Canterbury Station Catchment and Construction Site

Archaeological method statement for WE38 and the MSB

Prepared for HSEJV
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9 March 2021	9 March 2021

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1 Canterbury Station Catchment and construction site

1.1 Overview

EMM Consulting Pty Ltd (EMM) has been engaged by Transport Smart Infrastructure Consultants (SIC) on behalf of Haslin Stephen Edwards Construction Joint Venture (HSEJV) to prepare archaeological method statements (AMS) for proposed excavation works of the Sydney Metro City & Southwest Sydenham to Bankstown project (the project). The Sydney Metro City & Southwest Sydenham to Bankstown project is a Transport for NSW project.

This AMS has been prepared to guide management of relics, that is, archaeological resources of local or State significance, that may be present in the works corridor on the Canterbury Station Catchment and Construction site (Canterbury site). AMS reports have also been produced for the Marrickville Station and Lakemba Station Catchment sites. This document is live and will be updated with each rail possession to include new construction and archaeological activities; earlier sections relating to the previous possessions will remain in this document.

Project details are provided in the table below:

Project	**Sydney Metro Southwest**
Date	5 March 2021
EMM Project	J210114
Location	Canterbury Station
Track possession	20 and 21 March 2021
Authors	Amelia O'Donnell, EMM Archaeologist and Researcher
Review	Pamela Kottaras, EMM National Technical Leader - Historical Heritage
Excavation Directors	Primary: Fiona Lesley – relics of State significance; and Secondary: Pamela Kottaras – relics of local significance
Client	HSEJV
Client review	N/A

1.2 Background

1.2.1 Purpose of this document

This archaeological management strategy (AMS) has been prepared to manage construction works as impacts to relics may arise during construction phase of the project. It is a response to the Revised Mitigation Measures document approved by the Department of Planning Industry and Environment (DPIE). Specifically, condition NAH12:

> The archaeological research design, including any mitigation measures identified in the Archaeological Assessment and Research Design report, would be implemented (SPIR p.16.13).

This AMS covers construction activities for rail possession WE38 (WE38) confined to the rail corridor, and site preparation activities for the Metro Services Building (MSB), which can take place outside of the rail possession periods.

The archaeological excavation method in this document forms the framework for the identification and recording of relics should they be identified during monitoring or outline the methods if test and salvage excavation has been confirmed as the management measure. Additionally, archaeological resources that may not fit the category of relics, but are considered significant, will also be recorded as per this report. An unexpected finds procedure that addresses Aboriginal heritage will also be apply to the work.

The method statement in this AMS will be updated to reflect each possession prior to the start of the construction and archaeological programs. Undocumented and unexpected finds will be recorded as per the unexpected finds procedure. Recording procedures for each archaeological field activity will remain as detailed in this document.

The methods presented in the AMS are in accordance with the following:

- Artefact Heritage 2018, *Sydney Metro City & Southwest Sydenham to Bankstown Upgrade Historical Archaeological Assessment & Research Design* (AARD, Section 4.0); which forms part of the
- Submissions and Preferred Infrastructure Report 2018 (SPIR);
- Sydney Metro Integrated Management System (IMS) 2020, Southwest Metro – Marrickville, Canterbury and Lakemba Station Upgrades Heritage Management Plan; and
- the updated mitigation measures.

1.2.2 Site location

Canterbury Station is located on Canterbury Road, Canterbury, in the Parish of Petersham, County of Cumberland and sits within the Canterbury-Bankstown local government area. The station area is bounded by Broughton Street to the north, mixed urban tower blocks to the south and Canterbury Road overbridge to the east. The station is accessed via Canterbury Road (Plate 1.1).

The Canterbury Station Catchment works are proposed to occur in the boundaries of:

- Lot 1 DP828270, which includes Canterbury Station and the rail corridor west of the station;
- Lot 5 DP1184346, the Canterbury Road overbridge;
- Lot 11 DP1002980, the rail corridor east of the station; and
- Lots 3 and 21 DP876254, north of the rail corridor.

The Canterbury Station construction site is in the boundaries of:

- Lot 1 DP818683, 15 Close Street, Canterbury, a former bowling club (to be demolished); and
- A small corridor along the eastern boundary of Lot 2 DP818683, which travels south from the above lot to the Cooks River.

1.2.3 Report limitations

This report was prepared with limited time and information. A more detailed interpretation will be completed in the excavation report.

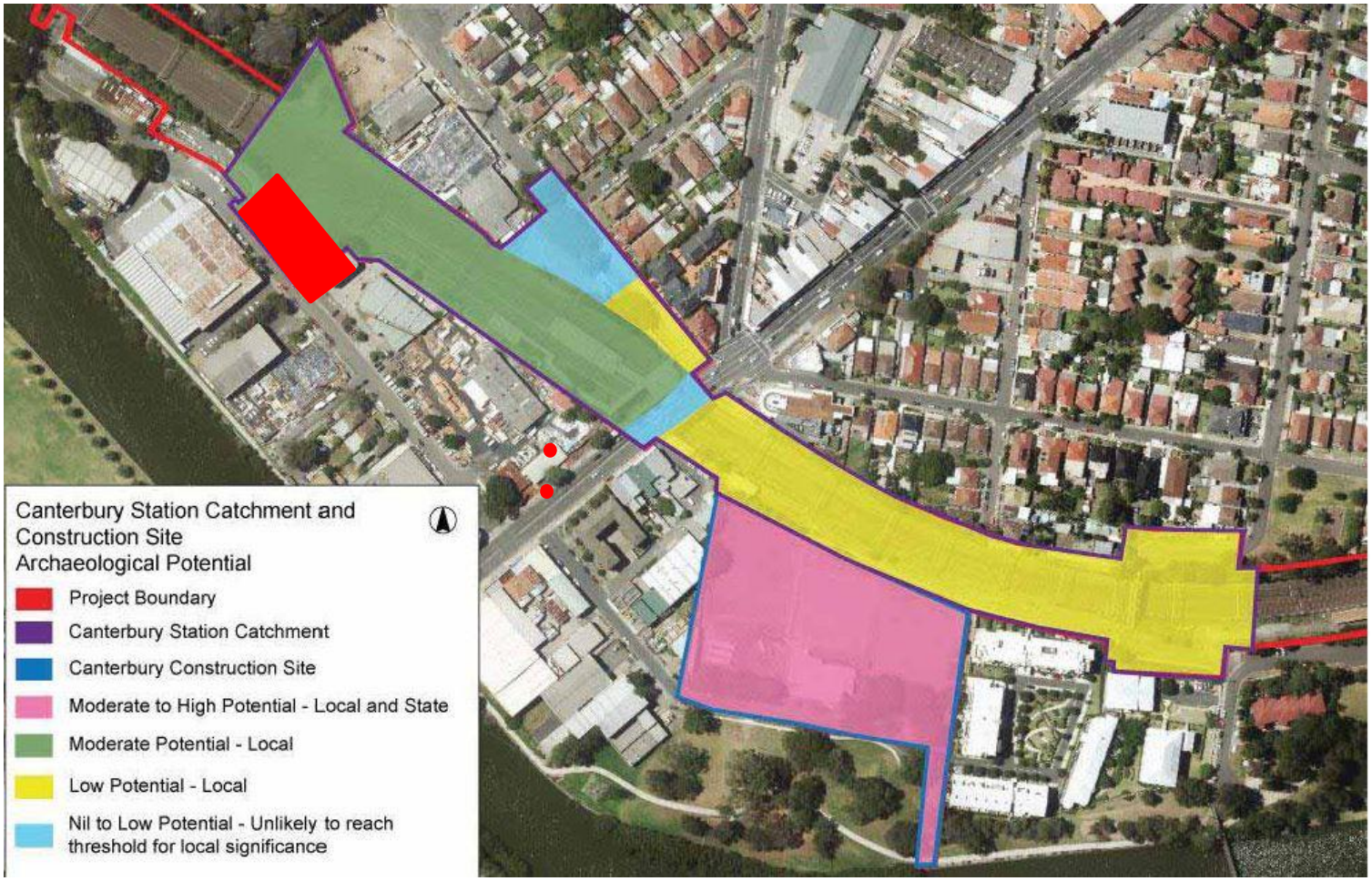


Plate 1.1 **Archaeological potential of the project area. The estimated locations of the proposed lifts are indicated by red dots; the MSB is represented by the red rectangle. Source: Artefact Heritage 2018, Figure 4-22. p.54.**

1.3 Archaeological phases and possible archaeological resources

1.3.1 Summary

Artefact Heritage (2019, pp.142-143) identified potential for the presence of relics and archaeological resources in the proposed Canterbury Station Catchment and Construction Site works. The project area has been divided into five phases with potential, significance, proposed works and management, summarised in Table 1.1. The excavation works associated with the construction of station platforms, tracks, service building, services and utilities and retaining walls as well as clearance of the construction site have been assessed to have potential impacts to State and locally significant archaeological resources associated with the five identified historical phases of the site.

This AMS fulfils the requirement of NAH12 in relation rail possession WE38. Additional archaeological management will be required for future construction work and will be added to this document.

1.3.2 Phase 1 (1788–1841)

Land granted to the Reverend Richard Johnson after which it was cleared, grazed and farmed. Archaeological features that would be present with this type of land use would be:

- tree boles;
- post holes denoting fence lines and sheds;
- field drains; and
- isolated artefacts.

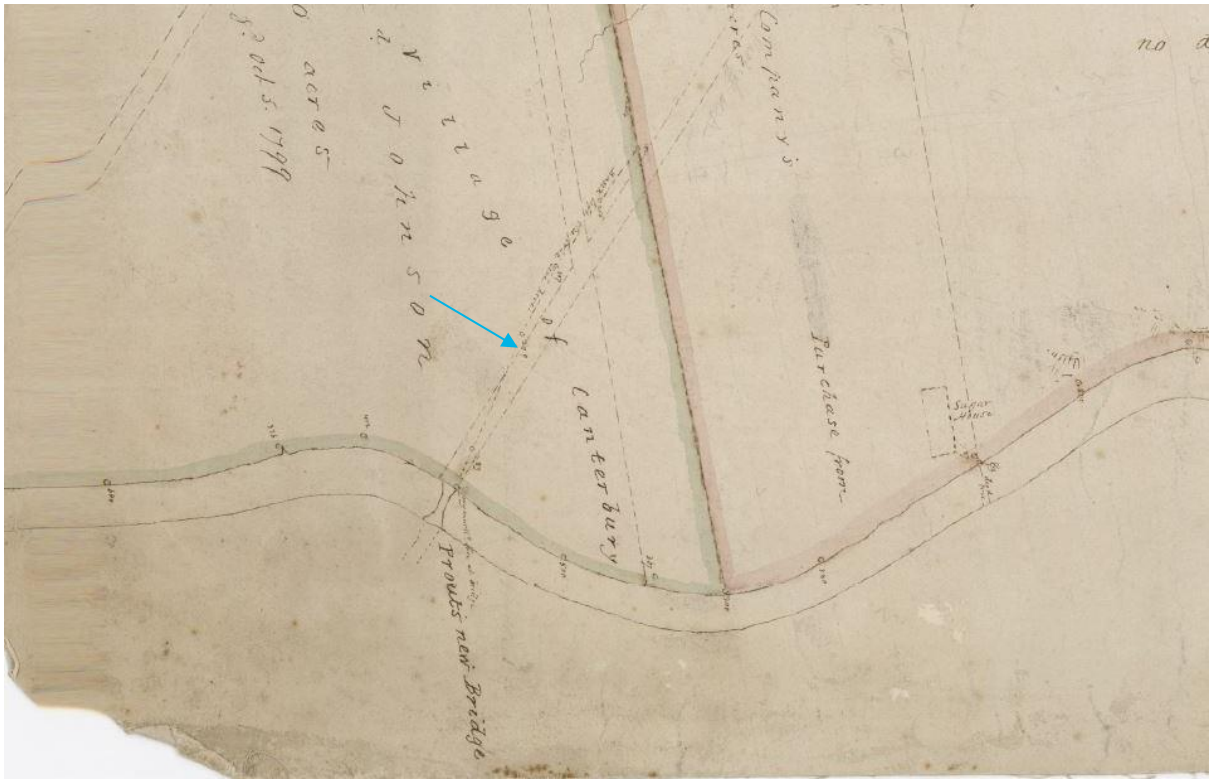


Plate 1.2 Detail from an undated plan of the Canterbury Estate (Manuscript cadastral map), SLNSW.

Plate 1.2 is a detail from an undated map of the Canterbury Estate (*Manuscript cadastral map of allotments along the Cook's River near the village of Canterbury, New South Wales*) from the State Library of NSW online. Prouts Bridge has been built as it is labelled as "Prouts new bridge" and it is shown as a solid line. The line of what is now Canterbury Road is dashed (blue arrow) suggesting that it has been surveyed in but not formalised. To the right (east), the dashed lines of the "Sugar House" are visible but since other buildings on this map are shown with solid lines and labelled, this map shows the plans for the road and for the Sugar Mill (also referred to as the Sugar works). This information would date this plan to just before 1841 when the mill was built, and the village sprung up around it. No structures are shown in the project area to the west of the road alignment. Refer also to Section 3, Plate 3.2.

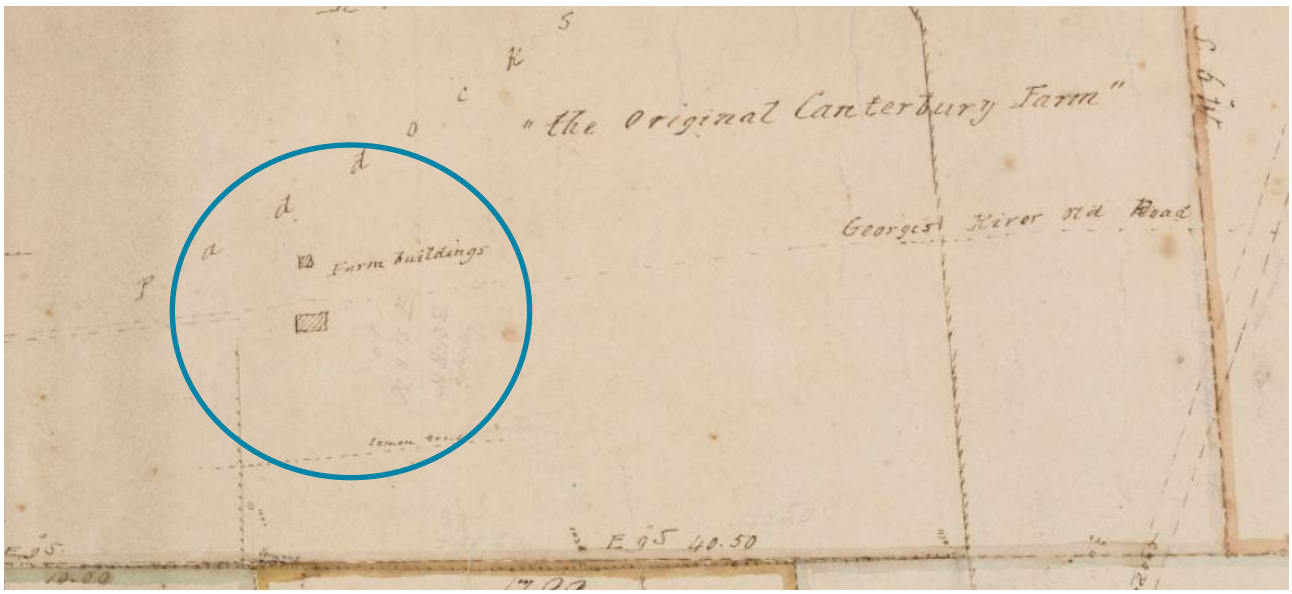


Plate 1.3 Detail from another section of the Manuscript cadastral map, with drawings of existing farm buildings (circled).

1.3.3 Phase 2 (1841–1855)

The village of Canterbury is established in the period between 1841 and 1855, and the Australasian Sugar Company built its factory on the banks of the Cooks River. Other developments in Canterbury at the time included timber cutting, wool? washing and mining. The 1841 W H Wells survey plan indicates that slab huts for workers of the sugar mill were built inside what is now the rail corridor. The huts are present on the 1843 (Plate 1.4) and 1850 (Plate 1.5) plans of the area.

The following relics associated with the Australian Sugar Company may occur in the project area:

- outbuildings including footings, timber slab remnants, underfloor deposits, post holes, artefacts, cess pits, wells, cisterns and yard surfaces;
- landscape modifications;
- fence lines;
- drains; and
- structural features.

Evidence of small-scale mining activities may survive as:

- quarries for local stone.

Evidence of farming activities may survive as:

- post holes for fences and sheds;
- brick or paved yard surfaces;
- field drains; and
- isolated artefacts or artefact scatters.

Evidence of residential cottages may survive as:

- wells and cisterns;
- footings; and
- refuse pits.

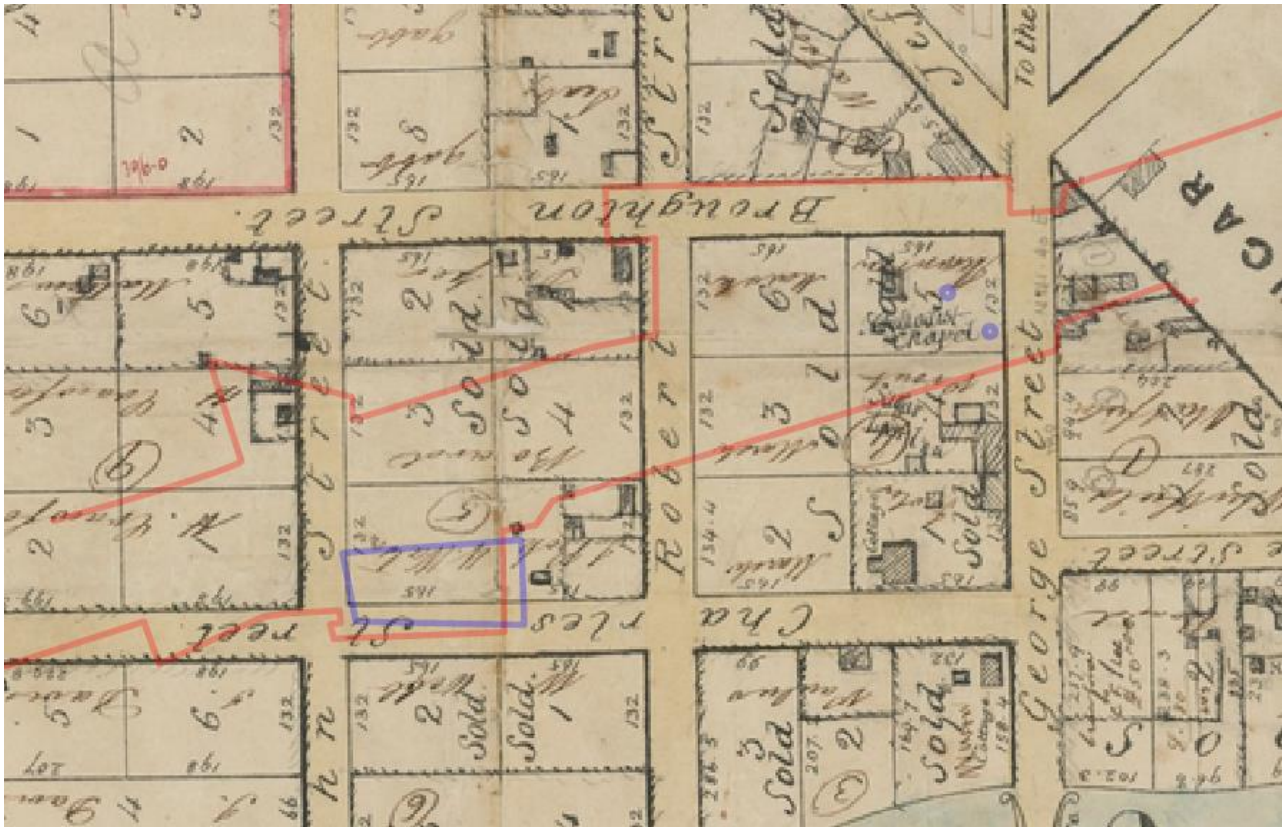


Plate 1.4 Detail of the 1843 subdivision plan of the village of Canterbury with the project boundary, lift locations and SMB overlaid.

1.3.4 Phase 3 (1855–1895)

As per Phase 2 with the addition of the Blackett and Co Canterbury Engineering Works, which includes:

- outbuildings;
- landscape modifications;
- fence lines (post holes?);
- drains;
- and other structural remains.

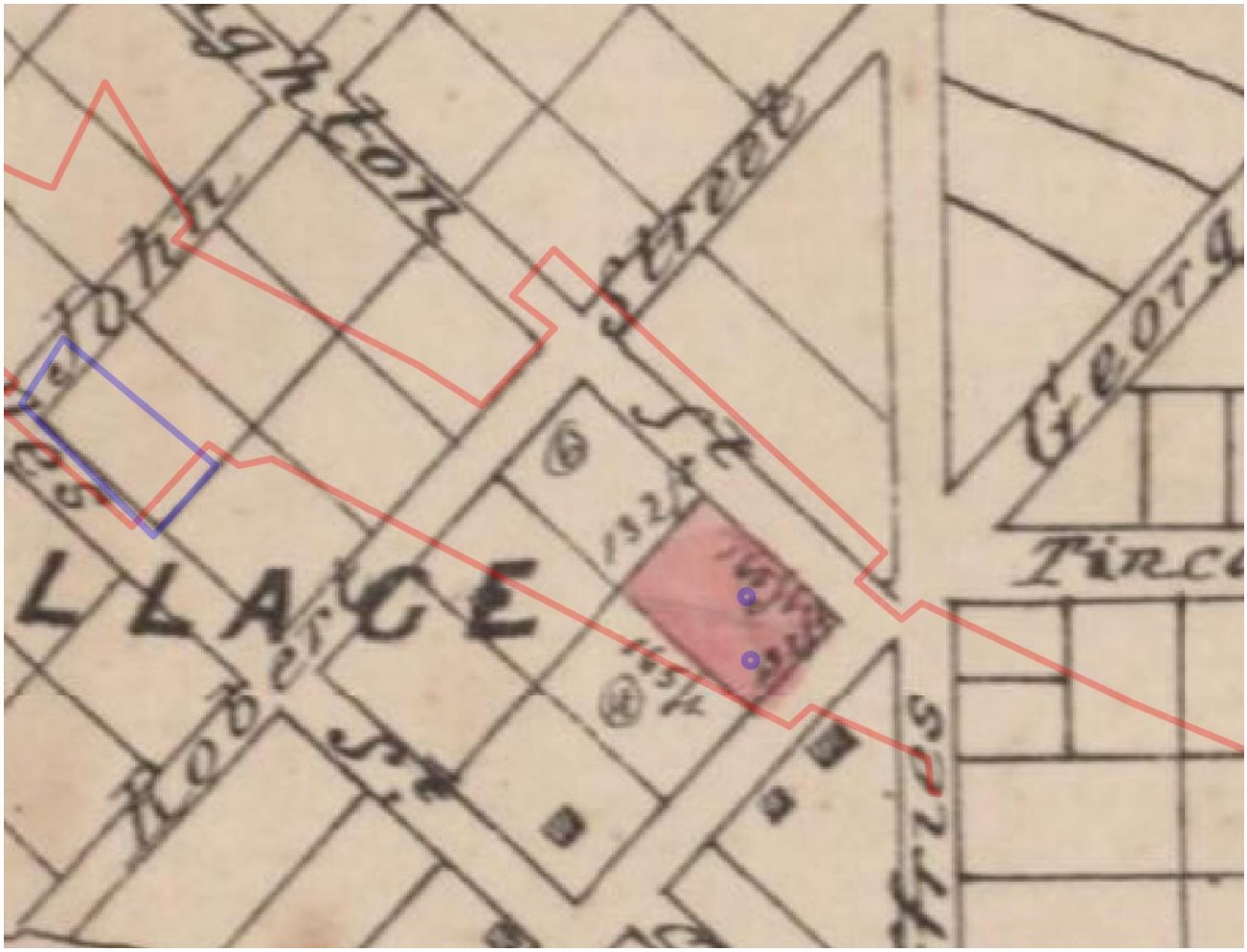


Plate 1.5 **The project design over a detailed section of the c1850 plan of the Canterbury estate and village**

1.3.5 Phase 4 (1895–1943)

Land was resumed for Canterbury Station, built 1895. Dwellings were part of the resumption, therefore archaeological resources relating to residential use may be present. During this time, the Australian Sugar Company was converted to the Canterbury Bacon Factory and later 'Hutton's Bacon Factory', a process that may have removed early outbuildings to the west of the main buildings.

Evidence of this phase may survive as:

- building platforms;
- rails and timber sleepers;
- refuse pits;
- storage sidings;
- post holes;
- brick footings;
- former floor surfaces; and
- early infrastructure such as ceramic service pipes, brick drainage pits, electrical conduits and pits and stanchion bases.

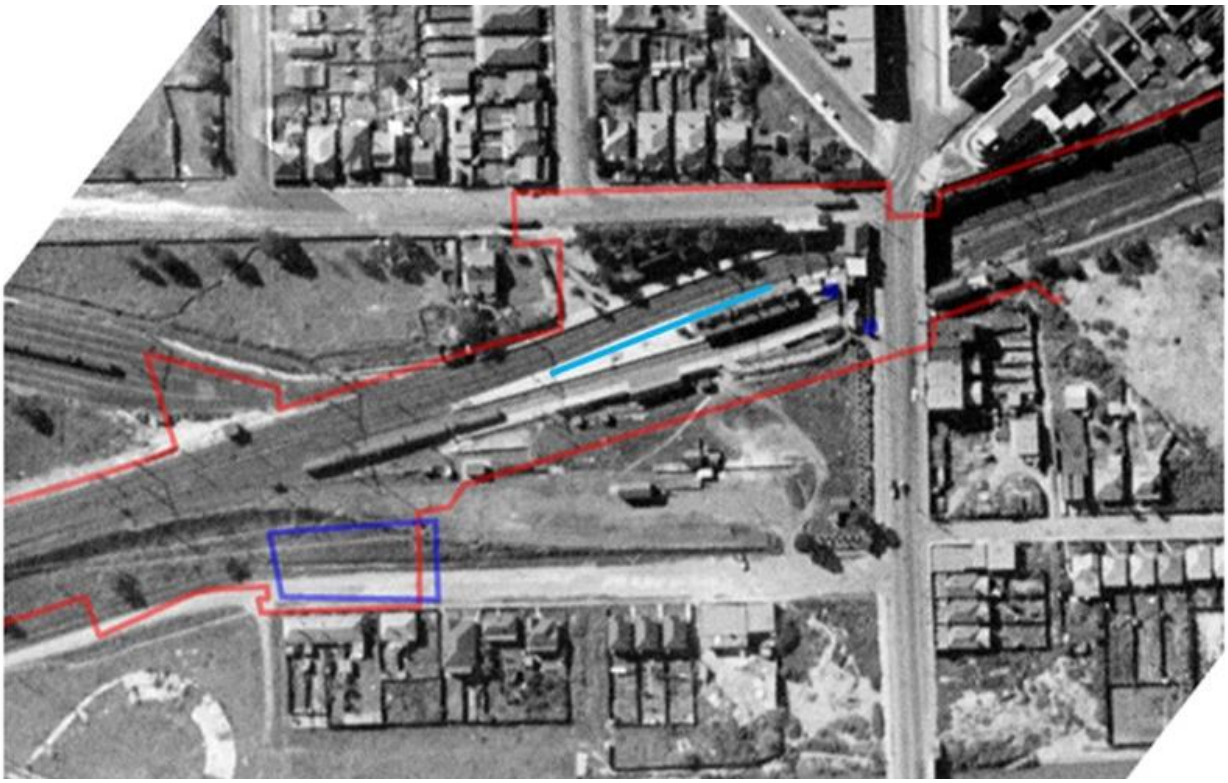


Plate 1.6 The outline of the project scope for WE38 and the SMB overlaid on the 1943 aerial photograph accessed from SixViewer.

1.3.6 Phase 5 (1943–present)

Urban development and rail upgrades (Plate 1.6). Archaeological evidence from this phase may include industrial features such as utilities and drainage. These items would not be relics.

1.4 Evidence from the geotechnical testing

1.4.1 Introduction

Geotechnical testing has been undertaken in the project area (Metron), which has been incorporated into this analysis to predict the level of the preservation of archaeological resources.

Testing was undertaken in the vicinity of location of Lift 1 (SSC-SBH161 and SSC-SBH165); the location of Lift 2 was not tested, with the closest sample being SSC-SBH156 (Plate 1.7).

Geotechnical sampling in the location of the MSB was undertaken with SSC-CBH004, BH065, BH067, BH068 and BH069 (Plate 1.8).

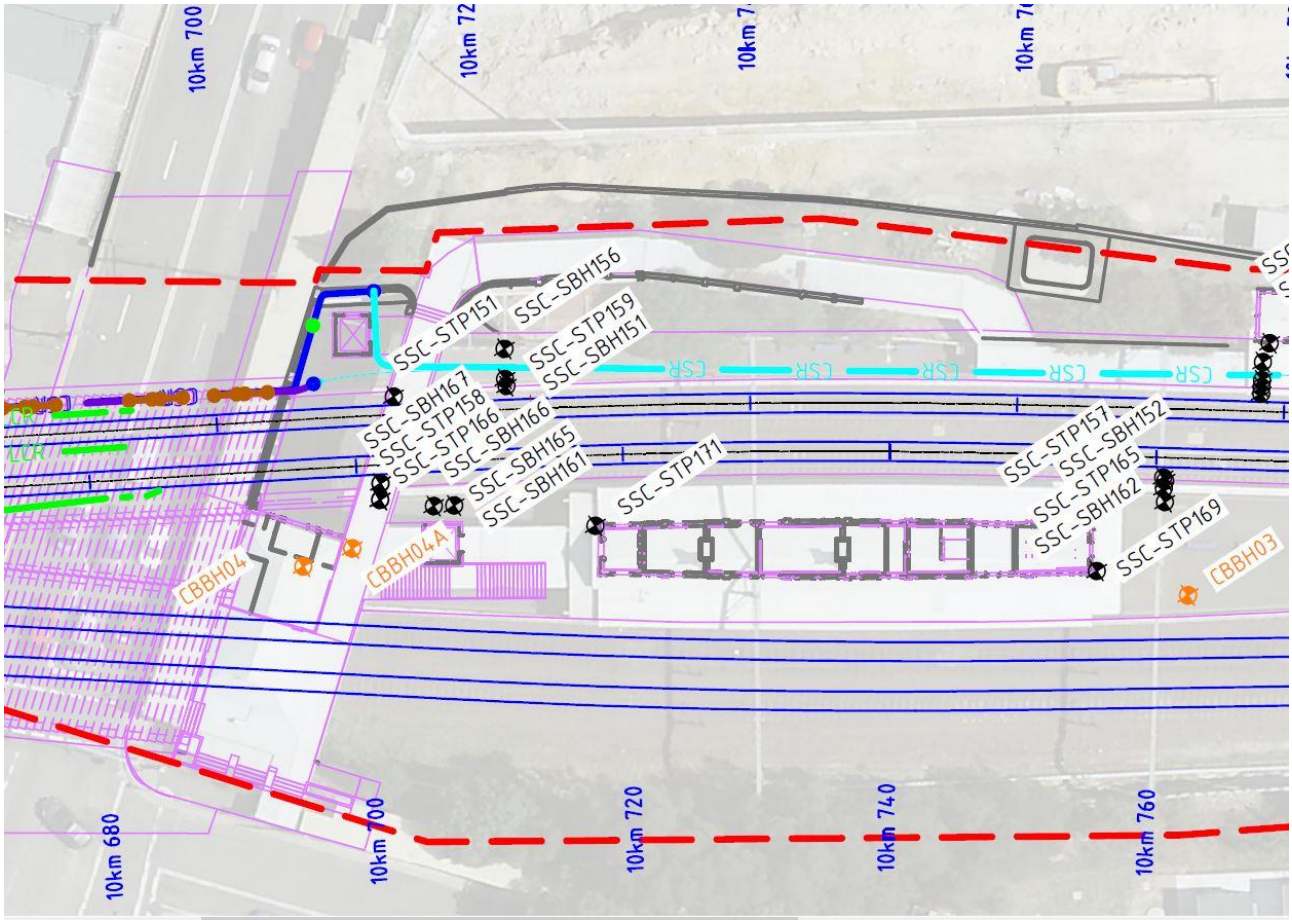


Plate 1.7 Canterbury Station Platform geotechnical testing sites. Source: Metron T2M.

Plate 1.8 Geotechnical testing locations at the future MSB site. Source: Metron T2M

1.4.2 Results

i WE38 scope

SSC-SBH161 was sampled using a machine driller. It was located approximately 2 m to the north of the proposed location of Lift 1 yielded asphaltic concrete for 50 mm and then a fill of gravelly sand, which was fine to coarse-grained, brown in colour and with sandstone cobbles. At 1.8 m, the deposit becomes a fine to coarse grained sandstone without the sandstone cobbles. Coring was terminated at 1.95 m.

SSC-SBH165 yielded similar results to the SSC-SBH161, using the same drilling technique at the same distance from the proposed lift area and to the east by approximately 2 m. Fine to course-grained gravelly sand fill to 1.8 m. Coring was terminated at 2.3 m.

SSC-SBH156. located approximately 10 m west of proposed Lift 2, resulted in a fill of gravelly sand, which was fine to coarse-grained, brown in colour with sandstone, to 0.5 m. From 0.5 m to 1 m the deposit was fine to coarse-grained sandstone, highly weathered and light brown. This deposit is not described as “fill” and is identified as something else by the key, possibly residual soil (refer to Appendix D).

ii SMB scope

SSC-CBH004 was logged in 2019. The results show that sandstone was reached at 2 m above which sits sandy clay, clayey sand with ironstone gravel. The top 0.4 m has been labelled as “fill” consisting of gravelly sand, which is fine

to medium grained, dark brown in colour, fine to coarse grained sub-angular to angular gravel, traces of brick fragments were identified in what is described as residual soil.

BH065 was extracted by pushtube revealing a brown-grey gravelly sand, fine to coarse-grained. This deposit was interpreted as fill comprised of ballast and road base and extended to 2.4 m deep. Between 2.4 m and refusal at 2.6 m, the description is of sandy clay, also interpreted as fill.

BH067 was extracted by pushtube, which found that the top 0.7 m described as “fill” comprised of gravelly sand, in a dark brown matrix of coarse gravel and clay to 0.2 m, over fine to brown medium angular gravelly sand with fine to coarse gravel. The deposit includes trace sandstone fragments.

BH068 was extracted by pushtube, which showed “fill” to a depth of 2.8 m. From a depth of 1.3 m to 2.8 m, the fill comprises low plasticity sandy clay with black, red and brown angular gravel. This soil type includes brick, sandstone and road base to a depth of 2.8 m, over residual soil.

BH069 was extracted by pushtube. The results of this test are consistent with the BH068, in that the top 0.4 m is a fill comprised of ballast, which is interpreted as being rail related. At 1.3 m, the deposit is a fill of sandy clay with low plasticity in black, red and brown in angular gravel fill. Brick, sandstone and road base was also found in this core. The lowest fill deposit sits over residual soil.

1.4.3 Interpretation and potential

i WE38

The results from the geotechnical tests around the proposed lifts suggests disturbance through the creation of fill either for the village or for the railway. Both proposed lifts are in locations that were the backyards of cottages captured in the 1843 plan (Plate 3.3 and Plate 3.6). The results are consistent with what would be expected of yard surfaces, but also of undeveloped land that is underlain by sandstone.

The potential for archaeological resources, including relics, to survive in WE38 is considered to be **low**. Despite the possibility of yard surfaces and outdoor structures that may have existing from the village phases (Phase 2 and Phase3), later developments such as the railway and residential expansion, is likely to have disturbed intact evidence of these earlier phases. The planned works for the lift well excavations are highly localised and may not yield clear information, even if it survives.

ii MSB

The results of geotechnical testing in the location of the proposed MSB indicates the existence of earlier structures. Brick and sandstone fragments were recovered from the top 2.8 m of the ground. Road base was also recovered, which may suggest leveling of the ground when the land was resumed for the railways.

Given that the 1843 (Plate 3.6) plan captures structures in the immediate area, and cottages only a few metres away, it is possible that the results are of in situ archaeological resources rather than a result of leveling activities.

The potential for surviving archaeological resources and relics in the location of the propose MSB is considered to be **moderate to low resulting from the construction of the rail line and installation of the sewer pipe**. After the railways resumed this land, very little development occurred, and the space remained free of structures. Vegetation was planted and gravel was laid down to create a driving surface but impacts prior to these activities are not clearly understood. The results of the geotechnical tests indicate that archaeological resources may be present. Archaeological monitoring during the initial excavation will determine the level of archaeological preservation in the location of the proposed MSB and therefore the archaeological management that needs to be applied.

Table 1.1 summarises the AARD with respect to archaeological potential and significance and assigns management measures based on the potential, significance and impacts.

Table 1.1 Canterbury Station archaeological management

Phases	Land use	*Significance* & Potential	Potential relics / significance	Potential impacts	Proposed mitigation
1: 1788–1841 Early settlement	• early land grants • land clearance • farming • Canterbury Farm	*Unlikely to reach the threshold for local significance* Nil to low	• features associated with land clearance eg tree boles; • post holes; • drains; and • isolated artefacts.	Excavation for the construction of new station platforms, station service building, retaining wall, tracks, services, utilities, and fencing. Clearing and grubbing of the construction site.	Unexpected Finds Procedure
2. 1841–1855 Village of Canterbury and Australian Sugar Company	• establishment Canterbury and Australian Sugar Company works and associated residential settlement • rural subdivision • country estates • small scale industry	*State (Potentially)* Moderate to high	• structural remains associated with Sugar Company works; • structural remains associated with early cottages; • footings; • underfloor deposits; • post holes; • cess pits, wells, cisterns; • artefact deposits; • yard surfaces; and • small scale mining activities.	Excavation for retaining walls, tracks, services, utilities, and fencing. Clearing and grubbing of the construction site.	Salvage excavations

Table 1.1 Canterbury Station archaeological management

Phases	Land use	*Significance* & Potential	Potential relics / significance	Potential impacts	Proposed mitigation
3. 1855–1895 Development of Canterbury	• closure Sugar Company works • further subdivisions • development town • public buildings	*Local (potentially)* Moderate to high	• structural remains associated with early cottages; • structural remains associated with Blackett and Co Canterbury Engineering Works; • footings; • underfloor deposits; • post holes; • cess pits, wells, cisterns; • artefact deposits; • yard surfaces; and • landscape modification.	Excavation for Canterbury Station Catchment and construction site clearing works	Salvage excavations
4. 1895–1943 Canterbury Station	• land resumed for railway • construction of railway (completed 1895) • railway upgrades • Canterbury Bacon Factory	*Local (potentially)* Moderate	• remains of early railway construction and early railway buildings; • rails and timber sleepers; • refuse pits; • drains; • former race platform and retaining wall; • storage sidings; and • infrastructure and utility services.	Excavation for Canterbury Station Catchment	Test/Salvage excavations
5. 1943–Present Urban Development	• railway upgrades • industrial, commercial and residential development	*Unlikely to reach the threshold for local significance* Moderate to high	• remains of construction upgrades; • utility upgrades.	Excavation for Canterbury Station Catchment	Unexpected Finds Procedure

2 Heritage significance

2.1 The significance framework

In NSW, historical value is ascribed to buildings, places, archaeological sites and landscapes modified in the Australian historical period for purposes other than traditional Aboriginal use. The assessment of heritage significance is based on the Burra Charter (Australia ICOMOS 2013) and further expanded upon in *Assessing Heritage Significance* (NSW Heritage Manual Heritage Office 2001). The heritage manual lists seven criteria to identify and assess heritage values that apply when considering if an item is of state or local heritage significance, which are set out in Table 2.1. The result of the assessments of significance may determine that an individual component does not meet the threshold for local or State significance as an individual item, but that it does contribute to the significance of the cultural landscape.

The criteria against which heritage significance have been assessed are reproduced in Table 2.1. The assessment of relics is hypothetical as their existence as intact and substantial sites is predicted.

Table 2.1 NSW heritage assessment criteria

Criterion	Explanation
a)	An item is important in the course or pattern of NSW's (or the local area's) cultural or natural history (Historical Significance).
b)	An item has strong or special association with the life or works of a person, or group of persons of importance in NSW's (or the local area's) cultural or natural history (Associative Significance).
c)	An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area) (Aesthetic Significance).
d)	An item has a strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons (Social Significance).
e)	An item has the potential to yield information that will contribute to an understanding of NSW's (or the local area's) cultural or natural history (Research Significance).
f)	An item possesses uncommon, rare or endangered aspects of NSW's (or the local area's) cultural or natural history (Rarity).
g)	An item is important in demonstrating the principal characteristics of a class of NSW's (or the local area's) cultural or natural places or environments (Representativeness).

Source: *Assessing heritage significance* (NSW Heritage Office 2001, p.9).

The project has the potential to impact on two items that are listed on the State Heritage Register (SHR) – Canterbury Railway Station Group (01109) and the Old Sugarmill (00290).

While the listing for the Canterbury Railway Station Group does not include archaeological potential, the station and rail lines were built over cottages that were built during the early growth of the Canterbury village.

The Old Sugarmill is listed with 'great' archaeological potential with the ability to inform about early occupation and industry in NSW. The statements of significance for each site are reproduced below.

2.2 Canterbury Railway Station Group

2.2.1 Statement of significance

Canterbury Railway Station possesses historical significance as it is a station on the Sydenham to Bankstown Line which was constructed to relieve congestion on the Main South Line as well as to encourage suburban development and the growth of agriculture in the late 19th and early 20th century. The main platform building represents the period of transition from the boom time of the 1880s to the standardisation of NSW railway building design from the 1890s onwards.

Canterbury Railway Station is significant at the state level as the Platform 1 Building demonstrates the high level of aesthetic design of the pre-1900 standard railway buildings, which included the use of polychromatic brickwork, decorative dentil coursing, ornate awning brackets and carved bargeboards. This platform building is relatively intact and is representative of a small group of such ornate platform buildings including Marrickville and Belmore on the Bankstown Line.

The Canterbury signal box is of historical significance as it is representative of the development of railway signalling technology in the first decades of the 20th century. As it was is [*sic*] intact internally it is capable of providing information about the workings of a signal box of this era.

State Heritage Register Item 01109; updated 18 November 2010

2.3 Old Sugarmill

2.3.1 Statement of significance

The Old Sugarmill at Canterbury is of State significance for its involvment [*sic*] in the development of the sugar industry and CSR in Australia, and for its role in the industrial development of the locality of Canterbury - both in its original use as a sugar mill and for its later uses as a foundry, a butter factory and in the manufacture of processed foods. A five-storey sandstone building erected beside the Cooks River in 1841, it is believed to be the oldest surviving industrial building in the Sydney region. Statewide it is a rare example of a pre-1850s industrial building which has retained much of its external form. It is also of State aesthetic significance for its landmark appearance on the river and its symmetrical Georgian styling. It has scientific significance for the site's archaeological potential to reveal information about early industry in New South Wales. Although the Old Sugarmill was a ruin for many years and was further damaged by fire in 1996, it has been recently restored and adapted into a new use as an apartment block within a new residential complex.

State Heritage Register Item 00290; updated 27 March 2007

2.4 Assessment of sites in the development footprint

Canterbury Station is identified as an item of state heritage significance on the State Heritage Register (Canterbury Station Group SHR 01109). The Canterbury Station Group is significant as part of the Sydenham to Bankstown Line and the intact nineteenth century intact platform and early twentieth century signal box are acknowledged to have aesthetic significance as representative examples of historical transport infrastructure.

Artefact Heritage (2018, p.76-77) have produced an assessment of significance for the potential archaeological relics of Canterbury Station and the project boundary, which is summarised below in Table 2.2.

Table 2.2 Assessment of significance

Criterion	Assessment
a) Historical	The potential archaeological resources associated with the Canterbury Sugar Works and residential and industrial activities of Phases 2 and 3 may contribute to the understanding of the historical development of Canterbury. If substantial archaeological resources associated with these phases are found within the project area, they may fulfil the criteria for **State** significance. The development of the village of Canterbury follows a trajectory that played out in many of Sydney's proximal estates – from a colonial perspective, initially land grants that were farmed, which were rapidly subdivided to create housing for workers at the Sugar Works. The resulting village primarily comprised simple cottages of a working-class vernacular. Archaeological resources related to the village would fulfil the criteria to be classified as relics at a **local** level.
b) Associative	The potential archaeological resources of Phase 2 are associated with the State significant Canterbury Sugar Company works, which was influential in the growth of Canterbury. Further the site is associated with prominent Sydney merchant Robert Campbell. The potential archaeological resources of Phase 4 are associated with the development of the Sydenham to Bankstown Line. Moreover, Canterbury station is associated with builder J.J. Scouller and the Canterbury racecourse. The resource fulfils the criteria at a **local** level and are therefore classified as relics.
c) Aesthetic	It is unlikely archaeological resources of former railway infrastructure will meet the criteria for aesthetic or technological significance. It is possible the archaeological resources of the sugar works and Blackett and Co Canterbury Engineering Works have the potential to represent technological advances in the respective industries and be of technological significance. The resource associated with the former railway infrastructure is unlikely to meet the threshold for local or State significance, nor would they be considered relics as they are 'works', that is, infrastructure. Evidence of the sugar works and the engineering works is likely to meet aesthetic value at a **local** level and would therefore be classified as relics.
d) Social	The growth of the village of Canterbury is of interest on a social level in that a spatial study of the archaeological resource may reveal evidence of the growth of the place, living and working conditions and the relationship of the residents to the Sugar Works. This value, however, cannot be tested on the SMSW project due to the restricted locations of impact. If social values of the early growth of Canterbury and its relationship to manufacturing are evident in the archaeological resource, they would be of **local** significance.
e) Research	The potential archaeological resource associated with early to mid-nineteenth century residential and industrial (sugar mill and mining) activities could offer significant information regarding the early history of Canterbury and its people. Similarly, archaeology associated with the later nineteenth century development of Canterbury, including the iron works, could contribute information about the lifeways and living conditions of the local population as well as provide insights into industrial practices. The potential archaeological resources related the development of rail infrastructure would contribute to additional information not readily available through historical sources. It is unlikely archaeological resources of Phase 1 will fulfil the criteria as the phases are likely to be heavily disturbed. Archaeological evidence of the residential and industrial past of the project area is of **local** significance at least, therefore would be relics.
f) Rarity	Archaeological sites representing residential and industrial uses are rare in NSW.
g) Representativeness	Evidence of life in the early phase of the village of Canterbury would be representative of life in the colony at the juncture of large estate to working-class village.

2.4.1 Statement of significance

The Canterbury Station Catchment has the potential to contain relics of **local** and **State** significance.

The site has a moderate to high potential to hold archaeological resources associated with the mid-nineteenth century Canterbury Sugar Company works. Evidence of the sugar mill would have high research value and the connection of the Mill to Campbell and the development of Canterbury means relics may be of State significance.

The presence of relics related to the early phase of the village of Canterbury would be of **local** significance for their potential to demonstrate the living conditions of the working-class families who moved to work at the Sugar Works. Their lives may be captured in the archaeological resource, which would provide information about the expansion of an area of the colony that began its historical development as large land grants and swiftly transformed to a village that serviced the Sugar Works.

Archaeological resources of the later nineteenth century residential and industrial activity may contribute to understandings of the development of Canterbury and the lives of the local people and may be of local significance. Archaeological resources associated with the development of the Sydenham to Bankstown railway line, station and Canterbury racecourse has the potential to meet the criteria for local heritage significance.

It is unlikely that significant archaeological remains associated with the first settlement phase Canterbury survive intact within the project boundary. Archaeological remains of phase five are not likely to meet assessment criteria.

2.5 Archaeological significance assessments

This heading is a place holder. If relics are found during the project, they will be assessed in the excavation report and here during further iterations of this document.

3 Proposed works

3.1 WE38 Possession

The approved works associated with the construction of the new Canterbury Station (Possession map WE38; architectural design plans and service plans; Appendix A) will involve clearing, grubbing, fencing, stockpiling and material laydown, as well as the construction of:

- excavating pits for lifts 1 and 2
- station platforms inside the rail corridor;
- a station service building;
- a retaining wall on the southern boundary of the station and rail corridor;
- the addition of Metro Southwest running tracks;
- installation of drainage pipes;
- single grate drainage pits;
- gas pipelines and CSR utilities; and
- installation of a segregation fence on the northwest boundary of the rail corridor.

3.2 WE38 Anticipated impacts

Construction work scheduled for rail possession WE38 will occur in an area of moderate potential (Plate 1.1). However, based on available maps and plans, the potential for relics in the locations of proposed lifts 1 and 2 is low. Other proposed construction activities will include working in ground that has been historically trenched for services installations and the installation of CSR utilities in the existing platform 0 (indicated by the blue line in Plate 1.6). For reference, a snapshot of the current work boundary and the new station design is shown in Plate 3.1. The red lot is the only one that is coloured on the original plan, which does not come with a key, and the plan does not show structures on the lot. Being singling out on the plan may indicate that it had been/was going to be resumed for the rail station.

The earliest plan identified for this project is the *Manuscript cadastral map of allotments along the Cook's River near the village of Canterbury*, dated to between 1803 and 1823 (Plate 3.2). Regardless of the date, this plan is early and shows grants, the alignment of the "New Canterbury Road" and the location of the "Sugar House", which is shown as a dotted rectangle; elsewhere on the plan (not shown here), existing buildings are shown with solid lines. This representation of the Australasian Sugar Company suggests that the plan is dated to the late 1830s or very early in 1840 as the factory was being built in that year.

In 1843 the lot that was eventually resumed for the railway station had been built on as was the property directly adjacent to the south-west (Plate 3.3, *Plan of the Village of Canterbury, part of the Canterbury Estate, on Cook's River, Immediately adjoining the Australian Sugar Company's Establishment to be sold at Auction by Mr. Stubs on Wednesday next, the 31st of May 1843*). A blue polygon indicates the estimated location of the railway station and the construction activities proposed for rail possession WE38.

This plan also suggests that the potential for intact relics in the form of building fabric is low, as the buildings are on either side of the rail line. Nevertheless, yard surfaces may have accumulated in the time that the buildings existed, although the concentration of archaeological data in this location is likely to be lower than in other areas closer to more substantial buildings such as the “Cottage” to the left.

The installation of CSR conduits in the station platform will be achieved by trenching into the platform to approximately 600 mm deep and 800 mm wide. It is anticipated that the internal structure of the platform is fill with little archaeological significance. Nevertheless, an archaeologist will be present to inspect the work as it proceeds.

Overall, significant impacts are not anticipated for this WE38 phase of the construction program.

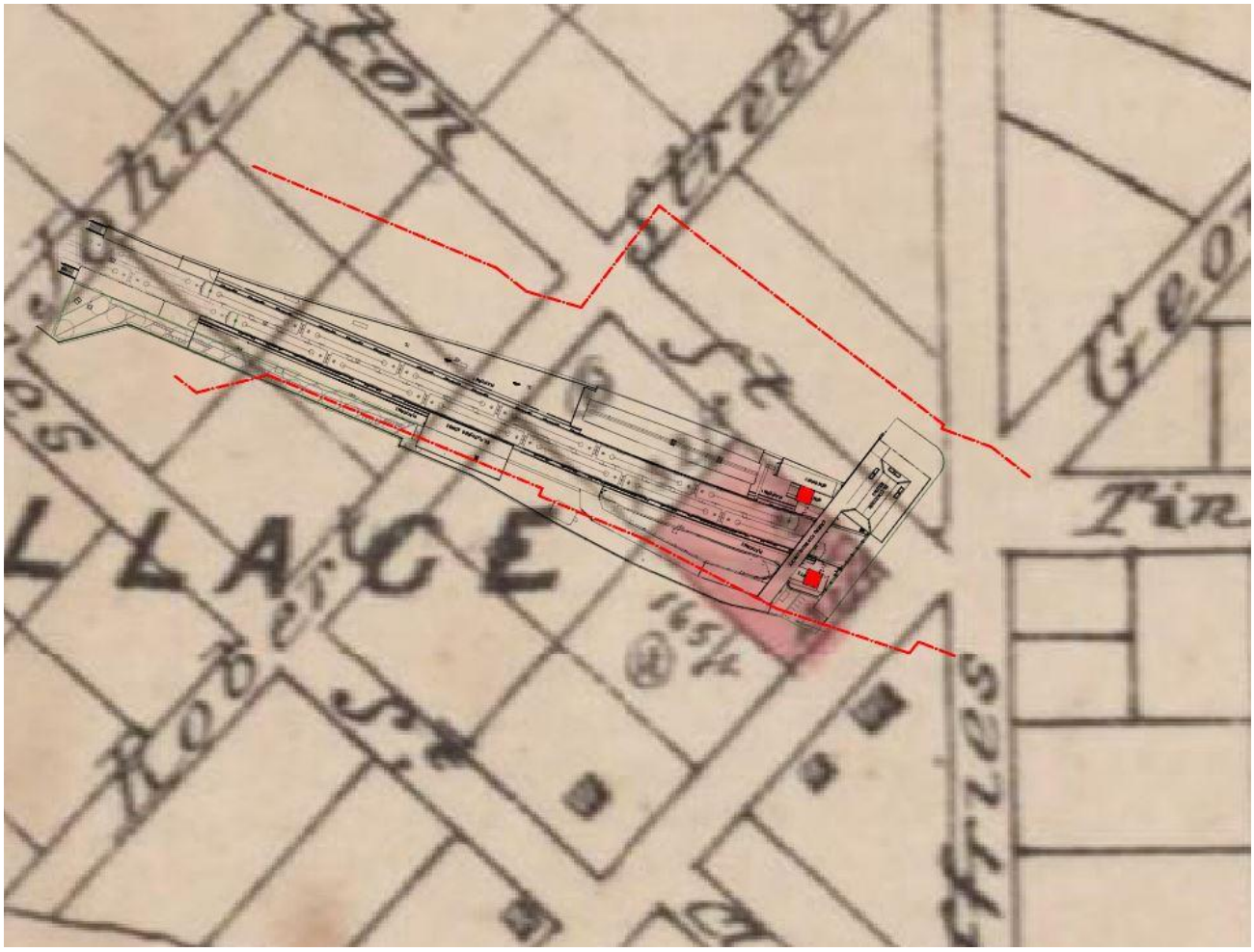


Plate 3.1 Overlay of the project design related specifically to possession WE38; the red squares are the locations of the proposed lifts 1 and 2. Base plan is the c1850 “Sketch showing Canterbury estate and Canterbury Village”.

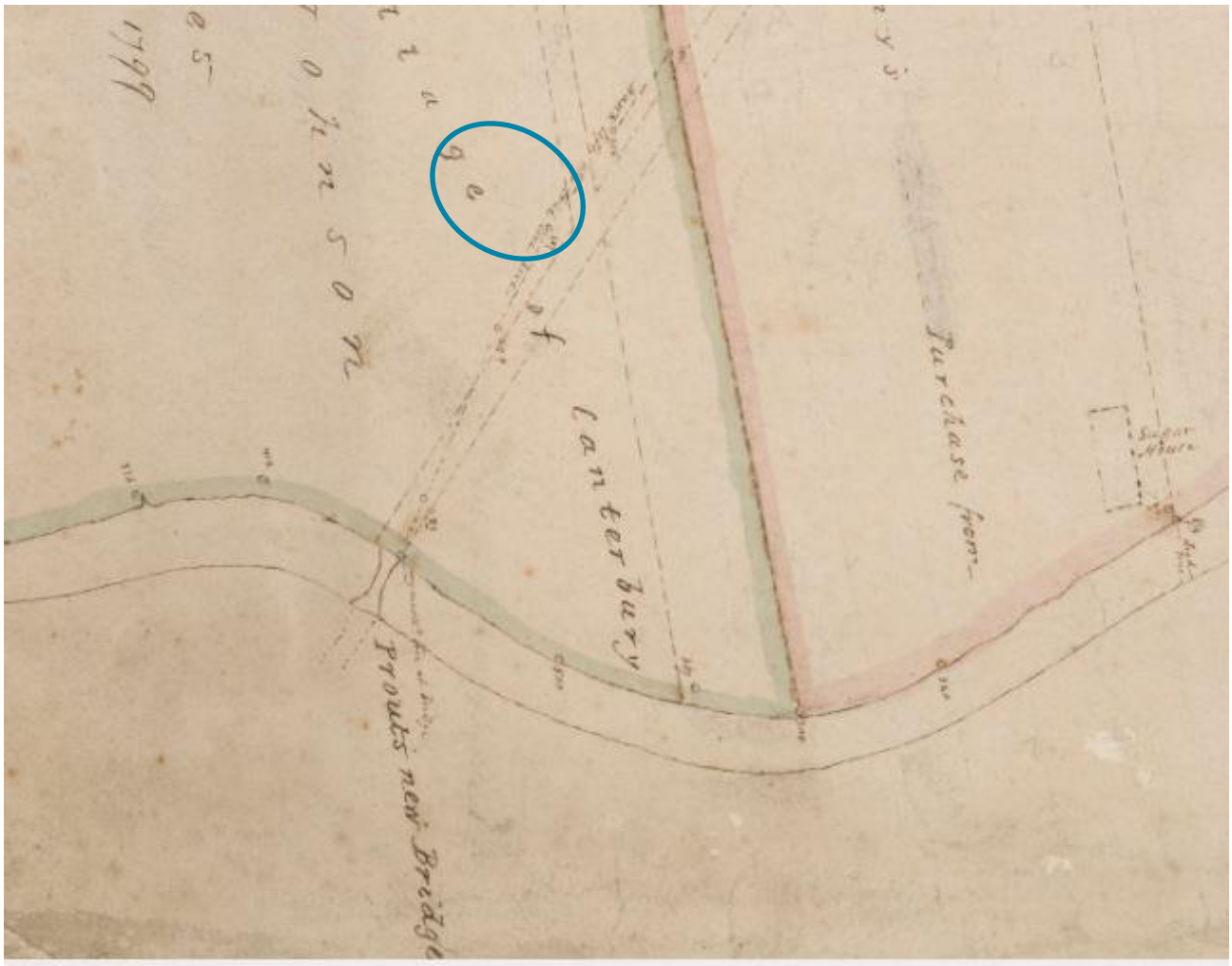


Plate 3.2 **"Manuscript cadastral map of allotments along the Cook's River near the Village of Canterbury New South Wales". The approximate location of Canterbury Railway Station is indicated by the blue polygon.**

Plate 3.3 **1843 "Plan of the Village of Canterbury". The blue polygon indicates the general area of construction activities during possession WE38.**

3.3 Metro Services Building

In addition to the works scheduled for possession WE38, HSEJV proposes to start construction work for the MSB, south-west of the railway station (Plate 1.1) outside of possession.

Project activities associated with the construction of the MSB include excavation to level the site for a building platform as well as a large number of trench excavations to lay CSR, stormwater pipes and pits, sewer pipes (Appendix C cross sections and Plate 3.4). Existing disturbance in the MSB area includes a sewer pipe approximately 5 m down (HSEJV *pers comm*) and the potential for activities that would have been carried out by the residents of the village of Canterbury.

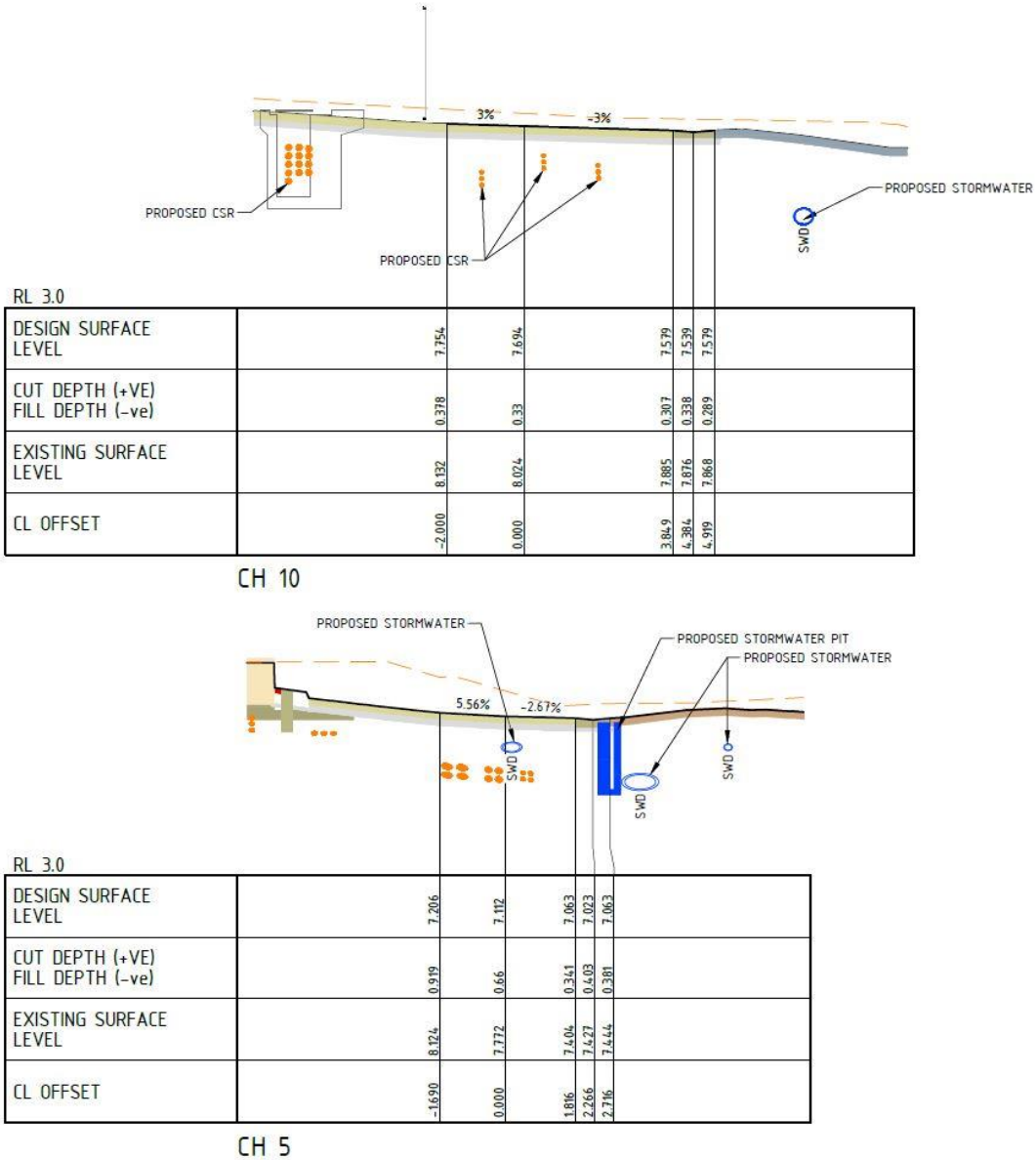


Plate 3.4 Two examples of the cross sections of the proposed services installations under the MSB. Refer to Appendix C for more details.

Ground disturbance to the location of the MSB includes a sewer pipe (Route 221), which is approximately 5 m deep. The sewer pipe was installed by cut and fill, and to reach this depth, it is likely that the trench was benched, creating impacts that extended up to 5 m across. The sewer pipe is shown in Plate 3.5 (in the black polygon), which also includes the future MSB envelope.

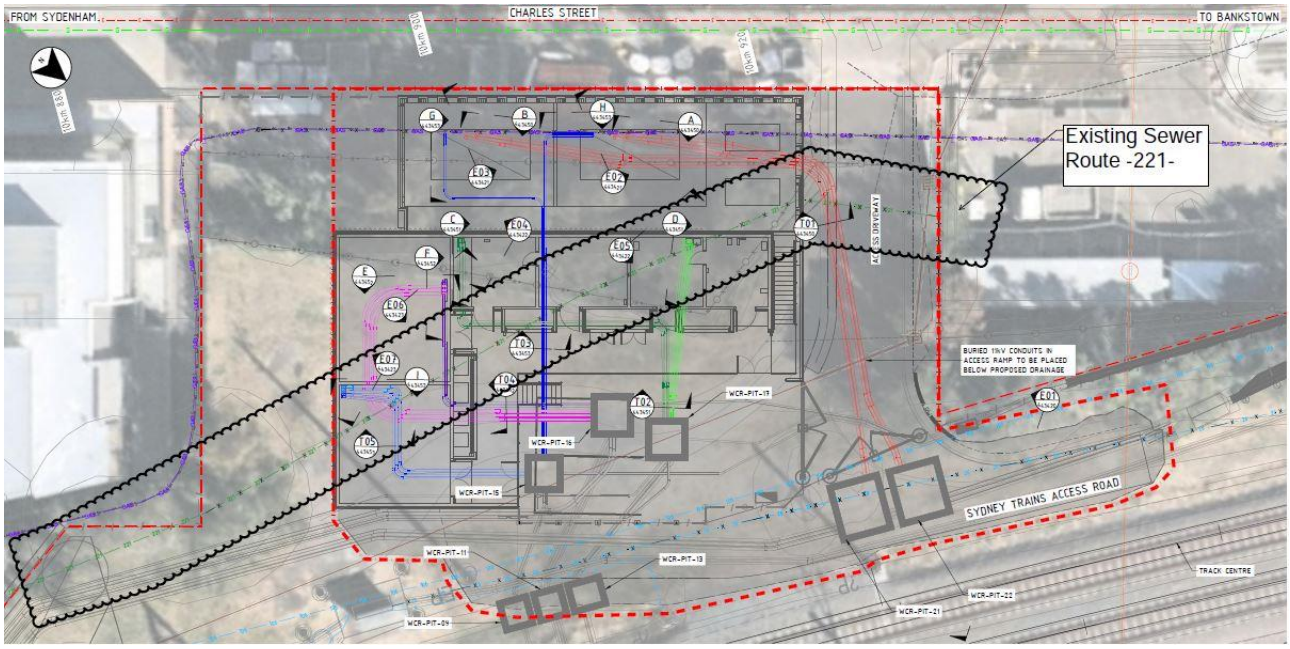


Plate 3.5 The location of the existing sewer 221 across the lot. Note the tree canopy in the bottom left of the image (north-east corner).

3.4 Metro Services Building anticipated impacts

Plate 3.6 is an overlay of the project boundary in red, the location of the proposed lift shafts (purple dots) to the right and the proposed MSB (purple rectangle). The accuracy of the overlay cannot be confirmed, given that the project area and MSB are shown to impede on Charles Street. In reality, the design of the MSB does not include Charles Street but the overlay is the best fit using the project boundaries and known intersections with existing roads and therefore the exact location of the structures shown in the plan may not be exact. The excavation method will respond to the construction method (refer to Section 5).

Consideration will be given to the presence of relics associated with the structures in the 1843 plan and overlay (Plate 3.6). The drawings of the structures adjacent to the future MSB do not have the same appearance as those that are representations of cottages (refer to the block on the corner of George and Charles streets) and it is possible that these small structures are privies or sheds, chicken coops, or other farm-related structures. The presentation of most of the structures on this plan, suggests that they were constructed after the roads were laid down as information on the plan indicates that the second subdivision is for sale. The explanatory text on the plan reads:

> "Lots all pegged out as per plan" "The Surveyor will be on the Ground to point out the lots at the time of Sale" "Sale to commence at One" (Plate 3.7).

Clarification about function, phase and therefore ownership may be answered through archaeological excavation if related resources survive. These questions have been added to the 'research questions' section of this report (Section 4).

The question of archaeological potential is raised by the existence of sewer pipe 221. Historical impacts to the site resulting from the installation 5 m is likely to have included benching to reach those depths thereby reducing the

potential for archaeological resources and relics to exist in this area. This question will also be addressed during the archaeological investigation.

Plate 3.6 Overlay of the proposed project activities on the 1843 plan of the Village of Canterbury.

Plate 3.7 The 1843 subdivision plan of the Canterbury Estate.

4 Research questions

4.1 Introduction

The purpose of research questions that are posed on the archaeological resource is to guide the process and to answer questions that can substantively add knowledge to the past and will guide how resources are interpreted while they are being excavated.

The research questions relevant to the archaeological excavation in this document are reproduced from the AARD (Artefact Heritage 2018, in italics) and additional questions have been added that are based on the most recent information and relate substantially to the locations of the proposed lift wells.

4.2 Questions

1. Is there evidence of the former developments shown on the 1843 plan (Plate 3.6)? Did yard surfaces survive the railway development? If yes, in what form?

2. To which phase do the structures shown in the 1843 plan belong (Plate 3.6)? Is there evidence to suggest that they pre-date the establishment of the village?

3. *What evidence of early land clearing and land modification, if any, is present?*

4. *Is there any evidence of former platforms located below or within present-day station platforms?*

5. *What similar sites have been investigated within the local or broader context?*

6. *What evidence of transport developments and changes in transport technology exist on the site?*

7. *What evidence remains of early services, including early cisterns, tanks, wells, cesspits, in-ground services including sandstone, timber, brick and ceramic drains?*

8. *Does this provide information about the provision of services and changes in technology? (This question has been interpreted by EMM to be, does the answer to question 4 (above) answer question 5 (this question)?*

9. *What were the living conditions of the people occupying the study area?*

10. *Can the archaeological remains of the buildings inform the internal and external layout of the huts and cottages and the use of space?*

11. *Can the archaeological remains inform changes in building technology, supply of materials and architectural preferences of the period? Do the houses provide evidence of class/status distinction?*

12. *Is there evidence that the employees were engaged in activities outside of their working life? (gaming, smoking, sewing, etc)*

13. *Is there evidence of the conditions in which the employees worked?*

14. *Does the artefact assemblage provide information on the daily life of the occupants of the cottages? Can gender and class/status be discerned from the archaeological record?*

15. *Do any intact under floor deposits provide useful spatial information, identify discrete activity area or provide spatial data on the range of tasks undertaken within the building over time?*

16. *What food were the residence of the huts and cottages consuming? Is there evidence of the cooking methods used?*

17. *Is there evidence of male, females, and children occupying the cottages? Does this provide information about family dynamics in early Canterbury?*

18. *What evidence is there of gardens, and the layout and use of the yard areas? Does this show evidence of recreational activities, eg marbles or games? What can the gardens inform about daily life and food habits?*

19. *Do any refuse deposits indicate a domestic setting? Do refuse deposits inform about daily eating habits?*

20. *Is there evidence of quarrying on the site?*

21. *What evidence is there of the school? Do artefactual remains relate to the provision of education?*

22. *Is there artefactual or architectural evidence related to the sugar works in the study area?*

23. *Is there evidence of the division of labour spaces, yards and sheds?*

24. *How does the study area compare to other mixed residential and industrial sites? Is the*

25. *archaeological record typical for Sydney?*

26. *What does the evidence indicate about the development of rail infrastructure and technology?*

27. *How does the evidence inform the historical development of the Bankstown rail line and Canterbury Station?*

28. *Is there any evidence of former platforms located below or within the present-day station platforms?*

The answers to these questions will be inform the revised assessments of significance and public interpretation.

5 Archaeological methods

5.1 Background

The methods presented in this AMS address and expand upon the requirements of Section 4.6.1. of the AARD (Artefact Heritage 2018, p.84).

5.2 Call out requirements

An archaeologist will be on call for the period 8–10 March 2021 when potholing is scheduled at Canterbury, Marrickville and Lakemba stations. While potholing for existing services is unlikely to uncover relics, the need for an archaeologist to attend site if questions arise will be met.

5.3 Monitoring

An archaeologist will be in attendance to supervise construction and excavation work which has the potential to expose and/or impact relics. Monitoring is generally implemented in areas considered to have lower archaeological potential and/or minor excavation work is undertaken in areas of archaeological sensitivity. However, the construction schedule is such that monitoring is the only method by which relics can be recorded and collected without delaying the works. Despite this, the works will proceed as described in Section 5.4 under the supervision of the excavation director(s). The archaeological team will communicate with the construction team to ensure that resources and equipment is in place before construction that has the potential to impact on archaeological resources begins. This will be (and has been) achieved by programming the archaeological fieldwork with the construction schedule.

If relics are identified during monitoring, localised stoppages of construction would be required so the archaeologist can record and assess the find. Work will only recommence once the monitoring archaeologist has completed recording and determined that further investigation is not required.

5.4 Archaeological test and salvage excavation

Archaeological test and salvage excavation will occur if, during monitoring, relics are noted by the excavation director(s).

Archaeological excavation process will be generally as follows:

- a smooth-bucket machine excavator will remove fills, overburden and/or vegetation followed by topsoil under the direction of a qualified archaeologist;
- the excavator will be stopped if archaeological features are identified; if none are detected, machine excavation will continue until the culturally sterile layer is identified or the target construction depth has been reached; and
- if archaeological features or deposits are identified, they will be further clarified by the archaeologist using manual excavation techniques and recorded (see section for recording techniques).

5.5 Salvage of identified relics

The AARD (Artefact Heritage 2018, p.84) has proposed salvage excavation be undertaken to:

"investigate and record archaeological remains related to Phase 2 and 3 if impacts were proposed in areas of identified potential" and "investigate and record archaeological remains related to Phase 4 if impacts were proposed in areas of identified potential."

Construction work programmed for the areas of archaeological potential relating to phases 2 and 3 will be undertaken as required to ensure that salvage excavation is completed prior to construction impacts. Salvage excavation is largely guided by the nature and extent of the archaeological resource. If significant relics are identified, whether through desktop assessment or monitoring, then further salvage excavation would be required prior to construction. Salvage excavation aims to:

- determine if peripheral or ephemeral and unrelated archaeological resources exist within the construction zone; and
- answer the research questions developed for the project (see Artefact Heritage 2018, p.84–87).

5.6 Recording method

5.6.1 Excavation recording

The excavation recording methods are as follows:

- a site datum would be established or an existing one will be used;
- a standard context recording system will be implemented whereby a context number will be applied to each element of each feature, cut and deposit; the feature number, assigned to each feature, will be related to the context number assigned on site;
- archaeological features, deposits and cuts will be photographed (RAW format with photo board and scale), planned to scale and sections drawn prior to, and, depending on the remains, after removal by hand. All in situ artefacts will be collected by context for later analysis; and
- features will be recorded by a qualified surveyor and the resulting plan will be tied into the appropriate datum (on advice from the surveyor). This will include recording reduced levels to establish the varying depths of phases across the sites.

5.6.2 Curation of archaeological material

Curation of archaeological material processes reflect strategies outlined in the Salvage and Storage Strategy of the Sydney Metro Integrated Management System (Transport for NSW 2016a: p.5-6).

- artefacts recovered from the site will be managed by a dedicated artefact manager after retrieval from the site;
- large or redundant materials will have samples collected (eg bricks). Hazardous material will be recorded but will not be collected;
- unprovenanced artefacts and other material assessed as being of low significance or future research potential will be discarded upon delivery of the final report;
- artefacts that are retained will be catalogued by using a system that identifies and allows easy retrieval of the item;

- specialist cataloguers' will produce reports on the artefacts containing an analysis of artefacts, their deposits and contexts, as well as outlining issues of importance. Analyses will be supported using tables and photographs;

- once post-excavation analysis and reporting has been completed, Transport for NSW will be responsible for the management, curation and ongoing care of the collection, including items which require special care (i.e. material prone to deterioration). Artefact management will fall under the project's salvage strategy; and

- if the artefact collection is to be incorporated into an interpretive public display, artefacts may be subject to material conservation, including gluing of pottery or the conservation of important metal or leather materials.

5.6.3 Public engagement

If substantial relics are discovered Heritage NSW can be invited to attend the site and public engagement opportunities implemented, ie public open day and public interpretation. Discussion with TfNSW and the HSEJV would be required as the form of public engagement, which may include photographs and text at Canterbury Station. In situ site visits will not occur during the project due to the nature of the construction site and its proximity to the rail corridor.

Significant archaeological findings would be considered for inclusion in the project heritage interpretation as per condition of approval E12.

5.6.4 Reporting

All archaeological activity will be recorded with short field work call-outs documented in short reports or letters stating that archaeologists attended the site but relics were not found.

If salvage excavation is required a detailed archaeological excavation report will be prepared following the completion of archaeological analyses. The report will describe the methods, and results of the archaeological program and present an interpretation of these findings. The report will additionally include artefact analyses and respond to research questions of the AARD. The report will be supported by photographs, tables and plans. The excavation report is a separate stage to the field program.

If relics are identified and assessed during the project, a memorandum outlining the results will be prepared at the end of the archaeological works prior to work commencing on the excavation report.

5.6.5 Aboriginal archaeological heritage strategy

Aboriginal cultural heritage such as object, are not anticipated to occur in the project area. The unexpected finds procedure will address such an event.

5.7 Team and timing

Three archaeologists will attend Canterbury Station for WE38. The archaeologists will supply recording equipment and limited excavation equipment consisting of trowels and hoes. It is expected that HSEJV will supply plant and survey equipment (with surveyor).

The archaeologists will be on site when the lift shafts are being excavated and for any other construction activities that will remove soil deposits. Coordination between HSEJV, SIC and EMM will occur prior to the WE38 rail possession.

6 Unexpected finds procedure

6.1 Introduction

This section is a summary of the unexpected finds procedure prepared by Sydney Metro (Appendix F) and fulfils condition NAH14.

6.2 Human remains

Discovery of suspected human remains would be managed under the project Unexpected Finds Policy and the Exhumation Policy (Sydney Metro 2019;Appendix F).

If suspected human skeletal remains were uncovered at any time during earthworks for the project, the following actions apply in the following order:

29. Immediately cease all excavation activity.

30. Notify NSW Police and NSW Coroner's Office.

31. Consult a forensic anthropologist to determine the nature of the remains.

32. Notify Heritage NSW via the Environment Line on 131 555 to provide details of the remains and their location.

33. Ensure no recommencement of excavation activity unless authorised in writing by Heritage NSW.

6.3 Suspected relics or Aboriginal objects

The procedure if suspected relics or Aboriginal objects are encountered unexpectedly and if an archaeologist is not present will follow the process set out in the project Unexpected Finds Procedure (Appendix F).

References

Documents

Artefact Heritage 2018, *Sydney Metro City & Southwest Sydenham to Bankstown Upgrade: Historical Archaeological Assessment & Research Design*, Report prepared for Transport for New South Wales.

Sydney Metro, *Southwest Metro – Marrickville, Canterbury and Lakemba Station Upgrades Heritage Management Plan*, 16 December 2020

Metron T2M, *Technical Memorandum: Geotechnical interpretive report – Canterbury Station Stage 3 Design Submission,* 19 December 2019.

Historical plans and photographs

1943 Aerial photograph, SixViewer, Department of Lands

Plan of the Village of Canterbury, part of the Canterbury Estate, on Cook's River, Immediately adjoining the Australian Sugar Company's Establishment to be sold at Auction by Mr. Stubs on Wednesday next, the 31st of May 1843

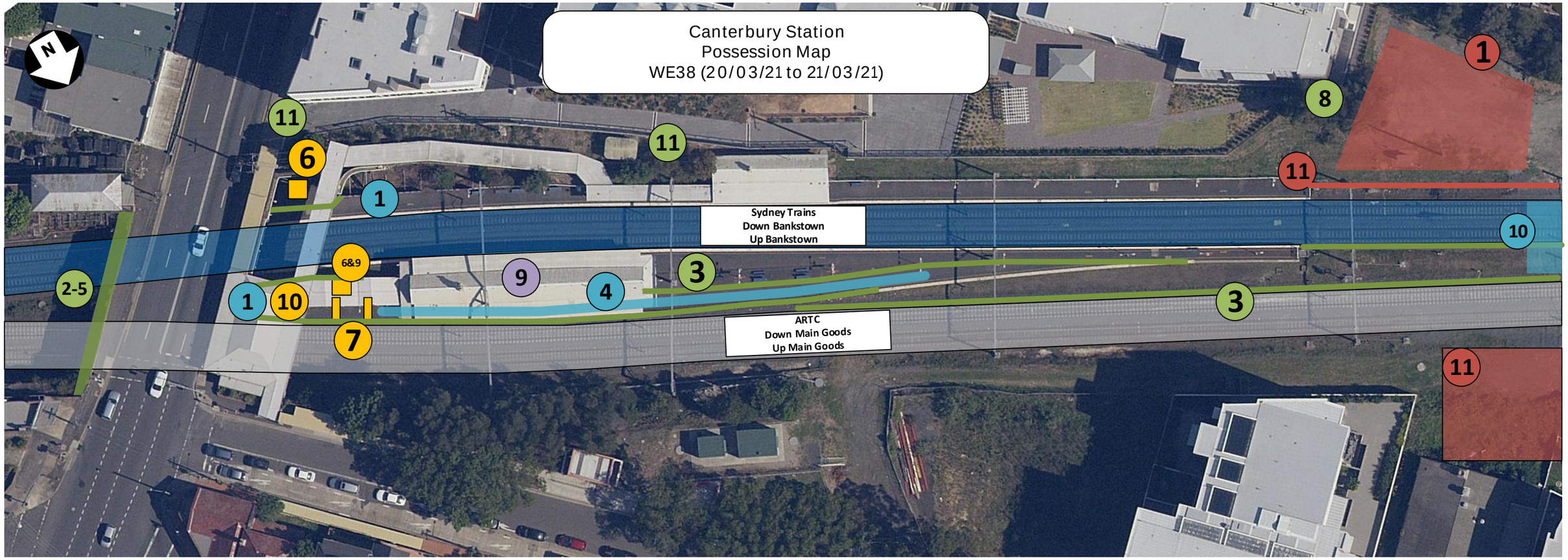
Manuscript cadastral map of allotments along the Cook's River near the village of Canterbury (1803–1823)

Sketch showing Canterbury estate and Canterbury village 1850–1859 (National Library of Australia online)

Appendix A

Canterbury possession map WE38

A.1 Canterbury possession map WE38



CIVIL (STRUCTURE + ROADWORKS + UTILITIES)	STATION STRUCTURE (LIFT + STAIRS + BRIDGE)	PLATFORM (+CSR & DRAINAGE)	STATION BUILDINGS	SERVICE BUILDING
2. Service Investigation works (Road Bridge) 3. Install Segregation Fencing and Hoarding 5. Bridge Girder and HAZMAT Investigations 8. Vegetation Management	6. Excavations for Lift 1 and 2 (incl. saw cut platform surface) 7. Excavate column footings SP1 - SP4 - Platform 0/1 9. Service Relocations (Site Wide) 10. Install temp Concrete line concourse/footbridge	1. Service Investigation Works (Platform and Track) 4. Platform 0 – Installation of CSR	9. Service Relocations	1. Service Investigation Works (Platform and Track) 11. Install Barriers adjacent to MS Building – Country Down Cess

PLANT:

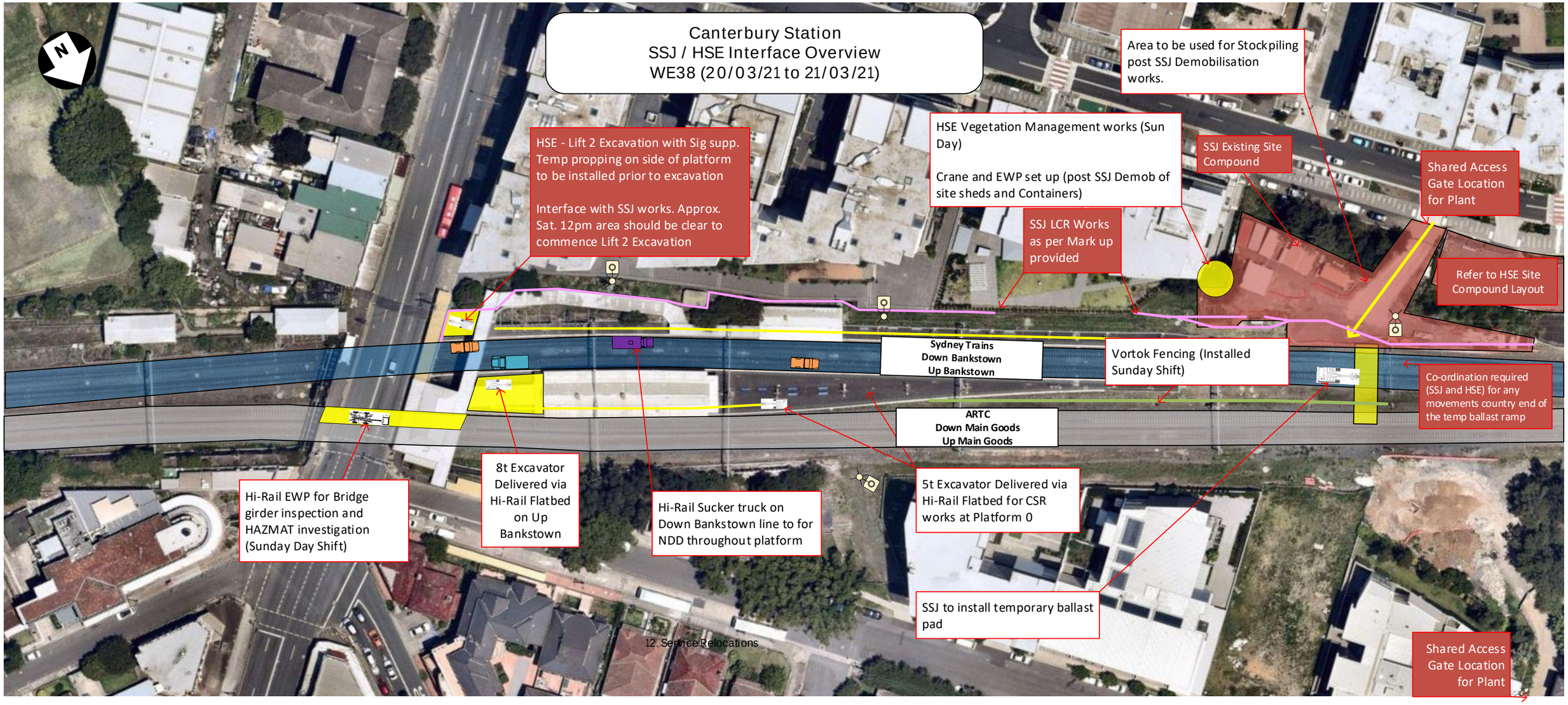
- Hi-Rail Sucker Truck x 2
- Hi-Rail Flatbed
- Hi Rail EWP x 2
- Hi Rail Hydrema x2
- Hi Rail 8t Excavator
- Vacuum truck
- Flatbed
- 1.5 – 8t Excavator
- Scissor lift
- EWP
- Front end loader

GENERAL:

1. Interface with SSJ platform 2 and MS Building (Plant movements to be coordinated and stockpile locations identified)

2. Plant access to tracks from Temporary Ballast at Charles St Access gate. Crossover tracks to ARTC via Temporary Ballast on 6ft to be installed

REVISION:		FILE NAME:		STATION:	SCALE:	SHEET NO:
REV 00 – 05/02/21	HSE	CBY-SK-005	SOUTHWEST METRO UPGRADE – PACKAGE 4 **CANTERBURY – POSSESSION MAP WE38**	CANTERBURY DRAWN BY: AUEL MALIBIRA	N.T.S	1 OF 3



Scope Interface

Saturday 20/03
-1500V Power Out Permit issued (Time TBA on WE38)
-SSJ to mobilise to Down Bankstown to City End of Platform 2 (Scheduled to be finished at city end by Sat 12pm)
-Interface for mobilising plant between SSJ and HSE. HSE Proposed timing for mobilising to plant is as soon as 1500V Power out Permit has been issued. First plant to be mobilised to track is the Hi-Rail Flatbed to float Excavator to Platform 1 via Up Bankstown Track. Followed by 1x Excavator to Platform 0 via Hi-Rail Flatbed on the Up Bankstown
-1xHi-Rail Sucker truck on Down Bankstown to commence NDD on Platform 2
-1x Excavator to mobilise via Hi-Rail Flatbed to Down Bankstown post SSJ works completion city end (Sat 10-12pm) – Movement to be co-ordinated with SSJ

Sunday 21/03
-1x Hi-Rail EWP to mobilise on the Down Main Goods 12 noon to complete HAZMAT investigation works (require at least 6hrs to complete scope)
-Demobilise all Hi-Rail Plant (6pm)

Notes:
-All HSE Hi-Rail Plant will be mobilised via Charles St Access Gate (ST side)
-Stockpiling location and movements to be managed and co-ordinated on the day
-HSE will co-ordinate demobilisation of SSJ's EWP on Down Bankstown Line

Legend:

- Hi-Rail Flatbed
- 1x Hi-Rail EWP
- 2x Hi-Rail Hydrema
- Hi-Rail 8t Excavator
- 1x Hi-Rail Sucker Truck
- 2x 8t Excavator
- 5t Excavator
- Lighting Towers

REVISION:		FILE NAME:		STATION:	SCALE:	SHEET NO:
REV 00 – 05/02/21	HSE	CBY-SK-005	SOUTHWEST METRO UPGRADE – PACKAGE 4 **CANTERBURY – POSSESSION MAP WE38**	CANTERBURY DRAWN BY: AUEL MALIBIRAN	N.T.S	2 OF 3

Access Gates

Notes:
-Rail Corridor access gates shall at all times be accessible to allow for any emergency works/maintenance works to occur
-Access that will require to cross HSE laydown/site compound area, shall be co-ordinated with HSE
-Access to track or assets owned by either Sydney Trains or ARTC shall not be impeded by any obstacles/plant/materials
-HSE to manage and ensure that area is always clear and any temporary fencing/access secured and locked at all times when not manned
-Access for possession works shall be co-ordinated via interface/finalisation co-ordination meetings

Legend:

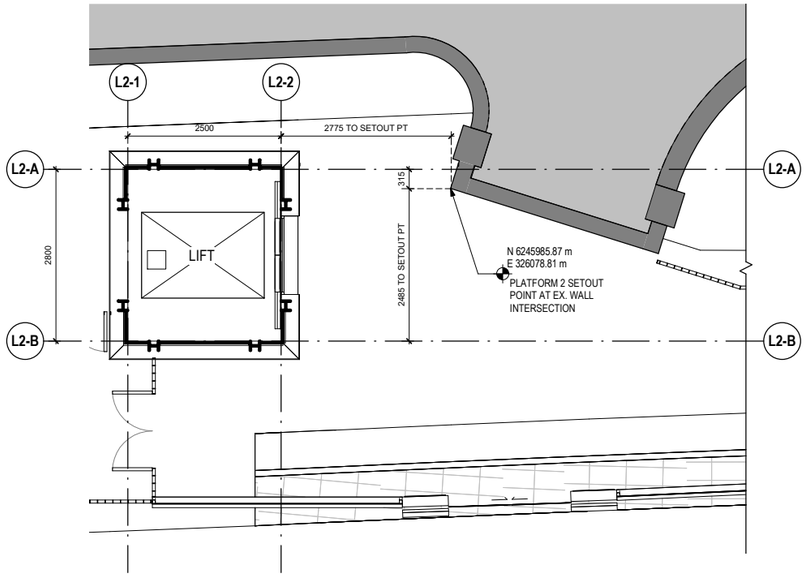
- Access Gate via Broughton St – M24 10.331 U
- Access Gate via Charles St – M24 10.303 D
- Access Gate via corner of Broughton St/Robert St – M24 10.184 U
- OHW Stauncheons
- Signals
- Track Circuit Tuning

REVISION:		FILE NAME:		STATION:	SCALE:	SHEET NO:
REV 00 – 05/02/21	HSE	CBY-SK-005	SOUTHWEST METRO UPGRADE – PACKAGE 4 **CANTERBURY – POSSESSION MAP WE38**	CANTERBURY DRAWN BY: AUEL MALIBIRAN	N.T.S	3 OF 3

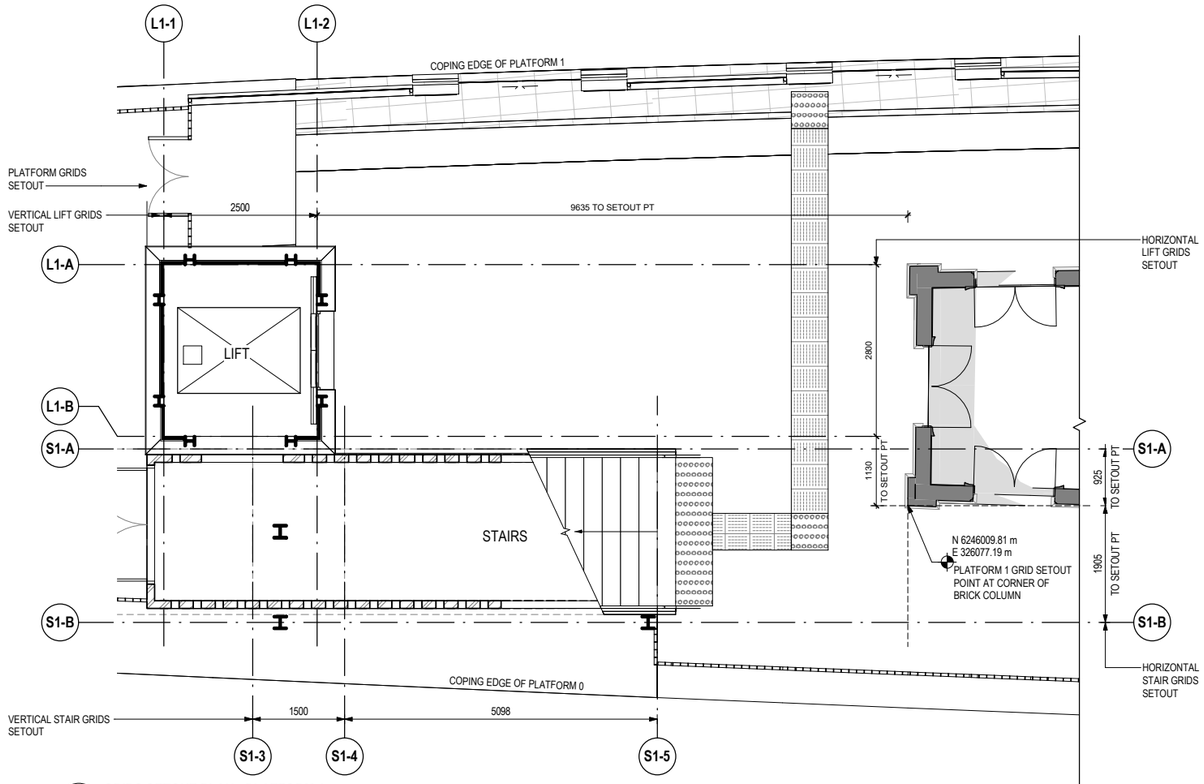
Appendix B

Architectural design

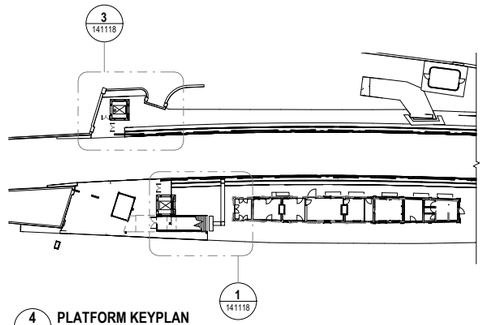
B.1 Architectural design



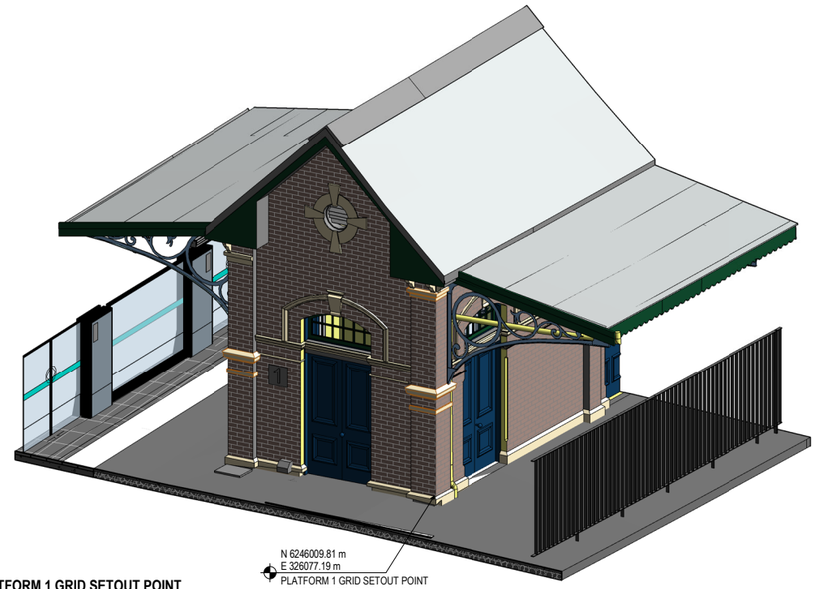
3 / 140037 **GRIDS SETOUT PLAN - PLATFORM 2**
SCALE 1 : 50



1 / 140037 **GRIDS SETOUT PLAN - PLATFORM 1**
SCALE 1 : 50



4 / 140037 **PLATFORM KEYPLAN**
SCALE 1 : 500



2 **PLATFORM 1 GRID SETOUT POINT**
SCALE

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
B	GD	24/09/2020	UPDATED STAGE 3 ISSUE	LP
A	ML	13/03/2020	ISSUED FOR STAGE 3	LP

0.5 0 0.5 1 1.5 2m
1:50 FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

NOTE: Do not scale from this drawing.

ALT. DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141118-P03

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DRAWN JONATHAN ZHANG
DESIGNED MIKE LODGE
DRG CHECK ANTHONY WEERAKKODY
DESIGN CHECK GARTH DAVIES
APPROVED LUKE PALMER 13/03/20

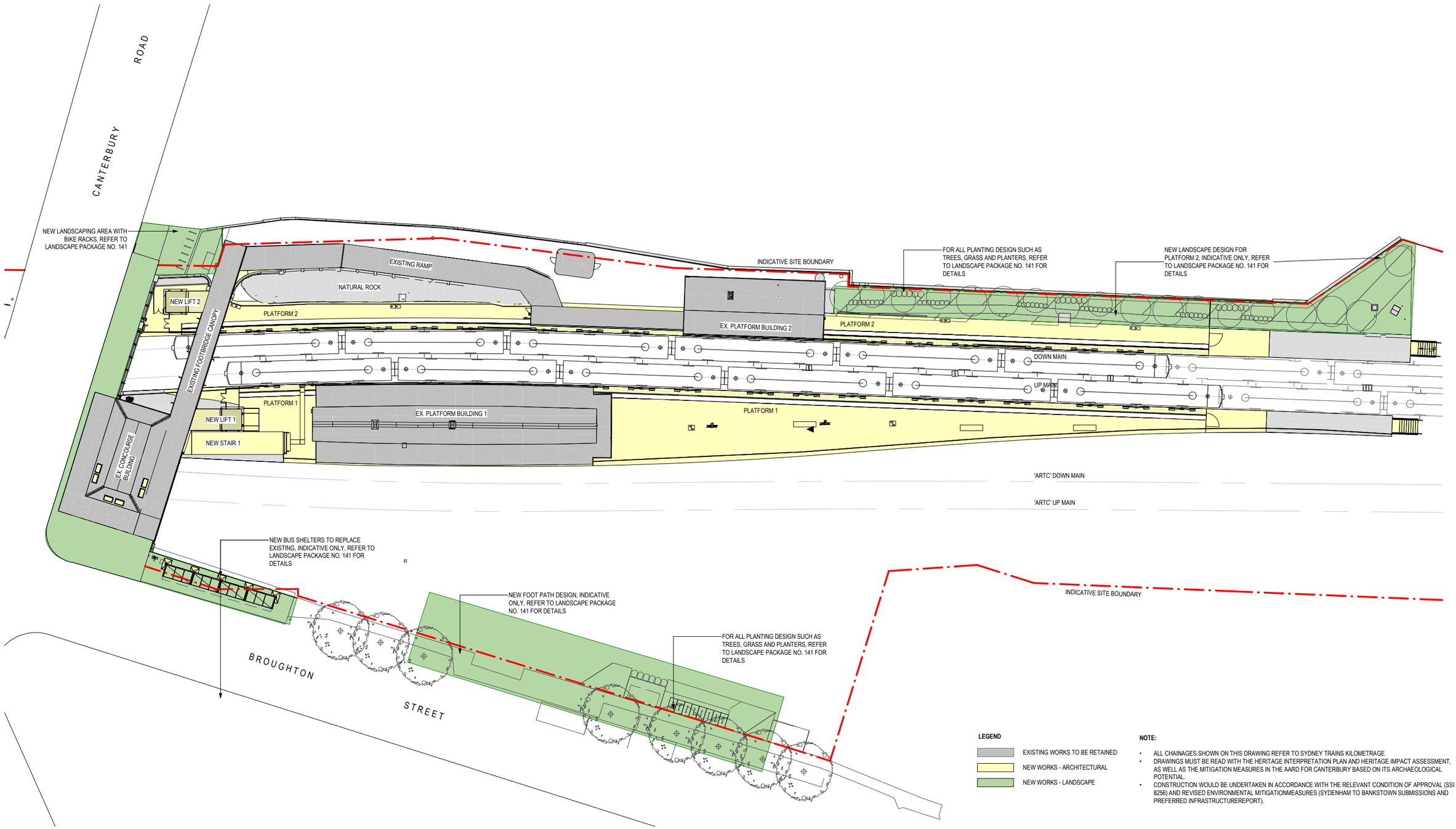
SYDNEY METRO

CANTERBURY (10.596km to 10.930km SYDNEY METRO KILOMETRAGE)
ARCHITECTURAL DESIGN
GENERAL
GRID SETOUT PLANS

STATUS: FOR REVIEW AND COMMENT | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141118 | REV. B

100mm AT FULL SIZE Plot Date & Time 27/09/2020 6:21:48 PM



LEGEND

- EXISTING WORKS TO BE RETAINED
- NEW WORKS - ARCHITECTURAL
- NEW WORKS - LANDSCAPE

NOTE:

- ALL CHAINAGES SHOWN ON THIS DRAWING REFER TO SYDNEY TRAINS KILOMETRAGE.
- DRAWINGS MUST BE READ WITH THE HERITAGE INTERPRETATION PLAN AND HERITAGE IMPACT ASSESSMENT, AS WELL AS THE MITIGATION MEASURES IN THE AARD FOR CANTERBURY BASED ON ITS ARCHAEOLOGICAL POTENTIAL.
- CONSTRUCTION WOULD BE UNDERTAKEN IN ACCORDANCE WITH THE RELEVANT CONDITION OF APPROVAL (SSI 8256) AND REVISED ENVIRONMENTAL MITIGATIONMEASURES (SYDENHAM TO BANKSTOWN SUBMISSIONS AND PREFERRED INFRASTRUCTUREREPORT).

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100mm AT FULL SIZE Plot Date & Time 27/09/2020 6:22:12 PM

REV.	BY	DATE	DESCRIPTION	APPD.
D	GD	24/09/2020	UPDATED STAGE 3 ISSUE	LP
C	ML	13/03/2020	ISSUED FOR STAGE 3	LP
B	ML	24/09/2019	ISSUED FOR STAGE 2	LP
A	ML	11/06/2019	ISSUED FOR STAGE 1	LP

2.5 0 2.5 5 7.5 10m
1:250 FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

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ALT. DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141120-P03

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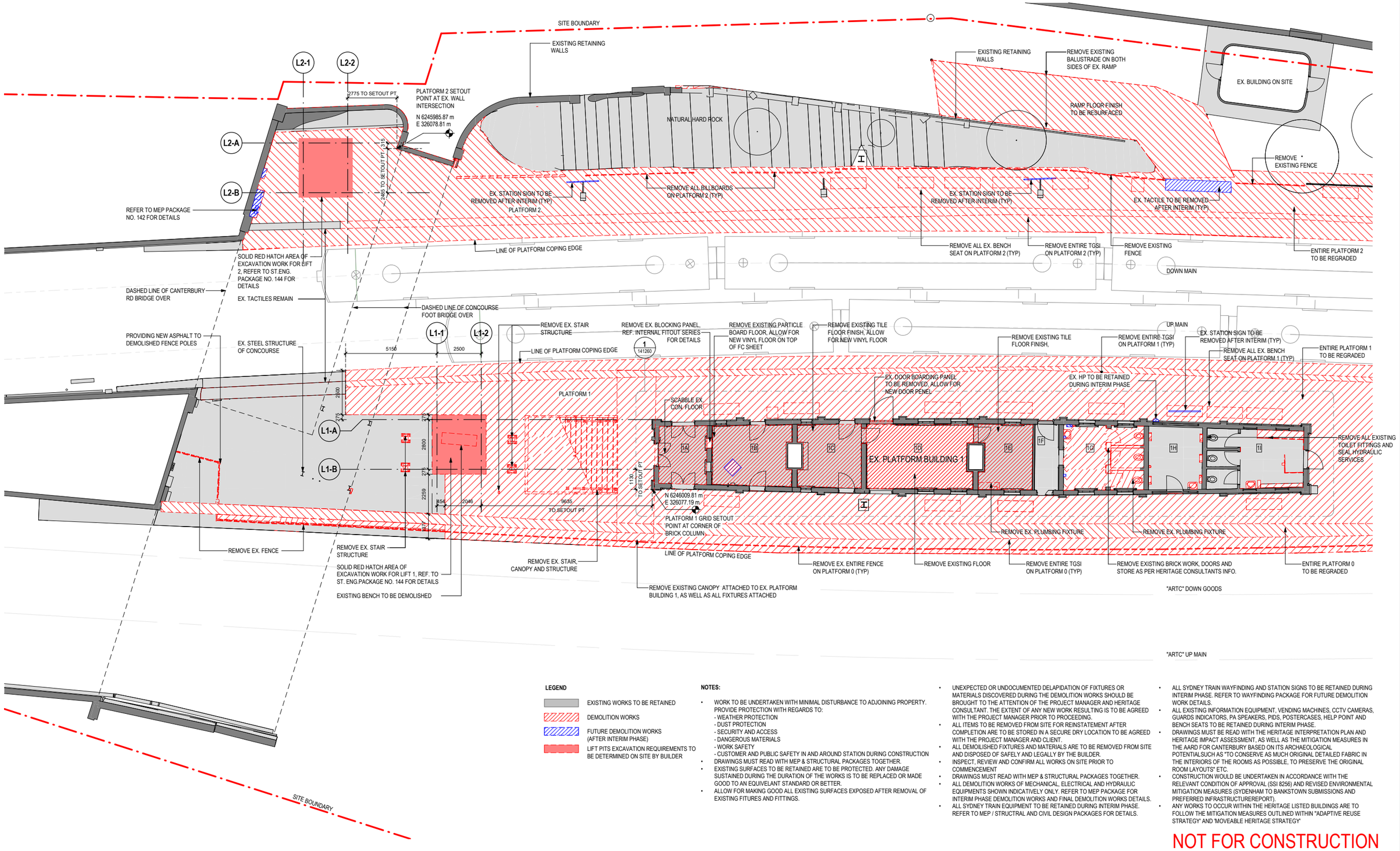
DESIGNED GARTH DAVIES
DRG CHECK ANTHONY WEERAKKODY
DESIGN CHECK GARTH DAVIES
APPROVED LUKE PALMER 13/03/20

SYDNEY METRO

CANTERBURY (10.596km to 10.930km SYDNEY METRO KILOMETRAGE)
ARCHITECTURAL DESIGN
GENERAL
SITE PLAN

STATUS: FOR REVIEW AND COMMENT | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141120 | REV. D



LEGEND

- EXISTING WORKS TO BE RETAINED
- DEMOLITION WORKS
- FUTURE DEMOLITION WORKS (AFTER INTERIM PHASE)
- LIFT PITS EXCAVATION REQUIREMENTS TO BE DETERMINED ON SITE BY BUILDER

NOTES:

- WORK TO BE UNDERTAKEN WITH MINIMAL DISTURBANCE TO ADJOINING PROPERTY. PROVIDE PROTECTION WITH REGARDS TO:
  - WEATHER PROTECTION
  - DUST PROTECTION
  - SECURITY AND ACCESS
  - DANGEROUS MATERIALS
  - WORK SAFETY
  - CUSTOMER AND PUBLIC SAFETY IN AND AROUND STATION DURING CONSTRUCTION
- DRAWINGS MUST READ WITH MEP & STRUCTURAL PACKAGES TOGETHER.
- EXISTING SURFACES TO BE RETAINED ARE TO BE PROTECTED. ANY DAMAGE SUSTAINED DURING THE DURATION OF THE WORKS IS TO BE REPLACED OR MADE GOOD TO AN EQUIVELANT STANDARD OR BETTER.
- ALLOW FOR MAKING GOOD ALL EXISTING SURFACES EXPOSED AFTER REMOVAL OF EXISTING FITURES AND FITTINGS.
- UNEXPECTED OR UNDOCUMENTED DELAPIDATION OF FIXTURES OR MATERIALS DISCOVERED DURING THE DEMOLITION WORKS SHOULD BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER AND HERITAGE CONSULTANT. THE EXTENT OF ANY NEW WORK RESULTING IS TO BE AGREED WITH THE PROJECT MANAGER PRIOR TO PROCEEDING.
- ALL ITEMS TO BE REMOVED FROM SITE FOR REINSTATEMENT AFTER COMPLETION ARE TO BE STORED IN A SECURE DRY LOCATION TO BE AGREED WITH THE PROJECT MANAGER AND CLIENT.
- ALL DEMOLISHED FIXTURES AND MATERIALS ARE TO BE REMOVED FROM SITE AND DISPOSED OF SAFELY AND LEGALLY BY THE BUILDER.
- INSPECT, REVIEW AND CONFIRM ALL WORKS ON SITE PRIOR TO COMMENCEMENT
- DRAWINGS MUST READ WITH MEP & STRUCTURAL PACKAGES TOGETHER.
- ALL DEMOLITION WORKS OF MECHANICAL, ELECTRICAL AND HYDRAULIC EQUIPMENTS SHOWN INDICATIVELY ONLY. REFER TO MEP PACKAGE FOR INTERIM PHASE DEMOLITION WORKS AND FINAL DEMOLITION WORKS DETAILS.
- ALL SYDNEY TRAIN EQUIPMENT TO BE RETAINED DURING INTERIM PHASE. REFER TO MEP / STRUCTRAL AND CIVIL DESIGN PACKAGES FOR DETAILS.
- ALL SYDNEY TRAIN WAYFINDING AND STATION SIGNS TO BE RETAINED DURING INTERIM PHASE. REFER TO WAYFINDING PACKAGE FOR FUTURE DEMOLITION WORK DETAILS.
- ALL EXISTING INFORMATION EQUIPMENT, VENDING MACHINES, CCTV CAMERAS, GUARDS INDICATORS, PA SPEAKERS, PIDS, POSTERCASES, HELP POINT AND BENCH SEATS TO BE RETAINED DURING INTERIM PHASE.
- DRAWINGS MUST BE READ WITH THE HERITAGE INTERPRETATION PLAN AND HERITAGE IMPACT ASSESSMENT, AS WELL AS THE MITIGATION MEASURES IN THE AARD FOR CANTERBURY BASED ON ITS ARCHAEOLOGICAL POTENTIALSUCH AS "TO CONSERVE AS MUCH ORIGINAL DETAILED FABRIC IN THE INTERIORS OF THE ROOMS AS POSSIBLE, TO PRESERVE THE ORIGINAL ROOM LAYOUTS" ETC.
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- ANY WORKS TO OCCUR WITHIN THE HERITAGE LISTED BUILDINGS ARE TO FOLLOW THE MITIGATION MEASURES OUTLINED WITHIN "ADAPTIVE REUSE STRATEGY" AND 'MOVEABLE HERITAGE STRATEGY"

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REV.	BY	DATE	DESCRIPTION	APPD.
D	GD	24/09/2020	UPDATED STAGE 3 ISSUE	LP
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A	ML	11/06/2019	ISSUED FOR STAGE 1	LP

1:100 FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141210-P03

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DRAWN S NOIRAUD
DESIGNED GARTH DAVIES
DRG CHECK ANTHONY WEERAKKODY
DESIGN CHECK GARTH DAVIES
APPROVED LUKE PALMER 13/03/20

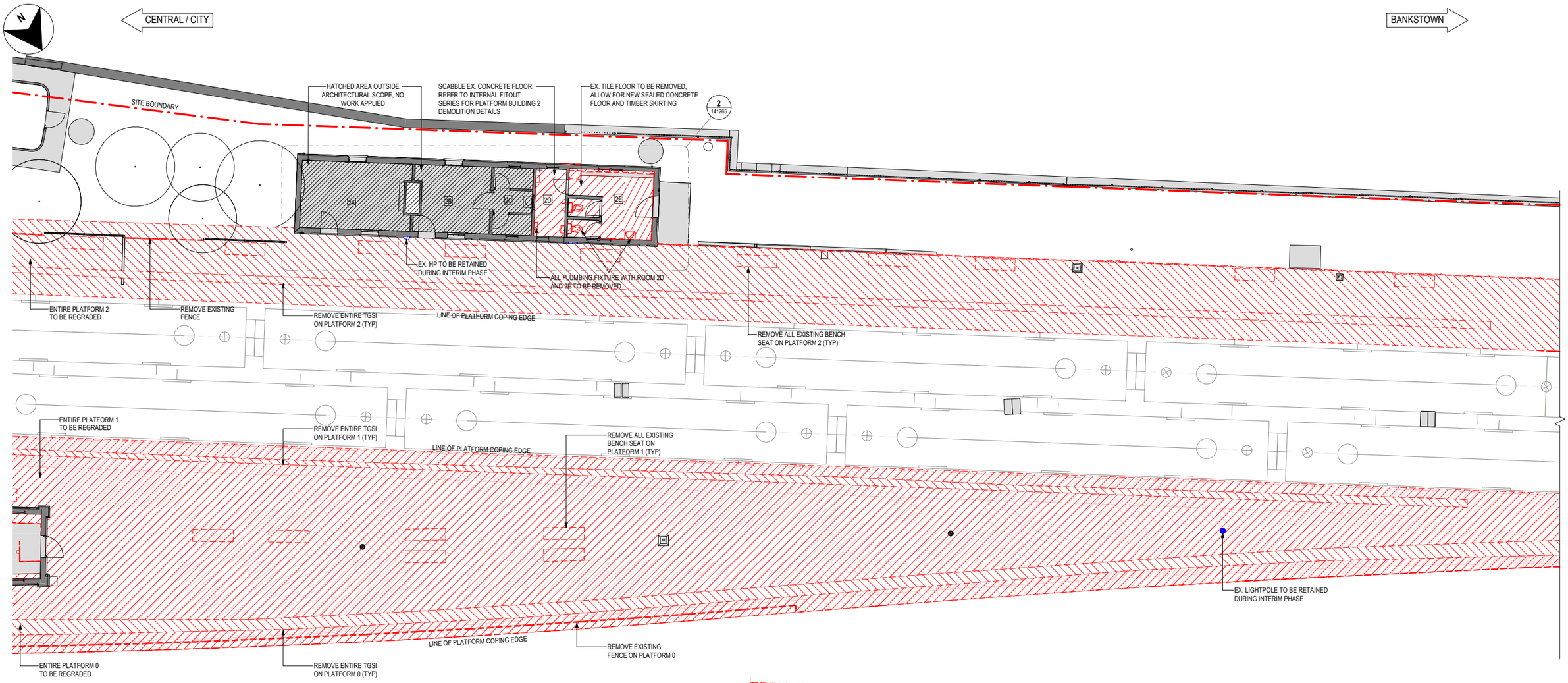
SYDNEY METRO

CANTERBURY (10.596km to 10.930km SYDNEY METRO KILOMETRAGE)
ARCHITECTURAL DESIGN
GENERAL ARRANGEMENT PLANS
DEMOLITION PLAN - PLATFORM - EAST

STATUS: FOR REVIEW AND COMMENT | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141210 | REV. D

100mm AT FULL SIZE Plot Date & Time 27/09/2020 6:23:18 PM



1 DEMOLITION - PLATFORM - MIDDLE

140022 SCALE 1 : 100

LEGEND

- EXISTING WORKS TO BE RETAINED
- DEMOLITION WORKS
- FUTURE DEMOLITION WORKS (AFTER INTERIM PHASE)

NOTES:

- WORK TO BE UNDERTAKEN WITH MINIMAL DISTURBANCE TO ADJOINING PROPERTY. PROVIDE PROTECTION WITH REGARDS TO:
  - WEATHER PROTECTION
  - DUST PROTECTION
  - SECURITY AND ACCESS
  - DANGEROUS MATERIALS
  - WORK SAFETY
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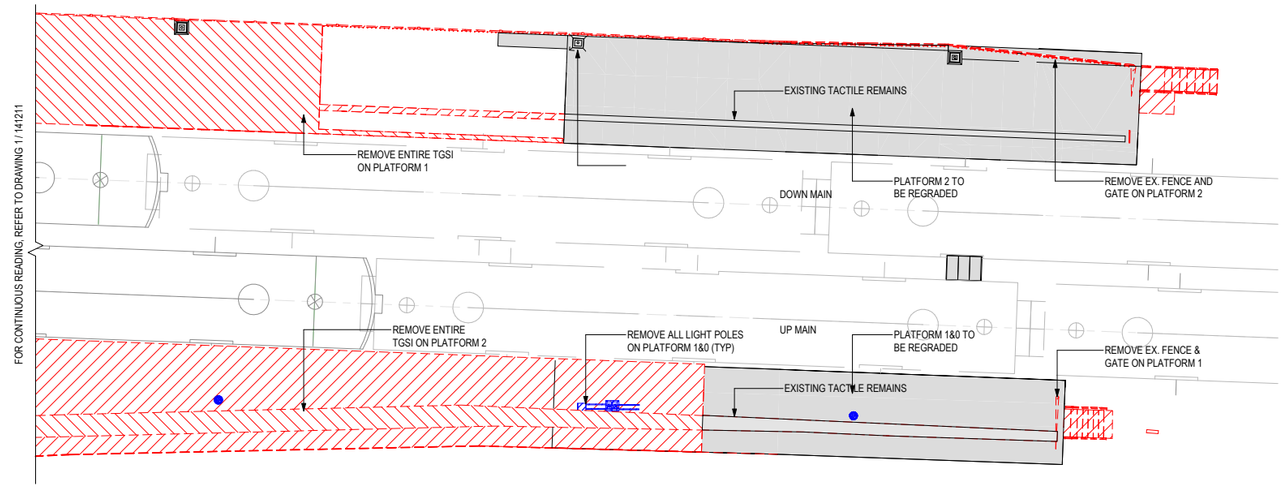

2 DEMOLITION - PLATFORM - WEST

140022 SCALE 1 : 100

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
D	GD	24/09/2020	UPDATED STAGE 3 ISSUE	LP
C	ML	13/03/2020	ISSUED FOR STAGE 3	LP
B	ML	24/09/2019	ISSUED FOR STAGE 2	LP
A	ML	11/06/2019	ISSUED FOR STAGE 1	LP

1 0 1 2 3 4m
1:100 FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141211-P03

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DESIGNED GARTH DAVIES
DRG CHECK ANTHONY WEERAKKODY
DESIGN CHECK GARTH DAVIES
APPROVED LUKE PALMER 13/03/20

SYDNEY METRO

CANTERBURY (10.596km to 10.930km SYDNEY METRO KILOMETRAGE)
ARCHITECTURAL DESIGN
GENERAL ARRANGEMENT PLANS
DEMOLITION PLAN - PLATFORM - WEST

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DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141211 | REV. D

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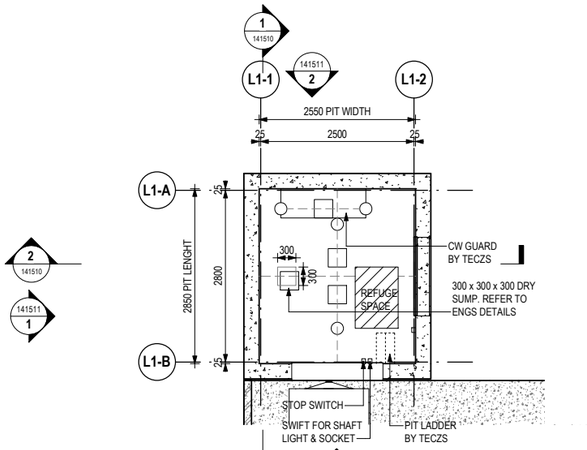
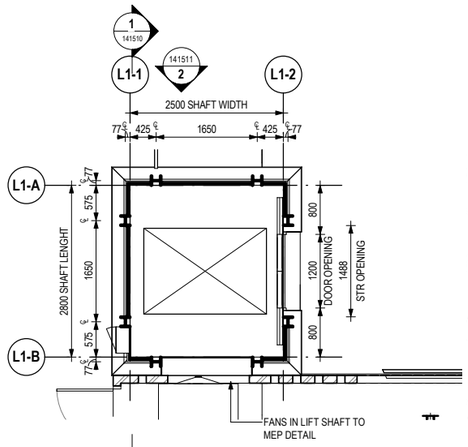
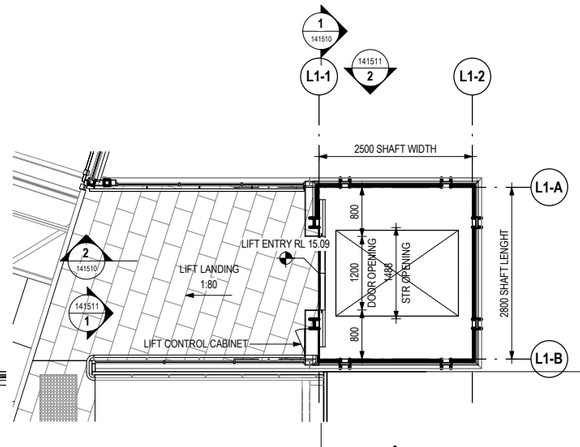


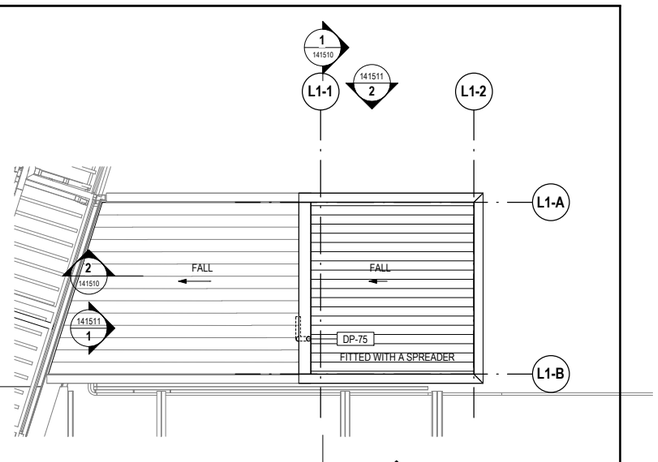
3 140022 **LIFT 1 - PIT** SCALE 1 : 50



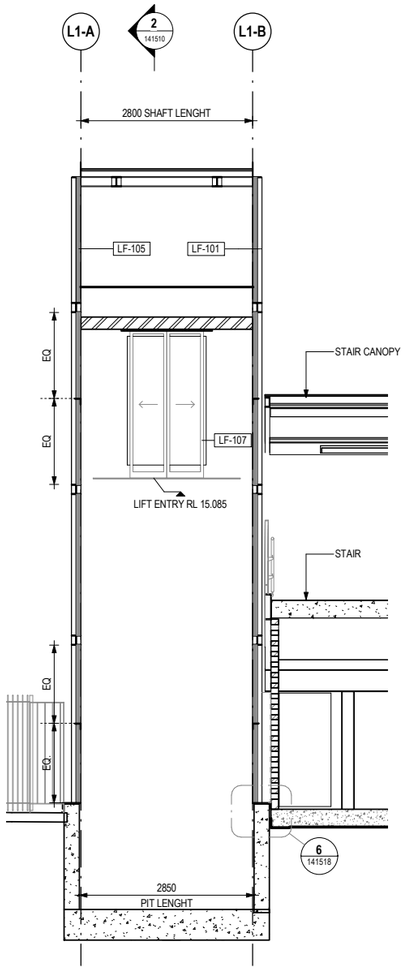
4 140022 **LIFT 1 - PLATFORM** SCALE 1 : 50



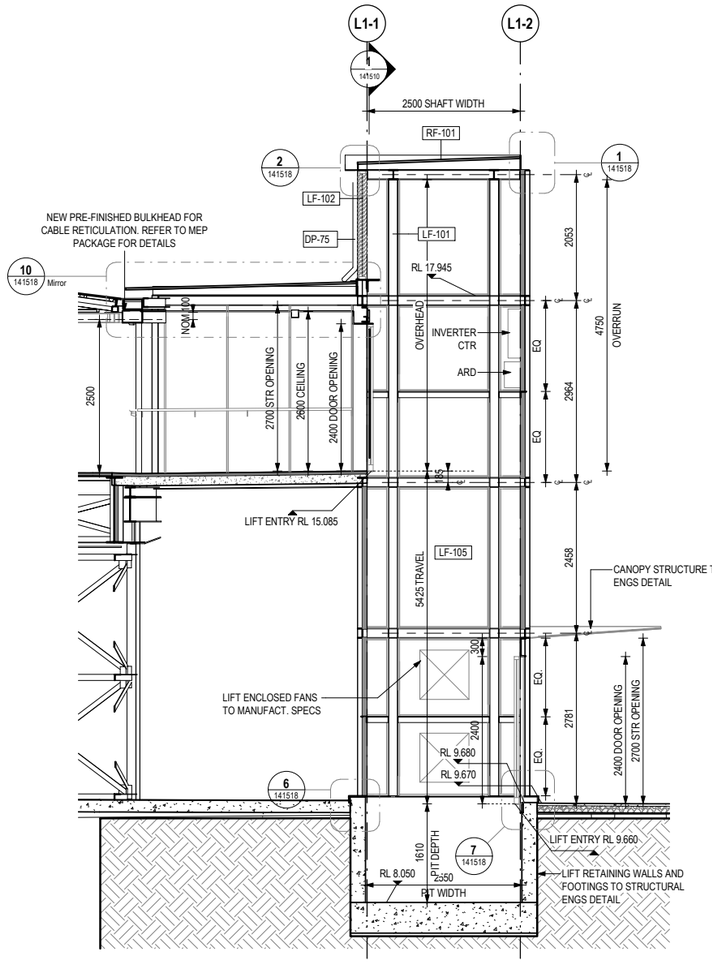
5 140037 **LIFT 1 - CONCOURSE** SCALE 1 : 50



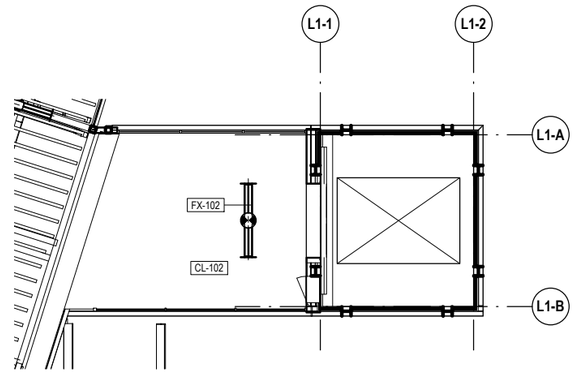
6 140037 **LIFT 1 - ROOF** SCALE 1 : 50



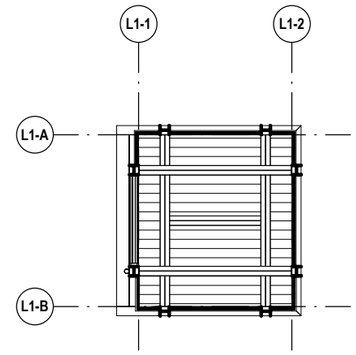
1 141510 **LIFT 1 - SECTION 1** SCALE 1 : 50



2 141510 **LIFT 1 - SECTION 2** SCALE 1 : 50



7 140037 **LIFT 1 RCP - CONCOURSE LANDING** SCALE 1 : 50



8 140037 **LIFT 1 RCP - ROOF** SCALE 1 : 50

KEYNOTE LEGEND	
CODE	DESCRIPTION

CL-102	FLUSH FC CEILING
DP-75	
FX-102	EMERGENCY LINEAR LIGHT
LF-101	PAINTED STEEL STRUCTURE (EXTERNAL)
LF-102	PREFINISHED AL LOUVRES
LF-105	LIFT SHAFT GLAZING
LF-107	LIFT DOORS
RF-101	ROOF SHEET - LONGLINE 305

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
C	GD	24/09/2020	UPDATED STAGE 3 ISSUE	LP
B	ML	13/03/2020	ISSUED FOR STAGE 3	LP
A	ML	24/09/2019	ISSUED FOR STAGE 2	LP

0.5 0 0.5 1 1.5 2m
1:50 FULL SIZE A1

CLIENT

NSW GOVERNMENT | sydney METRO

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METRON T2M

DRAWN S NOIRAUD
DESIGNED G DAVIES
DRG CHECK ANTHONY WEERAKKODY
DESIGN CHECK GARTH DAVIES
APPROVED LUKE PALMER 13/03/20

SYDNEY METRO

CANTERBURY (10.596km to 10.930km SYDNEY METRO KILOMETRAGE)
ARCHITECTURAL DESIGN
SETOUT DETAILS
LIFT 1 SETOUT - SHEET 1

STATUS: FOR REVIEW AND COMMENT | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141510 | REV. C

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141510-P03

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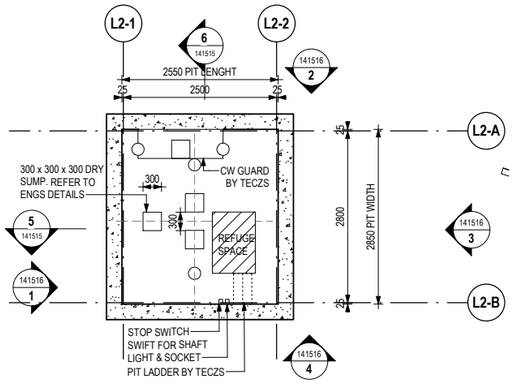
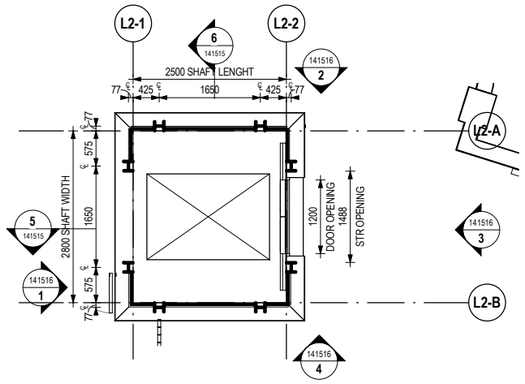
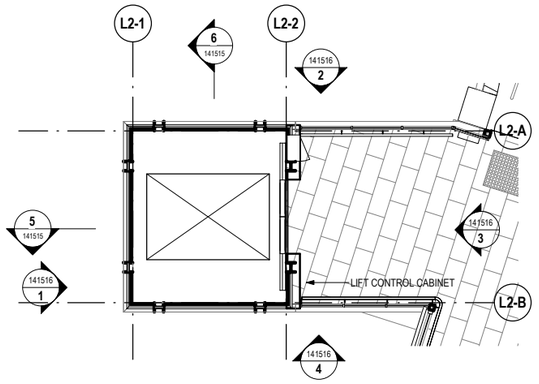


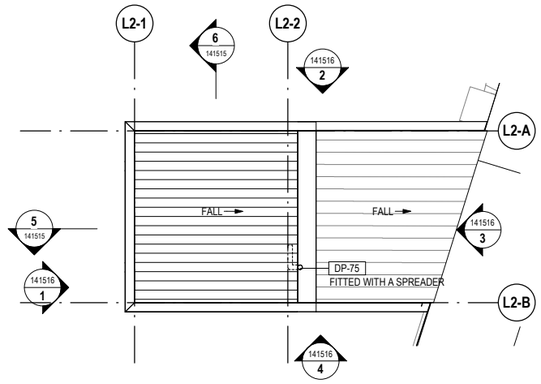
1 LIFT 2 - PIT
140022 SCALE 1 : 50



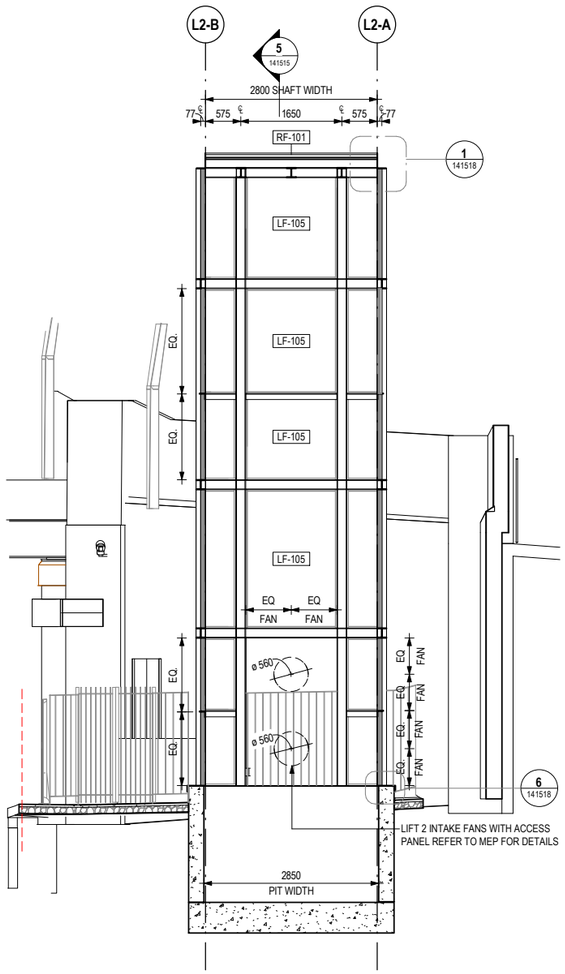
2 LIFT 2 - PLATFORM
140022 SCALE 1 : 50



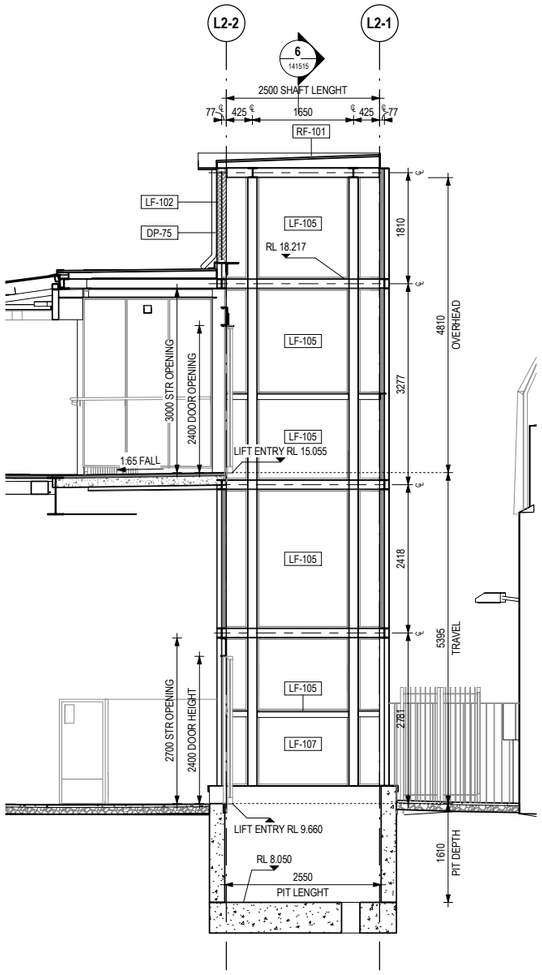
3 LIFT 2 - CONCOURSE
140037 SCALE 1 : 50



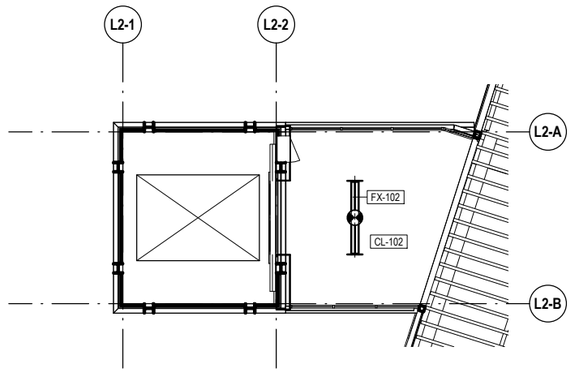
4 LIFT 2 - ROOF
140037 SCALE 1 : 50



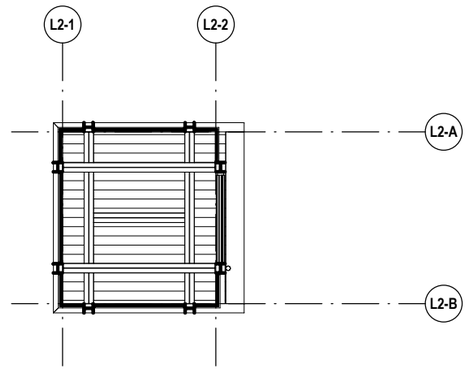
6 LIFT 2 - SECTION 1
141515 SCALE 1 : 50



5 LIFT 2 - SECTION 2
141515 SCALE 1 : 50



7 LIFT 2 RCP - CONCOURSE
140037 SCALE 1 : 50



8 LIFT 2 RCP - ROOF
140037 SCALE 1 : 50

KEYNOTE LEGEND	
CODE	DESCRIPTION

CL-102	FLUSH FC CEILING
DP-75	
FX-102	EMERGENCY LINEAR LIGHT
LF-102	PREFINISHED AL LOUVRES
LF-105	LIFT SHAFT GLAZING
LF-107	LIFT DOORS
RF-101	ROOF SHEET - LONGLINE 305

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
C	GD	24/09/2020	UPDATED STAGE 3 ISSUE	LP
B	ML	13/03/2020	ISSUED FOR STAGE 3	LP
A	ML	24/09/2019	ISSUED FOR STAGE 2	LP

0.5 0 0.5 1 1.5 2m
1:50 FULL SIZE A1

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SERVICE PROVIDERS
METRON T2M

DRAWN S NOIRAUD
DESIGNED G DAVIES
DRG CHECK ANTHONY WEERAKKODY
DESIGN CHECK GARTH DAVIES
APPROVED LUKE PALMER 13/03/20

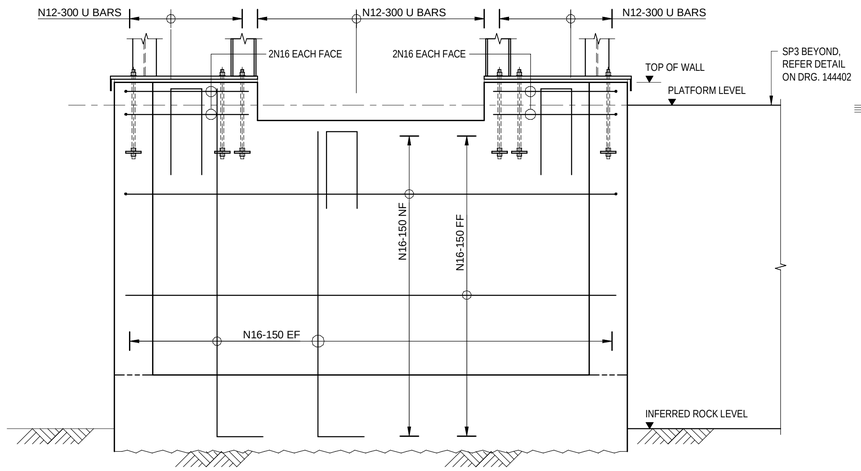
SYDNEY METRO

CANTERBURY (10.596km to 10.930km SYDNEY METRO KILOMETRAGE)
ARCHITECTURAL DESIGN
SETOUT DETAILS
LIFT 2 SETOUT - SHEET 1

STATUS: FOR REVIEW AND COMMENT | SHEET 1 OF 1 | ©
DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141515 | REV. C

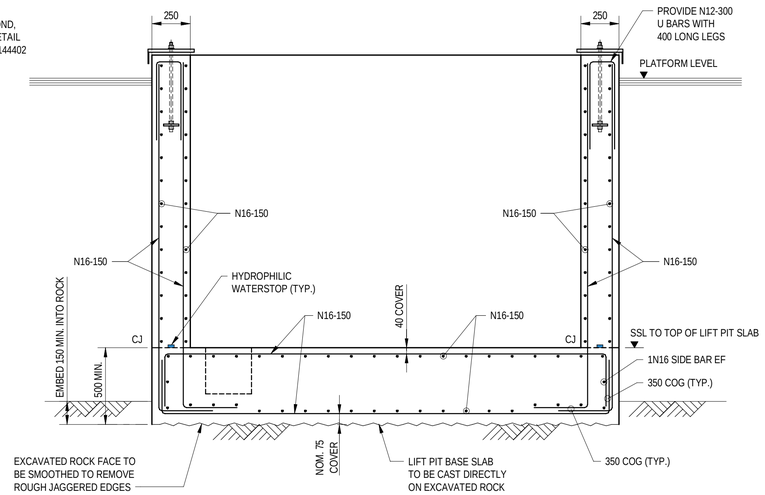
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-AT-DWG-141515-P03

100mm AT FULL SIZE Plot Date & Time 27/09/2020 6:34:35 PM



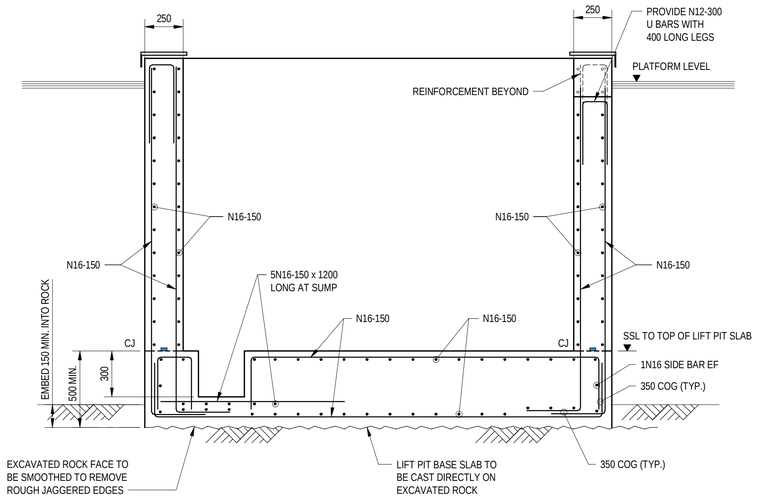
LIFT WALL LW4

1 : 20



SECTION A 144420

1 : 20



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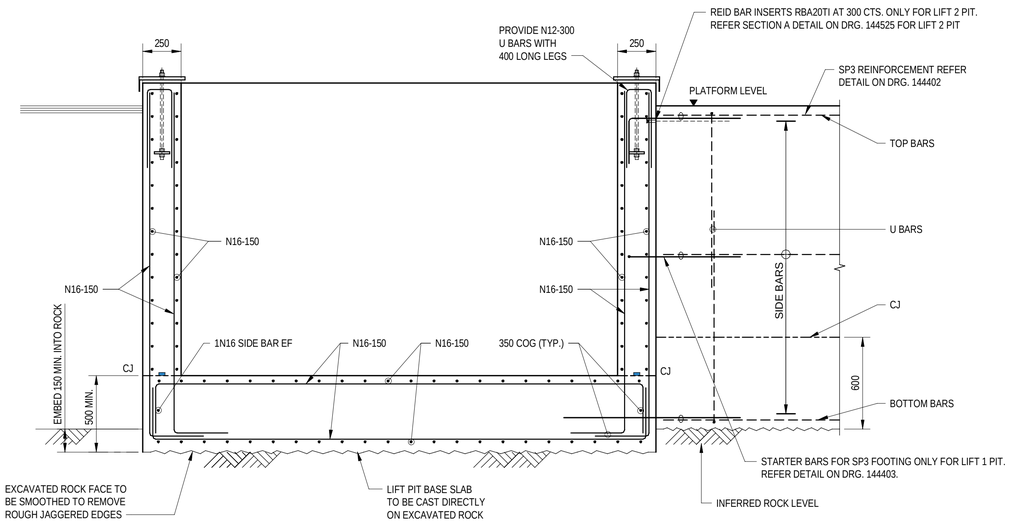
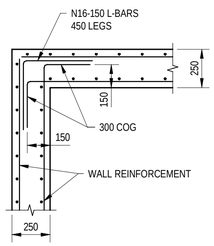


SECTION C 144420

1 : 20



LIFT PIT WALL CORNER DETAIL - PLAN

1 : 20

NOTE:
1. MINIMUM FOUNDATION BEARING PRESSURE UNDER LIFT PIT BASE SLAB IS 500kPa.
2. BACKFILL AROUND EXCAVATION AND FACE OF LIFT PIT WALLS USING CEMENT STABILISED SAND OR EQUIVALENT LOW STRENGTH CONCRETE (GRADE N10).

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
B	DL	06.03.2020	ISSUED FOR STAGE 3	LP
A	DL	30.09.2019	ISSUED FOR STAGE 2	LP

50 0 50 100 150 200mm
1:5 FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

NOTE: Do not scale from this drawing. | ALT. DRG No.

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SERVICE PROVIDERS
METRON T2M

DRAWN N.SAWANT
DESIGNED A.COCKBURN
DRG CHECK D.LYWOOD
DESIGN CHECK V.MCLAUGHLIN
APPROVED R.BLIUC 30.09.2019

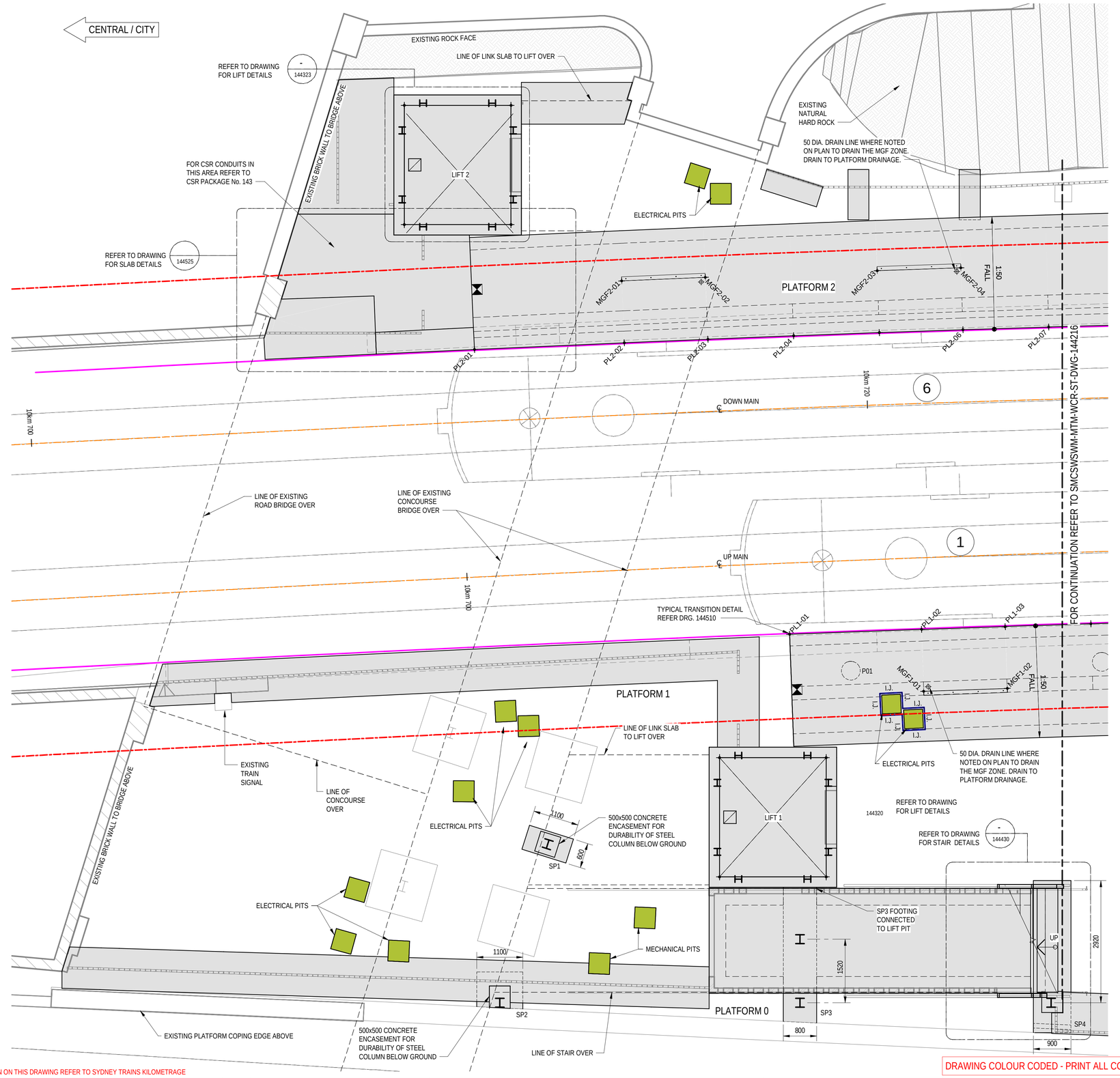
SYDNEY METRO

CANTERBURY STATION (10.596km to 10.930km)
STRUCTURAL
CONCRETE DETAILS
LIFT PITS - SHEET 2

STATUS: STAGE 3 | SHEET 2 OF 2 | ©

DRG No. SMCSWSWM-MTM-WCR-ST-DWG-144421 | REV. B

100mm AT FULL SIZE Plot Date & Time 9/26/2020 6:45:19 PM



PLATFORM 1			
INSITU BASE SLAB SETTING OUT			
SOP	EASTING (m)	NORTHING (m)	LEVEL (m)
PL1-01	326082.222	6245998.320	9.514
PL1-02	326079.513	6245999.939	9.513
PL1-03	326077.802	6246000.973	9.512

MGF ANGLE		
SETTING OUT		
SOP	EASTING (m)	NORTHING (m)
MGF1-01	326080.276	6246001.207
MGF1-02	326078.562	6246002.238

PLATFORM 2			
INSITU BASE SLAB SETTING OUT			
SOP	EASTING (m)	NORTHING (m)	LEVEL (m)
PL2-01	326084.831	6245988.507	9.511
PL2-02	326081.741	6245990.325	9.507
PL2-03	326080.019	6245991.342	9.505
PL2-04	326078.256	6245992.389	9.504
PL2-05	326076.496	6245993.440	9.504
PL2-06	326074.782	6245994.471	9.504
PL2-07	326073.029	6245995.533	9.504

MGF ANGLE		
SETTING OUT		
SOP	EASTING (m)	NORTHING (m)
MGF2-01	326080.988	6245989.050
MGF2-02	326079.266	6245990.068
MGF2-03	326075.733	6245992.172
MGF2-04	326074.019	6245993.202

NOTE:
FOR LEVELS ON TOP EDGE OF MGF ANGLES, REFER TO PLATFORM LEVEL DRAWINGS AND LEVEL ON POINT SOP3 OR SOP4 ON CORRESPONDING PRECAST UNIT PANEL. SHIM ANGLES AS REQUIRED.

PILING SCHEDULE								
PILE REF	DIAMETER (mm)	EASTING (m)	NORTHING (m)	MINIMUM PILE TOE LEVEL (m AHD)	ESTIMATED INDICATIVE PILE LENGTH (m)	DESIGN ULS AXIAL FORCE (kN)	DESIGN ULS LATERAL FORCE (kN)	DESIGN ULS LATERAL MOMENT (kNm)
P01	450	326081.469	6245999.847	6.1	3.000	300	67	0

NOTE :
MINIMUM EMBEDMENT/SOCKET LENGTH SHALL BE, 2000mm INTO CLASS V SANDSTONE OR 700mm INTO CLASS III.
WHERE THE EDGE OF THE PILE IS WITHIN 200mm OF THE ADJACENT MASONRY WALL, THE PILE IS TO BE OFFSET TO MAINTAIN A MINIMUM 200mm CLEARANCE AND THE GROUND BEAM IS TO BE STEPPED LOCALLY. REFER TO DRG. 144254.

LEGEND :

- DENOTES EXISTING CENTRE LINE OF RAIL
- DENOTES 2m ELECTRICAL ISOLATION ZONE
- DENOTES PROPERTY LINE
- DENOTES SYDNEY TRAINS PLATFORM COPING EDGE STRING
- DENOTES INSITU BASE SLAB
- DENOTES MGF ANGLE
- DENOTES ELECTROLYSIS MONITORING POINT
- I.J. DENOTES ISOLATION JOINT. PROVIDE ISOLATION JOINT WITH 20mm ABLEFLEX & MASTIC SEALANT AS REQUIRED BETWEEN SLAB ON GROUND AND ANY EXISTING VERTICAL ELEMENT.
- DENOTES SERVICES PIT

ALL CHAINAGES SHOWN ON THIS DRAWING REFER TO SYDNEY TRAINS KILOMETRAGE

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

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REV.	BY	DATE	DESCRIPTION	APPD.
C	GM	24.09.2020	UPDATED STAGE 3 ISSUE	LP
B	DL	06.03.2020	ISSUED FOR STAGE 3	LP
A	DL	30.09.2019	ISSUED FOR STAGE 2	LP

0.5 0 0.5 1 1.5 2m
1:50 FULL SIZE A1

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SERVICE PROVIDERS
METRON T2M

DRAWN N.SAWANT
DESIGNED A.COCKBURN
DRG CHECK D.LYWOOD
DESIGN CHECK V.MCLAUGHLIN
APPROVED R.BLIUC

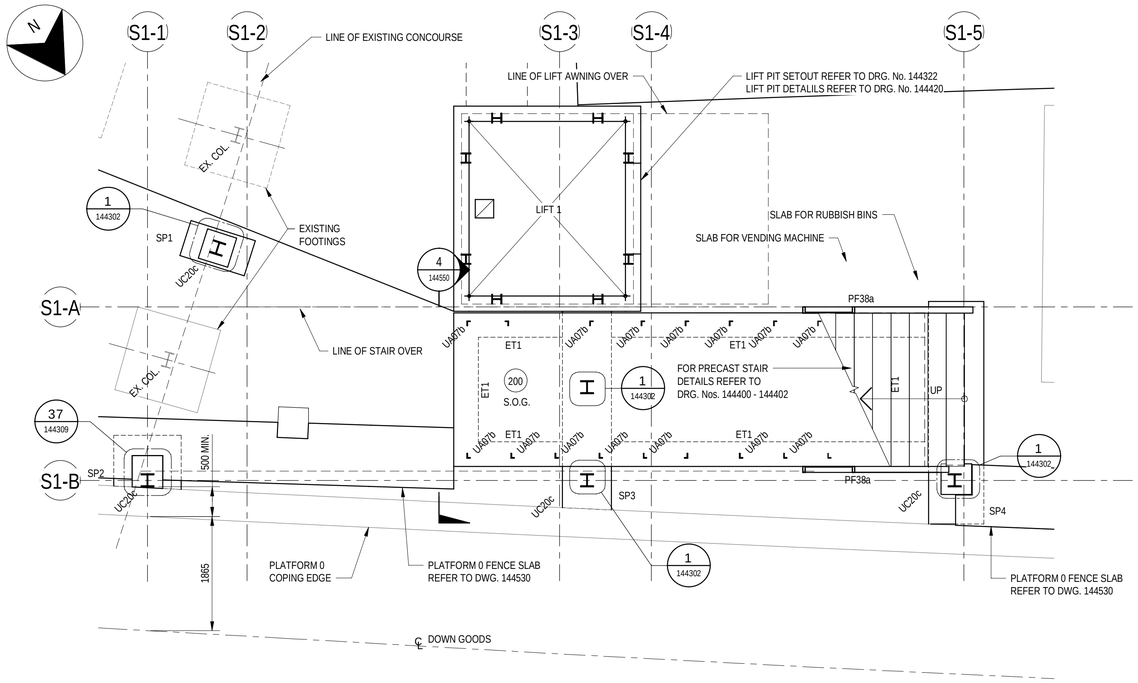
SYDNEY METRO

CANTERBURY STATION (10.596km to 10.930km)
STRUCTURAL
PLATFORM WORKS
NEW PLATFORM FOOTING PLAN - SHEET 1

STATUS: STAGE 3 | SHEET 1 OF 7 | ©
DRG No. SMCSWSWM-MTM-WCR-ST-DWG-144215 | REV. C

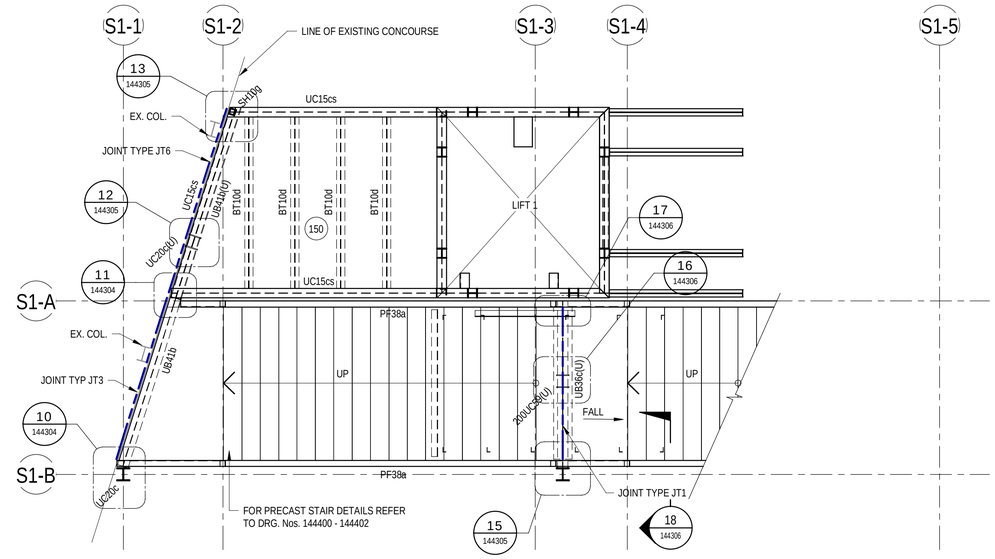
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No.

100mm AT FULL SIZE Plot Date & Time 9/26/2020 6:43:04 PM



STAIR FOUNDATIONS

1 : 50

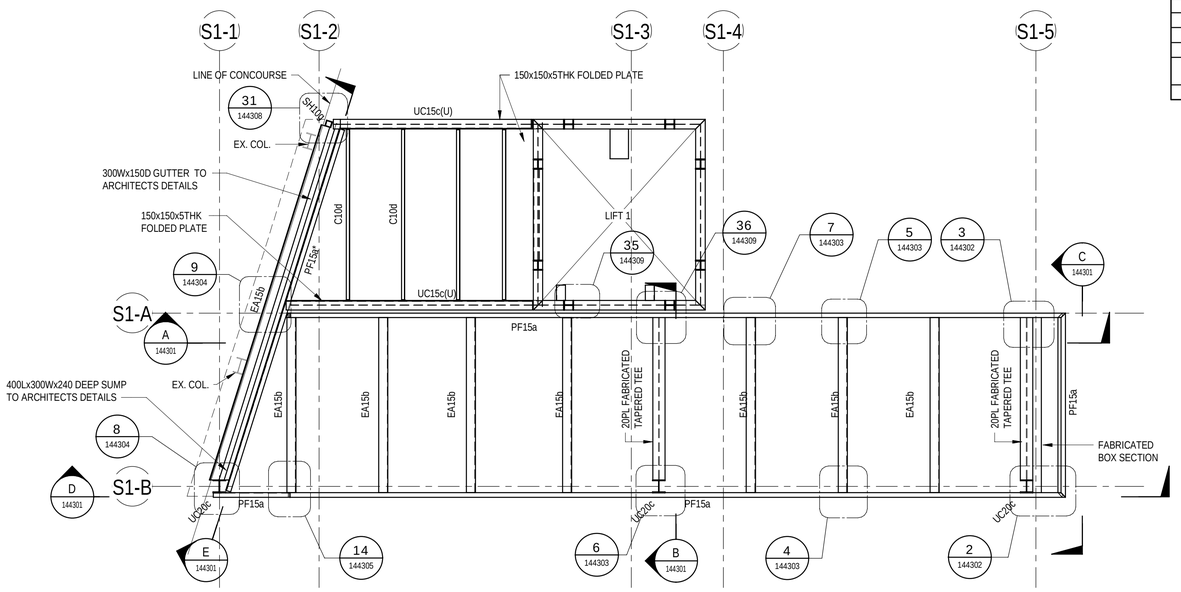


STAIR AT CONCOURSE LEVEL

1 : 50

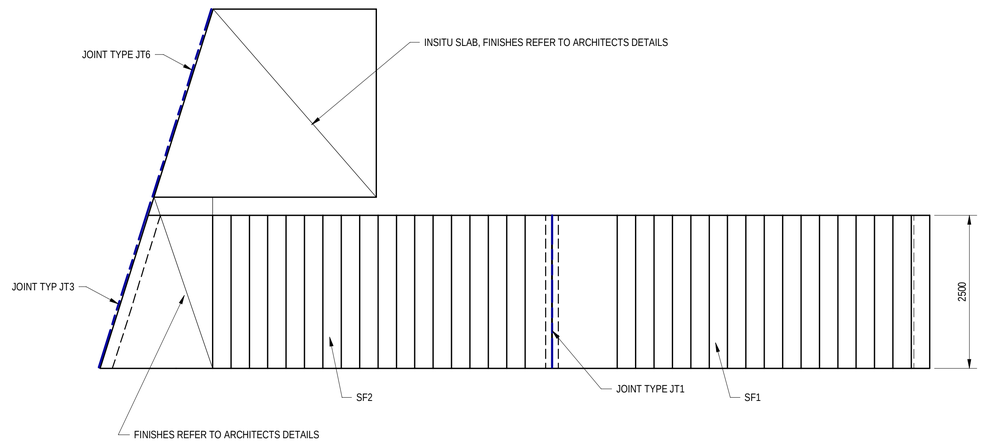
STAIR FRAMING SCHEDULE	
MARK	MEMBER
BT10d	100BT15
C10d	C10019
EA10c	100x100x10EA
EA15b	150x150x12 EA
PF15a	150PFC
PF15a*	REFER TO DETAIL ON DRG. 144304
PF38a	380PFC
RB42a	42 DIA ROUND BAR
SH08e	89x89x6.0SHS
SH10g	100x100x9.0SHS
UA07b	75x50x6UA
UB36c	360UB56
UB41b	410UB59
UC15c	150UC37
UC15cs	150UC37 WITH 19 DIA x 90 SHEAR STUDS AT 300 crs
UC20c	200UC59

FOUNDATION SCHEDULE					
MARK	SIZE	TYPE	REINFORCEMENT	INFERRED FOUNDING MATERIAL	SERVICIBILITY/MINIMUM ALLOWABLE BEARING PRESSURE
ET1	400Wx400D	EDGE THICKENING.	REFER DRG 144550	PLATFORM FILL	80 kPa
SP1	1100Lx600Wx600D	PAD FOOTING	REFER DRG 144402	SANDSTONE IV	300 kPa
SP2	REFER DETAIL	PAD FOOTING	REFER DRG 144402	SANDSTONE IV	300 kPa
SP3	REFER DETAIL	PAD FOOTING	REFER DRG 144403	SANDSTONE IV	300 kPa
SP4	REFER DETAIL	PAD FOOTING	REFER DRG 144404	SANDSTONE IV	300 kPa



STAIR ROOF PLAN

1 : 50



PLAN ON PRECAST STAIR ELEMENTS

1 : 50

REFER TO ARCHITECTURAL DRAWINGS FOR PROFILE DETAILS OF RISER, TREAD, FALLS TO LANDING AND TREAD, NOSING DETAILS, ETC.

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
D	GM	24.09.2020	UPDATED STAGE 3 ISSUE	LP
C	DL	06.03.2020	ISSUED FOR STAGE 3	LP
B	DL	30.09.2019	ISSUED FOR STAGE 2	LP
A	ND	11.06.2019	ISSUED FOR STAGE 1	LP

1:100 FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

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ALT. DRG No. SMCSWSWM-MTM-WCR-ST-DWG-144300 P01

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SERVICE PROVIDERS

METRON T2M

DRAWN N.SAWANT
DESIGNED A.COCKBURN
DRG CHECK D.LYWOOD
DESIGN CHECK V.MCLAUGHLIN
APPROVED R.BLUC 30.09.2019

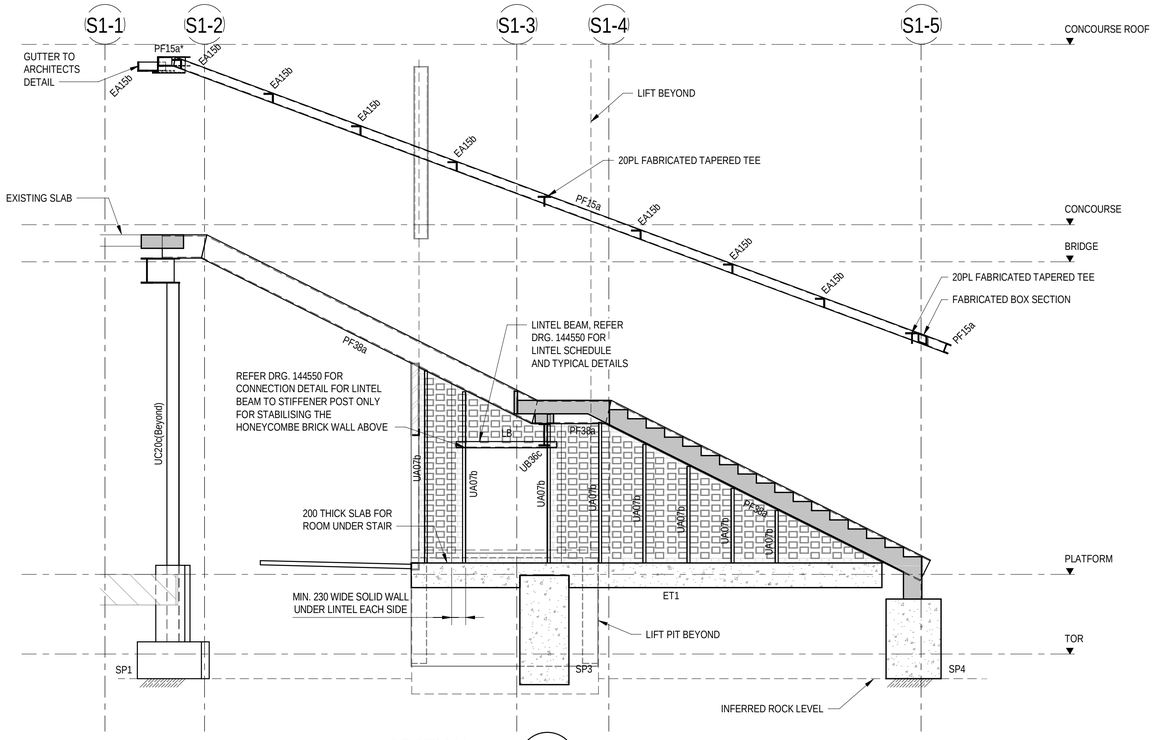
SYDNEY METRO

CANTERBURY STATION (10.596km to 10.930km)
STRUCTURAL
STEELWORK DETAILS
STAIRS - SHEET 1

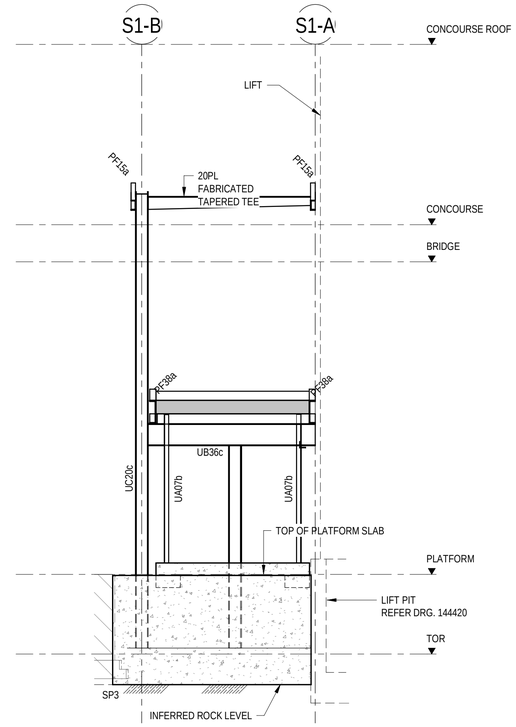
STATUS: STAGE 3 | SHEET 1 OF 2 | ©

DRG No. SMCSWSWM-MTM-WCR-ST-DWG-144300 | REV. D

100mm AT FULL SIZE Plot Date & Time 9/26/2020 6:44:19 PM



SECTION A
1 : 50
144300



SECTION B
1 : 50
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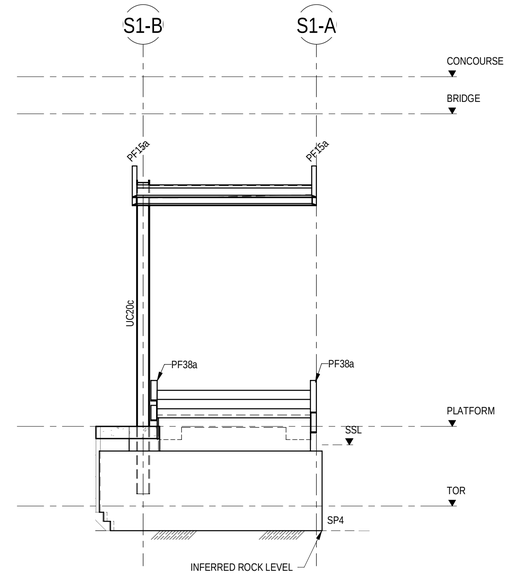
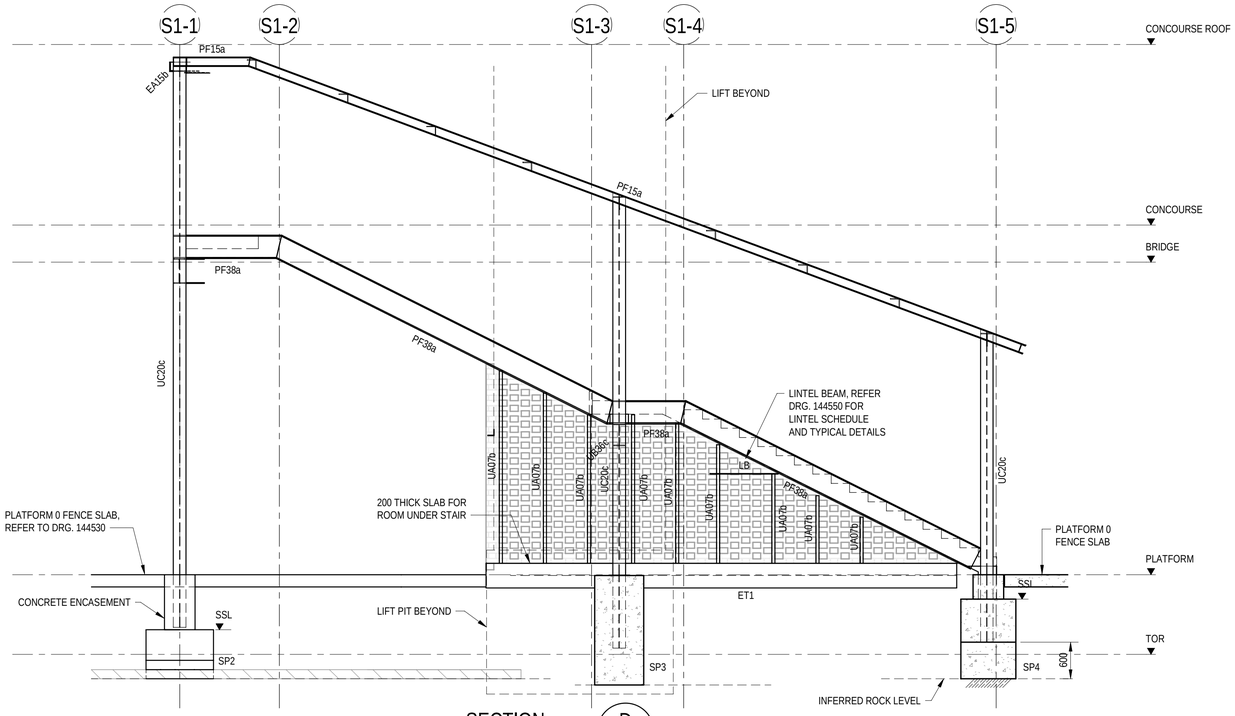


SECTION C
1 : 50
144300

NOTE:
REFER TO ARCHITECTURAL DRAWINGS FOR ALL THE LEVEL RL'S



SECTION D
1 : 50
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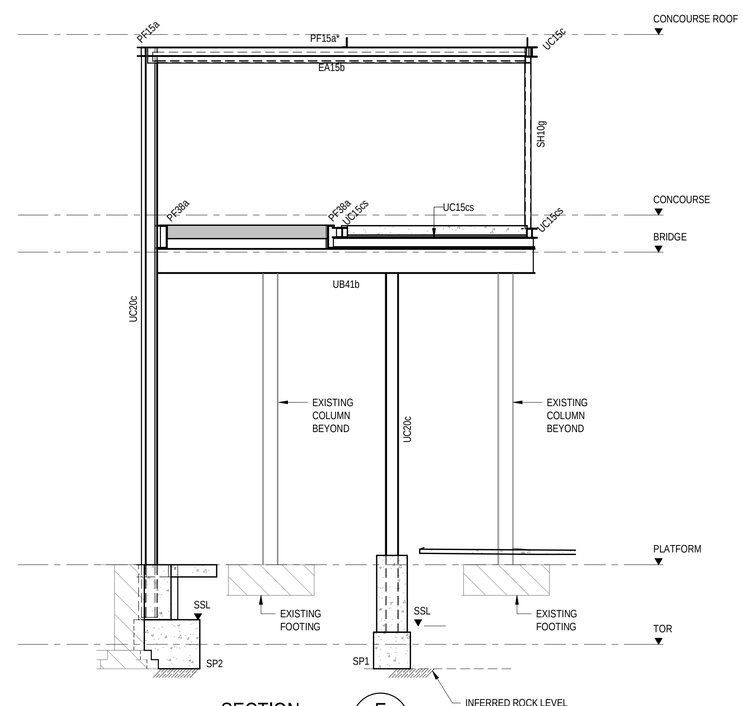

SECTION E
1 : 50
144300

STAIR FRAMING SCHEDULE

MARK	MEMBER
BT10d	100BT15
C10d	C10019
EA10c	100x100x10EA
EA15b	150x150x12 EA
PF15a	150PFC
PF15a*	REFER TO DETAIL ON DRG. 144304
PF38a	380PFC
RB42a	42 DIA ROUND BAR
SH08e	89x89x6.0SHS
SH10g	100x100x9.0SHS
UA07b	75x50x6UA
UB36c	360UB56
UB41b	410UB59
UC15c	150UC37
UC15cs	150UC37 WITH 19 DIA x 90 SHEAR STUDS AT 300 crs
UC20c	200UC59

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
D	GM	24.09.2020	UPDATED STAGE 3 ISSUE	LP
C	DL	06.03.2020	ISSUED FOR STAGE 3	LP
B	DL	30.09.2019	ISSUED FOR STAGE 2	LP
A	ND	11.06.2019	ISSUED FOR STAGE 1	LP

0.5 0 0.5 1 1.5 2m
1:50 FULL SIZE A1

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SERVICE PROVIDERS
METRON T2M

DRAWN N.SAWANT
DESIGNED A.COCKBURN
DRG CHECK D.LYWOOD
DESIGN CHECK V.MCLAUGHLIN
APPROVED R.BLIUC 30.09.2019

SYDNEY METRO

CANTERBURY STATION (10.596km to 10.930km)
STRUCTURAL
STEELWORK DETAILS
STAIRS - SHEET 2

STATUS: STAGE 3 | SHEET 2 OF 2 | ©
DRG No. SMCSWSWM-MTM-WCR-ST-DWG-144301 | REV. D

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-ST-DWG-144301 P01

100mm AT FULL SIZE Plot Date & Time 9/26/2020 6:44:24 PM

Appendix C

MSB design drawings

C.1 MSB design drawings

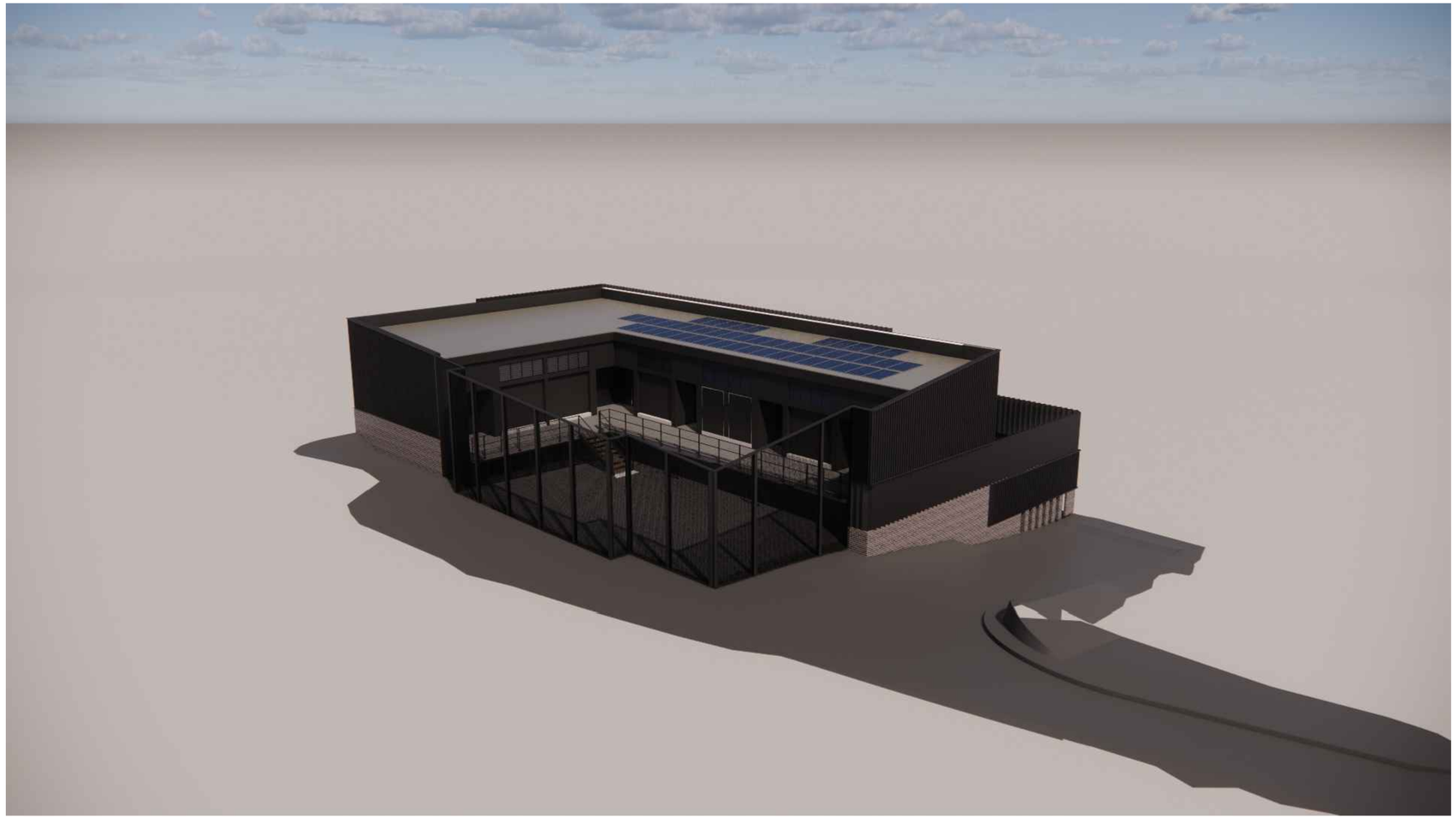
SYDNEY METRO

SOUTHWEST

CANTERBURY STATION - SERVICE BUILDING

CIVIL ENGINEERING

PACKAGE NO. 443



DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
C	TL	06.10.2020	ISSUED FOR STAGE 3	LP
B	TL	18.03.2020	ISSUED FOR STAGE 2	LP
A	TL	08.11.2020	ISSUED FOR STAGE 1	LP

SCALES

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SERVICE PROVIDERS

METRON T2M

DRAWN M. ZHOU

DESIGNED G. LUO / A. KIRK

DRG CHECK P. ALFORD

DESIGN CHECK T. LEE

APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING

CIVIL ENGINEERING

SERVICE BUILDING

COVER SHEET

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443101 | REV. C

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443101 0

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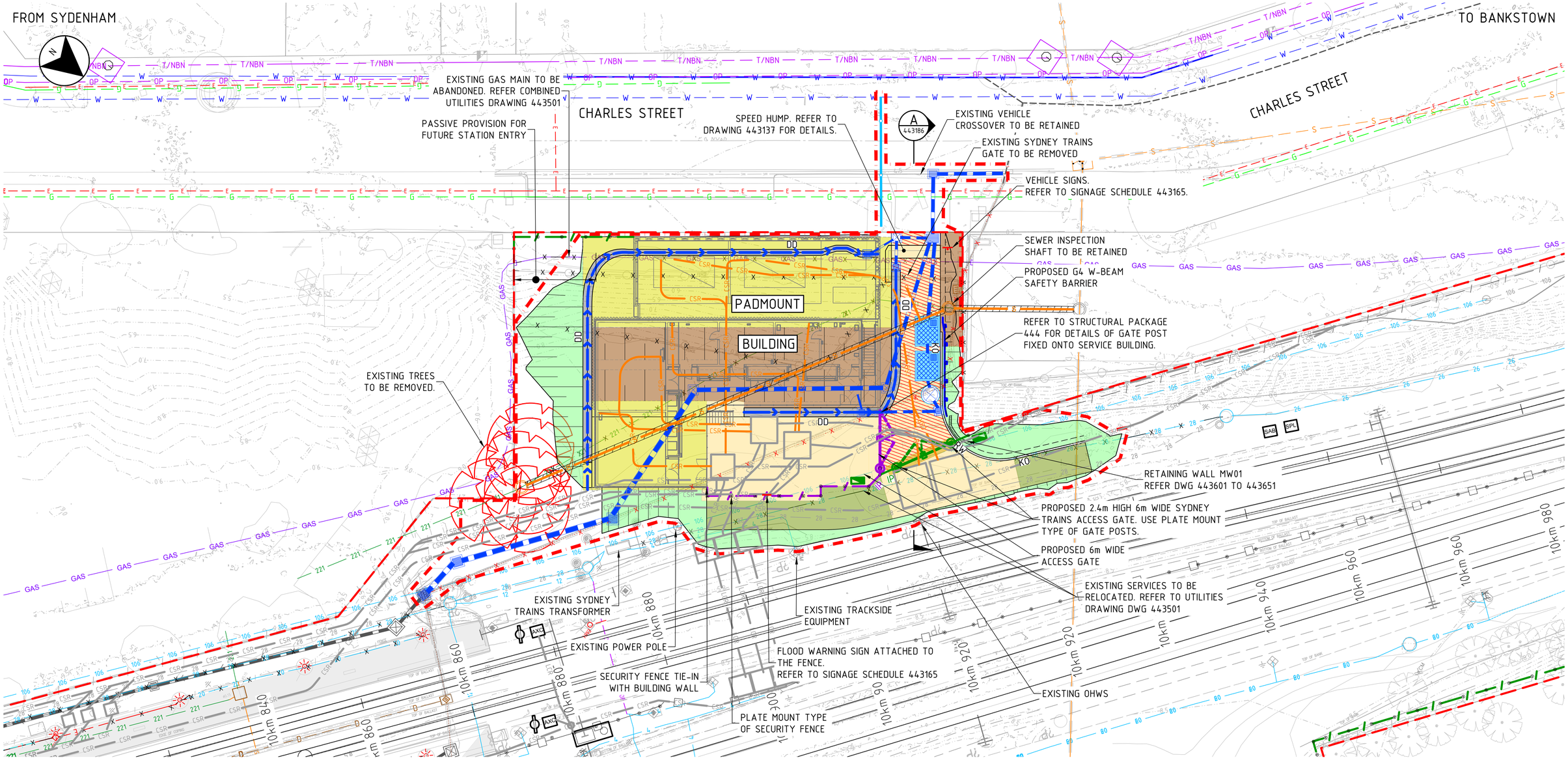
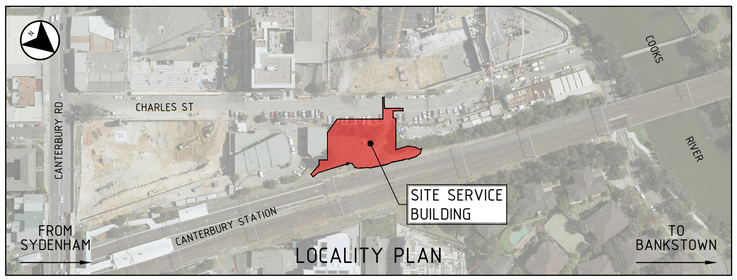


PLAN

SCALE 1:200

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. REFER TO STATION DESIGN PACKAGES FOR PLATFORM AND BUILDING WORKS.
4. FOR FINISH SURFACE PLAN REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443137.
5. FOR PAVEMENT PLAN REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443161.
6. FOR BULK EARTHWORKS CUT AND FILL PLAN REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443201.
7. FOR BULK EARTHWORKS PLAN AND LONGITUDINAL SECTION REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443206.
8. FOR DRAINAGE LAYOUT REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443301.
9. FOR CSR LAYOUT REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443410. DO NOT REFER TO ANY OTHER GENERAL ARRANGEMENT PLANS FOR THE DESIGN AND EXTENTS OF CSR WORKS.
10. FOR UTILITIES LAYOUT REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443501.
11. FOR RETAINING WALL AND SHOTCRETE PLAN AND DETAILS, REFER DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443601 TO 443643.
12. PADMOUNT AND CHILLER BAY WILL BE FULLY ENCLOSED. ITS FENCE WILL BE PART OF ARCHTIECTURAL DESIGN. REFER TO ARCHITECTURAL PACKAGE 441.



LOCALITY PLAN

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

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REV.	BY	DATE	DESCRIPTION	APPD.
C	TL	06.10.2020	ISSUED FOR STAGE 3	LP
B	TL	18.03.2020	ISSUED FOR STAGE 2	LP
A	RT	08.11.2019	ISSUED FOR STAGE 1	LP

SCALES: 1 : 200 — 2 0 2 4 6 8m — FULL SIZE A1

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SERVICE PROVIDERS: METRON T2M

DRAWN: M. ZHOU
DESIGNED: G. LUO / A. KIRK
DRG CHECK: P. ALFORD
DESIGN CHECK: T. LEE
APPROVED: L. PALMER 06.10.2020

SYDNEY METRO

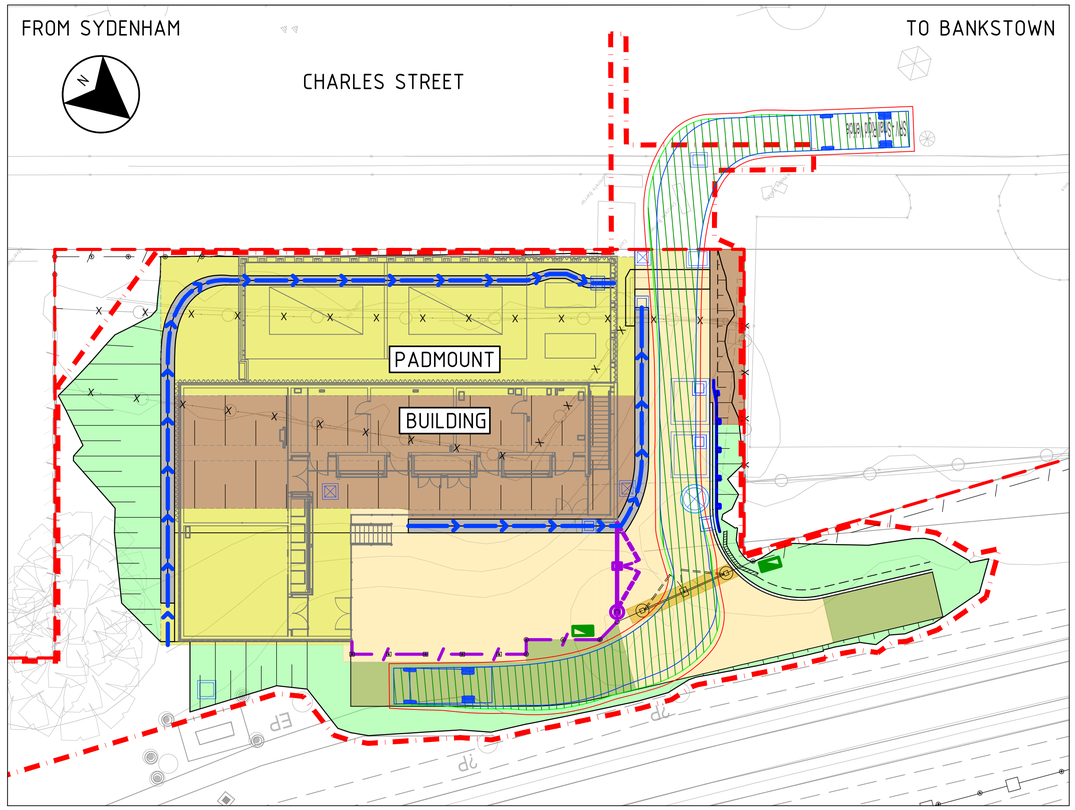
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
GENERAL ARRANGEMENT PLAN

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443111 | REV. C

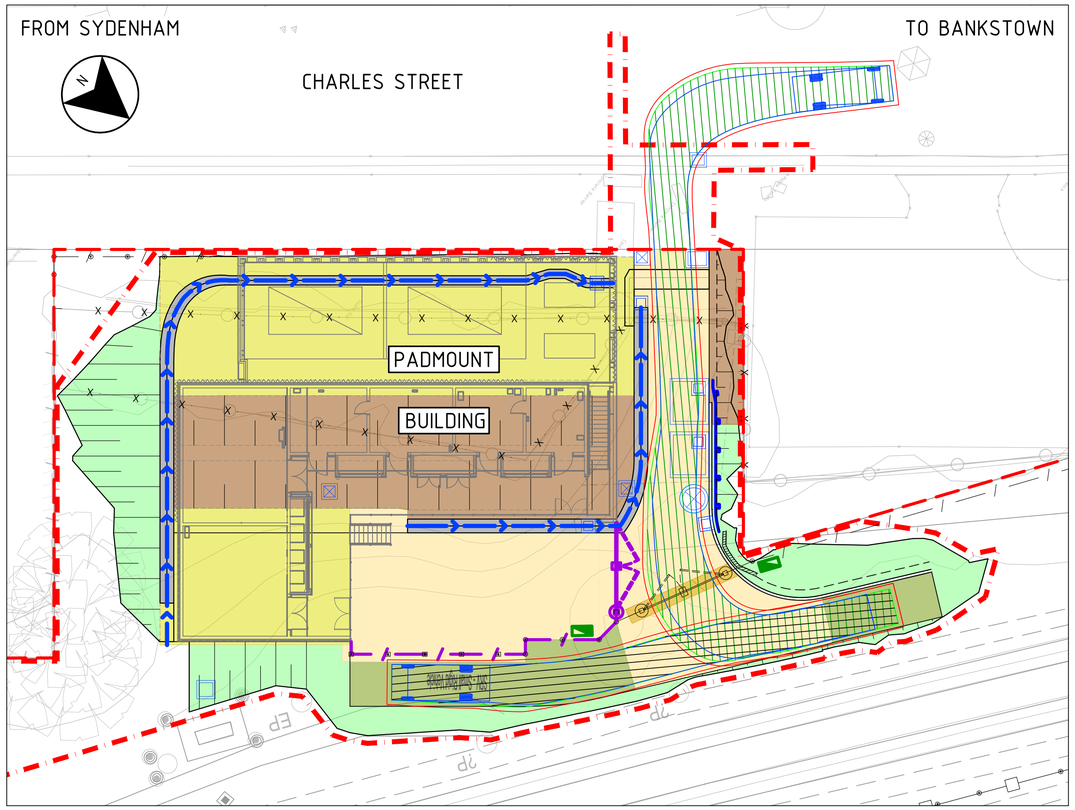
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443111 0

Plot Date: 04/10/20 - 18:17 Cad File: C:\projectwise\MM_TRNSW\44_Canterbury\SMCSWSWM-MTM-WCR-CE-DWG-443111.dwg 100mm AT FULL SIZE



SRV VEHICLE ENTRY (INTO RAIL CORRIDOR)

SCALE 1:200



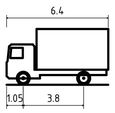
SRV VEHICLE EXIT (FROM RAIL CORRIDOR)

SCALE 1:200

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. DESIGN VEHICLES FOR SWEPT PATH CHECK IS SRV.

LEGEND



SRV - SMALL RIGID VEHICLE

OVERALL LENGTH	6.400m
OVERALL WIDTH	2.330m
OVERALL BODY HEIGHT	3.500m
MIN BODY GROUND CLEARANCE	0.398m
TRACK WIDTH	2.330m
LOCK-TO-LOCK TIME	4.00s
CURB TO CURB TURNING RADIUS	7.100m

WHEEL ENVELOPE
VEHICLE ENVELOPE
0.3m CLEARANCE ENVELOPE
VEHICLE FORWARD MOVEMENT
VEHICLE REVERSE MOVEMENT

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NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

2 0 2 4 6 8m

1 : 200 FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

NOTE: Do not scale from this drawing.

ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443116 0

CLIENT

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SERVICE PROVIDERS

METRON T2M

DRAWN M. ZHOU
DESIGNED G. LUO / A. KIRK
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

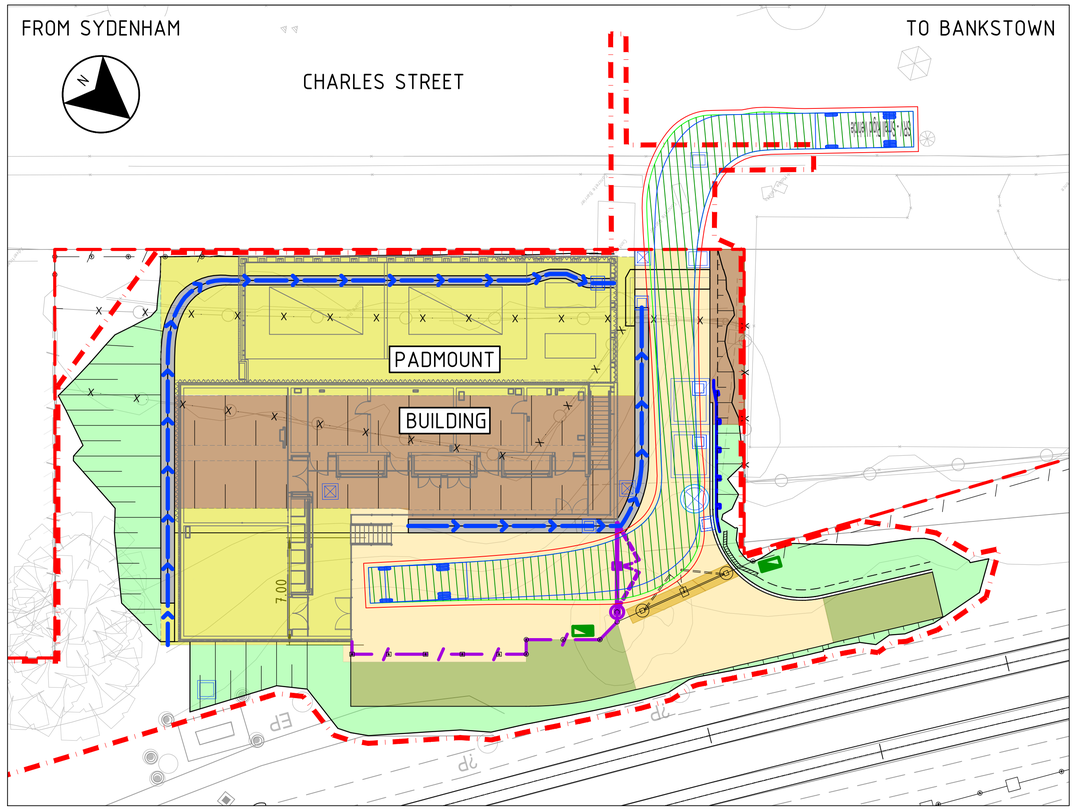
SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
VEHICLE MANOEUVERING PLAN

STATUS: STAGE 3 | SHEET 1 OF 2 | ©

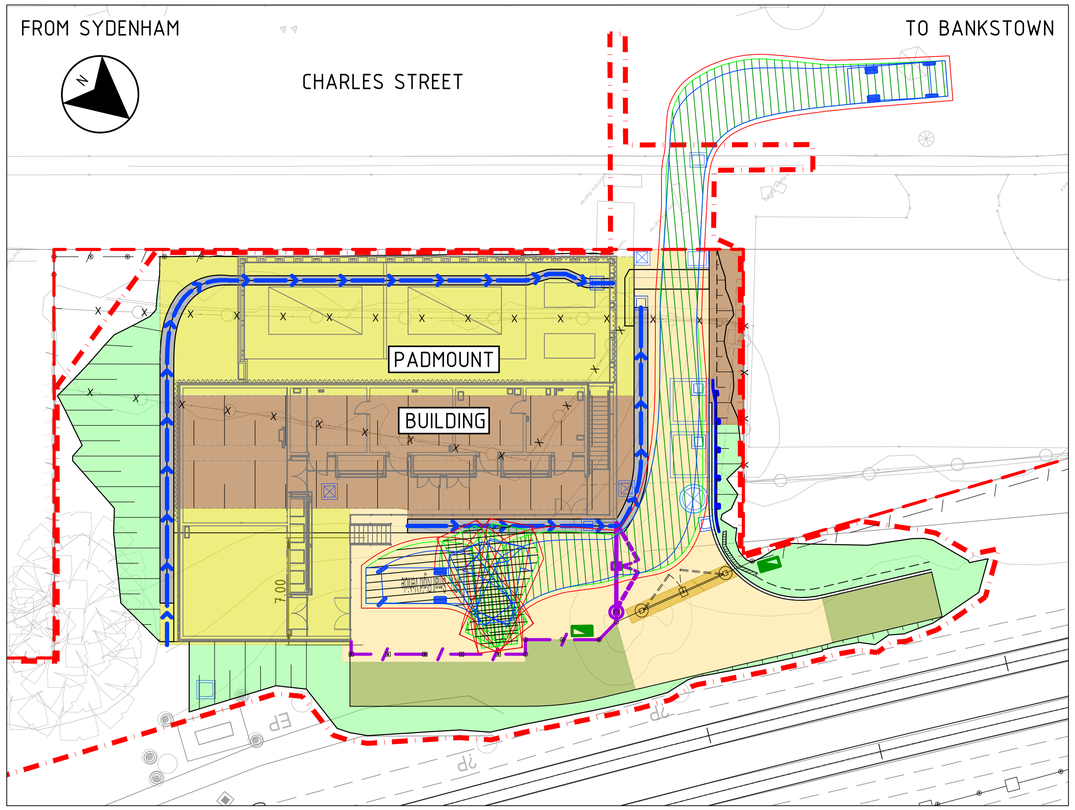
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443116 | REV. A

Cad File: C:\ProjectWise\mm-sydney-metro-usdts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443116.dwg
Plot Date: 02/10/20 - 11:38
100mm AT FULL SIZE



SRV VEHICLE ENTRY (INTO SERVICE BUILDING)

SCALE 1:200



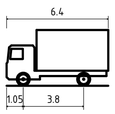
SRV VEHICLE EXIT (FROM SERVICE BUILDING)

SCALE 1:200

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. DESIGN VEHICLES FOR SWEPT PATH CHECK IS SRV.

LEGEND



SRV - SMALL RIGID VEHICLE

OVERALL LENGTH	6.400m
OVERALL WIDTH	2.330m
OVERALL BODY HEIGHT	3.500m
MIN BODY GROUND CLEARANCE	0.398m
TRACK WIDTH	2.330m
LOCK-TO-LOCK TIME	4.00s
CURB TO CURB TURNING RADIUS	7.100m

WHEEL ENVELOPE
VEHICLE ENVELOPE
0.3m CLEARANCE ENVELOPE
VEHICLE FORWARD MOVEMENT
VEHICLE REVERSE MOVEMENT

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

2 0 2 4 6 8m

1 : 200 FULL SIZE A1

CLIENT

NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS

METRON T2M

DRAWN M. ZHOU
DESIGNED G. LUO / A. KIRK
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

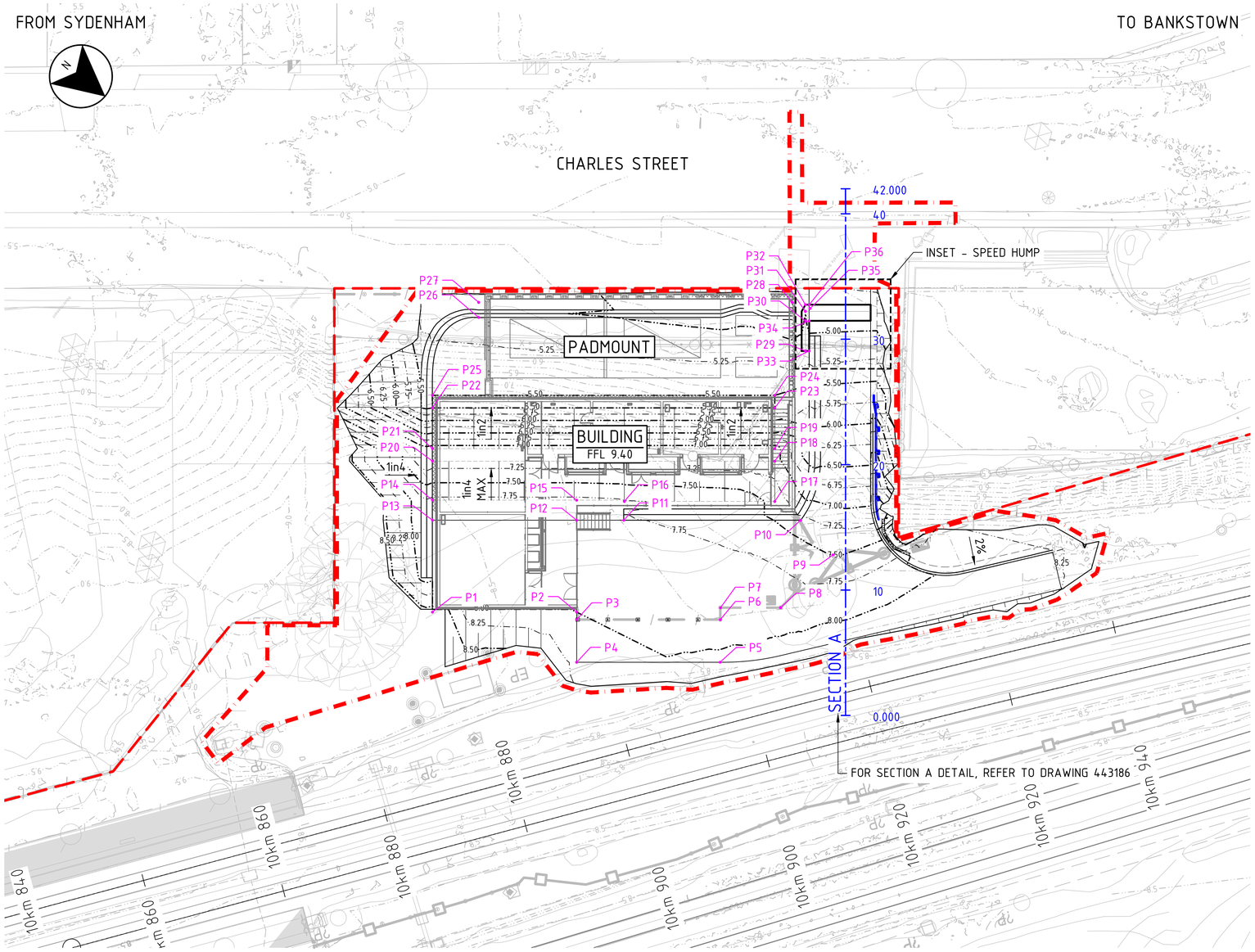
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
VEHICLE MANOEUVERING PLAN

STATUS: STAGE 3 | SHEET 2 OF 2 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443117 | REV. A

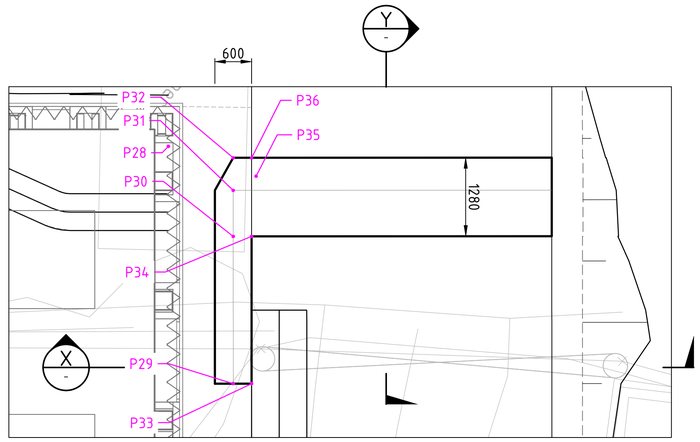
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443117 0

100mm AT FULL SIZE Plot Date: 02/10/20 - 11:39 Cad File: C:\Project\Wise\mm-sydney-metro-uscits-(apna-au)\0185377\SMCSWSWM-MTM-WCR-CE-DWG-443117.dwg



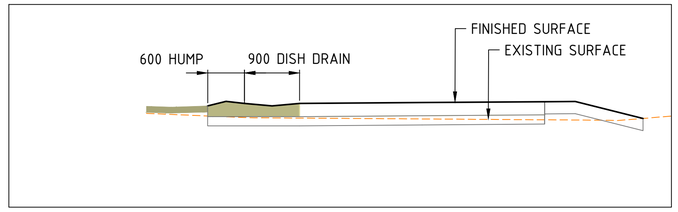
PLAN

SCALE 1:200



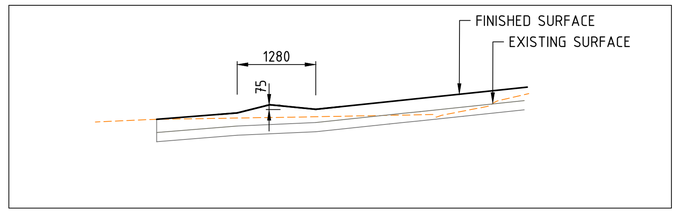
INSET - SPEED HUMP

SCALE 1:50



SECTION X

SCALE 1 : 50



SECTION Y

SCALE 1 : 50

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. FINISH SURFACE PLAN DENOTES THE FINISH SURFACE LEVELS OF SERVICE YARD, ACCESSWAY, OPEN CHANNEL AND GRASS AREA (TOPSOIL INCLUDED).
4. FOR BULK EARTHWORK LEVELS, REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443206.

POINT	EASTING	NORTHING	LEVEL
1	325931.034	6246077.959	8.000
2	325923.672	6246086.794	8.000
3	325924.133	6246087.178	8.012
4	325926.745	6246089.355	8.080
5	325919.418	6246098.148	8.031
6	325916.802	6246095.977	7.928
7	325916.060	6246095.383	7.900
8	325912.991	6246099.062	7.880
9	325907.078	6246099.581	7.489
10	325906.609	6246095.829	7.319
11	325915.641	6246084.990	7.768
12	325918.045	6246082.105	7.805

POINT	EASTING	NORTHING	LEVEL
13	325925.406	6246073.270	7.805
14	325924.177	6246072.246	7.805
15	325916.816	6246081.081	7.805
16	325914.460	6246084.064	7.767
17	325906.778	6246093.283	7.414
18	325904.312	6246091.228	7.125
19	325903.544	6246090.588	7.125
20	325921.788	6246070.255	7.125
21	325921.020	6246069.615	7.125
22	325918.523	6246067.535	5.500
23	325901.047	6246088.508	5.500
24	325900.278	6246087.868	5.500

POINT	EASTING	NORTHING	LEVEL
25	325917.755	6246066.894	5.500
26	325910.623	6246065.745	5.119
27	325909.701	6246064.977	5.113
28	325893.695	6246084.185	4.857
29	325895.994	6246087.478	5.141
30	325894.148	6246085.940	5.026
31	325893.571	6246085.459	4.991
32	325893.164	6246085.119	4.866
33	325895.802	6246087.709	5.140
34	325893.956	6246086.170	4.907
35	325893.379	6246085.689	4.991
36	325892.972	6246085.350	4.864

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 1 : 50 FULL SIZE A1 (0.5 0 0.5 1 1.5m); 1 : 200 FULL SIZE A1 (2 0 2 4 6 8m)

CLIENT: NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS: METRON T2M

DRAWN M. ZHOU
DESIGNED A. KIRK
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

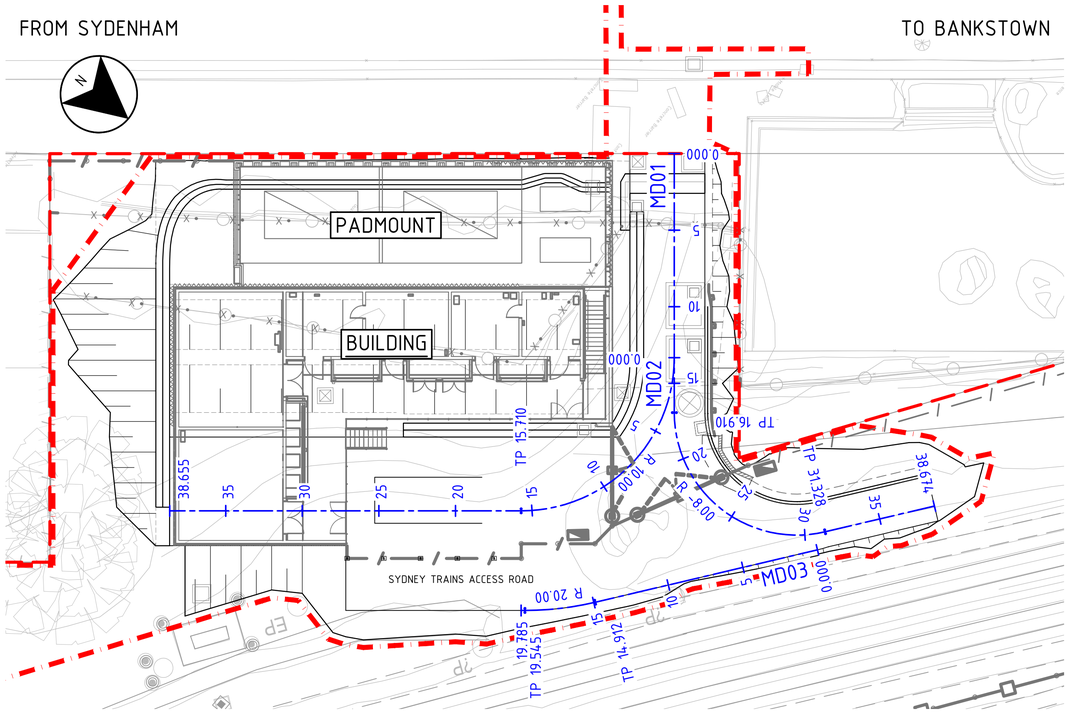
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
FINISH SURFACE PLAN

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443137 | REV. A

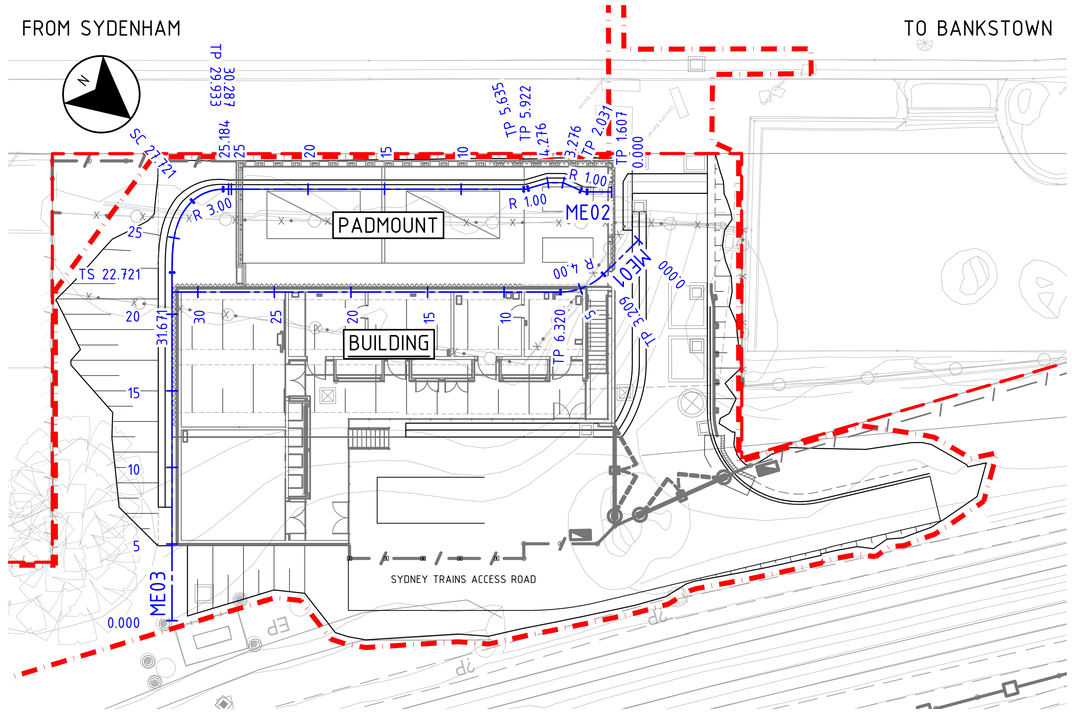
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443137 0

Cad File: C:\projectwise\MM-Sydney-Metro-usdfs-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443137.dwg
Plot Date: 04/10/20 - 12:07
100mm AT FULL SIZE



PLAN (MD)

SCALE 1:200



PLAN (ME)

SCALE 1:200

SETOUT TABLE - MD01

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	DEP.SEG	DEP.RAD	DEP.LEN
S	0.000	325890.104	6246086.735	4.745	50°11'11.75"	LINE		16.910
	5.000	325893.945	6246089.936	5.160	50°11'11.75"			
	10.000	325897.785	6246093.138	5.863	50°11'11.75"			
	15.000	325901.626	6246096.339	6.613	50°11'11.75"			
TC	16.910	325903.093	6246097.562	6.899	50°11'11.75"	ARC	-8.000	14.418
	20.000	325905.031	6246099.944	7.363	28°03'24.95"		-8.000	
	25.000	325905.898	6246104.786	7.916	352°14'49.44"		-8.000	
	30.000	325903.768	6246109.220	8.113	316°26'13.94"		-8.000	
CT	31.328	325902.777	6246110.102	8.127	306°55'32.98"	LINE		7.346
	35.000	325899.842	6246112.309	8.163	306°55'32.98"			
E	38.674	325896.905	6246114.516	8.200	306°55'32.98"			

SETOUT TABLE - MD02

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	DEP.SEG	DEP.RAD	DEP.LEN
S	0.000	325900.339	6246095.267	6.362	140°11'47.99"	ARC	10.000	15.710
	5.000	325904.806	6246097.396	7.112	78°50'04.62"		10.000	
	10.000	325909.746	6246097.123	7.694	107°28'57.02"		10.000	
	15.000	325913.951	6246094.515	7.828	136°07'49.42"		10.000	
CT	15.710	325914.425	6246093.987	7.836	140°11'47.99"	LINE		22.945
	20.000	325917.171	6246090.691	7.878	140°11'47.99"			
	25.000	325920.372	6246086.850	7.928	140°11'47.99"			
	30.000	325923.573	6246083.008	7.950	140°11'47.99"			
	35.000	325926.773	6246079.167	7.950	140°11'47.99"			
E	38.655	325929.113	6246076.359	7.950	140°11'47.99"			

SETOUT TABLE - MD03

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	DEP.SEG	DEP.RAD	DEP.LEN
S	0.000	325903.994	6246110.477	8.192	126°55'32.98"	LINE		14.912
	5.000	325907.991	6246107.473	8.177	126°55'32.98"			
	10.000	325911.988	6246104.469	8.128	126°55'32.98"			
TC	14.912	325915.915	6246101.518	8.079	126°55'32.98"	ARC	20.000	4.632
	15.000	325915.985	6246101.465	8.078	127°10'38.58"		20.000	
CT	19.545	325919.265	6246098.332	8.033	140°11'47.99"	LINE		0.240
E	19.785	325919.418	6246098.148	8.030	140°11'47.99"			

SETOUT TABLE - ME01

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	DEP.SEG	DEP.LEN
S	0.000	325900.663	6246088.188	5.500	140°11'47.99"	LINE	27.300
	5.000	325903.863	6246084.346	5.500	140°11'47.99"		
	10.000	325907.064	6246080.505	5.500	140°11'47.99"		
	15.000	325910.265	6246076.664	5.500	140°11'47.99"		
	20.000	325913.466	6246072.823	5.500	140°11'47.99"		
	25.000	325916.666	6246068.981	5.500	140°11'47.99"		
E	27.300	325918.139	6246067.215	5.500	140°11'47.99"		

SETOUT TABLE - ME02

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	DEP.SEG	DEP.RAD	DEP.LEN
S	0.000	325894.752	6246085.065	4.864	140°11'47.99"	LINE		1.607
TC	1.607	325895.781	6246083.830	4.882	140°11'47.99"	ARC	1.000	0.423
CT	2.031	325895.976	6246083.458	4.886	164°27'17.52"	LINE		1.246
DIS	3.276	325896.310	6246082.258	4.893	140°11'50.51"	LINE		1.000
DIS	4.276	325896.950	6246081.490	4.898	123°46'33.09"	LINE		1.359
	5.000	325897.551	6246081.088	4.901	123°46'33.09"			
TC	5.635	325898.079	6246080.734	4.904	123°46'33.09"	ARC	1.000	0.287
CT	5.922	325898.292	6246080.543	4.907	140°11'47.99"	LINE		19.262
	10.000	325900.902	6246077.410	4.952	140°11'47.99"			
	15.000	325904.103	6246073.569	5.007	140°11'47.99"			
	20.000	325907.304	6246069.728	5.062	140°11'47.99"			
	25.000	325910.505	6246065.887	5.117	140°11'47.99"			
E	25.184	325910.623	6246065.745	5.119	140°11'47.99"			

SETOUT TABLE - ME03

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	DEP.SEG	DEP.RAD	DEP.LEN
S	0.000	325934.623	6246080.938		230°11'47.40"	LINE		22.721
	5.000	325930.782	6246077.737	8.544	230°11'47.40"			
	10.000	325926.941	6246074.536	7.865	230°11'47.40"			
	15.000	325923.100	6246071.335	7.497	230°11'47.40"			
	20.000	325919.258	6246068.134	5.974	230°11'47.40"			
TS	22.721	325917.168	6246066.393	5.492	230°11'47.40"	TRANSITION		5.000
	25.000	325915.338	6246065.039	5.379	240°07'05.43"			
SC	27.721	325912.739	6246064.422	5.175	277°56'34.74"	ARC	3.000	2.212
CT	29.933	325910.849	6246065.473	5.122	320°11'47.99"	LINE		0.354
	30.000	325910.806	6246065.524	5.122	320°11'47.99"			
E	30.287	325910.623	6246065.745		320°11'47.99"			

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

2 0 2 4 6 8m

1 : 200 FULL SIZE A1

CLIENT

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SERVICE PROVIDERS

METRON T2M

DRAWN M. ZHOU

DESIGNED A. KIRK

DRG CHECK P. ALFORD

DESIGN CHECK T. LEE

APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING

CIVIL ENGINEERING

SERVICE BUILDING - CIVIL

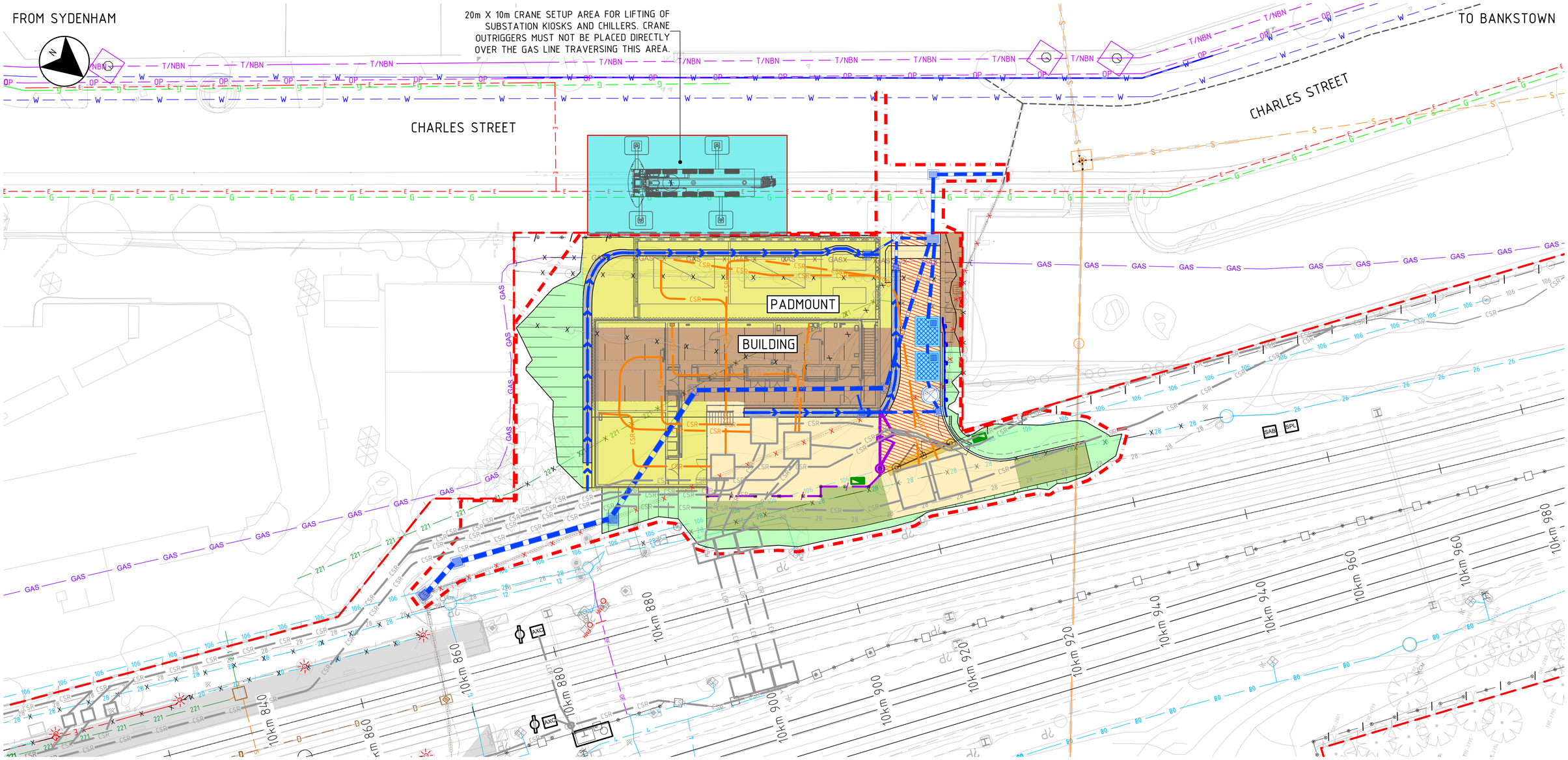
SETOUT CONTROL PLAN AND TABLES

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443138 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443138 0

Cad File: C:\ProjectWise\mm-sydney-metro-usdfs-japna-au\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443138.dwg
Plot Date: 02/10/20 - 11:38
100mm AT FULL SIZE



PLAN

SCALE 1:200

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. FOR PAVEMENT DETAILS REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443166.
4. THE CRANE LAYOUT, OUTRIGGER LOCATION AND TRACKING CURVES ARE BASED ON 130 TON CRANE LIEBHERR-LTM1130.
5. IT IS IMPERATIVE THAT CONTRACTOR PLACES OUTRIGGER AT THE LOCATIONS OUTLINE THIS LIFTING PLAN, SO AS NOT TO DAMAGE UNDERGROUND UTILITIES.
6. CONTRACTOR IS TO DEVELOP LIFTING STRATEGY PLAN AND CONFIRM LIFTING REQUIREMENTS
7. DESIGN MAXIMUM LIFTING WEIGHT BY 130 TON CRANE LIEBHERIR-LTM1130 IS 18,750 KG ON A WORKING. RADIUS OF 18.5M, OR MAXIMUM 80% OF CRANE'S LIFTING CAPACITY ON DESIGNATED WORKING RADIUS AS SHOWN ON THE CRANE PRODUCT MANUAL, WHICHEVER IS LESSER.
8. CONTRACTOR IS TO INVESTIGATE EXISTING UTILITY SERVICES AT CRANE OUTRIGGER AREA AND OBTAIN REQUIRED APPROVALS PRIOR TO LIFTING OPERATIONS.
9. CONTRACTOR TO ENSURE CRANE PAD'S BEARING CAPACITY IS ACHIEVED FOR THE TYPE OF CRANE SPECIFIED.
10. REFER TO MEP DRAWING PACKAGE 442 FOR DELIVERY ROUTE AND EQUIPMENT DETAILS.

LEGEND

AVAILABLE AREA FOR CRANE OPERATIONS

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 1 : 200 FULL SIZE A1

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SERVICE PROVIDERS: METRON T2M

DRAWN M. ZHOU
DESIGNED G. LUO
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

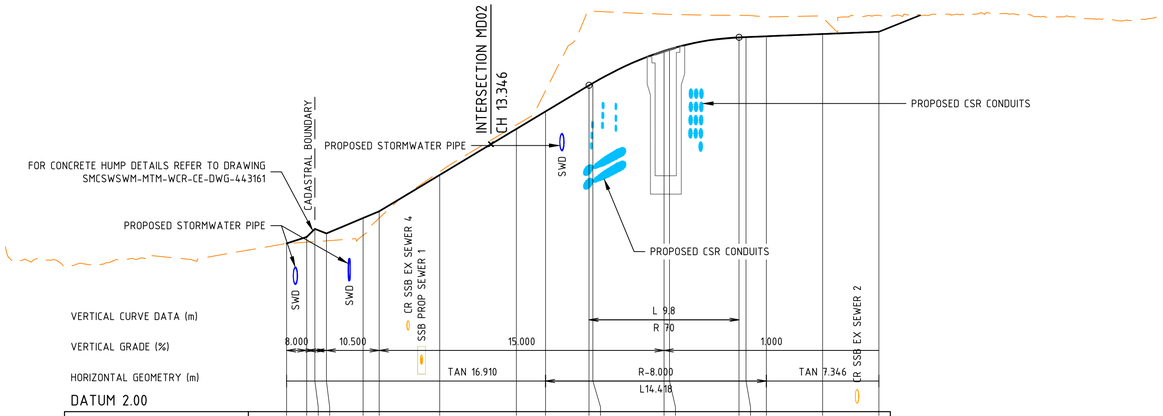
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
LIFTING PLAN

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443156 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443156 0

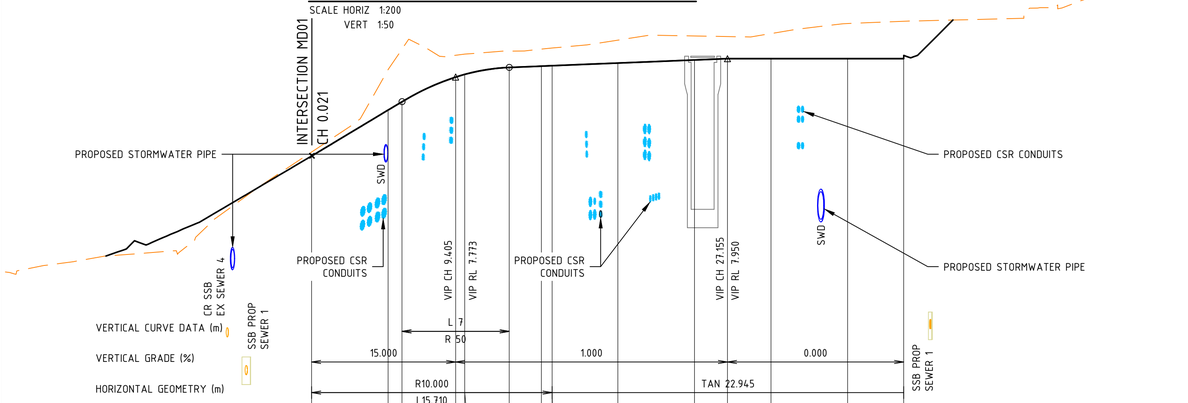
Cad File: C:\ProjectWise\mm-sydney-metro-usdts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443156.dwg
Plot Date: 02/10/20 - 16:30
100mm AT FULL SIZE



CUT DEPTH (+VE) FILL DEPTH (-ve)	0.000	-0.084 -0.208 -0.120	-0.281	-0.111	0.054	0.065	0.340	1.212 1.174	0.598 0.567	0.358 0.354	0.317	0.271	0.267
DESIGN SURFACE LEVEL	4.745	4.850 4.983 4.908	5.160	5.270	5.863	6.613	6.899	7.325 7.363	7.888 7.916	8.109 8.113	8.127	8.163	8.200
EXISTING SURFACE LEVEL	4.745	4.766 4.775 4.788	4.879	5.159	5.917	6.678	7.240	8.537 8.536	8.486 8.483	8.467 8.467	8.443	8.434	8.467
CHAINAGE	0.000	1.316 1.846 2.597	5.000	6.049	10.000	15.000	16.910	19.745 20.000	24.645 25.000	29.545 30.000 31.328		35.000	38.674

DRIVEWAY (MD01) LONGITUDINAL SECTION

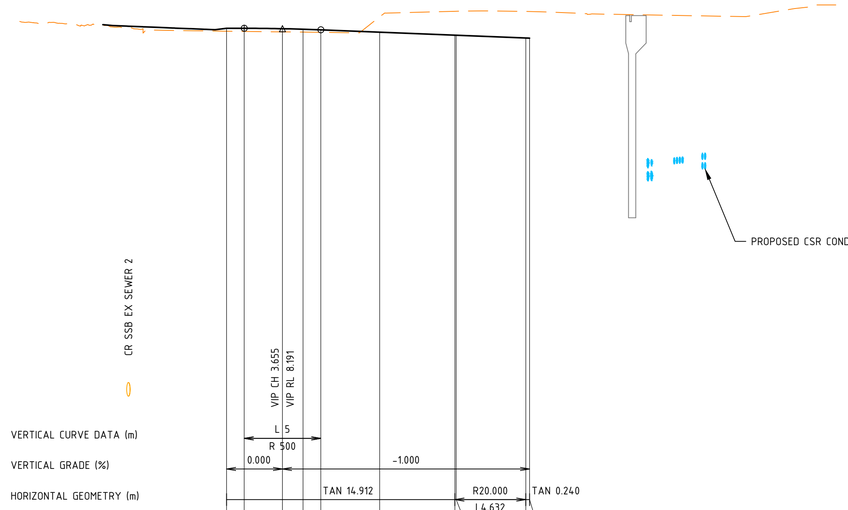
SCALE HORIZ 1:200
VERT 1:50



CUT DEPTH (+VE) FILL DEPTH (-ve)	0.066	0.660 0.883	0.358 0.330	0.269	0.278 0.288	0.374	0.392	0.360	0.409	0.574	0.610
DESIGN SURFACE LEVEL	6.362	7.112 7.248	7.650 7.694	7.808	7.828 7.836	7.878	7.928	7.950	7.950	7.950	7.950
EXISTING SURFACE LEVEL	6.428	7.772 8.130	8.008 8.024	8.076	8.107 8.123	8.253	8.320	8.310	8.359	8.524	8.560
CHAINAGE	0.000	5.000 5.905	9.405 10.000	12.905	15.000 15.710	20.000	25.000	27.155	30.000	35.000	38.655

DRIVEWAY (MD02) LONGITUDINAL SECTION

SCALE HORIZ 1:200
VERT 1:50



CUT DEPTH (+VE) FILL DEPTH (-ve)	-0.047	-0.050	-0.052	-0.048	-0.041	0.249	0.390 0.392	0.436 0.436
DESIGN SURFACE LEVEL	8.191	8.192	8.185	8.177	8.166	8.128	8.079 8.078	8.033 8.030
EXISTING SURFACE LEVEL	8.145	8.141	8.133	8.129	8.125	8.377	8.469 8.470	8.468 8.467
CHAINAGE	0.000	1.155	3.655	5.000	6.155	10.000	14.912 15.000	19.545 19.785

DRIVEWAY (MD03) LONGITUDINAL SECTION

SCALE HORIZ 1:200
VERT 1:50

LEGEND

- EXISTING SURFACE
- DESIGN SURFACE

NOTES

1. REFER TO SMCSWSWM-MTM-WCR-CE-DWG-443138 FOR SETOUT PLAN.
2. REFER TO SMCSWSWM-MTM-WCR-CE-DWG-443137 FOR FINISHED SURFACE PLAN.

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES
1 : 200 FULL SIZE A1
1 : 50 FULL SIZE A1

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SERVICE PROVIDERS
METRON T2M

DRAWN M. ZHOU
DESIGNED G. LUO
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
DRIVEWAY LONGITUDINAL SECTIONS

STATUS: STAGE 3 | SHEET 1 OF 2 | ©
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443181 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443181 0

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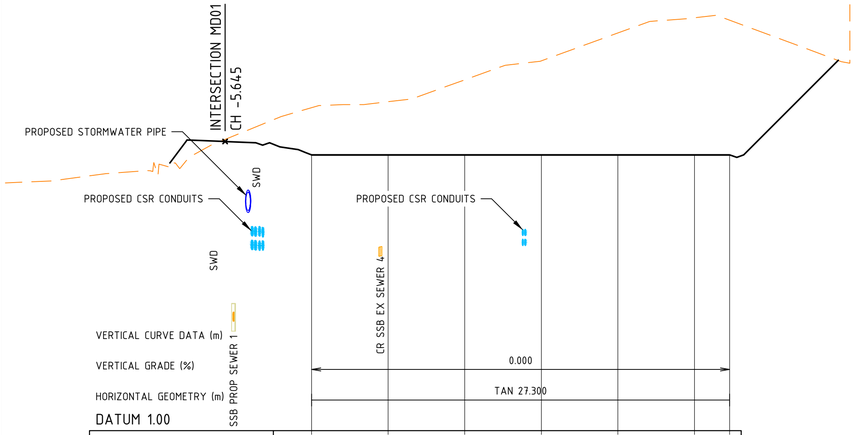
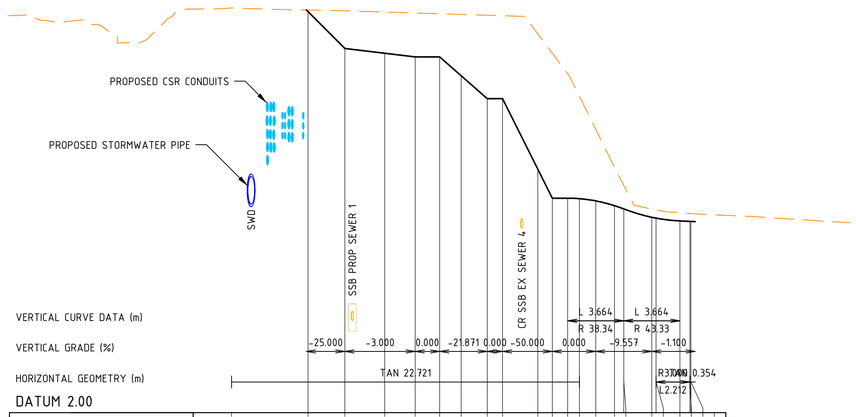


CUT DEPTH (+VE) FILL DEPTH (-ve)	0.771	0.868	1.226	1.536	1.990	2.238	2.199
DESIGN SURFACE LEVEL	5.500	5.500	5.500	5.500	5.500	5.500	5.500
EXISTING SURFACE LEVEL	6.271	6.368	6.726	7.036	7.490	7.738	7.699
CHAINAGE	0.000	5.000	10.000	15.000	20.000	25.000	27.300

(ME01) LONGITUDINAL SECTION

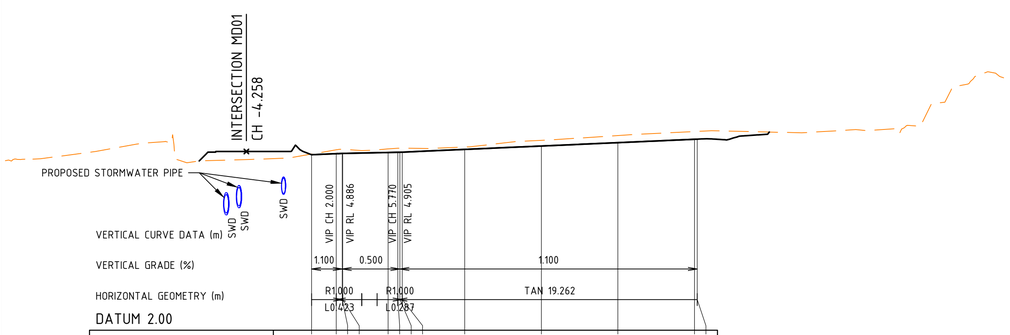
SCALE HORIZ 1:200
VERT 1:50



CUT DEPTH (+VE) FILL DEPTH (-ve)		0.027	0.615	0.673	0.717	0.705	1.002	1.361	1.353	2.207	2.365	2.032	1.670	1.169	0.631	0.379	0.131	0.131	0.132	0.127	0.127
DESIGN SURFACE LEVEL		8.544	7.943	7.865	7.805	7.805	7.497	7.125	7.125	5.974	5.500	5.500	5.492	5.456	5.379	5.325	5.189	5.175	5.130	5.122	5.122
EXISTING SURFACE LEVEL	8.605	8.571	8.558	8.538	8.522	8.510	8.499	8.486	8.478	8.182	7.865	7.532	7.162	6.626	6.010	5.704	5.319	5.306	5.261	5.250	5.245
CHAINAGE	0.000	5.000	7.404	10.000	11.989	13.589	15.000	16.699	17.699	20.000	20.949	21.949	22.721	23.781	25.000	25.613	27.445	27.721	29.277	29.953	30.000	30.287

TOE OF BATTER (ME03) LONGITUDINAL SECTION

SCALE HORIZ 1:200
VERT 1:50



CUT DEPTH (+VE) FILL DEPTH (-ve)	0.011	0.062 0.066 0.066	0.060 0.065 0.066 0.064	0.038	0.093	0.116	0.126 0.127
DESIGN SURFACE LEVEL	4.864	4.882 4.886 4.886	4.901 4.904 4.905 4.907	4.952	5.007	5.062	5.117 5.119
EXISTING SURFACE LEVEL	4.875	4.944 4.952 4.952	4.961 4.970 4.971 4.971	4.990	5.100	5.177	5.243 5.245
CHAINAGE	0.000	1.607 2.000 2.031	5.000 5.635 5.770 5.922	10.000	15.000	20.000	25.000 25.184

DISH DRAIN (ME02) LONGITUDINAL SECTION

SCALE HORIZ 1:200
VERT 1:50

LEGEND

- EXISTING SURFACE
- DESIGN SURFACE

NOTES

1. REFER TO SMCSWSWM-MTM-WCR-CE-DWG-443138 FOR SETOUT PLAN.
2. REFER TO SMCSWSWM-MTM-WCR-CE-DWG-443137 FOR FINISHED SURFACE PLAN.

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES
1 : 200 FULL SIZE A1
1 : 50 FULL SIZE A1

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SERVICE PROVIDERS
METRON T2M

DRAWN M. ZHOU
DESIGNED G. LUO
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
DRIVEWAY LONGITUDINAL SECTIONS

STATUS: STAGE 3 | SHEET 2 OF 2 | ©
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443182 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443182 0

Cad File: C:\ProjectWise\mm-sydney-metro-usdfs-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443182.dwg
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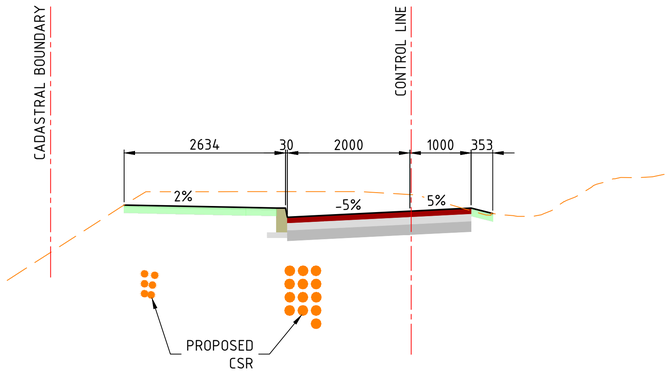
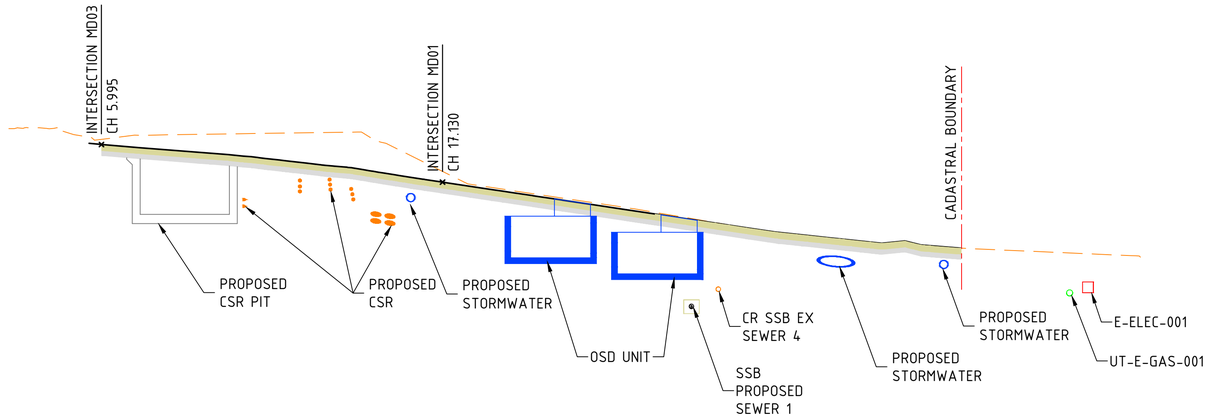
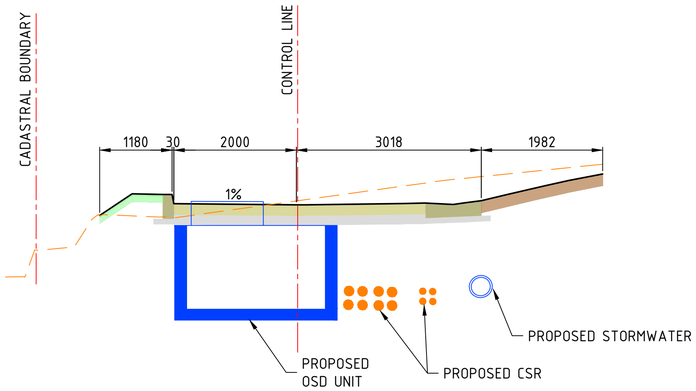
100mm AT FULL SIZE



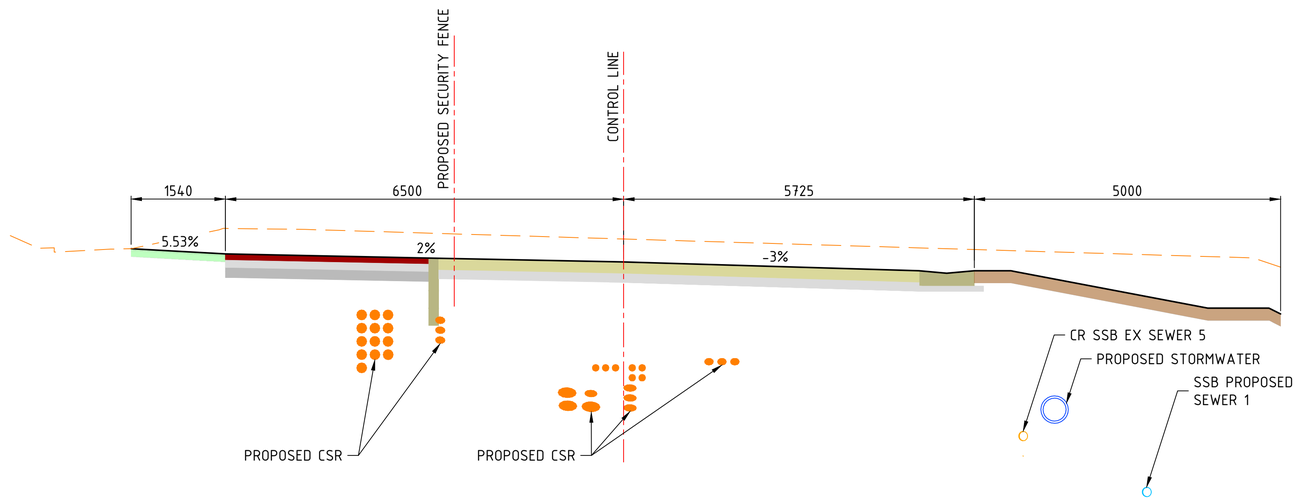
TYPICAL DRIVEWAY (MD01) CROSS SECTION (CH 35)
SCALE 1:50



SECTION A
SCALE 1:100
443137



TYPICAL DRIVEWAY (MD01) CROSS SECTION (CH 14)
SCALE 1:50



TYPICAL DRIVEWAY (MD02) CROSS SECTION (CH 20)
SCALE 1:50

NOTES

1. REFER TO SMCSWSWM-MTM-WCR-CE-DWG-443138 FOR SETOUT PLAN.
2. REFER TO SMCSWSWM-MTM-WCR-CE-DWG-443137 FOR FINISHED SURFACE PLAN.

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES
1 : 50 FULL SIZE A1
1 : 100 FULL SIZE A1

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SERVICE PROVIDERS
METRON T2M

DRAWN M. ZHOU
DESIGNED G. LUO / A. KIRK
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
TYPICAL CROSS SECTIONS

STATUS: STAGE 3 | SHEET 1 OF 1 | ©
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443186 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443186 0

Cad File: C:\projectwise\MtM-Sydney-Metro-usdfs-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443186.dwg
Plot Date: 04/10/20 - 12:11
100mm AT FULL SIZE

DRAWING DELETED

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
B	TL	06.10.2020	ISSUED FOR STAGE 3	LP
A	TL	18.03.2020	ISSUED FOR STAGE 2	LP

SCALES

2 0 2 4 6 8m

1 : 200 FULL SIZE A1

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SERVICE PROVIDERS

METRON T2M

DRAWN M. ZHOU

DESIGNED G. LUO

DRG CHECK P. ALFORD

DESIGN CHECK T. LEE

APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
LIFTING PLAN - DRAWING DELETED

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

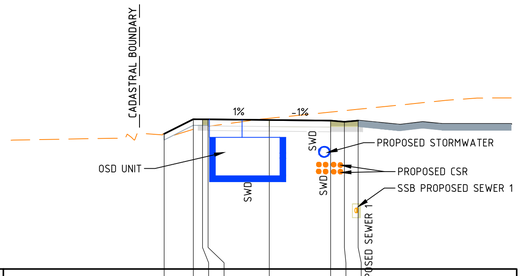
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443190 | REV. B

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

NOTE: Do not scale from this drawing.

ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443190 0

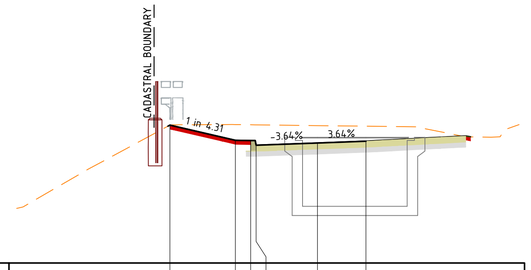
100mm AT FULL SIZE Plot Date: 02/10/20 - 11:44 Cad File: C:\ProjectWise\mm-sydney-metro-usdts (apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443190.dwg



RL 1.0

DESIGN SURFACE LEVEL	5.411	5.889	5.883	5.883	5.863	5.843	5.803	5.843
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	-0.331	-0.254	-0.229	0.054	0.277	0.363	0.369
EXISTING SURFACE LEVEL	5.411	5.558	5.629	5.654	5.917	6.120	6.166	6.212
CL OFFSET	-3.435	-2.480	-2.180	-2.000	0.000	2.000	2.450	2.900

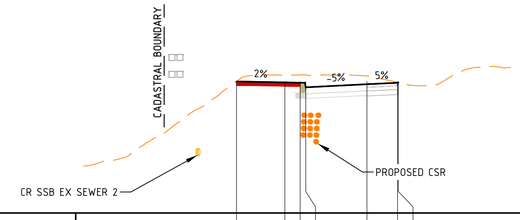
CH 10



RL 4.0

DESIGN SURFACE LEVEL	8.499	8.003	7.993	7.843	7.916	7.973
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.513	0.517	0.665	0.567	0.49
EXISTING SURFACE LEVEL	8.499	8.516	8.510	8.508	8.483	8.464
CL OFFSET	-4.819	-2.680	-2.180	-2.000	0.000	1.584

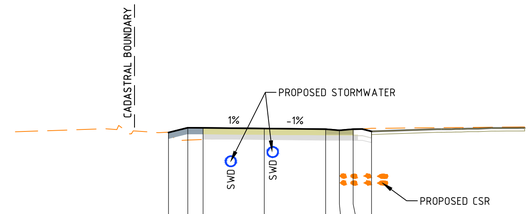
CH 25



RL 4.0

DESIGN SURFACE LEVEL	8.292	8.260	8.250	8.100	8.200	8.250	8.254
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.238	0.255	0.406	0.267	0.011	0
EXISTING SURFACE LEVEL	8.292	8.498	8.505	8.506	8.467	8.261	8.254
CL OFFSET	-4.258	-2.680	-2.180	-2.000	0.000	1.000	1.022

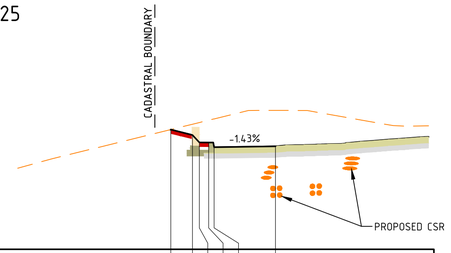
CH 38.674



RL 2.0

DESIGN SURFACE LEVEL	5.028	5.185	5.180	5.160	5.140	5.100	5.140	5.066
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	-0.402	-0.378	-0.281	-0.081	-0.008	-0.015	0.1
EXISTING SURFACE LEVEL	5.028	4.783	4.802	4.879	5.060	5.092	5.125	5.166
CL OFFSET	-3.129	-2.500	-2.000	0.000	2.000	2.450	2.900	3.500

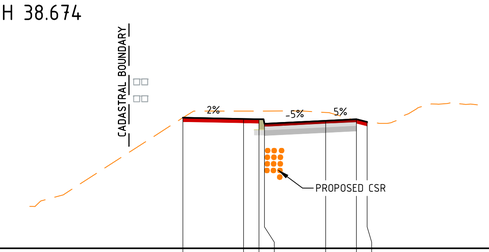
CH 5



RL 4.0

DESIGN SURFACE LEVEL	7.909	7.732	7.490	7.484	7.334	7.363
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.351	0.649	0.729	0.924	1.174
EXISTING SURFACE LEVEL	7.909	8.083	8.139	8.213	8.258	8.536
CL OFFSET	-3.416	-2.708	-2.483	-2.180	-2.000	0.000

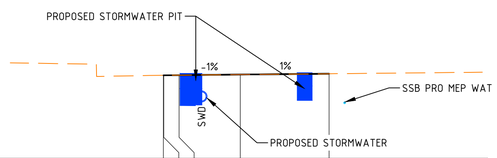
CH 20



RL 4.0

DESIGN SURFACE LEVEL	8.263	8.223	8.213	8.063	8.163	8.213	8.125
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.258	0.269	0.419	0.271	-0.044	0
EXISTING SURFACE LEVEL	8.263	8.481	8.482	8.482	8.434	8.169	8.125
CL OFFSET	-4.664	-2.680	-2.180	-2.000	0.000	1.000	1.353

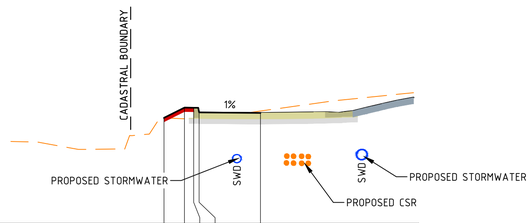
CH 35



RL 2.0

DESIGN SURFACE LEVEL	4.723	4.720	4.725	4.745	4.774
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.003	0.002	0	-0.001
EXISTING SURFACE LEVEL	4.723	4.723	4.727	4.745	4.773
CL OFFSET	-2.510	-2.500	-2.000	0.000	2.900

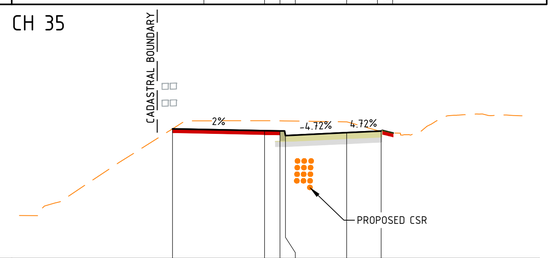
CH 0



RL 3.0

DESIGN SURFACE LEVEL	6.454	6.389	6.393	6.633	6.613
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	-0.364	-0.366	-0.231	0.065
EXISTING SURFACE LEVEL	6.454	6.425	6.417	6.402	6.678
CL OFFSET	-3.149	-2.680	-2.180	-2.000	0.000

CH 15



RL 4.0

DESIGN SURFACE LEVEL	8.239	8.179	8.169	8.019	8.113	8.166
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.326	0.33	0.477	0.354	-0.015
EXISTING SURFACE LEVEL	8.239	8.504	8.499	8.496	8.467	8.152
CL OFFSET	-5.686	-2.680	-2.180	-2.000	0.000	1.123

CH 30

LEGEND

EXISTING SURFACE
DESIGN SURFACE

DRIVEWAY (MD01) CROSS SECTIONS

SCALE HORIZ 1:100
VERT 1:100

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 1 : 100 FULL SIZE A1

CLIENT: NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS: METRON T2M

DRAWN M. ZHOU
DESIGNED G. LUO
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

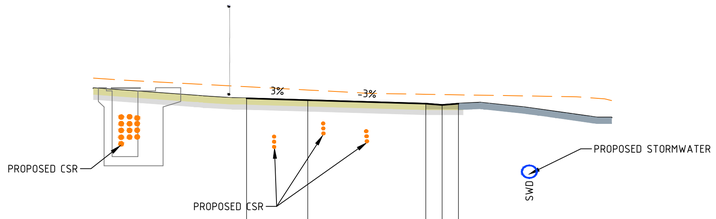
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
CROSS SECTIONS

STATUS: STAGE 3 | SHEET 1 OF 3 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443191 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443191 0

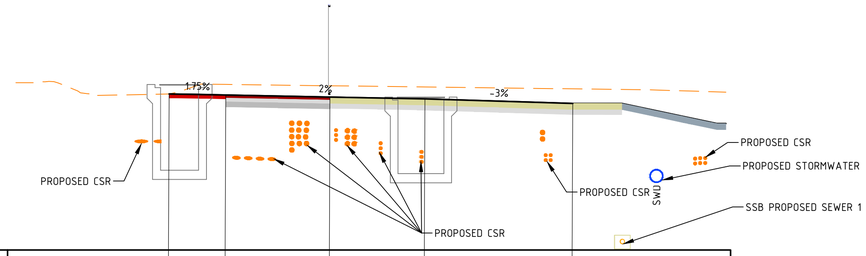
Cad File: C:\projectwise\mm-sydney-metro-usdts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443191.dwg
Plot Date: 06/10/20 - 11:53
100mm AT FULL SIZE



RL 3.0

DESIGN SURFACE LEVEL	7.754	7.694	7.579	7.539	7.579	
CUT DEPTH (+VE) FILL DEPTH (-ve)	0.378	0.33	0.307	0.338	0.289	
EXISTING SURFACE LEVEL	8.132	8.024	7.885	7.876	7.868	
CL OFFSET	-2.000	0.000	3.849	4.384	4.919	

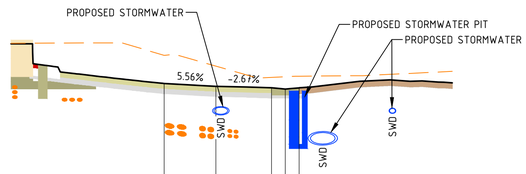
CH 10



RL 3.0

DESIGN SURFACE LEVEL	8.091	8.058	7.990	7.928	7.784	
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.345	0.369	0.392	0.475	
EXISTING SURFACE LEVEL	8.091	8.403	8.360	8.320	8.258	
CL OFFSET	-8.353	-6.500	-3.100	0.000	4.825	

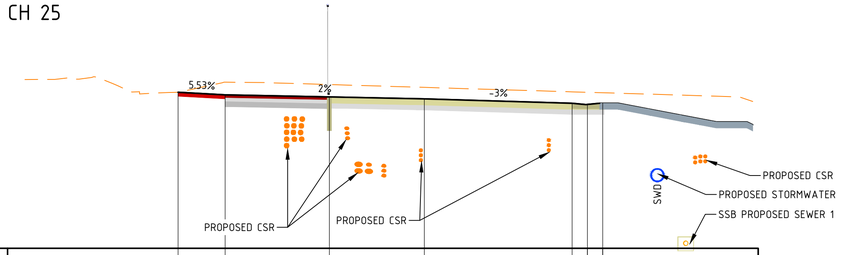
CH 25



RL 3.0

DESIGN SURFACE LEVEL	7.206	7.112	7.063	7.023	7.063	
CUT DEPTH (+VE) FILL DEPTH (-ve)	0.919	0.66	0.341	0.403	0.381	
EXISTING SURFACE LEVEL	8.124	7.772	7.404	7.427	7.444	
CL OFFSET	-1.690	0.000	1.816	2.266	2.716	

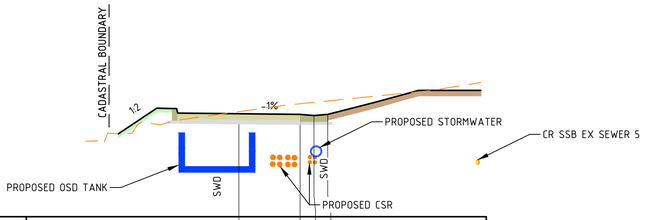
CH 5



RL 3.0

DESIGN SURFACE LEVEL	8.094	8.008	7.940	7.878	7.734	7.694	7.734
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.417	0.406	0.374	0.374	0.401	0.347
EXISTING SURFACE LEVEL	8.094	8.426	8.346	8.253	8.108	8.094	8.081
CL OFFSET	-8.040	-6.500	-3.100	0.000	4.825	5.275	5.725

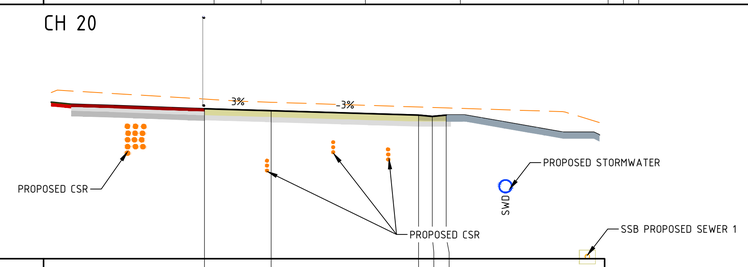
CH 20



RL 3.0

DESIGN SURFACE LEVEL	6.362	6.342	6.302	6.342	
CUT DEPTH (+VE) FILL DEPTH (-ve)	0.066	0.344	0.43	0.436	
EXISTING SURFACE LEVEL	6.428	6.686	6.732	6.778	
CL OFFSET	0.000	2.000	2.450	2.900	

CH 0



RL 3.0

DESIGN SURFACE LEVEL	7.894	7.828	7.684	7.644	7.684
CUT DEPTH (+VE) FILL DEPTH (-ve)	0.319	0.278	0.267	0.293	0.238
EXISTING SURFACE LEVEL	8.212	8.107	7.952	7.937	7.922
CL OFFSET	-2.178	0.000	4.812	5.263	5.714

CH 15

LEGEND

EXISTING SURFACE

DESIGN SURFACE

DRIVEWAY (MD02) CROSS SECTIONS

SCALE HORIZ 1:100
VERT 1:100

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NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 1 : 100 — 1 0 1 2 3 4m — FULL SIZE A1

CLIENT: NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS: METRON T2M

DRAWN: M. ZHOU
DESIGNED: G. LUO
DRG CHECK: P. ALFORD
DESIGN CHECK: T. LEE
APPROVED: L. PALMER 06.10.2020

SYDNEY METRO

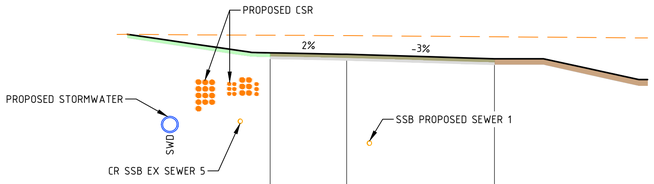
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
CROSS SECTIONS

STATUS: STAGE 3 | SHEET 2 OF 3 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443192 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443192 0

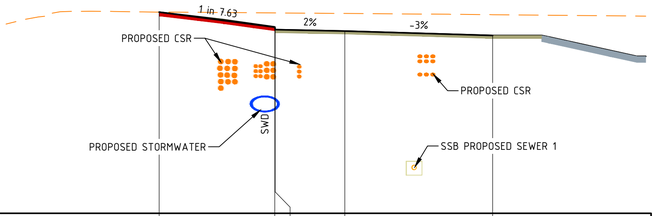
Cad File: C:\ProjectWise\mm-sydney-metro-asdfs-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443192.dwg
Plot Date: 02/10/20 - 11:45
100mm AT FULL SIZE



RL 3.0

DESIGN SURFACE LEVEL	8.000	7.950	7.805
CUT DEPTH (+VE) FILL DEPTH (-ve)	0.573	0.61	0.717
EXISTING SURFACE LEVEL	8.573	8.560	8.522
CL OFFSET	-2.500	0.000	4.825

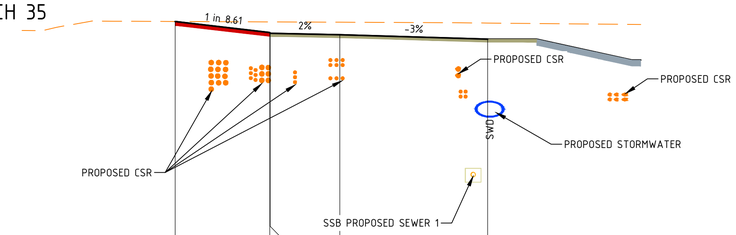
CH 38.655



RL 2.0

DESIGN SURFACE LEVEL	8.569	8.074	7.995	7.950	7.805
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.468	0.546	0.574	0.678
EXISTING SURFACE LEVEL	8.569	8.542	8.541	8.524	8.484
CL OFFSET	-6.063	-2.285	-2.275	0.000	4.825

CH 35



RL 1.0

DESIGN SURFACE LEVEL	8.383	8.024	7.995	7.950	7.805
CUT DEPTH (+VE) FILL DEPTH (-ve)	0	0.345	0.374	0.409	0.527
EXISTING SURFACE LEVEL	8.383	8.369	8.369	8.359	8.332
CL OFFSET	-5.378	-2.285	-2.275	0.000	4.825

CH 30

LEGEND

EXISTING SURFACE
DESIGN SURFACE

DRIVEWAY (MD02) CROSS SECTIONS

SCALE HORIZ 1:100
VERT 1:100

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A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES
1 0 1 2 3 4m
1 : 100 FULL SIZE A1

CLIENT
NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS
METRON T2M

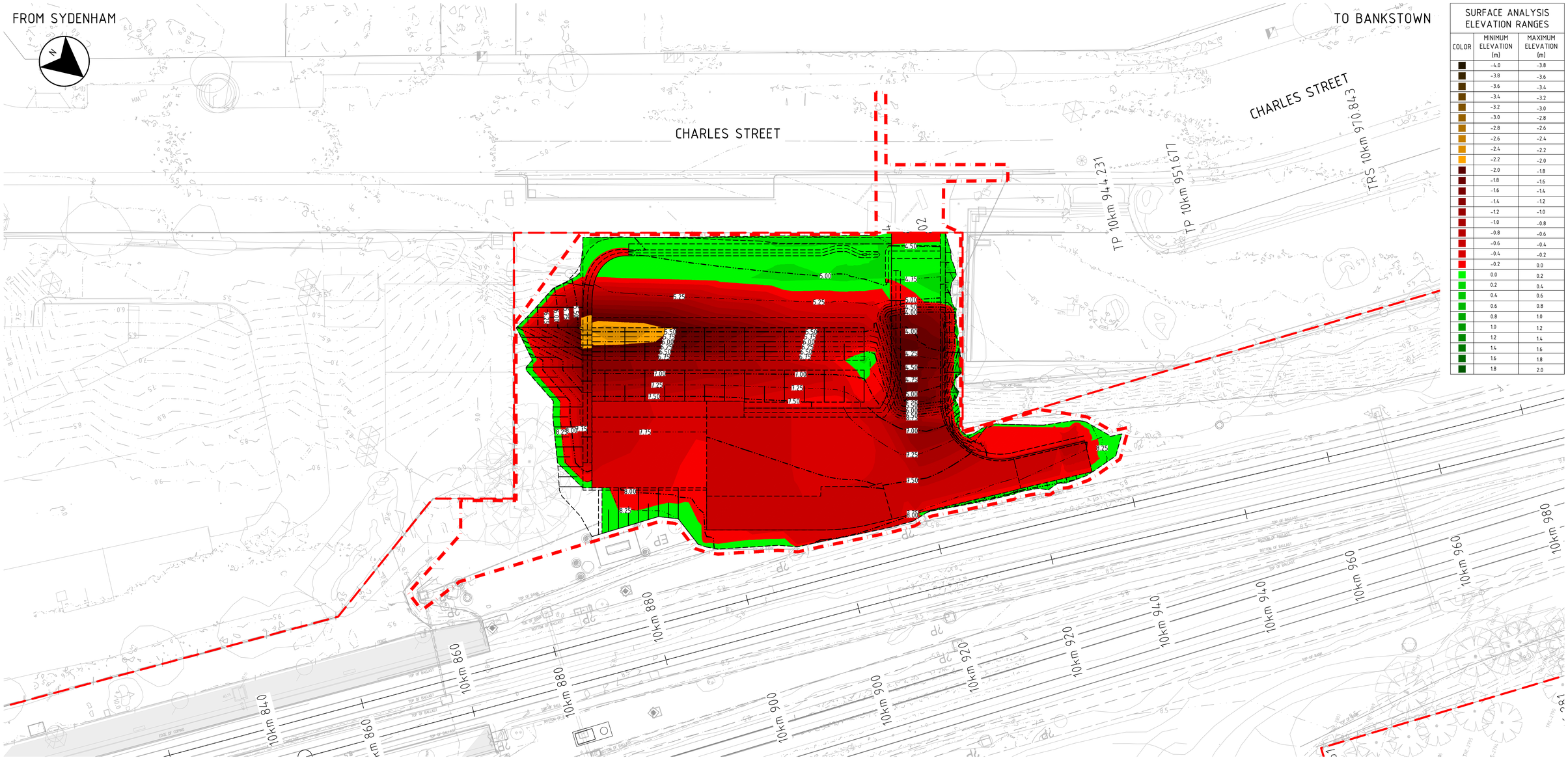
DRAWN M. ZHOU
DESIGNED G. LUO
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
CROSS SECTIONS

STATUS: STAGE 3 | SHEET 3 OF 3 | ©
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443193 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443193 0

Cad File: C:\ProjectWise\mm-sydney-metro-usdts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443193.dwg
Plot Date: 02/10/20 - 11:45
100mm AT FULL SIZE



SURFACE ANALYSIS ELEVATION RANGES		
COLOR	MINIMUM ELEVATION (m)	MAXIMUM ELEVATION (m)
	-4.0	-3.8
	-3.8	-3.6
	-3.6	-3.4
	-3.4	-3.2
	-3.2	-3.0
	-3.0	-2.8
	-2.8	-2.6
	-2.6	-2.4
	-2.4	-2.2
	-2.2	-2.0
	-2.0	-1.8
	-1.8	-1.6
	-1.6	-1.4
	-1.4	-1.2
	-1.2	-1.0
	-1.0	-0.8
	-0.8	-0.6
	-0.6	-0.4
	-0.4	-0.2
	-0.2	0.0
	0.0	0.2
	0.2	0.4
	0.4	0.6
	0.6	0.8
	0.8	1.0
	1.0	1.2
	1.2	1.4
	1.4	1.6
	1.6	1.8
	1.8	2.0

PLAN

SCALE 1:200

NOTES

1. FOR BULK EARTHWORKS PLAN AND LONGITUDINAL SECTION REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443206.
2. FOR BULK EARTHWORKS CROSS SECTIONS REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443211

VOLUMES:

TOTAL CUT - 563 m^3
TOTAL FILL - 28 m^3

TOTAL BALANCE 535 m^3 EXCESS CUT

EARTHWORKS NOTES

1. ESTIMATE VOLUMES BETWEEN EXISTING SURVEY AND BULK EARTHWORKS LEVELS. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL VOLUMES PRIOR TO CONSTRUCTION:
2. THE BULK EARTHWORKS HAS BEEN BASED ON THE FOLLOWING ASSUMPTIONS:
3. CONCRETE DRIVEWAY PAVEMENT DEPTH = 360mm
4. TOPSOIL STRIPPING OF 300mm IS APPLIED ACROSS THE SITE.
5. DETAILED EXCAVATION VOLUME IS NOT INCLUDED IN THE VOLUME CALCULATION.
6. NO BULKING OR COMPACTION FACTORS HAVE BEEN APPLIED.

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 1 : 200 FULL SIZE A1

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SERVICE PROVIDERS: METRON T2M

DRAWN M.ZHOU
DESIGNED K. VEKERIA
DRG CHECK P. ALFORD
DESIGN CHECK T. LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - CIVIL
BULK EARTHWORKS CUT AND FILL PLAN

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443201 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443201 0

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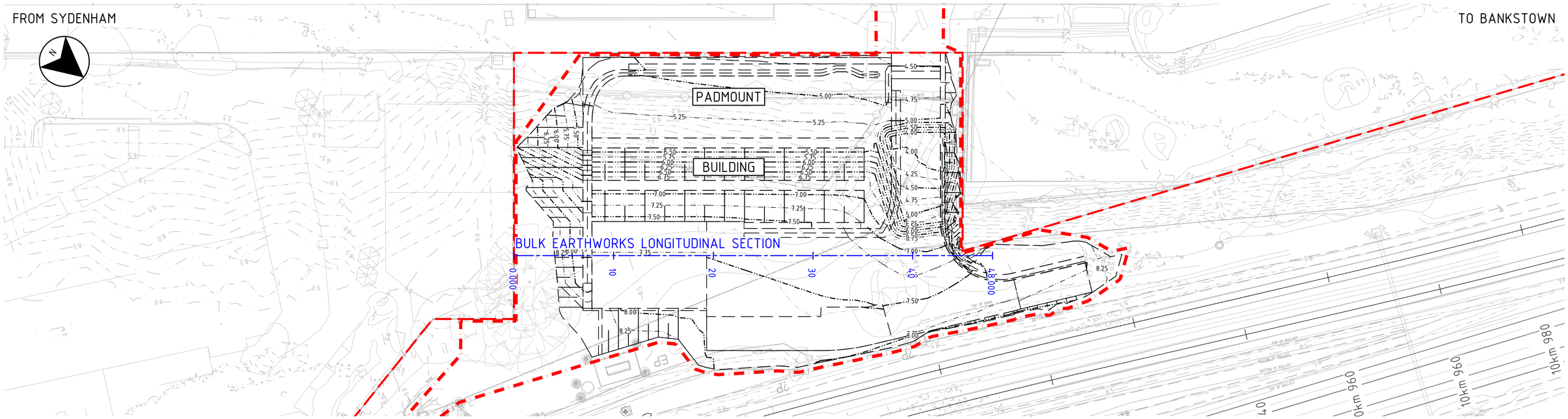
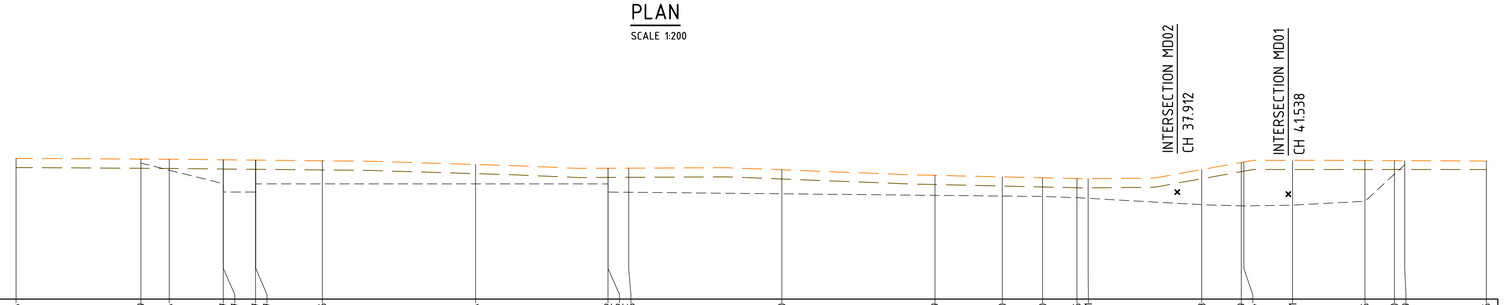
Plot Date: 02/10/20 - 11:45
100mm AT FULL SIZE



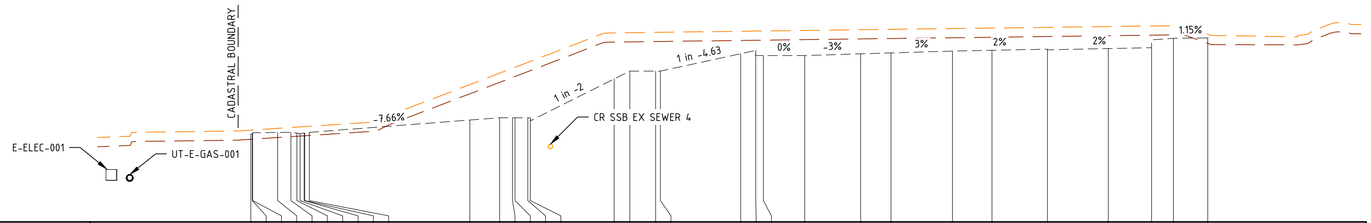
PLAN

SCALE 1:200



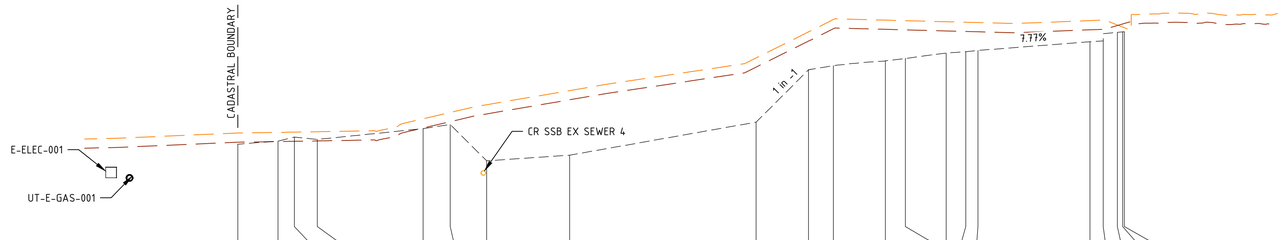
DATUM 4.00

| | | |


CADASTRAL BOUNDARY
E-ELEC-001
UT-E-GAS-001
-7.66%
1 in -2
1 in -4.63
CR SSB EX SEWER 4
0%
-3%
3%
2%
2%
1.15%

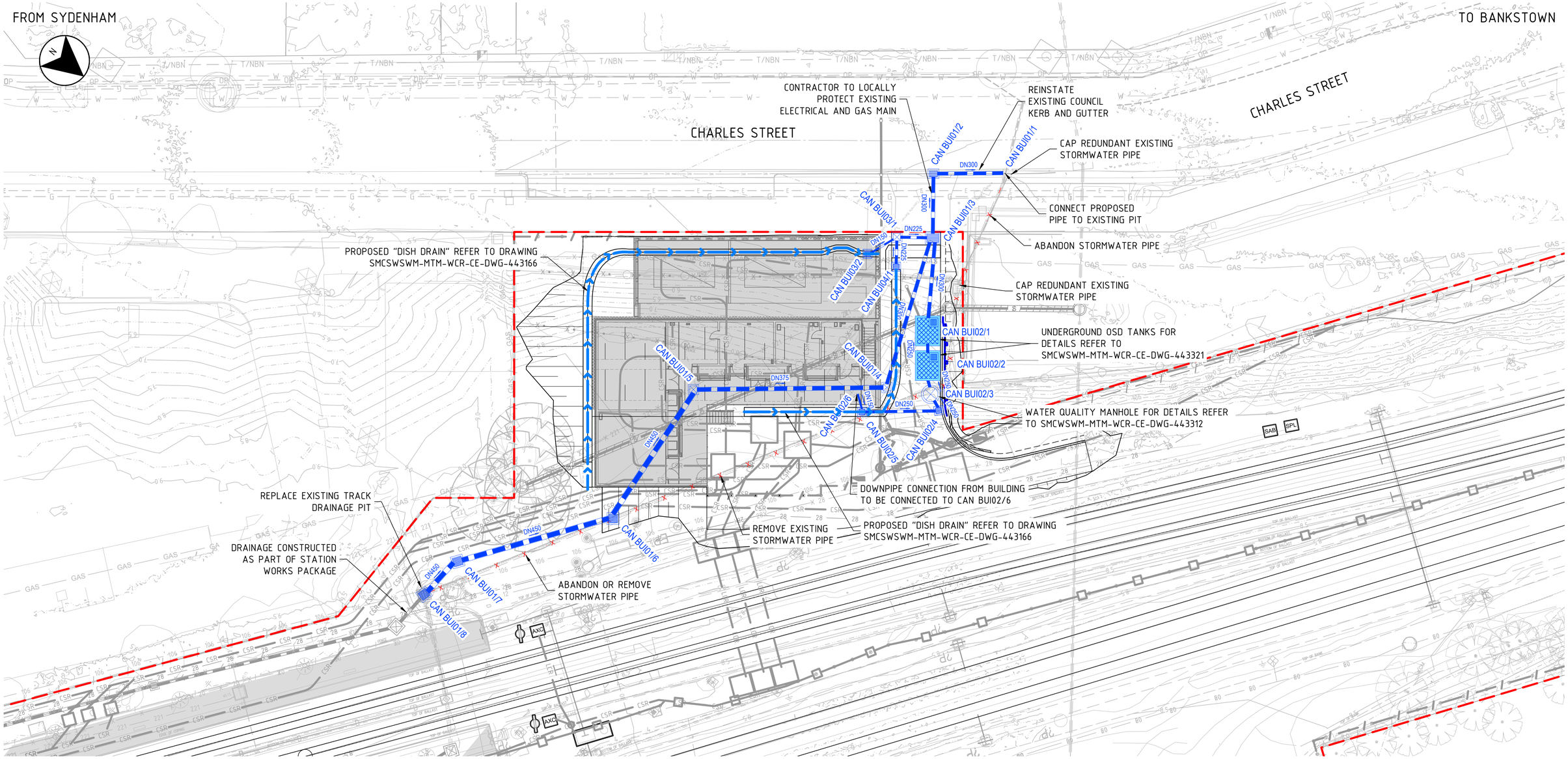
RL 2.0

| | | |


CADASTRAL BOUNDARY
E-ELEC-001
UT-E-GAS-001
CR SSB EX SEWER 4
1 in -1
7.77%

RL 1.0

| | | |

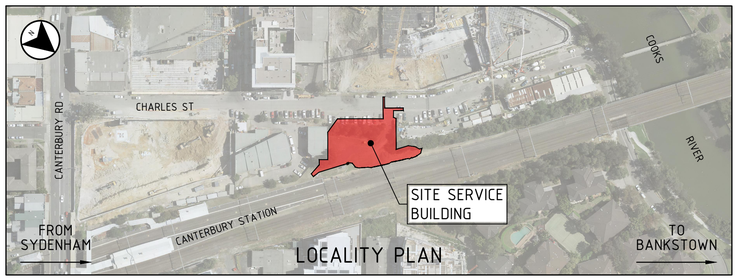


PLAN

SCALE 1:200

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. FOR STORMWATER DRAINAGE DETAILS REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443311 AND 443312.
4. FOR OSD DETAILS REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443321.



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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 1 : 200 — 2 0 2 4 6 8m — FULL SIZE A1

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SERVICE PROVIDERS: METRON T2M

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DRAWN R.TACADENA
DESIGNED J.LAW
DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
GENERAL ARRANGEMENT PLAN

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443301 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443301 0

Cad File: C:\Projectwise\mm-sydney-metro-usdts (apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443301.dwg
Plot Date: 01/10/20 - 16:30
100mm AT FULL SIZE

CANTERBURY SERVICE BUILDING - DRAINAGE STRUCTURE SCHEDULE

STRUCTURE NO.	STRUCTURE TYPE	CO-ORDINATES		DRAWING REFERENCE	COMMENTS
		EASTING	NORTHING		
CAN BUI01/8	SURFACE INLET PIT 900x900	325949.916	6246071.731	SMCSWSWM-MTM-WCR-CE-DWG-443311	CLASS D GRATE. REPLACE EXISTING PIT
CAN BUI01/7	SURFACE INLET PIT 900x900	325945.216	6246072.213	SMCSWSWM-MTM-WCR-CE-DWG-443311	CLASS D GRATE
CAN BUI01/6	SURFACE INLET PIT 900x900	325931.928	6246081.430	SMCSWSWM-MTM-WCR-CE-DWG-443311	CLASS D GRATE
CAN BUI01/5	IP	325916.832	6246079.349	RMS R0220-35	CLASS D COVER
CAN BUI01/4	IP	325904.257	6246094.129	RMS R0220-35	CLASS D COVER
CAN BUI01/3	SURFACE INLET PIT 900x1200	325889.783	6246088.057	SMCSWSWM-MTM-WCR-CE-DWG-443311	CLASS D GRATE
CAN BUI01/2	DOUBLE GRATED GULLY PIT	325884.792	6246083.989	CANTERBURY BANKSTOWN S-118	CLASS D GRATE. INSTALL DOUBLE 'WELDLOCK' GRATE ON VEHICLE CROSSOVER. HEEL AND BIKE SAFE
CAN BUI01/1	OUT	325880.280	6246089.317	-	CONNECT INTO EXISTING COUNCIL PIT
CAN BUI02/6	DOWNPIPE CONNECTION	325906.606	6246092.277	-	CONNECT SERVICE BUILDING ROOF DRAINAGE
CAN BUI02/5	SURFACE INLET PIT 600x600	325907.741	6246093.768	SMCSWSWM-MTM-WCR-CE-DWG-443311	CLASS D GRATE. PROVIDE OCEAN PROTECT OCEANGUARD CONFIGURATION B OR APPROVED EQUIVALENT
CAN BUI02/4	SURFACE INLET PIT 600x600	325902.705	6246099.589	SMCSWSWM-MTM-WCR-CE-DWG-443311	CLASS D GRATE. PROVIDE OCEAN PROTECT OCEANGUARD CONFIGURATION B OR APPROVED EQUIVALENT
CAN BUI02/3	CIRCULAR MANHOLE	325901.973	6246097.928	REFER TO MANUFACTURERS DRAWING & SMCSWSWM-MTM-WCR-CE-DWG-443312	OCEAN PROTECT STORMFILTER PRECAST 1460DIA MANHOLE WITH CLASS D COVER OR APPROVED EQUIVALENT. PROVIDE 4 CARTRIDGES OF 690mm HIGH PSORB CARTRIDGES
CAN BUI02/2	OSD TANK	325899.944	6246095.869	REFER TO MANUFACTURERS DRAWING	8000L OSD TANK (2.5m WIDE 3.0m LONG x 1.2m HIGH) PANTHER COMMERCIAL TANK OR APPROVED EQUIVALENT
CAN BUI02/1	OSD TANK	325897.274	6246093.632	REFER TO MANUFACTURERS DRAWING	8000L OSD TANK (2.5m WIDE 3.0m LONG x 1.2m HIGH) PANTHER COMMERCIAL TANK OR APPROVED EQUIVALENT
CAN BUI03/2	SURFACE INLET PIT 600x600	325895.202	6246084.056	SMCSWSWM-MTM-WCR-CE-DWG-443311	CLASS D GRATE. PROVIDE OCEAN PROTECT OCEANGUARD CONFIGURATION B OR APPROVED EQUIVALENT
CAN BUI03/1	IP	325892.022	6246085.242	RMS R0220-35	CLASS D COVER
CAN BUI04/1	SURFACE INLET PIT 600x600	325894.357	6246087.094	SMCSWSWM-MTM-WCR-CE-DWG-443311	CLASS D GRATE. PROVIDE OCEAN PROTECT OCEANGUARD CONFIGURATION B OR APPROVED EQUIVALENT

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

NOTE: Do not scale from this drawing.

ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443306 0

CLIENT

NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS

METRON T2M

DRAWN R.TACADENA
DESIGNED J.LAW
DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

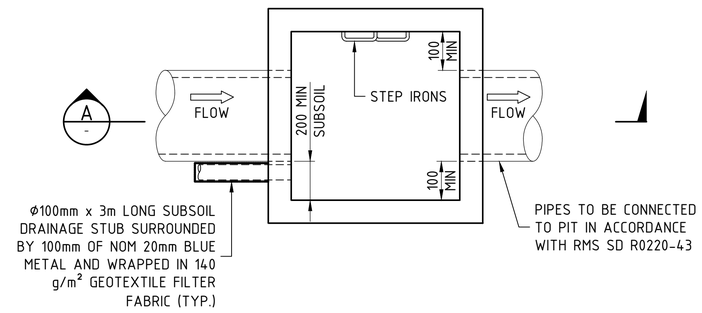
SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
PIT SCHEDULE

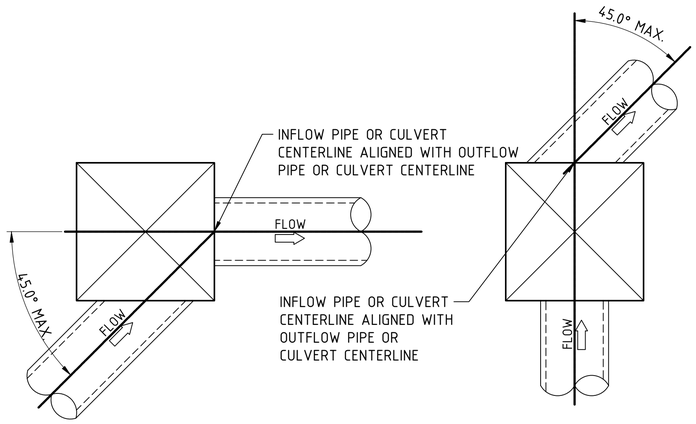
STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443306 | REV. A

100mm AT FULL SIZE Plot Date: 01/10/20 - 16:26 Cad File: C:\Projectwise\mm-sydney-metro-usdts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443306.dwg



TYPICAL PLAN - PIT STRUCTURE
SCALE 1:20



DEFLECTION ANGLE UP TO 45° (SIDE OF PIT)

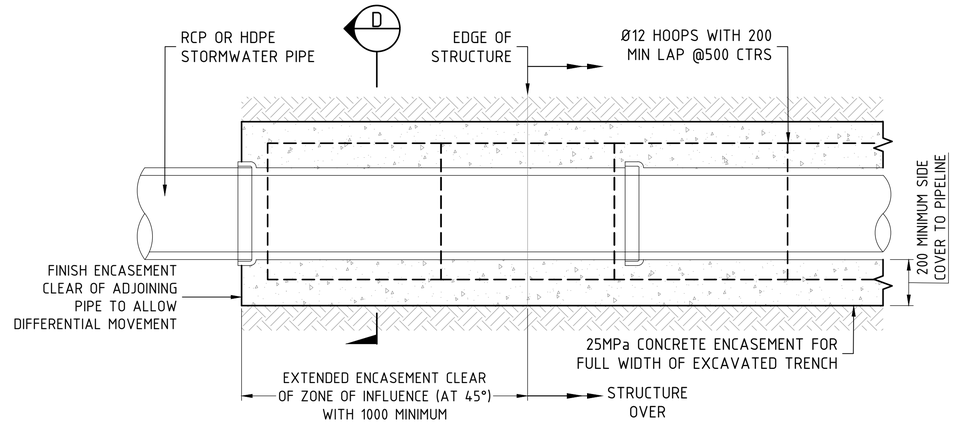
DEFLECTION ANGLE UP TO 45° (REAR OF PIT)

PIT ALIGNMENT REQUIREMENTS
SCALE NTS

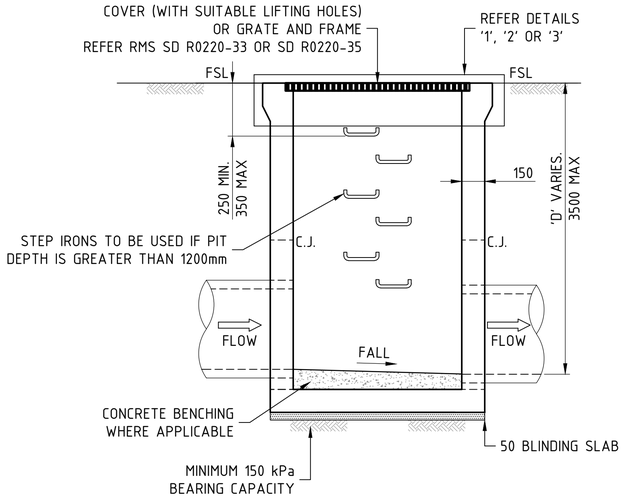
TYPICAL DETAILS OF STORMWATER PIPE OR CULVERT ALIGNMENTS THROUGH STORMWATER PITS. STORMWATER PIPE OR CULVERT ALIGNMENTS NOT SHOWN SHOULD BE CONSTRUCTED SIMILARLY IN ORDER TO STREAMLINE FLOWS FROM UPSTREAM TO DOWNSTREAM AND MINIMISE HEADLOSS.

GENERAL NOTES

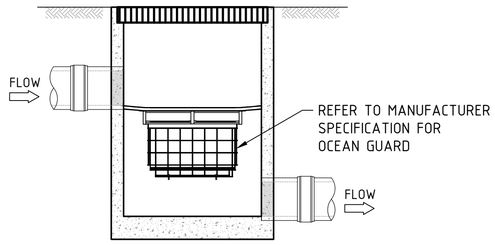
1. ENCASEMENT TO FINISH AT A PIPE COLLAR CLEAR OF THE ZONE OF INFLUENCE OF THE STRUCTURE AT 45° WITH 1.0m MINIMUM.
2. CONCRETE TO BE MINIMUM GRADE 25MPa & PLACED USING MECHANICAL VIBRATION.
3. STEEL REINFORCEMENT COVER SHALL BE 75mm MINIMUM. STEEL REINFORCEMENT SHALL BE GALVANISED.
4. PROVIDE SUPPORT TO PIPE BARREL AT 1500mm CENTRES USING CONCRETE SADDLES WITH STYROFOAM PADDING UNDER PIPE BARREL, OR SAND BAGS FILLED WITH 8:1 SAND CEMENT.
5. PRECAUTIONS SHALL BE TAKEN AGAINST FLOTATION OR MOVEMENT OF THE PIPELINE DURING ENCASEMENT.



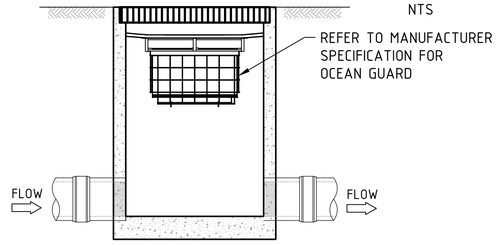
PLAN - CONCRETE ENCASEMENT OF STORMWATER PIPE
NTS



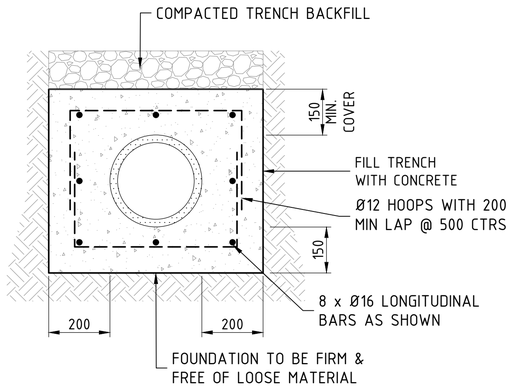
SECTION A
SCALE 1:20



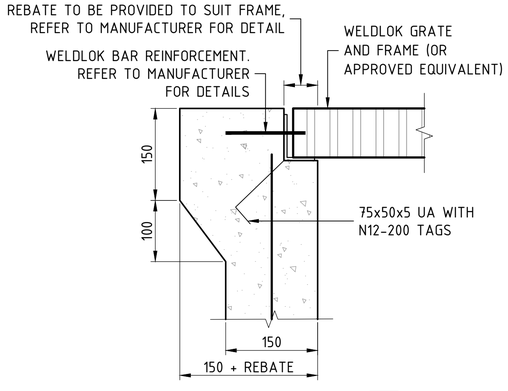
OCEAN GUARD DETAIL A - PIPE FLOW CONFIGURATION
SCALE 1:20



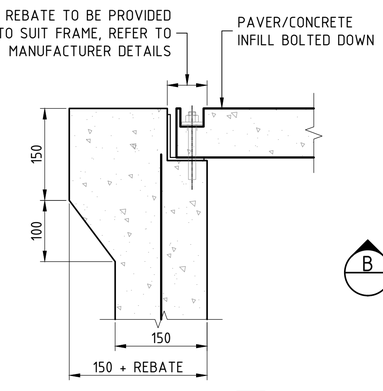
OCEAN GUARD DETAIL B - SURFACE FLOW CONFIGURATION
SCALE 1:20



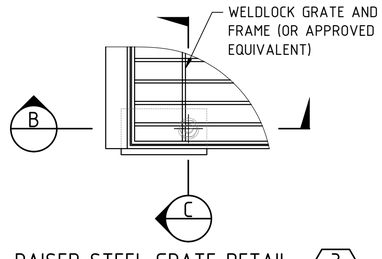
SECTION D
NTS



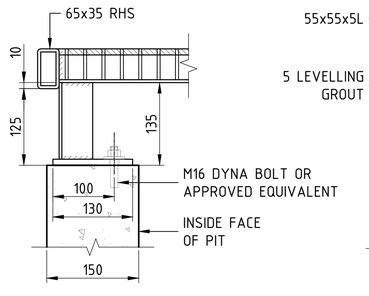
GRATED INLET DETAIL 1
SCALE 1:5



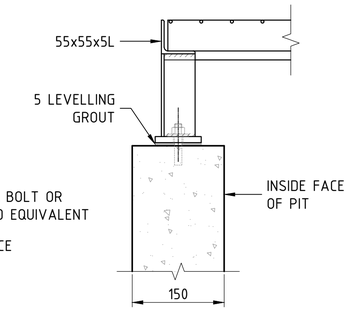
JUNCTION PIT DETAIL 2
SCALE 1:5



RAISED STEEL GRATE DETAIL 3
SCALE 1:5



SECTION B
SCALE 1:5



SECTION C
SCALE 1:5

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES
1 : 20 FULL SIZE A1
1 : 5 FULL SIZE A1

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DESIGNED J.LAW
DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
PIT DETAILS

STATUS: STAGE 3 | SHEET 1 OF 2 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443311 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443311 0

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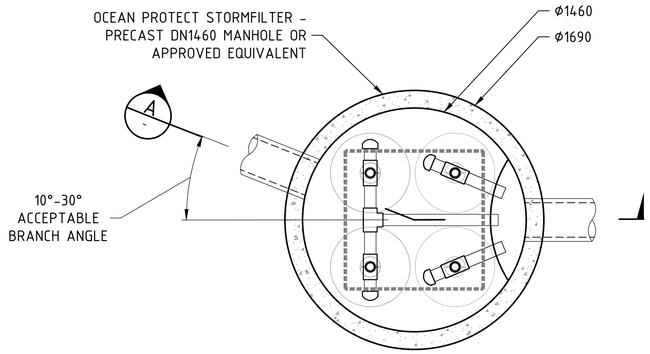
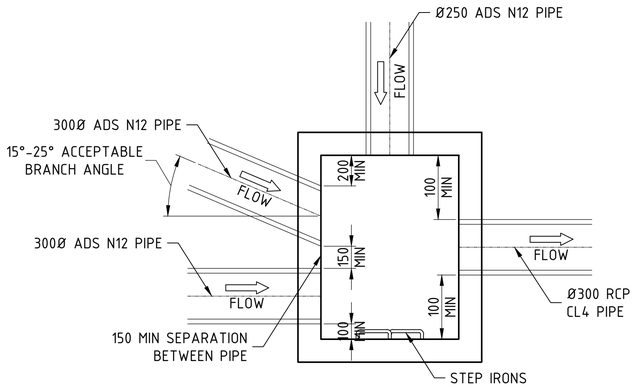
Plot Date: 01/10/20 - 16:26
100mm AT FULL SIZE



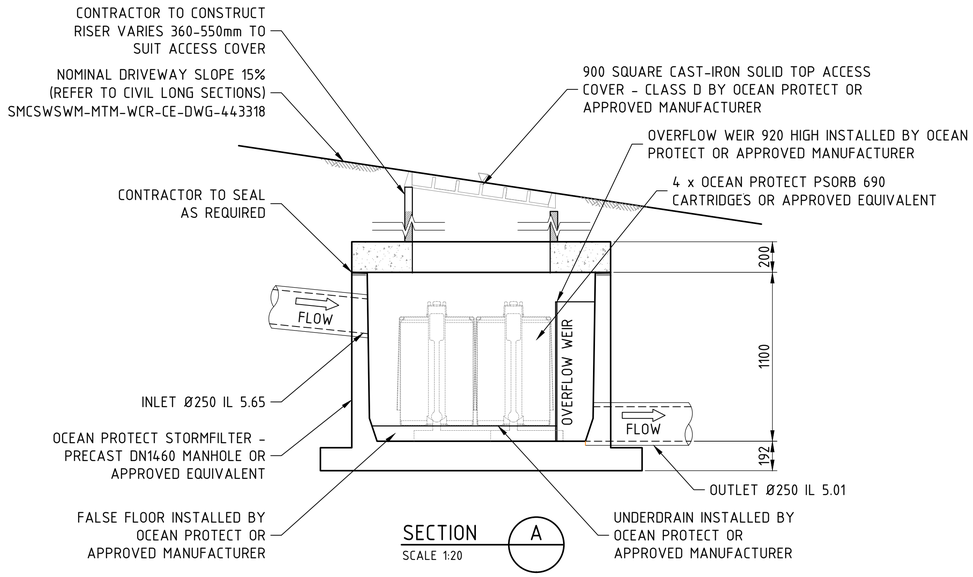
WATER QUALITY MANHOLE PLAN

SCALE 1:20



CAN BUI01/3 - PIT DETAIL

SCALE 1:20



SECTION A

SCALE 1:20

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 0.2 0 0.2 0.4 0.6 0.8m — 1 : 20 — FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

NOTE: Do not scale from this drawing.

ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443312 0

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SERVICE PROVIDERS: METRON T2M

DRAWN R.TACADENA
DESIGNED J.LAW
DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
PIT DETAILS

STATUS: STAGE 3 | SHEET 2 OF 2 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443312 | REV. A

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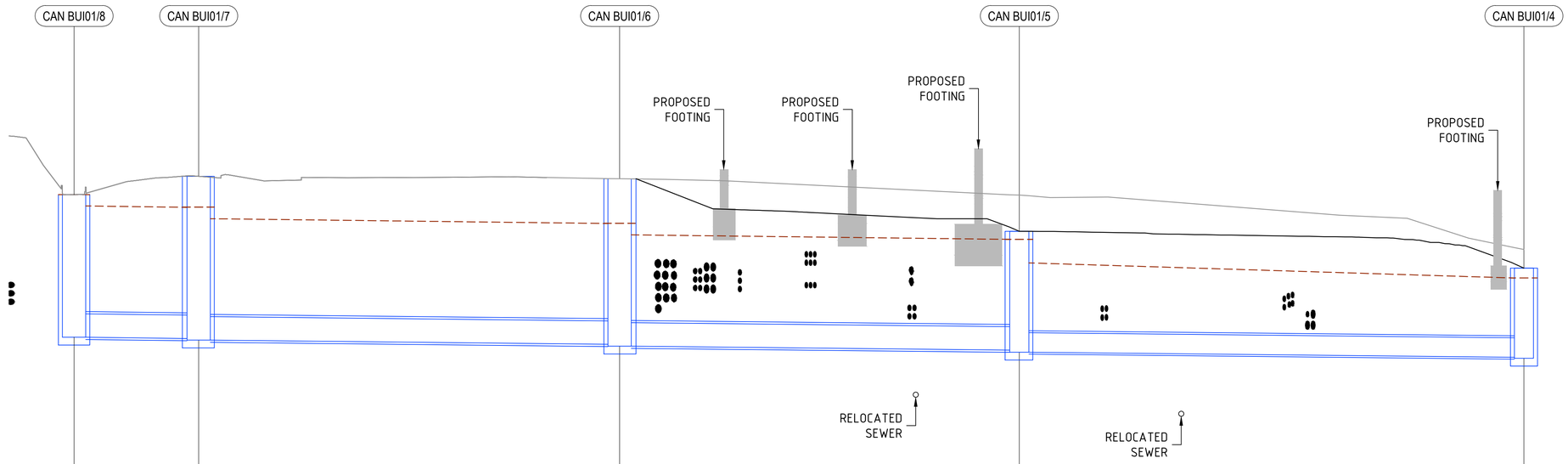
Plot Date: 01/10/20 - 16:26
100mm AT FULL SIZE

LEGEND

- △ UTILITY LEVEL KNOWN
- ┼ UTILITY LEVEL UNKNOWN
- ● PROPOSED BUILDING SERVICE AND CSR LEVEL
- ○ PROPOSED UTILITIES



	CAN BUI01/8	CAN BUI01/7	CAN BUI01/6	CAN BUI01/5	CAN BUI01/4
FLOW [1% AEP+10%] (m^3/s)	0.234	0.234	0.234	0.234	
VELOCITY [1% AEP+10%] (m/s)	1.5	1.5	1.5	2.1	
PIPE SIZE	Ø450	Ø450	Ø450	Ø375	
PIPE TYPE	ADS N12 HDPE	ADS N12 HDPE	ADS N12 HDPE	ADS N12 HDPE	
PIPE GRADIENT	0.50%	0.50%	0.50%	0.50%	
DATUM R.L.	0.00				
HYDRAULIC GRADE LINE (HGL) (1% AEP+10%)	8.05	8.03 7.81	7.71 7.50	7.41 6.96	6.67
INVERT LEVELS	5.53	5.51 5.48	5.39 5.36	5.28 5.24	5.15
DESIGN SURFACE LEVEL	8.27	8.62	8.42	7.57	6.86
EXISTING SURFACE LEVEL	8.27	8.62	8.57	8.26	7.21
CHAINAGE	0.00	4.79	20.98	36.35	55.76

CAN BUI01

NOTES

1. UTILITIES ARE SHOWN APPROXIMATE POSITION ONLY.
2. REFER TO UTILITY DRAWINGS FOR UTILITY DETAILS.
3. REFER TO BUILDING AND CSR DRAWINGS FOR DETAILS.
4. STORMWATER PIPES LOCATED BENEATH FOOTINGS SHALL ADOPT A CEMENT STABILISED BACKFILL AND EXTEND BACKFILL A MINIMUM 1000 CLEAR OF THE FOOTING ZONE OF INFLUENCE (AT 45°)

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 1 : 100 FULL SIZE A1 (1 0 1 2 3 4m); 1 : 50 FULL SIZE A1 (0.5 0 0.5 1 1.5m)

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DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
DRAINAGE LONG SECTION

STATUS: STAGE 3 | SHEET 1 OF 3 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443316 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443316 0

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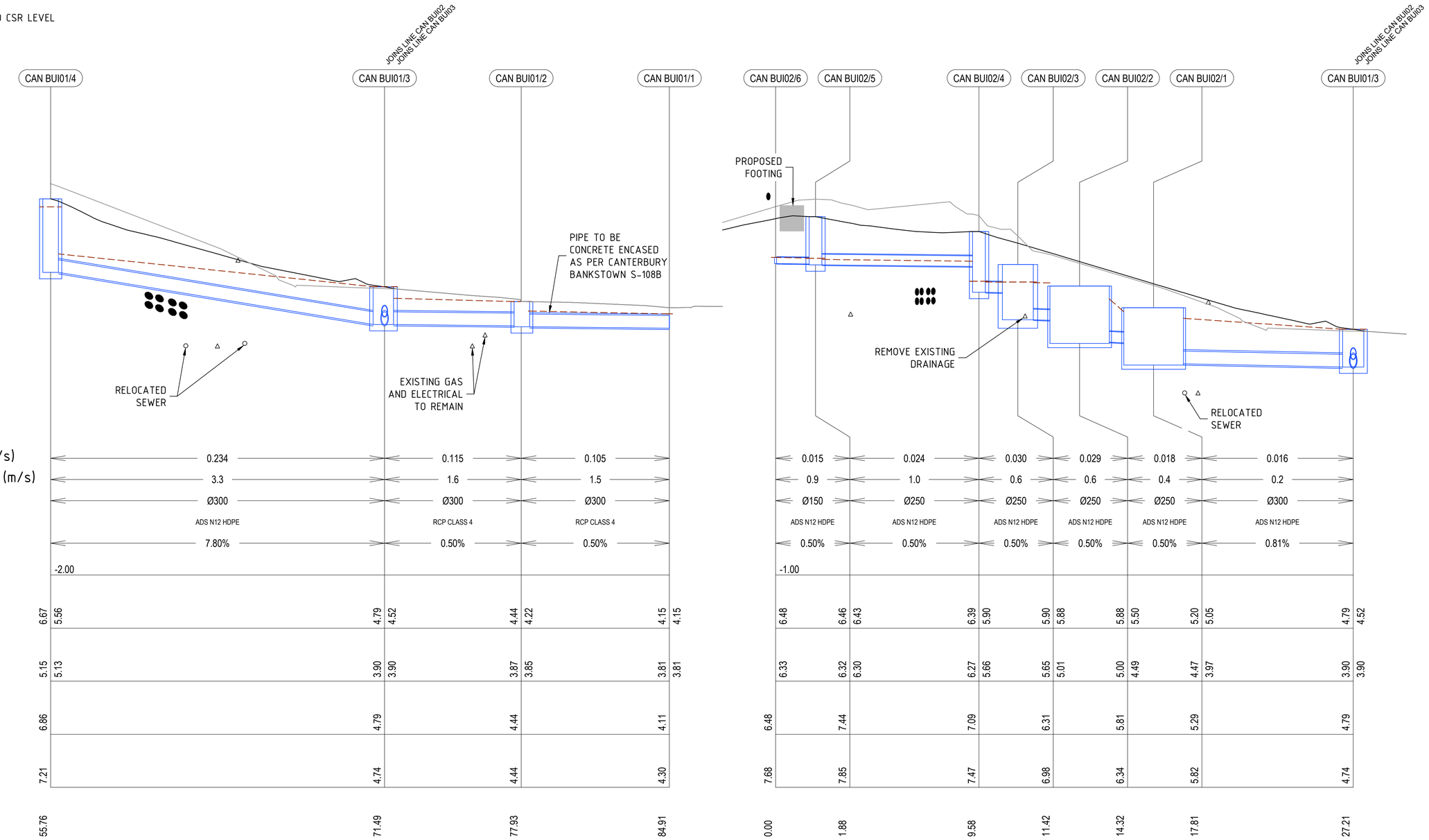
Plot Date: 01/10/20 - 16:26
100mm AT FULL SIZE

LEGEND

- △ UTILITY LEVEL KNOWN
- ┼ UTILITY LEVEL UNKNOWN
- ● PROPOSED BUILDING SERVICE AND CSR LEVEL
- ○ PROPOSED UTILITIES



NOTES

1. UTILITIES ARE SHOWN APPROXIMATE POSITION ONLY.
2. REFER TO UTILITY DRAWINGS FOR UTILITY DETAILS.
3. REFER TO BUILDING AND CSR DRAWINGS FOR DETAILS.
4. STORMWATER PIPES LOCATED BENEATH FOOTINGS SHALL ADOPT A CEMENT STABILISED BACKFILL AND EXTEND BACKFILL A MINIMUM 1000 CLEAR OF THE FOOTING ZONE OF INFLUENCE (AT 45°)

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES
1 : 100 FULL SIZE A1
1 : 50 FULL SIZE A1

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DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
DRAINAGE LONG SECTION

STATUS: STAGE 3 | SHEET 2 OF 3 | ©
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443317 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443317 0

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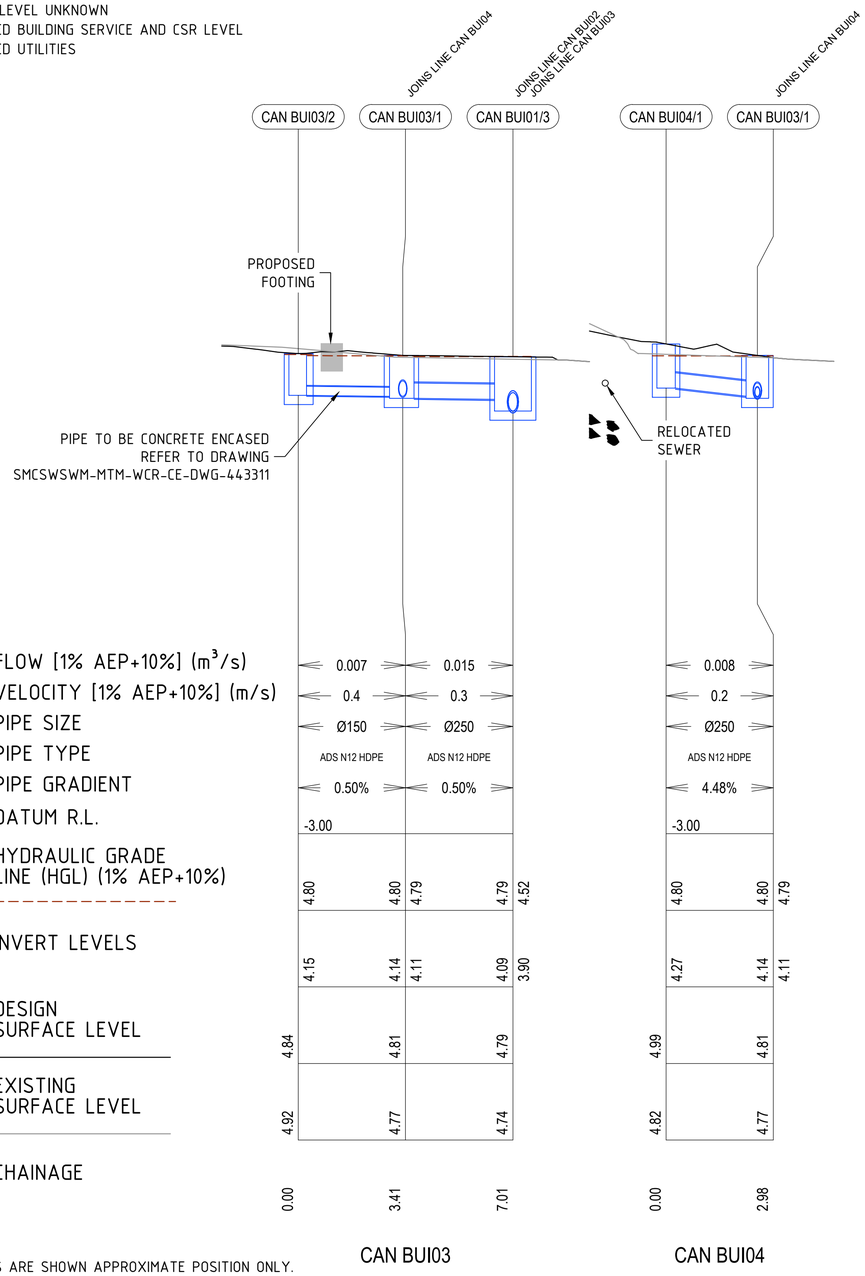
LEGEND

- △ UTILITY LEVEL KNOWN
- ┼ UTILITY LEVEL UNKNOWN
- ● PROPOSED BUILDING SERVICE AND CSR LEVEL
- ○ PROPOSED UTILITIES



NOTES

1. UTILITIES ARE SHOWN APPROXIMATE POSITION ONLY.
2. REFER TO UTILITY DRAWINGS FOR UTILITY DETAILS.
3. REFER TO BUILDING AND CSR DRAWINGS FOR DETAILS.
4. STORMWATER PIPES LOCATED BENEATH FOOTINGS SHALL ADOPT A CEMENT STABILISED BACKFILL AND EXTEND BACKFILL A MINIMUM 1000 CLEAR OF THE FOOTING ZONE OF INFLUENCE (AT 45°)

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES
1 : 100 FULL SIZE A1
1 : 50 FULL SIZE A1

CLIENT: NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS: METRON T2M

DRAWN: R.TACADENA
DESIGNED: J.LAW
DRG CHECK: P. ALFORD
DESIGN CHECK: R.PETERSON
APPROVED: L. PALMER 06.10.2020

SYDNEY METRO

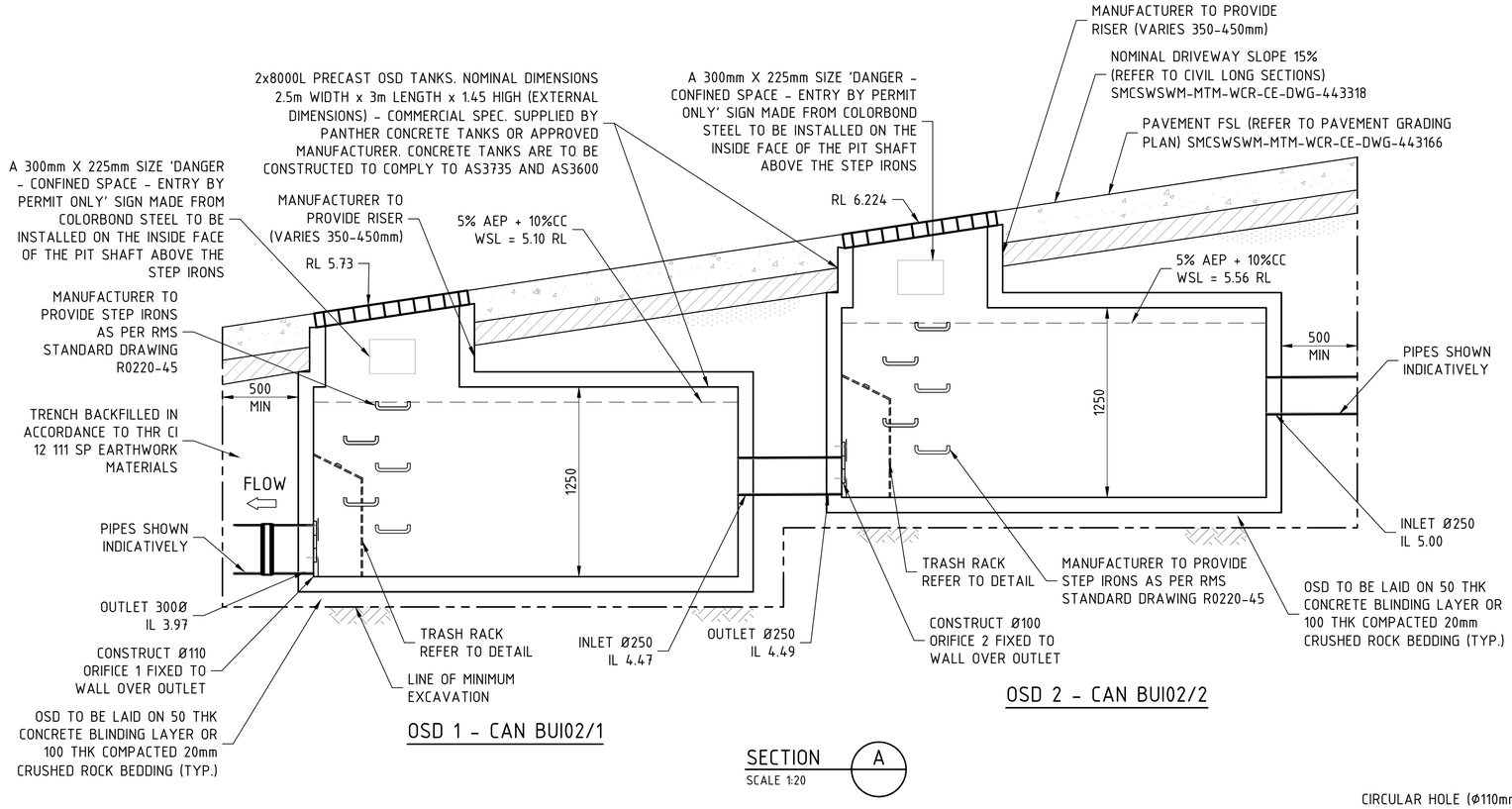
CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
DRAINAGE LONG SECTION

STATUS: STAGE 3 | SHEET 3 OF 3 | ©

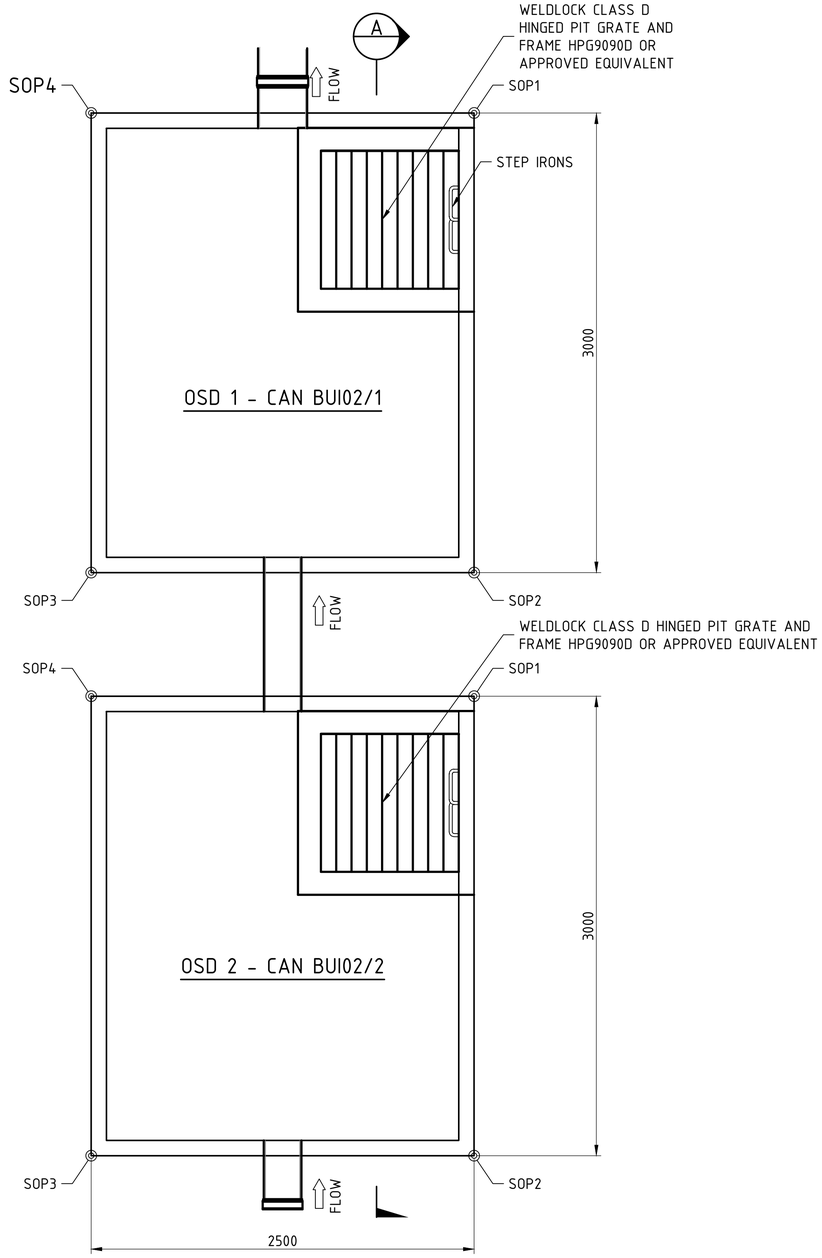
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443318 | REV. A

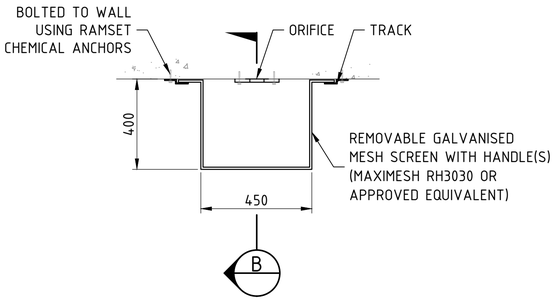
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443318 0

Cad File: C:\Projectwise\mm-sydney-metro-usdfs-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443318.dwg
Plot Date: 01/10/20 - 20:00
100mm AT FULL SIZE

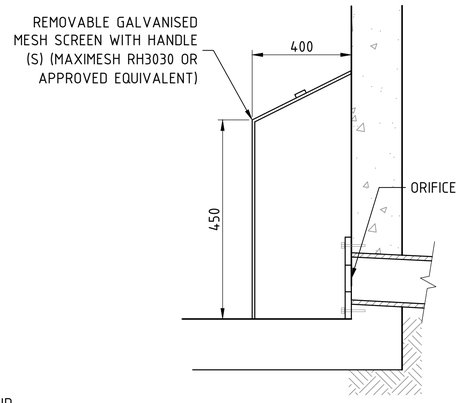


SECTION A
SCALE 1:20



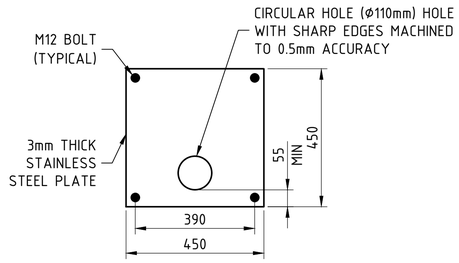


TRASH RACK DETAIL
NTS

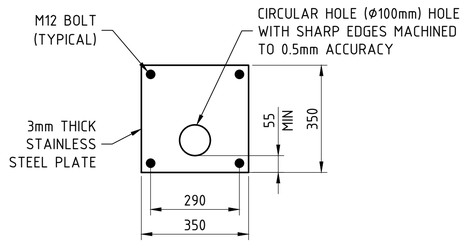


FOR ORIFICE DIAMETER UP TO 135mm ONLY

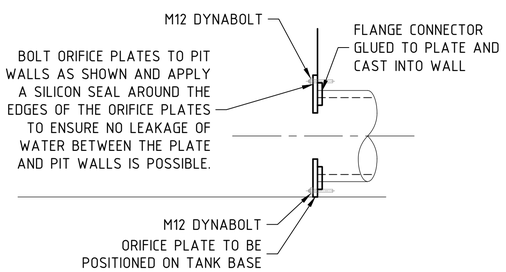
SECTION B
NTS



ORIFICE 1 PLATE DETAIL
SCALE 1 :10



ORIFICE 2 PLATE DETAIL
SCALE 1 :10



ORIFICE PLATE ATTACHMENT DETAILS
SCALE 1:20

OSD 1 - CAN BUI 02/1		
SETOUT POINT	EASTING	NORTHING
SOP1	325895.322	6246093.632
SOP2	325897.626	6246095.553
SOP3	325899.227	6246093.632
SOP4	325896.923	6246091.712

OSD 2 - CAN BUI 02/2		
SETOUT POINT	EASTING	NORTHING
SOP1	325897.992	6246095.869
SOP2	325900.296	6246097.790
SOP3	325901.897	6246095.869
SOP4	325899.593	6246093.948

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NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES
1 : 20 FULL SIZE A1
1 : 10 FULL SIZE A1

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NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS
METRON T2M

DRAWN R.TACADENA
DESIGNED J.LAW
DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
OSD DETAILS

STATUS: STAGE 3 | SHEET 1 OF 1 | ©
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443321 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443321 0

Cad File: C:\Projectwise\mm-sydney-metro-uscits-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443321.dwg
Plot Date: 02/10/20 - 12:56
100mm AT FULL SIZE

DRAWING DELETED

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
B	TL	06.10.2020	ISSUED FOR STAGE 3	LP
A	TL	18.03.2020	ISSUED FOR STAGE 2	LP

SCALES

1 : 100 FULL SIZE A1

CLIENT

NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS

METRON T2M

DRAWN R.TACADENA
DESIGNED K.VEKERIA
DRG CHECK P. ALFORD
DESIGN CHECK T.LEE
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
STORMWATER DRAINAGE PLAN - DRAWING DELETED

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

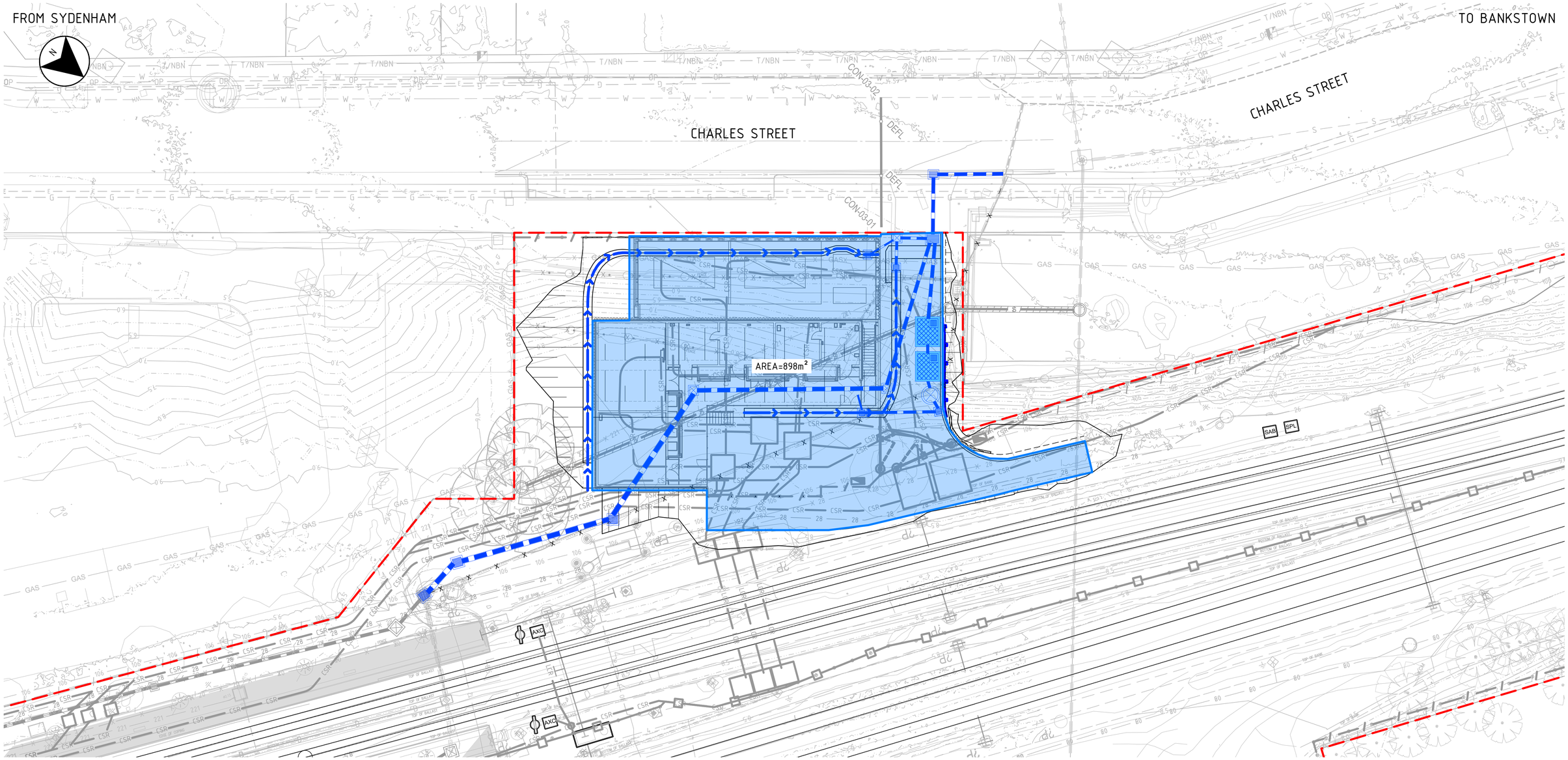
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443331 | REV. B

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

NOTE: Do not scale from this drawing.

ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443331 0

100mm AT FULL SIZE Plot Date: 04/10/20 - 12:14 Cad File: C:\projectwise\MM-Sydney-Metro-usdfs-japna-au\\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443331.dwg

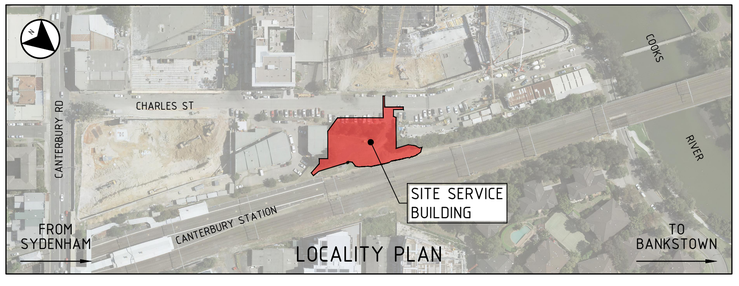


PLAN

SCALE 1:200

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. FOR STORMWATER DRAINAGE DETAILS REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443311 AND 443312.
4. FOR OSD DETAILS REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443321.



LOCALITY PLAN

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NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

2 0 2 4 6 8m

1 : 200 FULL SIZE A1

CLIENT

NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS

METRON T2M

DRAWN R.TACADENA
DESIGNED J.LAW
DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

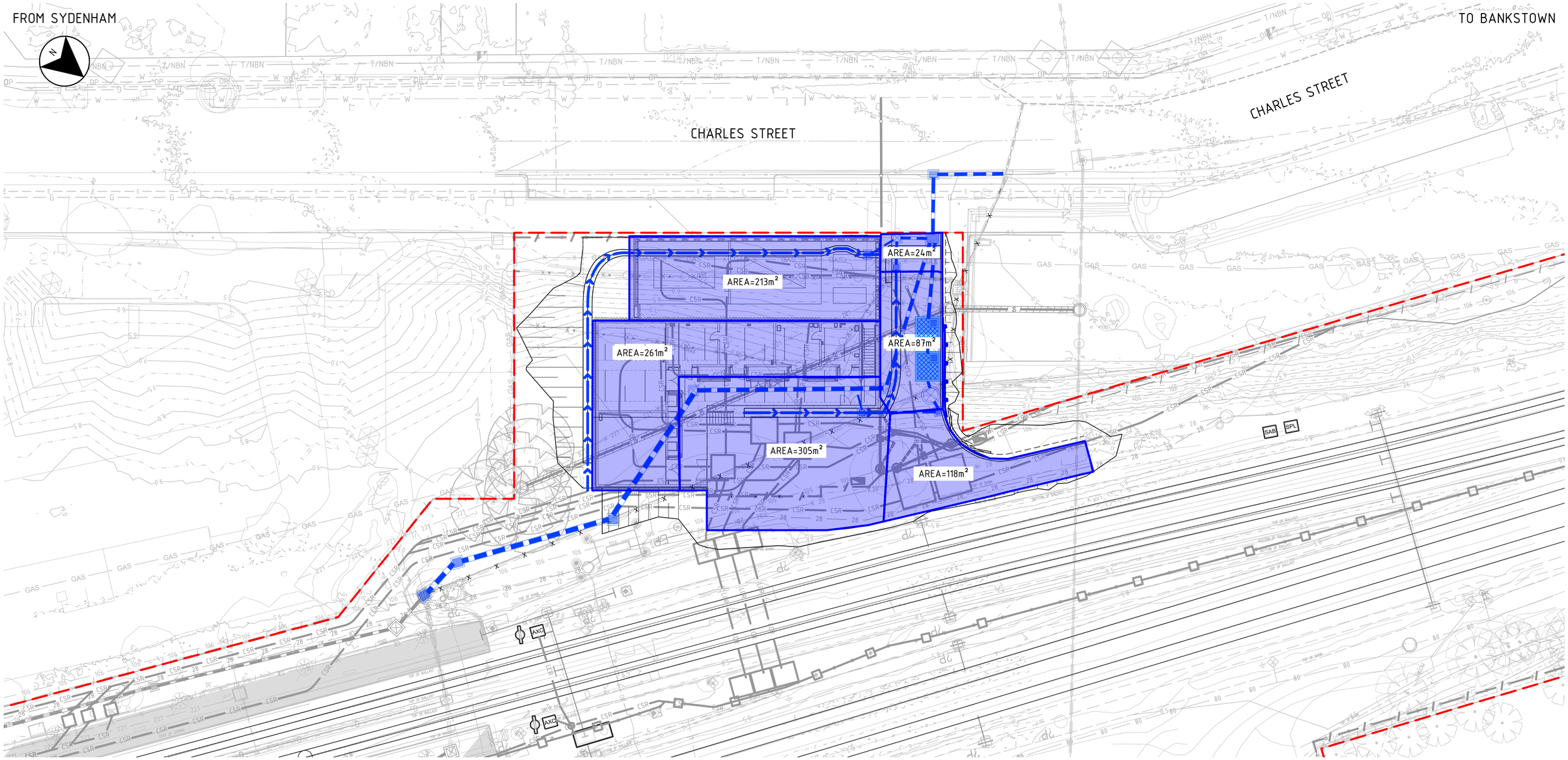
CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
CATCHMENT PLAN - PRE DEVELOPMENT CASE

STATUS: STAGE 3 | SHEET 1 OF 3 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443341 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443341 0

Cad File: C:\Projectwise\nmr-sydney-metro-usdfs-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443341.dwg
Plot Date: 01/10/20 - 16:32
100mm AT FULL SIZE

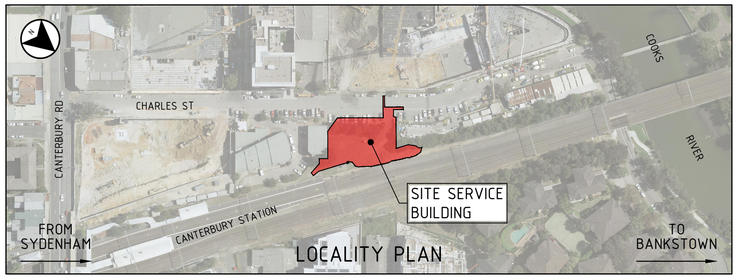


PLAN

SCALE 1:200

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. FOR STORMWATER DRAINAGE DETAILS REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443311 AND 443312.
4. FOR OSD DETAILS REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443321.



LOCALITY PLAN

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

2 0 2 4 6 8m

1 : 200 FULL SIZE A1

CLIENT

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SERVICE PROVIDERS

METRON T2M

DRAWN R.TACADENA
DESIGNED J.LAW
DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

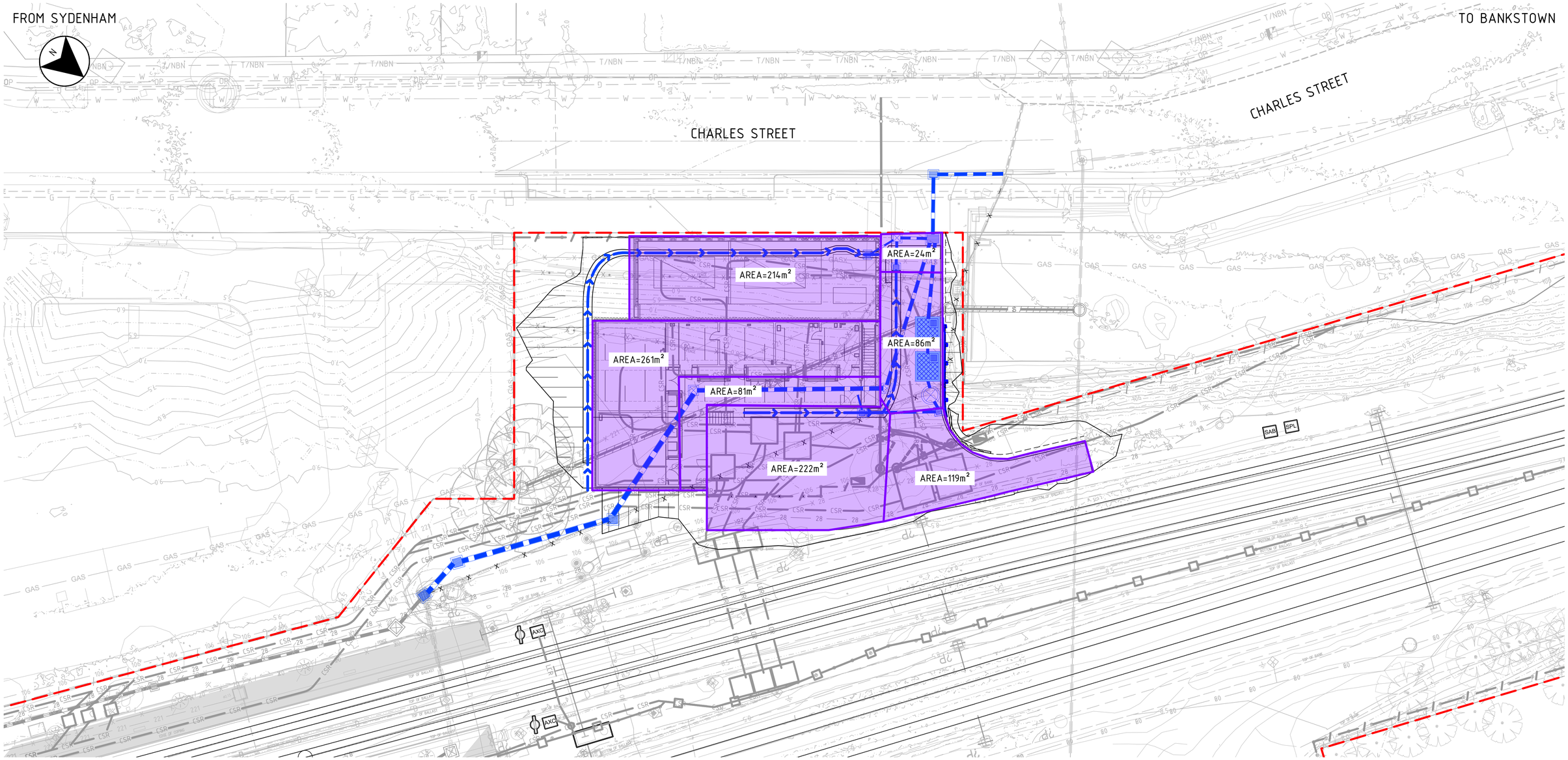
CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
CATCHMENT PLAN - POST DEVELOPMENT CASE

STATUS: STAGE 3 | SHEET 2 OF 3 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443342 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443342 0

Cad File: C:\Projectwise\nrm-sydney-metro-usdfs-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443342.dwg
Plot Date: 01/10/20 - 16:33
100mm AT FULL SIZE

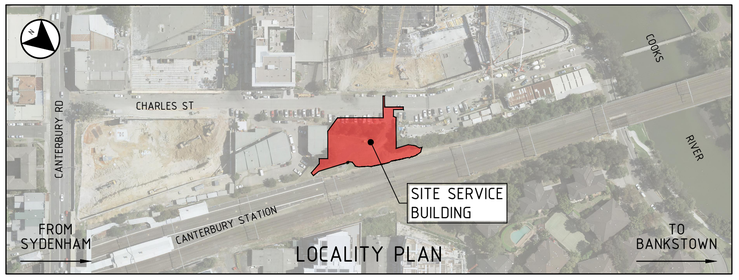


PLAN

SCALE 1:200

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. FOR STORMWATER DRAINAGE DETAILS REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443311 AND 443312.
4. FOR OSD DETAILS REFER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443321.



LOCALITY PLAN

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

2 0 2 4 6 8m

1 : 200 FULL SIZE A1

CLIENT

NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS

METRON T2M

DRAWN R.TACADENA
DESIGNED J.LAW
DRG CHECK P. ALFORD
DESIGN CHECK R.PETERSON
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

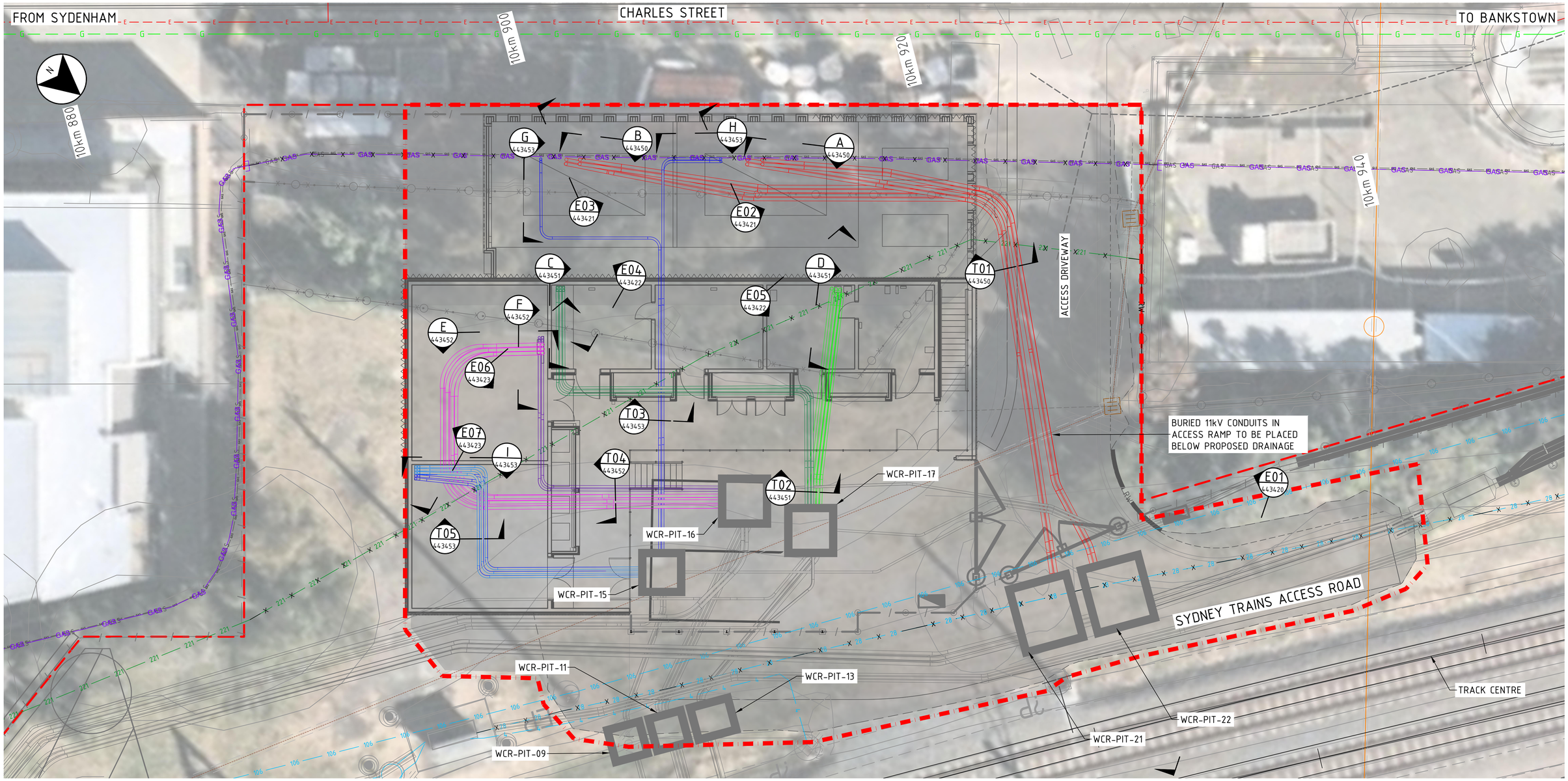
CANTERBURY STATION - SERVICE BUILDING
DRAINAGE DESIGN
SERVICE BUILDING - DRAINAGE
CATCHMENT PLAN - WATER QUALITY MODEL

STATUS: STAGE 3 | SHEET 3 OF 3 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443343 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443343 0

Cad File: C:\Projectwise\nrm-sydney-metro-usdfs-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443343.dwg
Plot Date: 01/10/20 - 16:33
100mm AT FULL SIZE



NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443401 TO 443405.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443408 AND 443409.
3. FOR WCR PIT DETAILS REFER TO STATION PACKAGE 143.

PLAN

SCALE: 1:100

LEGEND

BACKBONE (CSR) CONDUITS

- CSR - HV (33kV)
- CSR - HV (11kV)
- CSR - LOW VOLTAGE
- CSR - COMMUNICATIONS
- CSR - SIGNALLING

LOCAL (LCR) CONDUITS

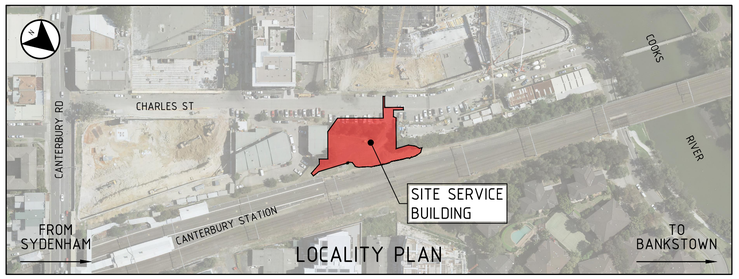
- LCR - LOW VOLTAGE
- LCR - COMMUNICATIONS
- LCR - SIGNALLING

OTHER

- CSR - PROPOSED GST ROUTE
- CSR - PROPOSED CABLE TRAY ROUTE
- CSR - PROPOSED PIT
- LCR - PROPOSED TRENCH ROUTE
- LCR - PROPOSED BALLAST ROUTE
- LCR - PROPOSED GST ROUTE

SYDNEY TRAINS RELOCATED SERVICES

- ST - SYDNEY TRAINS RELOCATION ROUTE



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REV.	BY	DATE	DESCRIPTION	APPD.
A	SP	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 1 : 100 — 1 0 1 2 3 4m — FULL SIZE A1

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SERVICE PROVIDERS: METRON T2M

DRAWN S.PIYASENA & S.DRAGOTTA
DESIGNED N.JALILIAN
DRG CHECK P.ALFORD
DESIGN CHECK O.COLE & A.SHANTIA
APPROVED L.PALMER 06.10.2020

SYDNEY METRO

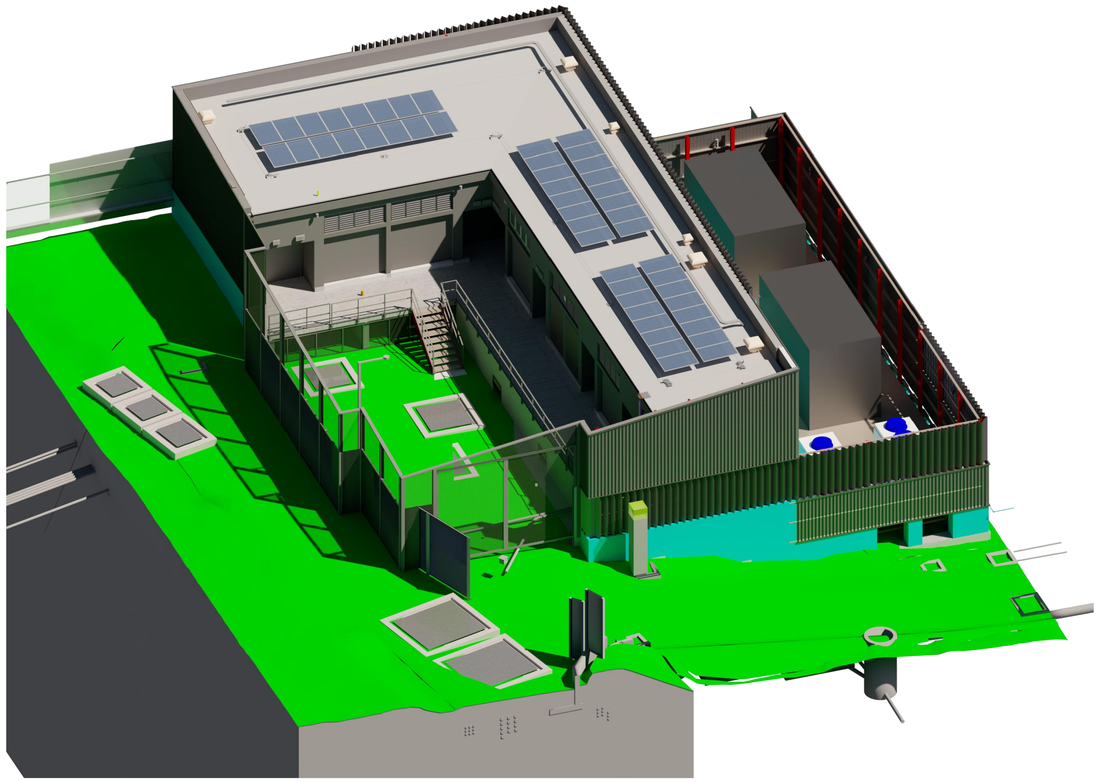
CANTERBURY STATION (SERVICE BUILDING)
CIVIL ENGINEERING
COMBINED SERVICES ROUTE (CSR)
GENERAL ARRANGEMENT PLAN

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443410 | REV. A

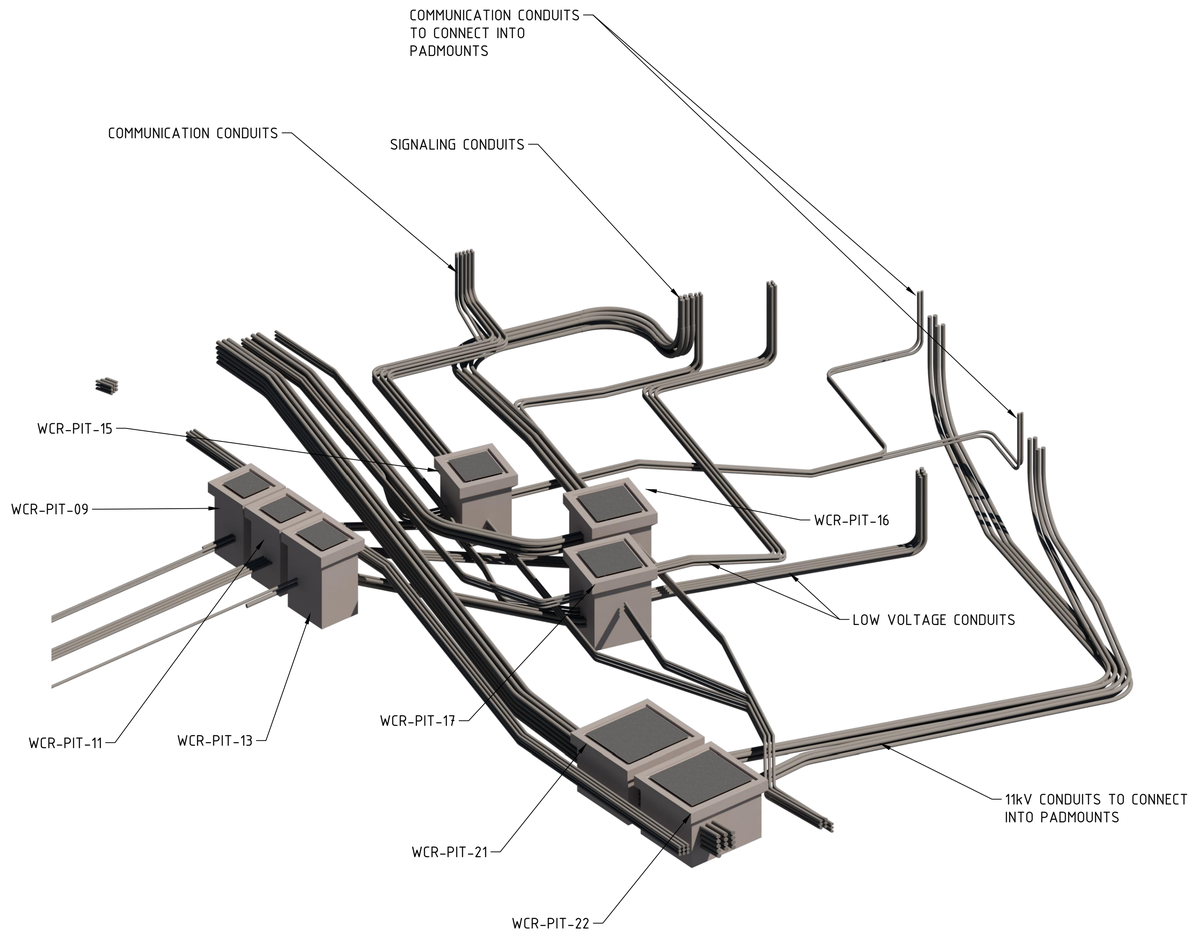
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443410

Cad File: C:_pw_sands-csrl\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443410.dwg
Plot Date: 01/10/20 - 16:44
100mm AT FULL SIZE



ELEVATION E01
NTS 443410

ISO VIEW OF SERVICE BUILDING



ELEVATION E01
NTS 443410

BURRIED CONDUITS CONNECTING TO SERVICE BUILDING

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
A	SP	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

CLIENT

NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS

METRON T2M

DRAWN S.PIYASENA & S.DRAGOTTA
DESIGNED N.JALILIAN
DRG CHECK P.ALFORD
DESIGN CHECK O.COLE & A.SHANTIA
APPROVED L.PALMER 06.10.2020

SYDNEY METRO
CANTERBURY STATION (SERVICE BUILDING)
CIVIL ENGINEERING
COMBINED SERVICES ROUTE (CSR)
3D VIEW SHEET 1

STATUS: STAGE 3 | SHEET 1 OF 4 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443420 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443420

100mm AT FULL SIZE Plot Date: 30/09/20 - 16:07 Cad File: C:_pw_smds-csr\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443420.dwg

UTILITIES IMPACT REGISTER

CLASH ID	SYDNEY METRO CHAINAGE	ASSET CLASSIFICATION	ASSET OWNER	CLASH DESCRIPTION	EXISTING UTILITIES INFORMATION	CRITICALITY	PROPOSED ACTION	PROPOSED ACTION
CR-G-MSB1	10KM + 880 TO 10KM +920	NON-RAIL ASSET	QENOS	PROPOSED MSB WILL BE CONSTRUCTED WITHIN THE VICINITY OF EXISTING QENOS PIPELINE (203).	PIPE SIZE: DN150 TYPE: HIGH PRESSURE (ABANDONED)	LOW	REMOVED	REMOVE QENOS PIPELINE AT METRO SERVICE BUILDING. CONTRACTOR TO REMOVE SECTION OF QENOS PIPELINE TO FACILITATE THE CONSTRUCTION OF MSB. LENGTH OF THE PIPELINE TO BE REMOVED AS PER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443501. CONTRACTOR TO NOTIFY QENOS ONE WEEK PRIOR TO UNDERTAKING WORK ON QENOS' ASSETS
CR-G-D1	10KM + 920	NON-RAIL ASSET	QENOS	PROPOSED DRAINAGE PIPE WILL BE CROSSING AN EXISTING QENOS PIPELINE (203).	PIPE SIZE: DN150 TYPE: HIGH PRESSURE (ABANDONED)	LOW	REMOVED	REMOVE QENOS PIPELINE AT DRAINAGE CROSSING CONTRACTOR TO REMOVE SECTION OF QENOS PIPELINE TO FACILITATE THE CONSTRUCTION OF PROPOSED DRAINAGE LINE. LENGTH OF THE PIPELINE TO BE REMOVED AS PER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443501. CONTRACTOR TO NOTIFY QENOS ONE WEEK PRIOR TO UNDERTAKING WORK ON QENOS' ASSETS
CR-V1-W1	10KM TO 920	NON-RAIL ASSET	VIVA	PROPOSED WATER SUPPLY WILL CROSS OVER EXISTING VIVA HIGH PRESSURE PIPELINE	TYPE: HIGH PRESSURE JET FUEL PIPELINE	HIGH	PROTECT	PROTECT AND IDENTIFIED EXISTING VIVA HIGH PRESSURE JET FUEL MAIN. CONTRACTOR TO LAY DN50 WATERMAIN ACROSS CHARLES STREET TO CONNECT TO AN EXISTING DN100 WATERMAIN ON SOUTHERN SIDE OF SOUTH STREET. THE DN50 WATER CONDUIT WILL BE LAY IN TRENCHES AT 450MM COVER. THE EXISTING VIVA HIGH PRESSURE MAIN HAS 1200MM COVER AND THE PROPOSED WATERMAIN CONNECTION WILL HAVE NO IMPACT ON THE EXISTING VIVA'S PIPELINE. TO MINIMISE RISK OF DAMAGE TO THE PIPELINE, THE WATER MAIN WILL BE HANDEXCAVATED WITH A MINIMUM 300MM CLEARANCE FROM THE VIVA HIGH PRESSURE MAIN. THIS WILL BE CARRIED OUT IN THE PRESENCE OF A VIVA ENERGY PIPELINE SURVEILLANCE INSPECTOR AS PER 'VIVA ENERGY AUSTRALIA CONDITIONS FOR WORKS NEAR VIVA ENERGY AUSTRALIA PTY LTD OWNED AND OPERATED HIGH PRESSURE PIPELINES IN NEW SOUTH WALES', PUBLISHED 27 AUG 2018
CR-AG-W1	10KM TO 920	NON-RAIL ASSET	AUSGRID	PROPOSED WATER SUPPLY WILL CROSS OVER EXISTING AUSGRID LOW VOLTAGE CABLE	TYPE: 4 X DN150 LOW VOLTAGE	MEDIUM	PROTECT	PROTECT AND IDENTIFIED EXISTING AUSGRID LOW VOLTAGE CABLES. CONTRACTOR TO LAY DN50 WATERMAIN ACROSS CHARLES STREET TO CONNECT TO AN EXISTING DN100 WATERMAIN ON SOUTHERN SIDE OF SOUTH STREET. THE DN50 WATER CONDUIT WILL BE LAID IN TRENCHES AT 450MM COVER. THE EXISTING AUSGRID LV CABLES HAS 900MM COVER AND THE PROPOSED WATERMAIN CROSSING WILL HAVE NO IMPACT ON THE EXISTING AUSGRID CABLES. TO MINIMISE RISK OF DAMAGE TO THE LV CABLES, THE WATER MAIN WILL HAVE A MINIMUM 300MM CLEARANCE FROM THE CONDUIT AS PER NSW STREETS OPENING COORDINATION COUNCIL (SOCC) GUIDE TO CODES AND PRACTICES FOR STREETS OPENING. THIS STANDARD IS REFERENCED IN AUSGRID NS130.
CR-AG-D2	10KM TO 925	NON-RAIL ASSET	AUSGRID	PROPOSED DRAINAGE LINE WILL CROSS OVER EXISTING AUSGRID LOW VOLTAGE CABLE	TYPE: 4 X DN150 LOW VOLTAGE	MEDIUM	PROTECT	PROTECT AND IDENTIFIED EXISTING AUSGRID LOW VOLTAGE CABLES. CONTRACTOR TO LAY DN300 DRAINAGE OVER EXISTING AUSGRID CABLE AS PER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443301 TO CONNECT TO AN EXISTING DRAINAGE LINE ON CHARLES STREET. THE DRAINAGE LINE WILL BE LAID IN TRENCHES WITH 300MM COVER. THE EXISTING AUSGRID LV CABLES HAS 900MM COVER AND THE PROPOSED DRAINAGE LINE HAS 150MM CLEARANCE OVER THE EXISTING AUSGRID CABLES. THIS CLEARANCE IS LESS THAN THE MINIMUM REQUIREMENT OF 300MM SPECIFIED WITHIN THE NSW STREETS OPENING COORDINATION COUNCIL (SOCC) GUIDE TO CODES AND PRACTICES FOR STREETS OPENING. THIS STANDARD IS REFERENCED IN AUSGRID NS130. DISPENSATION WILL BE REQUIRED FROM AUSGRID TO ALLOW FOR THIS REDUCED CLEARANCE.
CR-V1-D2	10KM TO 925	NON-RAIL ASSET	VIVA	PROPOSED DRAINAGE WILL CROSS OVER EXISTING VIVA HIGH PRESSURE PIPELINE	TYPE: HIGH PRESSURE JET FUEL PIPELINE	HIGH	PROTECT	PROTECT AND IDENTIFIED EXISTING VIVA HIGH PRESSURE MAIN. CONTRACTOR TO LAY DN300 DRAINAGE LINE OVER THE EXISTING VIVA PIPELINE CABLE AS PER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443301 TO CONNECT TO AN EXISTING DRAINAGE LINE ON CHARLES STREET. THE DRAINAGE LINE WILL BE LAID IN TRENCHES WITH 300MM COVER. THE EXISTING VIVA HIGH PRESSURE PIPELINE HAS 1200MM COVER. THE PROPOSED DRAINAGE LINE WILL BE HAND EXCAVATED AND MAINTAIN MIN 300MM VERTICAL CLEARANCE AND 2M HORIZONTAL CLEARANCE. THIS WILL BE CARRIED OUT IN THE PRESENCE OF A VIVA ENERGY PIPELINE SURVEILLANCE INSPECTOR AS PER 'VIVA ENERGY AUSTRALIA CONDITIONS FOR WORKS NEAR VIVA ENERGY AUSTRALIA PTY LTD OWNED AND OPERATED HIGH PRESSURE PIPELINES IN NEW SOUTH WALES', PUBLISHED 27 AUG 2018
CR-G-DRV1	10KM + 920	NON-RAIL ASSET	QENOS	PROPOSED DRIVEWAY WILL BE CONSTRUCTED OVER AN EXISTING QENOS PIPELINE (203).	PIPE SIZE: DN150 TYPE: HIGH PRESSURE (ABANDONED)	LOW	REMOVED	REMOVE QENOS PIPELINE AT MSB DRIVEWAY CONTRACTOR TO REMOVE SECTION OF QENOS PIPELINE TO FACILITATE THE CONSTRUCTION OF PROPOSED DRIVEWAY. LENGTH OF THE PIPELINE TO BE REMOVED AS PER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443501. CONTRACTOR TO NOTIFY QENOS ONE WEEK PRIOR TO UNDERTAKING WORK ON QENOS' ASSETS
CR-S-D3	10KM + 920	RAIL ASSET	SYDNEY TRAINS	PROPOSED DRAINAGE PIPE WILL BE CROSSING OVER AN EXISTING SYDNEY TRAINS' SEWER (221).	PIPE SIZE: DN150 TYPE: VC	LOW	RELOCATE	RELOCATE EXISTING SYDNEY TRAINS' SEWER LINE (221). EXISTING SYDNEY TRAINS' SEWER WILL BE CUT AND REMOVED. NEW DN150 SEWER TO BE LAID AND CONCRETE ENCASED AS PER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443501 TO FACILITATE THE CONSTRUCTION OF THE PROPOSED DRAINAGE LINE.

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REV.	BY	DATE	DESCRIPTION	APPD.
B	TL	06.10.2020	ISSUED FOR STAGE 3	LP
A	TL	18.03.2020	ISSUED FOR STAGE 2	LP

SCALES

CLIENT

NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS

METRON T2M

DRAWN A.ZHAO
DESIGNED J. SECO
DRG CHECK P. ALFORD
DESIGN CHECK M. LAM
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
UTILITIES CO-ORDINATION
SERVICE BUILDING - UTILITIES
IMPACT REGISTER

STATUS: STAGE 3 | SHEET 1 OF 2 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443502 | REV. B

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443502 0

Cad File: C:\projectwise\mm-sydney-metro-usdfs-japna-au\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443502.dwg
Plot Date: 01/10/20 - 11:27
100mm AT FULL SIZE

UTILITIES IMPACT REGISTER

CLASH ID	SYDNEY METRO CHAINAGE	ASSET CLASSIFICATION	ASSET OWNER	CLASH DESCRIPTION	EXISTING UTILITIES INFORMATION	CRITICALITY	PROPOSED ACTION	PROPOSED ACTION
CR-S-CSR1	10KM + 920	RAIL ASSET	SYDNEY TRAINS	CSR - PROPOSED BURIED ROUTE CORRIDOR WILL BE CROSSING OVER AN EXISTING SYDNEY TRAINS' SEWER (221).		LOW	RELOCATE	RELOCATE EXISTING SYDNEY TRAINS' SEWER LINE (221). EXISTING SYDNEY TRAINS' SEWER WILL BE CUT AND REMOVED. NEW DN150 SEWER TO BE LAID AND CONCRETE ENCASED AS PER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443501 TO FACILITATE THE CONSTRUCTION OF THE PROPOSED CSR WORK.
CR-S-MSB1	10KM + 880 TO 10KM + 920	RAIL ASSET	SYDNEY TRAINS	PROPOSED SERVICE BUILDING WILL BE CONSTRUCTED OVER AN EXISTING SYDNEY TRAINS' SEWER (221).		LOW	RELOCATE	RELOCATE EXISTING SYDNEY TRAINS' SEWER LINE (221). EXISTING SYDNEY TRAINS' SEWER WILL BE CUT AND REMOVED. NEW DN150 SEWER TO BE LAID AND CONCRETE ENCASED AS PER DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443501 TO FACILITATE THE CONSTRUCTION OF THE PROPOSED SERVICE BUILDING.
CR-E-CSR2	10KM + 880	RAIL ASSET	SYDNEY TRAINS	CSR - PROPOSED BURIED ROUTE CORRIDOR WILL BE LAYED WITHIN THE VICINITY OF THE POLE OF AN EXISTING SYDNEY TRAINS' AERIAL HIGH VOLTAGE LINE (106).	AERIAL HIGH VOLTAGE LINE (AC: >1000V ; DC: >1500V)	LOW	PROTECT	PROTECT EXISTING SYDNEY TRAINS' HV POLE (106). PROPOSED CSR LINE WILL BE CONSTRUCTED WITHIN THE VICINITY OF EXISTING OVER HEAD POLE. THE POLE HAS A 1.5M HORIZONTAL CLEARANCE FROM THE PROPOSED CSR LINE. TEMPORARY SHORING TO BE PROVIDED BY THE CONTRACTOR TO ENSURE THE POLE IS SUPPORTED DURING THE EXCAVATION OF THE CSR LINE.
CR-SC-CSR3	10KM + 900	RAIL ASSET	SYDNEY TRAINS	LCR - PROPOSED BURIED ROUTE ULX-URX PIT WILL BE CONSTRUCTED NEXT TO AN EXISTING SYDNEY TRAINS' DUCTED SIGNAL CABLE (4).	LOCAL ROUTE	LOW	PROTECT	PROTECT EXISTING SYDNEY TRAINS' SIGNAL CABLE (4). EXISTING SIGNAL CABLE IS 300MM CLEAR OF THE PROPOSED CSR PITS. DURING CONSTRUCTION CONTRACTOR TO PEG OUT THE LOCATION OF THE CABLES AND PROTECTED DURING CONSTRUCTION OF THE CSR PITS.
CR-SC-CSR4	10KM + 920	RAIL ASSET	SYDNEY TRAINS	CSR - PROPOSED BURIED ROUTE CORRIDOR & PIT WILL BE CONSTRUCTED OVER AN EXISTING SYDNEY TRAINS' DUCTED SIGNAL CABLE, COPPER COMMUNICATION CABLE & OPTIC FIBRE CABLE (28).	BACKBONE	HIGH	RELOCATE	RELOCATE EXISTING DUCTED SYDNEY TRAINS' SIGNAL CABLE, COPPER COMMUNICATION CABLE & OPTIC FIBRE CABLE (28). EXISTING SYDNEY TRAINS' SIGNAL CABLE, COPPER COMMUNICATION CABLE & OPTIC FIBRE CABLE WILL BE RELOCATED. REFER TO CSR DESIGN PACKAGE 143 (DWG NO. SMCSWSWM-MTM-WCR-CE-DWG-143142).
CR-S-CSR5	10KM + 940	NON-RAIL ASSET	SYDNEY WATER	CSR - PROPOSED BURIED ROUTE CORRIDOR WILL BE CROSSING OVER AN EXISTING SEWER LINE (221).	PIPE SIZE: DN 225 MATERIAL: VITRIFIED CLAY	LOW	PROTECT	IDENTIFIED EXISTING SYDNEY WATER SEWER (221). THE PROPOSED CSR IS BEEN CONSTRUCTED OVER THE EXISTING DN225 SWC SEWER. REFER TO DRAWING NO. SMCSWSWM-MTM-WCR-CE-143142 FOR CSR DETAILS. THE PROPOSED CSR IS AT 1.5M BELOW EXISTING SURFACE LEVEL , WHICH HAS A 2.0M VERTICAL CLEARANCE TO THE EXISTING SEWER

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

CLIENT

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SERVICE PROVIDERS

METRON T2M

DRAWN A.ZHAO
DESIGNED J. SECO
DRG CHECK P. ALFORD
DESIGN CHECK M. LAM
APPROVED L. PALMER 06.10.2020

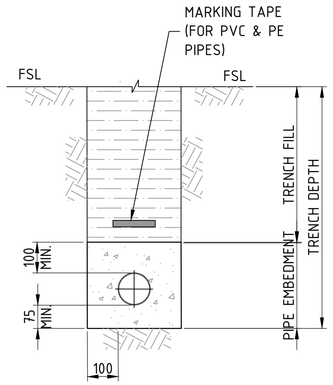
SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
UTILITIES CO-ORDINATION
SERVICE BUILDING - UTILITIES
IMPACT REGISTER

STATUS: STAGE 3 | SHEET 2 OF 2 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443503 | REV. A

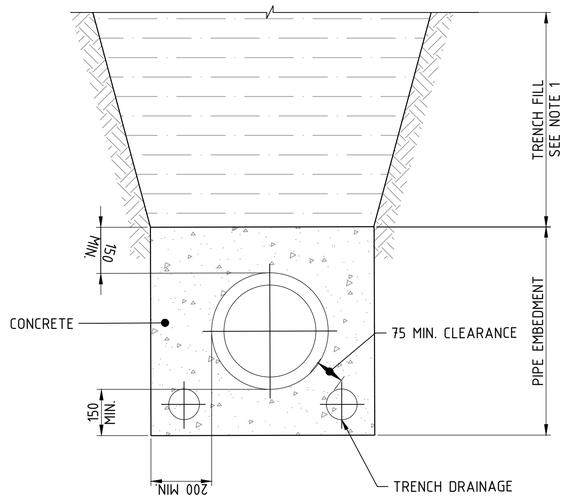
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443503 0

100mm AT FULL SIZE Plot Date: 01/10/20 - 11:28 Cad File: C:\projectwise\mm-sydney-metro-usrfts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443503.dwg



TYPICAL WATER TRENCH DETAIL

SCALE 1:10



TYPE 12U SUPPORT
UTILISING CONCRETE EMBEDMENT

SCALE 1:10

BACKFILLING FOR SEWER:

SG1. BACKFILLING FOR SERVICES TRENCHES TO BE IN ACCORDANCE WITH T HR CI 12190 ST AND T HR CI 12111SP.

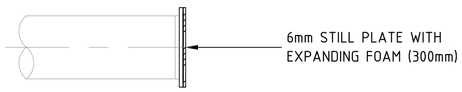
SG2. SERVICES FOR TRENCHES TO BE BACKFILLED WITH GENERAL FILL IN T HR CI 12190 ST.

SG3. GENERAL FILL MATERIAL TO MEET REQUIREMENTS IN T HR CI 12111SP. GENERAL FILL TO BE PLACED COMPACTED TO 95% STANDARD MAXIMUM DRY DENSITY (SMDD).

SG4. WHERE SERVICES TRENCHES ARE LOCATED BENEATH SLABS, THE TOP 300mm OF GENERAL FILL TO BE COMPACTED TO 98% SMDD.

SG5. TEMPORARY WORKS DESIGN REQUIRED IS TO BE CARRIED OUT BY THE CONTRACTORS AEO CERTIFIED TEMPORARY WORKS DESIGNER AND IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH ALL THE RELEVANT CONTRACT DOCUMENTS, CODES, STANDARDS, CODES OF PRACTICE, INDUSTRY STANDARDS, ETC.

SG6. GROUNDWATER MAYBE ENCOUNTERED AT 2m DEPTH BELOW SURFACE. WHERE EXCAVATIONS EXTEND TO / BEYOND APPROXIMATELY 2m DEPTH, CONTRACTOR TO CONSIDER IMPACT OF GROUNDWATER IN PLANNING OF THE CONSTRUCTION WORKS. CONTRACTOR MUST NOTIFY THE GEOTECHNICAL ENGINEER IMMEDIATELY IF ANY UNEXPECTED GROUNDWATER IS ENCOUNTERED ON SITE DURING CONSTRUCTION OF THE WORKS.



DETAIL A - END CAP DETAIL

NOTES:

1. PLUG THE REMAIN IN-SITU PIPELINE WITH EXPANDING FOAM (300mm) THICK.
2. WELD A FLAT PLATE (MIN 6mm THICK) ON TO THE OPEN END TO CREATE A SEAL.
3. THE FLAT PLATE MUS BE WELDED ON WITH A FULL CIRCUMFERENTIAL FILLET WELD.
4. WRAP THE CAPPED END WITH DENSO WRAP OR EQUIVALENT.

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 0.1 0 0.1 0.2 0.3 0.4 — 1 : 10 FULL SIZE A1

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SERVICE PROVIDERS: METRON T2M

DRAWN A.ZHAO
DESIGNED J. SECO
DRG CHECK P. ALFORD
DESIGN CHECK M. LAM
APPROVED L. PALMER 06.10.2020

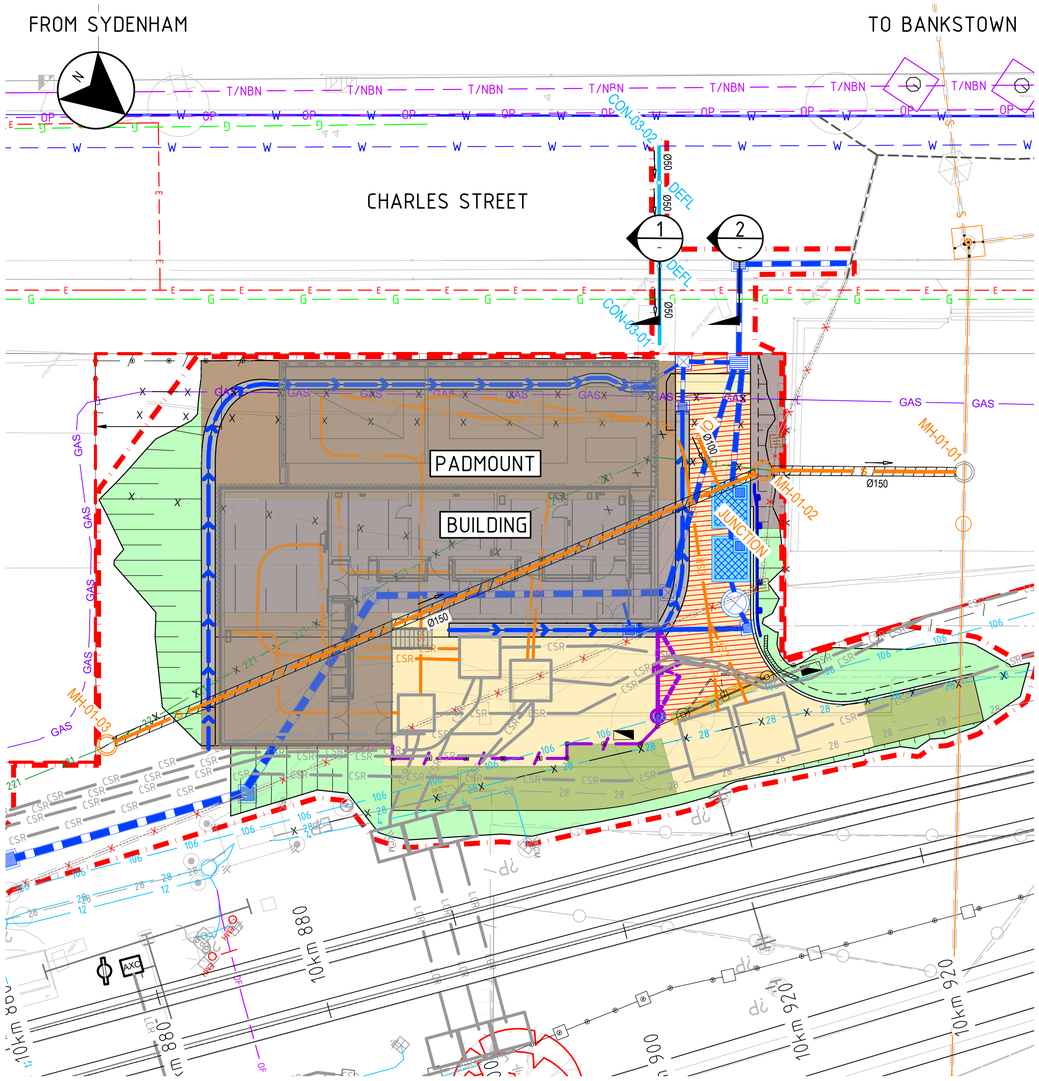
SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
UTILITIES CO-ORDINATION
SERVICE BUILDING - UTILITIES
SERVICE DETAILS

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443506 | REV. A

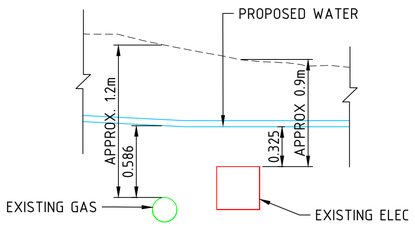
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443506 0

Cad File: C:\projectwise\mm-sydney-metro-usrfts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443506.dwg
Plot Date: 01/10/20 - 11:29
100mm AT FULL SIZE



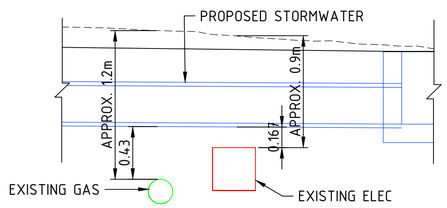
PLAN

SCALE 1:200



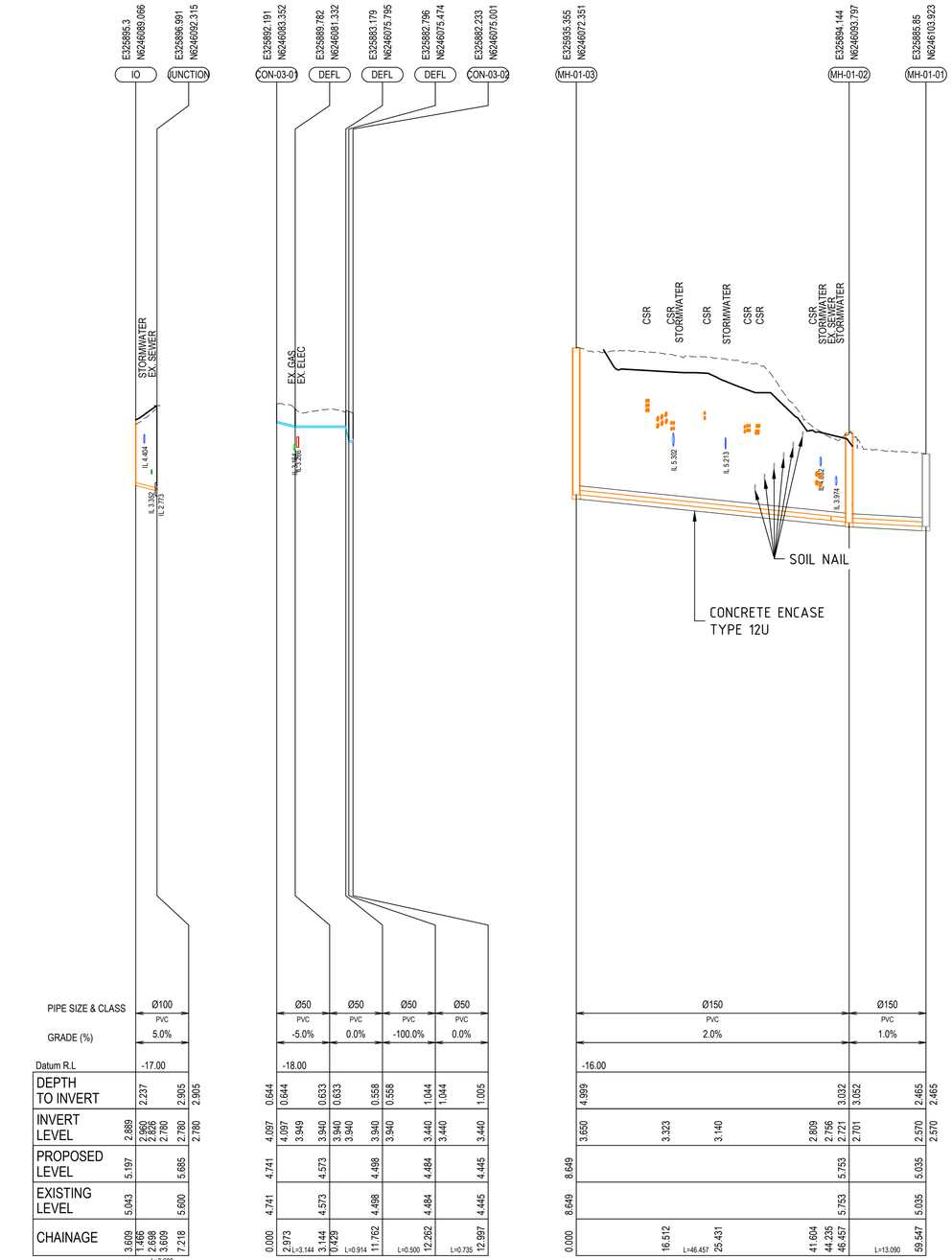
SECTION 1

SCALE 1:25



SECTION 2

SCALE 1:25



LINE SSB PRO MEP SEW

SCALE 1:500 (H) 1:100 (V)

LINE SSB PRO MEP WAT

SCALE 1:500 (H) 1:100 (V)

LINE SSB PROP SEWER 1

SCALE 1:500 (H) 1:100 (V)

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES
1 : 200 FULL SIZE A1
1 : 500 FULL SIZE A1
1 : 100 FULL SIZE A1

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SERVICE PROVIDERS

METRON T2M

DRAWN A.ZHAO
DESIGNED J. SECO
DRG CHECK P. ALFORD
DESIGN CHECK M. LAM
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
UTILITIES CO-ORDINATION
SERVICE BUILDING - UTILITIES
UTILITIES LONG SECTIONS

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

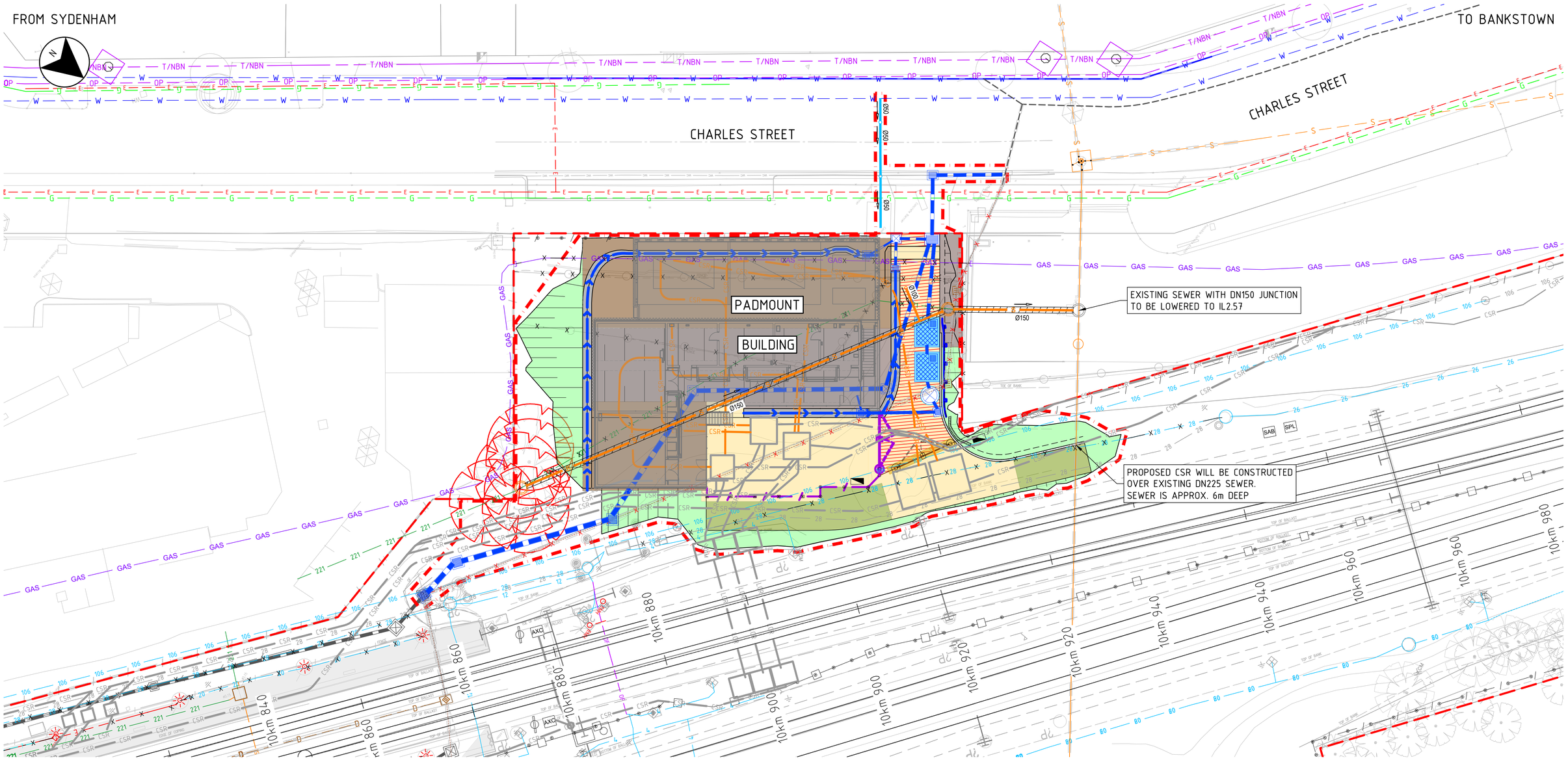
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443511 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443511 0

Cad File: C:\projectwise\mm-sydney-metro-usdts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443511.dwg
Plot Date: 01/10/20 - 16:35
100mm AT FULL SIZE

A1

CONTRACT PLAN



CANTERBURY SYDNEY WATER PLAN

SCALE 1:200

NOTES

1. FOR CRB STRUCTURAL DETAIL REFER TO STRUCTURAL WORK PACKAGE 444 FOR STRUCTURAL DETAIL

LEGEND

TYPE	DATE	REF
EX COUNCIL DRAINAGE:		DBYD
EX STORMWATER PIT: D		DBYD
EX WATER: W		DBYD
EX WATER MAIN: W		
EX WATER MAIN DIGI: WZ		
EX TRANSGRID: 330kV		DBYD
EX ELEC U/G: E		
EX ELEC U/G DIGI: EZ		
EX MAIN SEWER PIT: S		
EX MAIN DIGITISED SEWER: SZ		DBYD

TYPE	DATE	REF
EX GAS MAIN: G		
EX GAS MAIN DIGI: GZ		
EX GAS TO BE ABANDONED: GAS		
EX COMMS U/G: T		
EX COMMS U/G DIGI: TZ		
EX COMMS OPT U/G: OF		
EX COMMS OPT U/G DIGI: OFZ		
EX UTI TO BE REMOVED: X X		
FULL WIDTH REPRESENTATION OF EX UTI ABOVE:		

TYPE	DATE	REF
PROP WATER: W		ARCADIS
PROP SEWER: S		ARCADIS
PROPOSED AUSGRID BURIED LOW VOLTAGE: ELV		ARCADIS
PROPOSED SYDNEY TRAINS AERIAL HIGH VOLTAGE: EHV (AB)		ARCADIS
PROPOSED SYDNEY TRAINS BURIED HIGH VOLTAGE EHV		ARCADIS
PROPOSED CSR BURIED ROUTE CORRIDOR CSR CSR		ARCADIS
PROPOSED LCR BURIED ROUTE ULX-URX LCR		ARCADIS
PROPOSED CSR GST ROUTE ON FENCING CSR CSR		ARCADIS

SMCSWSWM-MTM-WCR-CE-DWG-443531

No.	AMENDMENT DESCRIPTION	BY	DATE
A	ISSUE FOR INFORMATION	AZ	06/10/20

PLAN TO BE READ IN CONJUNCTION WITH CURRENT SYDNEY WATER STANDARDS
SYDNEY WATER CORPORATION

PRIOR TO COMMENCEMENT OF EXCAVATION FOR PROPOSED AND EXISTING SERVICES CONTACT :-

DIAL BEFORE YOU DIG	Ph. 1100
ELECTRICITY	Ph. 9853 4161
GAS	Ph. 1300 880 906
TELECOMMUNICATIONS	Ph. 1800 653 935
SYDNEY WATER	Ph. 8849 3800

GIVING AT LEAST 48 HOURS NOTICE.

UTILITIES

TYPE	DATE	REF.	TYPE	DATE	REF.
REFER TO TABLE ABOVE FOR LEGEND					

WORK AS CONSTRUCTED CERTIFICATION

DEVELOPER
WATER SERVICE CO-ORDINATOR
CONSTRUCTOR
COMPLETED W.A.C. PREPARED

DESIGNER

I CERTIFY THAT THE WORKS HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE WORK AS CONSTRUCTED DRAWINGS.

PIPE SCHEDULE

SIZE DN	TYPE	CLASS	LENGTH	PIPE JOINING METHOD / NOTES

DESIGN HEAD 120 m

BOUNDARY TRAPS REQUIRED.

AUSTRALIAN HEIGHT DATUM

SCALES

PLAN 1:200 SECTION HOR. VERT.

CROSS SECTIONS NATURAL

LENGTHS, DEPTHS & LEVELS ARE IN METRES.

NO AMENDMENTS ARE TO BE MADE TO THIS PLAN WITHOUT REFERENCE TO SYDNEY WATER.

U.B. DIRECTORY MAP 147 - A4 - K3 (49th Ed.)

SHEET 1 OF 1 File No. N/A

Sydney WATER SYDNEY WATER CORPORATION

Case No.183632CRB

CHARLES STREET
CANTERBURY STATION
CANTERBURY INNERWEST

PLAN DRAWN DATE: 06/10/2020 VERSION: A

SHEET 1 OF 1 SHEETS

SOIL NAIL NOTES

GENERAL NOTES

SNW1. THE PROPOSED LOCATION OF THE SOIL NAIL IS INDICATIVE. CARE MUST BE TAKEN TO AVOID INTERFERENCE WITH ANY UTILITIES OR BURIED SERVICES.
SNW2. THE SOIL SHALL BE INSTALLED IN ACCORDANCE WITH RMS QA SPECIFICATION R64.
SNW3. THE CUT FACE MUST BE THOROUGHLY CLEARED OF DEBRIS FOR INSPECTION BY A SGR PRIOR TO INSTALLATION OF SOIL NAILS.
SNW4. PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE SOIL NAIL, IT IS RECOMMENDED THAT A SGR INSPECT THE CUT FACE TO CONFIRM THE GROUND CONDITIONS ALIGN WITH THE DESIGN ASSUMPTIONS.
SNW5. THE SOIL PROFILES SHALL BE LOGGED BY A SGR DURING THE SOIL NAIL DRILLING TO CONFIRM SUBSURFACE CONDITIONS ALIGN WITH THE DESIGN ASSUMPTIONS.
SNW6. NO EXCAVATION TO BE CARRIED OUT AFTER PRO LONGER PERIOD OF RAINS.
SNW7. THE GEOTECHNICAL DESIGN OF THE SOIL NAILS ASSUMES THE NAILS WILL BE INSTALLED IN RESIDUAL SOIL WITH ULTIMATE DESIGN BOND STRENGTH OF 45 kPa.
SNW8. ASSUMED GEOTECHNICAL MODELS ARE SHOWN IN THE TYPICAL CROSS SECTION.
SNW9. SOIL NAILS MUST BE CONSTRUCTED TO MEET A DESIGN LIFE OF 50 YEARS.
SNW10. SOIL NAIL MUST BE GRADE D500N IN ACCORDANCE WITH AS4671.
SNW11. SOIL NAILS ARE TO BE ENCAPSULATED WITH A CORRUGATED HIGH-DENSITY POLYETHYLENE (HDPE) SHEATH WITH MINIMUM WALL THICKNESS MUST BE 2mm.
SNW12. SPACERS (CENTRALIZERS) ARE TO BE PROVIDED AT NOT LESS THAN 2m INTERVALS. FIRST AND LAST SPACERS MUST BE LOCATED 300mm FROM EACH ENDS OF THE NAIL. A MINIMUM OF THREE SPACERS ARE TO BE PROVIDED.
SNW13. SOIL NAILS SHALL CARRY A MINIMUM OF 200% OF THE WORKING LOAD PRIOR TO REACHING 80% OF BAR YIELD LOAD.

SHOTCRETE / GROUT

SNW14. SHOTCRETE WALL EXPOSURE CLASSIFICATION (EXPOSED TO AIR): B1 IN ACCORDANCE WITH AS3600.
SNW15. SHOTCRETE MIX DESIGN MUST BE EXPOSURE CLASSIFICATION (IN CONTACT WITH SOIL): B2 IN ACCORDANCE WITH RMS SPECIFICATION R64 CLAUSE 2.3.3.
SNW16. MINIMUM 28-DAY COMPRESSIVE STRENGTH OF SHOTCRETE AND SOIL NAIL CEMENT GROUT MUST BE 40MPa USE OF SHRINKAGE LIMITED CEMENT IN SHOTCRETE IN ACCORDANCE WITH RMS SPECIFICATION R68 AND 3211.
SNW17. SOIL NAILS, GROUT AND SHOTCRETE MUST BE IN ACCORDANCE WITH SPECIFICATION R64 AND R68.
SNW18. SHOTCRETE THICKNESS TO BE MINIMUM 150mm UNLESS NOTED OTHERWISE.
SNW19. GROUT TUBES MUST HAVE A MINIMUM INTERNAL DIAMETER OF 12mm, MADE FROM HDPE, MINIMUM WALL THICKNESS MUST BE 2mm.
SNW20. GROUTING SHALL COMMENCE IMMEDIATELY AFTER APPROVAL OF THE INSERTION OF THE SOIL NAIL. THIS TIME DELAY SHOULD NOT EXCEED 24 HOURS.

REINFORCEMENT

SNW21. ALL REINFORCING BARS TO BE GRADED D500N TO AS4671. STEEL MESH MUST BE GRADE D500L IN ACCORDANCE WITH AS4671.
SNW22. BEARING PLATES, WHERE REQUIRED, MUST BE GRADE 250 IN ACCORDANCE WITH AS3678.
SNW23. NOMINAL COVER TO SOIL NAIL HEAD MUST BE NOT LESS THAN 50mm.
SNW24. NOMINAL COVER TO STEEL MESH MUST BE NOT LESS THAN 75mm TO SURFACE AND ROCK. 40mm COVER IS ACCEPTABLE TO STRIP DRAIN. CONSTRUCTION METHODOLOGY TO ENSURE COVER TO STRIP DRAIN IS ACHIEVED. LOCAL ADDITIONAL EXCAVATION MAY BE REQUIRED.
SNW25. STEEL MESH MUST BE LAPPED BY 3 WIRES.
SNW26. STEEL MESH LAPS MUST BE STAGGERED AND CUT SUCH THAT ONLY TWO SHEETS ARE LAPPED AT ONE LOCATION. LAPS OVER STRIP DRAINS ARE NOT PERMITTED.
SNW27. SOIL NAILS, BEARING PLATES, WASHERS AND STEEL MESH AND REINFORCING BARS MUST BE HOT DIP GALVANISED IN ACCORDANCE WITH AS4680 WITH A COATING WEIGHT OF 600g/m.
SNW28. SOIL NAIL NUTS MUST BE GRADE C COMPLYING WITH AS1112.3 AND PROPERTY CLASS 5 COMPLYING WITH AS4291.2 OR EQUIVALENT TO SUIT THE THREADED END OF THE SOIL NAIL.

RETAINING WALL DRAINAGE

SNW29. 150mm HDPE STRIP DRAIN MUST BE USED IN ACCORDANCE WITH RMS SPECIFICATION 3557.
SNW30. HDPE STRIP DRAIN TO BE CORRUGATED CORE PERFORATED AND MUST BE INSTALLED AT HORIZONTAL SPACINGS SHOWN ON DRAWINGS, DIAGONALLY ACROSS THE EXCAVATION FACE.
SNW31. THE STRIP DRAINS ARE TO BE FIXED BEHIND THE SHOTCRETE FACING AGAINST THE NATURAL CUT BATTER MATERIAL.
SNW32. BOTTOM OF THE STRIP DRAINS TO BE CONNECTED TO A VEE DRAIN TO DISCHARGE INTO AN APPROPRIATE POINT.
SNW33. NO WEEP DRAINS ARE TO BE INSTALLED INTO THE SOIL NAIL SLOPE.

SOIL NAIL TESTING

SNW34. ULTIMATE BOND STRENGTH ASSUMED IN THE DESIGN SHALL BE VERIFIED BY SUITABILITY TESTS. ADDITIONAL 2NOS SACRIFICIAL SOIL NAIL IS TO BE INSTALLED TO CONDUCT SUITABILITY TESTING TO 2 TIMES WORKING LOAD OR FAILURE. SACRIFICIAL SOIL NAIL TO BE POSITIONED NEXT TO CUT SLOPE TO ENSURE RESULTS ARE REPRESENTATIVE HOWEVER SHOULD NOT BE USED AS PART OF CUT SLOPE DESIGN.
SNW35. ALL SOIL NAILS SHALL BE TESTED IN ACCORDANCE WITH RMS SPECIFICATION R64.
SNW36. ACCEPTANCE TESTS = 3% OF SOIL NAILS (MINIMUM 2 TESTS).

EXCAVATOIN

SNW37. EXCAVATION STAGE MUST NOT EXCEED 1.5m DEPTH PRIOR TO INSPECTION BY THE SGR AND INSTALLATION OF SOIL NAIL.

CONSTRUCTION STAGING

SNW38. EXCAVATE THE FOOTPRINT AREA TO THE FINAL DESIGN LEVELS.
SNW39. INSTALL TEST NAILS AND CARRY OUT PULL-OUT TESTING.
SNW40. INSTALL MEP SERVICES UNDER THE BUILDING.
SNW41. INSTALL SOIL NAILS AS PER DESIGN.
SNW42. CONSTRUCT FOOTINGS.
SNW43. INSTALL STRIP DRAINS.
SNW44. APLLY SHOTCRETE FACING.

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443601 0

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METRON T2M

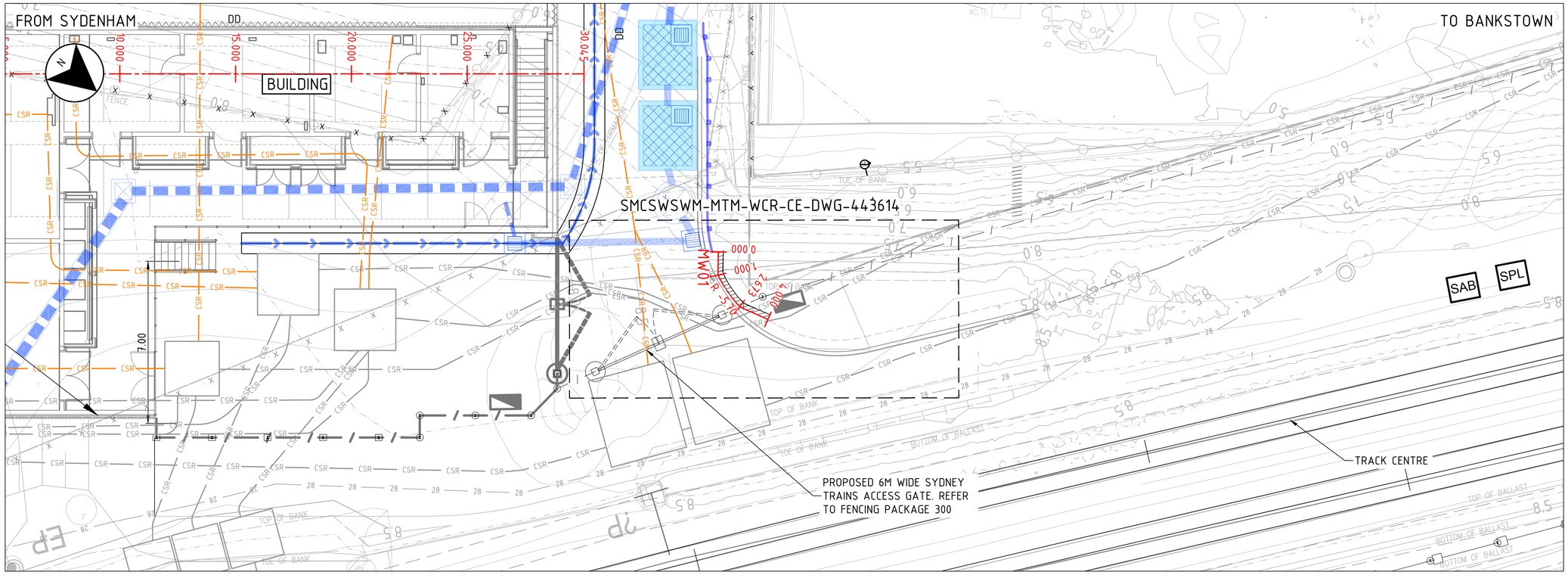
DRAWN F. ALPAPARA
DESIGNED N.COOK
DRG CHECK P. ALFORD
DESIGN CHECK T. GANANAWICKRAMA
APPROVED L. PALMER 06.10.2020

SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - RETAINING WALL
GENERAL NOTES

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443601 | REV. A

100mm AT FULL SIZE Plot Date: 03/10/20 - 20:40 Cad File: C:\projectwise\MM_TRNSW\44_Canterbury\SMCSWSWM-MTM-WCR-CE-DWG-443601.dwg

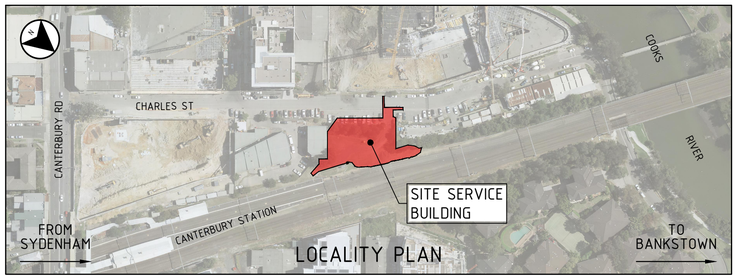


PLAN

SCALE 1:100

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.



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SCALES

1 : 100 — 1 0 1 2 3 4m — FULL SIZE A1

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SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - RETAINING WALL
GENERAL ARRANGEMENT PLAN

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443611 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443611 0

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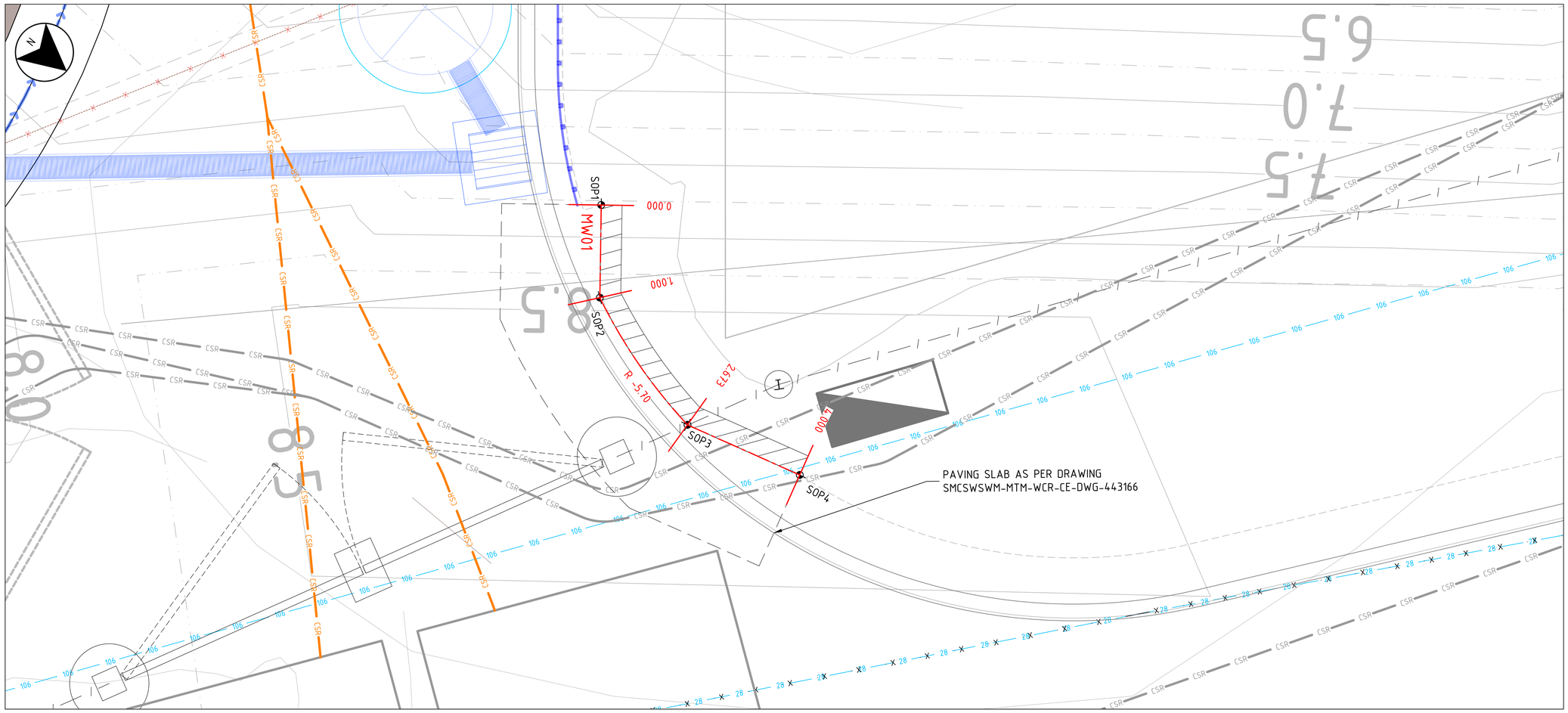

RETAINING WALL (MW01) PLAN DETAIL

SCALE 1:25

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108 TO 443109.
3. FOR STATION SERVICE BUILDING STRUCTURAL DETAILS, REFER TO STRUCTURES PACKAGE 464.

SETOUT TABLE - MW01

PT	CHAINAGE	EASTING	NORTHING
SOP1	0.000	325902.398	6246100.755
SOP2	1.000	325903.176	6246101.384
SOP3	2.673	325903.626	6246102.989
SOP4	4.000	325903.265	6246104.266

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TL	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 0.25 0 0.25 0.50 0.75m — 1 : 25 FULL SIZE A1

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DRG CHECK P. ALFORD
DESIGN CHECK T. GANANAWICKRAMA
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - RETAINING WALL
DETAIL PLANS

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443614 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443614 0

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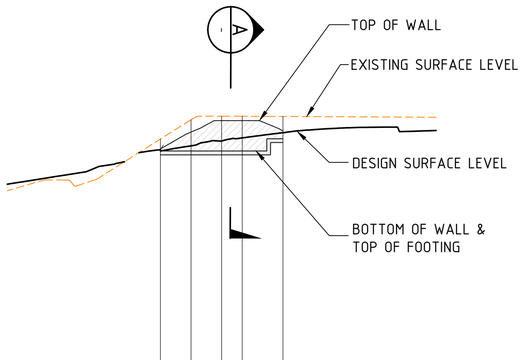
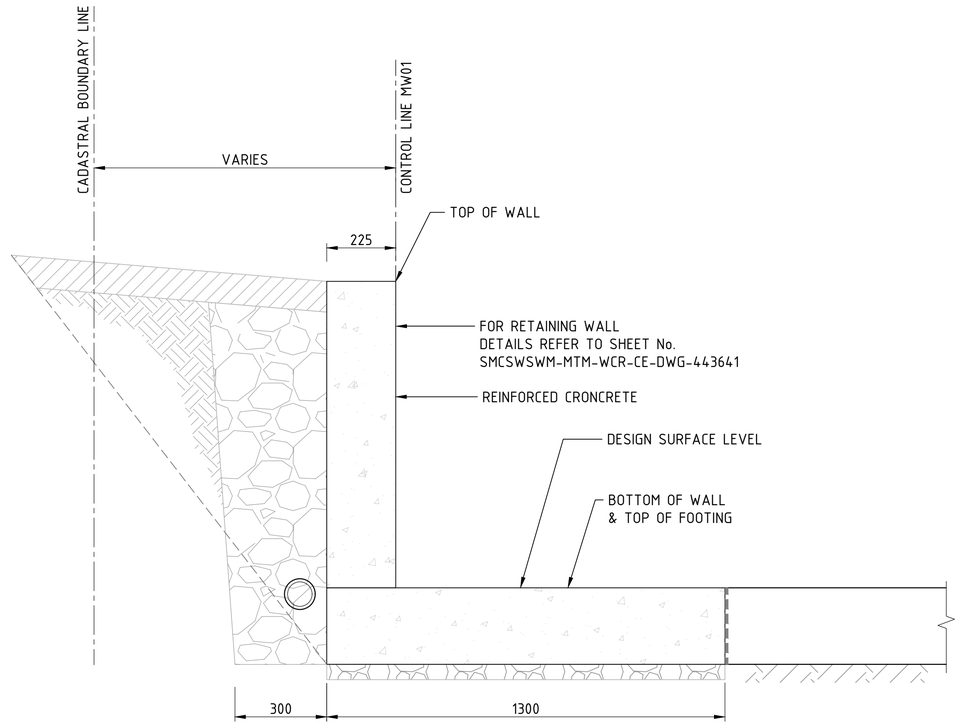


DATUM 0.00

TOP OF WALL LEVEL	7.458	8.007	8.380	8.380	8.042
BOTTOM OF WALL LEVEL	7.389	7.389	7.389	7.389	7.789
WALL HEIGHT	0.069	0.619	0.991	0.991	0.253
EXPOSED WALL	0.069	0.450	0.665	0.564	0.056
DESIGN SURFACE LEVEL	7.389	7.557	7.815	7.816	7.985
EXISTING SURFACE LEVEL	7.780	8.412	8.524	8.523	8.517
CHAINAGE	0.000	1.000	2.000	2.673	4.000

RETAINING WALL (MW01) LONGITUDINAL SECTION

SCALE HORIZ. 1:100
VERT. 1:100



SECTION A
1 : 10

NOTES

1. FOR RETAINING WALL DETAILS REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443631 & SMCSWSWM-MTM-WCR-CE-DWG-443632.

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SCALES
1 0 1 2 3 4m
1 : 100 FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied

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ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443621 0

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DESIGN CHECK T. GANANAWICKRAMA
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SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - RETAINING WALL
RETAINING WALL ELEVATIONS

STATUS: STAGE 3 | SHEET 1 OF 1 | ©
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443621 | REV. A

Cad File: C:\projectwise\MM-Sydney-Metro-usdts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443621.dwg
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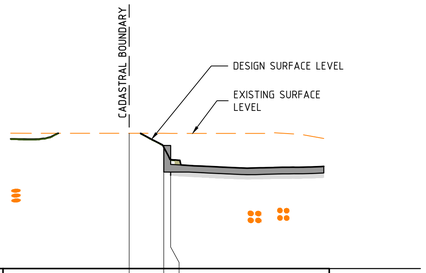
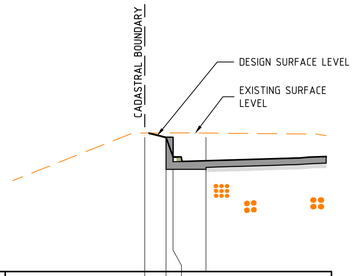


RL 4.0

DESIGN SURFACE LEVEL		7.956	7.557
CUT DEPTH (+VE) FILL DEPTH (-ve)		0.457	0.855
EXISTING SURFACE LEVEL		8.412	8.412
CL OFFSET	-1.355	-0.225	0.000

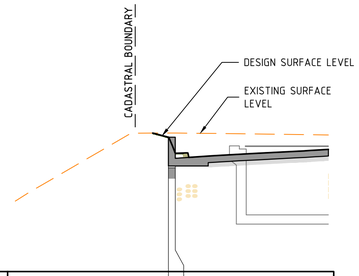
CH 1



RL 4.0

DESIGN SURFACE LEVEL		8.380	7.743
CUT DEPTH (+VE) FILL DEPTH (-ve)		0.143	0.78
EXISTING SURFACE LEVEL		8.523	8.524
CL OFFSET	-0.921	-0.225	0.000

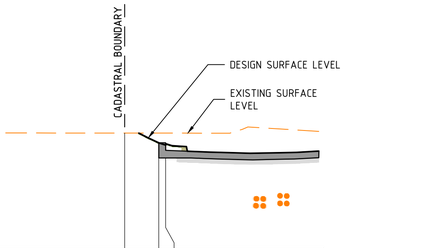
CH 2.188



RL 4.0

DESIGN SURFACE LEVEL		8.384	7.858
CUT DEPTH (+VE) FILL DEPTH (-ve)		0.137	0.664
EXISTING SURFACE LEVEL		8.521	8.522
CL OFFSET		-0.225	0.000

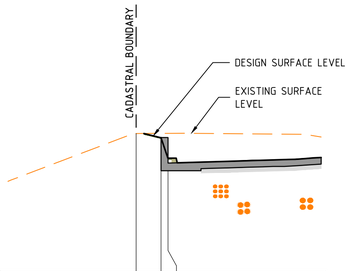
CH 3



RL 4.0

DESIGN SURFACE LEVEL		7.464	7.389
CUT DEPTH (+VE) FILL DEPTH (-ve)		0.317	0.392
EXISTING SURFACE LEVEL		7.781	7.781
CL OFFSET	-1.340	-0.225	0.000

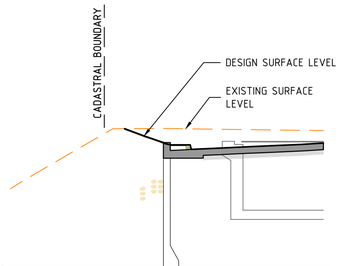
CH 0



RL 4.0

DESIGN SURFACE LEVEL		8.378	7.715
CUT DEPTH (+VE) FILL DEPTH (-ve)		0.145	0.809
EXISTING SURFACE LEVEL		8.523	8.524
CL OFFSET	-1.039	-0.225	0.000

CH 2



RL 4.0

DESIGN SURFACE LEVEL		8.060	7.985
CUT DEPTH (+VE) FILL DEPTH (-ve)		0.457	0.532
EXISTING SURFACE LEVEL		8.518	8.517
CL OFFSET		-0.225	0.000

CH 4

RETAINING WALL (MW01) CROSS SECTION

SCALE HORIZ. 1:100
VERT. 1:100

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.

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REV.	BY	DATE	DESCRIPTION	APPD.
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SCALES
1 : 100 FULL SIZE A1

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DRG CHECK P. ALFORD
DESIGN CHECK T. GANANAWICKRAMA
APPROVED L. PALMER 06.10.2020

SYDNEY METRO

CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - RETAINING WALL
RETAINING WALL CROSS SECTIONS

STATUS: STAGE 3 | SHEET 1 OF 1 | ©
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443631 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443631 0

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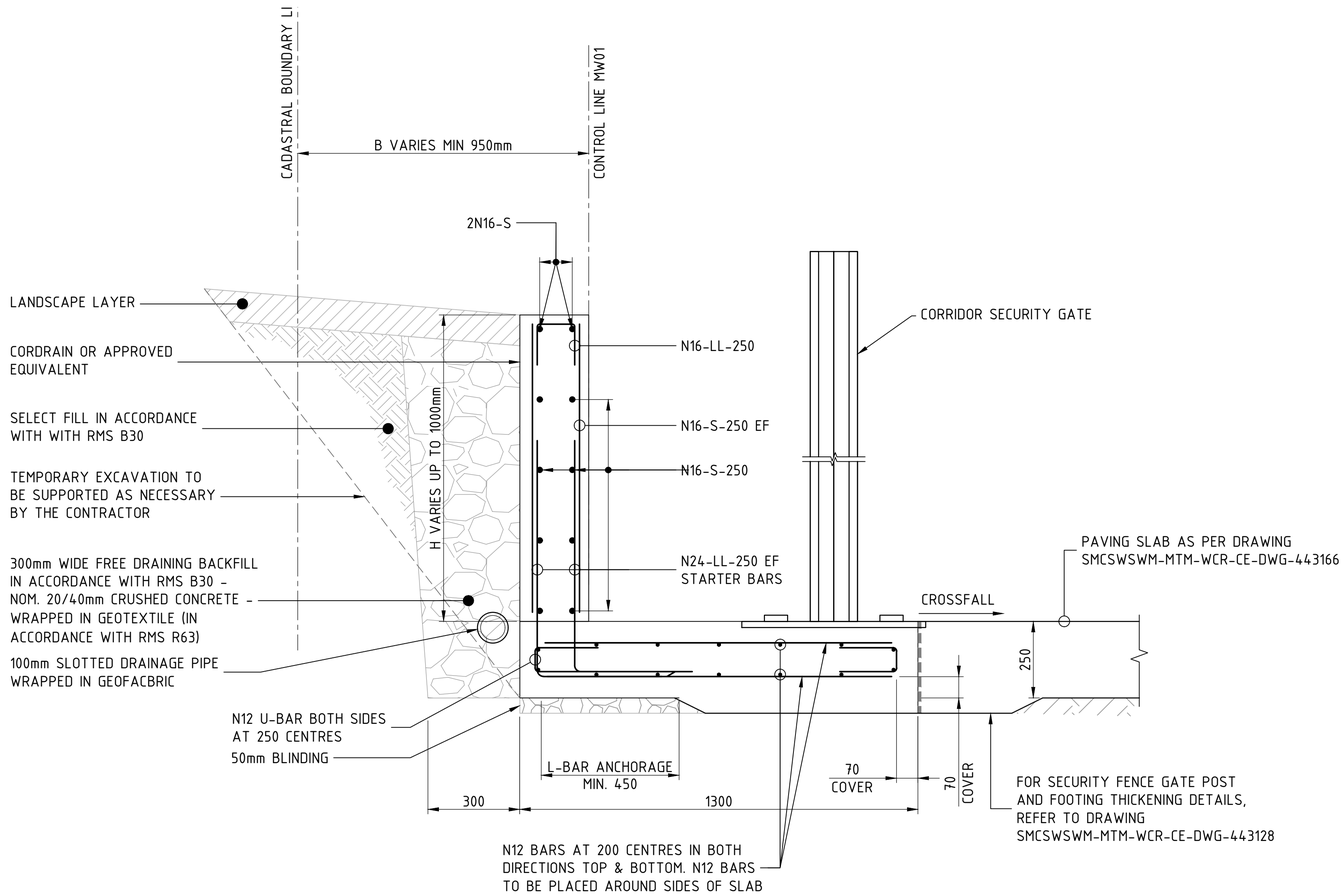
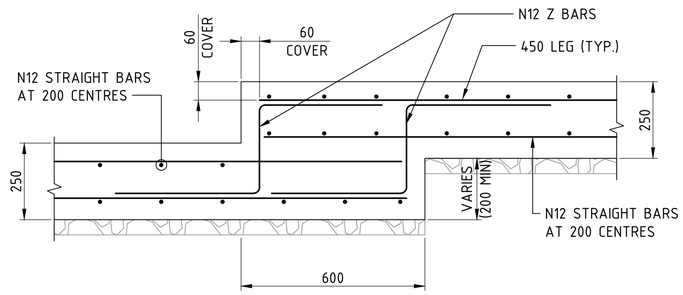


RETAINING WALL (MV01) TYPICAL REINFORCEMENT DETAIL

1 : 10



TYPICAL FOOTING STEP DETAIL

1 : 10

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.
2. FOR LEGEND REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443108.
3. FOR RETAINING WALL GEOTECHNICAL NOTES REFER TO DRAWING SMCSWSWM-MTM-WCR-CE-DWG-443105.
4. ULTIMATE BEARING CAPACITY OF 200kPa
5. CONCRETE BASE SLAB GRADE 40MPa COMPRESSIVE STRENGTH.
6. COVER TO TOP REINFORCEMENT 60mm AND COVER TO BOTTOM REINFORCEMENT 70mm.
7. BLINDING CONCRETE GRADE 20MPa COMPRESSIVE STRENGTH.
8. THE RETAINING WALL FOUNDATIONS SHALL BE INSPECTED BY THE SGR TO VERIFY AND CONFIRM THE ULTIMATE BEARING OF 200kPa TO BE ACHIEVED.

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REV.	BY	DATE	DESCRIPTION	APPD.
A	TG	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES

0.1 0 0.1 0.2 0.3 0.4

1 : 10 FULL SIZE A1

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SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - RETAINING WALL
RETAINING WALL DETAILS

STATUS: STAGE 3 | SHEET 1 OF 2 | ©

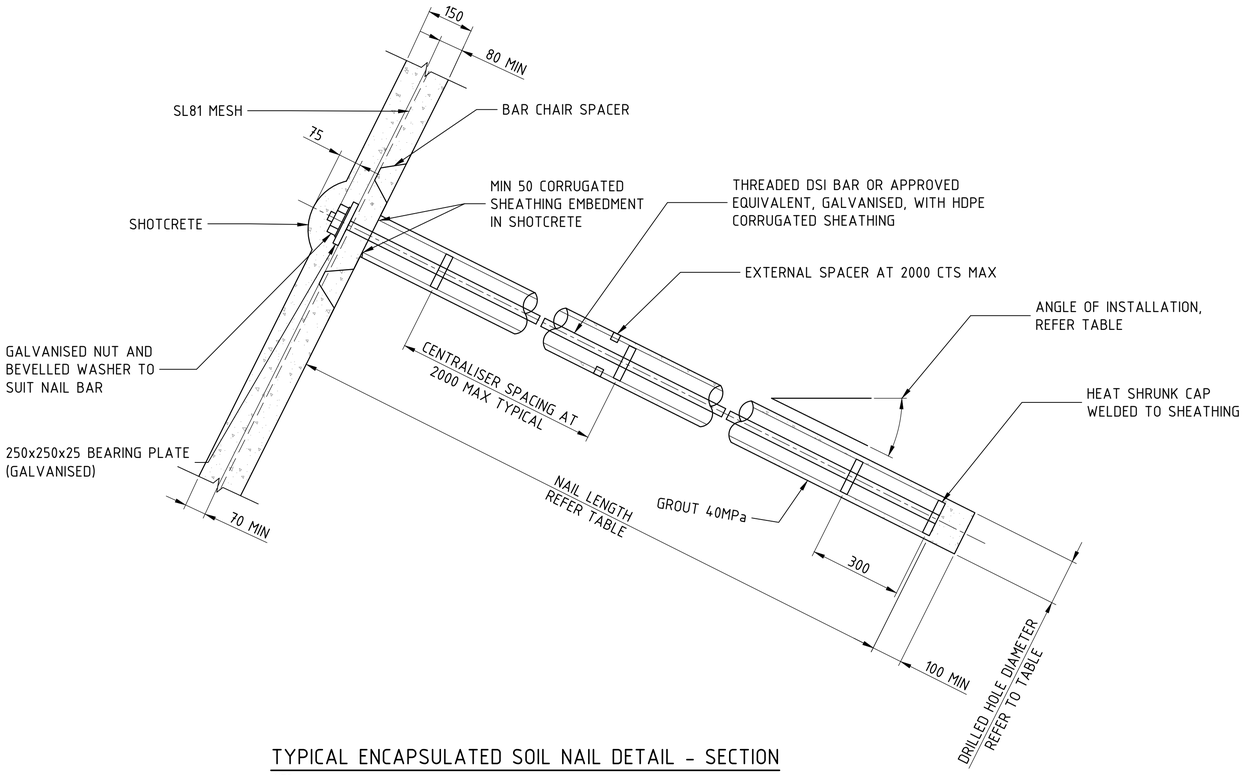
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443641 | REV. A

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443641 0

Cad File: C:\projectwise\MM_TNSW44_Canterbury\SMCSWSWM-MTM-WCR-CE-DWG-443641.dwg
Plot Date: 04/10/20 - 18:19
100mm AT FULL SIZE

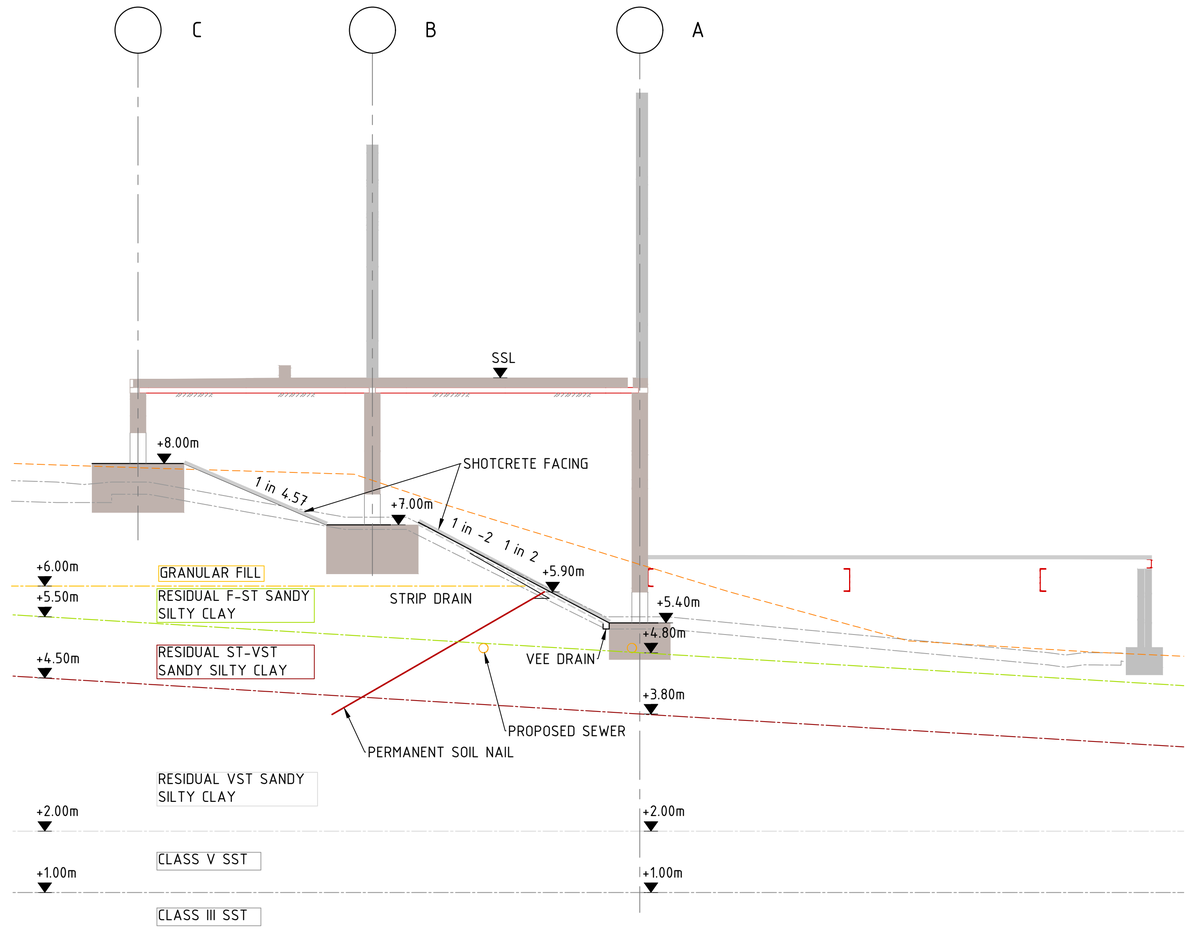
TABLE 1: SOIL NAIL DETAILS

LEVEL OF NAIL ROW (mAHD)	NAIL LENGTH (m)	DRILLED HOLE DIAMETER (mm)	BAR DIAMETER (mm)	NAIL INCLINATION FROM HORIZONTAL (deg)	HORIZONTAL SPACING (m)	MINIMUM BOND REQUIREMENT (m)	WORKING LOAD (kN)
5.9	4	150	32	30	1.5	5.6 INTO FIRM TO STIFF OR BETTER RESIDUAL SOIL	30



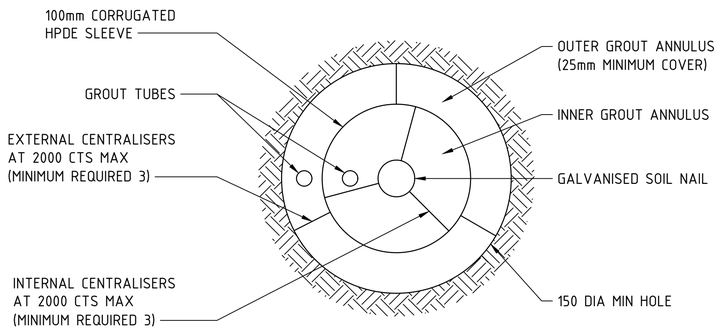
TYPICAL ENCAPSULATED SOIL NAIL DETAIL - SECTION

NTS



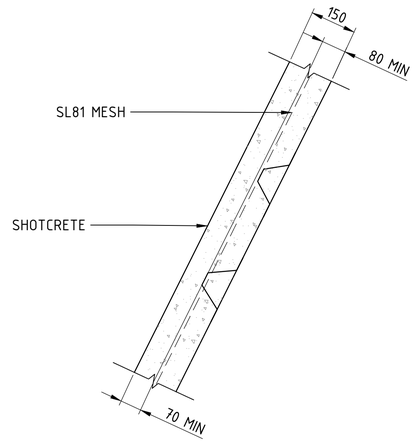
TYPICAL SECTION SHOWING ASSUMED GROUND MODEL AND SOIL NAIL LOCATION

NTS



TYPICAL SECTION THROUGH ENCAPSULATED SOIL NAIL

1 : 2



TYPICAL SHOTCRETE DETAIL (FLAT FACE) - SECTION

NTS

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WCR-CE-DWG-443104 TO 443107.

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
A	TG	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 0.02 0 0.02 0.04 0.06 0.08m — 1 : 2 FULL SIZE A1

A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443642 0

CLIENT: NSW GOVERNMENT | sydney METRO

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SERVICE PROVIDERS: METRON T2M

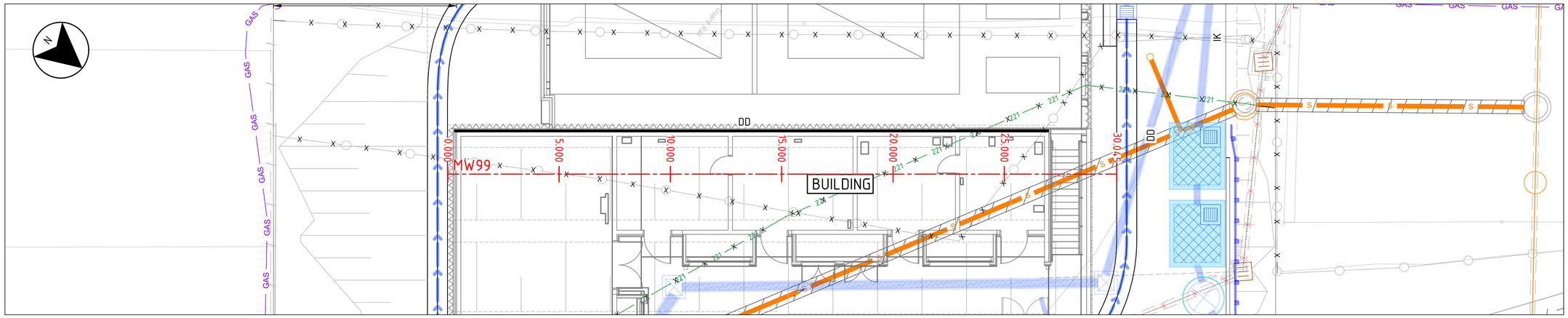
DRAWN F. ALPAPARA
DESIGNED N. COOK
DRG CHECK P. ALFORD
DESIGN CHECK T. GANANAWICKRAMA
APPROVED L. PALMER 06.10.2020

SYDNEY METRO
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - RETAINING WALL
RETAINING WALL DETAILS

STATUS: STAGE 3 | SHEET 2 OF 2 | ©

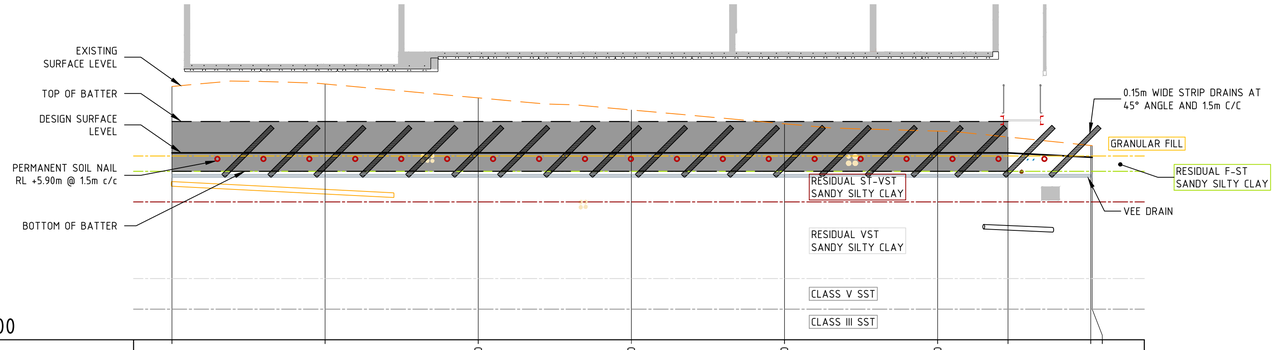
DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443642 | REV. A

Cad File: C:\projectwise\MtM-Sydney-Metro-usdfs-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443642.dwg
Plot Date: 04/10/20 - 12:22
100mm AT FULL SIZE



SOIL NAIL (MX99) PLAN DETAIL

SCALE 1:100



DATUM 0.000

BOTTOM OF BATTER LEVEL			5.500	5.500	5.500	5.500			
TOP OF BATTER LEVEL	7.125	7.125	7.125	7.125	7.125	7.125	7.125		
EXISTING SURFACE LEVEL	8.266	8.349	7.895	7.501	7.051	6.811	6.617	6.342	6.338
CUT DEPTH (+VE) FILL DEPTH (-ve)	2.166	2.249	1.795	1.401	0.951	0.711	0.517	0.386	0.384
DESIGN SURFACE LEVEL	6.100	6.100	6.100	6.100	6.100	6.100	6.100	5.957	5.954
CHAINAGE (MX99)	0.000	5.000	10.000	15.000	20.000	25.000	27.300	30.000	30.045

SOIL NAIL WALL ELEVATION

SCALE HORIZ 1:100
VERT 1:100

NOTES

1. FOR GENERAL NOTES REFER TO DRAWINGS SMCSWSWM-MTM-WDH-CE-DWG-423104 TO 423107.

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

NOT FOR CONSTRUCTION

REV.	BY	DATE	DESCRIPTION	APPD.
A	TG	06.10.2020	ISSUED FOR STAGE 3	LP

SCALES: 1 : 100 — FULL SIZE A1

CLIENT: NSW GOVERNMENT | sydney METRO

The information shown on this drawing is for the purposes of the Sydney Metro Project only. No warranty is given or implied as to its suitability for any other purpose. The Service Providers accept no liability arising from the use of this drawing and the information shown thereon for any purpose other than the Sydney Metro Project.

SERVICE PROVIDERS: METRON T2M

DRAWN: F. ALPAPARA
DESIGNED: N. COOK
DRG CHECK: P. ALFORD
DESIGN CHECK: T. GANANAWICKRAMA
APPROVED: L. PALMER 06.10.2020

SYDNEY METRO

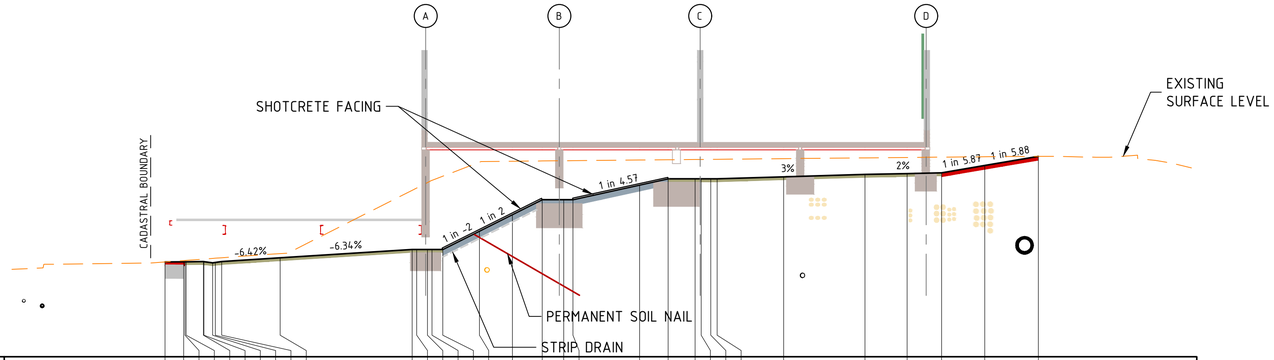
CANTERBURY STATION - SERVICE BUILDING
CIVIL ENGINEERING
SERVICE BUILDING - RETAINING WALL
SOIL WALL DETAILS

STATUS: STAGE 3 | SHEET 1 OF 1 | ©

DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443651 | REV. A

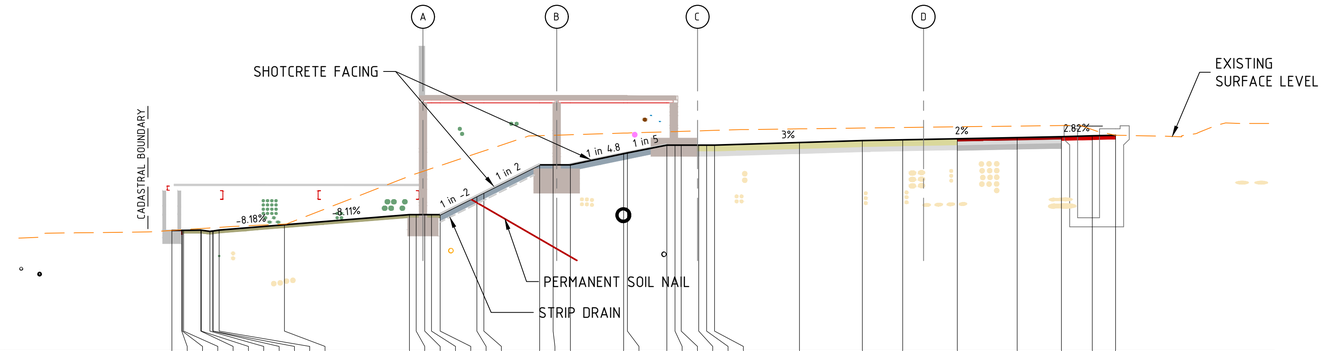
A1 Original | Co-ordinate System: MGA Zone 56 | Height Datum: A.H.D. | This sheet may be prepared using colour and may be incomplete if copied | NOTE: Do not scale from this drawing. | ALT. DRG No. SMCSWSWM-MTM-WCR-CE-DWG-443651 0

100mm AT FULL SIZE Plot Date: 04/10/20 - 12:23 Cad File: C:\projectwise\MM-Sydney-Metro-usdts-(apna-au)\d0185377\SMCSWSWM-MTM-WCR-CE-DWG-443651.dwg


A
B
C
D
SHOTCRETE FACING
EXISTING SURFACE LEVEL
CADASTRAL BOUNDARY
-6.42%
-6.34%
1 in -2
1 in 2
1 in 4.57
3%
2%
1 in 5.87
1 in 5.88
PERMANENT SOIL NAIL
STRIP DRAIN

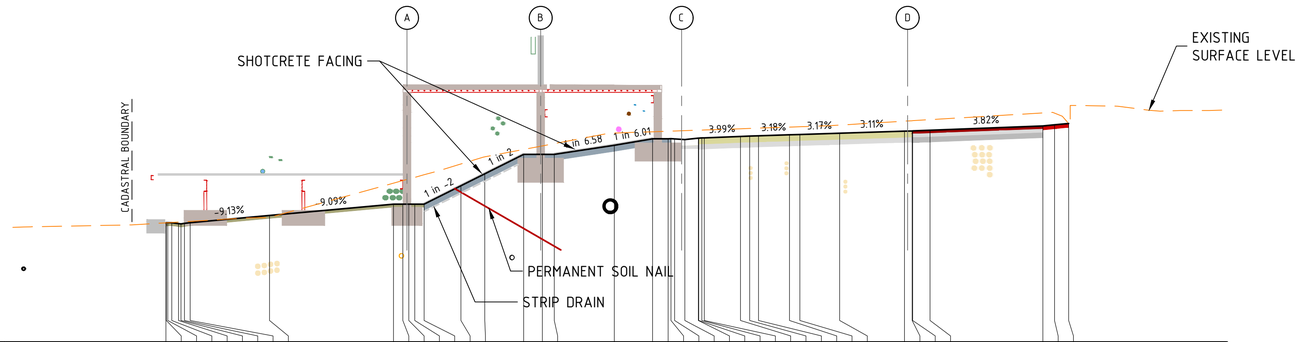
RL 2.0

| | | |


A
B
C
D
SHOTCRETE FACING
EXISTING SURFACE LEVEL
CADASTRAL BOUNDARY
-8.18%
-8.11%
1 in -2
1 in 2
1 in 4.8
1 in 5
3%
2%
2.82%
PERMANENT SOIL NAIL
STRIP DRAIN

RL 1.0

| | | |


A
B
C
D
SHOTCRETE FACING
EXISTING SURFACE LEVEL
CADASTRAL BOUNDARY
-9.13%
-9.09%
1 in -2
1 in -2
1 in 6.58
1 in 6.01
3.99%
3.18%
3.17%
3.11%
3.82%
PERMANENT SOIL NAIL
STRIP DRAIN

RL 1.0

| | | |

Appendix D

Geotechnical results

D.1 Geotechnical results

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : SSC-SBH156
FILE / JOB NO : SSJ-04-15624
SHEET : 1 OF 1

CLIENT : JHLORJV
LOCATION : Canterbury Station
PROJECT : Bankstown Line Station Investigation

POSITION : E: 326073.8, N: 6245991.8 (MGA94 Zone 56) SURFACE ELEVATION (RL) : 9.70 (m AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : D710P MOUNTING : Track CONTRACTOR : ROCKWELL DRILLER : WS

DATE STARTED : 28/01/2019 DATE COMPLETED : 28/01/2019 DATE LOGGED : 28/01/2019 LOGGED BY : OV CHECKED BY : JP

DRILLING							MATERIAL							
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	RL (m)	DEPTH (m)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	PENETROMETER TEST 0 5 10 15 20 25	STRUCTURE & Other Observations
AD/T				0.50m SPT R	9.5	0.0			0.05m **Asphaltic Concrete**				FILL
									FILL:Gravelly SAND, fine to coarse grained, brown, with sandstone cobbles.	M			
					9.0	0.5			0.50m **SANDSTONE,** fine to coarse grained, light brown, highly weathered, low to medium strength.				
						1.0			1.00m Hole Terminated at 1.00 m				
					8.5	1.5							
					8.0	2.0							
					7.5	2.5							
					7.0	3.0							
					6.5	3.5							
					6.0	4.0							
					5.5	4.5							
					5.0	5.0							

See Explanatory Notes for details of abbreviations & basis of descriptions.

ADECONSULTINGGROUP
SOLUTIONS THROUGH INNOVATION

ADE 1.00.0 LIB.GLB Log ADE AGS FORMAT WITH DCP COLUMN TEST PIT SSJ-04-15624 BH TYPE B PLATFORM.GPJ <<DrawingFile>> 11/06/2019 10:31 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: ADE 1.00.0 2018-08-01 Prj: ADE 1.00.0 2018-08-01

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : SSC-SBH161
FILE / JOB NO : SSJ-04-15624
SHEET : 1 OF 1

CLIENT : JHLORJV
LOCATION : Canterbury Station
PROJECT : Bankstown Line Station Investigation

POSITION : E: 326083.4, N: 6245999.5 (MGA94 Zone 56) SURFACE ELEVATION (RL) : 9.60 (m AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : D710P MOUNTING : Track CONTRACTOR : ROCKWELL DRILLER : WS

DATE STARTED : 28/01/2019 DATE COMPLETED : 28/01/2019 DATE LOGGED : 28/01/2019 LOGGED BY : OV CHECKED BY : JP

DRILLING							MATERIAL							
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	RL (m)	DEPTH (m)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	PENETROMETER TEST 0 5 10 15 20 25	STRUCTURE & Other Observations
AD/T					9.5	0.0			0.05m **Asphaltic Concrete**				FILL
									FILL:Sandy GRAVEL, fine to medium grained, grey and brown, fine to medium grained sand; with brick and concrete fragments.				
				0.50m SPT 4,10,5 N=15	9.0	0.5							
				0.95m 1.00m SPT 3,2,1 N=3	8.5	1.0				M			
				1.45m 1.50m SPT 3,1,13 N=14	8.0	1.5							
				1.95m					1.80m **SANDSTONE**, fine to coarse grained, pale brown, low to medium strength. 1.95m				
					7.5	2.0			Hole Terminated at 1.95 m				
					7.0	2.5							
					6.5	3.0							
					6.0	3.5							
					5.5	4.0							
					5.0	4.5							
						5.0							

See Explanatory Notes for details of abbreviations & basis of descriptions.

ADECONSULTINGGROUP
SOLUTIONS THROUGH INNOVATION

ADE 1.00.0 LIB.GLB Log ADE AGS FORMAT WITH DCP COLUMN TEST PIT SSJ-04-15624 BH TYPE B PLATFORM.GPJ <<DrawingFile>> 11/06/2019 10:31 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: ADE 1.00.0 2018-08-01 Prj: ADE 1.00.0 2018-08-01

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : SSC-SBH165
FILE / JOB NO : SSJ-04-15624
SHEET : 1 OF 1

CLIENT : JHLORJV
LOCATION : Canterbury Station

PROJECT : Bankstown Line Station Investigation

POSITION : E: 326084.7, N: 6245998.7 (MGA94 Zone 56) SURFACE ELEVATION (RL) : 9.59 (m AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : HANKJIN D&B-80 MOUNTING : Track CONTRACTOR : ROCKWELL DRILLER : WS

DATE STARTED : 28/01/2019 DATE COMPLETED : 28/01/2019 DATE LOGGED : 28/01/2019 LOGGED BY : LS CHECKED BY : JP

DRILLING							MATERIAL							
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	RL (m)	DEPTH (m)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	PENETROMETER TEST 0 5 10 15 20 25	STRUCTURE & Other Observations
						0.0			0.05m **Asphaltic Concrete** (50mm)				FILL
									FILL: Gravelly SAND, fine to coarse grained, brown, with sandstone cobbles				
ADT				0.50m SPT 1 4,10,5 N=15	9.0								
				0.95m 1.00m SPT 2 3,2,1 N=3		1.0				M			
				1.45m 1.50m SPT 3 2,1,13 N=14	8.0								
				1.95m		2.0			1.80m **SANDSTONE:** fine to coarse grained, pale brown, low to medium strength.				
									2.30m Hole Terminated at 2.30 m				
					7.0	3.0							
					6.0	4.0							
					5.0	5.0							
					4.0	6.0							
					3.0	7.0							
					2.0	8.0							
					1.0	9.0							

See Explanatory Notes for details of abbreviations & basis of descriptions.

ADECONSULTINGGROUP
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ADE 1.00.0 LIB.GLB Log ADE AGS FORMAT WITH DCP COLUMN TEST PIT SSJ-04-15624 BH TYPE C.GPJ <<DrawingFile>> 11/06/2019 11:06 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: ADE 1.00.0 2018-08-01 Prj: ADE 1.00.0 2018-08-01

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

Client Sydney Trains
Project Sydenham to Bankstown Contamination Assessment
Project No. 212549144
Site Sydney Metro
Location Sydenham to Bankstown
Date Drilled 30/08/2017 - 30/08/2017

Drill Co. Numac/Terratest/Strata Core
Driller Various
Rig Type Truck mounted / Geoprobe
Drill Method Pushtube
Total Depth (m) 2.6
Diameter (mm)

Easting 325943.6
Northing 6246070.36
Grid Ref GDA94_MGA_zone_56
Elevation 8.544
Logged By Peter B.
Checked By H. Milne

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
	HA	1.3	BH065_0-0.1			Gravelly SAND, brown grey, grey black, fine to coarse sand, fine to coarse sand (FILL)	SM	-	ballast, road base	8.4
0.2										8.2
0.4										8
		3	BH065_0.5-0.6							
0.6										7.8
0.8										7.6
1		1.8	BH065_1-1.1							7.4
	PT									
1.2										7.2
1.4										7
1.6										6.8
1.8										6.6
2		<0.1	BH065_2-2.1							6.4
2.2										6.2
2.4						Sandy CLAY (FILL)	D, SM	-		6
2.6		<0.1	BH065_2.5-2.6			Termination Depth at: 2.60 m. Refusal.				5.8
2.8										5.6
3										5.4
3.2										5.2
3.4										5
3.6										4.8
3.8										4.6
4										4.4
4.2										4.2
4.4										4
4.6										3.8
4.8										3.6

Notes

GHD Soil Classifications The GHD Soil Classification is based on Australian Standards AS 1726-1993. This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-GROUNDWATER

MONITORING WELL BH067

Client Sydney Trains
Project Sydenham to Bankstown Contamination Assessment
Project No. 212549144
Site Sydney Metro
Location Sydenham to Bankstown
Date Drilled 30/08/2017 - 30/08/2017

Drill Co. Terratest
Driller Pat
Rig Type Truck Mounted
Drill Method Pushtube
Total Depth (m) 9
Diameter (mm) 25

Easting, Northing 325913.9, 6246095.32
Grid Ref GDA94_MGA_zone_56
Elevation 8.483
Collar RL 8.413
Logged By Terry Nham
Checked By H. Milne

B.C.L No. N/A **Casing** PVC (Class 18) **Screen** 0.5mm Slotted PVC (Class 18) **Surface Completion** Gatic

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Well Details	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
	HE	1.7	BH067_0.0_0.1				Gravelly SAND, fine, dark brown, some coarse gravel, with clay (FILL)	D	-	no odour, no staining	
0.5	SFA	1.8	BH067_0.5_0.6				Gravelly SAND, fine to medium, angular, brown, some fine to coarse gravel (FILL)	D	-	trace sandstone fragments	8
1	HA	<0.1	BH067_1.0_1.1				Gravelly CLAY, low to medium plasticity, orange- brown, some fine to medium gravel (ALLUVIUM)	M	ST		7.5
1.5	PT										7
2		0.2	BH067_2.1_2.2		Grout		Sandy CLAY, low plasticity, yellow- brown and grey, some fine to medium sand (ALLUVIUM)	VM	-		6.5
2.5											6
3		0.1	BH067_3.1_3.2 (TNQA101)				Sandy CLAY, low plasticity, yellow- grey and dark brown, some fine to medium sand (ALLUVIUM)	VM	F		5.5
3.5							Sandy CLAY, low to medium plasticity, red- orange and grey, some fine to medium sand (RESIDUAL SOIL)	SM	VST		5
4		0.1	BH067_4.1_4.2								4.5
4.5	SFA										4
5		0.1	BH067_4.9_5		Bentonite						3.5
5.5							Gravelly SAND, fine to medium, subangular, dark orange- brown, some clay (Weathered SANDSTONE)	SM	-		3
6											2.5
6.5											2
7					Sand						1.5
7.5											1
8				∇			Gravelly SAND, fine to medium, subangular, dark orange- brown, some clay (Weathered SANDSTONE)	W	-		0.5
8.5											0
9							Termination Depth at: 9.00 m. Target depth achieved.				-0.5
9.5											-1
											-1.5

Notes

GHD Soil Classifications The GHD Soil Classification is based on Australian Standards AS 1726-1993. This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH068

Client Sydney Trains
Project Sydenham to Bankstown Contamination Assessment
Project No. 212549144
Site Sydney Metro
Location Sydenham to Bankstown
Date Drilled 30/08/2017 - 30/08/2017

Drill Co. Numac/Terratest/Strata Core
Driller Various
Rig Type Truck mounted / Geoprobe
Drill Method Pushtube
Total Depth (m) 4.2
Diameter (mm)

Easting 325926.4
Northing 6246082.9
Grid Ref GDA94_MGA_zone_56
Elevation 8.475
Logged By Peter B.
Checked By H. Milne

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
	HA	1.3	BH068_0-0.1			Gravelly SAND, dark brown/black, fine to medium angular gravel (Ballast) gravel (FILL)	SM	-	ballast	8.4
0.2										8.2
0.4						Sandy CLAY, medium plasticity, pale orange and grey, medium sand (FILL)	SM	ST		8
		1	BH068_0.5-0.6			CLAY, medium plasticity, pale brown, green, and orange, traces of medium sand (FILL)	SM	ST		
0.6										7.8
0.8										7.6
1		1.6	BH068_1-1.1							7.4
1.2										7.2
1.4	PT					Sandy CLAY, low plasticity, black, red, brown, angular gravel (FILL)	SM	VST	brick, sandstone, road base	7
1.6										6.8
1.8										6.6
2		0.5	BH068_2-2.1							6.4
2.2										6.2
2.4										6
2.6										5.8
2.8						CLAY, medium plasticity, green, pale grey, traces of fine sand, fine sand (RESIDUAL SOIL)	SM	VST		5.6
3		0.5	BH068_3-3.1							5.4
3.2						CLAY, medium plasticity, grey orange, traces of fine sand (RESIDUAL SOIL)		VST		5.2
3.4										5
3.6										4.8
3.8										4.6
4		<0.1	BH068_4-4.1							4.4
4.2						Termination Depth at: 4.20 m. Borehole teminated.				4.2
4.4										4
4.6										3.8
4.8										3.6

Notes

GHD Soil Classifications The GHD Soil Classification is based on Australian Standards AS 1726-1993. This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH069

Client Sydney Trains
Project Sydenham to Bankstown Contamination Assessment
Project No. 212549144
Site Sydney Metro
Location Sydenham to Bankstown
Date Drilled 30/08/2017 - 30/08/2017

Drill Co.
Driller Terry Nham
Rig Type
Drill Method Hand Auger
Total Depth (m) 0.8
Diameter (mm)

Easting 325905.7
Northing 6246101.15
Grid Ref GDA94_MGA_zone_56
Elevation 8.445
Logged By Terry Nham
Checked By H. Milne

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
	HA	1.5	BH069_0.0_0.1			Gravelly SAND, fine, dark brown, some fine to medium gravel, with clay (FILL)	D	-	no odour, no staining	8.4
0.2										8.2
0.4										8
		0.1	BH069_0.5_0.6							
0.6										7.8
0.8						Termination Depth at: 0.80 m. Hole abandoned - potential underground service.				7.6
1										7.4
1.2										7.2
1.4										7
1.6										6.8
1.8										6.6
2										6.4
2.2										6.2
2.4										6
2.6										5.8
2.8										5.6
3										5.4
3.2										5.2
3.4										5
3.6										4.8
3.8										4.6
4										4.4
4.2										4.2
4.4										4
4.6										3.8
4.8										3.6

Notes

GHD Soil Classifications The GHD Soil Classification is based on Australian Standards AS 1726-1993. This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

CORED DRILL HOLE - GEOLOGICAL LOG

HOLE NO : SSC-CBH004
FILE / JOB NO : SSJ-07-16212
SHEET : 2 OF 3

CLIENT : JHLORJV
LOCATION : Country of Canterbury
PROJECT : Bankstown Line Station Investigation

POSITION : E: 325923.4, N: 6246076.5 (MGA94 Zone 56) SURFACE ELEVATION (RL) : 8.47 (m AHD) ANGLE FROM HORIZONTAL : 90°

EXCAVATION METHOD : Comacchio GEO 205 MOUNTING : CONTRACTOR : ADE DRILLER : ND

DATE STARTED: 06/06/2019 DATE COMPLETED : 06/06/2019 LOGGED BY : OV CHECKED BY : YA

DRILLING & CASING	WATER	WATER	RL (m)	DEPTH (m)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50) ● - Axial ○ - Diametral (VL -0.1, L -0.3, M -1, H -3, VH -10, EH)	NATURAL FRACTURE (mm) (20, 40, 100, 300, 1000)	RQD (%)	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
			8.0								
				1.0							
			7.0								
				2.0							
			6.0								
				3.0							
			5.0								
				4.0							
			4.0								
				5.0							
			3.0								
				6.0		6.00m START CORING AT 6.00m					
NMLC	Not Observed					**Sandy CLAY**, low plasticity, pale grey; fine grained sand (Extremely weathered material)	XW				
			2.0			6.50m					
		Is(50) a=0.12MPa				**SANDSTONE**, fine to meidum grained, pale grey; iron stained	MW				
						6.90m					
				7.0		**SANDSTONE**, medium grained, pale grey, dark grey iron staining					
		Is(50) a=0.58MPa	1.0							76	CS, 10 mm
				8.0							Be, 0°, Un, Ro
			0.0								CS, 15 mm
											CS, 40 mm
						becoming light brown and red	XW				dark grey laminations 0°, spaced at 5-10 mm
						becoming light grey					
		Is(50) a=0.39MPa		9.0			SW - FR				
		Is(50) a=1.41MPa	-1.0							100	
		UCS 20.4 MPa				10.00m					

See Explanatory Notes for details of abbreviations & basis of descriptions.

ADECONSULTINGGROUP
SOLUTIONS THROUGH INNOVATION

TYPE C BOREHOLE DATABASE.GLB Log ADE CORED BOREHOLE LOG SSJ DATABASE GINT.GPJ <<DrawingFile>> 27/07/2019 12:01 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: ADE 1.00.0 2018-08-01 Prj: ADE 1.00.0 2018-08-01

Appendix E

Canterbury Station AARD

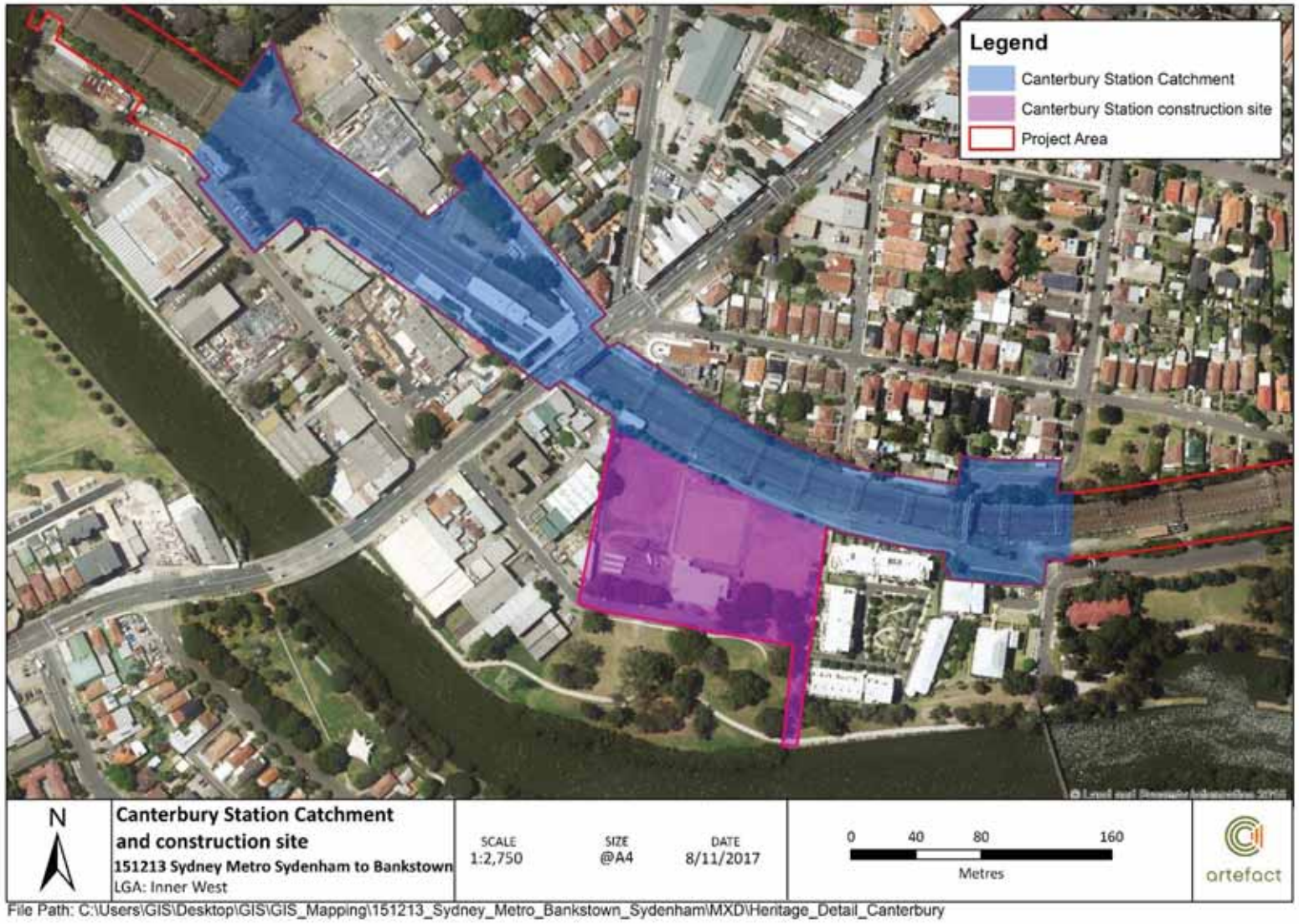
E.1 Canterbury Station AARD

4.0 CANTERBURY STATION CATCHMENT AND CONSTRUCTION SITE

4.1 Site Location

Canterbury Station is located to the north-west of the Canterbury Road overbridge. The station area is bounded by Broughton Street to the north, a large mixed use development fronting Charles Street to the south, and Canterbury Road to the east. The station entrance is on Canterbury Road.

Figure 4-1: Canterbury Station Catchment and construction site



File Path: C:\Users\GIS\Desktop\GIS\GIS_Mapping\151213_Sydney_Metro_Bankstown_Sydenham\MXD\Heritage_Detail_Canterbury

4.2 Historical Analysis

4.2.1 1788-1841: Early Settlement and Farming

The suburb of Canterbury north of the Cooks River was originally part of land granted to Reverend Richard Johnson. This grant, initially of 100 acres, was periodically added to throughout the late eighteenth century. Named 'Canterbury Vale,' Johnson successfully farmed the land with the assistance of convicts and hired men until it was sold to Lieutenant William Cox in 1800. At this time the property consisted of 600 acres of land, including two acres of vineyards, an orchard, 150 sheep, a mare, three fillies and some horned cattle.[34] The study area was located at the southern edge of the grant, near the banks of the Cooks River.

William Cox hired Joseph Holt to assist him in maintaining the property. In Holt's memoirs, he refers to his commencing construction of a grand house for Cox, although it is unclear whether this house was completed. By October, 1800, the farm had 24 acres under crop. Three shepherds were employed on the farm, suggesting that Cox was breeding sheep. Two sawyers, three carpenters, two stone cutters and 20 labourers were also employed on the farm.[35]

In 1803 Cox sold his 900 acre Canterbury Farm to the merchant Robert Campbell. In 1812 Campbell offered the estate for rent. At this time the property contained, in addition to Canterbury Farm, nine farms. Canterbury Farm was listed as being mostly cleared, and containing a house and other buildings. Campbell does not seem to have been successful in finding a tenant, and in 1814 the property, now consisting of 1040 acres, was offered for sale. A purchaser was presumably not found, and throughout the 1820s the farms were used for the grazing of Government bullocks.[36] The Campbell's held the land for many years, and when it was finally subdivided and sold off throughout the nineteenth century, it extended from the Cook's River at Canterbury to the Liverpool Road in Ashfield.

The Village of Canterbury dates to 1841, when 66 allotments of Campbell's Canterbury Estate were offered for sale (Figure 4-2). By November of that year the village contained a school, a building used as a chapel, and a store. Remaining lots for sale were said to be cleared and fenced. A brick kiln was also located on the estate. The under-sheriff of Sydney, Cornelius Prout, constructed Prout's Bridge over the Cook's River in 1841 using convict labour (Figure 4-4). Prior to this he had operated a punt between Canterbury village and his farm in the south side of the river. The railway station at Canterbury would later be constructed partially within Prout's property (Figure 4-9).

4.2.2 1841-1855: Establishment of Canterbury and the Australasian Sugar Company

In the second half of the nineteenth century Canterbury was dotted with palatial colonial mansions on large estates. During these years, the area had experienced very little industrial development, and residential development was largely limited to that at Canterbury village itself (Figure 4-3). The first series of subdivisions began in the 1840's, but were more concerned with dividing the early large land grants into smaller farms.[37]

The primary industry of the area was timber cutting, brick making and sugar works, constructed between 1840 and 1842 for the Australasian Sugar Company on 60 acres of Robert Campbell's original property (Figure 4-2, Figure 4-3 and Figure 4-4, Figure 4-5).

[34] Jervis 1951: 17.
[35] Jervis 1951: 18.
[36] *Ibid*: 20.
[37] Larcombe 1971: 172.

On 11 March 1840 the sugar works was established when the directors of the company and 40 mill staff with their families arrived in Sydney. The staff included William Knox Child and his family, Francis Kemble and his family, plus 30 immigrants who were to be employed by the company.[38] About 100 men were employed whilst the mill was being built at cost of £30,000. Sugar mill workers were housed nearby in slab huts and a school was already in operation for over 40 children.[39] In 1841 Scottish stonemasons were employed by the company under the management of David McBeath for cutting stone on the sites quarries, some of which are within the study area.[40]

The study area dissects part of the southern extent of the company's land as shown in Figure 4-3. A number of outbuildings associated with the sugar works were located in this area, although the main mill structure is located outside of the current study area boundary. The Old Sugarmill (located at 2-4 Sugar House Road, Canterbury) is one of the last remaining elements of the site within the landscape today.

An 1841 plan showing '95 proposed allotments adjoining the Australasian Sugar Company's works includes nine buildings and a circular feature labelled 'spot where the coal miners are at work', west of the sugar work's property boundary. Some of these are located within the study area, at the site of the proposed Canterbury Station Catchment construction worksite (shown in Figure 4-2). A number of structures within the mill's property are also shown to occupy land within the study area and an area now occupied by the current rail line.

Later plans prepared in 1843 and c1850 show a number of buildings occupying what is now Canterbury Road and Church Street (originally George Street and Sugar Mill Road respectively), as well as Robert, Broughton and Close Streets (Figure 4-6 and Figure 4-7). Some are located within the study area although they are likely to have been resumed and demolished to make way for the railway in 1895.

[38] Higginbotham 2000:7
[39] Higginbotham 2000:10
[40] Higginbotham 2000:8

Figure 4-2: 1841 Plan of 95 allotments at Canterbury adjoining the Australasian Sugar Company's works by W. H. Wells Land Surveyor, showing location of the mill, nearby structures and mining area. Source: National Library of Australia. Note. Plan shows approximate location of structures and may not be an accurate representation.

Figure 4-3 1842 Plan of the Canterbury estate showing land occupied by the Australasian Sugar Company and associated structures. Study area outlined in green. Source: State Library of NSW. Note. Plan shows approximate location of structures and may not be an accurate representation.

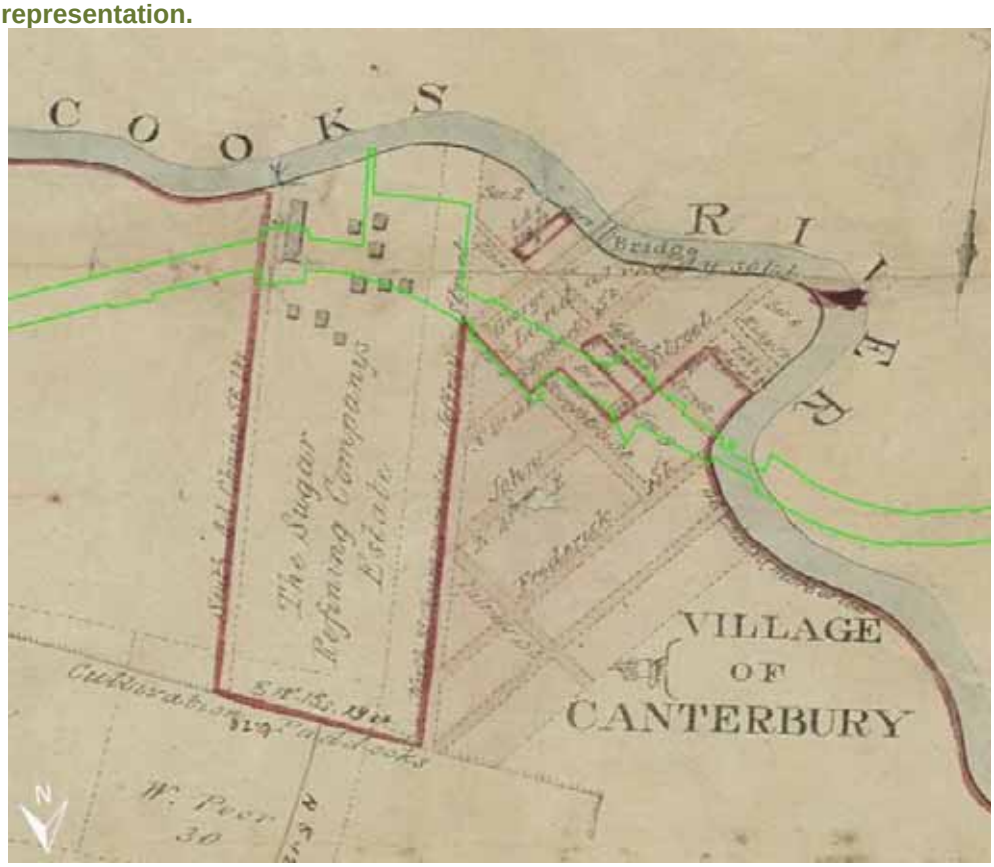
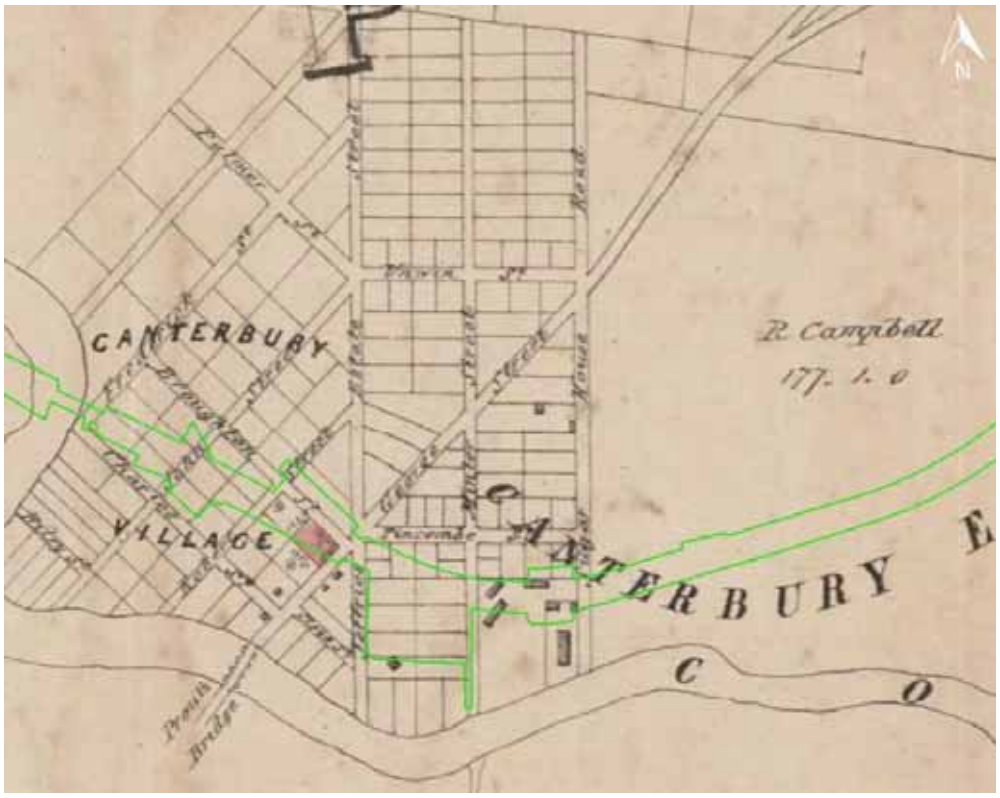


Figure 4-4 c.1859 Canterbury & Prout's Bridge on Cooks River by Henry Grant Lloyd, showing the Sugar works to the right of the painting. The cottages on the far side of the river to the left of the image are in the vicinity of Robert Street and present day Canterbury Road (George Street). Source: State Library of New South Wales [a5894078 / DL PX 42] (Dixson Library).

Figure 4-5: Canterbury Sugar Works c. 1842. Source: Dictionary of Sydney.

Figure 4-6. 1843 Plan of the Village of Canterbury showing various structures fronting onto what is now Canterbury Road and Robert, Broughton and Close Streets. Source: State Library of NSW. Note. Plan shows approximate location of structures and may not be an accurate representation.

Figure 4-7: c1850 sketch showing Canterbury estate and Canterbury village with various buildings along what is now Canterbury and Church Street. Source: National Library of Australia. Note. Plan shows approximate location of structures and may not be an accurate representation.



4.2.3 1855-1895: Urban Development

The Australasian Sugar Company's works closed in 1855, and the site was not used again until 1884. This had a negative economic impact on the area, and little development occurred for the next two decades, although a wool washing establishment was later opened on the south side of the Cook's River in 1868 (south of the study area).

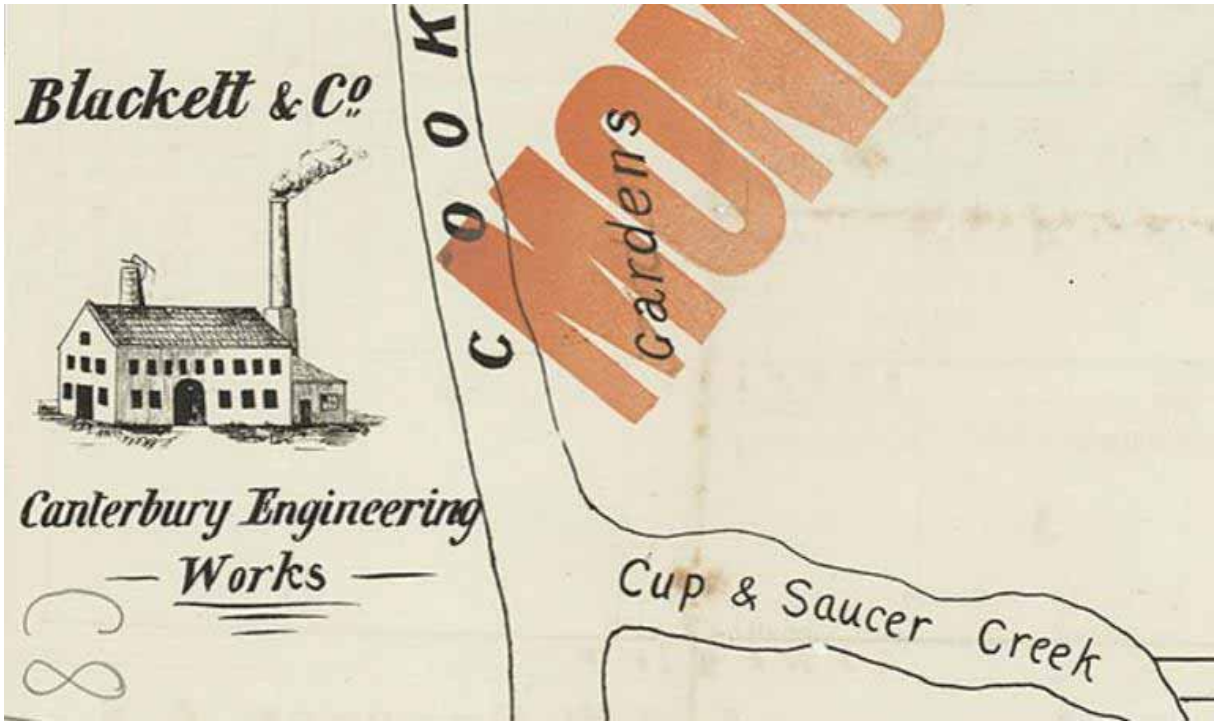
Canterbury changed dramatically in the 1880s, when Sydney experienced a surge in urban development. Initially, sales in the suburb were slow. The poor state of its roads and lack of public transport were accentuated when compared with areas on the rail and tram networks.[41] The first post office opened in 1858, and the first official public school in 1878, and the district slowly developed. Canterbury Race Course, on the northern bank of the Cooks River has been one of Sydney's major racetracks since 1871.

Between 1880 and 1892 the population of Canterbury rose by only 1500, indicating that the area is likely to have retained much of its rural character. Journalists at the time commented on the nature of the area, stating that the large house blocks and older-style residences made it appear 'old-fashioned'. In 1888 it was noted that the residents did not wish for water to be pumped into their homes due to the expense, and continued to use tank and wells.[42]

In 1881, the site of the Australasian Sugar Company's works (now consisting of 11 acres, 2 roods and 28 perches, and an adjacent parcel of land containing 2 acres, 2 roods and 26 perches) was purchased by Edward Cox. This was then mortgaged by Edward Clissold, who conveyed the site to Owen Blackett. Blackett then established the Blackett & Co Canterbury Engineering Works on the property. This specialised in producing ironwork for the railways.[43] The ironworks set up production within the original sugar works mill building, as shown in Figure 4-8. Whether the additional outbuildings extended west into the study area is unknown. The company declared bankruptcy in 1886 although may have continued to operate until 1890.[44]

[41] *Ibid*: 176.
[42] Jervis 1951: 32.
[43] Edward Higginbotham and Associates, May 2000. Historical and Archaeological Assessment of the Australian Sugar Company Mill, Sugar House Road (Formerly Church Street, Canterbury, NSW. Prepared for Gold Abacus Development and Woodhouse and Danks Pty Ltd, pp.12-13.
[44] Edward Higginbotham and Associates, May 2000, p. 15.

Figure 4-8: 1884 Redmans Canterbury Allotments Subdivision Plan showing detail of Blackett and Co Canterbury Engineering Works. Source: State library of NSW.



4.2.4 1895-1943: Canterbury Station, Resumptions and Development

Prior to the arrival of the railway in 1895, Canterbury remained relatively undeveloped due to its isolation from the rest of the city, and much of the study area west of the Old Sugarmill remained occupied by small cottages. To accommodate a rail line through Canterbury, land was resumed and the original street layout slightly altered as evidenced by plans shown in Figure 4-10 and Figure 4-11. The original property boundary of the Robert Campbell's estate and Australian Sugar Company works was dissected, and several properties along, and west of, Canterbury Road resumed. It is possible that the area west of the sugar works, that had once been occupied by outbuildings and mining operations was cleared at this time, as they do not appear on later plans.

The opening of Canterbury Station on February 1, 1895, encouraged land sales throughout the area (Figure 4-10 and Figure 4-11). The subdivision catering to the new station was called the Silver Park Estate. The station consisted of two impressive polychromatic brick platform buildings (Figure 4-12 and Figure 4-13). A branch line leading to sidings used on race days at the Canterbury Racecourse was also constructed (since demolished; Figure 4-14). Extensive cuttings within the existing bedrock took place at this time in order to accommodate the rail line. These are likely to have removed evidence of some structures associated with part of the Canterbury Sugar Company works.

The station consisted of two platforms, with brick facing and concrete edges, and associated brick platform buildings. As a main station on the Bankstown Line, this station had ornate designs which included the use of polychromatic brickwork, decorative dentil coursing, ornate awning brackets and carved bargeboards. A new building was constructed on Platform 3 in 1915 when the station was expanded in conjunction with the Metropolitan Goods Line. In 1916 a goods line was constructed. This was associated with a goods line and goods shed, to the south of the station.

In 1915 a two storey timber-framed signal box was built beside the Bankstown suburban line. The signal box controlled all train movements through Canterbury on both the Bankstown suburban line and Metropolitan Goods line, as well as the storage sidings for the Canterbury Racecourse special

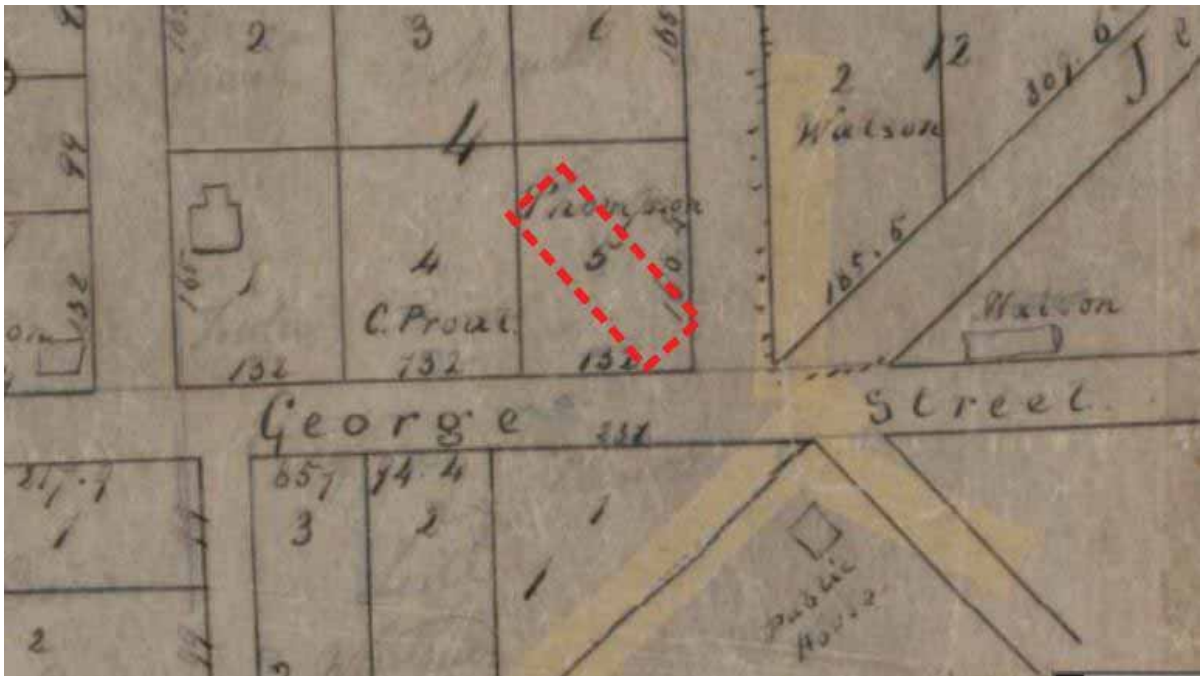
trains and the shunting of the local goods sidings. Extensions were added to the signal box in 1937 and 1968, and it was closed in 1996.

A footbridge was constructed in 1915 with a haunched beam design consisting of tapered cantilevers bearing on platform trestles and brick piers on each side to support shallow beams over the railway tracks. An overbridge was constructed in c1917 consisting of steel girders supporting a jack arched brick and concrete deck.

In 1927 the track was realigned. The Down Bankstown track alongside a new Down side platform; the Up Bankstown track alongside the old Up island platform; the Down Goods track replacing the middle storage siding and the Up Goods track replacing the racecourse siding; No 1 to No 7 car sidings at the racecourse were opened and all were electrified (Figure 4-15).[45] The goods shed and additional buildings were still present in 1943 (Figure 4-16).

In 1900, land associated with the Old Sugarmill, now consisting of 3 acres and 2 roods was conveyed to Edward Williams Denham, who established the Canterbury Bacon Factory. This too occupied the original Old Sugarmill building, east of the current study area. The factory was then sold to J C Hutton, who established 'Hutton's Bacon Factory' (Figure 4-17). It is unknown if any structures were erected within the study area or more specifically the site of the Canterbury Station Catchment construction site.

Figure 4-9: Detail from c.1840s plan of Cooks River, Jeffreys allotments, Sydney, with approximate location of Canterbury Station (red dashed line) within lots belonging to 'Thompson' and 'C. Prout'. Source: NLA MAP F 749.



[45] State Heritage Inventory 'Canterbury Railway Station Group' accessed 9 July 2016.

Figure 4-10: Detail of c.1885-90 plan of Canterbury, showing the rail line and location of Canterbury Station. Source: City of Sydney Archives, Historical Atlas of Sydney, Atlas of the Suburbs of Sydney ca 1885-1890 – Canterbury.

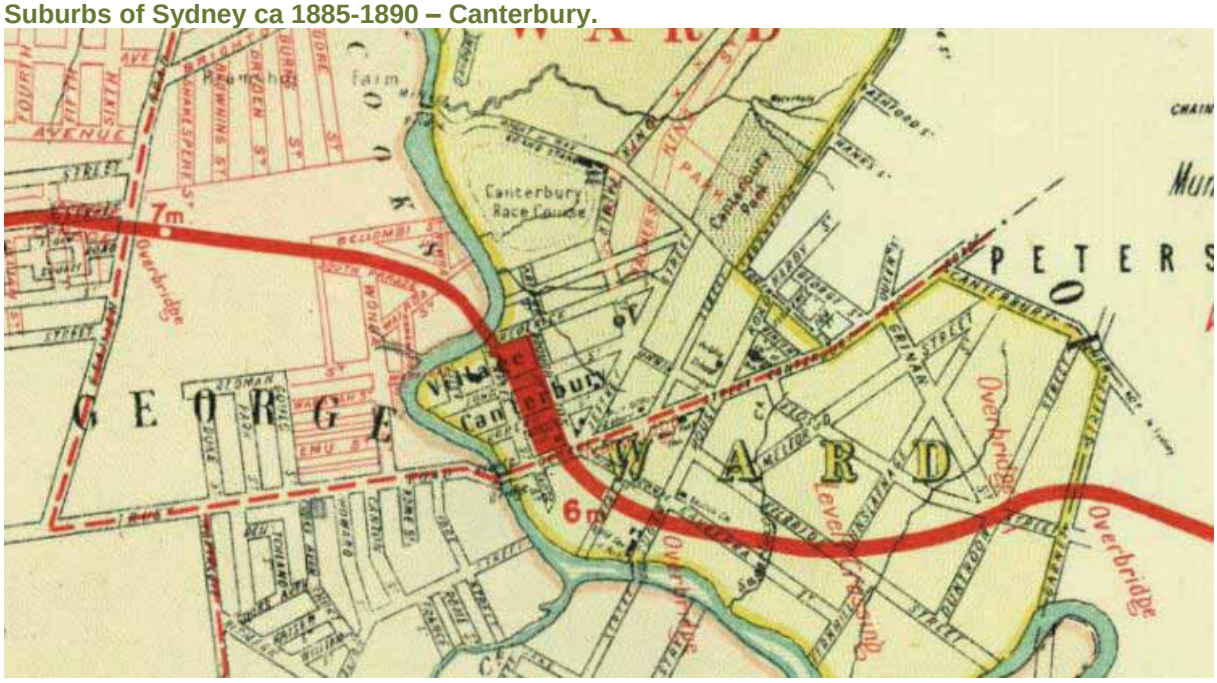


Figure 4-11: Railway acquisition in the vicinity of Bellombi Street and South Parade, between Canterbury and Campsie stations. The new subdivision either side of the line would be called the Silver Park Estate. Source: SLNSW call no. Z/ SP/ C8.

Figure 4-12: Canterbury Station between 1916 and 1927. Source: State Heritage Inventory 'Canterbury Railway Station Group'.

Figure 4-13: n.d. Canterbury Railway Station, showing platforms capping had been removed possibly with the realignment in 1927. Source: ARHS: 023606.

Figure 4-14: Configuration of Canterbury Station with goods platform, race platform and earlier cottages. Source: SLNSW call no. Z/ SP/ C8.

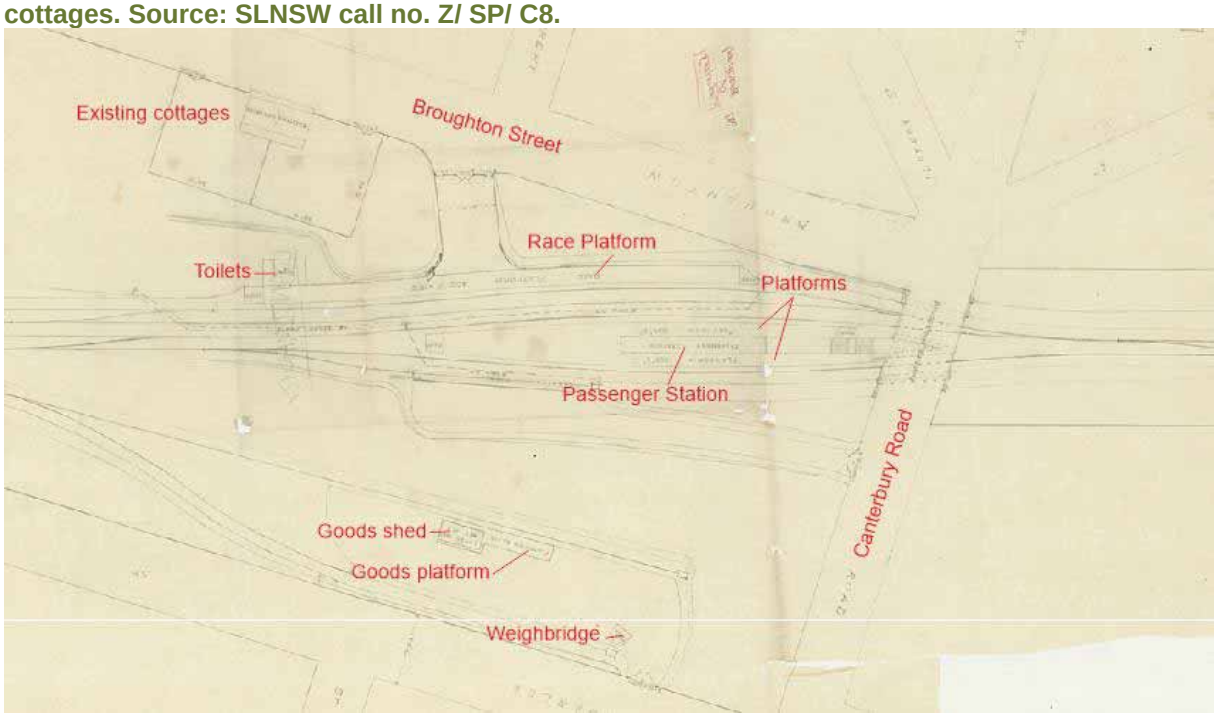


Figure 4-15: Electrification of the railway line c.1926, Canterbury Station. Source: SLNSW call no. Z/ SP/ C8.

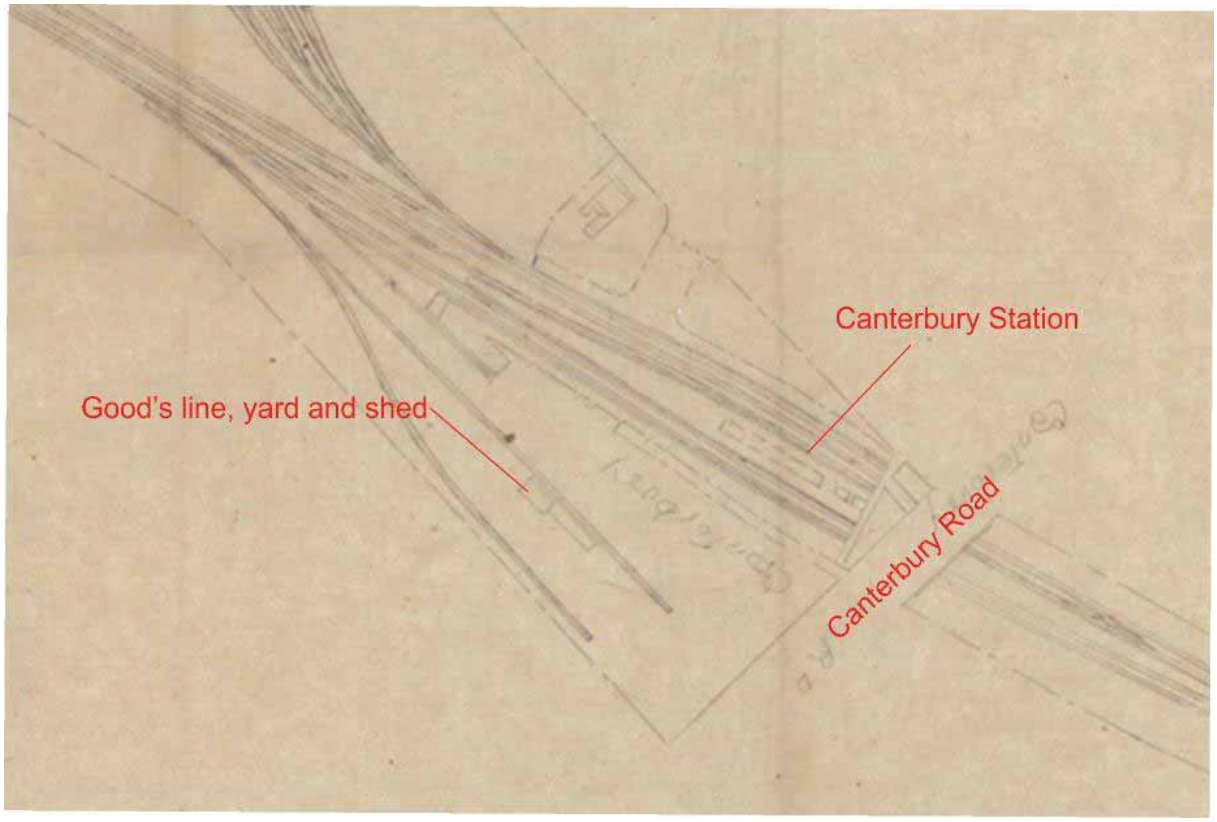


Figure 4-16: 1943 aerial of Canterbury Station. Source: SixMaps.

Figure 4-17. Canterbury, N.S.W. showing the J.C. Hutton Bacon Factory and outbuildings, just east of the study area. Likely taken from near the railway line. Source: State Library of NSW (a105124h).

4.2.5 1943-Present: Suburban and Urban Development

By 1943, the majority of Canterbury had been settled and was associated with late nineteenth and early twentieth century suburban subdivisions (Figure 4-18). Land that had once been occupied by outbuildings and for the sugar works (shown in the 1841 plan) had been cleared and was now occupied by a grassed park bounded by the rail line to the north and Close Street to the south.

Buildings associated with the sugar works and later industries continued to occupy land to the east of the study area. Aside from the railway line and station, no structures occupied the study area at this time.

At present, a warehouse and carpark have been constructed within the once empty grassed park. This fronts onto Close Street and is located within the Canterbury Station Catchment construction site. The remaining parkland continues to remain unoccupied and no development or evidence of ground disturbing works have occurred.

Land to the west of Canterbury Road, north and south of the rail line has also been developed since 1943, and appears to be associated with small scale industrial activities. Rapid development has also taken place along Canterbury Road within the last decade, consisting mainly of modern apartments and commercial enterprises (Figure 4-19).

Figure 4-18. 1943 aerial showing Canterbury at the time. Land to the west, north and south of the rail line is unoccupied and residential subdivisions take up the majority of land to the north. Source: SixMaps.

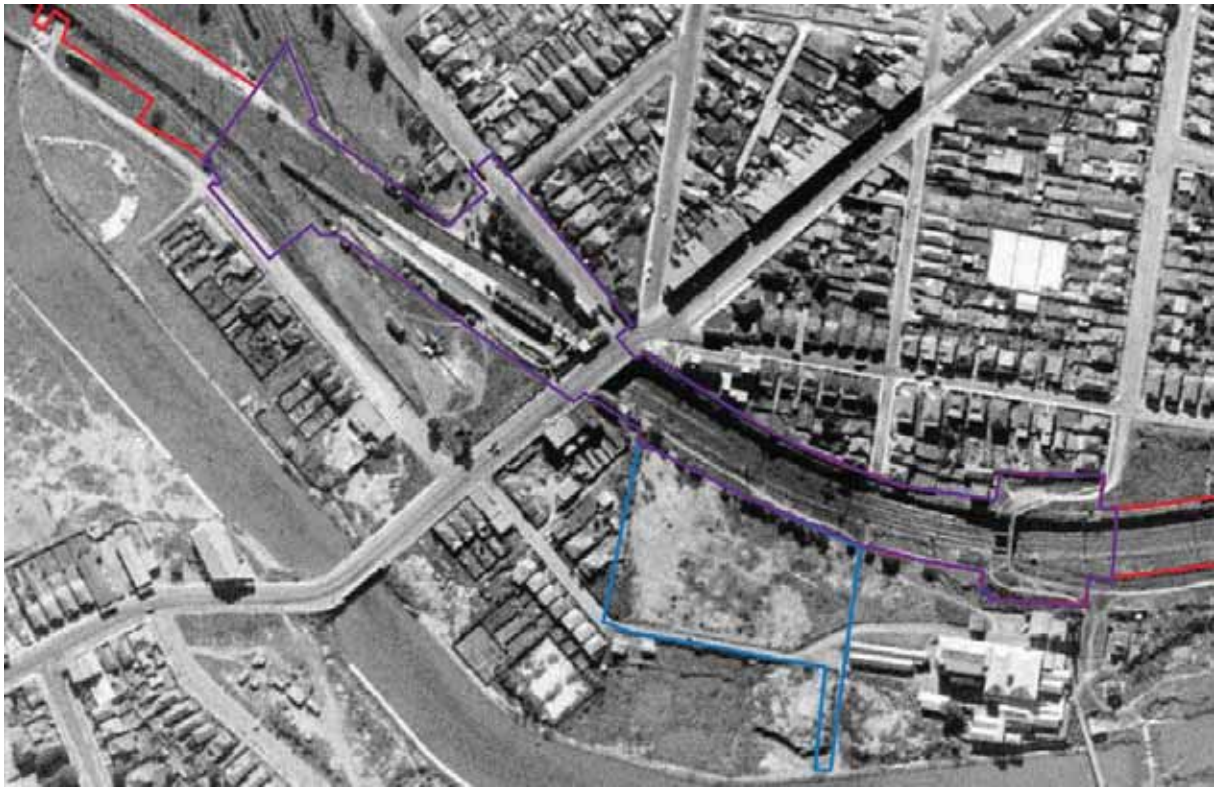


Figure 4-19. Satellite image showing Canterbury in 2016. Source: Google Earth.

4.3 Archaeological Potential

4.3.1 Previous Archaeological Studies

Artefact Heritage 2017. *Sydney Metro City & Southwest: Sydenham to Bankstown, Non-Aboriginal Heritage Impact Assessment*. Prepared for Transport for NSW.

The technical paper considered the construction and operational impacts on listed heritage items and potential archaeological resources within the study area. It included identification of items and areas of heritage significance that would be materially affected by the project, with consideration of the potential impacts on the values, settings and integrity of heritage items and archaeological resources located within the project area. The paper outlined proposed mitigation and management measures in accordance with relevant best practice guidelines.

GML 2002. *153-159 Canterbury Road, Canterbury archaeological assessment and research design*. Prepared for ALDI Stores.

Godden Mackay Logan prepared an Archaeological Assessment and Research Design for 153-159 Canterbury Road, Canterbury in October, 2002. 153-159 Canterbury Road, Canterbury is located approximately 55 metres northeast of the study area. It was originally part of the Canterbury Farm Estate, granted to Reverend Richard Johnson between 1793 and 1799. The land was used for farming and sheep grazing until it was sold to Robert Campbell in 1803. It was then occupied by the Rising Sun Inn from c1848 to 1922.

The archaeological assessment concluded that the entire site of the Rising Sun Inn had potential to contain archaeological deposits associated with its occupation including wells and cisterns that were once located at the rear of the building. Archaeological remains associated with the inn were

assessed as having high local significance. The report recommended test trenching with potential further investigations if substantial deposits or intact features were identified.

Higginbotham, E. 2000. *Historical and archaeological assessment of the Australian Sugar Company mill, Sugar house Road (formerly Church Street), Canterbury, NSW.* Prepared for Gold Abacus Developments & Whhohouse & Danks Pty Ltd.

Edward Higginbotham and Associates prepared a historical and archaeological assessment of the Australian Sugar Company Mill, Sugar House Road (Formerly Church Street, Canterbury, NSW) in May, 2000. The report focussed on land directly east of the current study area, to the west of Hutton and Church Streets, Canterbury. The Mill was established on 1840 and closed in 1855. Prior to this it was part of Robert Campbell's 'Canterbury Estate'. The site was then left empty until 1884 when it was used as an ironworks by an engineering firm for the railways. The ironworks closed in 1890 and the site used as a butter factory. A large portion of the original property was then resumed for the railway in 1897. The newly dissected property was then used as a bacon factory (1900-08) and then a ham and bacon curing factory (1908-1983). It was during this later phase that many original outbuildings associated with the Old Sugarmill were demolished.

The assessment outlined the various structures associated with the site and its many phases of development. It concluded that there was potential for archaeological remains of the Mill and associated outbuildings to exist within the area. These were assessed as having associative, social and historic significance.

Stedinger Associates 2003. *Additional excavations at the Canterbury Sugar Mill, NSW.* Prepared for Grosvenor Residential Pty Ltd.

Stedinger Associates prepared an addendum report for archaeological monitoring and recording of excavations at the site of the former Australian Sugar Company Mill, Canterbury in 2003. These were carried out 14 metres west of the mill site and approximately 30 metres east of the study area. Excavations uncovered several unrelated fill layers likely associated with each occupation phase at the site. The earliest occupation phase identified being 1884-1890.

A meat hook (associated with a meatworks [bacon and ham factory] that occupied the site between 1900-1908) and several large cast-iron objects were uncovered during excavations. The latter was likely associated with an ironmongery that occupied the site in the late nineteenth century, and are likely to be parts of machinery and offcuts. In addition, a north-south oriented sandstone drain was identified in the westernmost portion of the site. This was assessed as being built during the meatworks occupation of the site or the Australian Sugar Company Mill. The drain was preserved in situ.

4.3.2 Land Use Summary

The historical development of the Canterbury Station Catchment and surrounds can be divided into the following phases of activity:

- Phase 1 (1788 – 1841): Early land grants: Land clearance, timber getting, grazing, farming activity associated with the Canterbury Farm
- Phase 2 (1841 – 1855): Establishment of Canterbury and the Australasian Sugar Company works: Subdivision for smaller farms, development of country estates, small scale industry such as timber cutting, wool washing and mining, establishment of the Australasian Sugar Company works and construction of associated structures and outbuildings (some within study area) and small scale residential settlement in form of cottages

- Phase 3 (1855 – 1895): Urban development and closure of the Australasian Sugar Company works: Sugar works closed and site remains unoccupied, post office, public school and race course opened, further subdivisions
- Phase 4 (1895-1943): Canterbury Station, resumptions and development: Land resumed for railway, including residential buildings, construction of railway station in 1895, expansion and construction of the Metropolitan Goods line in 1916, electrification upgrades in 1926 and track realignment in 1927, mill site used for Canterbury Bacon Factory and later 'Hutton's Bacon Factory', possible removal of earlier outbuildings west of the Old Sugarmill site
- Phase 5 (1943 – present): Suburban and urban development: Railway station upgrades and continued use, industrial, commercial and residential development west of Canterbury Road and within grassed park bounded by Close Street and the railway line.

4.3.3 Previous Impacts

Construction of the railway station and rail line in the late nineteenth century would have included a considerable amount of ground disturbance and excavation, especially within the rail corridor. Track realignment, station upgrades and road construction throughout the twentieth century would have resulted in high levels of ground impacts throughout the station catchment.

Contemporary redevelopment to the south of Canterbury Station would have removed archaeological remains of the former Goods siding, platform, shed and weighbridge. In addition, contemporary redevelopment associated with the construction of a building fronting onto Close Street may have impacted potential archaeological resources. Other impacts include, but are not limited to, the following:

- Subsurface excavations to varying depths to grade and level land within the rail corridor and railway station
- Trenching within and adjacent to the rail corridor and railway station to accommodate services and utilities
- Vegetation clearance
- Subsurface excavations associated with subsequent upgrades to the rail corridor and railway station

4.3.4 Potential Archaeological Remains

Phase 1 (1788 – 1841)

Canterbury was originally part of land granted to Reverend Richard Johnson. The land was cleared, and timber getting, grazing, and farming of the Canterbury Farm occurred during this time. Archaeological features associated with land clearance could be present in the study area such as tree boles, evidence of estate farming activities such as fence line postholes, former shed postholes, field drains, isolated artefact scatters.

Phase 2 (1841 – 1855)

During this time the village of Canterbury was established with subdivision for smaller farms and the development of country estates. Small scale industry developed in the area including timber cutting, wall washing and mining. The Australasian Sugar Company works were constructed with associated structures and outbuildings and small scale residential settlement in the form of cottages. The 1841

plan of the sugar works indicates outbuildings to be present in the study area. These were the slab huts for workers at the sugar mill. A quarry is also evidence on the plan, which was used to construct the sugar mill. Buildings are also marked on the 1843 and 1850 plans of the area.

Archaeological remains of outbuildings, landscape modifications, fence lines, drains and other structural remains associated with the Australasian Sugar Company works could remain within the study area. Archaeological remains of the outbuildings could include footings, timber slabs remnants, underfloor deposits, post holes, artefact deposits, cess pits, wells, cisterns, fencelines, and yard surfaces. Evidence of small scale mining activities for the quarrying of the local stone could exist. Archaeological evidence of farming could be present such as 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.

Phase 3 (1855 – 1895)

The Australasian Sugar Company works was closed in 1855 and the site remained unoccupied. During this time a post office, public school and race course opened, and the area underwent further subdivisions.

Archaeological remains of early residential cottages could include 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 could be present in the study area.

Phase 4 (1895 – 1943)

Canterbury Station was constructed in 1895 with land being resumed for the railway which included residential buildings. The station was expanded with the construction of the Metropolitan Goods line in 1916. The line was electrified and upgraded in 1926, and the track realigned in 1927. The sugar works site was used for the Canterbury Bacon Factory and later 'Hutton's Bacon Factory', possibly removing the earlier outbuilding west of the Old Sugarmill site.

Plans of Canterbury Station indicate a septic tank, an absorption trench, and the goods siding that had a goods shed and a carriage dock on the southern side of the railway corridor. A sheep and pig yard were located near Charles Street as part of the goods siding. Sugar House Road originally had an overbridge connecting it across the railway corridor.

Archaeological remains and evidence of early railway construction could include 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 could be located in the study area. Archaeological remains of early infrastructure could include 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.

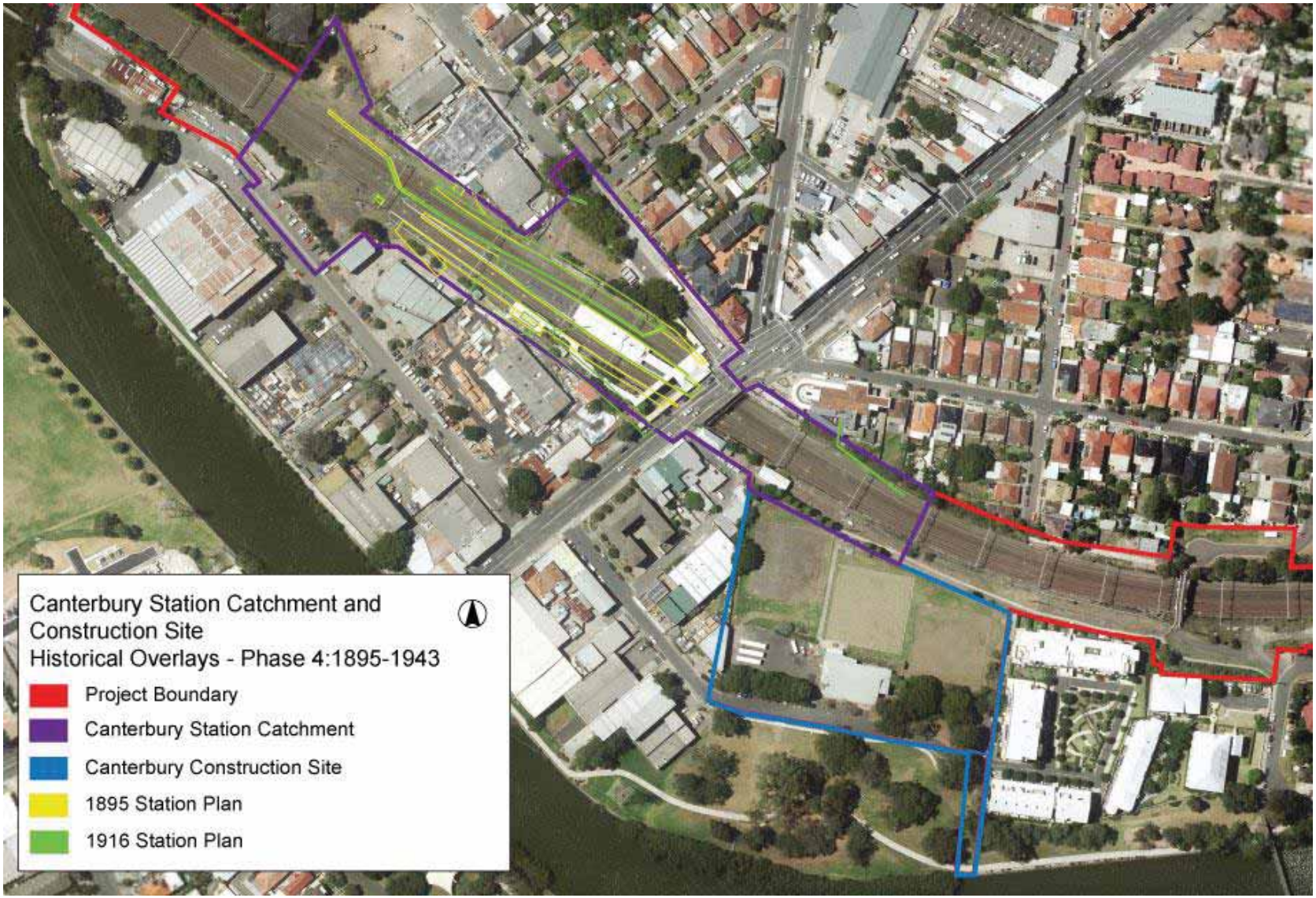
Phase 5 (1943 – present)

During this phase Canterbury underwent further suburban and urban development. The railway station had upgrades. Industrial, commercial and residential development occurred west of Canterbury Road and within the grassed park bounded by Close Street and the railway line. Potential archaeological remains associated with upgrades could include utilities and drainage.

Based on the history of the site and disturbance that has occurred in the area, archaeological remains are likely to consist of post-railway structures and services.

Figure 4-20: Historical overlays for Phase 2: 1841-1855

Figure 4-21: Historical overlays for Phase 4: 1895-1943



4.3.5 Summary of Archaeological Potential

Based on historical information, land use data and evidence of sub-surface impacts, a summary of the potential archaeological remains at Canterbury Station Catchment and construction site is provided in Table 4-1 below.

Table 4-1: Summary of potential archaeological remains for Canterbury Station Catchment and construction site

Phase	Likely archaeological remains	Potential
1 (1788-1841)	• No documentary evidence of specific activities or development with the site • 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-low
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 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.	Moderate to High
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
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	Moderate

Phase	Likely archaeological remains	Potential
	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)	• Archaeological remains associated with upgrades such as utilities and drainage	Moderate to high

4.4 Archaeological Significance

The following assessment of significance is based on the guidelines discussed in Section 2.4 of this report.

Table 4-2: Assessment of archaeological significance for Canterbury Station Catchment and construction site

Criteria	Discussion
Research potential	• It is unlikely that archaeological remains associated with Phase 1 would be present within the site. Any remains would be truncated or ephemeral and would not have research potential • Potential archaeological remains associated with Phase 2 residential and industrial structures and activities (sugar works and mining) would have high research significance as they would yield information relating to the one of the earliest phases of development in Canterbury. Remains of the Old Sugarmill outbuildings could provide information relating to activities that took place around the mill, and the domestic lives of workers, if they were residing at the site. Remains of mining activities would provide insights into early small scale mining practices in the area • If intact remains associated with Phase 3 residences and industrial activities (iron works) were located within the study area, they would have moderate research potential. They could yield information relating to domestic living conditions in Canterbury during the mid to late nineteenth century as well as providing insights into early iron works activities and the potential use of outbuildings or the surrounding landscape • Potential archaeological remains associated with Phase 4 former structures and rail infrastructure would unlikely contribute additional information not available from other historical resources • It is unlikely that artefact-bearing deposits associated with the early station accumulated or survived subsequent development and upgrades.
Association with individuals, events or groups of historical importance	• The potential archaeological remains of Phase 2 occupation of the site are associated with the State significant 'Canterbury Sugar Company works' or 'Old Sugarmill'. This site was associated with Robert Campbell, a prominent Sydney merchant. The establishment of the Old Sugarmill was highly influential on the subsequent development of Canterbury as a township in the early nineteenth century. • The development of the rail network facilitated economic development and suburban growth in Sydney in the latter half of the nineteenth and twentieth centuries. Canterbury Station was built in 1895 as part of the Bankstown Line. The potential Phase 4 archaeological remains are associated with the historical development of Bankstown rail line and Canterbury Station. Canterbury Station is

Criteria	Discussion
	associated with J.J. Scouller who was the builder of the station. The station is also associated with the Canterbury Park Racecourse by having dedicated platforms and holding areas specifically for the racecourse.
Aesthetic or technical significance	• The potential archaeological remains are not likely to hold aesthetic value, although exposed *in situ* archaeological remains may have distinctive/attractive visual qualities. • Extensive and intact remains of former station structures are not expected to be present. • Intact remains associated with the Canterbury Sugar Company works and/ Blackett and Co Canterbury Engineering Works have the potential to hold technical significance, as they would represent early technological advances and structures associated with threw respective industries. • Former rail infrastructure may demonstrate changes in technology and rail engineering over time. However, they are not expected to demonstrate technical significance.
Ability to demonstrate the past through archaeological remains	• The potential archaeological remains associated with the Canterbury Sugar Company works and Phase 2 and 3 cottages may illustrate the historical development of Canterbury. If intact or substantial remains are found to exist within the project area, they have the potential to reach the threshold for State significance.

4.4.1 Statement of Archaeological Significance

There is nil to low potential for archaeological remains associated with nineteenth century farming. Any remains are unlikely to have research value. There is moderate to high potential for remains of structures associated with the Canterbury Sugar Company works and outbuildings. These would have high research value and associative and historical significance at a local or State level depending on nature and intactness. There is moderate to high potential for remains of Phase 3 residential and industrial structures that once occupied land within the rail line. If intact remains were found, they would have moderate research potential and reach the threshold for local significance. Potential Phase 4 archaeological remains are associated with the historical development of the Bankstown rail line, Canterbury Station and Canterbury Park Racecourse. Depending on the intactness of the remains, potential archaeological remains of Phase 4 could reach the threshold for local significance. Remains associated with Phase 5 are unlikely to reach the threshold for local heritage significance.

A summary of the significance of potential archaeological resources is provided in Table 4-3 and Figure 4-22 below.

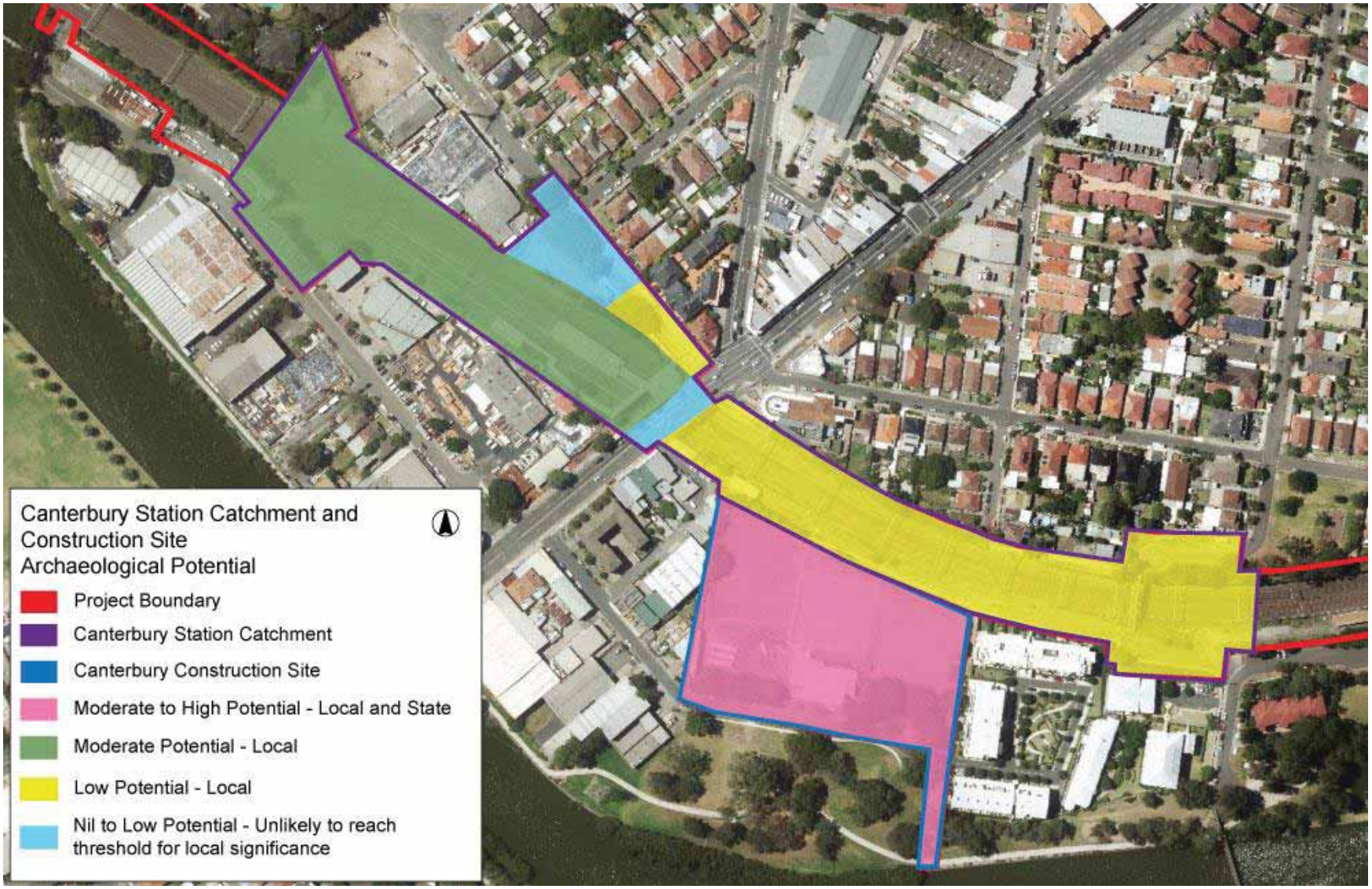
Table 4-3: Summary of areas with potential for significant archaeological remains for Canterbury Station Catchment and construction site

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-low	Unlikely to reach the threshold for local significance

Phase	Archaeological resource	Potential	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 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	Moderate to High	Potentially State
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

Phase	Archaeological resource	Potential	Significance
5 (1943-present)	• Archaeological remains associated with upgrades such as utilities and drainage	Moderate to high	Unlikely to reach the threshold for local significance

Figure 4-22: Archaeological potential for Canterbury Station Catchment and construction site



4.5 Archaeological Impacts

4.5.1 Proposed Works

Proposed works within the Canterbury Station Catchment would involve the construction of new station platforms along the rail corridor, construction of a station service building, construction of a retaining wall along the southern boundary of the station and rail corridor, addition of Metro South West running tracks (MSWs), installation of installation of drainage pipes, single grate drainage pits, gas pipelines and CSR utilities and the construction of a proposed segregation fence along the northwest boundary of the rail corridor. These works would involve trenching and subsurface ground disturbance. The construction site would include clearing and grubbing, fencing, stockpiling, and material laydown.

4.5.2 Potential Archaeological Impacts

Although the location of the Canterbury Sugar Company works mill and former associated structures is outside of the study area, there is potential that remains of outbuildings and mining activities may exist within the rail corridor and compound site. These have the potential to reach the threshold for State significance, if intact or substantial remains are found to exist within the study area. There is also potential that remains associated with the Canterbury township Phases 2 and 3 may be present.

The proposed works within the Canterbury Station Catchment and construction site involve trenching and subsurface ground disturbance. There is potential for impacts to occur to local and State significant archaeology within the Canterbury Station Catchment footprint and compound site.

4.6 Archaeological Management

The area within the Canterbury Station Catchment and construction site has been assessed as having nil to low potential to contain archaeological remains associated with Phase 1 and moderate to high potential to contain archaeological remains associated with Phase 2 and 3 occupation of the site. Potential archaeological remains associated with Phase 2 occupation may have State heritage significance due to their association with the Canterbury township and SHR listed Old Sugarmill. Potential remains associated with Phase 3 and Phase 4 may have potential to have local heritage significance. Potential remains associated with Phase 1 and 5 are not considered likely to reach the threshold of local or State significance.

Excavation work within Canterbury Station Catchment and construction site would require archaeological management. Ground disturbance and excavation work with potential to impact significant archaeological remains would require archaeological mitigations. This would involve salvage excavations in areas for potential remains of Phase 2 and Phase 3, and test/salvage excavations for Phase 4. Areas of potential for Phase 1 and 5 would be covered by the Unexpected Finds Procedure. Archaeological salvage excavations would be supervised by a suitably qualified Excavation Director with experience in managing State significant archaeology in areas where State significant archaeology is expected, or locally significant archaeology where locally significant archaeology is expected.

The archaeological mitigation is summarised in Table 4-4.

Table 4-4: Summary of archaeological mitigation for Canterbury Station Catchment and construction site

Phase	Potential archaeology	Impact	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	Excavation for the construction of new station platforms, station service building, retaining wall, tracks, services, utilities, and fencing. Clearing and grubbing of the construction site.	• Unexpected Finds Procedure
2 (1841 – 1855)	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.	Excavation for retaining walls, tracks, services, utilities, and fencing. Clearing and grubbing of the construction site.	• AMS • Salvage excavations
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	Excavation for retaining walls, tracks, services, utilities, and fencing. Clearing and grubbing of the construction site.	• AMS • Salvage excavations

Phase	Potential archaeology	Impact	Mitigation
	Blackett and Co Canterbury Engineering Works.		
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 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.	Excavation for the construction of new station platforms, station service building, retaining wall, tracks, services, utilities, and fencing.	• AMS • Test/Salvage excavations
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.	Excavation for the construction of new station platforms, station service building, retaining wall, tracks, services, utilities, and fencing.	• Unexpected Finds Procedure

4.6.1 Archaeological Methodology

The following archaeological methodology for the Canterbury Station Catchment and construction site is based on impacts known at project approval stage. Explanation and further details regarding the archaeological process and methodologies identified below are provided in Section 7.0.

- An AMS would be prepared prior to construction works commencing at the Canterbury Station Catchment and construction site. This AMS would:
  - Review scope of works and construction methodology
  - Reassess potential for impacts to significant archaeological resources based on construction methodology
  - Review contamination reports and provide archaeological mitigation strategies for any remediation with the potential to impact significant archaeology
  - Identify opportunity for in situ conservation of archaeological remains in these areas
  - Outline how the archaeological program would be undertaken within the construction program
  - Provide a detailed archaeological mitigation for potential impacts in these areas, such as salvage excavation
  - Consider opportunities to provide information regarding the archaeological findings to the public.
- Salvage excavations would be undertaken to investigate and record archaeological remains related to Phase 2 and 3 if impacts were proposed in areas of identified potential.
- Test/salvage excavations would be undertaken to investigate and record archaeological remains related to Phase 4 if impacts were proposed in areas of identified potential.
- Unexpected finds procedure would apply to all other areas within the Canterbury Station Catchment and construction site.
- The archaeological investigations would be supervised by a suitably qualified Excavation Director with experience in managing State significant archaeology.
- A preliminary results report would be written once archaeological fieldwork has been completed.
- Post-excavation analysis of fieldwork results, artefacts, samples and other archaeological data would be undertaken and included in a final archaeological investigation report.
- Significant archaeological findings would be considered for inclusion in heritage interpretation for the project.

4.6.2 Research Questions

The historical themes associated with Canterbury Station Catchment and construction site study area are presented in Table 4-5.

Table 4-5: Historical themes associated with Canterbury Station Catchment and construction site

Australian theme	NSW theme	Explanatory notes	Comments
3. Developing local, regional and national economies	Agriculture	Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes, can include aquaculture	Evidence of early grazing, and farming activity associated with the Canterbury Farm could provide information about the development of agriculture in the area.
3. Developing local, regional and national economies	Communication	Activities relating to the creation and conveyance of information	Evidence of the post office could provide information in regards to the early post offices.
3. Developing local, regional and national economies	Industry	Activities associated with the manufacture, production and distribution of goods	Evidence of small scale industries such as timber cutting, wool washing and mining could be present in the study area and provide information about industrial development of Canterbury. The establishment of the Australasian Sugar Company works and construction of associated structures and outbuildings (some within study area) and small scale residential settlement in form of cottages could provide information about industry and workers accommodation.
3. Developing local, regional and national economies	Mining	Activities associated with the identification, extraction, processing and distribution of mineral ores, precious stones and other such inorganic substances.	Scottish stonemasons were employed to mine the local stone to construct the sugar works and a quarry was located in the study area. Evidence of the quarry could provide information about the processing of the stone and tools used.
3. Developing local, regional and national economies	Transport	Activities associated with the moving of people and goods from one place to another, and systems for the provision of such movements	Canterbury Railway Station is associated with the provision of transport in developing local economies. Evidence of the development of the Bankstown line could provide information about the changing technologies in rail infrastructure. Evidence could include early rail infrastructure.
4. Building settlements, towns and cites	Towns, suburbs and villages	Activities associated with creating, planning and managing urban functions, landscapes and lifestyles in towns, suburbs and villages	Evidence of the early subdivision pattern of the study area could provide information about the development of the site, which would complement existing historical plans. It is possible that ephemeral evidence of fencelines and postholes, may exist.
4. Building settlements, towns and cites	Land tenure	Activities and processes for identifying forms of ownership and occupancy of land and water, both Aboriginal and non-Aboriginal	Evidence of the early subdivision pattern of the study area could provide information about the development of the site, which would complement existing historical plans. It is possible that ephemeral evidence of fencelines and postholes, may exist.

Australian theme	NSW theme	Explanatory notes	Comments
4. Building settlements, towns and cites	Utilities	Activities associated with the provision of services, especially on a communal basis	Evidence of early culverts, wells and cesspits can provide information about the provision of services and changes in technology, and often contain artefact deposits that have research potential. Early in-ground services including sandstone, brick and ceramic drains could be present in the study area.
4. Building settlements, towns and cites	Accommodation	Activities associated with the provision of accommodation, and particular types of accommodation – does not include architectural styles – use the theme of Creative Endeavour for such activities.	Early plans suggest that eight slab huts and cottages existed on the site. Evidence of early housing could provide information about the changes in technology, supply of materials, and preferences for houses during this time.
6. Educating	Education	Activities associated with teaching and learning by children and adults, formally and informally.	A school was located within the study area to provide for the children of the workers of the sugar mill. Evidence of the school could provide information about the provision of education during the period.
8. Developing Australia's cultural life	Domestic life	Activities associated with creating, maintaining, living in and working around houses and institutions.	Early plans suggest that slab huts and cottages existed on the site. Evidence of the slab huts and cottages could consist of footings, postholes, artefact deposits, deposits containing evidence of occupation including underfloor deposits and yard scatters, evidence for gardens, layout and use of the yard areas, and refuse associated with domestic activities. These types of evidence can provide information about how people lived in early Canterbury, the class distinction of the occupants and their archaeological signature, what people ate, and the arrangement of houses at the time. Depending on the evidence, artefacts could also provide information on gender roles, family dynamics, and the occupants of the houses.
8. Developing Australia's cultural life	Sport	Activities associated with organised recreational and health promotional activities	Canterbury Station provided transport on race days to Canterbury Park Racecourse.

The following research questions should be used to guide archaeological investigation.

- What evidence of early land clearing and land modification, if any, is present on the site?
- Is there any evidence of former platforms located below or within the present-day station platforms?
- What similar sites have been investigated within the local or broader context?
- What evidence of transport developments and changes in transport technology exist on the site?
- What evidence remains of early services, including early cisterns, tanks, wells, cesspits, in-ground services including sandstone, timber, brick and ceramic drains?

- Does this provide information about the provision of services and changes in technology?
- What were the living conditions of the people occupying the study area?
- Can the archaeological remains of the buildings inform the internal and external layout of the huts and cottages and the use of space?
- Can the archaeological remains inform changes in building technology, supply of materials and architectural preferences for the period? Do the houses provide evidence of class/status distinction?
- Is there evidence that the employees were engaged in activities outside of their working life? (gaming, smoking, sewing, etc)
- Is there evidence of the conditions in which the employees worked?
- Does the artefact assemblage provide information on the daily life of the occupants of the cottages? Can gender and class/status be discerned from the archaeological record?
- Do any intact under floor deposits provide useful spatial information, identify discrete activity area or provide spatial data on the range of tasks undertaken within the building over time?
- What food were the residence of the huts and cottages consuming? Is there evidence of the cooking methods used?
- Is there evidence of male, females, and children occupying the cottages? Does this provide information about family dynamics in early Canterbury?
- What evidence is there of gardens, and the layout and use of the yard areas? Does this show evidence of recreational activities, e.g. marbles or games? What can the gardens inform about daily life and food habits?
- Do any refuse deposits indicate a domestic setting? Do refuse deposits inform about daily eating habits?
- Is there evidence of quarrying on the site?
- What evidence is there of the school? Do artefactual remains relate to the provision of education?
- Is there artefactual or architectural evidence related to the sugar works in the study area?
- Is there evidence of the division of labour spaces, yards and sheds?
- How does the study area compare to other mixed residential and industrial sites? Is the archaeological record typical for Sydney?
- What does the evidence indicate about the development of rail infrastructure and technology?
- How does the evidence inform the historical development of the Bankstown rail line and Canterbury Station?
- Is there any evidence of former platforms located below or within the present-day station platforms?
- Interpret the results in terms of broader themes, posing questions that help to inform the Statement of Significance.

Additional research questions may be posed (and existing questions modified) as the archaeological excavation progresses and the extant and condition of the archaeological resource is revealed.

Appendix F

Sydney Metro Unexpected finds procedure

F.1 Sydney Metro Unexpected finds procedure

Sydney Metro Unexpected Heritage Finds Procedure

[SM-18-00105232]

Sydney Metro Integrated Management System (IMS)

Applicable to:	Sydney Metro
Document Owner:	Author/Document owner
System Owner:	IMS element owner (generally a member of the Executive)
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1. Purpose

This procedure is applicable to the Sydney Metro program of works including major projects delivered under Critical State Significant Infrastructure Planning Approvals (CSSI), early CSSI minor and enabling works and works that are subject to the NSW Heritage Act (1977) including s57/139 and s60/140 exemptions and permit approvals.

This procedure has been prepared for Sydney Metro programs to provide a method for managing unexpected heritage items (both Aboriginal and non-Aboriginal) that are discovered during preconstruction (pre-Construction Heritage Manage Plan approval), construction phases (post Construction Heritage Manage Plan approval) and for works subject to the NSW Heritage Act (1977).

An 'unexpected heritage find' can be defined as any unanticipated archaeological discovery, that has not been previously assessed or is not covered by an existing approval under the Heritage Act 1977 (Heritage Act) or National Parks and Wildlife Act 1974 (NPW Act).

In NSW, there are strict laws to protect and manage heritage objects and relics. As a result, appropriate heritage management measures need to be implemented to minimise impacts on heritage values; ensure compliance with relevant heritage notification and other obligations; and to minimise the risk of penalties to individuals, Sydney Metro and its contractors. This procedure includes Sydney Metro's heritage notification obligations under the Heritage Act, NPW Act and the Coroner's Act 2009 and the requirements of the conditions of approval(CoA) issued by NSW Department of Planning and Environment.
Note that a Contractor must not amend the Sydney Metro Unexpected Finds Procedure without the prior approval of Sydney Metro.

It should be noted that this procedure must be read in conjunction with the relevant CCSI conditionals of approval (if applicable), the contract documents and other plans including the Sydney Metro Exhumation Management Plan and procedures developed by the contractor during the delivery of the Sydney Metro works.

1.1. Legislation that does not apply

The following authorisations are not required for Sydney Metro approved Critical State Significant Infrastructure (and accordingly the provisions of any Act that prohibits an activity without such an authority do not apply):

- Division 8 of Part 6 of the Heritage Act 1977 does not apply to prevent or interfere with the carrying out of approved State significant infrastructure.
- An approval under Part 4, or an excavation permit under section 139, of the Heritage Act 1977,
- An Aboriginal heritage impact permit under section 90 of the National Parks and Wildlife Act 1974,

This document provides relevant background information in Section 4, followed by the technical procedure in Sections 6 and 7. Associated guidance referred to in the procedure can be found in Appendices 1-6.

2. Scope

Despite earlier investigation, unexpected heritage items may still be discovered during works on a Sydney Metro site. When this happens, this procedure must be followed. This procedure provides direction on when to stop work, where to seek technical advice and how to notify the regulator, if required.
This procedure **applies to**:

- the discovery of any unexpected heritage item, relic or object, where the find is not anticipated in an approved Archaeological Assessment Design Report (AARD) or Archaeological Method Statements (AMS) that are prepared as part of the planning approval for that project.

This procedure must be followed by all Sydney Metro staff, contractors, subcontractors or any person undertaking works for Sydney Metro. It includes references to some of the relevant legislative and regulatory requirements, but is not intended to replace them.
This procedure **does not apply** to:

- The discovery and disturbance of heritage items as a result of investigations being undertaken in accordance with the Office of Environment and Heritage's (OEH) *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW 2010*[1]; an Aboriginal Heritage Impact Permit (AHIP) issued under the NPW Act; or a permit approval issued under the Heritage Act.
- the discovery and disturbance of heritage items as a result of construction related activities, where the disturbance is permissible in accordance with an AHIP; or an approval issued under the Heritage Act or CSSI /CSSD planning approval;

3. Definitions

All terminology in this procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

	Definitions
AHIP	Aboriginal Heritage Impact Permit
Aboriginal object	An Aboriginal object is any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains. An Aboriginal object may include a shell midden, stone tools, bones, rock art, Aboriginal-built fences and stockyards, scarred trees and the remains of fringe camps.
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
CSSD	Critical State Significant Development
CSSI	Critical State Significant Infrastructure
EP&A Act	**NSW *Environmental Planning and Assessment Act 1979***
Excavation	A person that complies with the Heritage Council of NSW's Criteria for Assessment of

[1] An act carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* as published by the Department in the Gazette on 24 September 2010 is excluded from the definition of ***harm*** an object or place in section 5 (1) of the NPW Act.

Director	Excavation Directors (July 2011) to oversee and advise on matters associated with historic archaeology. Note this applies to a specific project/program and requires consultation and/or approval by OEH.
Heritage Act	NSW *Heritage Act 1977*
NPW Act	NSW *National Parks and Wildlife Act 1974*
OEH	Office of Environment and Heritage
SM	Sydney Metro
Relic (non-Aboriginal heritage)	A relic means any deposit, artefact, object or material evidence that: a) relates to the settlement of the area that comprises NSW, not being Aboriginal settlement, and b) is of State or local significance. A relic may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse.
TfNSW	Transport for New South Wales
Work (non-Aboriginal heritage)	Archaeological features such as historic utilities or buried infrastructure that provide evidence of prior occupations such as former rail or tram tracks, timber sleepers, kerbing, historic road pavement, fences, culverts, historic pavement, buried retaining walls, cisterns, conduits, sheds or building foundations, but are also subject to assessment by the Excavation Director to determine its classification

4. Types of unexpected heritage items and corresponding statutory protections

The roles of project, field and environmental personnel (including construction contractors) are critical to the early identification and protection of unexpected heritage items.

Appendix 1 illustrates the wide range of heritage discoveries found on Sydney Metro projects and provides a useful photographic guide. Subsequent to confirmation of a heritage discovery it must then be identified and assessed by Excavation Director. An 'unexpected heritage item' means any unanticipated discovery of an actual or potential heritage item, for which Sydney Metro does not have approval to disturb[2] and/or have an existing management process in place.

These discoveries are categorised as either:

(a) Aboriginal objects

(b) Historic (non-Aboriginal) heritage items

(c) Human skeletal remains.

The relevant legislation that applies to each of these categories is described below and is also addressed in the Sydney Metro Exhumation Management Plan).

4.1. Aboriginal objects

The NPW Act protects Aboriginal objects which are defined as:

[2] Disturbance is considered to be any physical interference with the item that results in it being destroyed, defaced, damaged, harmed, impacted or altered in any way (this includes archaeological investigation activities).

> *"any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains"*[3].

Examples of Aboriginal objects include stone tool artefacts, shell middens, axe grinding grooves, pigment or engraved rock art, burials and scarred trees.

IMPORTANT!

<u>All</u> Aboriginal objects, regardless of significance, are protected under law.

If any impact is expected to an Aboriginal object, an AHIP is usually required from OEH Also, when a person becomes aware of an Aboriginal object they must notify the Director-General of OEH about its location[4]. Assistance on how to do this is provided in Section 7 (Step 5).

4.2. Historic heritage items

Historic (non-Aboriginal) heritage items may include:

- Archaeological 'relics'
- Other historic items (i.e. works, structures, buildings or movable objects).

4.2.1. Archaeological relics

The Heritage Act protects *relics* which are defined as:

> "*any deposit, artefact, object or material evidence that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and is of State or local heritage significance*"[5].

Relics are archaeological items of local or state significance which may relate to past domestic, industrial or agricultural activities in NSW, and can include bottles, remnants of clothing, pottery, building materials and general refuse.

IMPORTANT!

<u>All</u> relics are subject to statutory controls and protections.

If a relic is likely to be disturbed, a heritage approval is usually required from the NSW Heritage Council[6]. Also, when a person discovers a relic they must notify the NSW Heritage Council of its location[7].

4.2.2. Other historic items

Some historic heritage items are not considered to be 'relics', but are instead referred to as works*, buildings, structures or movable objects. Examples of these items that may be encountered include culverts, historic pavements, retaining walls, tramlines, rail tracks, timber sleepers, cisterns*, fences, sheds, buildings and conduits. Although an approval under the Heritage Act may not be required to disturb these items, their discovery must be managed in accordance with this procedure.

[3] Section 5(1) NPW Act.
[4] This is required under section 89(A) of the NPW Act and applies to all Sydney Metro projects.
[5] Section 4(1) Heritage Act.

[7] This is required under section 146 of the Heritage Act and applies to all Sydney Metro projects.

As a general rule, an archaeological relic requires discovery or examination through the act of excavation. For an unexpected find an archaeological excavation permit under section 140 of the Heritage Act may be required to do this. In contrast, 'other historic items' either exist above the ground surface (e.g. a shed), or they are designed to operate and exist beneath the ground surface (e.g. a culvert).

4.3. Human skeletal remains

Also refer to Sydney Metro Exhumation Management Plan for a more detailed explanation of the approval processes.

Human skeletal remains can be identified as either an Aboriginal object or non-Aboriginal relic depending on ancestry of the individual (Aboriginal or non-Aboriginal) and burial context (archaeological or non-archaeological). Remains are considered to be archaeological when the time elapsed since death is suspected of being 100 years or more. Depending on ancestry and context, different legislation applies.

As a simple example, a pre-European settlement archaeological Aboriginal burial would be protected under the NPW Act, while a historic (non-Aboriginal) archaeological burial within a cemetery would be protected under the Heritage Act. For a non-Aboriginal archaeological burial, the relevant heritage approval and notification requirement described in Section 3.1 would apply. In addition to the NPW Act, finding Aboriginal human remains also triggers notification requirements to the Commonwealth Minister for the Environment under section 20(1) of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth).

IMPORTANT!

<u>All</u> human skeletal remains are subject to statutory controls and protections.

All bones must be treated as potential human skeletal remains and work around them must stop while they are protected and investigated urgently.

However, where it is suspected that less than 100 years has elapsed since death, the human skeletal remains come under the jurisdiction of the State Coroner and the Coroners Act 2009 (NSW). Such a case would be considered a 'reportable death' and under legal notification obligations set out in section 35(2); a person must report the death to a police officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old8 regardless of ancestry (i.e. both Aboriginal and non-Aboriginal remains). Public health controls may also apply.

Guidance on what to do when suspected human remains are found is provided in Appendix 5.

5. Legislative Requirements

Table 1 identifies some of the relevant legislation/regulations for the protection of heritage and the management of unexpected heritage finds in NSW. It should be noted that significant

[8] Under section 19 of the *Coroners Act 2009*, the coroner has no jurisdiction to conduct an inquest into reportable death unless it appears to the coroner that (or that there is reasonable cause to suspect that) the death or suspected death occurred within the last 100 years.

penalties exist for breaches of the listed legislation as a result of actions that relate to unauthorised impacts on heritage items. Further, it is noted that heritage that has been assessed and is being managed in accordance with relevant statutory approvals(s) is exempt from these offences.

To avoid breaches of legislation, it is important that Sydney Metro and its contractors are aware of their statutory obligations under relevant legislation and that appropriate control measures are in place to ensure that unexpected heritage items are appropriately managed during construction. Contractors/Alliances will need to ensure that they undertake their own due diligence to identify any other legislative requirements that may apply for a given project.

Table 1 Legislation and guidelines for management of unexpected heritage finds

Relevant Requirement	Objectives and offences
Environmental Planning and Assessment Act 1979 (EP&A Act)	Section 115ZB Giving of approval by Minister to carry out a project.
Environmental Planning and Assessment Act 1979 (EP&A Act)	Requires heritage to be considered within the environmental impact assessment of projects. This guideline is based on the premise that an appropriate level of Aboriginal and non-Aboriginal cultural heritage assessment and investigations and mitigation have already been undertaken under the relevant legislation, including the EP&A Act, during the assessment and determination process. It also assumes that appropriate mitigation measures have been included in the conditions of any approval.
***Heritage Act 1977* (Heritage Act)**	The Heritage Act provides for the care, protection and management of heritage items in NSW. Under section 139, it is an offence to disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed, unless the disturbance or excavation is carried out in accordance with an excavation permit issued by the Heritage Division of the OEH. Under the Act, a relic is defined as: *'any deposit, artefact, object or material evidence that: (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and (b) is of State or local heritage significance.'* A person must notify the Heritage Division of OEH, if a person is aware or believes that they have discovered or located a relic (section 146). Penalties for offences under the Heritage Act can include six months imprisonment and/or a fine of up to $1.1million.

Relevant Requirement	Objectives and offences
***National Parks and Wildlife Act 1974* (NPW Act)**	The NPW Act provides the basis for the care, protection and management of Aboriginal objects and places in NSW. An Aboriginal object is defined as: *'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains'*. An 'Aboriginal place' is an area declared by the Minister administering the Act to be of special significance with respect to Aboriginal culture. An Aboriginal place does not have to contain physical evidence of occupation (such as Aboriginal objects). Under section 87 of the Act, it is an offence to harm or desecrate an Aboriginal object or place. There are strict liability offences. An offence cannot be upheld where the harm or desecration was authorised by an AHIP and the permit's conditions were not contravened. Defences and exemptions to the offence of harming an Aboriginal object or Aboriginal place are provided in section 87, 87A and 87B of the Act. A person must notify OEH if a person is aware of the location of an Aboriginal object. Penalties for some of the offences can include two years imprisonment and/or up to $550,000 (for individuals), and a maximum penalty of $1.1 million (for corporations).

6. Unexpected heritage finds protocol

6.1. What is an unexpected heritage find?

An 'unexpected heritage find' can be defined as any unanticipated archaeological discovery that has not been identified during a previous assessment or is not covered by an existing permit under the Heritage Act. The find may have potential cultural heritage value, which may require some type of statutory cultural heritage permit or notification if any interference of the heritage item is proposed or anticipated.

The range of potential archaeological discoveries can include but are not limited to:

- remains of rail infrastructure including buildings, footings, stations, signal boxes, rail lines, bridges and culverts
- remains of other infrastructure including sandstone or brick buildings, wells, cisterns, drainage services, conduits, old kerbing and pavement, former road surfaces, timber and stone culverts, bridge footings and retaining walls
- artefact scatters including clustering of broken and complete bottles, glass, ceramics, animal bones and clay pipes
- Archaeological human skeletal remains.

6.2. Managing unexpected heritage finds

In the event that an unexpected heritage find (the find) is encountered on a Sydney Metro site, the flowchart in Figure 1 must be followed. There are eight steps in the procedure. These steps are summarised in Figure 1 and explained in detail in Table 2.

Figure 1 Overview of steps to be undertaken on the discovery of an unexpected heritage item

IMPORTANT!

Sydney Metro may have approval to impact on certain heritage items during construction. If you think that you may have discovered a heritage item and you are unsure whether an approval is in place or not, **STOP** works and follow this procedure.

Table 2 Specific tasks to be implemented following the discovery of an unexpected heritage item

Step	Task	Responsibility	Guidance and tools
1	**Stop work, protect item and inform the Excavation Director**		
1.1	Stop all work in the immediate area of the item and notify the Project Manager	Contractor/ Supervisor	**Appendix 1** (Identifying Unexpected Heritage items)
1.2	Establish a 'no-go zone' around the item. Use high visibility fencing, where practical. No work is to be undertaken within this zone until further investigations are completed and, if required, appropriate approvals are obtained. Inform all site personnel about the no-go zone.	Project Manager/ Contractor/ Supervisor	
1.3	Inspect, document and photograph the item.	Archaeologist and or Excavation Director	**Appendix 2** (Unexpected Heritage Item Recording Form) **Appendix 3** (Photographing Unexpected Heritage items)
1.4	Is the item likely to be bone? If **yes**, follow the steps in Appendix 4 – 'Uncovering bones'. Where it is obvious that the bones are human remains, you must notify the local police by telephone immediately. They may take command of all or part of the site. Also refer to the Sydney Metro Exhumation Management Plan If **no**, proceed to next step.	Excavation Director	**Appendix 4** (Uncovering Bones)

Step	Task	Responsibility	Guidance and tools
1.5	Inform the Excavation Director of the item and provide as much information as possible, including photos and completed form (**Appendix 2**). Where the project has a Sydney Metro Environmental Manager, the Environmental Manager should be involved in the tasks/process.	Contractors Project Manager	
1.6	Can the works avoid further disturbance to the item? Project Manager to confirm with Sydney Metros Environment Manager. Complete the remaining tasks in Step 1.	Contractors Project Manager	
1.7	Excavation Director and Sydney Metro Environmental Manager to advise the Project Manager whether Sydney Metro has approval to impact on the 'item'. Does Sydney Metro have an approval or permit to impact on the item? If **yes**, work may recommence in accordance with that approval or permit. There is no further requirement to follow this procedure. If **no**, continue to next step.	Contractors Project Manager	
1.8	Has the 'find' been damaged or harmed? If **yes**, record the incident in the Incident Management System Implement any additional reporting requirements related to the planning approval and CEMP, where relevant.	Contractors Project Manager, Excavation Director	
2	**Contact and engage an archaeologist and/or an Aboriginal heritage consultant**		
2.1	If an archaeologist and/or Aboriginal heritage consultant has been previously appointed for the project, contact them to discuss the location and extent of the item and arrange a site inspection, if required. The project CEMP may contain contact details of the archaeologist/Aboriginal heritage consultant. Where there is no project archaeologist engaged for the works engage a suitably qualified consultant to assess the find: if the find is a non-Aboriginal deposit, engage a suitably qualified and experienced archaeological consultant if the find is likely to be an Aboriginal object, engage an Aboriginal heritage consultant to assess the find.	Contractors Project Manager, Excavation Director	
2.2	If requested, provide photographs of the item taken during Step 1.3 to the archaeologist or Aboriginal heritage consultant.	Contractors Project Manager, Excavation Director	**Appendix 3** (Photographing Unexpected Heritage items)

Step	Task	Responsibility	Guidance and tools
3	**Preliminary assessment and recording of the find**		
3.1	In a minority of cases, the archaeologist/Aboriginal heritage consultant may determine from the photographs that no site inspection is required because no heritage constraint exists for the project (*e.g. the item is not a 'relic', a 'heritage item' or an 'Aboriginal object'*). Any such advice should be provided in writing (e.g. via email or letter with the consultant's name and company details clearly identifiable) to the Sydney Metro Project Manager.	Archaeologist/ Aboriginal heritage consultant/ , Excavation Director	Proceed to Step 8
3.2	Arrange site access for the archaeologist/Aboriginal heritage consultant to inspect the item as soon as practicable. In the majority of cases a site inspection is required to conduct a preliminary assessment.	Contractors Project Manager, Excavation Director	
3.3	Subject to the archaeologist/Aboriginal heritage consultant's assessment, work may recommence at a set distance from the item. This is to protect any other archaeological material that may exist in the vicinity, which may have not yet been uncovered. Existing protective fencing established in Step 1.2 may need to be adjusted to reflect the extent of the newly assessed protective area. No works are to take place within this area once established.	Archaeologist/ Aboriginal heritage consultant Contractors Project Manager, Excavation Director	
3.4	The archaeologist/Aboriginal heritage consultant may provide advice after the site inspection and preliminary assessment that no heritage constraint exists for the project (e.g. the item is not a '*relic*' or a '*heritage item'* or an '*aboriginal item'*. Any such advice should be provided in writing (e.g. via email or letter with the consultant's name and company details clearly identifiable) to the Metro Project Manager. Note that : a relic is evidence of past human activity which has local or State heritage significance. It may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse an Aboriginal object may include a shell midden, stone tools, bones, rock art or a scarred tree a "work", building or standing structure may include tram or train tracks, kerbing, historic road pavement, fences, sheds or building foundations.	Archaeologist/ Aboriginal heritage consultant/ Contractors Project Manager, Excavation Director	Proceed to Step 8 Refer to **Appendix 1** (Identifying heritage items)

Step	Task	Responsibility	Guidance and tools
3.5	Where required, seek additional specialist technical advice (such as a forensic or physical anthropologist to identify skeletal remains). The archaeologist/Aboriginal heritage consultant can provide contacts for such specialist consultants.	Excavation Director Archaeologist	
3.6	Where the item has been identified as a 'relic' or 'heritage item' or an 'Aboriginal object' the archaeologist should formally record the item.	Archaeologist/ Aboriginal heritage consultant	
3.7	OEH (Heritage Division for non-Aboriginal relics and Planning and Aboriginal Heritage Section for Aboriginal objects) can be notified informally by telephone at this stage by the Sydney Metro Environmental Manager Any verbal conversations with regulators must be noted on the project file for future reference.	Contractors Project Manager, Excavation Director	
4	**Section 4 not used**		
5	**Notify the regulator, if required.**		
5.1	Based on the findings of the archaeological or heritage management plan and corresponding legislative requirements, is the find required to be notified to OEH and the Secretary? If **no**, proceed directly to Step 6 If **yes**, proceed to next step.	Sydney Metro Environmental Manager Excavation Director	
5.2	If notification is required, complete the template notification letter, including the archaeological/heritage management plan and other relevant supporting information and forward to the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) for signature.	Sydney Metro Environmental Manager Excavation Director	**Appendix 6** (Template Notification Letter)
5.3	Forward the signed notification letter to OEH and the Secretary. Informal notification (via a phone call or email) to OEH prior to sending the letter is appropriate. The archaeological or heritage management plan and the completed site recording form (Appendix 2) must be submitted with the notification letter (for both Aboriginal objects and non-Aboriginal relics). For Part 5.1 projects, the Department of Planning and Environment must also be notified.		

Step	Task	Responsibility	Guidance and tools
5.4	A copy of the final signed notification letter, archaeological or heritage management plan and the site recording form is to be kept on file and a copy sent to the Sydney Metro Project Manager.	Contractors Project Manager, Excavation Director	
6	**Implement archaeological or heritage management plan**		
6.1	Modify the archaeological or heritage management plan to take into account any additional advice resulting from notification and discussions with OEH.	Contractors Project Manager, Excavation Director	
6.2	Implement the archaeological or heritage management plan. Where impact is expected, this may include a formal assessment of significance and heritage impact assessment, preparation of excavation or recording methodologies, consultation with Registered Aboriginal Parties, obtaining heritage approvals etc., if required.	Contractors Project Manager, Excavation Director	
6.3	Where heritage approval is required contact the Sydney Metro Environment Manager for further advice and support material. Please note there are time constraints associated with heritage approval preparation and processing.	Contractors Project Manager, Excavation Director	
6.4	Assess whether heritage impact is consistent with the project approval or if project approval modification is required from the Department of Planning and Environment.	, Excavation Director/Sydney Metro Environmental Manager	
6.5	Where statutory approvals (or project approval modification) are required, impact upon relics and/or Aboriginal objects must not occur until heritage approvals are issued by the appropriate regulator.	Contractors Project Manager, Excavation Director	
6.6	Where statutory approval is not required but where recording is recommended by the archaeologist/Aboriginal heritage consultant, sufficient time must be allowed for this to occur.	Contractors Project Manager, Excavation Director	
6.7	Ensure short term and permanent storage locations are identified for archaeological material or other heritage material removed from site, where required. Interested third parties (e.g. museums, local Aboriginal land councils, or local councils) should be consulted on this issue. Contact the archaeologist or Aboriginal heritage consultant for advice on this matter, if required.	Contractors Project Manager, Excavation Director	
7	**Section 7 Not Used**		

Step	Task	Responsibility	Guidance and tools
8	**Resume work**		
8.1	Seek written clearance to resume project work from the project Excavation Director/Archaeologist/Aboriginal heritage consultant. Clearance would only be given once all archaeological excavation and/or heritage recommendations and approvals (where required) are complete. Resumption of project work must be in accordance with the all relevant project/heritage approvals/determinations.	Contractors Project Manager, Excavation Director	
8.2	If required, ensure archaeological excavation/heritage reporting and other heritage approval conditions are completed in the required timeframes. This includes artefact retention repositories, conservation and/or disposal strategies.	Contractors Project Manager, Excavation Director	
8.3	Deleted		
8.4	If additional unexpected items are discovered this procedure must begin again from Step 1.	All	

7. Responsibilities

Table 3 Roles and Responsibilities

Role	Responsibility or role under this guideline
Contractor / Supervisor	Stop work immediately when an unexpected heritage find is encountered. Cordon off area until Environmental Manager /Excavation Director advises that work can recommence.
Contractor or Environment Manager	Manage the process of identifying, protecting and mitigating impacts on the 'find'. Liaise with Sydney Metro Project Manager and Environment Manager and assist the archaeologist/Aboriginal heritage consultant with mitigation and regulatory requirements. Complete Incident Report and review CEMP for any changes required. Propose amendments to the CEMP if any changes are required.
Contractor's or Project Heritage Advisor or Consultant	Provide expert advice to the Sydney Metro Environment Manager on 'find' identification, significance, mitigation, legislative procedures and regulatory requirements.
Environmental Representative	Independent environmental advisor engaged by Sydney Metro Ensures compliance with relevant approvals (new and existing).
Heritage Division of OEH	Regulate the care, protection and management of relics (non-Aboriginal heritage). Delegated authority for Heritage Council Issue excavation permits.

Role	Responsibility or role under this guideline
Registered Aboriginal Parties (RAPs)	Aboriginal people who have registered with Sydney Metro to be consulted about a proposed project or activity in accordance with the OEH *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.
Sydney Metro Environment Manager	Notify the Sydney Metro Principal Manager, Environmental Management of 'find' and manage Incident Reporting once completed by Environmental Manager.
Contractors Project Manager	Ensures all aspects of this procedure are implemented. Advise Contractor / Supervisor to recommence work if all applicable requirements have been satisfied and the Excavation Director /Project Archaeologist has approved recommend of work.

8. Seeking Advice

Advice on this procedure should be sought from the Sydney Metro Environment a Manager in the first instance. Contractors and alliance partners should ensure their own project environment managers are aware of and understand this procedure.
Technical archaeological or heritage advice regarding an unexpected heritage item should be sought from a suitably qualified and experienced archaeologist/Aboriginal heritage consultant.

9. Related documents and references

- Environmental Incident Classification and Reporting – 9TP-PR-105
- Guide to Environmental Control Map – 3TP-SD-015
- NSW Heritage Office (1998), *Skeletal remains: guidelines for the management of human skeletal remains.*
- Roads and Maritime Services (2015), *Standard Management Procedure Unexpected Heritage Items.*
- Department of Environment and Conservation NSW (2006), *Manual for the identification of Aboriginal remains.*
- Sydney Metro Exhumation Management Plan

10. List of appendices

The following appendices are included to support this procedure:

Appendix 1: Examples of finds encountered during construction works
Appendix 2: Unexpected Heritage Item Recording Form
Appendix 3: Photographing Unexpected Heritage Items
Appendix 4: Uncovering Bones
Appendix 5: Archaeological Advice Checklist
Appendix 6: Template Notification Letter

11. Document history

Version	Date of approval	Notes
1.1		Incorporates ER comments 21/06/17
1.2		Amends p13 step 8 reference to s146 added
1.3		Incorporates Planning Mods 1-4 including amended CoA E20
1.4		Incorporates ER comments 21/03/18
2.0		Removes SSI 15-7400 COA reference

Appendix 1: Examples of finds encountered during construction works

Photo 1 - Aboriginal artefacts found at the Wickham Transport Interchange, 2015

Photo 2 – Aboriginal artefacts (shell material) found at the Wickham Transport Interchange, 2015

Photo 3 1840s seawall and 1880s retaining wall uncovered at Balmain East, 2016

Photo 4 Sandstone pavers uncovered at Balmain East, 2016

Photo 5 - Platform structure at Hamilton Railway Station classified as a 'work' by the project archaeologist - Wickham Transport Interchange project, 2015

Photo 6 - Platform structure at Hamilton Railway Station classified as a 'work' by the project archaeologist - Wickham Transport Interchange project, 2015

Photo 7 - Sandstone flagging and cesspit - Wynyard Walk project, 2014

Photo 8 - Chinese Ming Dynasty pottery and English porcelain/pottery dating back to early 19th century - Wynyard Walk project, 2014

Photo 9 - Pottery made by convict potter Thomas Ball during the early settlement - Wynyard Walk project, 2014

The following images, obtained from the Roads and Maritime Services' *Standard Management Procedure for Unexpected Heritage items 2015,* can be used to assist in the preliminary identification of potential unexpected items during construction and maintenance works.

Photo 10 - Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); Linear archaeological feature with post holes (Hume Highway Duplication), Animal bones (Hume Highway Bypass at Woomargama); Cut wooden stake; Glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area) (RMS, 2015).

Photo 11 - Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); Linear archaeological feature with post holes (Hume Highway Duplication), Animal bones (Hume Highway Bypass at Woomargama); Cut wooden stake; Glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area) (RMS, 2015).

Appendix 2 - Unexpected heritage item recording form

Example of unexpected heritage item recording form:

This form is to be completed Excavation Director on the discovery of an archaeological heritage item during construction or maintenance works			
Date:		**Recorded by:** (include name and position)	
Project name:			
Description of works being undertaken:			
Description of exact location of item			
Description of item found *(What type of item is it likely to be? Tick the relevant boxes).*			
A. A relic	☐	A 'relic' is evidence of a past human activity relating to the settlement of NSW with local or state heritage significance. A relic might include bottle, utensils, plates, cups, household items, tools, implements, and similar items	
B. A 'work', building or structure'	☐	A 'work' can generally be defined as a form infrastructure such as track or rail tracks, timber sleepers, a culvert, road base, a bridge pier, kerbing, and similar items	
C. An Aboriginal object	☐	An 'Aboriginal object' may include stone tools, stone flakes, shell middens, rock art, scarred trees and human bones	
D. Bone	☐	Bones can either be human or animal remains. **Remember that you must contact the local police immediately by telephone if you are certain that the bone(s) are human remains.**	
E. Other	☐		
Provide a short description of the item *(E.g. metal rail tracks running parallel to the rail corridor. Good condition. Tracks set in concrete, approximately 10 cm below the current ground surface).*			

Sketch *(Provide a sketch of the item's general location in relation to other road features so its approximate location can be mapped without having to re-excavate it. In addition, please include details of the location and direction of any photographs of the item taken)*			
Action taken (Tick either A *or* B)			
A. Unexpected item **would not** be further impacts on by the works	☐	**Describe how works would avoid impact on the item.** *(E.g. the rail tracks would be left in situ and recovered with paving).*	
B. Unexpected item would be further impacted by the works	☐	**Describe how works would impact on the item**. *(E.g. milling is required to be continued to a depth of 200 mm depth to ensure the pavement requirements are met. Rail tracks would need to be removed.)*	
Excavation Director		Signature	
		Signature	

Important

It is a statutory offence to disturb Aboriginal objects and historic relics (including human remains) without an approval. All works affecting objects and relics must cease until an approval is sought.

Approvals may also be required to impact on certain works.

Appendix 3 - Photographing unexpected heritage items

Photographs of unexpected items in their current context (*in situ*) may assist archaeologists/Aboriginal heritage consultants to better identify the heritage values of the item. Emailing good quality photographs to specialists can allow for better quality and faster heritage advice. The key elements that must be captured in photographs of the item include its position, the item itself and any distinguishing features. All photographs must have a scale (ruler, scale bar, mobile phone, coin etc.) and a note describing the direction of the photograph.

Context and detailed photographs

It is important to take a general photograph (Figure 1) to convey the location and setting of the item. This will add value to the subsequent detailed photographs also required (Figure 2).

Removal of the item from its context (e.g. excavating from the ground) for photographic purposes is not permitted.

Figure 2: Close up detail of the sandstone surface showing material type, formation and construction detail. This is essential for establishing date of the feature.

Figure 1: Telford road uncovered on the Great Western Highway (Leura) in 2008 (RMS, 2015).

Photographing distinguishing features

Where unexpected items have a distinguishing feature, close up detailed photographs must be taken of these features, where practicable. In the case of a building or bridge, this may include diagnostic details architectural or technical features. See Figures 3 and 4 for examples.

Figure 3: Ceramic bottle artefact with stamp.

Figure 4: Detail of the stamp allows '*Tooth & Co Limited*' to be made out. This is helpful to a specialist in gauging the artefact's origin, manufacturing date and likely significance.

Photographing bones

The majority of bones found on site will those of be recently deceased animal bones often requiring no further assessment (unless they are in archaeological context). However, if bones are human, the police must be contacted immediately (see Appendix 6 for detailed guidance). Taking quality photographs of the bones can often resolve this issue quickly. The project archaeologist can confirm if bones are human or non-human if provided with appropriate photographs.

Ensure that photographs of bones are not concealed by foliage (Figure 5) as this makes it difficult to identify. Minor hand removal of foliage can be undertaken as long as disturbance of the bone does not occur. Excavation of the ground to remove bone(s) should not occur, nor should they be pulled out of the ground if partially exposed.

Where sediment (adhering to a bone found on the ground surface) conceals portions of a bone (Figure 6) ensure the photograph is taken of the bone (if any) that is not concealed by sediment.

Figure 5: Bone concealed by foliage.

Figure 6: Bone covered in sediment

Ensure that all close up photographs include the whole bone and then specific details of the bone (especially the ends of long bones, the *epiphysis*, which is critical for species identification). Figures 7 and 8 are examples of good photographs of bones that can easily

be identified from the photograph alone. They show sufficient detail of the complete bone and the epiphysis.

Figure 7: Photograph showing complete bone.

Figure 8: Close up of a long bone's epiphysis.

Appendix 4 - Uncovering bones

This appendix provides advice regarding:

- what to do on first discovering bones
- the range of human skeletal notification pathways
- additional considerations and requirements when managing the discovery of human remains.

1. First uncovering bones

Refer to the Sydney Metro Exhumation Management Plan

Stop all work in the vicinity of the find. All bones uncovered during project works should be **treated with care and urgency** as they have the potential to be human remains. The bones must be identified as either human or non-human as soon as possible by a qualified forensic or physical anthropologist.

On the very rare occasion where it is immediately obvious from the remains that they are human, the Project Manager (or a delegate) should **inform the police by telephone** prior to seeking specialist advice. It will be obvious that it is human skeletal remains where there is no doubt, as demonstrated by the example in Figure 1[9]. Often skeletal elements in isolation (such as a skull) can also clearly be identified as human. Note it may also be obvious that human remains have been uncovered when soft tissue and/or clothing are present.

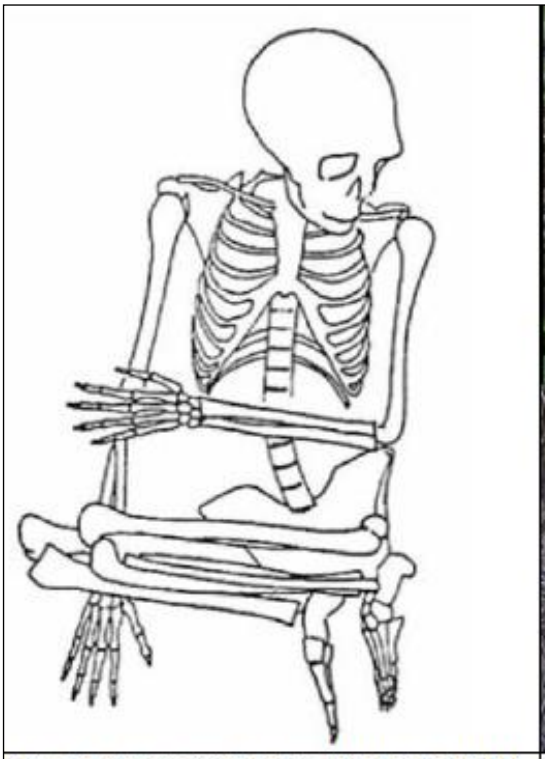

Figure 1: Schematic of a complete skeleton that is 'obviously' human[12].

Figure 2: Disarticulated bones that require assessment to determine species.

[9] After Department of Environment and Conservation NSW (2006), *Manual for the identification of Aboriginal Remains: 17*

This preliminary phone call is to let the police know that a specialist skeletal assessment to determine the approximate date of death which will inform legal jurisdiction. The police may wish to take control of the site at this stage. If not, a forensic or physical anthropologist must be requested to make an on-site assessment of the skeletal remains.

Where it is not immediately obvious that the bones are human (in the majority of cases, illustrated by Figure 2), specialist assessment is required to establish the species of the bones. Photographs of the bones can assist this assessment if they are clear and taken in accordance with guidance provided in Appendix 3. Good photographs often result in the bones being identified by a specialist without requiring a site visit; noting they are nearly always non-human. In these cases, non-human skeletal remains must be treated like any other unexpected archaeological find.

If the bones are identified as human (either by photographs or an on-site inspection) a technical specialist must determine the likely ancestry (Aboriginal or non-Aboriginal) and burial context (archaeological or forensic). This assessment is required to identify the legal regulator of the human remains so **urgent notification** (as below) can occur.

Preliminary telephone or verbal notification by the archaeologist to the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) is appropriate. This must be followed up later by a formal letter notification to the relevant regulator when a management plan has been developed and agreed to by the relevant parties.

2. Range of human skeletal notification pathways

The following is a summary of the different notification pathways required for human skeletal remains depending on the preliminary skeletal assessment of ancestry and burial context.

A. Human bones are from a recently deceased person (less than 100 years old).

Action
A police officer must be notified immediately as per the obligations to report a death or suspected death under s35 of the *Coroners Act 2009* (NSW). It should be assumed the police will then take command of the site until otherwise directed.

B. Human bones are archaeological in nature (more than 100 years old) and are likely to be *Aboriginal* remains.

Action
The OEH (Planning and Aboriginal Heritage Section) must be notified immediately. The Aboriginal Cultural Heritage Advisor must contact and inform the relevant Aboriginal community stakeholders who may request to be present on site.

C. Human bones are archaeological in nature (more than 100 years old) and likely to be non-Aboriginal remains.

Action
The OEH (Heritage Division) must be notified immediately

Figure 3 summarises the notification pathways on finding bones.

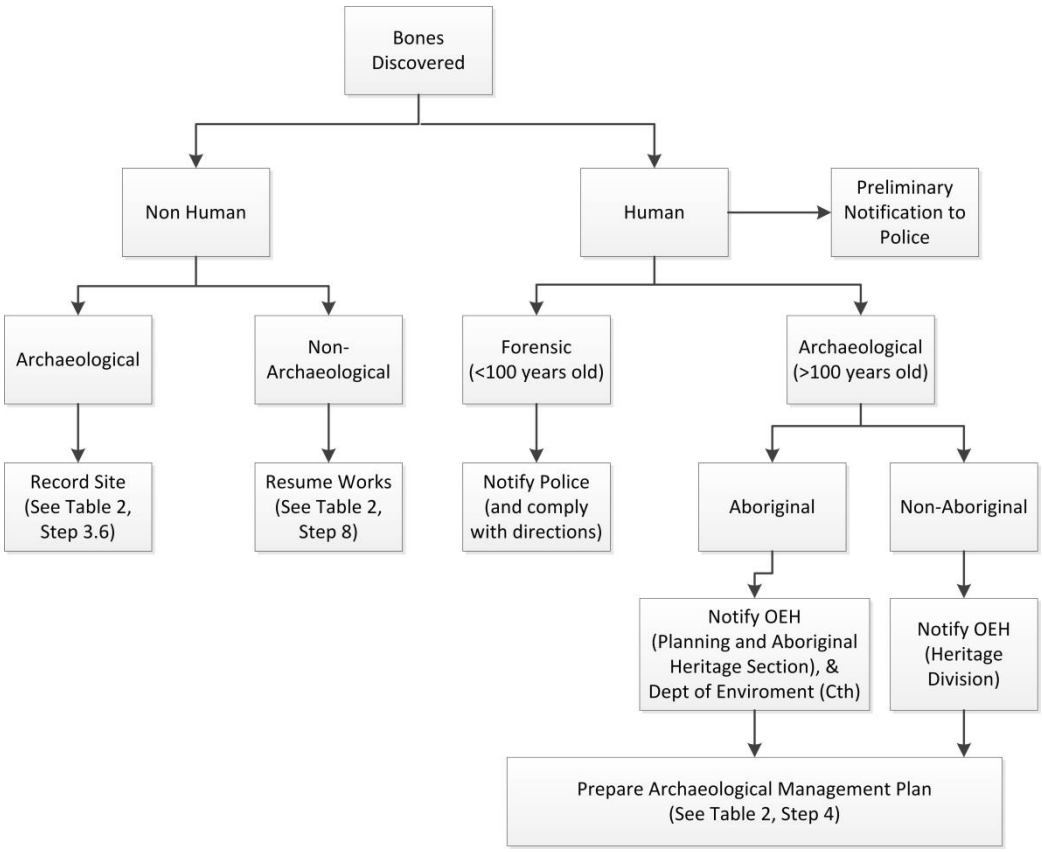

Figure 3 Overview of steps to be undertaken on the discovery of bones

After the appropriate verbal notifications (as described in 2B and 2C above), the Project Manager must proceed through the *Unexpected Heritage Items Exhumation Management Plan* (Step 4). It is noted that no *Exhumation Management Plan* is required for forensic cases (2A), as all future management is a police matter. Non-human skeletal remains must be treated like any other unexpected archaeological find and so must proceed to record the find as per Step 3.6.

3. Additional considerations and requirements

Uncovering archaeological human remains must be managed intensively and needs to consider a number of additional specific issues. These issues might include facilitating culturally appropriate processes when dealing with Aboriginal remains (such as repatriation and cultural ceremonies). Project Managers may need to consider overnight site security of any exposed remains and may need to manage the onsite attendance of a number of different external stakeholders during assessment and/or investigation of remains.

Project Managers may also be advised to liaise with local church/religious groups and the media to manage community issues arising from the find. Additional investigations may be required to identify living descendants, particularly if the remains are to be removed and relocated.

If exhumation of the remains (from a formal burial or a vault) is required, Project Managers should also be aware of additional approval requirements under the *Public Health Act 1991* (NSW). Specifically, Sydney Metro may be required to apply to the Director General of NSW

Department of Health for approval to exhume human remains as per Clause 26 of the *Public Health (Disposal of Bodies) Regulation 2002* (NSW)[10].

Further, the exhumation of such remains needs to consider health risks such as infectious disease control, exhumation procedures and reburial approval and registration. Further guidance on this matter can be found at the NSW Department of Health website.

In addition, due to the potential significant statutory and common law controls and prohibitions associated with interfering with a public cemetery, project teams are advised, when works uncover human remains adjacent to cemeteries, to confirm the cemetery's exact boundaries.

[10] This requirement is in addition to heritage approvals under the *Heritage Act 1977.*

Appendix 5 - Archaeological/heritage advice checklist

The archaeologist/Aboriginal heritage consultant must advise the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) of an appropriate archaeological or heritage management plan as soon as possible after an inspection of the site has been completed (see Step 4). An archaeological or heritage management plan can include a range of activities and processes, which differ depending on the find and its significance.

In discussions with the archaeologist/Aboriginal heritage consultant the following checklist can be used as a prompt to ensure all relevant heritage issues are considered when developing this plan. This will allow the project team to receive clear and full advice to move forward quickly. Archaeological and/or heritage advice on how to proceed can be received in a letter or email outlining all relevant archaeological and/or heritage issues.

	Required	Outcome/notes
Assessment and investigation		
• Assessment of significance	Yes/No	
• Assessment of heritage impact	Yes/No	
• Archaeological excavation	Yes/No	
• Archival photographic recording	Yes/No	
Heritage approvals and notifications		
• AHIP, section 140, section 139 exceptions etc.	Yes/No	
• Regulator relics/objects notification	Yes/No	
• Notification to Sydney Trains for s170 heritage conservation register	Yes/No	
• Compliance with CEMP or other project heritage approvals	Yes/No	
Stakeholder consultation		
• Aboriginal stakeholder consultation	Yes/No	
Artefact/heritage item management		
• Retention or conservation strategy (e.g. items may be subject to long conservation and interpretation)	Yes/No	
• Disposal strategy	Yes/No	
• Short term and permanent storage locations (interested third parties should be consulted on this issue).	Yes/No	
• Control Agreement for Aboriginal objects	Yes/No	

Appendix 6 - Template notification letter

Insert on TfNSW letterhead
Select and type date]
[Select and type reference number]

XXX
Manager, Conservation
Heritage Division, Office of Environment and Heritage
Locked Bag 5020
Parramatta NSW 2124

[Select and type salutation and name],

Re: Unexpected heritage item discovered during Sydney Metro activities.

I write to inform you of an unexpected [select: relic, heritage item or Aboriginal object] found during Sydney Infrastructure and Services construction works at [insert location] on [insert date] in accordance with the notification requirement under select: section 146 of the *Heritage Act 1977* (NSW). [Where the regulator has been informally notified at an earlier date by telephone, this should be referred to here].

NB: On finding Aboriginal human skeletal remains this letter must also be sent to the Commonwealth Minister for the Environment in accordance with notification requirements under section 20(1) of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Commonwealth).

[Provide a brief overview of the project background and project area. Provide a summary of the description and location of the item, including a map and image where possible. Also include how the project was assessed under the *Environmental Planning and Assessment Act 1979* (NSW) (e.g. Part 5). Also include any project approval number, if available].

Sydney Metro [*or contractor*] has sought professional archaeological advice regarding the item. A preliminary assessment indicates [provide a summary description and likely significance of the item]. Please find additional information on the site recording form attached.

Based on the preliminary findings, Sydney Metro *[or contractor]* is proposing [provide a summary of the proposed archaeological/heritage approach (e.g. develop archaeological research design (where relevant), seek heritage approvals, undertake archaeological investigation or conservation/interpretation strategy). Also include preliminary justification of such heritage impact with regard to project design constraints and delivery program].

The proposed approach will be further developed in consultation with a nominated Office of Environment and Heritage staff member.

Should you have any feedback on the proposed approach, or if you require any further information, please do not hesitate to contact [Environment and Planning Project Manager] on (02) XXXX XXXX.

Yours sincerely

[Sender name]

Sydney Metro Principal Manager Sustainability Environment and Planning (Program) [Attach the archaeological/heritage management plan and site recording form]