD or this archaeological assessment are encountered during works, all excavation works would cease, the remains protected, further assessment undertaken, and DPC Heritage would be notified. If significant archaeological remains are identified which would be impacted by further potholing works, the potholing works may no longer be classified as low impact activities and further assessment and archaeological investigation would be required.

Should potential State significant archaeological remains, related to the former Canterbury sugar mill, be identified during potholing works between Church Street and Hutton Street, ground disturbing works must cease in this location. In the eventuality that ground disturbing works have identified State significant archaeological remains, works should not recommence in this area. Further archaeological assessment, investigation and approval would be required.

Archaeologists would not be required to monitor backfilling, reinstatement of asphalt and other ground surfaces, or any drain camera investigation works which do not involve any ground excavation.

Approval pathway

Low impact activities

The instrument of approval for the project was approved on 12 December 2018, and provides the following description of low impact activities in that document:[10]

> *(b) investigations including investigative drilling and excavation;*
>
> *(i) archaeological testing under the Code of practice for archaeological investigation of Aboriginal objects in NSW (DECCW, 2010) or archaeological monitoring undertaken in association with (a)-(h) above to ensure that there is no impact on heritage items*

The instrument of approval also states that:

> *However, where heritage items on the State heritage register, areas of known or expected archaeological potential, … are affected by any low impact activity, that activity is construction, unless otherwise determined by the Planning Secretary, following consultation by the Proponent with OEH (*Office of Environment and Heritage – now Department of Premier and Cabinet [DPC] Heritage*)….*

The potholing works are being conducted for service investigation for utility services. The proposed works would result in neutral adverse impacts to heritage significant fabric and neutral to negligible impacts to significant archaeological resources. As such, these works would be considered Low Impact environmental activities, and can be progressed in advance of the preparation of the overall Construction Environmental Management Plan (CEMP) for the project works.

As such, consultation should be conducted with DPC Heritage for the potholing works at the following State heritage registered stations, where works are also taking place within areas of identified non-Aboriginal archaeological potential:

[10] NSW Planning and Environment, 12 December 2018. *Infrastructure Approval for SSI 8256*. Accessed online at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8256.

- Marrickville Station
- Canterbury Station.

DPC Heritage should also be consulted for potholing works at the Lakemba Station, as potholing works would take place within an area mapped in the ARD as MZ 1 and MZ 2.

Conclusions and recommendations

The proposed works would involve NDD potholing within the curtilages of eight heritage listed railway stations on the T3 Bankstown Line. These works would not result in adverse impacts to heritage significant fabric.

The proposed works would involve NDD potholing within four areas where the potential for State and locally significant archaeological remains have been identified. The proposed works would not likely result in adverse impacts to heritage significant archaeological remains, except at Canterbury Station between Church Street and Hutton Street where the proposed potholing could potentially result in negligible impacts to archaeological remains of a c. 1842 structure associated with the Australasian Sugar Company works (Phase 2). Stations where potholing works would be conducted within archaeologically sensitive areas are:

- Marrickville Station
- Canterbury Station (including between Church Street and Hutton Street)
- Lakemba Station.

These works would be classified as low impact environmental activities under the instrument of approval for the project. As works at Marrickville and Canterbury Stations are taking place within the curtilage of heritage items listed on the State Heritage Register, and works at Lakemba Station would take place in an area mapped in the ARD as MZ 1, DPC Heritage should be consulted to confirm that these works would be considered low impact environmental activities.

Following confirmation that the works are approved as low impact activities, the following recommendations must be followed during the potholing works to help minimise the risk of inadvertent impacts to significant fabric or archaeological remains:

- A program of archaeological monitoring must be conducted during potholing works at:
  - Marrickville Station
  - Lakemba Station
  - Footbridge works between Church Street and Hutton Street in the Canterbury Station precinct
- Archaeological monitoring would adhere to the AMS methodology provided in this document as well as relevant guidelines outlined the ARD for the project
- Significant fabric (such as platform coping or station platform buildings) near to areas of potholing should be protected from splash excavation material during the works. This would ensure that outer surfaces are kept clean during works.
- Following the completion of potholing works, all areas of investigation should be made good to restore the platform surfaces to their original appearance. This would include:

  - Cleaning all asphalt, concrete and brick surfaces that may have been dirtied during works
  - Ensuring that asphalt surfaces are reinstated following the completion of backfilling so that they match surrounding asphalt surfaces
- Potholing locations should not be moved from proposed locations outlined in this document. Should potholing locations be changed, this assessment may need to be revised and consultation with DPC Heritage may need to be repeated prior to works proceeding.
- Potholing works would be undertaken in accordance with the Sydney Metro Unexpected Finds Procedure.
- In the event that significant and intact remains not identified in the ARD or this archaeological assessment are encountered during works, all excavation works would cease, the remains would be protected, further assessment would be undertaken, and DPC Heritage would be notified.
  - If significant archaeological remains are identified which would be impacted by further potholing works, the potholing works may no longer be classified as low impact activities and further assessment, approval, and archaeological investigation would be required.

Please do not hesitate to contact me should you require clarification on any of the information contained in this letter.

Regards,

Jayden van Beek
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