

Liverpool Civic Place - Early Works DA Submission

Construction Management Plan

Prepared for: Built Development Group Pty Ltd

Attention: Barry Teeling

Date: 24 April 2020

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Ref: 43144-1

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WOOD & GRIEVE ENGINEERS

NOW PART OF



Revision

Revision	Date	Comment	Prepared By	Approved By
A	19.11.19	Draft for Comment	GYD	IAH
B	26.11.19	Issued for Approval	GYD	IAH
C	27.11.19	Issued for Approval	GYD	IAH
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1. Introduction

1.1 Purpose

This Construction Management Plan has been prepared for the purpose of early works development approval submission and describes how the Project Management team shall implement and conduct its allocated site management responsibilities during the Basement Works phase of the Liverpool Civic Place Project.

The fundamental aim of this plan is to ensure all works are properly facilitated, integrated and coordinated so as to deliver certainty to the objectives of the project.

1.2 CMP Implementation

This CMP will guide the project managers, contract superintendents and contractors responsible for the construction of the proposed works. It is expected that the following receipt of the development approval conditions, the CMP will be amended to be aligned with the approval conditions and submitted to the certifying authority prior to commencement of the works.

1.3 Limitations

This CMP has been prepared to provide a general understanding of construction activities for delivering the works, based on the initial concepts and preliminary site assessments.

Following Development Approval and receipt of conditions, the CMP will be reviewed and revised to incorporate the detailed design, including appropriate arrangements for detailed Construction, Environmental and Construction Management Plans by the relevant head contractors.

1.4 Proposed Works

The proposed works associated with this application include:

- Site Demolition and removal of demolition material;
- Basement Piling;
- Excavation Works;



2. Project Context

This Construction Management Plan is submitted to Liverpool City Council (Council) in support of a Development Application (DA) for site preparation and early works at 52 Scott Street, Liverpool (the site) also known as the Liverpool Civic Place site. Specifically, the DA seeks approval for:

- Public utility relocation works;
- Demolition of all existing structures and site improvements; and
- Bulk earth works to a depth of RL 10.35m AHD including shoring through the use of piles.

The proposal relates to the broader Liverpool Civic Place site redevelopment plan which is detailed within the Concept DA (DA/485/2019) submitted to Council on 17 September 2019. Specifically, the Concept Proposal seeks approval for various uses within proposed building envelopes, including:

- A building envelope with a maximum height of RL 43.45 for the purpose of an information and education facility (public library) use.
- A building envelope with a maximum height of RL 84.25 for the purpose of a public administration building use, and either (or a combination of) commercial premises or child-care centre uses.
- A building envelope with a maximum height of RL 118.85 which will accommodate either (or a combination of) commercial premises, educational establishments, tourist and visitor accommodation or boarding house (student accommodation) uses.
- A landscaping and public domain concept including the provision of a public through-site link running north to south through the site, connecting Scott Street to the north through to Terminus Street to the south; and
- A building envelope for a three-level shared basement car park across the entire site to accommodate parking for all future uses (approximately 413 spaces, to be determined as part of future detailed DAs) and accommodating a public car park to be owned by Council.

The detailed design of the Liverpool Civic Place will be subject of separate Stage 2 DA(s). The benefits of this approach would allow the expedited local assessment and determination of an application for these additional 'early works', which are key to ensuring the development can be delivered in a timely manner.





Figure 1: Indicative Photomontage of the Concept Proposal

Source: FJMT



2.1 Site Analysis

2.1.1 Site Location and Context

The Liverpool Civic Place site is located at 52 Scott Street and 306-310 Macquarie Street, Liverpool within the Liverpool City Council Local Government Area. However, the site to which the proposed works will occur, does not include the site at 306-310 Macquarie Street.

The site is located approximately 300m south west of Liverpool Railway Station and is also in the vicinity of a number of regionally significant land uses and features including Liverpool Hospital, Westfield Liverpool, Western Sydney University Liverpool Campus, the Georges River and Biggie Park public open space as illustrated at

Figure 2 below.

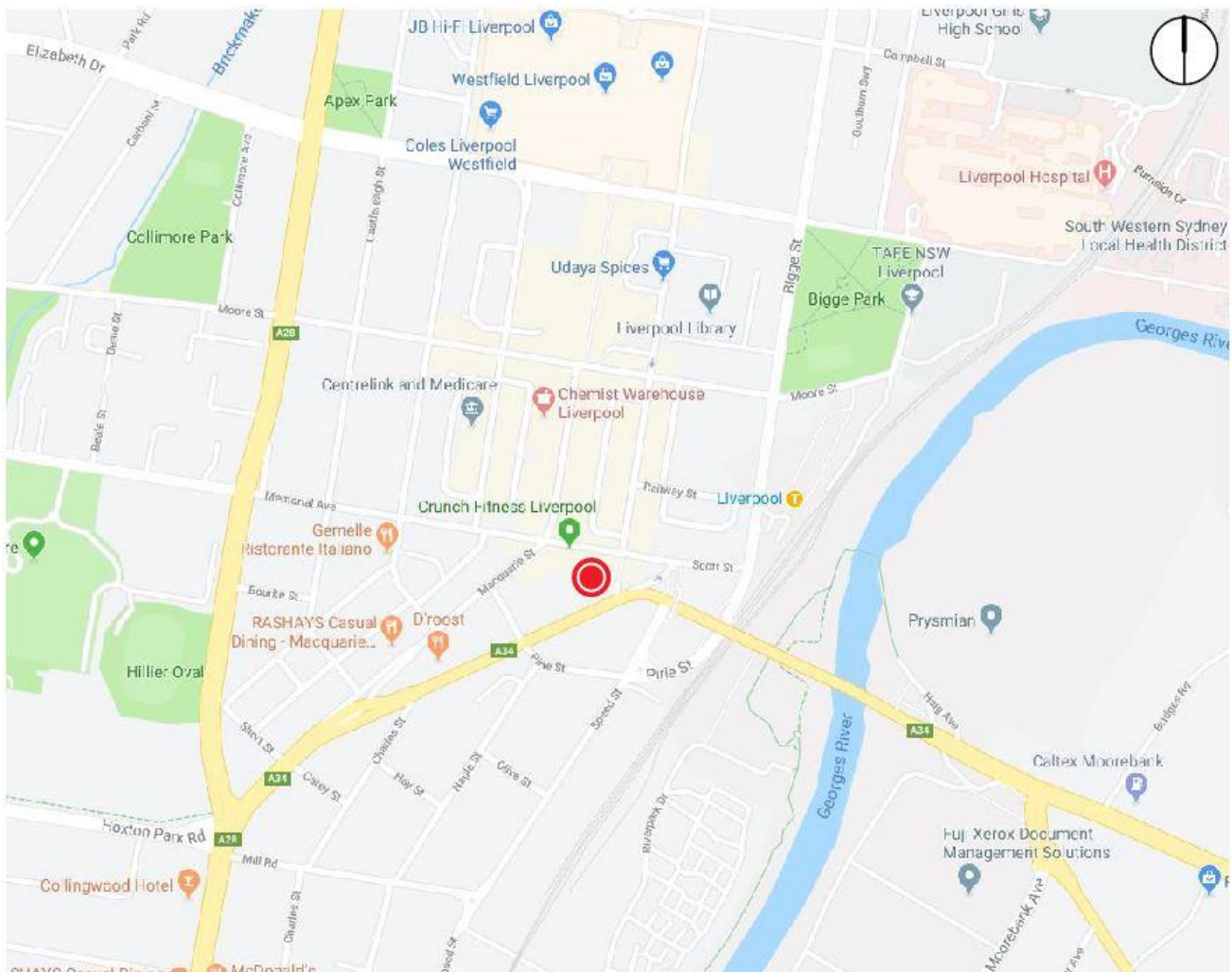


Figure 2: Site Location

Source: Google Maps and Ethos Urban



2.2 Site Description

This site is irregular in shape and is comprised of 11 lots, legally described below:

- Lot 1 in DP 514817;
- Lot 2 in DP 229979;
- Lot 17 in DP 81842;
- Lot 3 in DP 229979;
- Lot 11 in DP 522284;
- Lot 100 in DP 877435;
- Lot 12 in DP 657056;
- Lot 1 in DP 507070;
- Lot 22 in DP 441010;
- Lot 23 in DP 441010; and
- Lot 1 in DP 229979.

The site has a total area of 7190.4m² and has three primary road frontages including a primary frontage to Scott Street (98m frontage) to the north, George Lane (40m frontage) to the east and Terminus Street (115m frontage) to the south. An aerial photo of the site is shown in **Figure 3** below.

A Site Survey has been prepared and this illustrates that the site slopes to north with a fall of approximately 3.5m from its Terminus Street frontage (RL 25.95) to its Scott Street frontage (RL 22.74). The site is largely free of vegetation, with scattered grass cover present within the eastern vacant lots and street trees lining the Terminus Street boundary.

The site is largely occupied by a two-storey commercial building with a large frontage to Scott Street (**Figure 4** and **Figure 5**). The commercial building is provided with an above ground car parking structure at the rear with a frontage to Terminus Street (**Figure 6**). The eastern portion of the site is occupied by a two storey retail building (**Figure 7**) with an adjoining car park at the rear (**Figure 8**). The two existing buildings are divided by a central vacant lot.



Figure 3: Site Aerial

Source: Near Maps and Ethos Urban





Figure 4: Commercial building occupying the site as viewed from Scott Street (north east)



Figure 5: Commercial building occupying the site as viewed from Scott Street (north west)



Figure 6: Above ground car parking structure as viewed from Terminus Street (south east)



Figure 7: Commercial building occupying the site as viewed from Scott Street (north east)



Figure 8: Rear car park of the commercial building as viewed from Terminus Street (south east)



2.2.1 Access and Connectivity

Vehicular Access and Parking

The site has three street frontages, with Scott Street and Terminus Street being the primary street frontages. Scott Street functions as a collector road connecting Memorial Avenue through to Bigge Street and is aligned in an east-west direction. Scott Street is a two-way, two lane road within a 12m wide carriageway with no vehicle access points to the site. Terminus Street is a classified RMS road including a two-way, two lane road within a 13m carriageway. The site is currently provided with two left in/left out vehicle access points off Terminus Street (**Figure 9** and **Figure 10**).



Figure 9: Existing development from the south



Figure 10: Existing development from the south east

Pedestrian Access

Scott Street, Terminus Street and Macquarie Street are well-established pedestrian routes, with Liverpool Railway Station and the Liverpool retail precinct to the north being major generators of footfall traffic around the site. The site's eastern boundary fronts the George Street pedestrian access way which links Scott Street to Terminus Street.

2.2.2 Heritage

The subject site does not contain any heritage items nor is it located in a heritage conservation area. The broader Liverpool Civic Place site (Lot 201 DP 1224084, 306-310 Macquarie Street) contains a heritage item, being the Memorial School of Arts building (I99). No site preparation or early works are proposed on this lot. The site is in the vicinity of several heritage items identified within the Liverpool LEP 2008. Notable amongst these heritage items includes:

- I89 – Plan of Town of Liverpool (Early town centre street layout – Hoddle 1827);
- I91 – Commercial Building (formerly Rural bank and State bank);
- I92 – Boer War Memorial, including memorial to Private A.E Smith;
- I93 – Macquarie Monument;
- I94 – Row of 3 palm trees; and
- I109 – Liverpool Fire Station.



2.3 Surrounding Development

The Liverpool CBD is a growing strategic centre within Greater Western Sydney, comprising a true mixed use character. The Liverpool CBD is currently presented with opportunities for renewal and urban transformation which reflects the precinct's strategic positioning between Parramatta as Sydney's Central CBD and the future Badgerys Creek Aerotropolis. The site's immediate surrounding context is outlined below.

North

Development to the north of the site, on the opposite side of Scott Street, includes retail and commercial buildings of two to three storeys, primarily containing retail and commercial uses (**Figure 11**). To the north east, the street block contains higher density commercial and service apartment uses (**Figure 12**). Further north, this development transitions into the Liverpool civic and retail centre bound by Macquarie Street (**Figure 13**) and George Street (**Figure 14**).



Figure 11: Retail and commercial buildings to the north



Figure 12: Higher density development to the north east



Figure 13: Macquarie Street to the north



Figure 14: George Street to the north



East

Development to the east of the site, on the opposite side of the eastern through site link, is a two storey commercial building (**Figure 15**). This building is not listed as a heritage significant item. To the east of this building is a larger two storey commercial building (**Figure 16**), which extends to the Scott Street and Terminus Street intersection. The Georges River and Liverpool Railway Station are a further 300m from the site and effectively mark the eastern boundary of the Liverpool CBD.



Figure 15: Two storey commercial building to the east of the George Street through site link



Figure 16: Two storey commercial building at the intersection of Scott and Terminus Street

South

To the south of the site, and on the opposite side of Terminus Street, is the Telstra Exchange building that has a height of approximately four storeys (**Figure 17**). As well as this, various retail stores front Terminus Street. Further south of the commercial Terminus Street strip the area transitions to a residential character with a number of four to five storey residential flat buildings (**Figure 18**).



Figure 17: Telstra Exchange building and adjoining retail tenancies to the south



Figure 18: Retail and medium density residential uses fronting Terminus Street to the south



West

Immediately to the west includes the heritage listed Memorial Arts Building and surrounding public domain (**Figure 19**). To the rear of this building is a nine-storey mixed use development at 300 Macquarie Street (**Figure 20**). The mixed-use building presents a partial blank party wall to the site at the rear (**Figure 21**) and contains ground floor retail uses which are set back from the Memorial Arts Building and Macquarie Street. This adjoins a consolidation of low scale automotive service tenancies to the west (**Figure 22**).



Figure 19: Memorial Arts Building



Figure 20: Nine storey mixed use residential building to the west



Figure 21: Rear party wall presented to the site



Figure 22: Consolidated automotive service tenancies to the west



2.4 Scope of Works

2.4.1 Demolition

The site currently developed with a number of small scale commercial buildings, a large scale commercial building and associated multistory car park. These buildings will be demolished as part of the works and removed from the site.

2.4.2 Basement Shoring

The basement walls for the future development will be constructed using a piled shoring solution designed by the projects structural engineer. The shoring system will be constructed in works contemplated in this DA submission.

2.4.3 Excavation

Following completion of the piling the basement will be excavated and surplus material removed from site.

2.5 Staging

These works will form the early works portion of the Stage 1+2 works. Stage 1 of the development will include the construction of council assets including a public library, council offices, commercial space, access road and a public domain space along with a three level basement car park. Stage 2 of the development is proposed to include a commercial development and mixed use development.

2.6 Optional Staging of Basement Works

Options to stage the basement works have been investigated with the possibility of the western basement being constructed first and the eastern basement to follow later. The preferred option can be seen in Appendix C.

2.7 Working Hours

The allowable normal work hours for construction activities will be identified in the Development Approval conditions. The intended works hours will be in accordance with the conditions.

The head contractor may wish to seek variations to these working hours and will obtain approval from the relevant authorities as required and provide a formal submission demonstrating that due to the nature of the work being undertaken, or the location of the site, residents in the vicinity of the construction site will not be adversely affected, or due to safety reasons certain specialist works can only be carried out of normal work hours.

2.8 Approvals

A Development Approval is required for the works outlined in Section 1.5 of this document.

It is anticipated that the Development Approval will contain conditions requiring certain reports and payment of fees to be completed, submitted and approved before works can commence. They are likely to be:

- Construction Management Plan
- Environment Management Plans
- Erosion and Sediment Control Plan;
- Waste Management Plan.
- Traffic Management Plan and
- Payment of Long Service Levy and other authority fees.

Typically, head contractors will provide documents addressing the items above, and as conditioned, prior to site establishment for review of the relevant parties.



2.9 Legislative Framework

All activities carried out during the development will comply with the consent conditions, and the relevant provisions of building codes and legislation, namely the Environment Planning and Assessment Act, the Work Health and Safety Act.



3. Management of the Site

3.1 Management Structure

It is expected that the applicant will engage an experienced and proven tier 1 head contractor to deliver the development with use of specialist consultant engineers and trade contractors.

3.2 Responsibilities

Management responsibilities referred to in this CMP are applicable to the design and construction proposed works on the site. Handover of responsibilities to operational managers will occur at the completion of the construction works and commencement of occupation and use.

Head Contractor responsibilities generally apply as follows:

- Liaison with authorities having jurisdiction over the works
- Detail design and construction program issues.
- Carrying out risk assessments, and for setting up and ensuring the implementation of the management system on every project as appropriate;
- Construction site management;
- Appointing, monitoring and administering the progress of the specialist sub -contractor; and
- Complying with the relevant Development Approval conditions.

3.3 Management Systems

The head contractor will have a certified quality system of operation. In particular the system will comprise but not be limited to:

- Planning
- Process control
- Document control
- Monitoring and measurement
- Control of Non conformances
- Corrective and Preventative Actions
- Records
- Internal Audits

3.4 Consultation

The planning and implementation of the proposed construction works will be completed to meet the requirements of the following relevant authorities where applicable:

- Department of Planning (DoP)
- Liverpool City Council (LCC)
- Road and Maritime Services (RMS)
- Sydney Water Corporation (SWC)
- Ausgrid (AUS)
- CASA
- Jemena
- NBN Co
- Telstra
- Work Cover Authority (WCA)
- Department of Water (NSW)
- Other relevant State Agencies



3.4.1 Community Notification

In addition to the public exhibition process as part of the Development Approval process, and any additional consultation undertaken by the applicant if required, it is expected that the head contractor will notify the adjoining properties of commencement of site works.

Further communication proposed will include:

- A contact telephone number, to allow enquiries to be answered and managed early and efficiently as well as providing an avenue for issue identification.
- Letterbox drops providing information to the local residents of any upcoming works.

3.4.2 Complaints

All complaints will be managed and resolved as quickly and efficiently as possible. A set of Complaint Management Protocols and Procedures will be set out in the documentation provided in the letter box drops prior to the commencement of works.

3.5 Health And Safety

3.5.1 General

The construction works will be undertaken in accordance with the WHS Act 2012 and relevant Regulations. As such prior to construction the Head contractor will prepare a Work Health and Safety Plan for the site.

3.5.2 Security

The site will be fenced with appropriate hoarding, with secured access gates manned with trained traffic controllers. During out of hours, the site may be monitored by security.

All visitors to the site will be required to report to the site office and will be appropriately inducted and registered.

Builder identification signage will be displayed indicating the builder's or contact person's name and contact phone number. A contact telephone number will be provided on the sign which will be available 24 hours a day and 7 days per week.

3.5.3 Materials Storage and Unloading

On site storage will be provided on the eastern portion of the site following the demolition of the commercial building. Storage will be provided for the following materials:

- Demolition tools;
- Reinforcement for the piles;
- Pump out equipment for ground water removal.
- Generally unloading and loading activities will be carried out from within the site

3.5.4 Site Accommodation & Access

The site will be bounded by a combination of class A & B hoardings.

It is proposed that class B hoardings will be used to accommodate temporary offices and amenities until such time as appropriate facilities can be located wholly within the site. Secured and manned access to the site will be positioned on both Terminus Street and Scott Street.



3.5.5 Training

All staff and head contractors working on site will be required to have a Work Cover “White Card” accredited construction training card.

Prior to staff and subhead contractors entering site they will be inducted into the site to likely include the following;

- Consideration of Neighbours and Public
- Entry and exit locations
- Location of amenities and ablution facilities
- First aid officer and facilities
- Emergency muster location
- Site plan & important items
- Personnel Protective Equipment (PPE)
- Site specific risks and requirements
- Other WHS matters

3.5.6 Emergency And Incident Response

Prior to commencing works on site the Head contractor will prepare emergency and incident response procedures to ensure that all incidents will be managed and resolved as quickly as possible and with the minimum impact to the human health and the environment.



4. Construction Methodology

4.1 Demolition

All of the existing buildings will be demolished as part of these works to allow for the shoring and excavation of the basement. The existing utilities servicing the site and passing through the site will be removed or relocated prior to the commencement of demolition works. The smaller commercial development to the east of the site will be demolished first to allow the space to be used as site offices and vehicle parking/set down area. Then the larger commercial building will be demolished followed by the car park. The building will be demolished from top down. All spoil from the demolition will be removed from site.

4.2 Piling

Secant piling will be adopted for the shoring solution. The Secant Piles will be adopted as recommended by advice from the project geotechnical engineer and structural engineer. The following methodology will be adopted:

1. A stable piling platform will be prepared prior to piling.
2. The piling rig will then be brought onto site to undertake the piling works.
3. All piling will be undertaken from within the site. The piling rig will auger to bedrock with the spoil being removed from site.
4. Reinforcement cages will then be dropped and the concrete poured.

4.3 Excavation

Following completion of the piling works the basement will be excavated to bulk earthworks level of RL10.35m AHD. Excavation will be undertaken from surface level down. The following methodology will be adopted:

1. Excavators will be brought onto site from Scott Street and will work around the basement extent excavating evenly down to the bulk earthworks level of RL10.35m.
2. Spoil from the excavation will be trucked from the site via an earthwork ramp with trucks entering and exiting via Scott Street.
3. A shaker grid and wash down facility will be provided at the site exit to ensure sediment is not tracked onto the public road.

Details on the proposed excavation works are provided in Appendix A of this report.

4.4 Crane Erection

Crane use during early works will be limited to mobile cranes within the site.

4.5 Construction Waste Management

4.5.1 Responsibility

A suitably competent and experienced representative will be nominated as Construction & Demolition (C&D) Waste Manager for the project. The function of the C&D Waste Manager is to communicate effectively the aims and objectives of the Waste Management programme for the project to all relevant parties and contractors involved in the project, for the duration of demolition and construction works on site.

4.5.2 Demolition Waste

Demolition waste shall be generated during development. The management of spoil generated by demolition of the existing industrial building and excavation on site is described within the following section of this document.

The typical type of waste can be summarised as;



- Soil and stones;
- Concrete (including blocks);
- Timber;
- Glass;
- Mixed Metals;
- Gypsum based materials;
- Tiles / Ceramics;
- Insulation Materials (asbestos free);
- Waste electrical and electronic equipment;
- Fixtures and fittings etc

4.5.3 Excavation & Shoring Waste

Waste generated during the excavation and shoring works will include:

- Soil and stones;
- Concrete;
- Steel.

A site-specific Construction and Development Waste Management Plan (C&D WMP) for the demolition and construction of the development will be employed to ensure effective waste management and recycling of waste generated at the site.

4.5.4 Waste Management Mitigation Measures

Mitigation measures proposed are summarised below:

- On-site segregation of all waste materials into appropriate categories including:
 - made ground, soil, subsoil, bedrock
 - concrete, bricks, tiles, ceramics, plasterboard
 - metals;
 - dry recyclables e.g. cardboard, plastic, timber
- All waste materials will be stored in skips or other suitable receptacles in a designated area of the site.
- An asbestos survey has been completed in the demolished buildings.
- Wherever possible, left over materials (e.g. timber off cuts) and any suitable demolition materials shall be re-used on-site.
- Any potentially contaminated soil to be removed from site will be tested to confirm its contamination status and subsequent management requirements.
- All waste leaving site will be recycled, recovered or reused where possible, with the exception of those waste streams where appropriate facilities are currently not available.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably licensed or permitted facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.



5. Traffic Controls

5.1 Construction Vehicle Routes

The figure below indicates the proposed traffic access route for all construction vehicles travelling to and from the site.



Figure 23 - Site Aerial

Construction vehicles coming to the site will do so via the Hume Highway/Macquarie Street/Hoxton Park Road intersection. All vehicles will travel North East from the intersection along Macquarie Street before veering off to the right onto Terminus Street. All construction vehicles will enter the site via Terminus Street.

Vehicles will approach the site from the South West and make a left-in turn at the Terminus Street access point (no right turn into the site will be permitted).

All construction vehicles will exit the site onto Scott Street. Vehicles will make a left turn onto Scott Street (no right turn will be permitted). Vehicles will travel along Scott Street before continuing onto Memorial Avenue where it meets the Hume Highway. Alternatively, vehicles can make a left turn off Scott street onto Macquarie Street before continuing towards the Hume Highway/Macquarie Street/Hoxton Park Road intersection.



5.2 Site Workers

Public transport is also in close proximity for workers and workers will be encouraged to use these services.

5.3 Construction Parking & Material Handling

All construction vehicles and Contractor vehicle parking will be contained on site during the early works. Material handling will also be undertaken on site wherever possible. In the even that material handling cannot be undertaken on site and needs to be undertaken from the street frontage it will be undertaken under a council approved traffic management plan.

5.4 Traffic Generation

At the peak of the early works construction the site will generate 100 truck movements per day. The haulage vehicle movements during the works will be Monday to Friday 9:30am – 2:30pm. During AM and PM peak times it is expected that there will be a maximum of 8 truck movements per hour.

A traffic management plan will be prepared to address the impacts of construction vehicles on the surround road network.

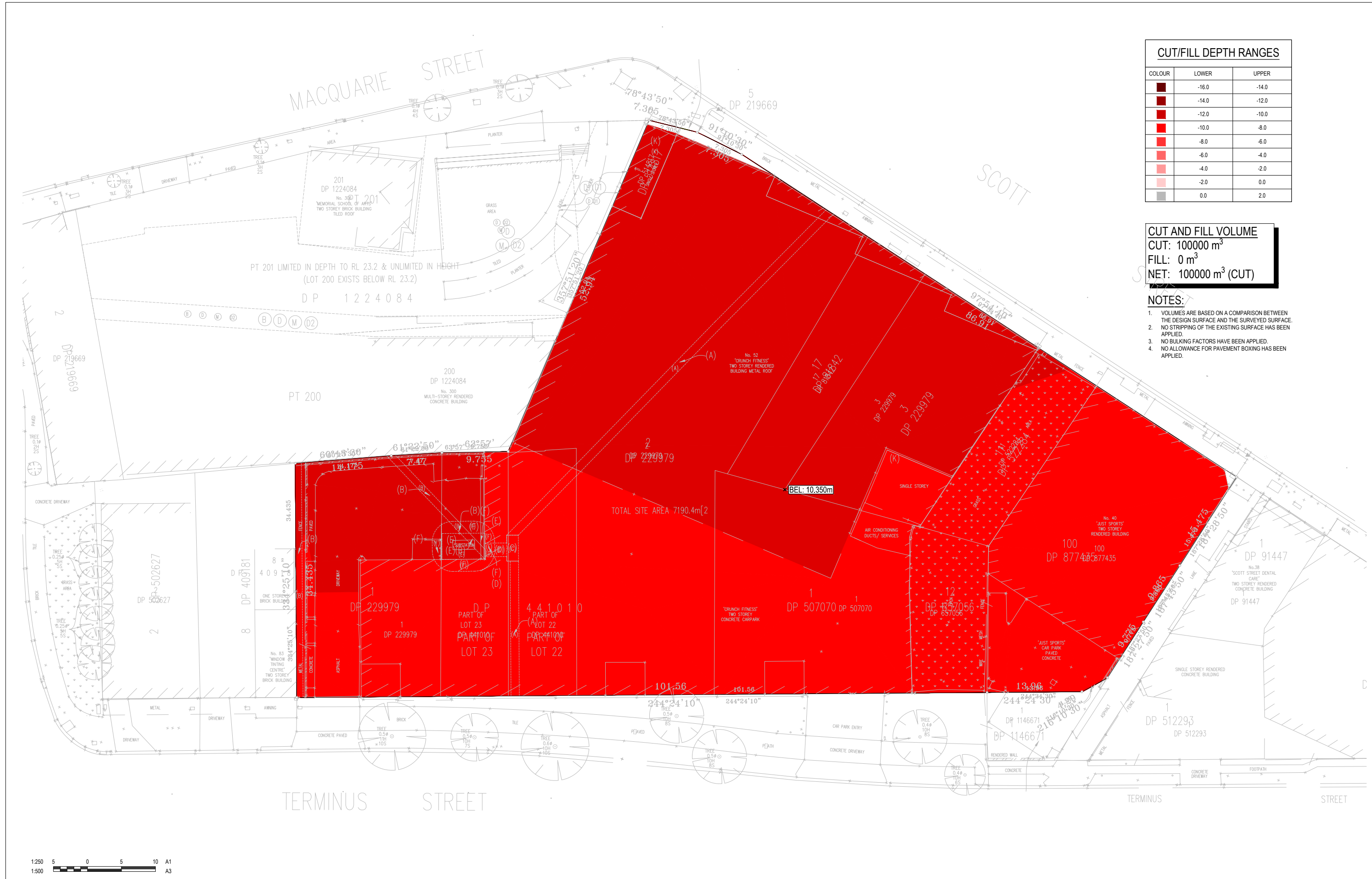
5.5 Temporary Road Closures & Traffic Routes

During the course of the delivery of the works temporary road closures may be required. If and when these closures are required, an application will be made to Liverpool City Council and approval sought prior to works being undertaken that will effect local traffic movements.



Appendix A Bulk Earthworks Plans





CUT/FILL DEPTH RANGES		
COLOUR	LOWER	UPPER
	-16.0	-14.0
	-14.0	-12.0
	-12.0	-10.0
	-10.0	-8.0
	-8.0	-6.0
	-6.0	-4.0
	-4.0	-2.0
	-2.0	0.0
	0.0	2.0

CUT AND FILL VOLUME
CUT: 100000 m³
FILL: 0 m³
NET: 100000 m³ (CUT)

- NOTES:
- VOLUMES ARE BASED ON A COMPARISON BETWEEN THE DESIGN SURFACE AND THE SURVEYED SURFACE.
 - NO STRIPPING OF THE EXISTING SURFACE HAS BEEN APPLIED.
 - NO BULKING FACTORS HAVE BEEN APPLIED.
 - NO ALLOWANCE FOR PAVEMENT BOXING HAS BEEN APPLIED.

B	ISSUED FOR INFORMATION	GYD	IAH	28.11.19
A	ISSUED FOR INFORMATION	GYD	IAH	25.11.19
REV	DESCRIPTION	DRAWN	APPD	DATE

DRAWN:	GYD
DESIGNED:	GYD
VERIFIED:	...
APPROVED FOR TENDER:	...
APPROVED FOR CONSTRUCTION:	...



ARCHITECT/CIENT

LIVERPOOL CIVIC PLACE	BULK EARTHWORKS FULL BASEMENT
PROJECT	TITLE
43144 - EARTHWORKS BASEMENTS FULL.dwg	





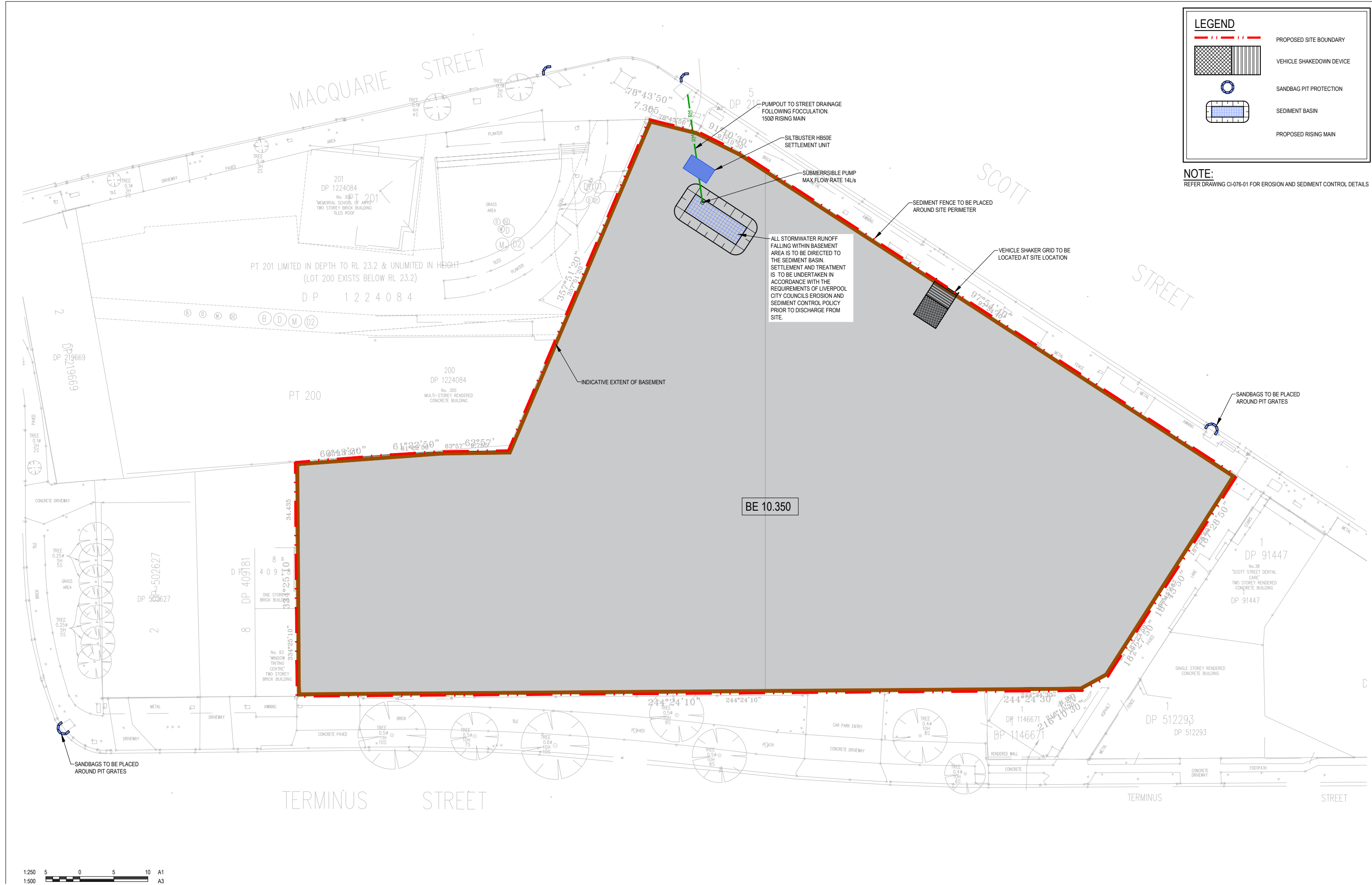
FOR INFORMATION
NOT FOR CONSTRUCTION

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SCALE @ A1	PROJECT No	DRAWING No	REV

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Appendix B Sedimentation & Erosion Control Plan





REV	DESCRIPTION	DRAWN	APPD	DATE
C	ISSUED FOR DA APPROVAL	IAH	IAH	26.11.19
B	ISSUED FOR DA APPROVAL	IAH	IAH	15.11.19
A	ISSUED FOR DA APPROVAL	CPO	IAH	14.08.19

DRAWN:	CPO
DESIGNED:	IAH
VERIFIED:	IAH 26.11.19
APPROVED FOR TENDER:	... J.J.
APPROVED FOR CONSTRUCTION:	... J.J.



ARCHITECT/CLIENT

LIVERPOOL CIVIC PLACE

STAGE 1 - EROSION AND SEDIMENT CONTROL PLAN

PROJECT

TITLE

43144-CI-070-01.dwg





FOR APPROVAL
NOT FOR CONSTRUCTION

AS SHOWN

43144

CI-070-01

C

SCALE @ A1

PROJECT No

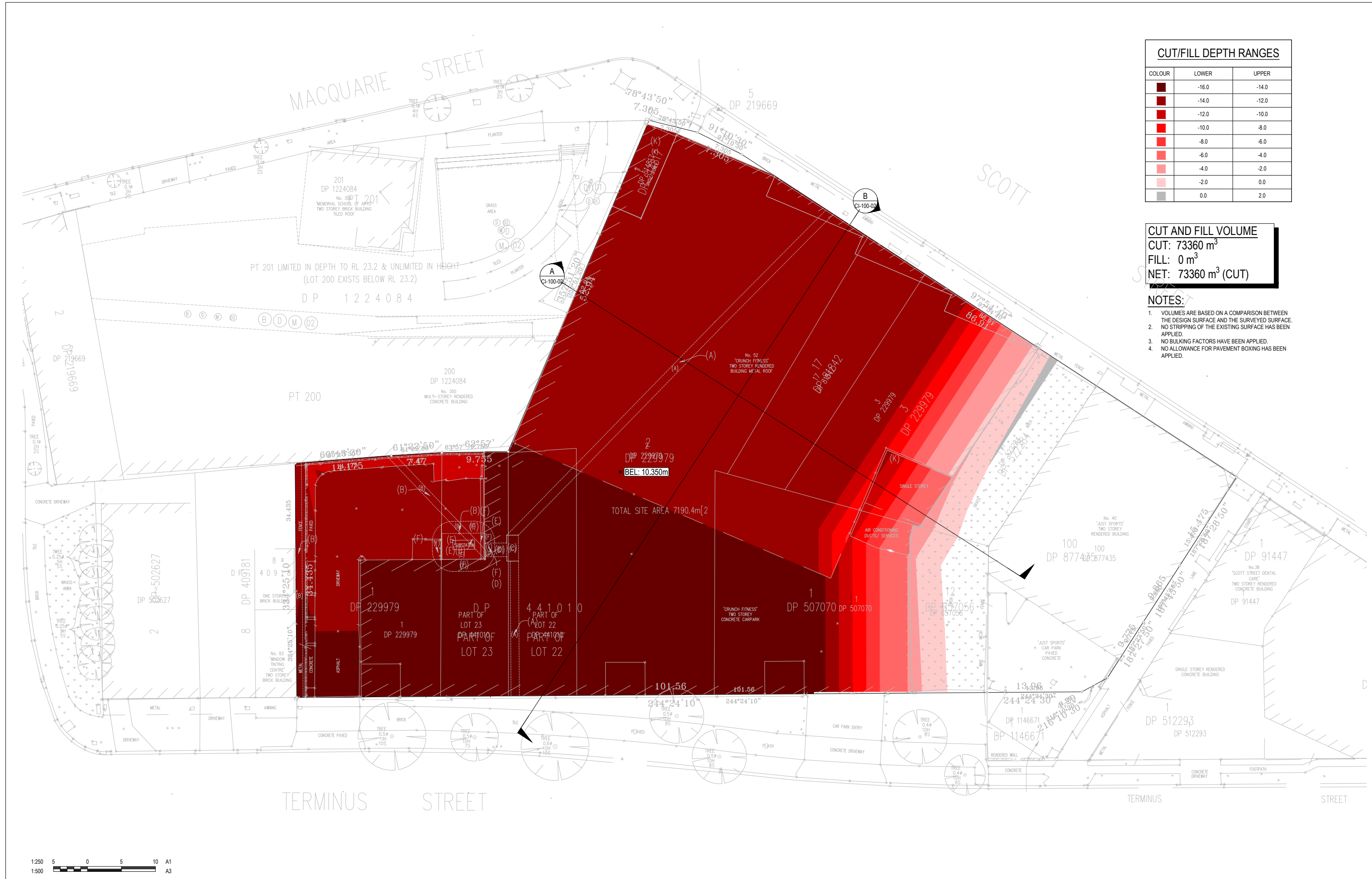
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REV

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Appendix C Staging Options

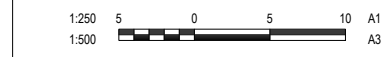




CUT/FILL DEPTH RANGES		
COLOUR	LOWER	UPPER
	-16.0	-14.0
	-14.0	-12.0
	-12.0	-10.0
	-10.0	-8.0
	-8.0	-6.0
	-6.0	-4.0
	-4.0	-2.0
	-2.0	0.0
	0.0	2.0

CUT AND FILL VOLUME
CUT: 73360 m³
FILL: 0 m³
NET: 73360 m³ (CUT)

- NOTES:
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B	ISSUED FOR INFORMATION	GYD	IAH	28.11.19
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DRAWN:	GYD
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VERIFIED:	...
APPROVED FOR TENDER:	...
APPROVED FOR CONSTRUCTION:	...

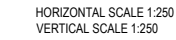
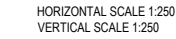
ARCHITECT/CIENT

LIVERPOOL CIVIC PLACE		BULK EARTHWORKS BASEMENTS WITH BATTER - OPTION 2	
PROJECT		TITLE	

WOOD & CONCRETE ENGINEERING
Stantec

FOR INFORMATION
NOT FOR CONSTRUCTION

1250	43144	CI-100-02	B
SCALE @ A1	PROJECT No	DRAWING No	REV





WOOD & GILBERT ENGINEERS

INCORPORATED



FOR INFORMATION

NOT FOR CONSTRUCTION

1:250

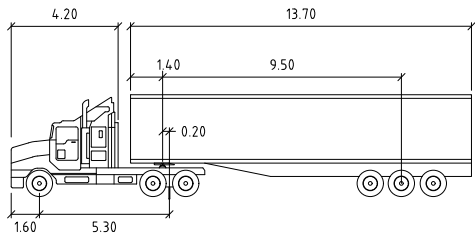
43144

CI-103-01

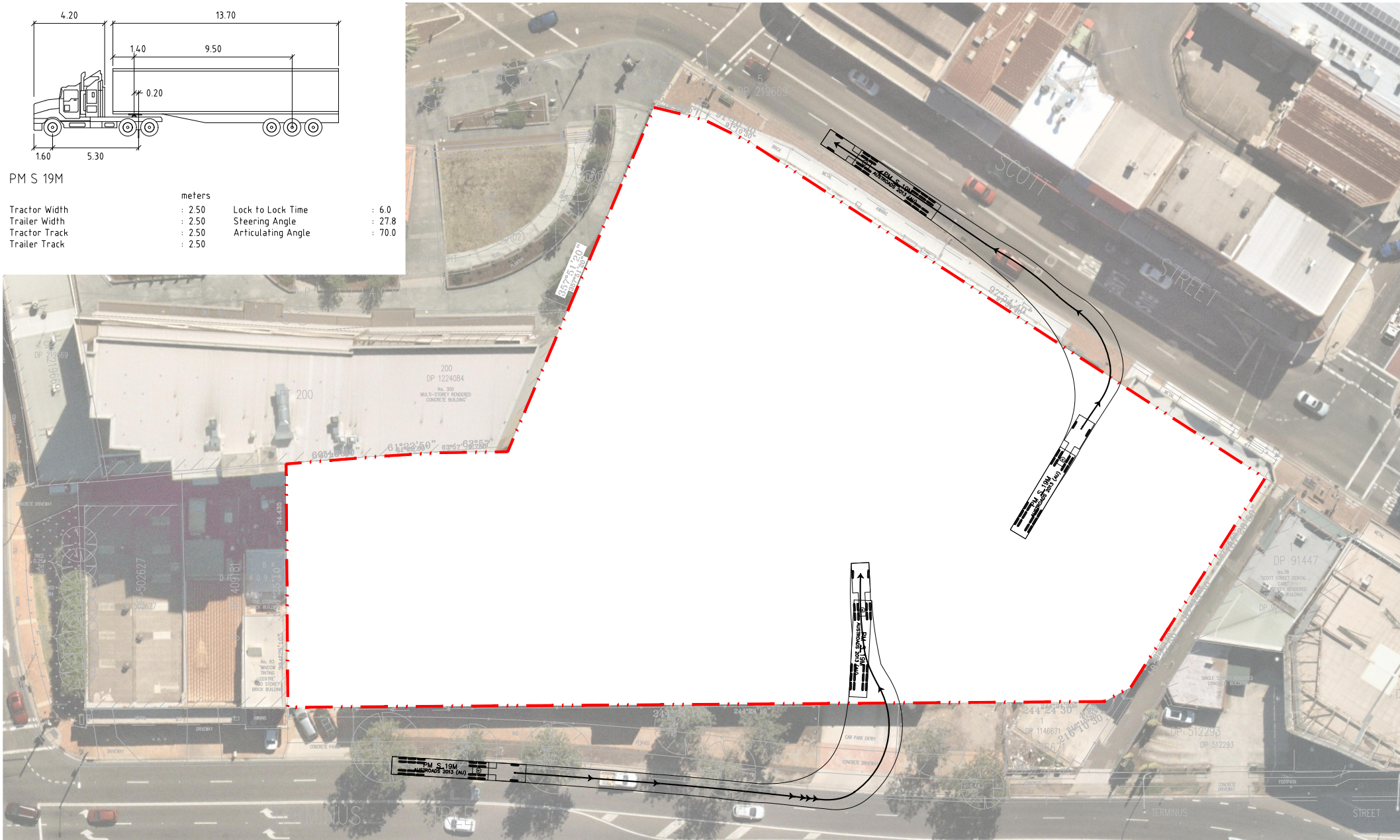
A

Appendix D Vehicle Swept Paths





PM S 19M		
	Tractor Width	2.50
	Trailer Width	2.50
	Tractor Track	2.50
	Trailer Track	2.50
		meters
	Lock to Lock Time	6.0
	Steering Angle	27.8
	Articulating Angle	70.0



REV	DESCRIPTION	DRAWN	APPROVED	DATE
A	ISSUED FOR APPROVAL	IAH	IAH	24.04.20

DRAWN	-
DESIGNED	-
VERIFIED	- J.L.
APPROVED FOR TENDER	- J.L.
APPROVED FOR CONSTRUCTION	- J.L.

fjmt

Built.

ARCHITECT/CLIENT

PROJECT	LIVERPOOL CIVIC PLACE
TITLE	19m SEMI-ARTICULATED SWEEP PATHS

43144-CI-400-01.dwg

		FOR APPROVAL NOT FOR CONSTRUCTION
SCALE @ A1	PROJECT No 43144	DRAWING No CI-400-01
		REV A

Fri Apr 24 13:01:06 2020

Design with
community in mind

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E sydney@wge.com.au

For more information please visit
www.wge.com.au



WOOD & GRIEVE ENGINEERS

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