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# WOOLWORTHS PTY LTD

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# CIVIL ENGINEERING REPORT

## For Development Application
## June 2023

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## 1.1 INTRODUCTION

### 1.1.1 General

This Engineering Report has been prepared to supplement the proposed Development Application Certificate (DA) to Liverpool City Council (LCC) for the proposed Woolworths supermarket and commercial development located at 330-350 Eighth Road, Austral. The development will consist of proposed commercial tenancies, associated car parking, and loading dock. These works will all be contained within the hatched area in figure 1 below and will be referred to as "the site" in this report. The works will also include constructing multiple roads surrounding the site. These roads are half road width on Eighth Avenue, half road width on Auger Street and a half road width on Warrawal Avenue. It is also proposed to do the western side of Warrawal Avenue where the site adjoins council land. This will be undertaken as part of the WIK Agreement. These road works will also include pedestrian footpaths and landscaping in the verge.

*Figure 1: Locality Sketch*

The following Engineering matters have been addressed in this report:

- Site Works including grading.
- Road works.
- Stormwater Management including Water Sensitive Urban Design (WSUD).

The purpose of this report is to provide an overview of the various Engineering issues that relate to the site and how these issues have been addressed.

### 1.1.2 Engineering Objectives/ Principles

One of the Engineering objectives for the development is to provide a safe and efficient building for the staff and visitors of the development. In addition, footpath and car parking grades must be sympathetic to the needs of the users of the building. The site also needs to be serviced by articulated trucks so grading in Warrawal Avenue is critical as it directly ties in with the site supermarket loading dock. The site has been designed such that the grades are sympathetic to the end users whilst considering the surrounding sites and road networks. The grading and building levels have been set to provide a flush access for users entering the site via the on-grade car park. Pedestrian access to the site will also be provided via Eighth Avenue, Auger Street, and Warrawal Avenue.

There currently is no piped stormwater system within Eighth Avenue (adjacent to our site) and thus all stormwater from our site will be designed to connect to the stubs provided by the development to the North that is currently under construction. The stormwater network for the site and the road must be designed to safely convey all stormwater events up to the 1 in 100-year storm via a pit and pipe stormwater system. Another aspect of the stormwater system is to ensure that the design considers water sensitive urban design (WSUD) measures. The stormwater network has been designed in accordance with these principles.

### 1.1.3 Council Policies

The civil engineering component of the aforementioned project has been designed in accordance with the following council codes and policies:

- Liverpool Development Control Plan (LDCP) – 2021
- Liverpool Growth Centre Precincts DCP 2021
- Schedule 1 – Austral & Leppington North Precincts

### 1.1.4 The Site & Its Context

The proposed development site is in a Retail Core Zone according to the Indicative Layout Plan for Austral & Leppington North Precincts exhibited on the NSW Department of Planning and Infrastructure website. The proposed development consists of a mix of commercial space, retail space, carpark space, residential space and a Woolworths & BWS space.

The surface levels of the site generally fall in a northerly direction towards Eighth Avenue at moderate grades from Auger Street. There is a ridge line running through the middle of the existing site, which currently splits the sites catchment in two. This will form the basis of a key stormwater design philosophy of this development. See section 1.3 for more details on stormwater design.

## 1.2 SITE WORKS

### 1.2.1 Site Grading and Floor Levels

The existing levels of the site fall from approximately RL 80.0 m AHD along the Southern boundary to approximately RL 74.5 m AHD along the northern boundary. As there is a significant (5.50m) difference in levels from the high to low point within the site, the levels have generally been designed to step such that bulk earthworks is minimised and access is ensured along all three road frontages. As a result, the building's lower level is FFL 74.33 m AHD along the northern frontage, with an upper ground level at 78.4 m. Correspondingly, the car par park to the south generally falls at 2.5% in a northerly direction towards the upper ground entrance. The upper ground entrance in turn falls out to the car park. This creates a valley approximately 11.5m out from

the building entrances. This valley adopts a cascading saw-tooth sag pit arrangement of stormwater surface inlet pits, allowing for efficient capture of runoff in all storms and safe ponding of stormwater in major stormwater events. See Architectural section excerpt below in figure 2 which shows the fall from east to west. Refer to section 1.3 for more details on stormwater design.

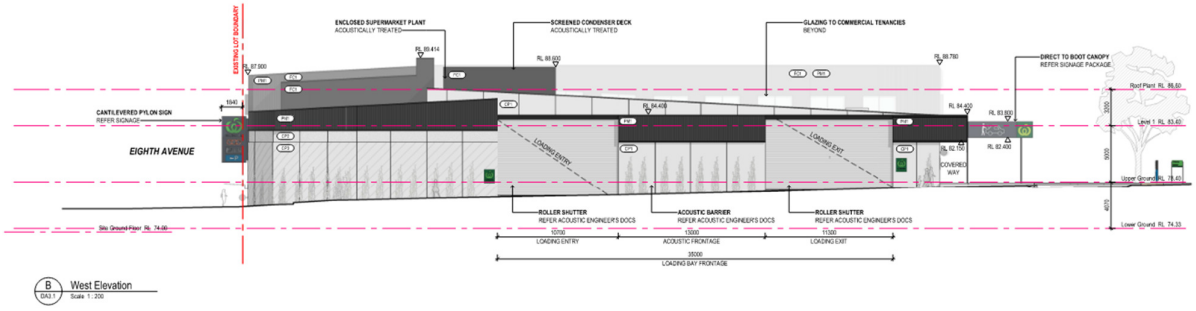


Figure 2: Architectural drawing excerpt – West elevation

### 1.2.2 Bulk Earthworks

As previously stated, the site has been designed such that the grades are sympathetic to requirements of the end users and local conditions whilst tying in with existing road levels. As such, the levels have been designed such that they minimise bulk earthworks whilst still permitting functional use of the site. Overall, the site will be in a small net fill proportional to the site's footprint. Preliminary calculations have indicated that there will be an excess of fill over cut by 4160 m³.

### 1.2.3 Road Works

#### 1.2.3.1 Eighth Avenue

The design of the half road width on Eighth Avenue is such that it will be able to sufficiently cater to traffic and parking requirements. The half road width construction of Eighth Avenue will tie into the northern half road width to be constructed by the development to the north. Stormwater discharge from The Development will travel perpendicular to the road and connect to the stubs provided by the development to the north. Stormwater drainage for Eighth Avenue itself will be a series of lintels connected by min. 375 mm diameter concrete pipes at min. 1% grade. The western half of the Eighth Avenue drainage converges with the development's drainage at proposed pit B-2 in the street. Please refer to 22U24_DA_ C101 and 22U24_DA_ C102 in Appendix A for more details.

#### 1.2.3.2 Warrawal Avenue

Cars will predominantly access the supermarket via Warrawal Avenue. A left in for southbound traffic into the car park will be provided upon construction of the half road. A right turn will likely be provided in the future once the western half of the road is developed by others. Currently, the design prescribes a right turn only for northbound traffic approaching the site from the south into to Auger Street.

During the preliminary design it was found by the consultant team that the Warrawal Avenue centreline south of Auger Street had been constructed approximately 2m east of the site's western boundary line. Discussions were undertaken with Council on this matter. It was found that Warrawal Avenue South of Sixth Avenue was constructed with the centreline constructed on the boundary.

During the preliminary design it was found by the consultant team that the Warrawal Avenue centreline south of Auger Street had been constructed approximately 2m east of the site's western boundary line. To carry this through would result in the Woolworth Development losing a further 2m (additional to the 10m already being dedicated to the road reserve) from the western side of the site. Discussions were undertaken with Council on this matter. It was found that that although the development south of Auger Street had been constructed 2m east of the boundary the Centreline of Warrawal Avenue returned to the boundary South of Sixth. Through these discussion with Council, it was agreed that this development could transition the centreline of Warrawal Avenue through the intersection with Auger Street back to the boundary line. This resulted in a small section of additional site being dedicated to the road reserve. This has been depicted within the enclosed Civil Engineering drawing package.

With the centreline of Warrawal Avenue now on the Boundary adjacent to the site we have proposed a 500mm berm, retaining wall and grassed swale within the Neighbour's property to account for any change in levels and stormwater runoff. This was done to ensure the future sawcut line does not occur at the road crown. The small retaining wall will be removed once the western half of Warrawal Avenue is constructed by others.

Warrawal Avenue is part of two catchments. The northern portion (north of Auger Street) of Warrawal Avenue will be drained by lintel pits in the kerb and gutter. The lintel pits are connected by min. 375 mm diameter concrete pipes to the drainage network in Eighth Avenue. The southern portion (south of Auger Street) of Warrawal Avenue is drained similarly, but to the southwest, where it connects into existing Council stormwater infrastructure. Please refer to 22U24_DA_ C102 and 22U24_DA_ C103 in Appendix A for more details.

#### 1.2.3.3 Auger Street

Auger street, as mentioned above, will be a part of this development, providing access to the on-grade carpark from the southern frontage. Stormwater runoff from Auger Street is a part of two separate catchments. The eastern portion of the Auger Street catchment drains to the southeast, where it connects to existing infrastructure provided in the development on the southern side of Auger Street. Similarly, the western portion of Auger Street drains to an existing stormwater pit to the southwest. Please refer to 22U24_DA_ C103 in Appendix A for more details.

### 1.2.4 Streetscape Raingardens

In the "Floodplain Management" section of the pre-DA advice received from Liverpool City Council (received on 21 February 2023), streetscape raingardens are noted as "required at the locations marked as 'Proposed Raingarden Locations' presented in Schedule 1 – Austral & Leppington North Precinct DCP." Refer to figure 3 below for an excerpt of the Liverpool City Council document titled "Development of Streetscape Raingarden Masterplan for Austral & Leppington North – Raingarden Design" which details the typical design for these raingardens. See Appendix D for a full-size version of this document. Typically, these raingardens sit proud of the kerb line. However, upon the completion of a turning path analysis for the trucks required to service the site, it was found that the raingarden needed to be inbound of the kerb line to allow truck access. We have endeavoured to provide as much raingarden space as possible behind the back of kerb whilst maintaining a minimum footpath width of 1.2m at the boundary splay. Please refer to 22U24_DA_ C101 in Appendix A for more details.

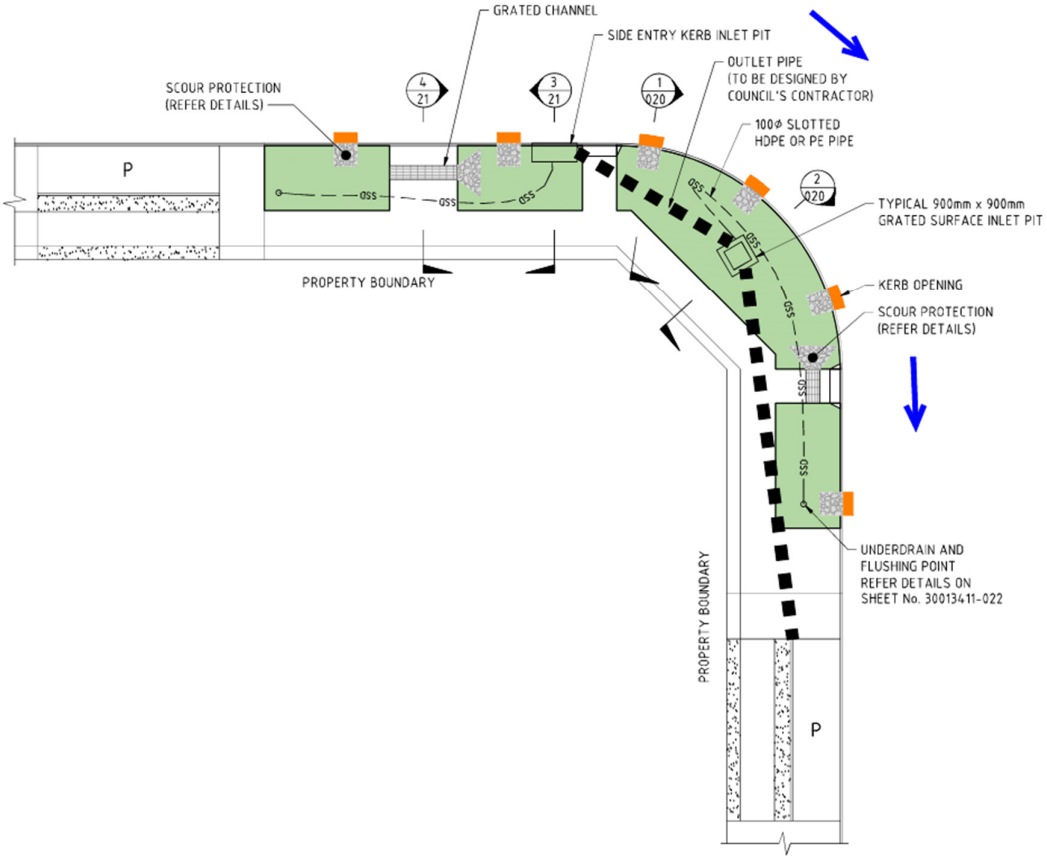


Figure 3: Raingarden typical standard design.

## 1.3 STORMWATER MANAGEMENT

### 1.3.1 Background

Stormwater controls will be implemented that ensure that the proposed development does not adversely impact on stormwater flows and water quality of the stormwater system downstream of the site.

The principles and operation of the proposed stormwater system for the development including water sensitive urban design (WSUD) measures and the components of the internal drainage system are detailed on the Development Application Drawings included in Appendix A.

### 1.3.2 Key Issues

The key issues and the proposed mitigation measures to be implemented as part of the proposed development are:

**Stormwater Quantity** – The site is currently largely pervious (assumed 100% pervious for modelling purposes). In the post developed scenario, the site will be made largely impervious through development. Council's policy stipulates that this new development will require On-site Stormwater Detention (OSD) to reduce peak flows from all storms from the 5 – 100-year ARI to predeveloped flows. On-site Stormwater Detention (OSD) will be provided

for the development to ensure that runoff from the development is appropriately managed in accordance with Council's requirements. The site stormwater system has been designed to safely convey the flows through the site and within the capacity of the downstream system. The design and operation of the proposed stormwater system is described in Section 1.3.3 below.

**Water Sensitive Urban Design** - Urban developments have the potential to increase gross pollutants, sediments, hydrocarbons, and nutrient concentrations in stormwater runoff. To limit the impact from this development it is proposed to drain most of the site to a water treatment device. Section 1.3.4 further describes the specific implementation of this device.

### 1.3.3 Stormwater Detention and Site Stormwater

The relevant DCP for the proposed development site is Liverpool Development Control Plan, dated February 2021. it is required to calculate the OSD size via computer modelling. According to the requirement in the DCP, the developed 5 ARI, 20 ARI and 100 ARI peak flows shall be maintained at pre-development flows proportional to the area of predeveloped site draining to the post developed discharge point. The following assumptions and parameters were used in the model:

- Pre-development catchment being 78.7% pervious (refer to 22U24_DA_C250 for predevelopment catchment plan) and post-development catchment being only 1.4% pervious (refer to 22U24_DA_C251 for post development catchment plan).
- Total site area: 18164 $m^2$ (including the half road width portion of Auger Street and Warrawal Avenue, but not Eighth Avenue (refer to 22U24_DA_C251 for post development catchment plan)
- Bypass area in the post-development scenario: 245 m2 (excluding Auger Avenue and Warrawal Avenue)
- The post development site will connect to the stub in Eighth Avenue. Downstream water levels used for modelling were taken from Diversi's civil engineering DA drawings package (Drawings C041 & C043) refer to pit A/8 in Appendix C
- AR&R2016 rainfall data and ILSAX hydrological model are adopted.

DRAINS software was used to size the OSD, and the modelling results show that an OSD with volume of approximately 475 $m^3$ is required to meet pre-developed flows for the relevant storm.

It should be noted that the Auger Street and Warrawal Avenue were not included in predeveloped or post developed flow rates calculations. Further, the site is located on a ridge, and as a result, it has 2 catchments herein referred to as the western and eastern catchments. Diversi (the civil engineers of the development to the north), have only allowed for the western catchment into their stub). 98.7% of the proposed site drains to the OSD, however, the small 1.3% bypass was excluded from post developed flow rates. This is because it is part of the eastern catchment. See appendix for full size version of all civil drawings including the discussed catchment plans, namely 22U24_DA_C252. As shown 98.7% of the site is draining to a discharge point which has a maximum catchment area of only 70.0% of our site. Thus the 1.3% bypass is draining to an area that previously received 30.0% of the development run-off. Since the western catchment is being limited by the OSD and its orifice and the eastern catchment has received a very significant reduction in catchment size it was determined that both catchments now comply with the LDCP PSD requirements. Table 1 below shows the results from the DRAINS modelling.

| ARI | Pre-developed Western Catchment (L/s) | Post-developed Whole site not incl. roads (L/s) | Pre-developed Eastern Catchment (L/s) | Post-developed Eastern Catchment (L/s) |
|---|---|---|---|---|
| **5** | 148 | 145 | 104 | 26 |
| **10** | 197 | 163 | 139 | 31 |
| **20** | 247 | 183 | 174 | 37 |
| **50** | 307 | 197 | 216 | 46 |
| **100** | 358 | 318 | 252 | 53 |

*Table 1: Drains Results*

The proposed OSD tank is effective in limiting all post developed flows to the pre-developed state of nature flows. The above calculations can be found in the DRAINS model called '22U24-DA-drains [01]'. The above drains model also indicates the in-ground drainage for the site and the adjacent roads.

### 1.3.4 Water Treatment

Urban developments have the potential to increase gross pollutants, sediments, hydrocarbons, and nutrient concentrations in stormwater runoff. To limit impact on the downstream systems, water quality measures at source and end of line treatments will be provided. This section describes the specific implementation of these measures for the proposed development.

Water quality measures will be implemented for the site as described below (excerpt from LDCP):

- *45% reduction in the baseline annual pollutant load of total nitrogen (TN)*
- *65% reduction in the baseline annual pollutant load of total phosphorus (TP)*
- *85% reduction in the baseline annual pollutant load of total suspended solids (TSS); and*
- *90% reduction in the baseline annual pollutant load of litter and vegetation larger than 5mm, through provision of GPT.*

The guidelines stipulate that a percentage reduction in post development average annual loads of pollutants is required. The above list indicates the specific removal rates required and our results are in table 2. To achieve these removal rates, we propose to incorporate 13 x OceanGuard pit baskets across the site. These will act as the primary treatment for all surface runoff, not including the roof.

100% of the roof will be drained to a 16 KL rainwater tank. This rainwater tank has been sized according to the LDCP. The primary function of the rainwater tank is to provide water for non-potable uses around the site including irrigation and toilet flushing. Assuming a conservative estimate of 10 toilets, and 100% of the pervious

surfaces on the site, the 16 KL rainwater tank has been confirmed to meet 80% re-use requirements for non-potable uses. Further the rainwater tank will aid in pollutant removal through sedimentation.

In addition to this, all stormwater (including roof water) will pass through a chamber filled with 18 x Psorb Stormfilter cartridges from Ocean Protect which will act as a secondary treatment. This chamber will be upstream of the OSD and will overflow into the OSD tank.

| Pollutants | Target Removal Rates % | Achieved Removal Rates % |
|---|---|---|
| **Total Suspended Solids** | 85 | 87.8 |
| **Total Phosphorus** | 65 | 66.1 |
| **Total Nitrogen** | 45 | 45.3 |

*Table 2: Required Pollutant Removal Rates and Results.*

The MUSIC model layout and results can also be seen in figure 3 below. Refer to the associated MUSIC model "22U24-DA-MUSIC [01]" for full modelling details.

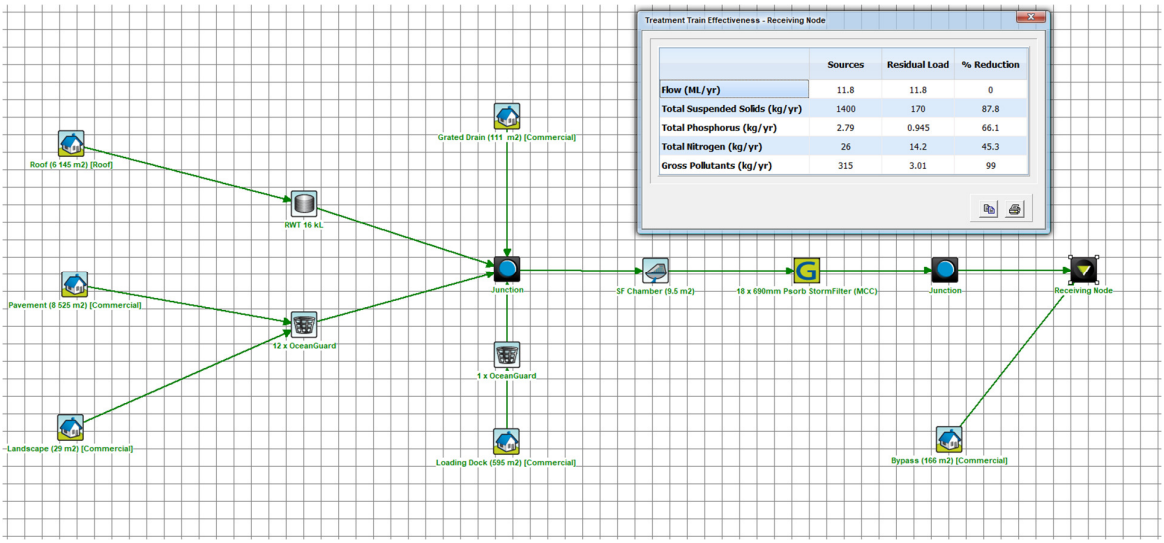


*Figure 3: MUSIC Model layout*

## 1.4 CONCLUSION

The design provides a building which is efficiently integrated with Eighth Avenue and Warrawal Avenue frontages to provide a safe and amenable outcome for its end users.

Design efficiencies have been adopted maintaining grades that are sympathetic to the end user. These efficiencies assist in minimising construction costs and to minimise the impact on local landfill resources.

Appropriate stormwater management practices will be implemented that minimise the impact of development on the existing stormwater system in terms of water sensitive urban design whilst ensuring safe and efficient conveyance of runoff and the provision of adequate freeboard to habitable dwellings.

The design is in accordance with both Liverpool City Council's requirements and best practice principles; hence it can be ensured that there will be minimal impact on the existing environment because of the proposed development. It should be noted that the results shown in this report are limited to use for Development Application purposes only.

## 1.5 REFERENCES

- Landcom - "Soils and Construction Volume 1 – 4th Edition", March 2004
- Institution of Engineers, Australia - "Australian Rainfall and Runoff", 2016
- Liverpool Development Control Plan (LDCP) – 2021

## 1.6 APPENDIX LIST

- APPENDIX A – H&H CIVIL ENGINEERING DA DRAWINGS
- APPENDIX B – CHC ARCHITECTURAL DA DRAWINGS
- APPENDIX C – DIVERSI HYDRAULIC MODELLING RESULTS
- APPENDIX D – (LCC) DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# APPENDIX A – H&H CIVIL ENGINEERING DA DRAWINGS

# PROPOSED RETAIL DEVELOPMENT
# 260 EIGHTH AVENUE, AUSTRAL NSW
# CIVIL ENGINEERING WORKS

## GENERAL NOTES:

1. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH LIVERPOOL COUNCIL SPECIFICATION. CONTRACTOR TO OBTAIN AND RETAIN A COPY ON SITE DURING THE COURSE OF THE WORKS.
2. ALL NEW WORKS ARE TO MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS AND MARRY IN A 'WORKMANLIKE' MANNER.
3. THE CONTRACTOR IS TO VERIFY THE LOCATION OF ALL SERVICES WITH EACH RELEVANT AUTHORITY. ANY DAMAGE TO SERVICES SHALL BE RECTIFIED BY THE CONTRACTOR OR THE RELEVANT AUTHORITY AT THE CONTRACTOR'S EXPENSE. SERVICES SHOWN ON THESE PLANS ARE ONLY THOSE EVIDENT AT THE TIME OF SURVEY OR AS DETERMINED FROM SERVICE DIAGRAMS. H & H CONSULTING ENGINEERS PTY. LTD CANNOT GUARANTEE THE INFORMATION SHOWN NOR ACCEPT ANY RESPONSIBILITY FOR INACCURACIES OR INCOMPLETE DATA.
4. SERVICES & ACCESSES TO THE EXISTING PROPERTIES ARE TO BE MAINTAINED IN WORKING ORDER AT ALL TIMES DURING CONSTRUCTION.
5. ADJUST EXISTING SERVICE COVERS TO SUIT NEW FINISHED LEVELS TO RELEVANT AUTHORITY REQUIREMENTS WHERE NECESSARY.
6. REINSTATE AND STABILISE ALL DISTURBED LANDSCAPED AREAS.
7. MINIMUM GRADE OF SUBSOIL SHALL BE 0.5% (1:200) FALL TO OUTLETS.
8. ALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES ARE TO BE CONSTRUCTED, PLACED AND MAINTAINED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS, EROSION AND SEDIMENTATION CONTROL PLAN AND LIVERPOOL COUNCIL REQUIREMENTS WHERE APPLICABLE.
9. CONTRACTOR TO CHECK AND CONFIRM SITE DRAINAGE CONNECTIONS ACROSS THE VERGE PRIOR TO COMMENCEMENT OF SITE DRAINAGE WORKS.
10. PROPERTIES AFFECTED BY THE WORKS ARE TO BE NOTIFIED IN ADVANCE WHERE DISRUPTION TO EXISTING ACCESS IS LIKELY.

## SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY THE SURVEYOR SPECIFIED IN THE TITLE BLOCK.
THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. HENRY AND HYMAS PTY. LTD. DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.
SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT HENRY AND HYMAS PTY. LTD. THE FOLLOWING NOTES HAVE BEEN TAKEN DIRECTLY FROM ORIGINAL SURVEY DOCUMENTS.

## LOCALITY SKETCH

SCALE: N.T.S.

## DRAWING SCHEDULE

| | |
|---|---|
| 22U24_DA_C000 | COVER SHEET, DRAWING SCHEDULE, NOTES AND LOCALITY SKETCH |
| 22U24_DA_C100 | GENERAL ARRANGEMENT PLAN |
| 22U24_DA_C101 | CIVIL DETAIL PLAN, SHEET 1 OF 2 |
| 22U24_DA_C102 | CIVIL DETAIL PLAN, SHEET 2 OF 2 |
| 22U24_DA_C105 | LOWER GROUND DETAIL PLAN |
| 22U24_DA_C110 | SITE SECTIONS - SHEET 1 OF 2 |
| 22U24_DA_C111 | SITE SECTIONS - SHEET 2 OF 2 |
| 22U24_DA_C120 | EIGHT AVE LONGITUDINAL SECTION AND CHAINAGES PLAN |
| 22U24_DA_C121 | WARRAWAL AVE LONGITUDINAL SECTION AND CHAINAGES PLAN |
| 22U24_DA_C122 | AUGER STREET LONGITUDINAL SECTION AND CHAINAGES PLAN - SHEET 1 OF 2 |
| 22U24_DA_C123 | AUGER STREET LONGITUDINAL SECTION AND CHAINAGES PLAN - SHEET 2 OF 2 |
| 22U24_DA_C200 | STORMWATER MISCELLANEOUS DETAILS AND PIT LID SCHEDULE |
| 22U24_DA_C201 | OSD PLAN, SECTION AND DETAILS |
| 22U24_DA_C250 | PRE-DEVELOPMENT STORMWATER CATCHMENT PLAN |
| 22U24_DA_C251 | POST-DEVELOPMENT STORMWATER CATCHMENT PLAN |
| 22U24_DA_C252 | STORMWATER CATCHMENT PLAN |
| 22U24_DA_C600 | LINEMARKING AND SIGNPOSTING PLAN, SHEET 1 OF 2 |
| 22U24_DA_C601 | LINEMARKING AND SIGNPOSTING PLAN, SHEET 2 OF 2 |
| 22U24_DA_C650 | TURNING PATH - EIGHTH AVE |
| 22U24_DA_C651 | TURNING PATH - SEVENTH AVE |
| 22U24_DA_BE01 | BULK EARTHWORKS CUT AND FILL PLAN |
| 22U24_DA_BE02 | BULK EARTHWORKS SECTIONS |
| 22U24_DA_SE01 | SEDIMENT AND EROSION CONTROL PLAN |
| 22U24_DA_SE02 | SEDIMENT AND EROSION CONTROL DETAILS |
| 22U24_DA_EX200 | WIK STORMWATER MISCELLANEOUS DETAILS AND PIT LID SCHEDULE |
| 22U24_DA_EX700 | WIK DETAIL PLAN, SHEET 1 OF 2 |
| 22U24_DA_EX701 | WIK DETAIL PLAN, SHEET 2 OF 2 |

## SITEWORKS NOTES

- DATUM : A.H.D.
- ORIGIN OF LEVELS : REFER TO BENCH OR STATE SURVEY MARKS WHERE SHOWN ON PLAN.
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO THE COMMENCEMENT OF WORK.
- ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS & THE DIRECTIONS OF THE SUPERINTENDENT.
- EXISTING SERVICES UNLESS SHOWN ON THE SURVEY PLAN HAVE BEEN PLOTTED FROM SERVICES SEARCH PLANS AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS ACHIEVED.
- THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
- CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATION IS TO BE UNDERTAKEN OVER TELSTRA OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
- CONTRACTOR TO OBTAIN AUTHORITY APPROVALS WHERE APPLICABLE.
- MAKE SMOOTH TRANSITION TO EXISTING SURFACES AND MAKE GOOD.
- THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED LANDSCAPE, ARCHITECTURAL, STRUCTURAL, HYDRAULIC AND MECHANICAL DRAWINGS AND SPECIFICATIONS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED RELATING TO DEVELOPMENT AT THE SITE.
- TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MINIMUM OF 50mm IN BITUMINOUS PAVING.
- ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø80 uPVC SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND EDGE OF PAVING.
- GRADES TO PAVEMENTS TO BE AS IMPLIED BY RL'S ON PLAN . GRADE EVENLY BETWEEN NOMINATED RL'S. AREAS EXHIBITING PONDING GREATER THAN 5mm DEPTH WILL NOT BE ACCEPTED UNLESS IN A DESIGNATED SAG POINT.
- ALL COVERS AND GRATES ETC TO EXISTING SERVICE UTILITIES ARE TO BE ADJUSTED TO SUIT NEW FINISHED SURFACE LEVELS WHERE APPLICABLE.

## EXISTING SERVICES & FEATURES

- THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF ALL EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA OR AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
- THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
- PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF HIS PROGRAM FOR THE RELOCATION/ CONSTRUCTION OF TEMPORARY SERVICES.
- CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN SUPPLY TO EXISTING BUILDING REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED, THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
- INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE TO THE PRINCIPAL. CONTRACTOR TO GAIN APPROVAL FROM THE SUPERINTENDENT FOR TIME OF INTERRUPTION.
- EXISTING SERVICES, BUILDINGS, EXTERNAL STRUCTURES AND TREES SHOWN ON THESE DRAWINGS ARE EXISTING FEATURES PRIOR TO ANY DEMOLITION WORKS.
- EXISTING SERVICES UNLESS SHOWN ON SURVEY PLAN HAVE BEEN PLOTTED FROM SERVICES SEARCH PLANS AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLETE A 'DIAL BEFORE YOU DIG' SEARCH AND TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø80 uPVC SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND EDGE OF PAVING.

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

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Client: FABCOT
Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

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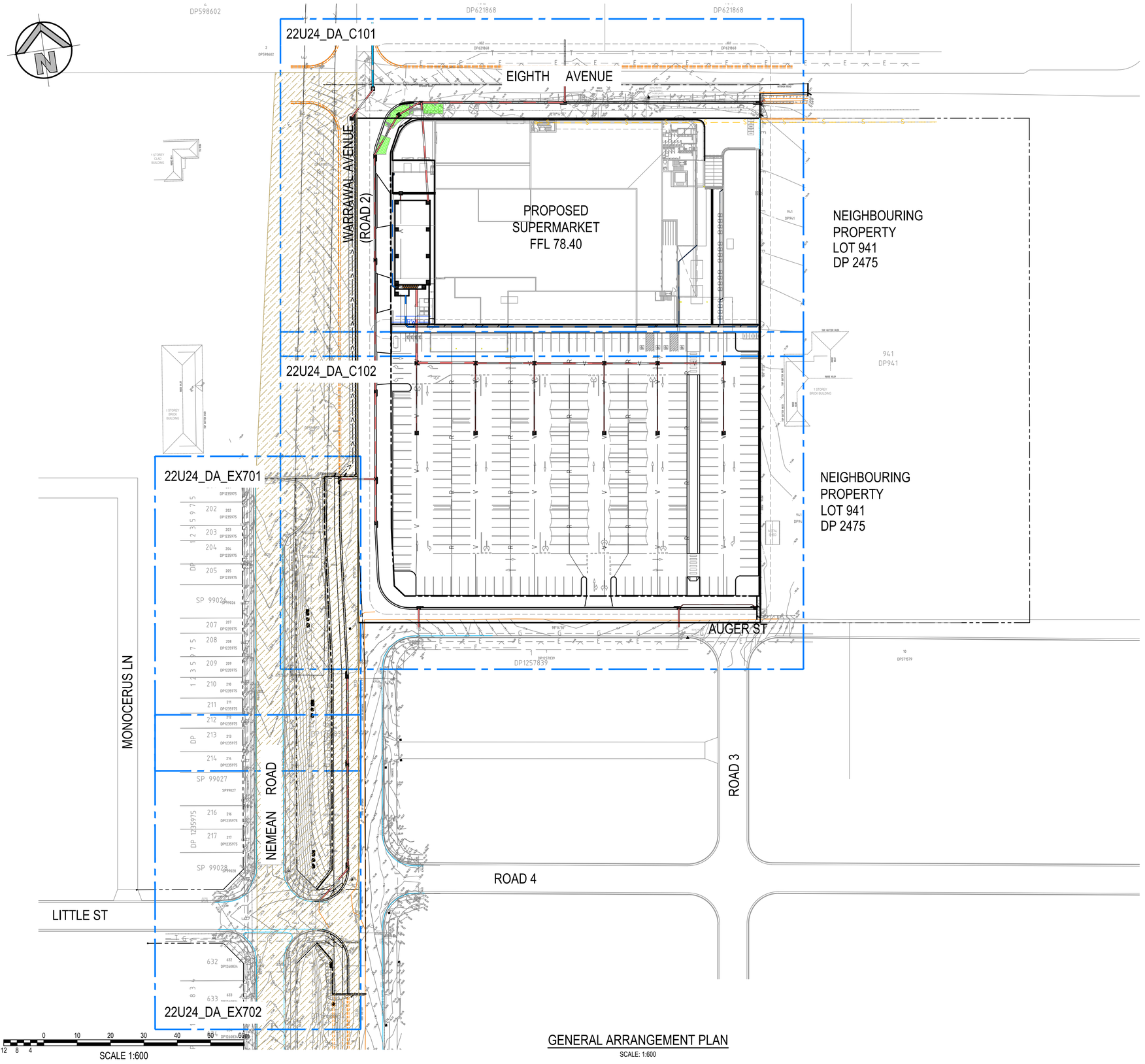
Project: PROPOSED RETAIL DEVELOPMENT 260 EIGHTH AVENUE, AUSTRAL NSW
Title: COVER SHEET, DRAWING SCHEDULE, NOTES AND LOCALITY SKETCH

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | N.T.S. |

Drawing number: 22U24_DA_C000
Revision: 03




## LEGEND

- EXISTING SURVEY BOUNDARY
- ROAD BOUNDARY
- PROPOSED RIDGE LINE (R)
- PROPOSED VALLEY LINE (V)
- PROPOSED JUNCTION PITS
- PROPOSED SURFACE INLET PITS
- PROPOSED LINTEL ONGRADE & SAG PITS
- PROPOSED PIT TAG (A-1: LINE LETTER, PIT NUMBER)
- STORMWATER UPSTREAM INVERT RL. (40.125)
- STORMWATER PIPE DIAMETER & CLASS (Ø425RCP)
- STORMWATER PIPE LENGTH (20.450m)
- STORMWATER PIPE GRADE (1.5%)
- STORMWATER DOWNSTREAM INVERT RL. (39.818)
- PROPOSED GRATED DRAIN
- EXISTING STORMWATER PIPE
- PROPOSED STORMWATER PIPE
- IN-GROUND DOWNPIPE COLLECTION LINE
- EXISTING CONTOURS (76.03)
- PROPOSED CONTOURS (72.50)
- PROPOSED SPOT LEVEL (RL78.10)
- EXISTING SPOT LEVEL (EX72.90)
- PROPOSED KERB ONLY (KO)
- PROPOSED EDGE STRIP (ES)
- PROPOSED RETAINING WALL (RW)
- PROPOSED RECYCLED WATER (RW)
- EXISTING STORMWATER (SW)
- EXISTING TELSTRA LINE (T)
- EXISTING ELECTRICAL OVERHEAD LINE (E)
- EXISTING GAS LINE (G)
- EXISTING SEWER LINE (S)
- EXISTING ROAD EDGE
- FUTURE ROAD BY OTHERS
- STREETSCAPE RAINGARDEN WITH KERB OPENING AND SCOUR PROTECTION
- EXISTING ELECTRICAL EASEMENT

## GENERAL ARRANGEMENT PLAN

SCALE: 1:600

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

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Client: FABCOT

Architect: CLARKE HOPKINS CLARKE

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Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: GENERAL ARRANGEMENT PLAN

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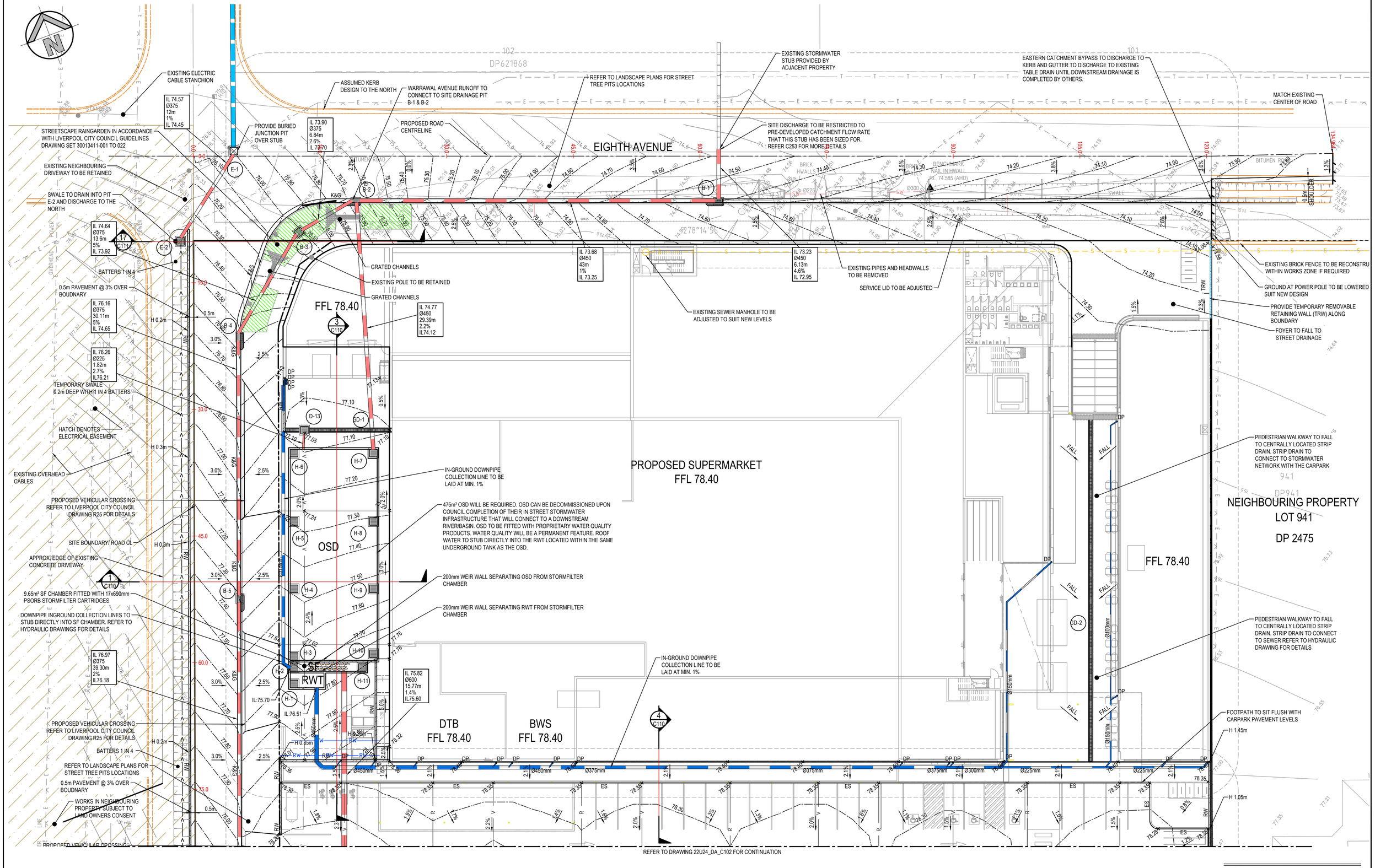
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:600 |

Drawing number: 22U24_DA_C100

Revision: 03




0 4 8 12 16 20m

4 3 2 1

SCALE 1:200

## CIVIL DETAIL PLAN

SCALE 1:200

**FOR DA ONLY**

SURVEY INFORMATION

SURVEYED BY LTS

DATUM: A.H.D.

ORIGIN OF LEVELS: SSM 199387 RL 79.060

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Architect: CLARKE HOPKINS CLARKE

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Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: CIVIL DETAIL PLAN
SHEET 1 OF 2

| Drawn | Designed | Original issue date |
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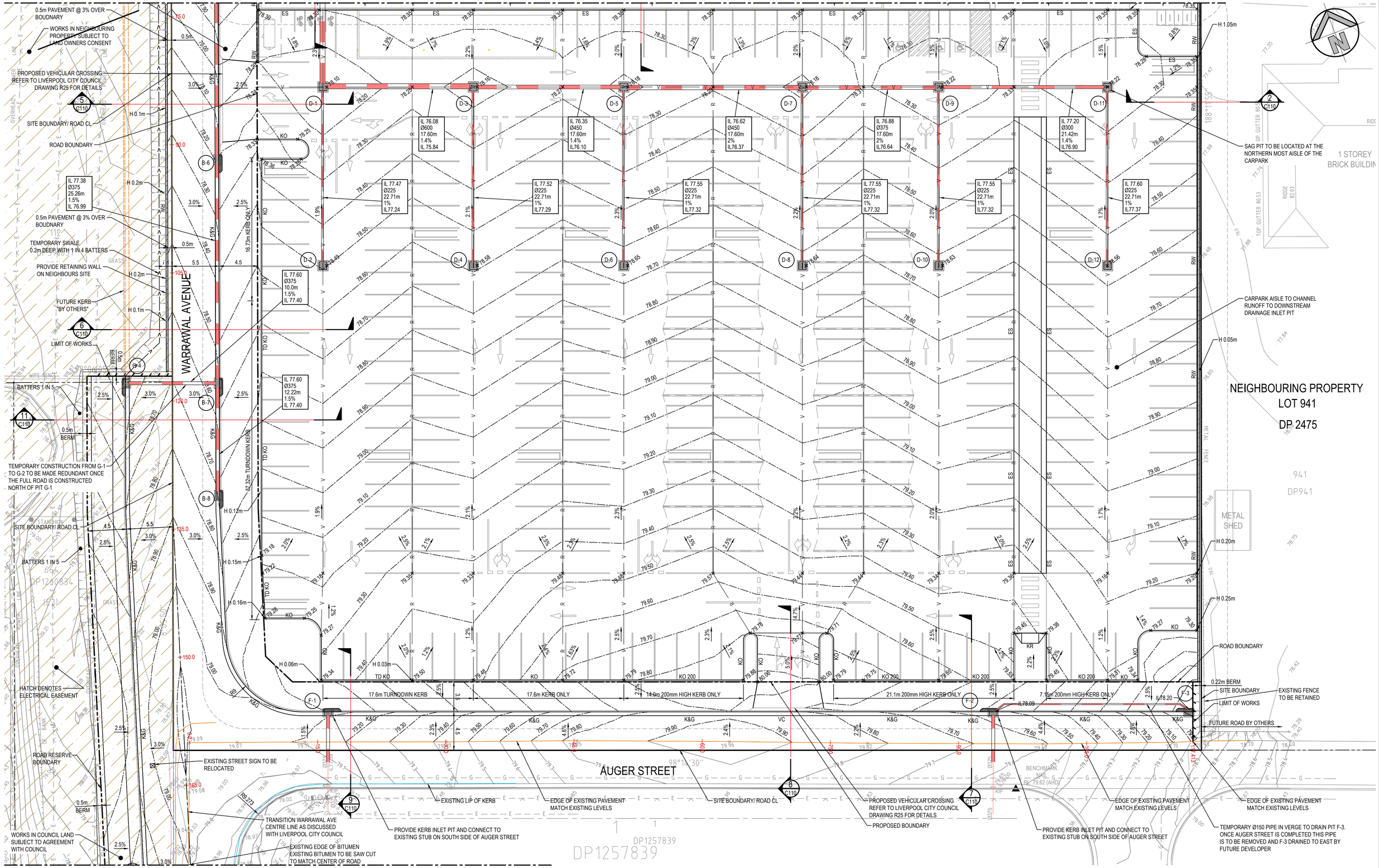
| T.Rozehnal | A.Francis | 1:200 |

Drawing number: 22U24_DA_C101

Revision: 03

REFER TO DRAWING 22U24_DA_C101 FOR CONTINUATION




## CIVIL DETAIL PLAN

SCALE 1:200

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SURVEYED BY LTS

DATUM: A.H.D.

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Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: CIVIL DETAIL PLAN
SHEET 2 OF 2

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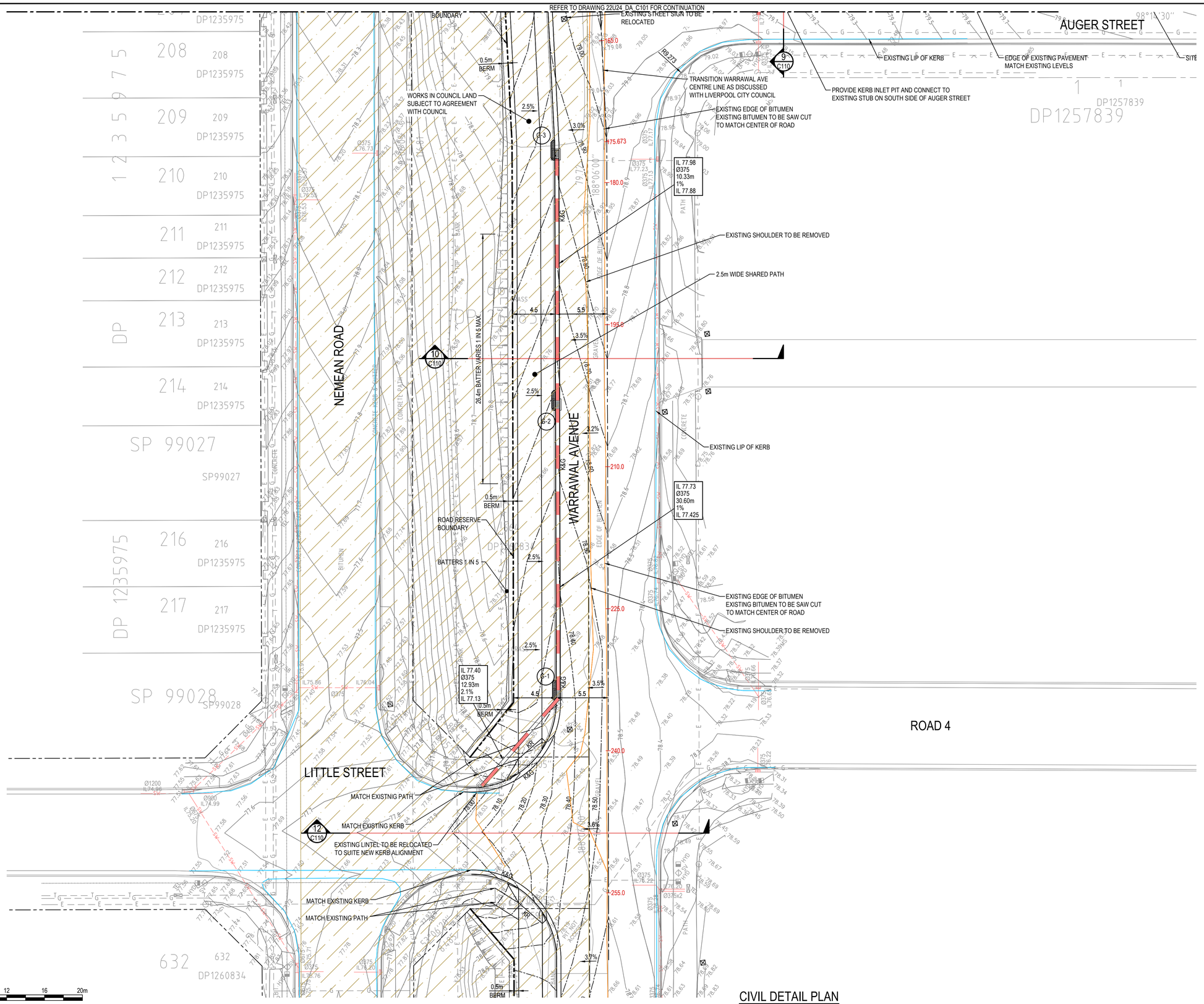
Drawing number: 22U24_DA_C102

Revision: 03




## CIVIL DETAIL PLAN

SCALE 1:200

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Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: CIVIL DETAIL PLAN
SHEET 3 OF 3

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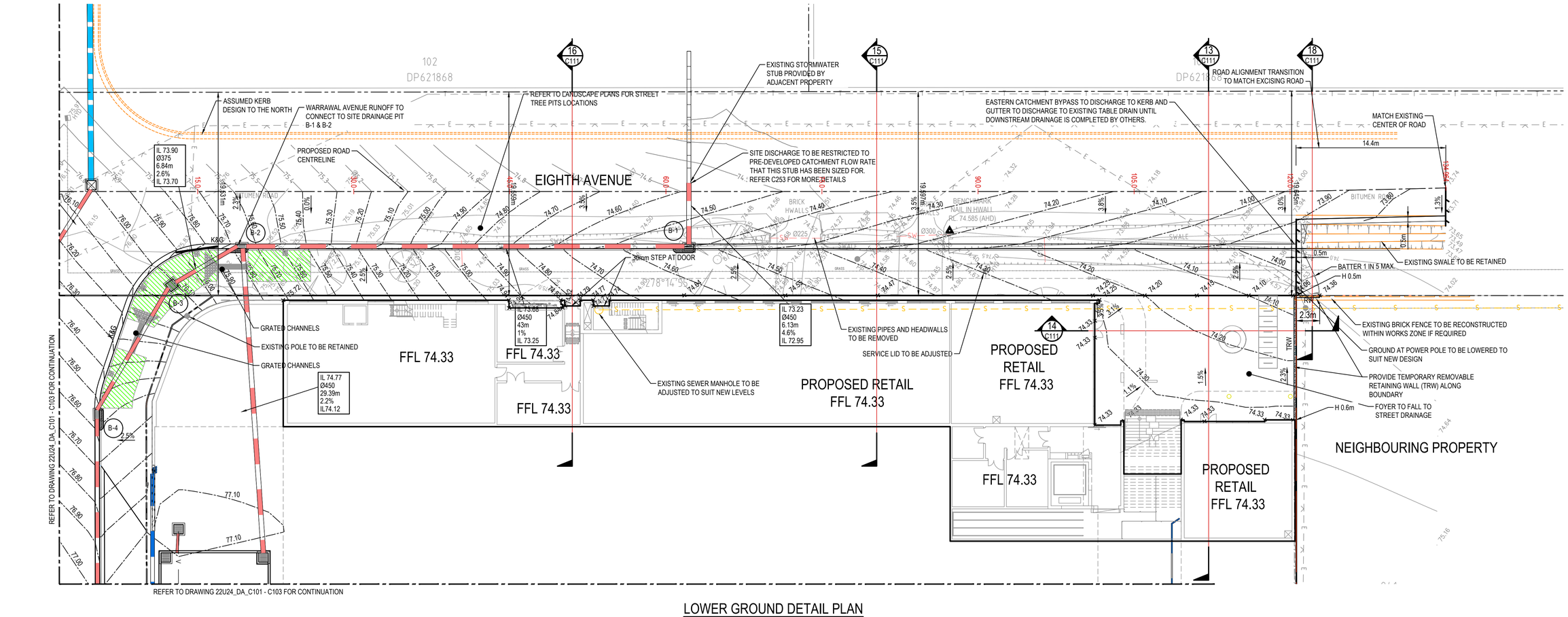
| T.Rozehnal | A.Francis | 1:200 |

Drawing number: 22U24_DA_C103

Revision: 03




## LOWER GROUND DETAIL PLAN

SCALE 1:200

0 4 8 12 16 20m

4 3 2 1

SCALE 1:200

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
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ORIGIN OF LEVELS: SSM 199387 RL 79.060

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Client: FABCOT

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260 EIGHTH AVENUE, AUSTRAL NSW

Title: LOWER GROUND DETAIL PLAN

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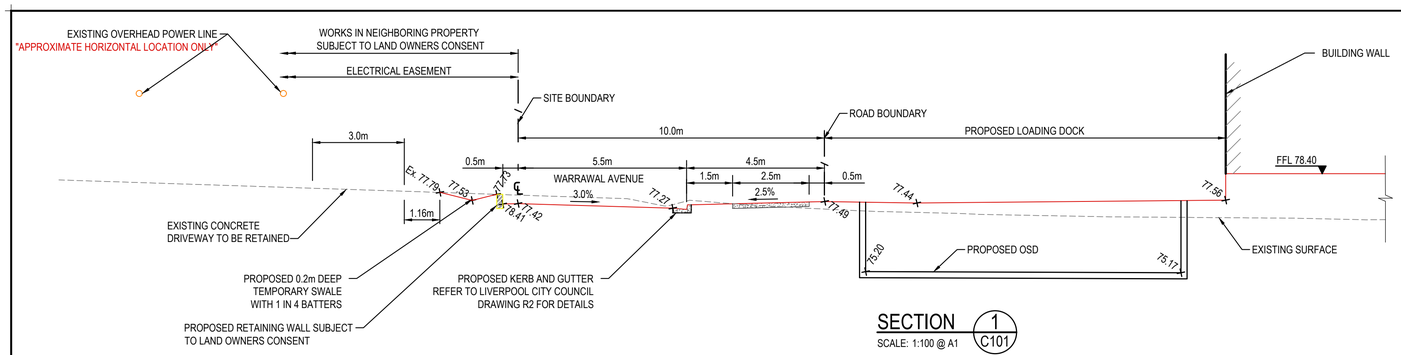
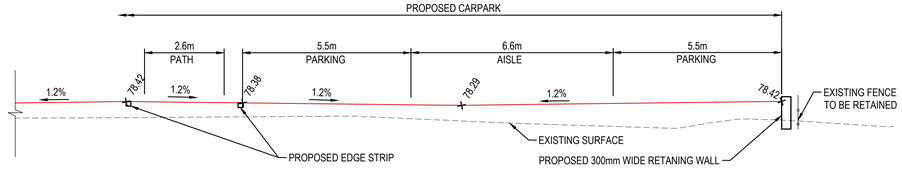
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:200 |

Drawing number: 22U24_DA_C105

Revision: 01




## SECTION 1
SCALE: 1:100 @ A1 — C101

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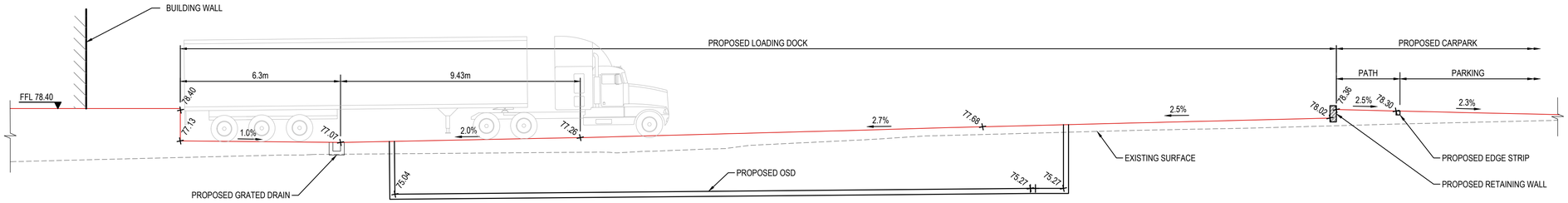
SCALE: 1:100 @ A1 — C102

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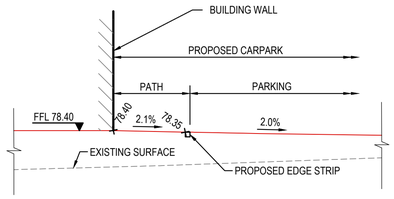
SCALE: 1:100 @ A1 — C101

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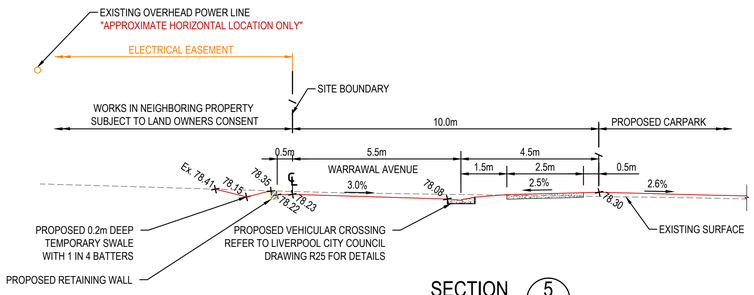
SCALE: 1:100 @ A1 — C101

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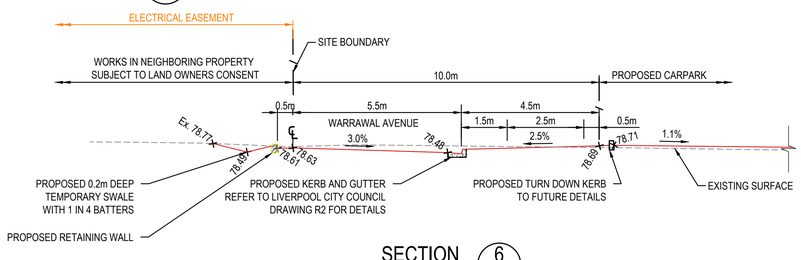
SCALE: 1:100 @ A1 — C102

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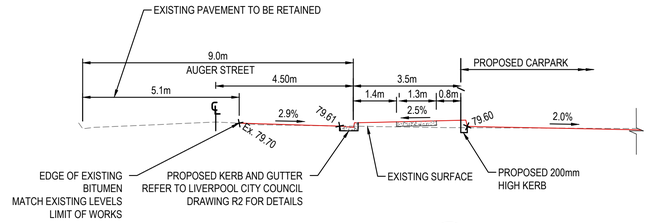


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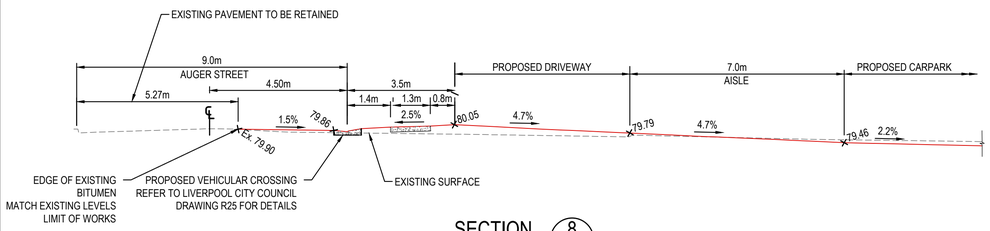


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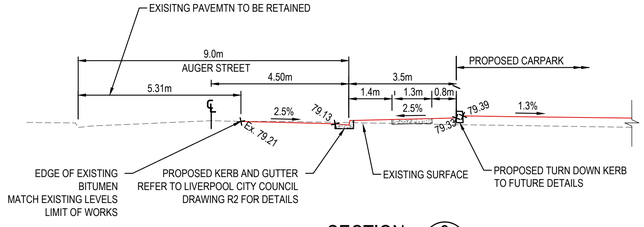
SCALE: 1:100 @ A1 — C102

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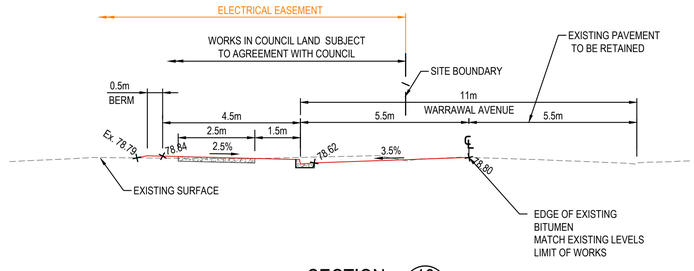
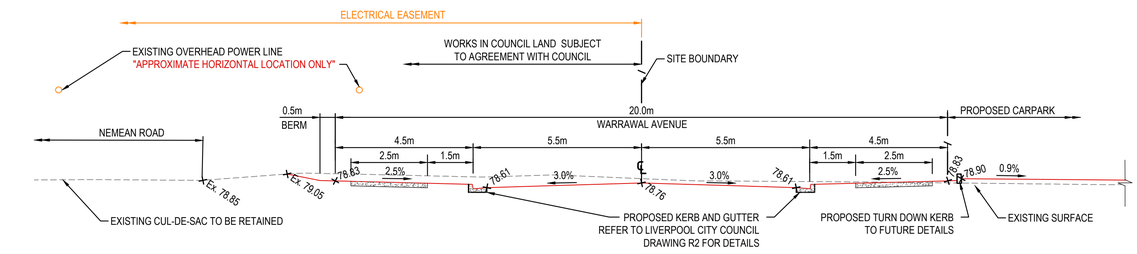
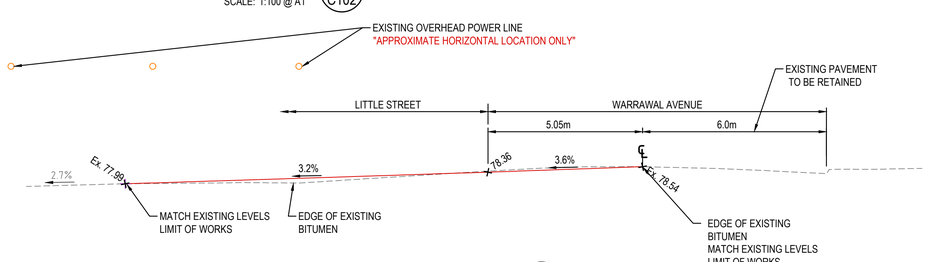
SCALE: 1:100 @ A1 — C102




## SECTION 10
SCALE: 1:100 @ A1 — C103




## SECTION 11
SCALE: 1:100 @ A1 — C102




## SECTION 12
SCALE: 1:100 @ A1 — C103

0 2 4 6 8 10m
2 1
SCALE 1:100

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SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

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Client: FABCOT
Architect: CLARKE HOPKINS CLARKE

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Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW
Title: SITE SECTIONS
SHEET 1 OF 2

| Drawn | Designed | Original issue date |
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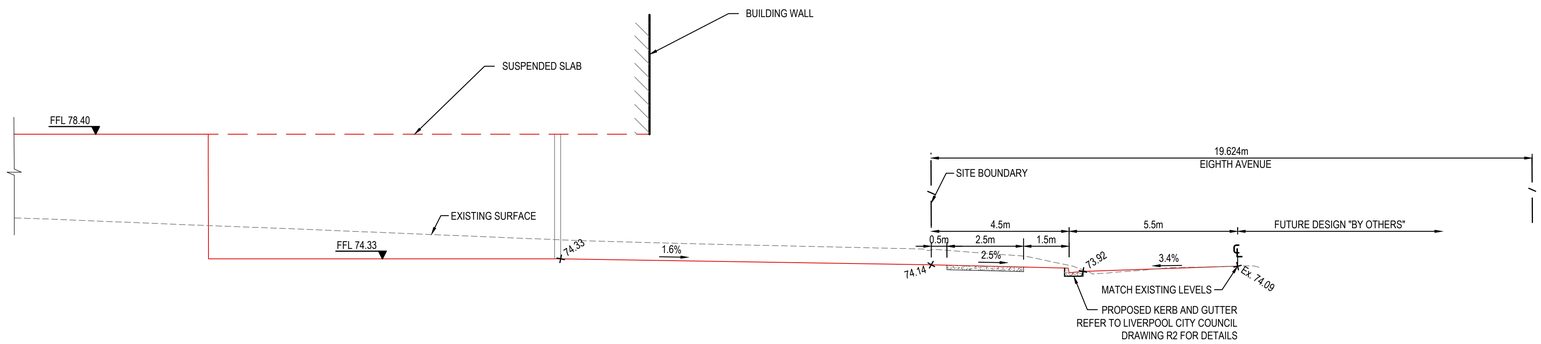
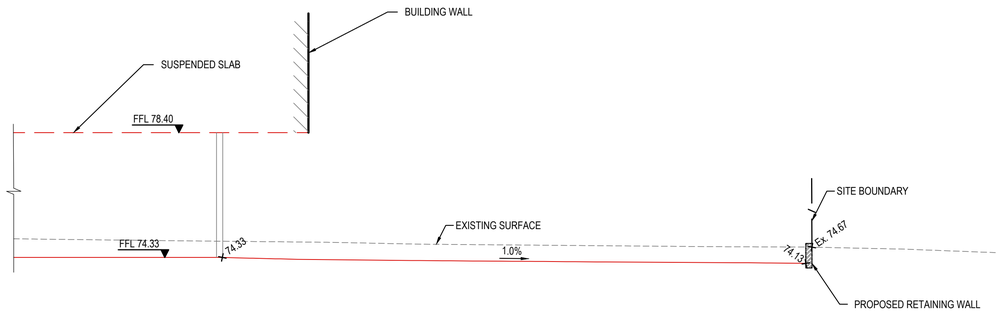
| T.Rozehnal | A.Francis | 1:100 |

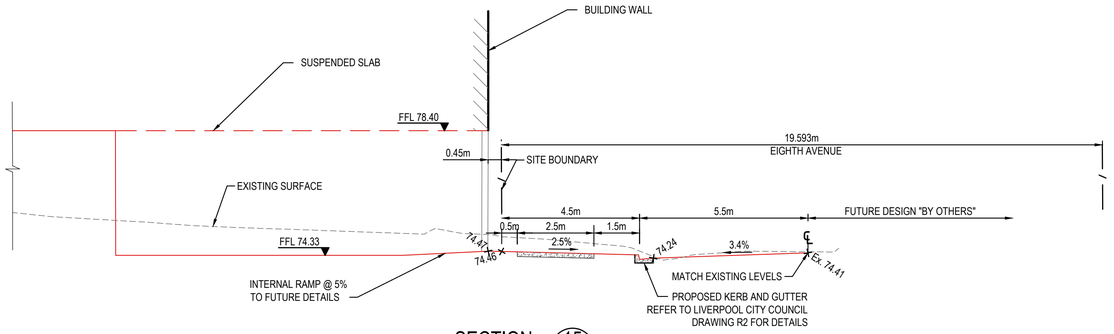
Drawing number: 22U24_DA_C110
Revision: 01




SECTION 13 (C105)
SCALE: 1:100 @ A1




SECTION 14 (C105)
SCALE: 1:100 @ A1




SECTION 15 (C105)
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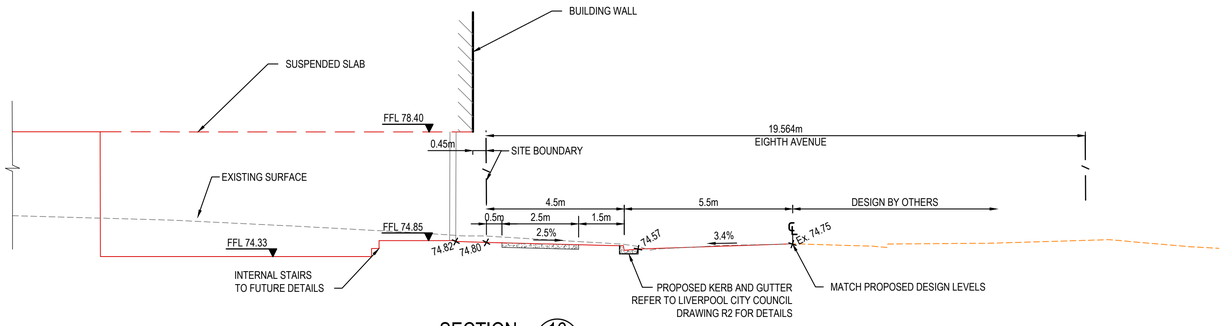


SECTION 16 (C105)
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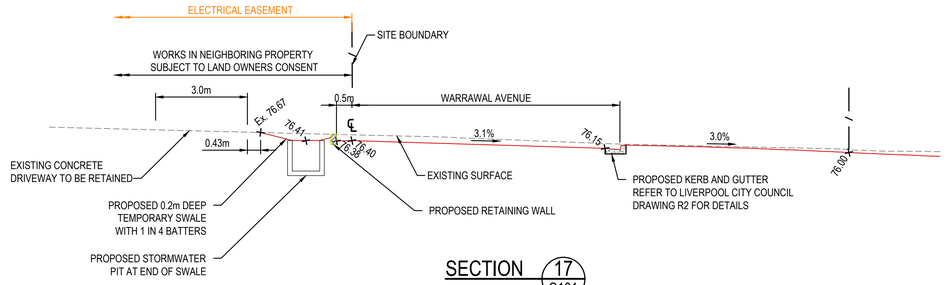
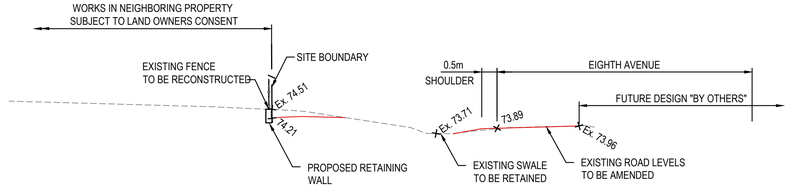



SECTION 17 (C101)
SCALE: 1:100 @ A1




SECTION 18 (C105)
SCALE: 1:100 @ A1

0 2 4 6 8 10m
2 1
SCALE 1:100

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Client: FABCOT
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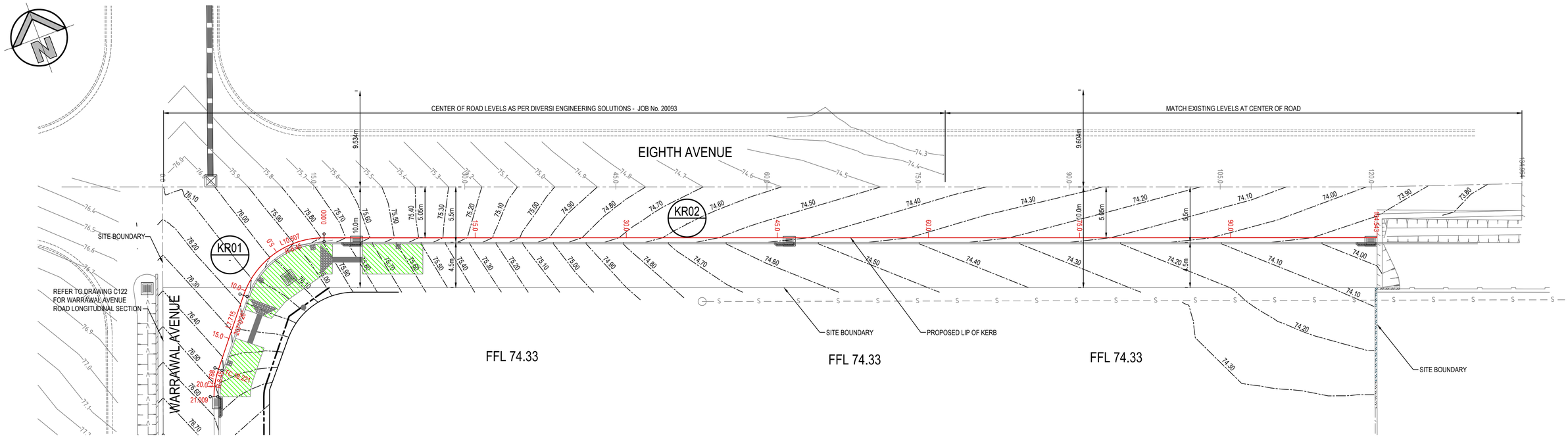
Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: SITE SECTIONS
SHEET 2 OF 2

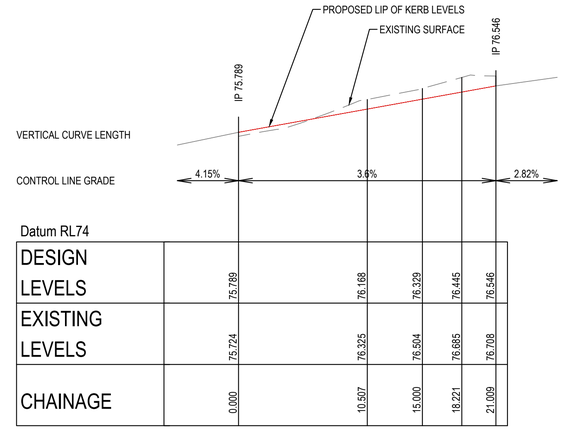
| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:100 |

Drawing number: 22U24_DA_C111
Revision: 01




## EIGHT AVENUE CHAINAGES PLAN

SCALE: 1:200

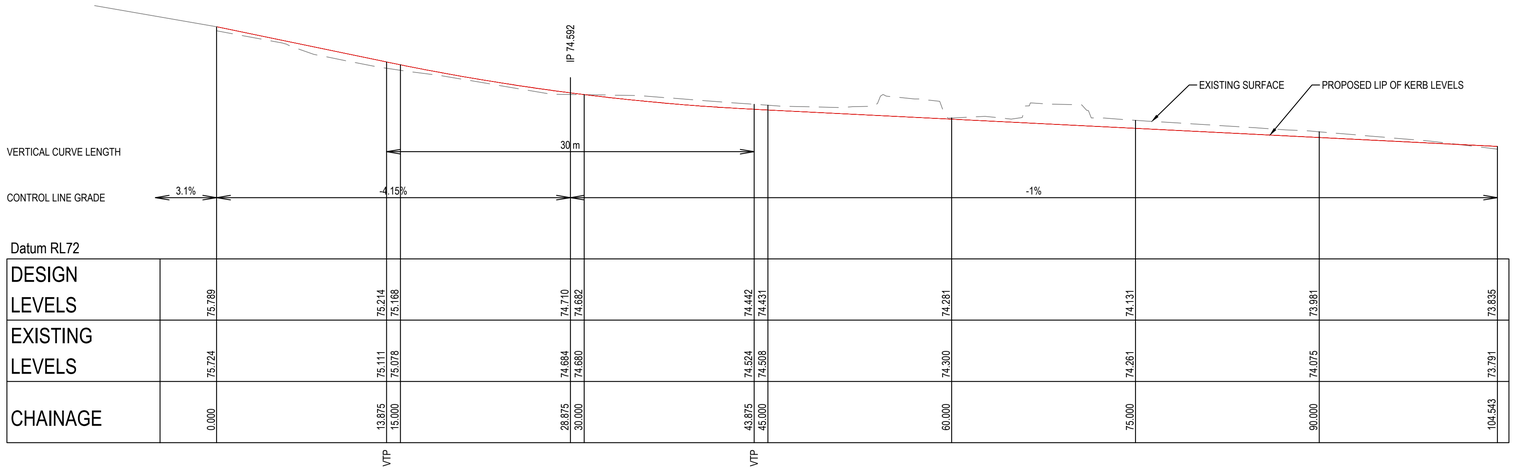



Datum RL74

| | | | | | |
|---|---|---|---|---|---|
| DESIGN LEVELS | 75.789 | 76.168 | 76.329 | 76.445 | 76.546 |
| EXISTING LEVELS | 75.724 | 76.325 | 76.504 | 76.685 | 76.708 |
| CHAINAGE | 0.000 | 10.507 | 15.000 | 18.221 | 21.009 |

## LONGITUDINAL SECTION KERB RETURN No. 01 - LIP OF KERB

HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:50




Datum RL72

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESIGN LEVELS | 75.789 | 75.214 | 75.168 | 74.710 | 74.692 | 74.442 | 74.431 | 74.281 | 74.131 | 73.981 | 73.835 |
| EXISTING LEVELS | 75.724 | 75.111 | 75.078 | 74.684 | 74.680 | 74.524 | 74.508 | 74.300 | 74.261 | 74.075 | 73.791 |
| CHAINAGE | 0.000 | 13.875 | 15.000 | 28.875 | 30.000 | 43.875 | 45.000 | 60.000 | 75.000 | 90.000 | 104.543 |

## LONGITUDINAL SECTION KERB RETURN No. 02 - LIP OF KERB

HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:50

0 5 10 15 20 25m
5 4 3 2 1
SCALE 1:250

0 4 8 12 16 20m
4 3 2 1
SCALE 1:200

0 1000 2000 3000 4000 5000mm
1000 600 200
SCALE 1:50

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
|---|---|---|---|---|
| 01 | ISSUED FOR DA ONLY | SC | MM | 14.06.2023 |

Client: FABCOT

Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

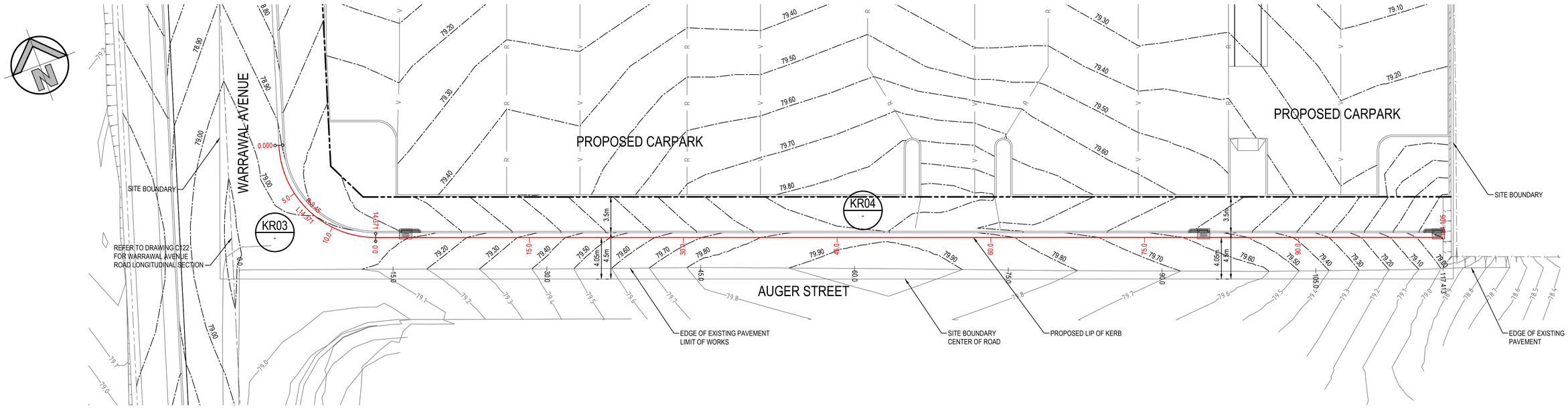
henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: EIGHT AVE LONGITUDINAL SECTION AND CHAINAGES PLAN

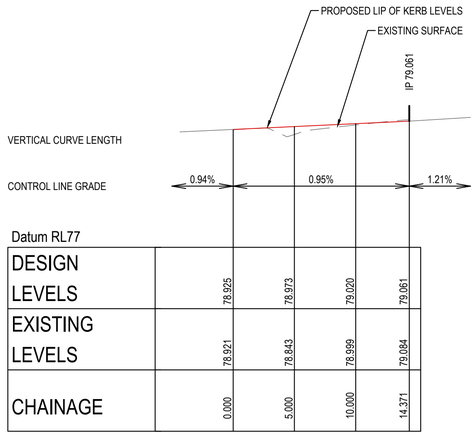
| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | AS SHOWN |

Drawing number: 22U24_DA_C120
Revision: 01




## AUGER STREET CHAINAGES PLAN

SCALE: 1:200

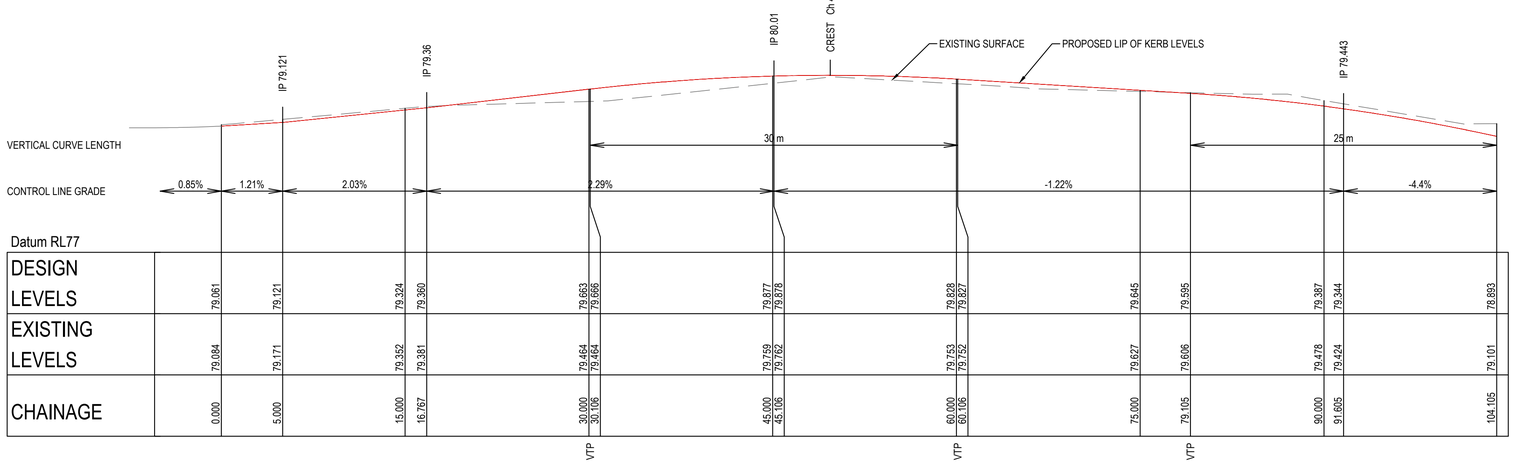



Datum RL77

| | | | | |
|---|---|---|---|---|
| DESIGN LEVELS | 78.925 | 78.973 | 79.020 | 79.061 |
| EXISTING LEVELS | 78.921 | 78.843 | 78.999 | 79.084 |
| CHAINAGE | 0.000 | 5.000 | 10.000 | 14.371 |

## LONGITUDINAL SECTION KERB RETURN No. 03 - LIP OF KERB

HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:50




Datum RL77

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESIGN LEVELS | 79.051 | 79.121 | 79.324 | 79.360 | 79.663 | 79.666 | 79.877 | 79.878 | 79.828 | 79.827 | 79.645 | 79.595 | 79.387 | 79.344 | 78.893 |
| EXISTING LEVELS | 79.084 | 79.171 | 79.352 | 79.381 | 79.464 | 79.464 | 79.769 | 79.762 | 79.753 | 79.752 | 79.627 | 79.606 | 79.478 | 79.424 | 79.101 |
| CHAINAGE | 0.000 | 5.000 | 15.000 | 16.767 | 30.000 | 30.106 | 45.000 | 45.106 | 60.000 | 60.106 | 75.000 | 79.105 | 90.000 | 91.605 | 104.105 |

## LONGITUDINAL SECTION KERB RETURN No. 04 - LIP OF KERB

HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:50

0 5 10 15 20 25m
5 4 3 2 1
SCALE 1:250

0 4 8 12 16 20m
4 3 2 1
SCALE 1:200

0 1000 2000 3000 4000 5000mm
1000 600 200
SCALE 1:50

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
|---|---|---|---|---|
| 01 | ISSUED FOR DA ONLY | SC | MM | 14.06.2023 |

Client: FABCOT

Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

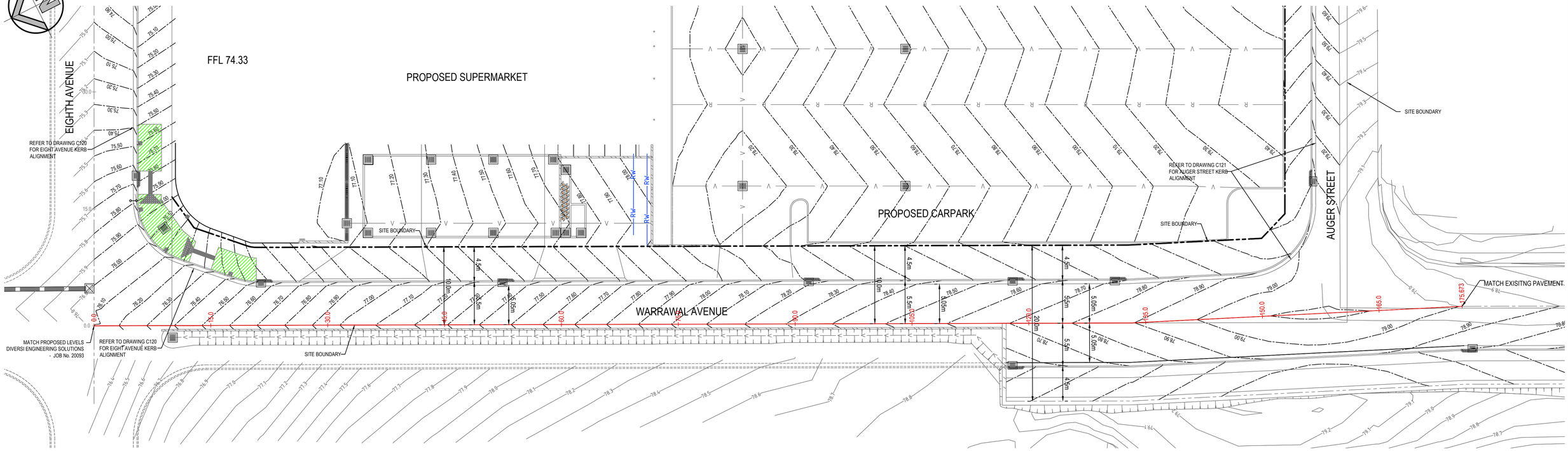
henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: AUGER STREET LONGITUDINAL SECTION AND CHAINAGES PLAN

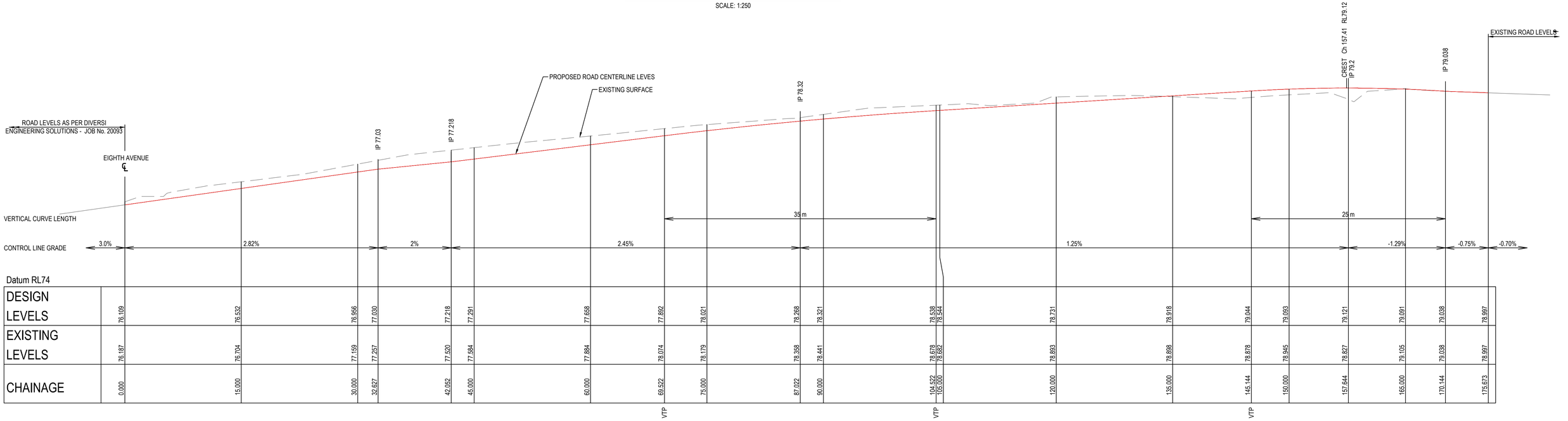
| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | AS SHOWN |

Drawing number: 22U24_DA_C121
Revision: 01

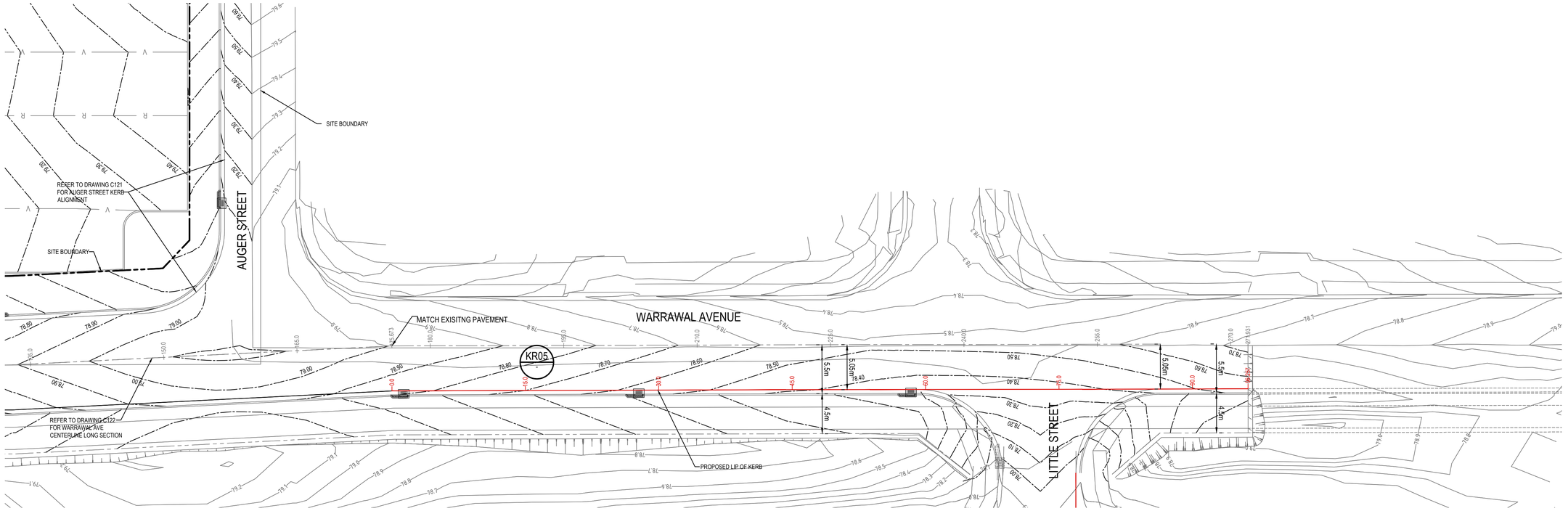



## WARRAWAL AVENUE CHAINAGES PLAN

SCALE: 1:250

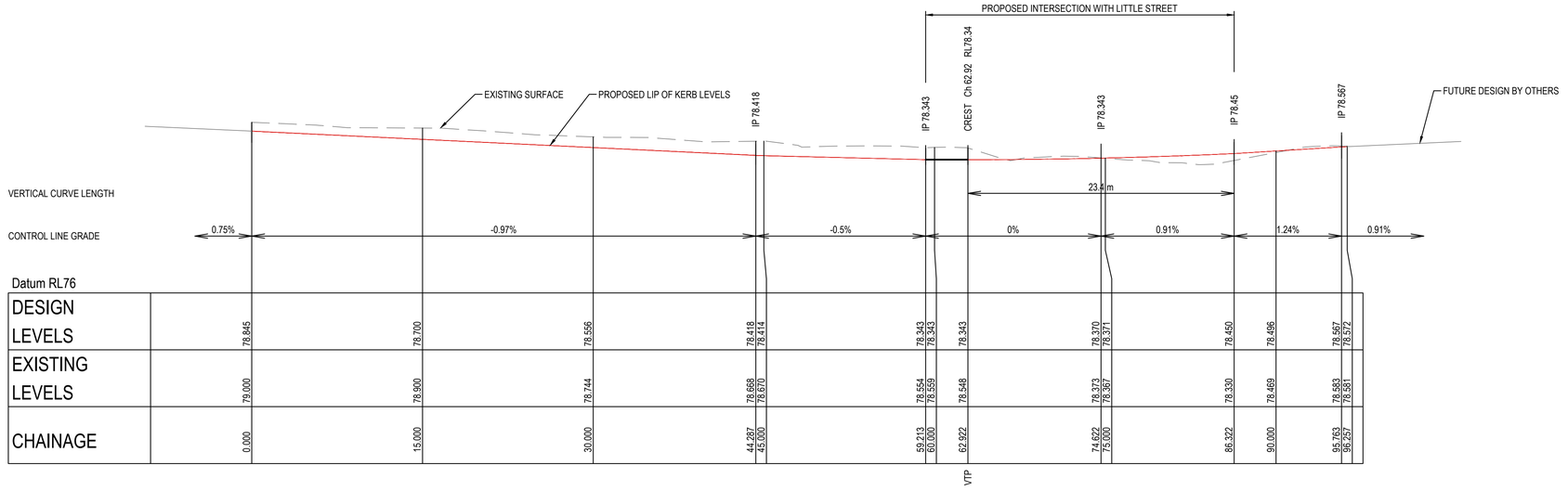



| | | |




## WARRAWAL AVENUE CHAINAGES PLAN

SCALE: 1:250




## LONGITUDINAL SECTION KERB RETURN No. 05 - LIP OF KERB

HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:50

0 5 10 15 20 25m
5 4 3 2 1
SCALE 1:250

0 1000 2000 3000 4000 5000mm
1000 600 200
SCALE 1:50

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
|---|---|---|---|---|
| 01 | ISSUED FOR DA ONLY | SC | MM | 14.06.2023 |

Client: FABCOT

Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

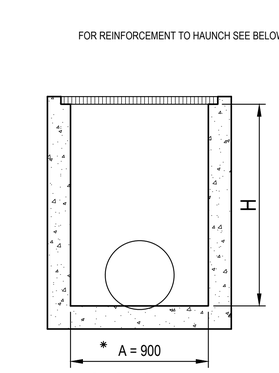
Title: WARRAWAL AVE LONGITUDINAL SECTION AND CHAINAGES PLAN - SHEET 2 OF 2

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | AS SHOWN |

Drawing number: 22U24_DA_C123
Revision: 01

# TYPICAL PIT CHAMBER SIZES
## IT IS THE CONTRACTORS RESPONSIBILITY TO SELECT PIT CHAMBER SIZE WITH REGARDS TO PIPE SIZE, DEPTH TO INVERT AND SKEW ANGLE. REFER SKETCHES BELOW.

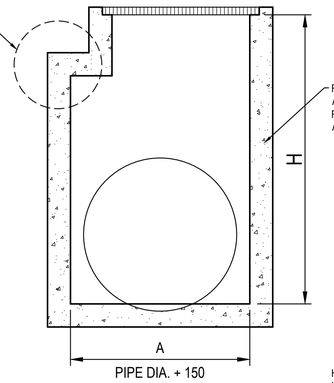
1. SELECT PIT CHAMBER USING THE STEPS BELOW:
2. SELECT PIT CHAMBER SIZE DEPENDING ON THE PIPE DIAMETERS.
3. CHECK PIT CHAMBER SIZE TO SATISFY DEPTH TO INVERT REQUIREMENTS.
   CHECK PIT CHAMBER DIMENSIONS TO SATISFY THE SKEW ANGLE IN THE TABLE.




SECTION
NTS

*A = 600 FOR PIPES UP TO 375 DIA.

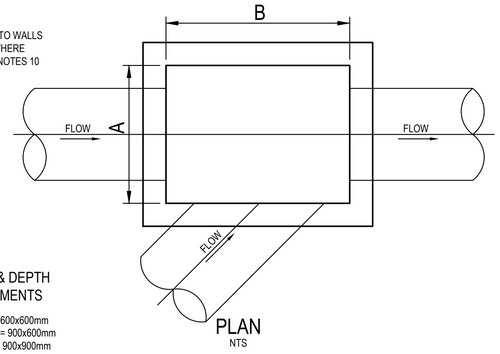
1 PIT CHAMBER DIMENSIONS FOR PIPES UP TO 600 DIA.




SECTION
NTS

1 PIT CHAMBER FOR PIPES GREATER THAN 600 DIA.

FOR B = 600mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 225mm
FOR B = 900mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 375mm
FOR B = 1200mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 600mm
FOR B = 1500mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 825mm
FOR B = 1900mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 1050mm

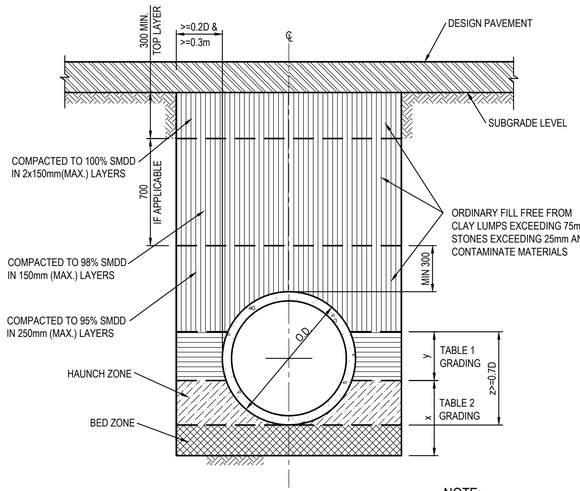



PLAN
NTS

2 PIT SIZE & DEPTH REQUIREMENTS

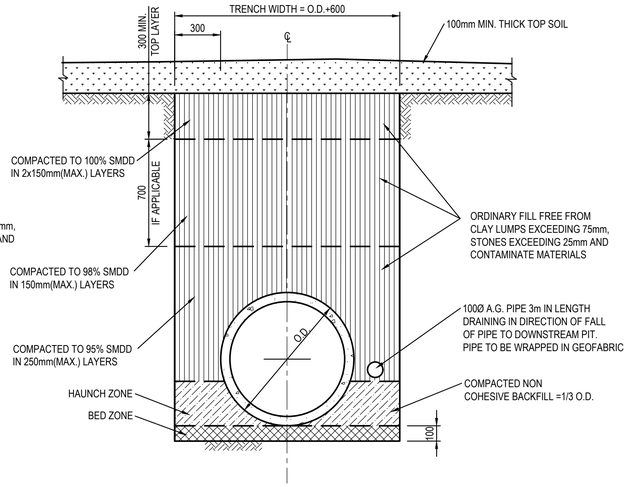
H = 0-900mm - AxB = 600x600mm
H = 900-1200mm - AxB = 900x600mm
H = >1200mm - AxB = 900x900mm

3 PIT CHAMBER FOR SIDE ENTRY ON SKEW

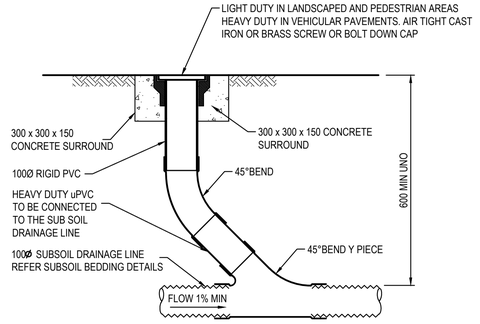



## PIPE TRENCH INSTALLATION BENEATH PAVEMENT
(HS SUPPORT TO BE USED UNDER ROADWAY)
SCALE 1:20

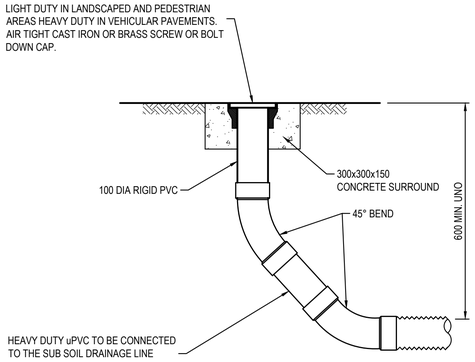
NOTE:
TYPE HS2 TO BE USED AS A TYPICAL SUPPORT FOR TRENCHES UNDER ROADWAY UNLESS SPECIFIED SEPERATELY



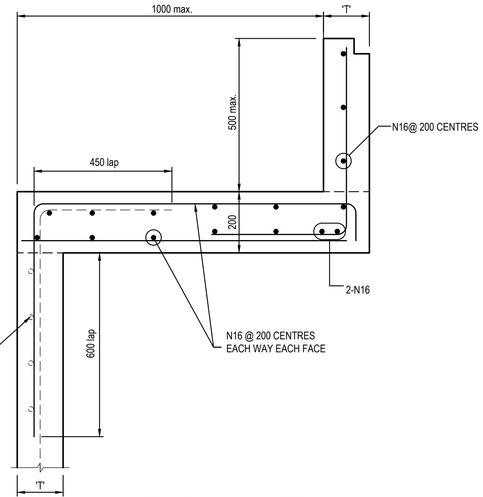

## PIPE TRENCH INSTALLATION IN LANDSCAPE AREAS
(H1 & H2 SUPPORT)
SCALE 1:20



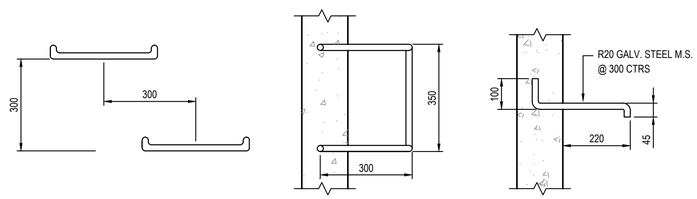

## INTERMEDIATE RISER (IR)
SCALE 1:10
NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED




## FLUSHING POINT (FP)
SCALE 1:10
NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED




## HAUNCH DETAIL -TYPICAL
SCALE 1:10




## TYPICAL STEP IRON DETAIL
SCALE 1:10

| TABLE 1 | |
|---|---|
| SIEVE SIZE (MM) | WEIGHT PASISNG (%) |
| 75.0 | 100 |
| 9.5 | 100 TO 50 |
| 2.36 | 100 TO 30 |
| 0.60 | 50 TO 15 |
| 0.075 | 25 TO 0 |

| TABLE 2 | |
|---|---|
| SIEVE SIZE (MM) | WEIGHT PASISNG (%) |
| 19.0 | 100 |
| 2.36 | 100 TO 50 |
| 0.60 | 90 TO 20 |
| 0.30 | 60 TO 10 |
| 0.15 | 25 TO 0 |
| 0.075 | 10 TO 0 |

| TABLE 3 | | | | |
|---|---|---|---|---|
| SUPPORT TYPE | BED ZONE X | HAUNCH ZONE Y | BED AND HAUNCH ZONES COMPACTION | MAX BEDDING FACTOR |
| HS1 | 100 IF D<=1500, OR 150 IF D>=1500 | 0.1D | 50 | 2.0 |
| HS2 | | 0.3D | 60 | 2.5 |
| HS3 | | 0.3D | 70 | 4.0 |

0 400 800 1200 1600 2000mm
400 200
SCALE 1:20

0 200 400 600 800 1000mm
200 100
SCALE 1:10

## PIT LID SCHEDULE

| PIT/STRUCTURE NUMBER | DESCRIPTION |
|---|---|
| B-1 B-2 C-1 C-2 C-3 C-4 F-1 F-2 F-3 G-1 G-2 G-3 G-4 B-4 B-5 B-6 B-7 B-8 | PROPOSED 1.8m KERB INLET PIT WITH HINGED 600x600 WITH HEAVY DUTY GRATED LID CLASS 'D' IN ACCORDANCE WITH LIVERPOOL CITY COUNCIL REQUIREMENTS. |
| D-1 D-2 D-3 D-4 D-5 D-6 D-7 D-8 D-9 D-10 D-11 D-12 D-13 E-2 | PROPOSED SURFACE INLET PIT WITH HINGED 900x900 MEDIUM DUTY GRATED LID CLASS 'C' IN ACCORDANCE WITH LIVERPOOL CITY COUNCIL REQUIREMENTS. |
| GD-1 GD-2 | PROPOSED 200mm WIDE GRATED DRAIN HEAVY DUTY CLASS 'D' GRATE AND FRAME IN ACCORDANCE WITH LIVERPOOL CITY COUNCIL REQUIREMENTS. |
| H-1 H-2 H-3 H-4 H-5 H-6 H-7 H-8 H-9 H-10 H-11 | OSD ACCESS LID 900x900 HEAVY DUTY LOCKABLE GRATED LID CLASS 'D' IN ACCORDANCE WITH LIVERPOOL CITY COUNCIL REQUIREMENTS. |
| B-3 | PROPOSED RAISED LETTER BOX PIT AS PER LIVERPOOL CITY COUNCIL DRAWING 30013411 - 020 CONCRETE LEVEL SET 150mm ABOVE RAIN GARDEN |
| E-1 | PROPOSED BURIED JUNCTION PIT |

## PITS TO BE FITTED WITH ENVIROPOD

D-1 D-2 D-3 D-4 D-5 D-6 D-7 D-8 D-9 D-10 D-11 D-12 D-13

## DRAINAGE NOTES:

1. ALL STORMWATER WORK TO COMPLY WITH AS 3500 PART 3.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE MINIMUM COVER OF 600mm ON ALL PIPES.

3. PROTECTION OF PIPES DUE TO LOADS EXCEEDING W7 WHEEL LOAD SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

4. BEDDING TYPE SHALL BE TYPE H2 FOR RCP. WHERE NECESSARY THE OVERLAY ZONE SHALL BE REDUCED TO ACCOMMODATE PAVEMENT REQUIREMENTS. REFER TO THIS DRAWING FOR DETAILS.

5. MINIMUM COVER OVER EXISTING PIPES FOR PROTECTION DURING CONSTRUCTION SHALL BE 800mm.

6. NO CONSTRUCTION LOADS SHALL BE APPLIED TO PLASTIC PIPES.

7. FINISHED SURFACE LEVELS SHOWN ON LAYOUT PLAN DRGS TAKE PRECEDENCE OVER DESIGN DRAINAGE SURFACE LEVELS.

8. ALL PIPES UP TO AND INCLUDING 300 DIA. SHALL BE SOLVENT OR RUBBER RING JOINTED PVC CLASS SH PIPE TO AS1260. ALL OTHER PIPES TO BE RCP USING CLASS 2 RUBBER RING JOINTED PIPE. HARDIES FRC PIPE MAY BE USED IN LIEU OF RCP IF DESIRED IN GROUND. ALL AERIAL PIPES TO BE PVC CLASS SH.

9. ALL PITS IN NON TRAFFICABLE AREAS TO BE PREFABRICATED POLYESTER CONCRETE "POLYCRETE" WITH "LIGHT DUTY" CLASS B GALV. MILD STEEL GRATING AND FRAME.
ALL PITS IN TRAFFICABLE AREAS (CLASS "D" LOADING MAX) TO HAVE 150mm THICK CONCRETE WALLS AND BASE CAST IN-SITU f'c=32 MPa, REINFORCED WITH N12-200 BOTH LOADING WAYS CENTRALLY PLACE .U.N.O. ON SEPARATE DESIGN DRAWINGS IN THIS SET. GALV.MILD STEEL GRATING AND FRAME TO SUIT DESIGN LOADING. PRECAST PITS, RECTANGULAR OR CIRCULAR IN SHAPE, MAY BE USED IN LIEU AND SHALL COMPLY WITH RELEVANT AUSTRALIAN STANDARDS.

10. ALL PITS, GRATINGS AND FRAMES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION AND TO BE IN ACCORDANCE WITH AS3500.3 AND AS3996.
11. PIT CHAMBER DIMENSIONS ARE TO BE SELECTED TO SATISFY THE FOLLOWING:
- PIPE SIZE
- DEPTH TO INVERT
- SKEW ANGLE
  REFER TYPICAL PIT CHAMBER DETAILS BELOW
IF PIT LID SIZE IS SMALLER THAN THE PIT CHAMBER SIZE THEN THE PIT LID IS TO BE CONSTRUCTED ON THE CORNER OF THE PIT CHAMBER WITH THE STEP IRONS DIRECTLY BELOW. ALTERNATIVELY THE PIT LID TO BE USED, IS TO BE THE SAME SIZE AS THE PIT CHAMBER.

12. FOR PIPE SIZES GREATER THAN Ø300mm, PIT FLOOR IS TO BE BENCHED TO FACILITATE FLOW.

13. GALVANISED STEP IRONS SHALL BE PROVIDED AT 300 CTS FOR PITS HAVING A DEPTH EXCEEDING 1200mm. SUBSOIL DRAINAGE PIPE SHALL BE PROVIDED IN PIPE TRENCHES ADJACENT TO INLET PIPES. (MINIMUM LENGTH 3m).

14. ALL SUBSOIL PIPES SHALL BE 100mm SLOTTED PVC IN A FILTER SOCK, UNO, WITH 3m INSTALLED UPSTREAM OF ALL PITS.

15. ALL PIPEWORK SHALL HAVE MINIMUM DIAMETER 100.

16. MINIMUM GRADE FOR ROOFWATER DRAINAGE LINES SHALL BE 1%.

17. ALL PIPE JUNCTIONS AND TAPER UP TO AND INCLUDING 300 DIA. SHALL BE VIA PURPOSE MADE FITTINGS.

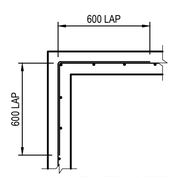
18. ALL ROOF DRAINAGE TO BE INSTALLED IN ACCORDANCE WITH AS3500, PART 3. TESTING TO BE UNDERTAKEN AND REPORTS PROVIDED TO THE SUPERINTENDENT.

19. LOCATION OF THE DIRECT DOWN PIPE CONNECTIONS MAY VARY ON SITE TO SUIT SITE CONDITIONS, WHERE CONNECTION SHOWN ON LONG SECTIONS CHAINAGES ARE INDICATIVE ONLY.

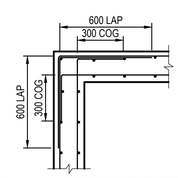
20. PITS IN EXCESS OF 1.5 m DEEP TO HAVE WALL AND FLOOR THICKNESS INCREASED TO 200mm. REINFORCED WITH N12@200 CTS CENTRALLY PLACED BOTH WAYS THROUGHOUT U.N.O.ON SEPARATE DESIGN DRAWINGS IN THIS SET. IF DEPTH EXCEEDS 5m CONTACT ENGINEER.

21. SUBSOIL DRAINAGE LINES FOR LANDSCAPE AREA NOT SHOWN ON THESE DRAWINGS. REFER TO LANDSCAPING PLANS FOR DETAILS.

22. ALL STORMWATER PITS TO HAVE Ø100 uPVC SLOTTED SUBSOIL PIPES CONNECTED TO THEM. THESE SUBSOILS TO EXTEND 3m UPSTREAM OF THE PIT AT A MINIMUM GRADE.




## 150 WALL - CORNER DETAIL
SCALE 1:20




## 200 WALL - CORNER DETAIL
SCALE 1:20

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
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| 03 | ISSUED FOR DA ONLY | SC | MM | 14.06.2023 |
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Client: FABCOT
Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

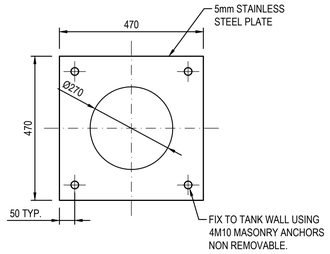
henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: STORMWATER MISCELLANEOUS DETAILS AND PIT LID SCHEDULE

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | AS NOTED |

Drawing number: 22U24_DA_C200
Revision: 02



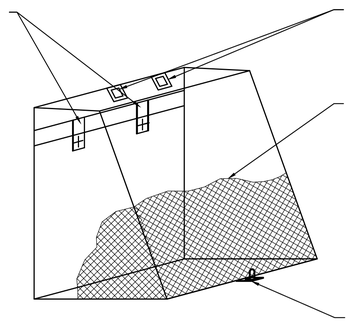

## ORIFICE PLATE DETAIL

SCALE 1:10

100 x 16 MOUNTING BAR WITH BRACKETS, SCREEN TO BE ATTACHED (GENERALLY ON A SLIDING MECHANISM) TO THE WALL, BUT SHOULD BE REMOVABLE (WITHOUT THE USE OF TOOLS) TO PERMIT CLEANSING AND EASY INSPECTION OF THE OUTLET CONTROL. ALL STEEL TO BE HOT DIPPED GALVANISED.

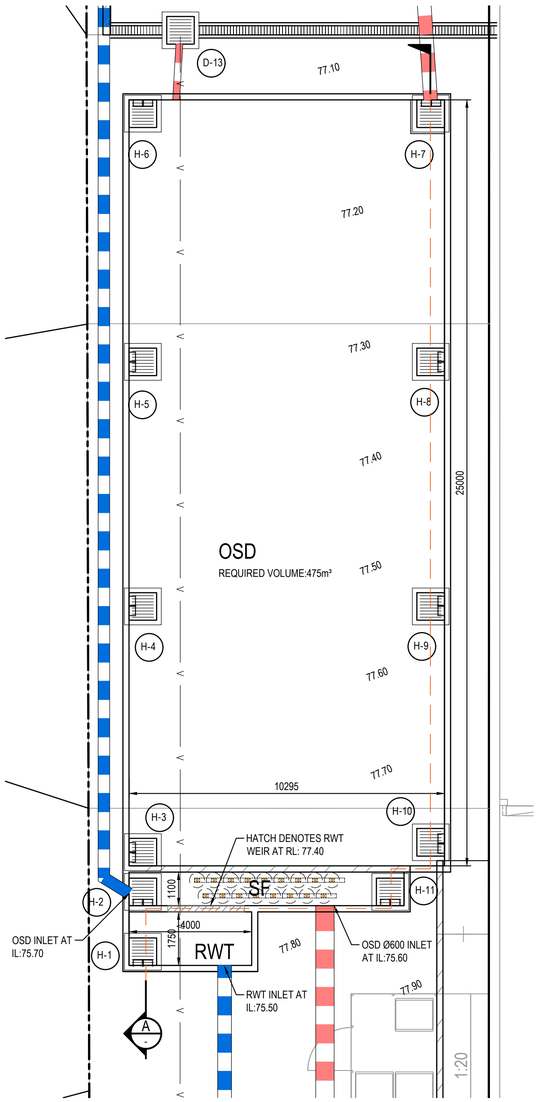
SCREEN TYPE WELDLOK A40/203 IS RECOMENDED FOR ORIFICES LARGER THAN 150mm AND SCREEN AREA 20 x THE ORIFICE AREA FOR THAT TYPE OF SCREEN - REFER UPRCT SECTION 4-13

MAXIMESH RH3030 IS RECOMMENDED FOR ORIFICES LESS THAN 150mm IN DIAMETER AND SCREEN AREA 50xTHE ORIFICE AREA REFER BURWOOD COUNCIL AND UPPER PARRAMATTA RIVER CATCHMENT TRUST HANDBOOK.



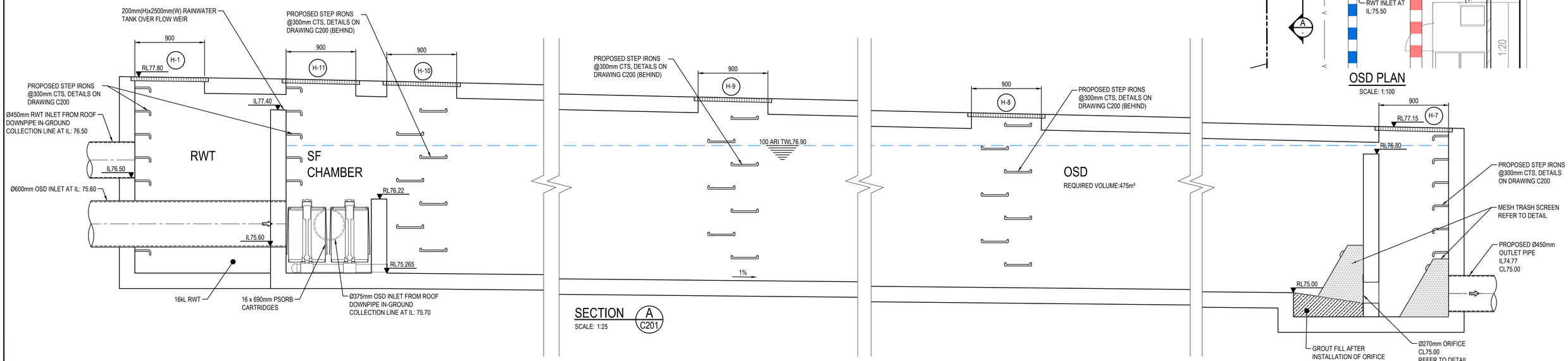

## DEBRIS SCREEN DETAIL

NOT TO SCALE
ALL STEEL TO BE HOT DIPPED GALVANISED




## OSD PLAN

SCALE: 1:100




## SECTION A

SCALE: 1:25 — C201

0 2 4 6 8 10m
2 1
SCALE 1:100

0 1000 2000 3000 4000 5000mm
1000 600 200
SCALE 1:50

0 400 800 1200 1600 2000mm
400 200
SCALE 1:20

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
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| 02 | ISSUED FOR DA ONLY | SC | MM | 14.06.2023 |
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Client: FABCOT
Architect: CLARKE HOPKINS CLARKE

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Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: OSD PLAN, SECTION AND DETAILS

| Drawn | Designed | Original issue date |
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| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | AS NOTED |

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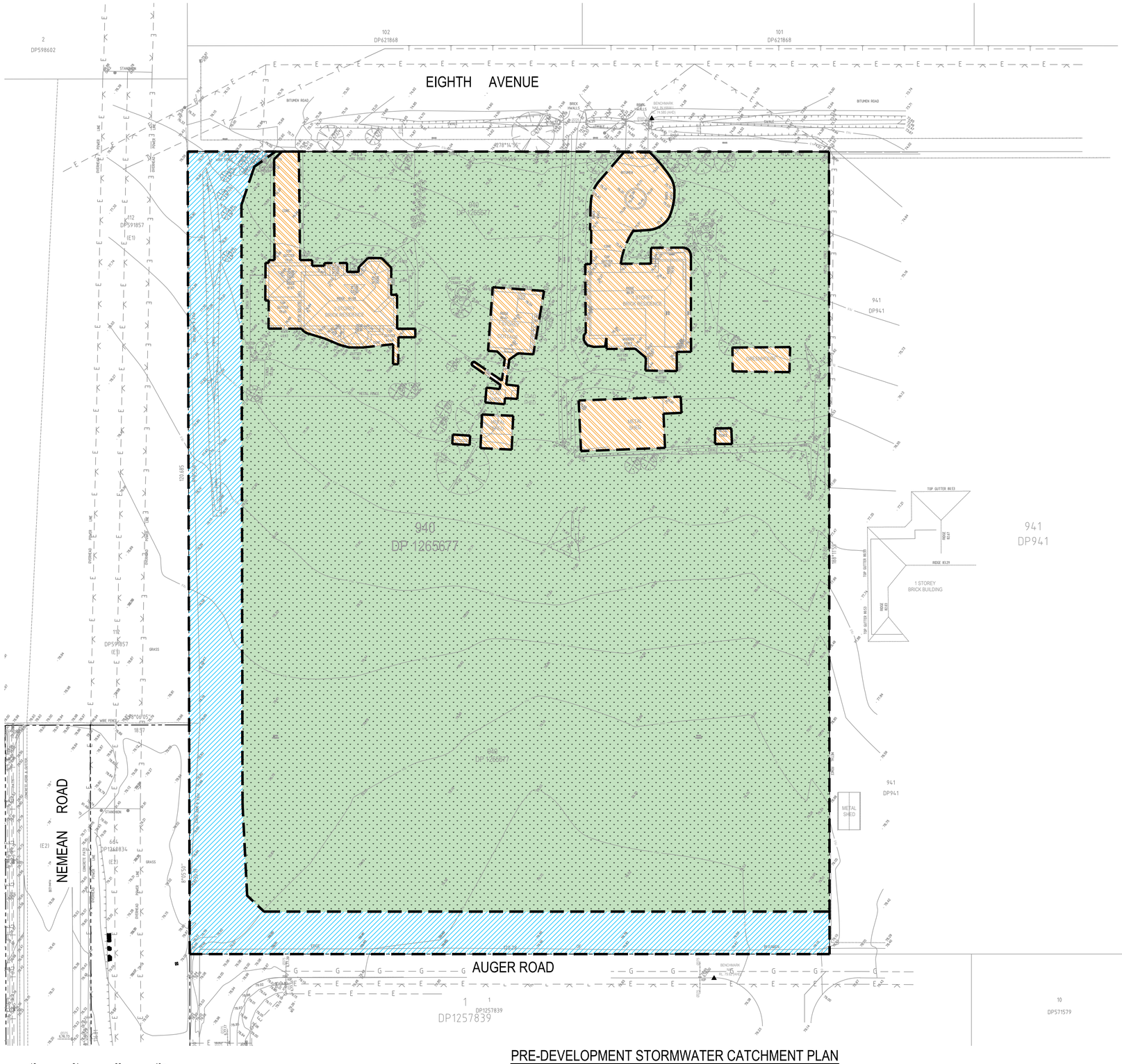
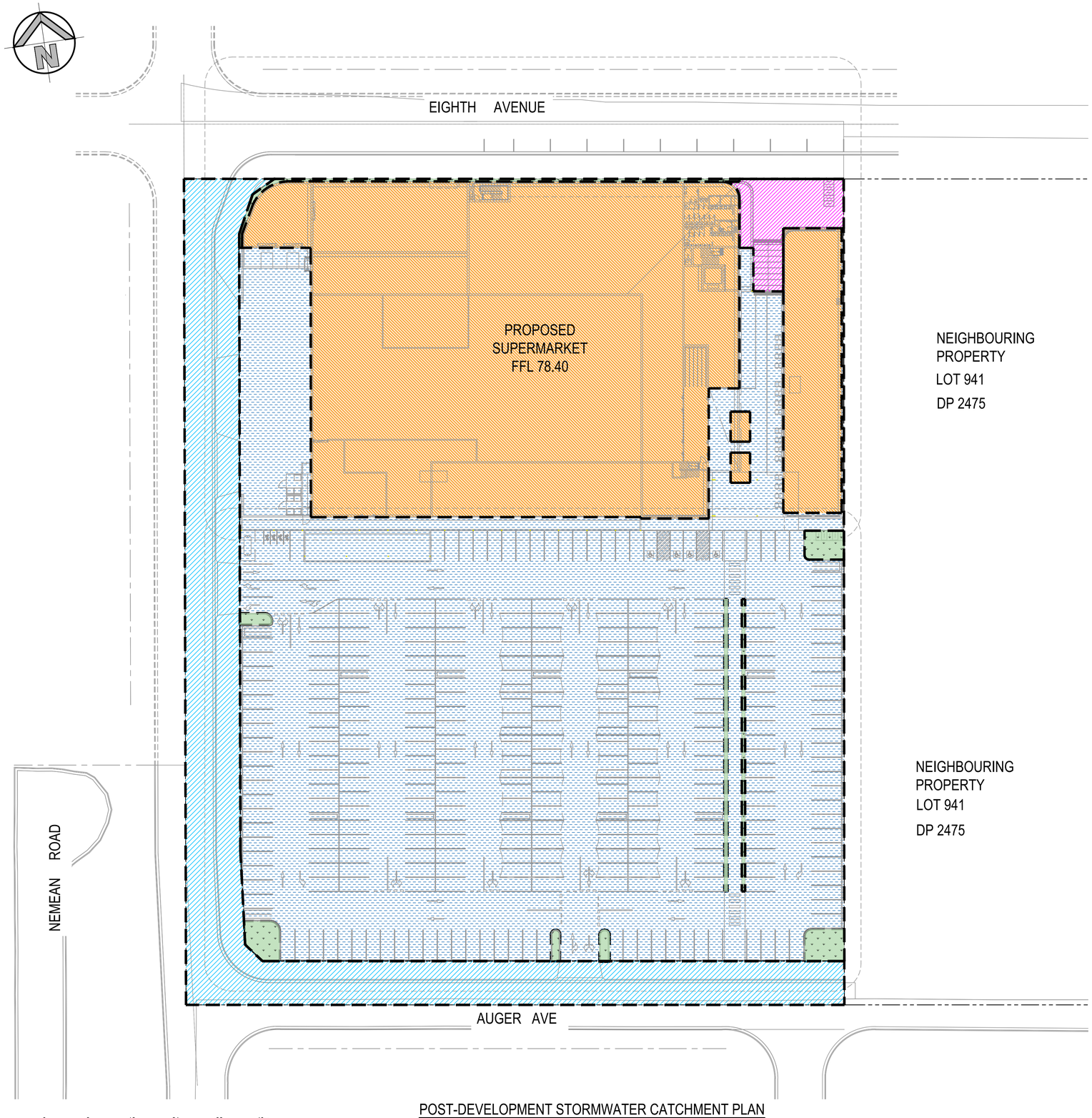
Revision: 02


EIGHTH AVENUE
AUGER ROAD
NEMEAN ROAD
940
DP1265677
941
DP941
941
DP941
941
DP941
1
DP1257839
10
DP571579
2
DP598602
102
DP621868
101
DP621868
112
DP591857
(E1)
112
DP591857
(E1)
GRASS
GRASS
METAL SHED
1 STOREY
BRICK BUILDING
TOP GUTTER 8653
TOP GUTTER 8655
RIDGE 8329
RIDGE 8347
RIDGE 8351
BENCHMARK
RL 71.554 (AHD)
BENCHMARK
RL 71.554 (AHD)
STANDARD
STANDARD
STANDARD
BITUMEN ROAD
BITUMEN ROAD
BRICK WALLS
BRICK WALLS
GUTTER
GUTTER
CONCRETE KERB & GUTTER
CONCRETE KERB & GUTTER
CONCRETE PATH
CONCRETE PATH
GRASS
GRASS
WIRE FENCE
WIRE FENCE
POWER LINE
POWER LINE
OVERHEAD
OVERHEAD
STORMWATER PIPE
STORMWATER PIPE
SEWER MH
SEWER MH
SEWER MH
SEWER MH
120.685
8°78'14"
8°05'50"
18°37'
18°37'
18°37'
18°37'
684
DP1260834
(E2)
(E3)
18
18
18




POST-DEVELOPMENT STORMWATER CATCHMENT PLAN

SCALE: 1:400

TOTAL AREA: 18164.1m²

**PERVIOUS AREA**
LANDSCAPE
AREA: 267m² (1.4%)

**BYPASS AREA**
AREA: 245.5m² (1.3%)

**ROAD CATCHMENT**
AREA: 2429.6m² (13.4%)
EXCLUDED FROM CALCULATIONS

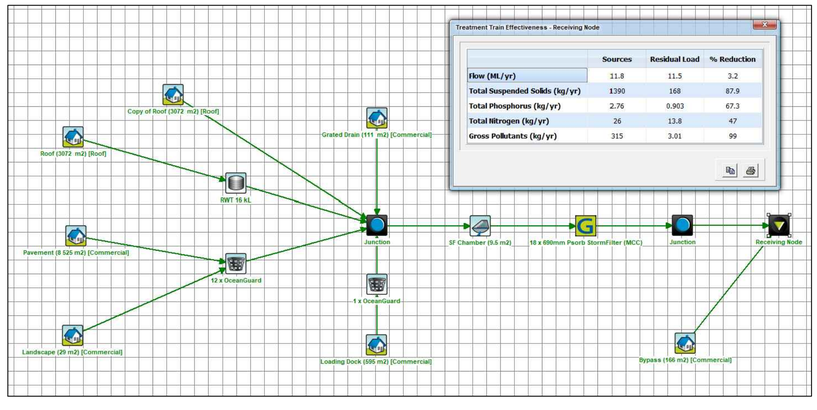
**IMPERVIOUS AREA**
ROOF
AREA: 5394m² (29.7%)

**IMPERVIOUS AREA**
PAVING
AREA: 9828m² (54.2%)

**TOTAL IMPERVIOUS AREA**
17651m² (97.3%)

## OSD CALCULATION SUMMARY SHEET

| ARI (YEAR) | PRE-DEVELOPED WESTERN CATCHMENT (L/S) | POST-DEVELOPED WHOLE SITE NOT INCLUDING ROADS (L/S) | PRE-DEVELOPED EASTERN CATCHMENT (L/S) | POST-DEVELOPED EASTERN CATCHMENT (L/S) |
|---|---|---|---|---|
| 5 | 148 | 145 | 104 | 26 |
| 10 | 197 | 163 | 139 | 31 |
| 20 | 247 | 183 | 174 | 37 |
| 50 | 307 | 197 | 216 | 46 |
| 100 | 358 | 318 | 252 | 53 |




MUSIC RESULTS

SCALE: N.T.S.

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
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Client
FABCOT

Architect
CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

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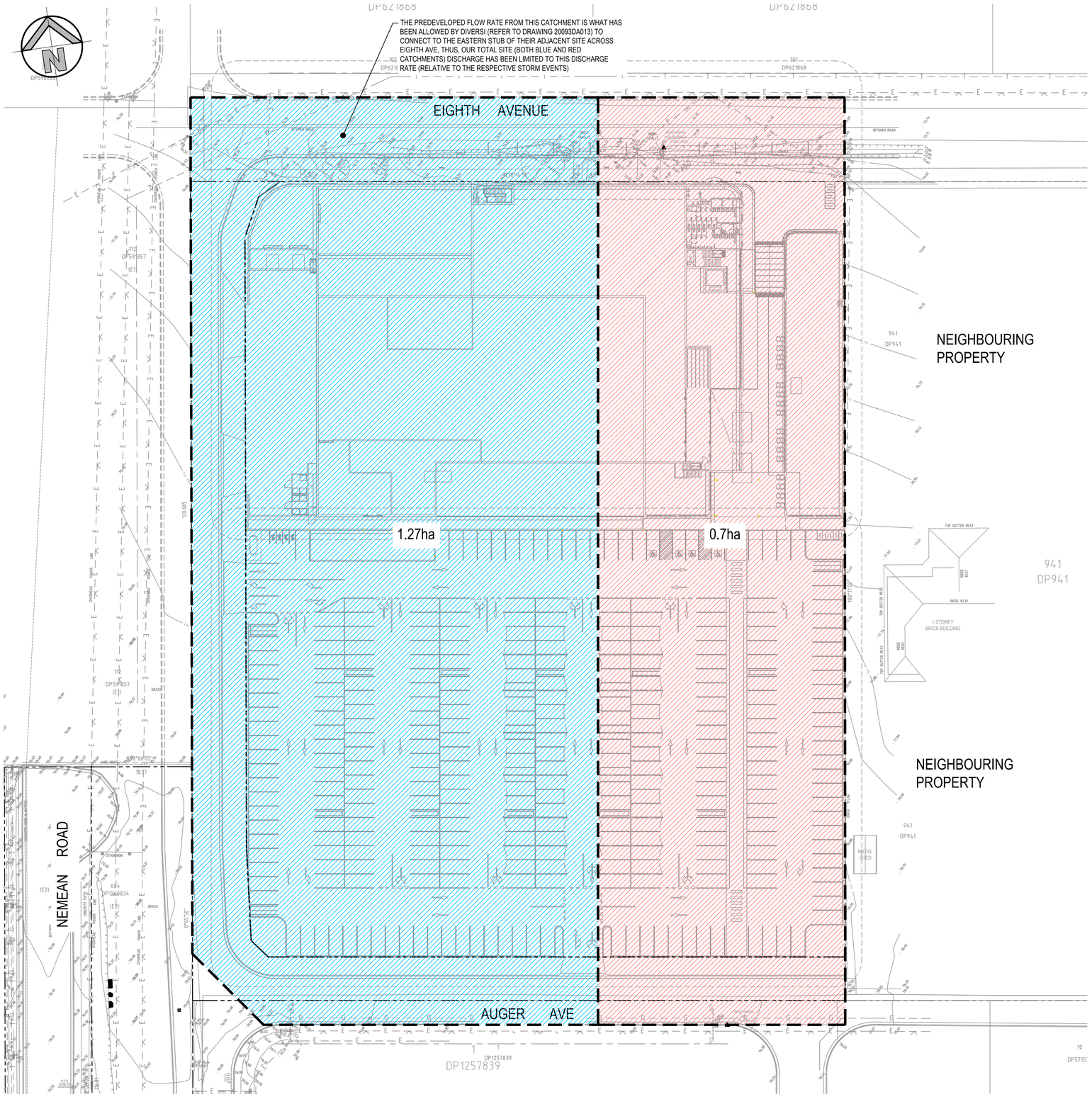
Project
PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title
POST-DEVELOPMENT STORMWATER CATCHMENT PLAN

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:400 |

Drawing number: 22U24_DA_C251

Revision: 03




0 8 16 24 32 40m
8 6 4 2
SCALE 1:400

## STORMWATER CATCHMENT PLAN
SCALE: 1:400

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

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Client: FABCOT
Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW
Title: STORMWATER CATCHMENT PLAN

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:400 |

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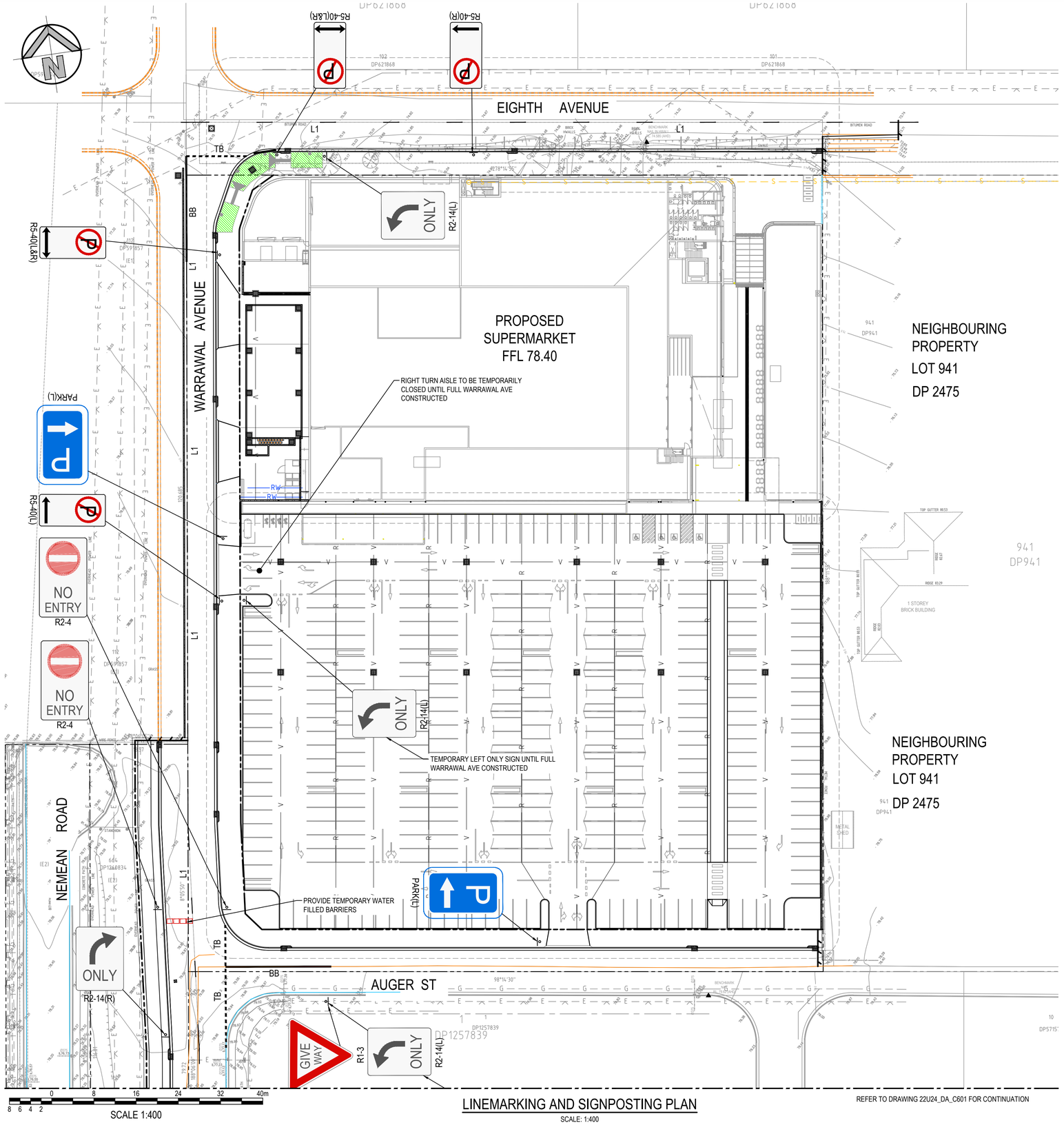
Revision: 03




## LINEMARKING AND SIGNPOSTING PLAN

SCALE: 1:400

REFER TO DRAWING 22U24_DA_C601 FOR CONTINUATION

## LEGEND

- PROPOSED LIMIT OF WORK
- EXISTING BOUNDARY
- TEMPORARY WATER FILLED BARRIERS

## ARROW LEGEND

| | | |
|---|---|---|
| | UA4(L) | COMBINATION STRAIGHT AHEAD AND TURN |
| | UA1 | STRAIGHT AHEAD |
| | UA3(R) | TURN RIGHT ONLY |

NOTE: MINIMUM LENGTH OF ARROWS:
1. STRAIGHT AHEAD AND TURN ARROW = 3.0m
2. COMBINED ARROW = 3.75m

NOTES:
1. E6 EDGE LINE TO BE PLACE ON THE INCLINED FACE OF TYPE MK KERB ALONG CENTRAL MEDIANS
2. PAVEMENT ARROWS IN ACCORDANCE WITH RMS AS1742.2 - FIGURE 5.9
3. THE LINE MARKING AND PAINT SHALL BE IN ACCORDANCE WITH THE FOLLOWING STANDARDS. AS 2890 AND AS 1742 AND RMS GUIDE "DELINEATION" SECTION 3.
4. LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING.
5. PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm TO 0.40mm.
6. PAVEMENT ARROWS IN ACCORDANCE WITH RMS AS1742.2 - FIGURE 5.9
7. ALL PAVEMENT MARKINGS ON THIS DRAWING ARE TO BE THERMOPLASTIC.

## SIGNPOSTING LEGEND

R1-3 GIVE WAY · R2-4 NO ENTRY · R2-14(L) ONLY · R2-14(R) ONLY · PARK(L)

R5-40(L) · R5-40(R) · R5-40(L&R)

## LINEMARKING LEGEND

| LINE TYPE | USE | DIMENSIONS (m) | COLOUR |
|---|---|---|---|
| BB | MOVEMENTS ACROSS LINES, OVERTAKING, U TURN ARE PROHIBITED | 0.025 min 0.05 max; 0.10; 0.10; 0.10 | WHITE |
| TB | GIVE WAY LINE | 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6; 0.30 | WHITE |
| L1 | LANE LINE ON MULTI LANE ROADS INCLUDING MOTORWAYS AND DUAL-CARRIAGEWAYS | 3 9 3 9 3 9 3 9 3; 0.10 | WHITE |
| L3 | LANE LINE ON MULTI LANE ROAD | 0.10 | WHITE |
| E4 | OUTLINE OF TRAFFIC ISLAND | 0.15 | WHITE |
| C1 | DEFINES EDGE OF THROUGH CARRIAGEWAY LANE | 1 3 1 3 1 3 1 3 1; 0.15 | WHITE |

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
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Client: FABCOT
Architect: CLARKE HOPKINS CLARKE

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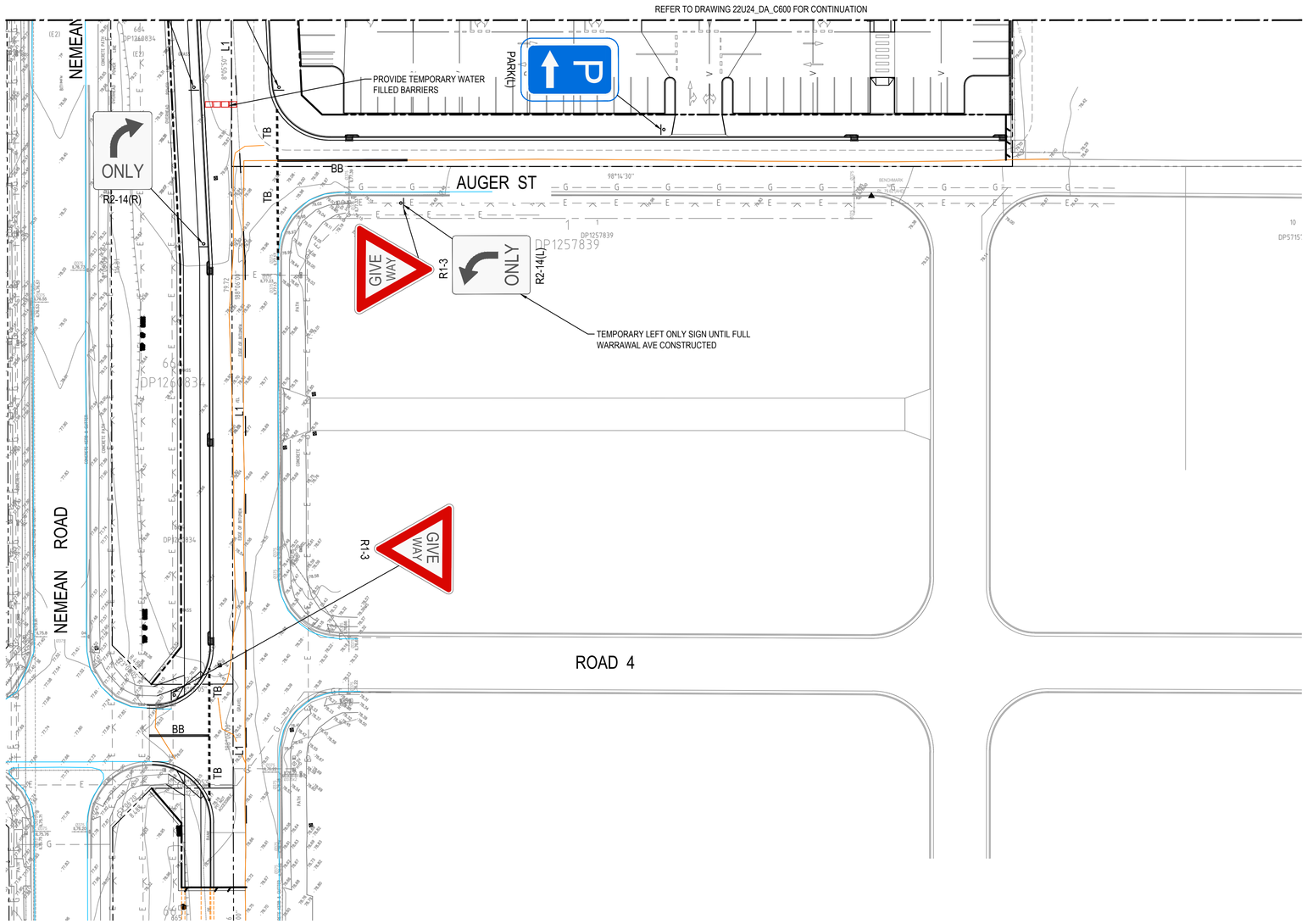
Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: LINEMARKING AND SIGNPOSTING PLAN
SHEET 1 OF 2

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:400 |

Drawing number: 22U24_DA_C600
Revision: 02




## LINEMARKING AND SIGNPOSTING PLAN

SCALE: 1:400

## LEGEND

- PROPOSED LIMIT OF WORK
- EXISTING BOUNDARY
- TEMPORARY WATER FILLED BARRIERS

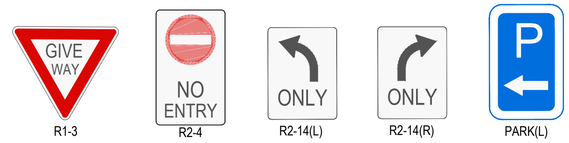
## ARROW LEGEND

| | | |
|---|---|---|
| | UA4(L) | COMBINATION STRAIGHT AHEAD AND TURN |
| | UA1 | STRAIGHT AHEAD |
| | UA3(R) | TURN RIGHT ONLY |

NOTE: MINIMUM LENGTH OF ARROWS:
1. STRAIGHT AHEAD AND TURN ARROW = 3.0m
2. COMBINED ARROW = 3.75m

NOTES:
1. E6 EDGE LINE TO BE PLACE ON THE INCLINED FACE OF TYPE MK KERB ALONG CENTRAL MEDIANS
2. PAVEMENT ARROWS IN ACCORDANCE WITH RMS AS1742.2 - FIGURE 5.9
3. THE LINE MARKING AND PAINT SHALL BE IN ACCORDANCE WITH THE FOLLOWING STANDARDS. AS 2890 AND AS 1742 AND RMS GUIDE "DELINEATION" SECTION 3.
4. LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING.
5. PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm TO 0.40mm.
6. PAVEMENT ARROWS IN ACCORDANCE WITH RMS AS1742.2 - FIGURE 5.9
7. ALL PAVEMENT MARKINGS ON THIS DRAWING ARE TO BE THERMOPLASTIC.

## SIGNPOSTING LEGEND




## LINEMARKING LEGEND

| LINE TYPE | USE | DIMENSIONS (m) | COLOUR |
|---|---|---|---|
| BB | MOVEMENTS ACROSS LINES, OVERTAKING, U TURN ARE PROHIBITED | 0.025 min 0.05 max; 0.10; 0.10; 0.3 | WHITE |
| TB | GIVE WAY LINE | 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6; 0.30 | WHITE |
| L1 | LANE LINE ON MULTI LANE ROADS INCLUDING MOTORWAYS AND DUAL-CARRIAGEWAYS | 3 9 3 9 3 9 3 9 3; 0.10 | WHITE |
| L3 | LANE LINE ON MULTI LANE ROAD | 0.10 | WHITE |
| E4 | OUTLINE OF TRAFFIC ISLAND | 0.15 | WHITE |
| C1 | DEFINES EDGE OF THROUGH CARRIAGEWAY LANE | 1 3 1 3 1 3 1 3 1 3; 0.15 | WHITE |

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
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Client: FABCOT
Architect: CLARKE HOPKINS CLARKE

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Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: LINEMARKING AND SIGNPOSTING PLAN
SHEET 2 OF 2

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:400 |

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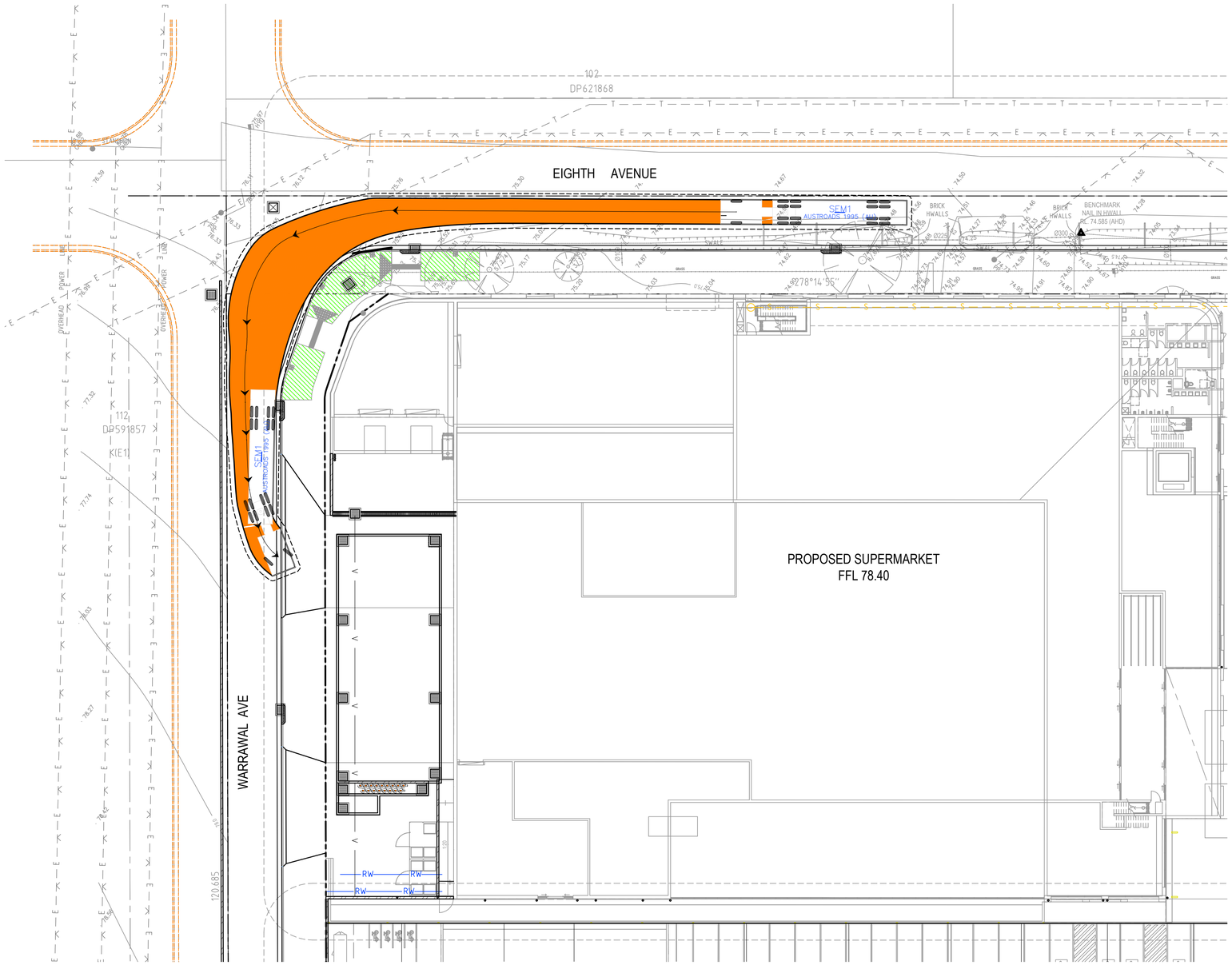
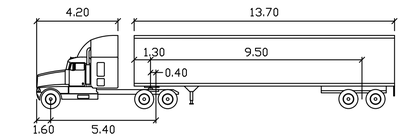
Revision: 02




TURNING PATH - EIGHTH AVE

SCALE: 1:200



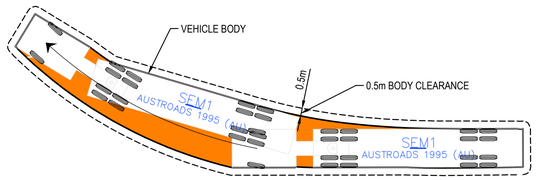

SEM1

meters

| | | | |
|---|---|---|---|
| Tractor Width | : 2.50 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 2.50 | Steering Angle | : 28.4 |
| Tractor Track | : 2.50 | Articulating Angle | : 70.0 |
| Trailer Track | : 2.50 | | |

19m SEM1 TRUCH PROFILE

N.T.S




TURNING PATH PROFILE

N.T.S

0 4 8 12 16 20m

4 3 2 1

SCALE 1:200

FOR DA ONLY

SURVEY INFORMATION

SURVEYED BY LTS

DATUM: A.H.D.

ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
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Client: FABCOT

Architect: CLARKE HOPKINS CLARKE

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*Web* www.henryandhymas.com.au

DRAWING TO BE PRINTED IN COLOUR

henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: TURNING PATH
EIGHTH AVE

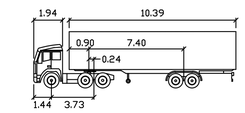
| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:400 |

Drawing number: 22U24_DA_C650

Revision: 02

TURNING PATH - SEVENTH AVE

SCALE: 1:200

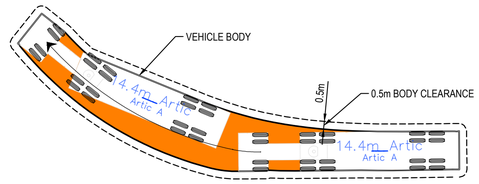



14.4m Artic

| | meters | | |
|---|---|---|---|
| Tractor Width | : 2.50 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 2.50 | Steering Angle | : 23.1 |
| Tractor Track | : 2.50 | Articulating Angle | : 70.0 |
| Trailer Track | : 2.50 | | |

14.4m TRUCH PROFILE

N.T.S




TURNING PATH PROFILE

N.T.S

0 4 8 12 16 20m

4 3 2 1

SCALE 1:200

FOR DA ONLY

SURVEY INFORMATION

SURVEYED BY LTS

DATUM: A.H.D.

ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE | REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
|---|---|---|---|---|---|---|---|---|---|
| 02 | ISSUED FOR DA ONLY | SC | MM | 14.06.2023 | | | | | |
| 01 | SKETCH | SC | MM | 17.05.2023 | | | | | |

Client

FABCOT

Architect

CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

henry&hymas

Project

PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

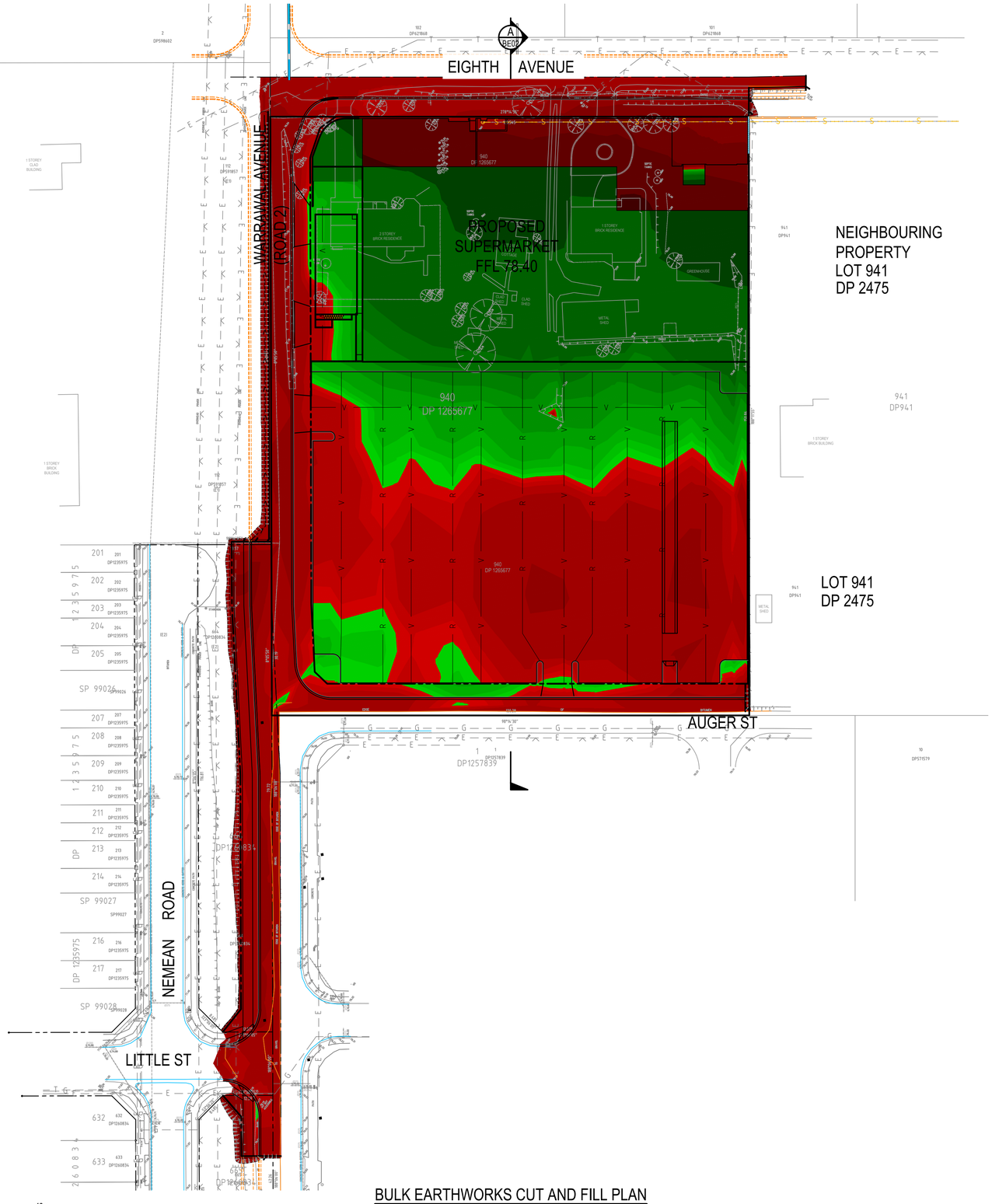
Title

TURNING PATH
SEVENTH AVE

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:400 |

Drawing number: 22U24_DA_C651

Revision: 02




| DEPTH RANGE Lower_value | | Upper_value | Colour |
|---|---|---|---|
| -6 | to | -4 | Meters |
| -4 | to | -2 | Meters |
| -2 | to | -1 | Meters |
| -1 | to | -.8 | Meters |
| -.8 | to | -.6 | Meters |
| -.6 | to | -.4 | Meters |
| -.4 | to | -.2 | Meters |
| -.2 | to | -.1 | Meters |
| -.1 | to | -.05 | Meters |
| -.05 | to | .0 | Meters |
| .0 | to | .05 | Meters |
| .05 | to | .1 | Meters |
| .1 | to | .2 | Meters |
| .2 | to | .4 | Meters |
| .4 | to | .6 | Meters |
| .6 | to | .8 | Meters |
| .8 | to | 1 | Meters |
| 1 | to | 2 | Meters |
| 2 | to | 4 | Meters |
| 4 | to | 6 | Meters |

## EARTHWORKS QUANTITIES

(APPROXIMATE ONLY)

- NOT TO BE USED FOR CONTRACTUAL PURPOSES. TENDERERS TO DETERMINE VOLUMES USING THEIR OWN METHOD OF CALCULATION.
- **ASSUMED SLAB AND PAVEMENT THICKNESS OF 350mm USED FOR CALCULATIONS.**

| - EARTHWORKS QUANTITIES - | |
|---|---|
| TOTAL AREA (2.142 ha) | |
| CUT | 4710m³ |
| FILL | 8910m³ |
| | |
| EXCESS OF FILL OVER CUT | 4200m³ |
| | |
| TOPSOIL STRIPPING "100mm" OF 2145m² NOT INCLUDED IN CALCULATION | |
| EXCAVATION FOR SERVICE TRENCHES NOT INCLUDED IN CALCULATION | |
| EXCAVATION FOR OSD NOT INCLUDED IN CALCULATION | |
| EXCAVATION FOR RETAINING WALLS NOT INCLUDED IN CALCULATION | |

0 8 16 24 32 40m

8 6 4 2

SCALE 1:400

## BULK EARTHWORKS CUT AND FILL PLAN

SCALE: 1:600

**FOR DA ONLY**

SURVEY INFORMATION

SURVEYED BY LTS

DATUM: A.H.D.

ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
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| 02 | ISSUED FOR DA ONLY | LC | MM | 14.06.2023 |
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Client: FABCOT

Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

henry&hymas

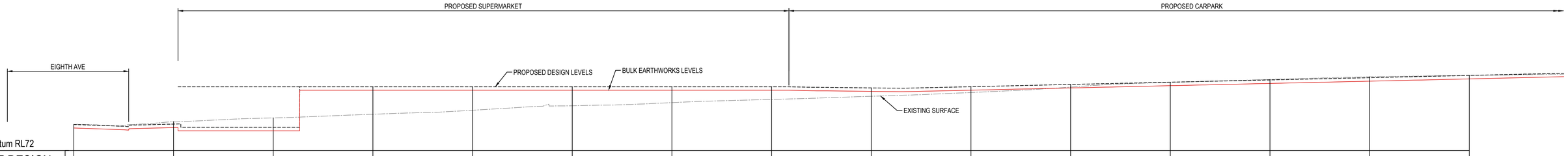
Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: BULK EARTHWORKS CUT AND FILL PLAN

| Drawn | Designed | Original issue date |
|---|---|---|
| L.Caha | M.Mishevski | APRIL 2023 |
| **Checked** | **Approved** | **Scale @A1** |
| T.Rozehnal | A.Francis | 1:600 |

Drawing number: 22U24_DA_BE01

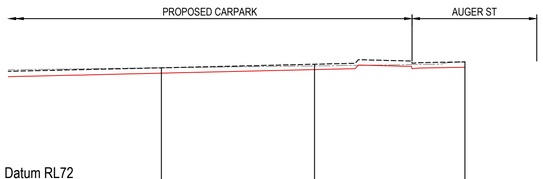
Revision: 02




Datum RL72

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BE DESIGN LEVELS | 74.260 | 74.304 | 73.980 | 78.050 | 78.050 | 78.050 | 78.050 | 78.050 | 77.938 | 78.058 | 78.265 | 78.511 | 78.738 | 78.964 | 79.191 |
| DESIGN LEVELS | 74.610 | 74.654 | 74.330 | 78.400 | 78.400 | 78.400 | 78.400 | 78.400 | 78.288 | 78.408 | 78.635 | 78.861 | 79.088 | 79.314 | 79.541 |
| EXISTING LEVELS | 74.628 | 74.903 | 75.273 | 75.643 | 76.045 | 76.496 | 76.813 | 77.131 | 77.447 | 77.826 | 78.375 | 78.843 | 79.137 | 79.405 | 79.543 |
| CHAINAGE | 0.000 | 10.000 | 20.000 | 30.000 | 40.000 | 50.000 | 60.000 | 70.000 | 80.000 | 90.000 | 100.000 | 110.000 | 120.000 | 130.000 | 140.000 |

SECTION A
SCALE: H 1:200
V 1:200
BE01




Datum RL72

| | | | |
|---|---|---|---|
| BE DESIGN LEVELS | 79.191 | 79.426 | 79.581 |
| DESIGN LEVELS | 79.541 | 79.776 | 79.931 |
| EXISTING LEVELS | 79.543 | 79.669 | 79.931 |
| CHAINAGE | 140.000 | 150.000 | 159.824 |

SECTION A
SCALE: H 1:200
V 1:200
BE01

0 4 8 12 16 20m
4 3 2 1
SCALE 1:200

FOR DA ONLY

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

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| 02 | ISSUED FOR DA ONLY | LC | MM | 14.06.2023 |
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Client: FABCOT

Architect: CLARKE HOPKINS CLARKE

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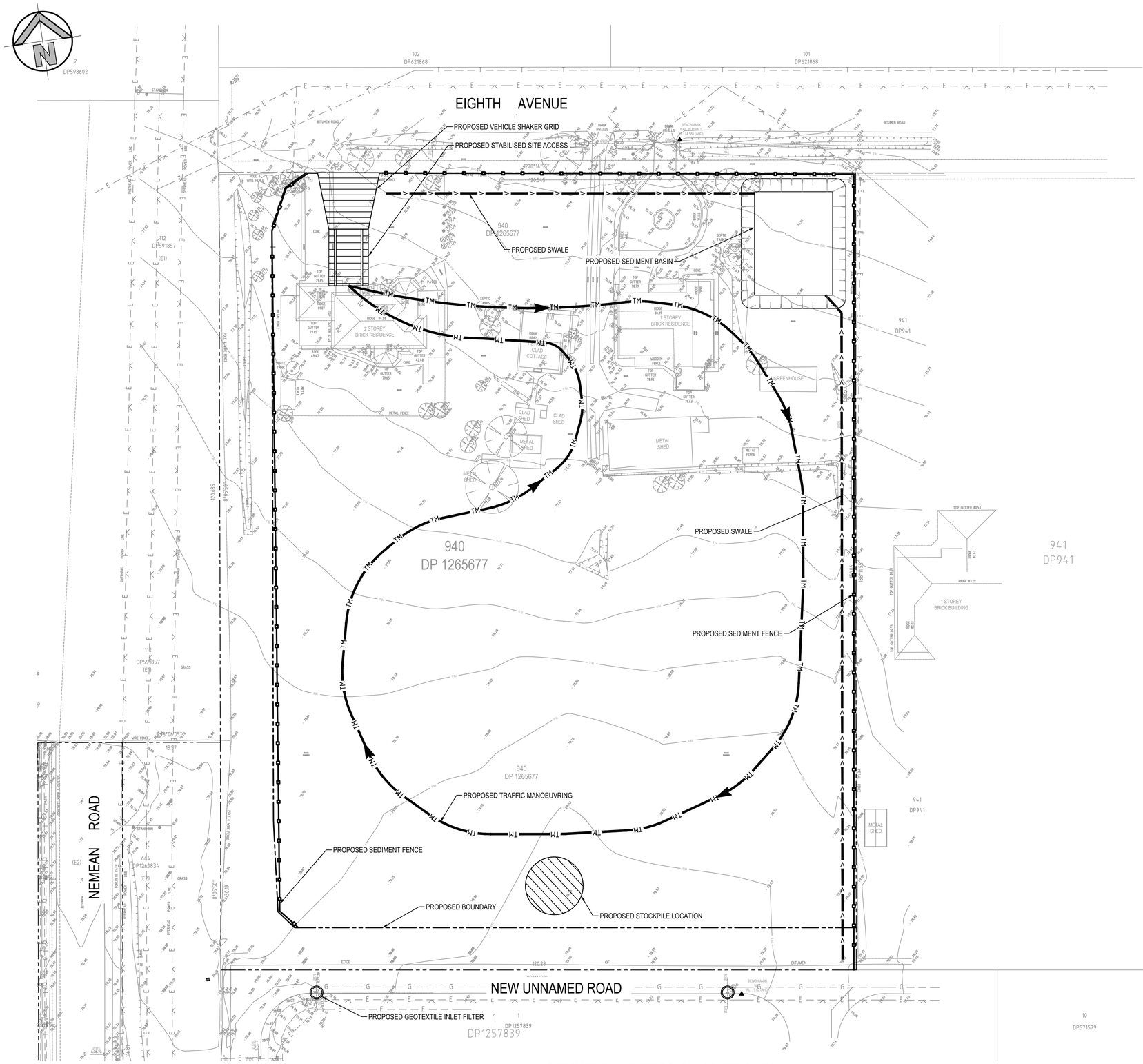
Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: BULK EARTHWORKS SECTIONS

| Drawn | Designed | Original issue date |
|---|---|---|
| L.Caha | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:200 |

Drawing number: 22U24_DA_BE02
Revision: 02




## LEGEND

- EXISTING BOUNDARY
- PROPOSED BOUNDARY
- PROPOSED SEDIMENTATION FENCE
- PROPOSED TRAFFIC MANOEUVRING
- PROPOSED STOCKPILE LOCATION
- PROPOSED GEOTEXTILE INLET FILTER
- PROPOSED MESH AND GRAVEL INLET FILTER
- PROPOSED VEHICLE SHAKER GRID
- PROPOSED STABILISED SITE ACCESS
- PROPOSED SEDIMENT BASIN
- PROPOSED SWALE

## SEDIMENT & EROSION CONTROL NOTES

- ALL SEDIMENT CONTROL DEVICES ARE TO BE CONSTRUCTED, PLACED AND MAINTAINED IN ACCORDANCE WITH LIVERPOOL COUNCIL SPECIFICATIONS AND LANDCOM'S "SOIL AND CONSTRUCTION" MANUAL.
- ALL PERIMETER & SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO, OR AS THE FIRST STEP IN EARTH WORKS AND/OR CLEARING.
- THE SEDIMENT & EROSION CONTROL PLAN MAY REQUIRE FUTURE ADJUSTMENT TO REFLECT CONSTRUCTION STAGING. IT IS ALSO THE CONTRACTORS RESPONSIBILTY TO PREPARE THEIR OWN SEDIMENT AND EROSION CONTROL PLAN WHICH SUITS THE DESIGNED CONSTRUCTION STAGING.
- FILTRATION BUFFER ZONES ARE TO BE FENCED OFF AND ACCESS PROHIBITED TO ALL PLANT AND MACHINERY.
- ALL TEMPORARY EARTH BERMS, DIVERSIONS & SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED & MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
- ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS FOR STRUCTURAL DAMAGE OR CLOGGING. TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE LOCATION.
- ALL TOPSOIL IS TO BE STOCKPILED ON SITE FOR REUSE (AWAY FROM TREES AND DRAINAGE LINES). MEASURES SHALL BE APPLIED TO PREVENT EROSION OF THE STOCKPILES.
- ALL EARTHWORK AREAS SHALL BE ROLLED EACH EVENING TO SEAL THE EARTHWORKS.
- ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END. ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND STRAW MULCHED WITHIN 14 DAYS OF COMPLETION OF FORMATION U.N.O. BY LANDSCAPE ARCHITECTS.
- UPON COMPLETION OF ALL EARTHWORKS OR AS DIRECTED BY COUNCIL SOIL CONSERVATION TREATMENTS SHALL BE APPLIED SO AS TO RENDER AREAS THAT HAVE BEEN DISTURBED, EROSION PROOF WITHIN 14 DAYS.
- EROSION AND SILT PROTECTION MEASURES ARE TO BE MAINTAINED AT ALL TIMES.

0 8 16 24 32 40m
8 6 4 2
SCALE 1:400

## SEDIMENT AND EROSION CONTROL PLAN

SCALE: 1:400

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

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Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: SEDIMENT AND EROSION CONTROL PLAN

| Drawn | Designed | Original issue date |
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| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:400 |

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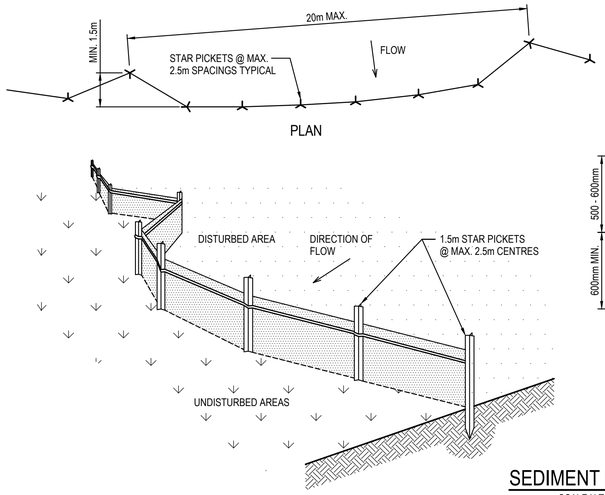
Revision: 02

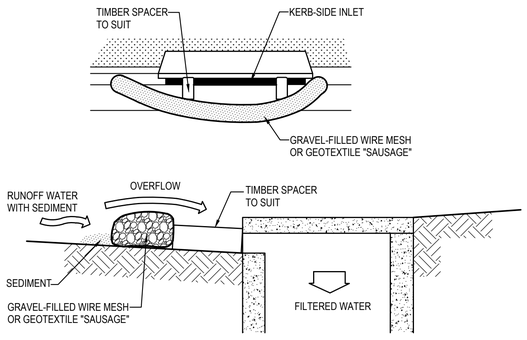



## SEDIMENT FENCE

SCALE N.T.S.

### SEDIMENT FENCE CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND @ 2.5m INTERVALS (MAX.) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

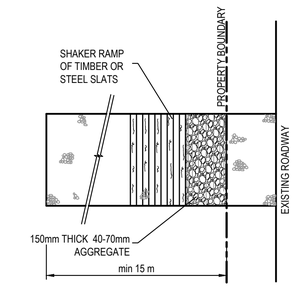



## MESH & GRAVEL INLET FILTER

SCALE N.T.S.

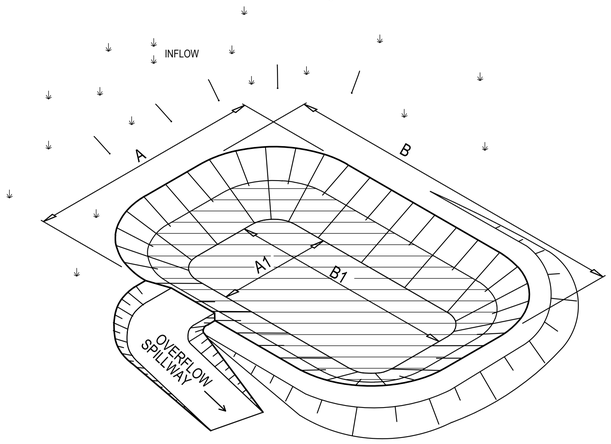
### MESH & GRAVEL INLET FILTER CONSTRUCTION NOTES:

1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
3. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
4. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
5. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY CAN FIRMLY ABUT EACH OTHER AND SEDIMENT / LADEN WATERS CANNOT PASS BETWEEN.

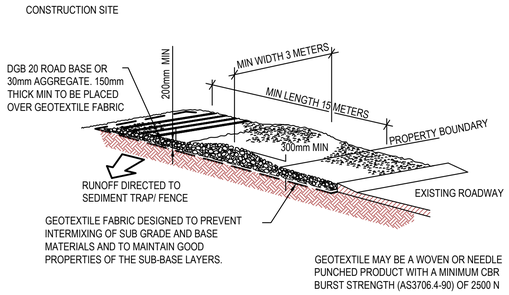



## PLAN
## STABILISED SITE ACCESS WITH SHAKER RAMP

N.T.S.




PERSPECTIVE VIEW

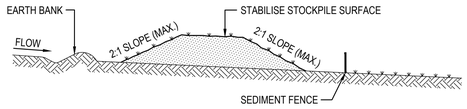



## STABILISED SITE ACCESS WITH SHAKER RAMP

N.T.S.

NOTES:

1. THIS DEVICE IS TO BE LOCATED AT ALL EXITS FROM CONSTRUCTION SITE.
2. THIS DEVICE IS TO BE REGULARLY CLEANED OF DEPOSITED MATERIAL SO AS TO MAINTAIN A 50mm DEEP SPACE BETWEEN PLANKS.
3. ANY UNSEALED ROAD BETWEEN THIS DEVICE AND NEAREST ROADWAY IS TO BE TOPPED WITH 100mm THICK 40-70mm SIZE AGGREGATE.
4. ALTERNATIVELY, THREE(3) PRECAST CONCRETE CATTLE GRIDS (AS MANUFACTURED BY "HUMES CONCRETE MAY BE USED. 1, 2 & 3 ABOVE ALSO APPLY.

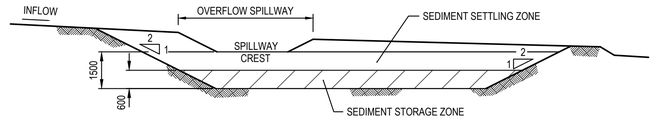



### STOCKPILE CONSTRUCTION NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE PLACED FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.C.P. OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.

## STOCKPILES

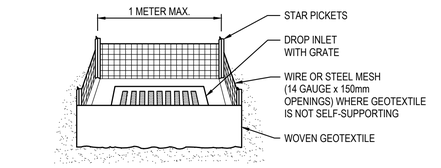
SCALE N.T.S.

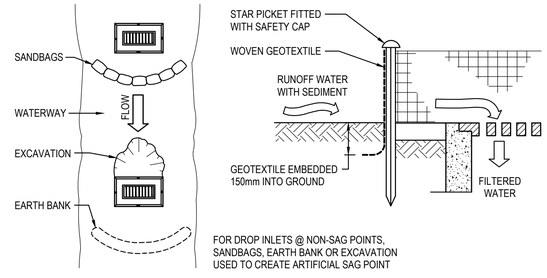



TYPICAL SECTION

## TYPE 'D' & 'F' SEDIMENTATION BASIN

N.T.S.




### GEOTEXTILE INLET FILTER CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE.
2. PICKET SPACING TO BE MAXIMUM 1.0m.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILES UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

## GEOTEXTILE INLET FILTER

SCALE N.T.S.

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

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| 02 | ISSUED FOR DA ONLY | SC | MM | 14.06.2023 |
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Client: FABCOT
Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

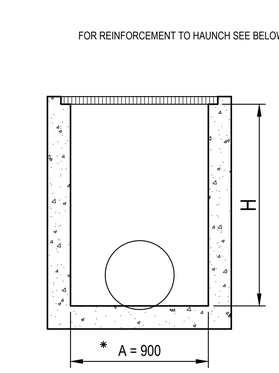
Title: SEDIMENT AND EROSION CONTROL DETAILS

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | N.T.S. |

Drawing number: 22U24_DA_SE02
Revision: 02

# TYPICAL PIT CHAMBER SIZES
## IT IS THE CONTRACTORS RESPONSIBILITY TO SELECT PIT CHAMBER SIZE WITH REGARDS TO PIPE SIZE, DEPTH TO INVERT AND SKEW ANGLE. REFER SKETCHES BELOW.

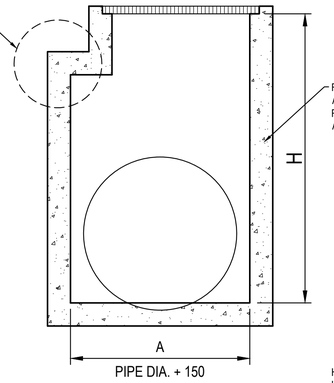
1. SELECT PIT CHAMBER USING THE STEPS BELOW:
2. SELECT PIT CHAMBER SIZE DEPENDING ON THE PIPE DIAMETERS.
3. CHECK PIT CHAMBER SIZE TO SATISFY DEPTH TO INVERT REQUIREMENTS.
   CHECK PIT CHAMBER DIMENSIONS TO SATISFY THE SKEW ANGLE IN THE TABLE.




SECTION
NTS

*A = 600 FOR PIPES UP TO 375 DIA.

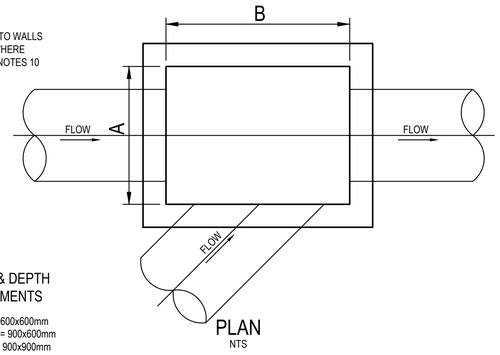
1 PIT CHAMBER DIMENSIONS FOR PIPES UP TO 600 DIA.




SECTION
NTS

1 PIT CHAMBER FOR PIPES GREATER THAN 600 DIA.

FOR B = 600mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 225mm
FOR B = 900mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 375mm
FOR B = 1200mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 600mm
FOR B = 1500mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 825mm
FOR B = 1900mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 1050mm

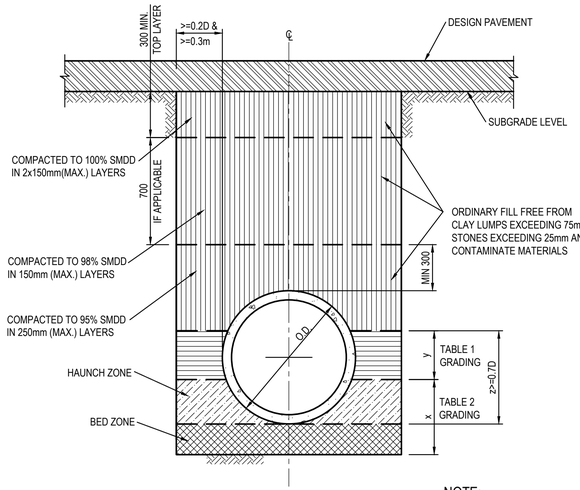



PLAN
NTS

2 PIT SIZE & DEPTH REQUIREMENTS

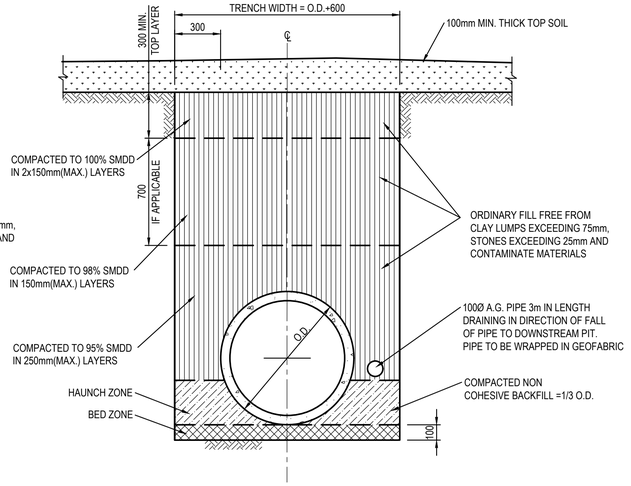
H = 0-900mm - AxB = 600x600mm
H = 900-1200mm - AxB = 900x600mm
H = >1200mm - AxB = 900x900mm

3 PIT CHAMBER FOR SIDE ENTRY ON SKEW




## PIPE TRENCH INSTALLATION BENEATH PAVEMENT
(HS SUPPORT TO BE USED UNDER ROADWAY)
SCALE 1:20

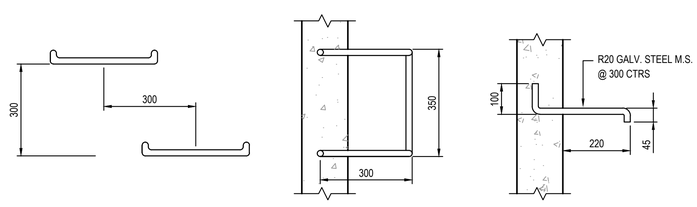
NOTE:
TYPE HS2 TO BE USED AS A TYPICAL SUPPORT FOR TRENCHES UNDER ROADWAY UNLESS SPECIFIED SEPERATELY




## PIPE TRENCH INSTALLATION IN LANDSCAPE AREAS
(H1 & H2 SUPPORT)
SCALE 1:20

| TABLE 1 | |
|---|---|
| SIEVE SIZE (MM) | WEIGHT PASISNG (%) |
| 75.0 | 100 |
| 9.5 | 100 TO 50 |
| 2.36 | 100 TO 30 |
| 0.60 | 50 TO 15 |
| 0.075 | 25 TO 0 |

| TABLE 2 | |
|---|---|
| SIEVE SIZE (MM) | WEIGHT PASISNG (%) |
| 19.0 | 100 |
| 2.36 | 100 TO 50 |
| 0.60 | 90 TO 20 |
| 0.30 | 60 TO 10 |
| 0.15 | 25 TO 0 |
| 0.075 | 10 TO 0 |



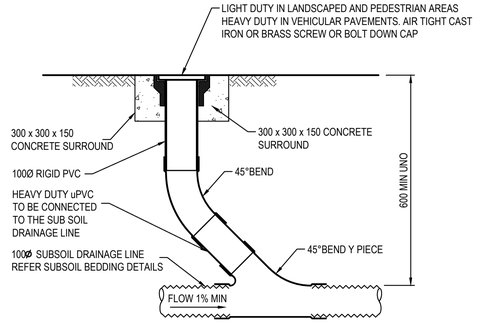

ELEVATION PLAN SECTION

## TYPICAL STEP IRON DETAIL
SCALE 1:10

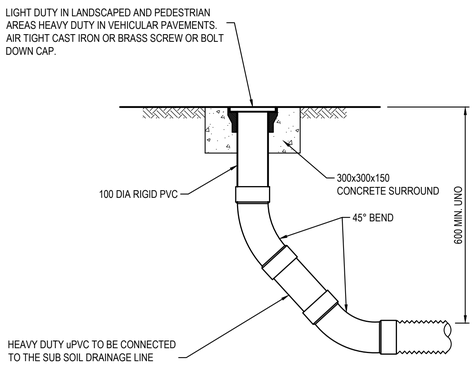
| TABLE 3 | | | | |
|---|---|---|---|---|
| SUPPORT TYPE | BED ZONE X | HAUNCH ZONE Y | BED AND HAUNCH ZONES COMPACTION | MAX BEDDING FACTOR |
| HS1 | 100 IF D<=1500, OR 150 IF D>=1500 | 0.1D | 50 | 2.0 |
| HS2 | | 0.3D | 60 | 2.5 |
| HS3 | | 0.3D | 70 | 4.0 |

0 400 800 1200 1600 2000mm
400 200
SCALE 1:20

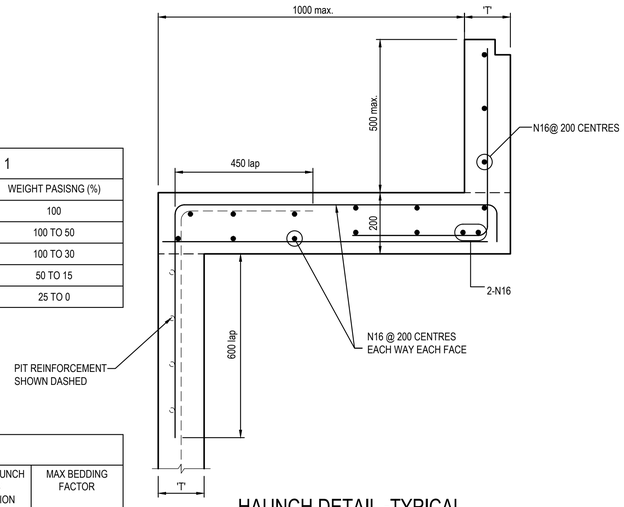
0 200 400 600 800 1000mm
200 100
SCALE 1:10




## INTERMEDIATE RISER (IR)
SCALE 1:10
NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED




## FLUSHING POINT (FP)
SCALE 1:10
NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED




## HAUNCH DETAIL -TYPICAL
SCALE 1:10

## PIT LID SCHEDULE

| PIT/STRUCTURE NUMBER | DESCRIPTION |
|---|---|
| G-1 G-2 G-3 G-4 | PROPOSED 1.8m KERB INLET PIT WITH HINGED 600x600 WITH HEAVY DUTY GRATED LID CLASS 'D' IN ACCORDANCE WITH LIVERPOOL CITY COUNCIL REQUIREMENTS. |

## DRAINAGE NOTES:

1. ALL STORMWATER WORK TO COMPLY WITH AS 3500 PART 3.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE MINIMUM COVER OF 600mm ON ALL PIPES.

3. PROTECTION OF PIPES DUE TO LOADS EXCEEDING W7 WHEEL LOAD SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

4. BEDDING TYPE SHALL BE TYPE H2 FOR RCP. WHERE NECESSARY THE OVERLAY ZONE SHALL BE REDUCED TO ACCOMMODATE PAVEMENT REQUIREMENTS. REFER TO THIS DRAWING FOR DETAILS.

5. MINIMUM COVER OVER EXISTING PIPES FOR PROTECTION DURING CONSTRUCTION SHALL BE 800mm.

6. NO CONSTRUCTION LOADS SHALL BE APPLIED TO PLASTIC PIPES.

7. FINISHED SURFACE LEVELS SHOWN ON LAYOUT PLAN DRGS TAKE PRECEDENCE OVER DESIGN DRAINAGE SURFACE LEVELS.

8. ALL PIPES UP TO AND INCLUDING 300 DIA. SHALL BE SOLVENT OR RUBBER RING JOINTED PVC CLASS SH PIPE TO AS1260. ALL OTHER PIPES TO BE RCP USING CLASS 2 RUBBER RING JOINTED PIPE. HARDIES FRC PIPE MAY BE USED IN LIEU OF RCP IF DESIRED IN GROUND. ALL AERIAL PIPES TO BE PVC CLASS SH.

9. ALL PITS IN NON TRAFFICABLE AREAS TO BE PREFABRICATED POLYESTER CONCRETE "POLYCRETE" WITH "LIGHT DUTY" CLASS B GALV. MILD STEEL GRATING AND FRAME.
ALL PITS IN TRAFFICABLE AREAS (CLASS "D" LOADING MAX) TO HAVE 150mm THICK CONCRETE WALLS AND BASE CAST IN-SITU f'c=32 MPa, REINFORCED WITH N12-200 BOTH LOADING WAYS CENTRALLY PLACE .U.N.O. ON SEPARATE DESIGN DRAWINGS IN THIS SET. GALV.MILD STEEL GRATING AND FRAME TO SUIT DESIGN LOADING. PRECAST PITS, RECTANGULAR OR CIRCULAR IN SHAPE, MAY BE USED IN LIEU AND SHALL COMPLY WITH RELEVANT AUSTRALIAN STANDARDS.

10. ALL PITS, GRATINGS AND FRAMES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION AND TO BE IN ACCORDANCE WITH AS3500.3 AND AS3996.
11. PIT CHAMBER DIMENSIONS ARE TO BE SELECTED TO SATISFY THE FOLLOWING:
- PIPE SIZE
- DEPTH TO INVERT
- SKEW ANGLE
  REFER TYPICAL PIT CHAMBER DETAILS BELOW
IF PIT LID SIZE IS SMALLER THAN THE PIT CHAMBER SIZE THEN THE PIT LID IS TO BE CONSTRUCTED ON THE CORNER OF THE PIT CHAMBER WITH THE STEP IRONS DIRECTLY BELOW. ALTERNATIVELY THE PIT LID TO BE USED, IS TO BE THE SAME SIZE AS THE PIT CHAMBER.

12. FOR PIPE SIZES GREATER THAN Ø300mm, PIT FLOOR IS TO BE BENCHED TO FACILITATE FLOW.

13. GALVANISED STEP IRONS SHALL BE PROVIDED AT 300 CTS FOR PITS HAVING A DEPTH EXCEEDING 1200mm. SUBSOIL DRAINAGE PIPE SHALL BE PROVIDED IN PIPE TRENCHES ADJACENT TO INLET PIPES. (MINIMUM LENGTH 3m).

14. ALL SUBSOIL PIPES SHALL BE 100mm SLOTTED PVC IN A FILTER SOCK, UNO, WITH 3m INSTALLED UPSTREAM OF ALL PITS.

15. ALL PIPEWORK SHALL HAVE MINIMUM DIAMETER 100.

16. MINIMUM GRADE FOR ROOFWATER DRAINAGE LINES SHALL BE 1%.

17. ALL PIPE JUNCTIONS AND TAPER UP TO AND INCLUDING 300 DIA. SHALL BE VIA PURPOSE MADE FITTINGS.

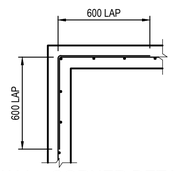
18. ALL ROOF DRAINAGE TO BE INSTALLED IN ACCORDANCE WITH AS3500, PART 3. TESTING TO BE UNDERTAKEN AND REPORTS PROVIDED TO THE SUPERINTENDENT.

19. LOCATION OF THE DIRECT DOWN PIPE CONNECTIONS MAY VARY ON SITE TO SUIT SITE CONDITIONS, WHERE CONNECTION SHOWN ON LONG SECTIONS CHAINAGES ARE INDICATIVE ONLY.

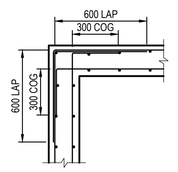
20. PITS IN EXCESS OF 1.5 m DEEP TO HAVE WALL AND FLOOR THICKNESS INCREASED TO 200mm. REINFORCED WITH N12@200 CTS CENTRALLY PLACED BOTH WAYS THROUGHOUT U.N.O.ON SEPARATE DESIGN DRAWINGS IN THIS SET. IF DEPTH EXCEEDS 5m CONTACT ENGINEER.

21. SUBSOIL DRAINAGE LINES FOR LANDSCAPE AREA NOT SHOWN ON THESE DRAWINGS. REFER TO LANDSCAPING PLANS FOR DETAILS.

22. ALL STORMWATER PITS TO HAVE Ø100 uPVC SLOTTED SUBSOIL PIPES CONNECTED TO THEM. THESE SUBSOILS TO EXTEND 3m UPSTREAM OF THE PIT AT A MINIMUM GRADE.




## 150 WALL - CORNER DETAIL
SCALE 1:20




## 200 WALL - CORNER DETAIL
SCALE 1:20

**FOR DA ONLY**

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
|---|---|---|---|---|
| 01 | ISSUED FOR DA ONLY | SC | MM | 14.06.2023 |

Client: FABCOT
Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

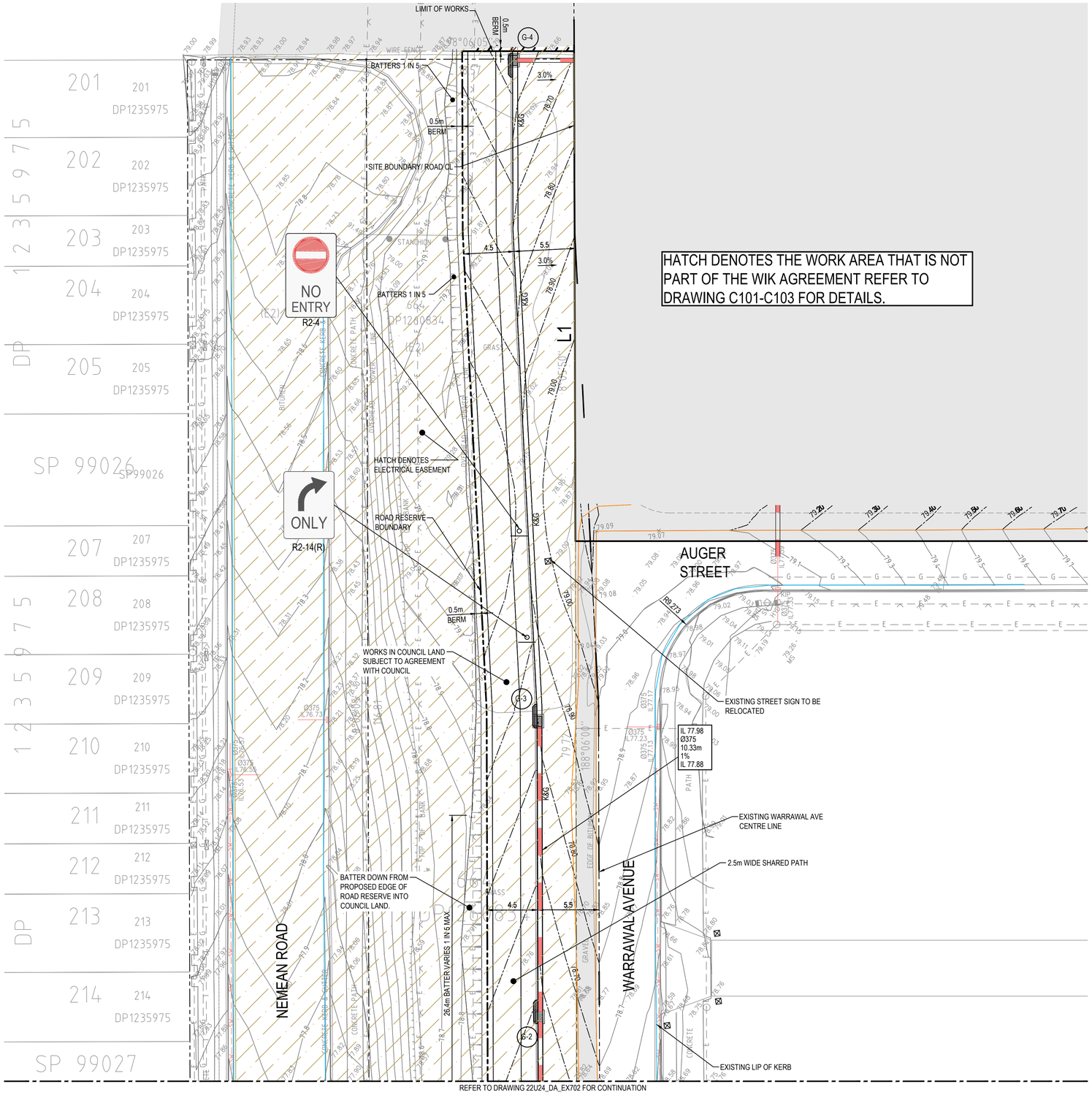
henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: WIK STORMWATER MISCELLANEOUS DETAILS AND PIT LID SCHEDULE

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | AS NOTED |

Drawing number: 22U24_DA_EX200
Revision: 01




## WIK DETAIL PLAN

SCALE 1:200

0 4 8 12 16 20m

4 3 2 1

SCALE 1:200

## LEGEND

- PROPOSED LIMIT OF WORK
- EXISTING BOUNDARY
- TEMPORARY WATER FILLED BARRIERS

## ARROW LEGEND

| | | |
|---|---|---|
| | UA4(L) | COMBINATION STRAIGHT AHEAD AND TURN |
| | UA1 | STRAIGHT AHEAD |
| | UA3(R) | TURN RIGHT ONLY |

NOTE: MINIMUM LENGTH OF ARROWS:
1. STRAIGHT AHEAD AND TURN ARROW = 3.0m
2. COMBINED ARROW = 3.75m

NOTES:
1. E6 EDGE LINE TO BE PLACE ON THE INCLINED FACE OF TYPE MK KERB ALONG CENTRAL MEDIANS
2. PAVEMENT ARROWS IN ACCORDANCE WITH RMS AS1742.2 - FIGURE 5.9
3. THE LINE MARKING AND PAINT SHALL BE IN ACCORDANCE WITH THE FOLLOWING STANDARDS. AS 2890 AND AS 1742 AND RMS GUIDE "DELINEATION" SECTION 3.
4. LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING.
5. PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm TO 0.40mm.
6. PAVEMENT ARROWS IN ACCORDANCE WITH RMS AS1742.2 - FIGURE 5.9
7. ALL PAVEMENT MARKINGS ON THIS DRAWING ARE TO BE THERMOPLASTIC.

## SIGNPOSTING LEGEND

NO ENTRY
R2-4

ONLY
R2-14(R)

## LINEMARKING LEGEND

| LINE TYPE | USE | DIMENSIONS (m) | COLOUR |
|---|---|---|---|
| BB | MOVEMENTS ACROSS LINES, OVERTAKING, U TURN ARE PROHIBITED | 0.025 min. 0.05 max. 0.10 0.1 0.10 | WHITE |
| TB | GIVE WAY LINE | 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.30 | WHITE |
| L1 | LANE LINE ON MULTI LANE ROADS INCLUDING MOTORWAYS AND DUAL-CARRIAGEWAYS | 3 9 3 9 3 9 3 0.10 | WHITE |

FOR DA ONLY

SURVEY INFORMATION
SURVEYED BY LTS
DATUM: A.H.D.
ORIGIN OF LEVELS: SSM 199387 RL 79.060

| REVISION | AMENDMENT | DRAWN | DESIGNED | DATE |
|---|---|---|---|---|
| 01 | ISSUED FOR DA ONLY | SC | MM | 14.06.2023 |

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Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

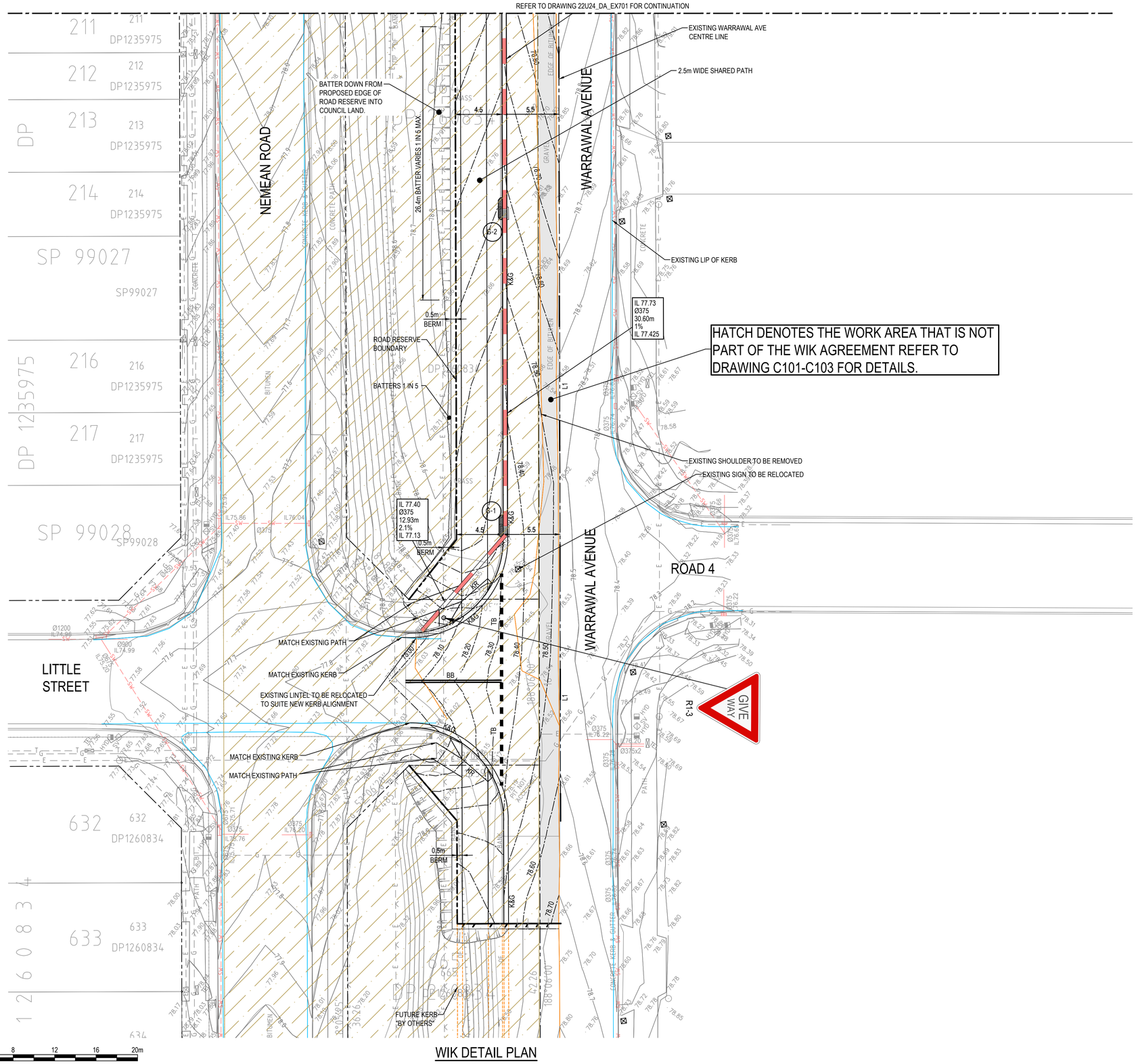
henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: WIK DETAIL PLAN
SHEET 1 OF 2

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:200 |

Drawing number: 22U24_DA_EX701
Revision: 01




## WIK DETAIL PLAN

SCALE 1:200

## LEGEND

- PROPOSED LIMIT OF WORK
- EXISTING BOUNDARY
- TEMPORARY WATER FILLED BARRIERS

## ARROW LEGEND

| | | |
|---|---|---|
| | UA4(L) | COMBINATION STRAIGHT AHEAD AND TURN |
| | UA1 | STRAIGHT AHEAD |
| | UA3(R) | TURN RIGHT ONLY |

NOTE: MINIMUM LENGTH OF ARROWS:
1. STRAIGHT AHEAD AND TURN ARROW = 3.0m
2. COMBINED ARROW = 3.75m

## NOTES:

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6. PAVEMENT ARROWS IN ACCORDANCE WITH RMS AS1742.2 - FIGURE 5.9
7. ALL PAVEMENT MARKINGS ON THIS DRAWING ARE TO BE THERMOPLASTIC.

## SIGNPOSTING LEGEND

R1-3

## LINEMARKING LEGEND

| LINE TYPE | USE | DIMENSIONS (m) | COLOUR |
|---|---|---|---|
| BB | MOVEMENTS ACROSS LINES, OVERTAKING, U TURN ARE PROHIBITED | 0.025 min. 0.05 max. 0.10 0.10 0.10 | WHITE |
| TB | GIVE WAY LINE | 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.30 | WHITE |
| L1 | LANE LINE ON MULTI LANE ROADS INCLUDING MOTORWAYS AND DUAL-CARRIAGEWAYS | 3 9 3 9 3 9 3 0.10 | WHITE |

**FOR DA ONLY**

SURVEY INFORMATION
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Client: FABCOT

Architect: CLARKE HOPKINS CLARKE

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DRAWING TO BE PRINTED IN COLOUR

henry&hymas

Project: PROPOSED RETAIL DEVELOPMENT
260 EIGHTH AVENUE, AUSTRAL NSW

Title: WIK DETAIL PLAN
SHEET 2 OF 2

| Drawn | Designed | Original issue date |
|---|---|---|
| M.Barrozo | M.Mishevski | APRIL 2023 |
| Checked | Approved | Scale @A1 |
| T.Rozehnal | A.Francis | 1:200 |

Drawing number: 22U24_DA_EX702

Revision: 01

# APPENDIX B – CHC ARCHITECTURAL DA DRAWINGS

## DA Sheets (Architectural)

| | | | |
|---|---|---|---|
| DA1.0 | Architectural DA Cover Page | P8 | 14.06.2023 |
| DA1.1 | Development Information | P6 | 14.06.2023 |
| DA2.4 | Site Plan - Overall Works | P7 | 14.06.2023 |
| DA2.5 | Site Plan - Part 1 | P7 | 14.06.2023 |
| DA2.6 | Site Plan - Part 2 | P7 | 14.06.2023 |
| DA3.1 | Lower Ground Floor Plan | P7 | 14.06.2023 |
| DA3.2 | Upper Ground Floor Plan | P7 | 14.06.2023 |
| DA3.3 | Level 1 Floor Plan | P7 | 14.06.2023 |
| DA3.4 | Roof Plan | P7 | 14.06.2023 |
| DA4.1 | Building Elevations - Sheet 1 | P4 | 14.06.2023 |
| DA4.2 | Building Elevations - Sheet 2 | P4 | 14.06.2023 |
| DA5.1 | Building Sections - Sheet 1 | P4 | 14.06.2023 |
| DA6.1 | Finishes Schedule | P3 | 14.06.2023 |
| DA6.2 | Signage Location Site Plan - Part 1 | P3 | 14.06.2023 |
| DA6.3 | Signage Location Site Plan - Part 2 | P3 | 14.06.2023 |
| DA6.4 | Signage Details - Sheet 1 | P3 | 14.06.2023 |
| DA7.1 | 3D Perspectives - Sheet 1 | P4 | 14.06.2023 |
| DA7.2 | 3D Perspectives - Sheet 2 | P4 | 14.06.2023 |
| DA7.3 | 3D Perspectives - Sheet 3 | P4 | 14.06.2023 |
| DA7.4 | 3D Perspectives - Sheet 4 | P4 | 14.06.2023 |
| DA7.5 | 3D Perspectives - Sheet 5 | P3 | 14.06.2023 |
| DA8.1 | Shadow Diagrams | P1 | 14.06.2023 |

Woolworths Group

Clarke Hopkins Clarke

**Austral Square**

**22108** | 330-350 Eighth Avenue AUSTRAL NSW 2179

# Architectural DA Cover Page

**REV P8 |** 14.06.2023

PRELIMINARY

# AREAS

## GLAR Summary

**Area Schedule_Lettable**

| Function | Area |
|---|---|
| | |
| COMMERCIAL | 1858 m² |
| LIQUOR | 200 m² |
| SPECIALTY RETAIL | 1521 m² |
| SUPERMARKET | 3881 m² |
| Grand total | 7460 m² |

## Retail Only

**Area Summary_Retail**

| Function | Area |
|---|---|
| | |
| LIQUOR | 200 m² |
| SPECIALTY RETAIL | 1521 m² |
| SUPERMARKET | 3881 m² |
| Grand total | 5602 m² |

## Commercial Only

**Area Summary_Commercial**

| Function | Area |
|---|---|
| | |
| COMMERCIAL | 1858 m² |
| Grand total | 1858 m² |

## GFA Summary

**Area Schedule_GFA**

| Function | Area |
|---|---|
| | |
| ADMIN | 13 m² |
| AMENITIES | 139 m² |
| CIRCULATION | 63 m² |
| COMMERCIAL | 1858 m² |
| LIQUOR | 200 m² |
| LOBBY | 100 m² |
| SPECIALTY RETAIL | 1521 m² |
| SUPERMARKET | 3881 m² |
| Grand total | 7775 m² |

# PARKING

## PARKING SUMMARY TABLE (DCP)

| | |
|---|---|
| TOTAL RETAIL AREA > 200 m² (SUPERMARKET, LIQUOR, DTB) | **4081 m²** |
| CAR SPACES REQUIRED @ 1 PER 22 m² | **186 SPACES** |
| TOTAL RETAIL AREA < 200 m² (SPECIALTY RETAIL, INCL KIOSKS) | **1521 m²** |
| CAR SPACES REQUIRED @ 1 PER 30 m² | **51 SPACES** |
| TOTAL COMMERCIAL AREA | **1858 m²** |
| CAR SPACES REQUIRED @ 1 PER 40 m² | **47 SPACES** |
| TOTAL CARSPACES REQUIRED (DCP) | **284 SPACES** |
| TOTAL CARSPACES PROVIDED | **319 SPACES** |
| TOTAL IN EXCESS | **+35 SPACES** |

## Parking Provided

**Parking Schedule**

| Category | Carparks Provided |
|---|---|
| | |
| Accessible | 7 |
| Direct to Boot (DTB) | 6 |
| Electric Vehicle | 4 |
| On-Grade | 286 |
| On-Street Parking | 16 |
| Grand total | 319 |

**Parking (Other)**

| Category | Carparks Provided |
|---|---|
| | |
| Motorcycle | 4 |
| Grand total | 4 |

# DEVELOPER-SPECIFIC

## SUPERMARKET COMPLIANCE (KEY ITEMS)

| KIT COMPLIANCE CHECKLIST | REQUIRED Y/N | ACHIEVED Y/N | COMMENTS |
|---|---|---|---|
| A. RETAIL CAR PARKING RATIO 5 CAR SPACES PER 100 m² GLA; COMMERCIAL 3 CAR SPACES PER 100 m² | Y | N | SHORTFALL OF 18 SPACES TO COMBINED RATE. |
| B. SHADE SAILS PROVIDED TO CENTRE REQUIREMENTS | Y | Y* | DIRECTION GIVEN BY DEVELOPMENT MANAGER. |
| C. CAR BAY SIZE MIN 2.6m x 5.5m | Y | Y* | TWO EXCEPTIONS TO REGULAR SPACES AT SITE PINCH POINT (5.4m D). ACCESS SPACES 2.4m WIDE TYPICALLY. |
| D. CARPARK AISLE WIDTH 6.6m TYPICAL 7m PRIMARY | Y | Y | |
| E. 80% OF CARS WITHIN 100m RADIUS OF SUPERMARKET ENTRY | Y | Y | 36 SPACES OUTSIDE RADIUS. 88.5% WITHIN 100m |
| F. 2-WAY CAR CIRCULATION THROUGHOUT | Y | Y | |
| G. MAX. 1:40 FALL ACROSS CARPARK | Y | Y* | CONFIRM WITH CIVIL ENGINEER |
| H. TROLLEY BAYS MIN 1 PER 40 CAR SPACES | Y | Y | 13 TROLLEY BAYS. 8 REQUIRED. |
| I. CARPARK ACCESS POINTS MIN 7.2m WIDE SPLAY | Y | Y | |

Clarke Hopkins Clarke
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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

Scale 1 : 200 @ A1

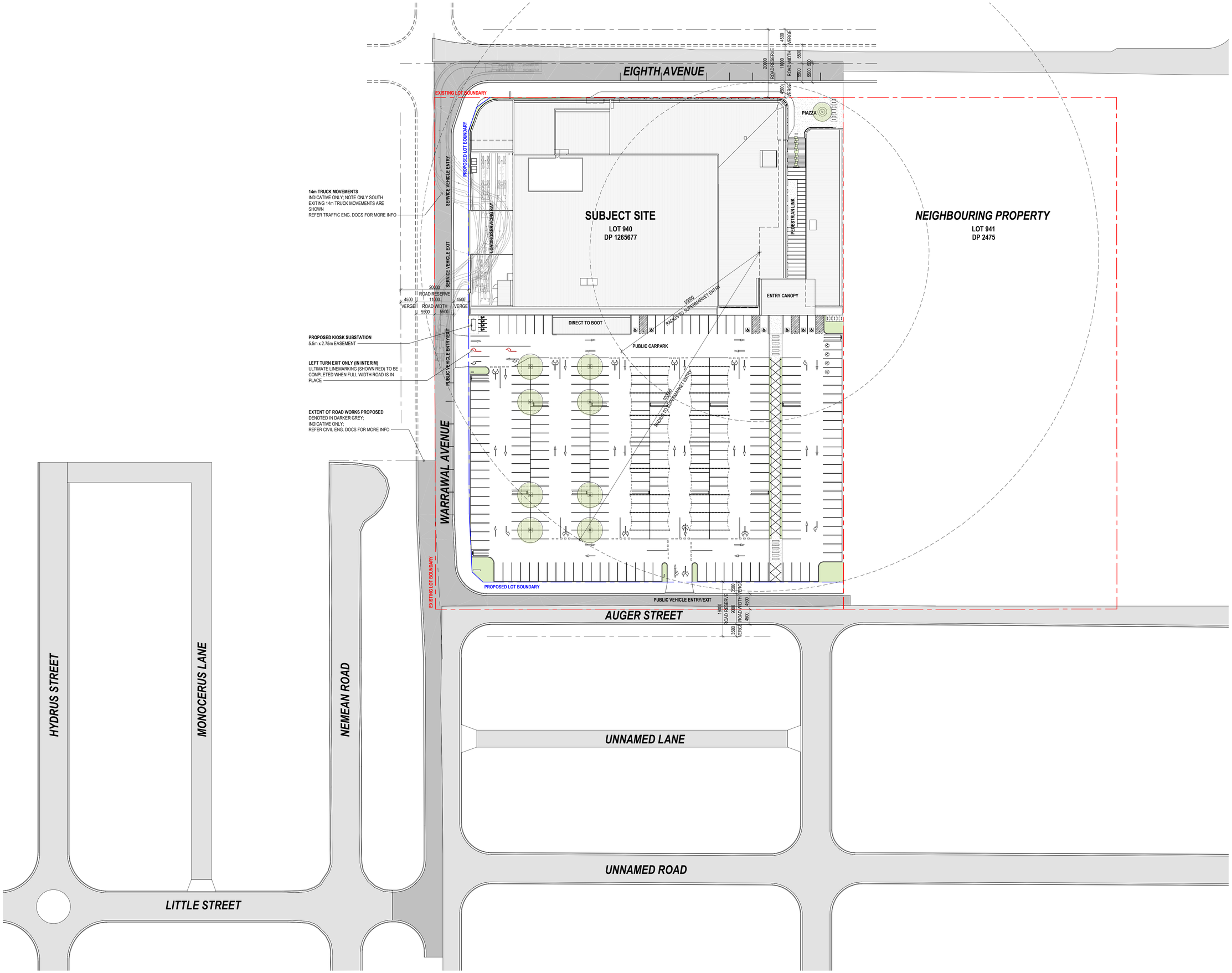
0 6m

PRELIMINARY

**Development Information**

14.06.2023

**DA1.1** P6




## Legend - Site

- NEW ROAD WORKS
- EXISTING ROADS
- GARDEN BEDS
- EXISTING TREE
- PROPOSED TREE REFER TO LANDSCAPE ARCHITECTS DRAWINGS
- EX 79.40 EXISTING LEVEL
- RL 79.40 RELATIVE LEVEL
- FFL 79.40 FLOOR LEVEL
- DENOTES DEMOLISHED ITEMS
- EXISTING LOT BOUNDARY
- PROPOSED NEW LOT BOUNDARY

## Keynote Legend

### Parking Summary

| Category | Carparks Provided |
|---|---|
| Accessible | 7 |
| Direct to Boot (DTB) | 6 |
| Electric Vehicle | 4 |
| On-Grade | 286 |
| On-Street Parking | 16 |
| Grand total | 319 |

**DCP Parking Summary**
Total Parking Demand: **284 spaces**
Total Parking Provided: 319 spaces

| Area Summary_Lettable | | Area Summary_Non-Lettable | |
|---|---|---|---|
| Function | Area | Function | Area |
| COMMERCIAL | 1858 m² | ADMIN | 13 m² |
| LIQUOR | 200 m² | AMENITIES | 139 m² |
| SPECIALTY RETAIL | 1521 m² | CIRCULATION | 63 m² |
| SUPERMARKET | 3881 m² | LIFTSTAIR | 189 m² |
| Grand total | 7460 m² | LOBBY | 100 m² |
| | | SERVICES | 436 m² |
| | | Grand total | 940 m² |

Clarke Hopkins Clarke
www.chc.com.au | studio@chc.com.au | 03 9419 4340

Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

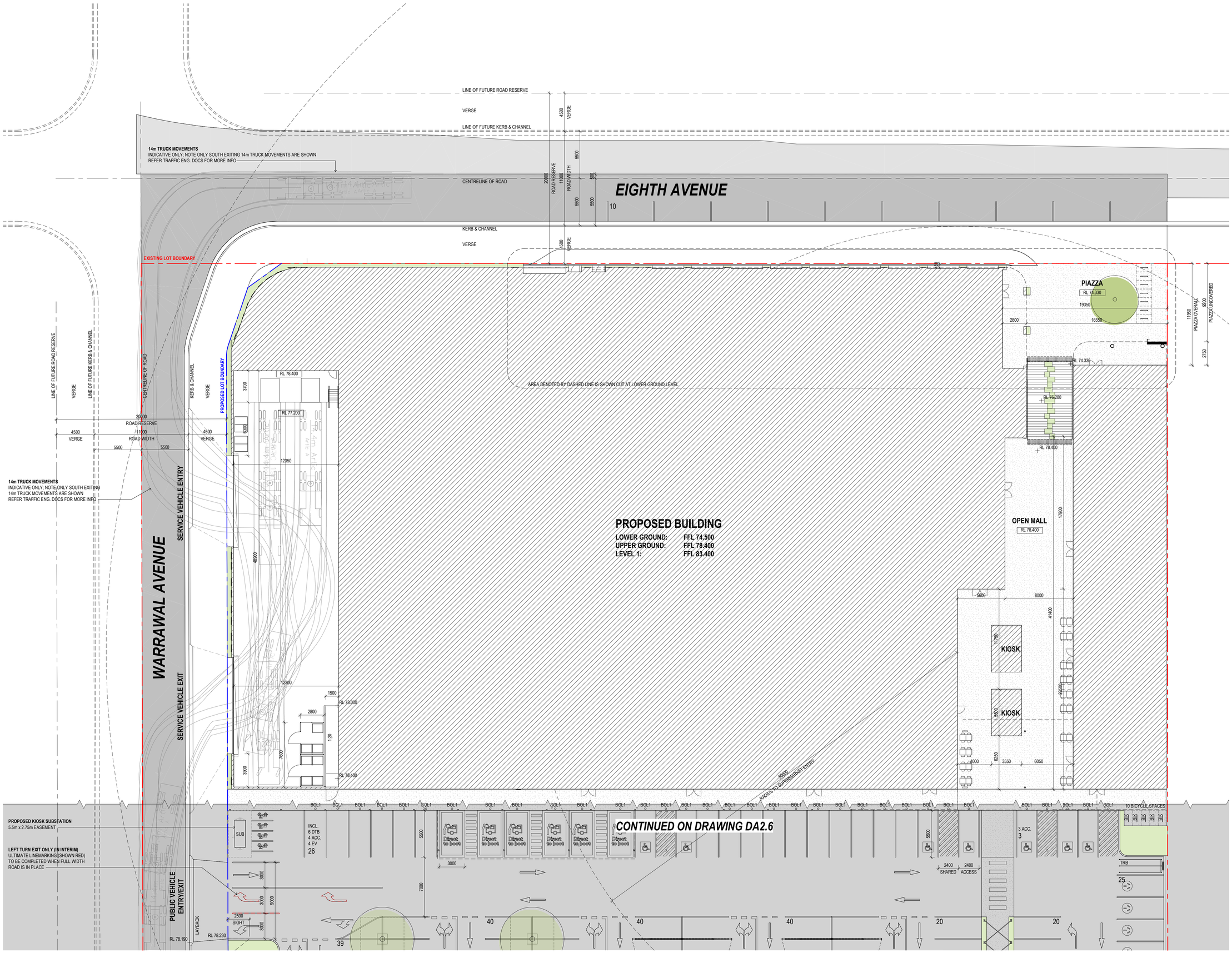
Scale 1:500 @ A1
0 15m

PRELIMINARY

# Site Plan - Overall Works

14.06.2023

# DA2.4 P7




## Legend - Site

- NEW ROAD WORKS
- EXISTING ROADS
- GARDEN BEDS
- EXISTING TREE
- PROPOSED TREE REFER TO LANDSCAPE ARCHITECTS DRAWINGS
- EX 79.40 EXISTING LEVEL
- RL 79.40 RELATIVE LEVEL
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## Keynote Legend

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| Grand total | 7460 m² | LOBBY | 100 m² |
| | | SERVICES | 436 m² |
| | | Grand total | 940 m² |

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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

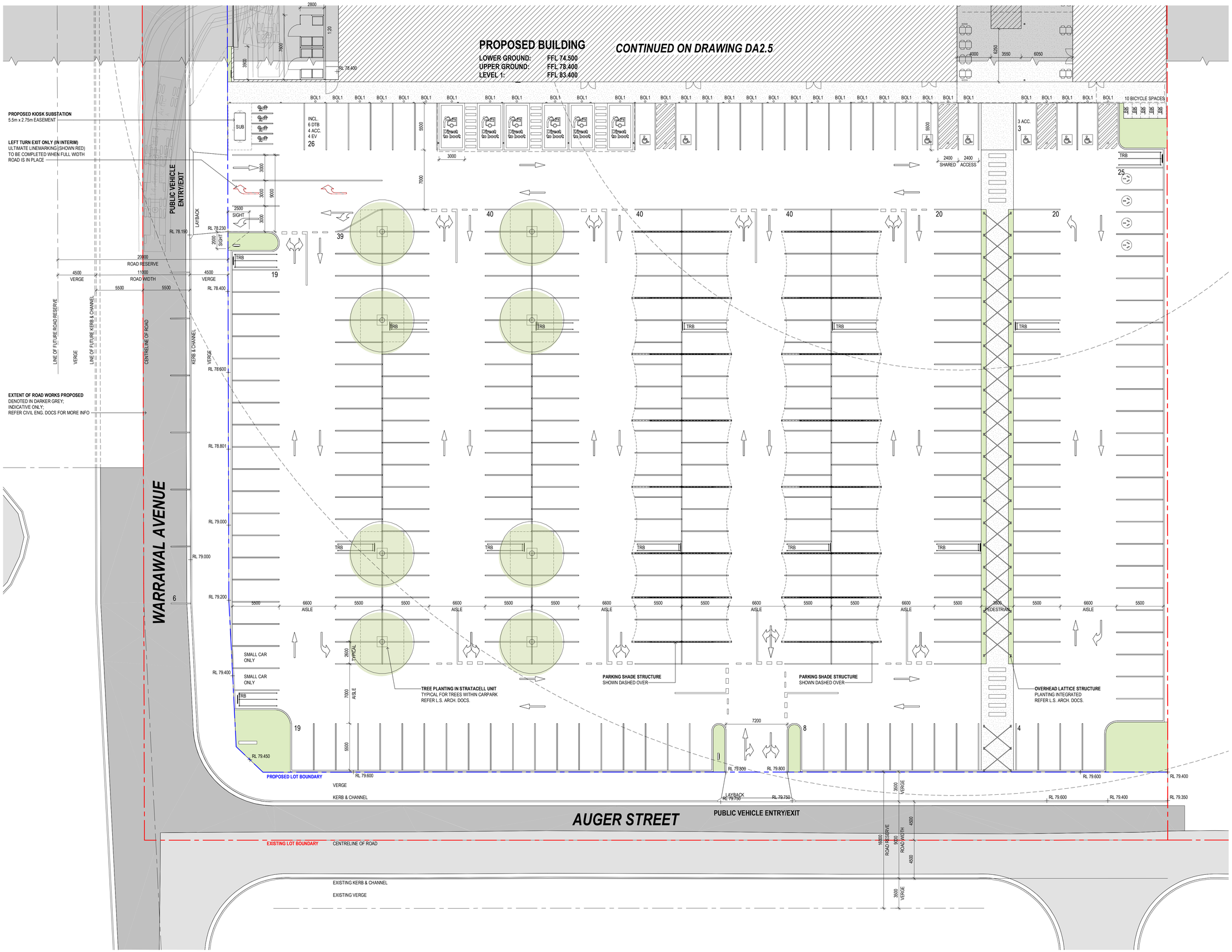
Scale 1 : 200 @ A1
0 6m

PRELIMINARY

# Site Plan - Part 1

14.06.2023

# DA2.5 P7




## Legend - Site

- NEW ROAD WORKS
- EXISTING ROADS
- GARDEN BEDS
- EXISTING TREE
- PROPOSED TREE
  REFER TO LANDSCAPE ARCHITECTS DRAWINGS
- EX 79.40 EXISTING LEVEL
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- FFL 79.40 FLOOR LEVEL
- DENOTES DEMOLISHED ITEMS
- EXISTING LOT BOUNDARY
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## Keynote Legend

**Parking Summary**

| Category | Carparks Provided |
|---|---|
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| On-Grade | 286 |
| On-Street Parking | 16 |
| Grand total | 319 |

**DCP Parking Summary**

Total Parking Demand: **284 spaces**

Total Parking Provided: 319 spaces

**Area Summary_Lettable**

| Function | Area |
|---|---|
| COMMERCIAL | 1858 m² |
| LIQUOR | 200 m² |
| SPECIALTY RETAIL | 1521 m² |
| SUPERMARKET | 3881 m² |
| Grand total | 7460 m² |

**Area Summary_Non-Lettable**

| Function | Area |
|---|---|
| ADMIN | 13 m² |
| AMENITIES | 139 m² |
| CIRCULATION | 63 m² |
| LIFTSTAIR | 189 m² |
| LOBBY | 100 m² |
| SERVICES | 436 m² |
| Grand total | 940 m² |


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**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

Scale 1 : 200 @ A1

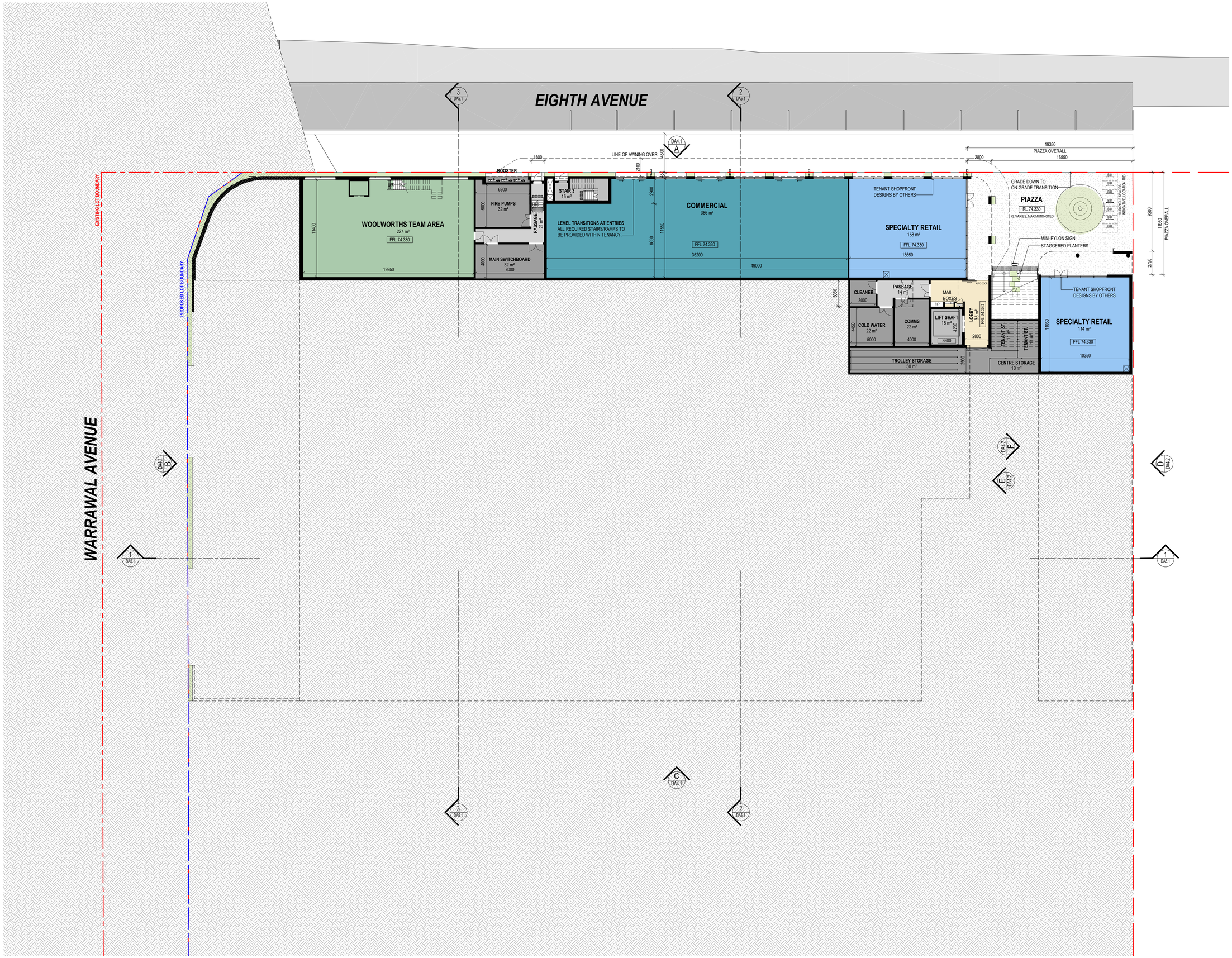
0 6m

PRELIMINARY

# Site Plan - Part 2

14.06.2023

# DA2.6 P7




## Keynote Legend

| | |
|---|---|
| BIK | BICYCLE RACK |
| FIP | FIRE INDICATOR PANEL |

### Parking Summary

| Category | Carparks Provided |
|---|---|
| Accessible | 7 |
| Direct to Boot (DTB) | 6 |
| Electric Vehicle | 4 |
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**DCP Parking Summary**

Total Parking Demand: **284 spaces**

Total Parking Provided: 319 spaces

### Area Summary_Lettable

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| Grand total | 7460 m² |

### Area Summary_Non-Lettable

| Function | Area |
|---|---|
| ADMIN | 13 m² |
| AMENITIES | 139 m² |
| CIRCULATION | 63 m² |
| LIFT/STAIR | 189 m² |
| LOBBY | 100 m² |
| SERVICES | 436 m² |
| Grand total | 940 m² |


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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

Scale 1 : 200 @ A1

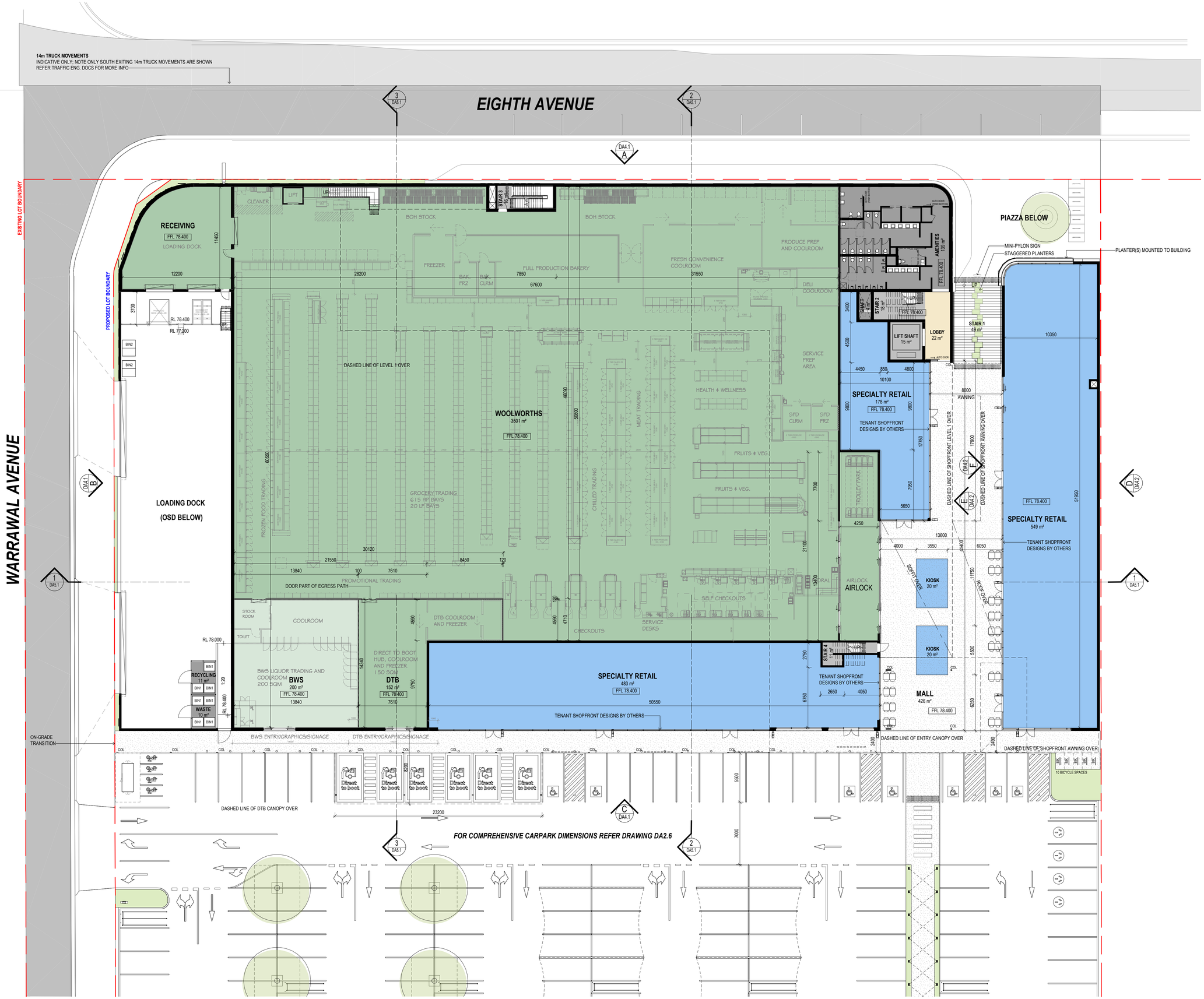
0 6m

PRELIMINARY

# Lower Ground Floor Plan

14.06.2023

# DA3.1 P7




## Keynote Legend

| | |
|---|---|
| BIK | BICYCLE RACK |
| BIN1 | BIN - TYPE 1 |
| BIN2 | BIN - TYPE 2 |
| COL | COLUMN |

### Parking Summary

| Category | Carparks Provided |
|---|---|
| Accessible | 7 |
| Direct to Boot (DTB) | 6 |
| Electric Vehicle | 4 |
| On-Grade | 286 |
| On-Street Parking | 16 |
| Grand total | 319 |

**DCP Parking Summary**
Total Parking Demand: **284 spaces**
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### Area Summary_Lettable

| Function | Area |
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| LIQUOR | 200 m² |
| SPECIALTY RETAIL | 1521 m² |
| SUPERMARKET | 3881 m² |
| Grand total | 7460 m² |

### Area Summary_Non-Lettable

| Function | Area |
|---|---|
| ADMIN | 13 m² |
| AMENITIES | 139 m² |
| CIRCULATION | 63 m² |
| LIFT/STAIR | 189 m² |
| LOBBY | 100 m² |
| SERVICES | 436 m² |
| Grand total | 940 m² |

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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

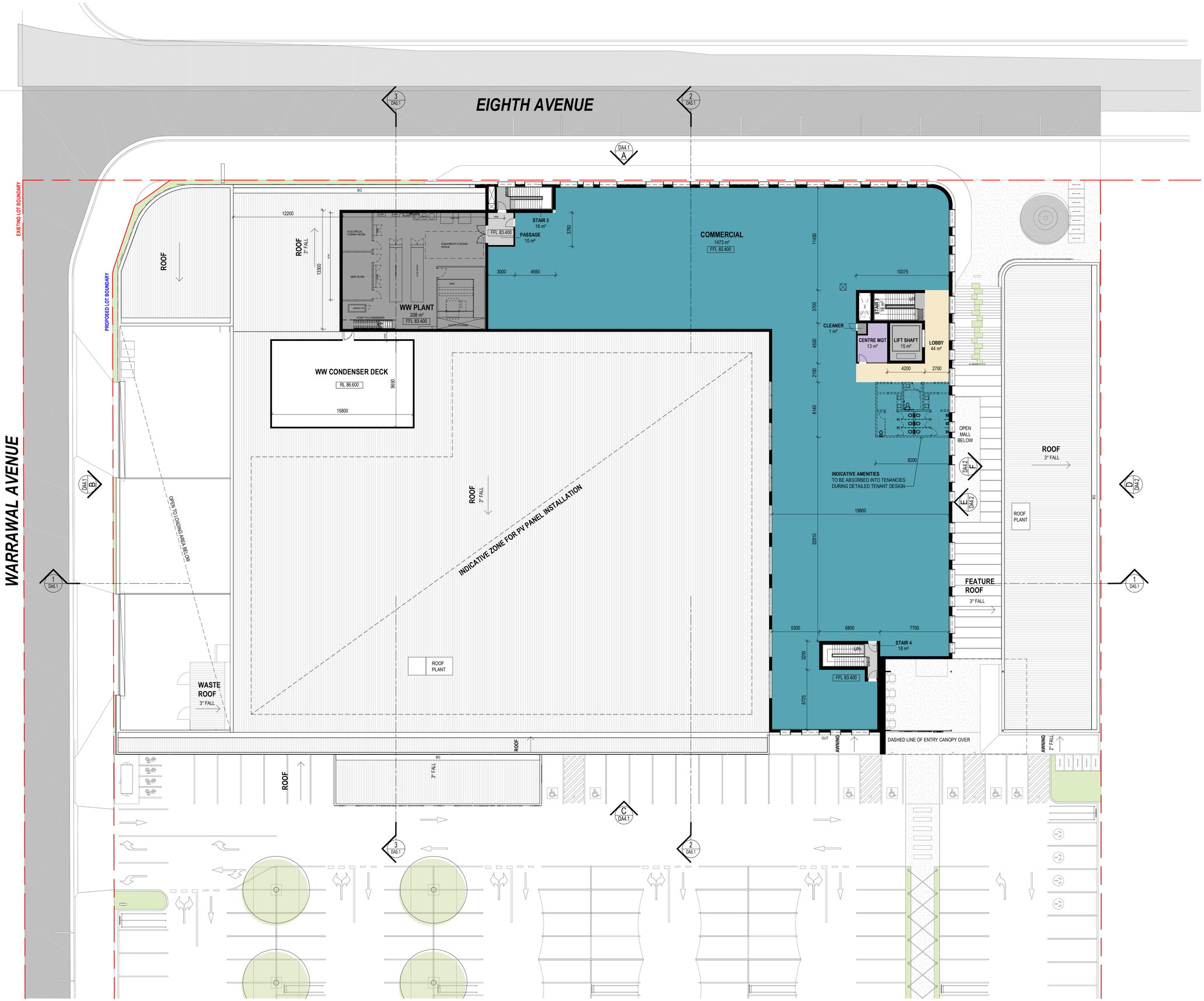
Scale 1 : 200 @ A1
0 6m

PRELIMINARY

# Upper Ground Floor Plan

14.06.2023

# DA3.2 P7




## Keynote Legend

BG BOX GUTTER

**Parking Summary**

| Category | Carparks Provided |
|---|---|
| Accessible | 7 |
| Direct to Boot (DTB) | 6 |
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| On-Grade | 286 |
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**DCP Parking Summary**

Total Parking Demand: **284 spaces**

Total Parking Provided: 319 spaces

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| | | Grand total | 940 m² |


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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

Scale 1 : 200 @ A1

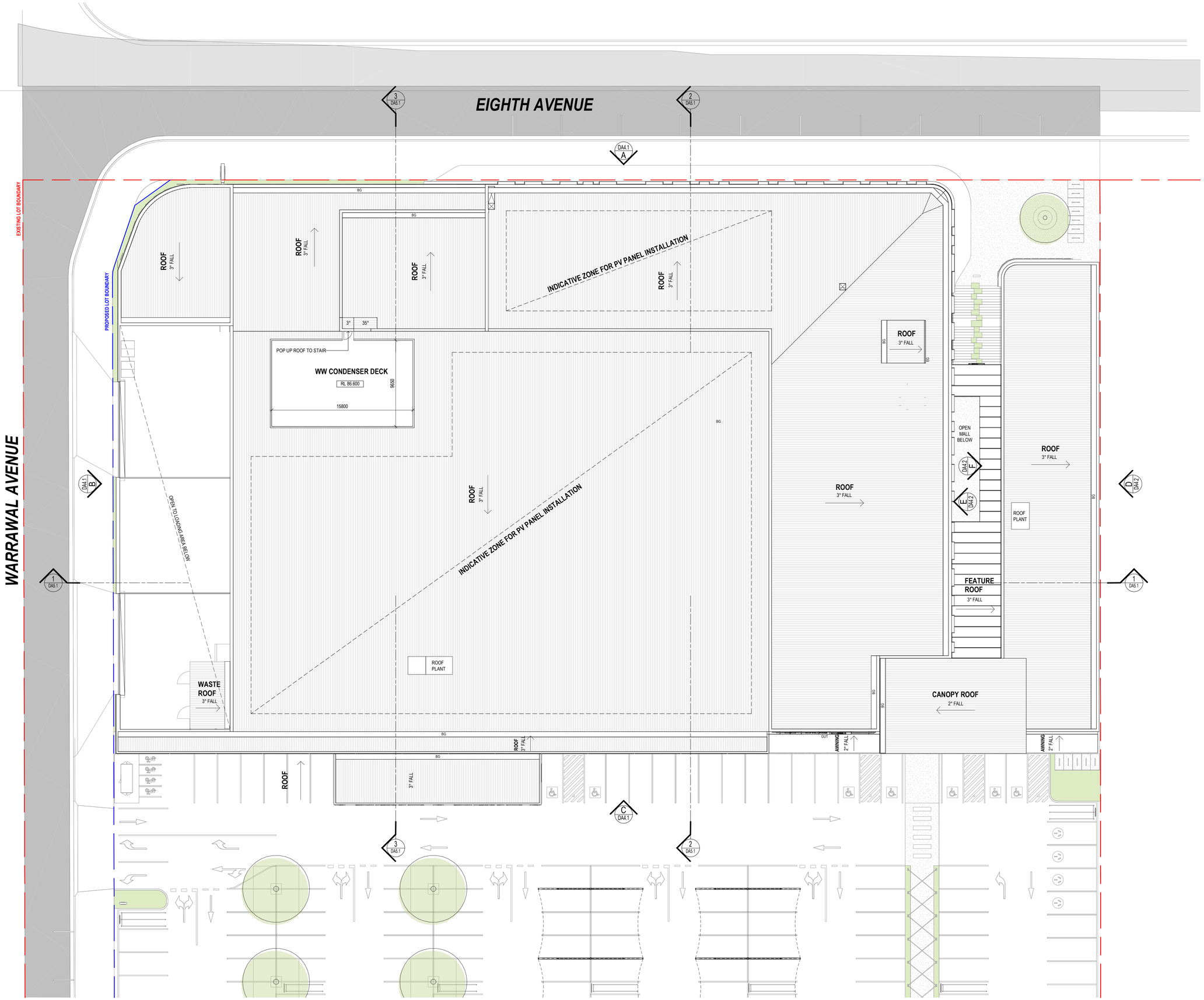
0 6m

PRELIMINARY

# Level 1 Floor Plan

14.06.2023

# DA3.3 P7




## Keynote Legend

| | |
|---|---|
| BG | BOX GUTTER |
| EG | EAVES GUTTER |
| GUT | |

**Parking Summary**

| Category | Carparks Provided |
|---|---|
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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

Scale 1 : 200 @ A1

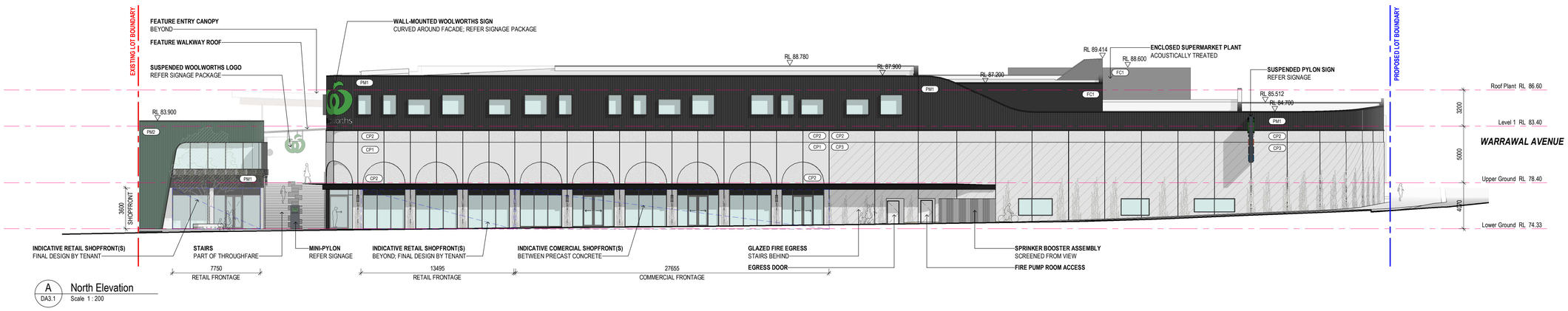
0 6m

PRELIMINARY

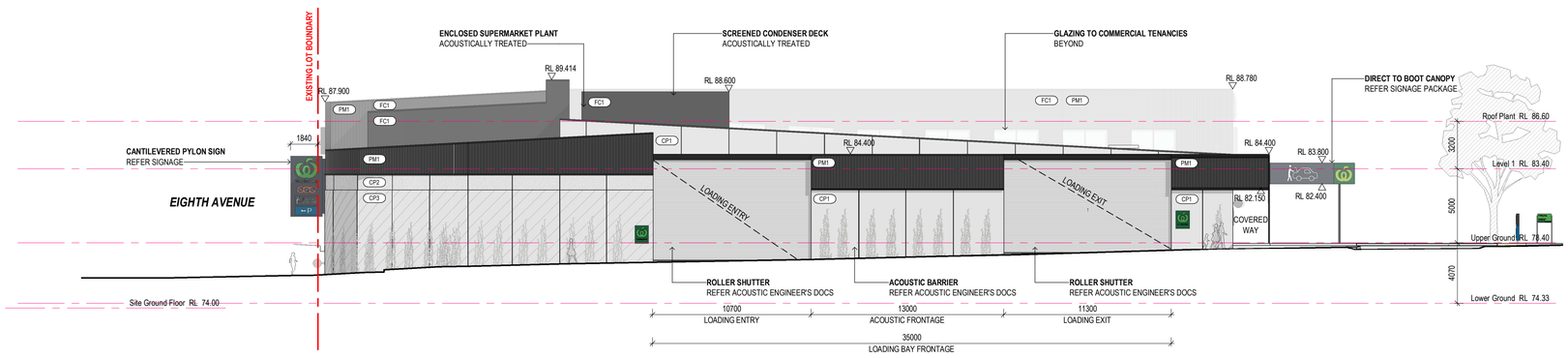
# Roof Plan

14.06.2023

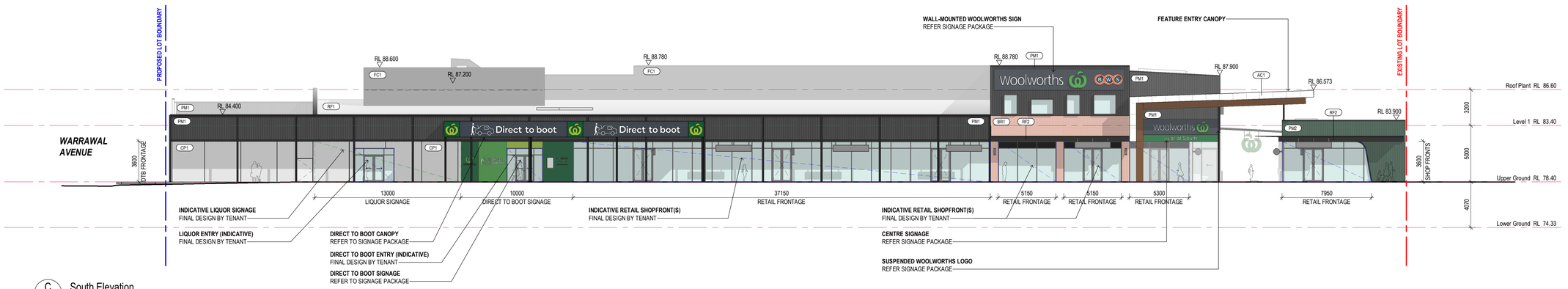
# DA3.4 P7




A North Elevation
DA3.1 Scale 1 : 200




B West Elevation
DA3.1 Scale 1 : 200




C South Elevation
DA3.1 Scale 1 : 200

## External Shopfronts

External Shopfront Design Parameters:

- All tenant shopfronts are shown indicatively only.
- Future shopfront design by tenant to future detail.
- Maximum 40% of each tenant shopfront to be solid (i.e. brickwork, masonry, filming, non-illuminated decals, signage, or the like).
- Minimum 60% of each tenant shopfront to be glazed (i.e. fixed glazing, glazed swing doors, glazed sliding doors, or the like).

Denotes zone of indicative shopfront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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

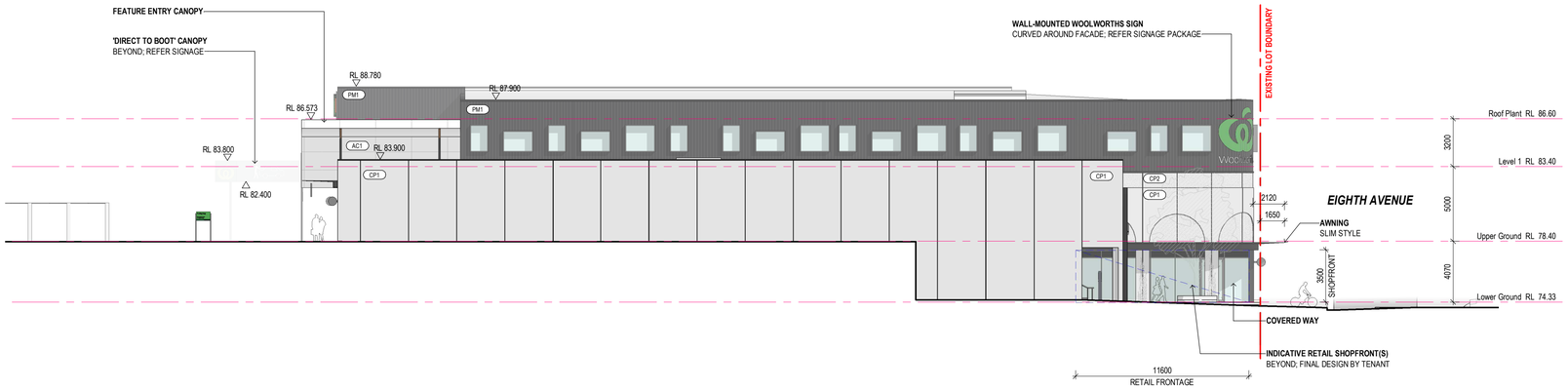
Scale 1 : 200 @ A1
0 6m

PRELIMINARY

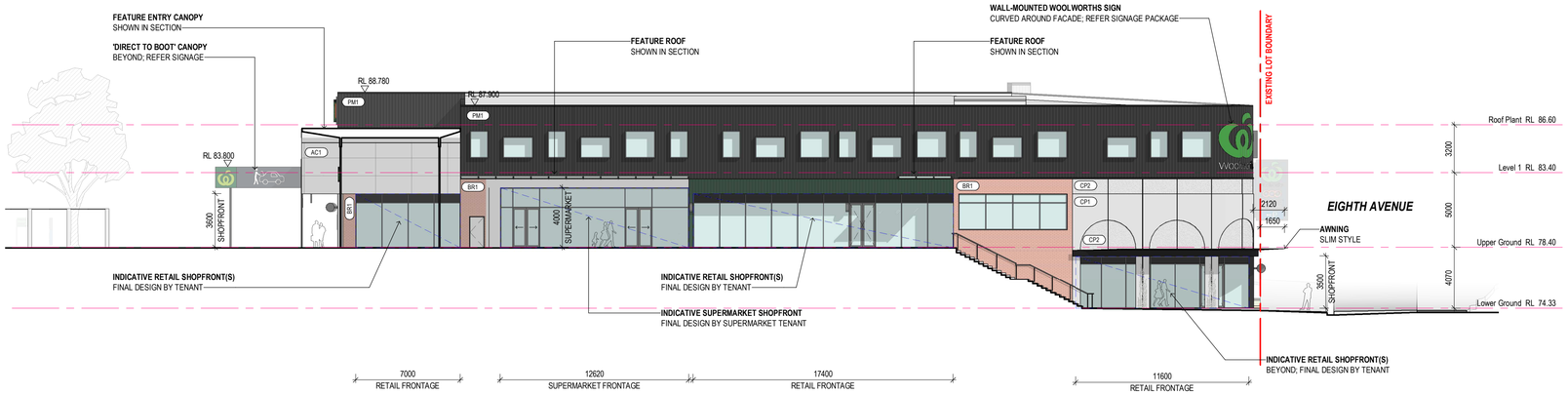
# Building Elevations - Sheet 1

14.06.2023

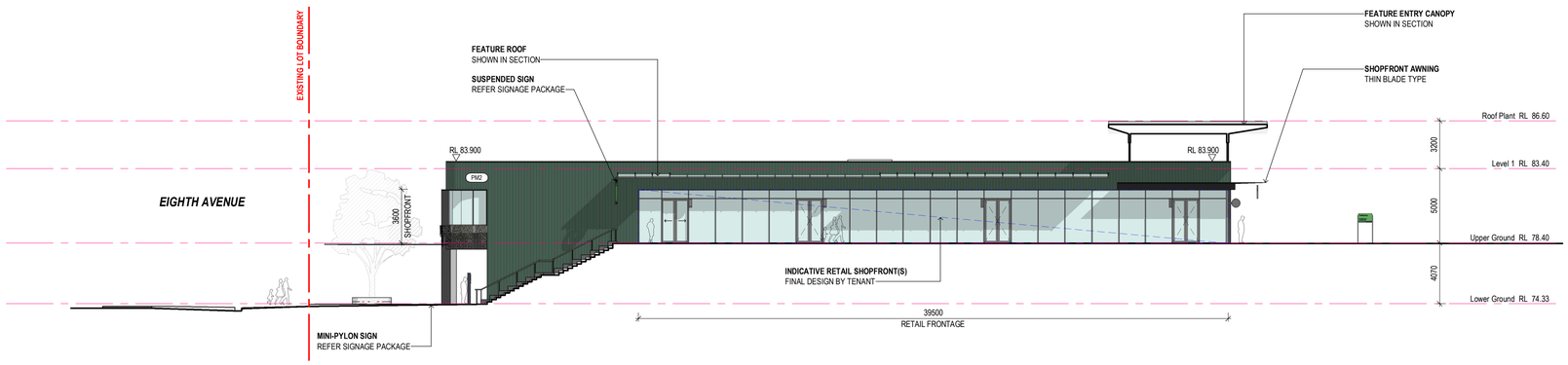
# DA4.1 P4




D DA3.1 East Elevation
Scale 1 : 200




E DA3.1 East Sectional Elevation
Scale 1 : 200




F DA3.1 West Sectional Elevation
Scale 1 : 200

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Job No. 22108

**Austral Square**

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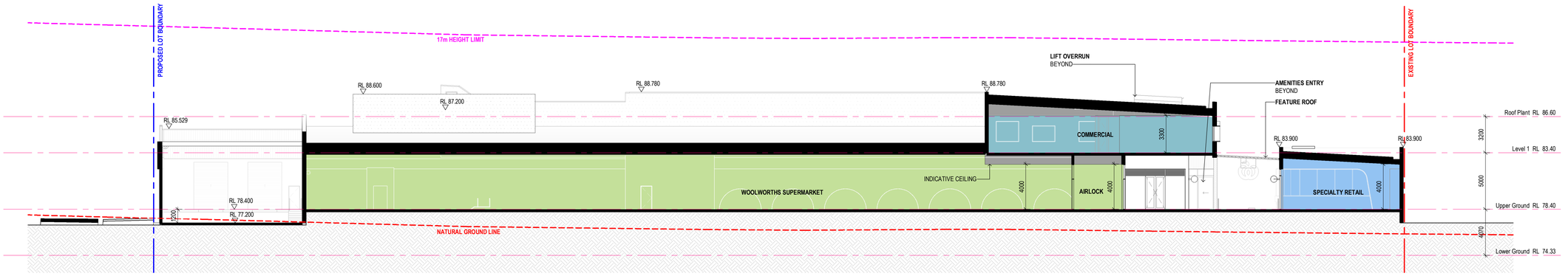
Scale 1 : 200 @ A1
0 6m

PRELIMINARY

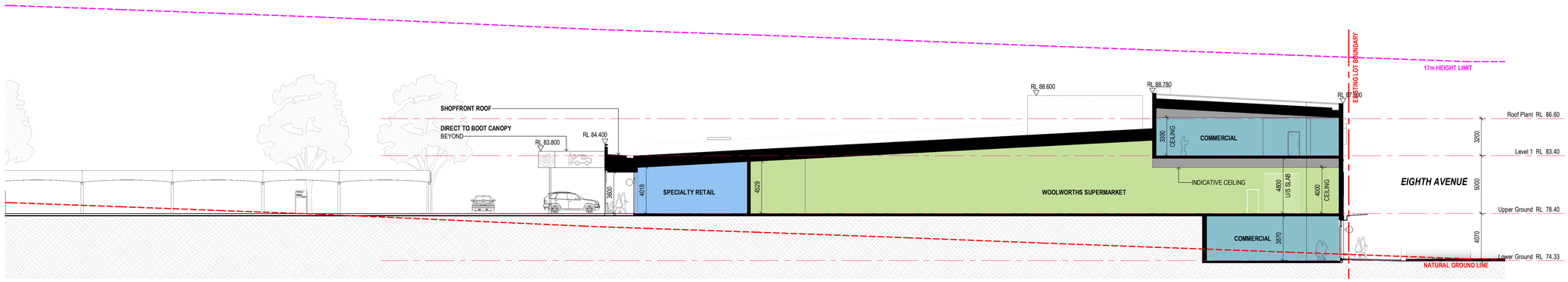
# Building Elevations - Sheet 2

14.06.2023

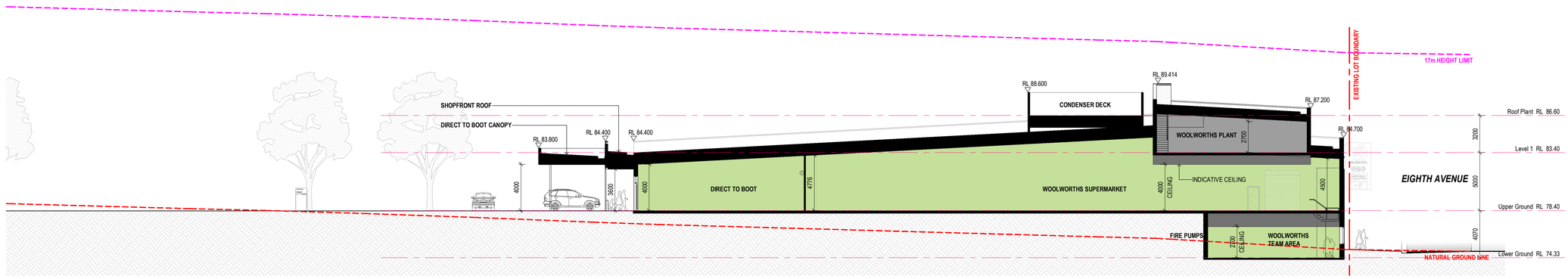
**DA4.2** P4




1 DA3.1 Section 1
Scale 1 : 200




2 DA3.1 Section 2
Scale 1 : 200




3 DA3.1 Section 3
Scale 1 : 200

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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

Scale 1 : 200 @ A1
0 6m

PRELIMINARY

# Building Sections - Sheet 1

14.06.2023

# DA5.1 P4

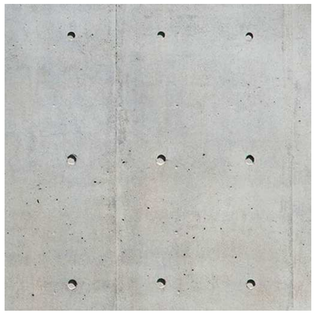
## CONCRETE & MASONRY FINISHES

**CODE: CP1**
MATERIAL: PRECAST CONCRETE WALL PANELS
COLOUR: PLAIN
FINISH: PLAIN FINISH

**CODE: CP2**
MATERIAL: PRECAST CONCRETE WALL PANELS
COLOUR: PLAIN
FINISH: SANDBLASTED SURFACE FINISH (OR SIMILAR)

**CODE: CP3**
MATERIAL: PRECAST CONCRETE WALL PANELS
COLOUR: PLAIN
FINISH: PAINTED MURAL FINISH (ARTWORK BY OTHERS)

**CODE: BR1**
MATERIAL: BRICK
COLOUR: VARIES
FINISH: PLAIN OR RUMBLED LOOK



**CODE: CO**
MATERIAL: CONCRETE
COLOUR: PLAIN
FINISH: PLAIN OR TEXTURED

## CLADDING FINISHES

**CODE: PM1**
MATERIAL: PROFILED METAL WALL CLADDING
COLOUR: DARK
FINISH: PROFILED

**CODE: PM2**
MATERIAL: PROFILED METAL WALL CLADDING
COLOUR: GREEN
FINISH: PROFILED

**CODE: FC1**
MATERIAL: FIBRE CEMENT CLADDING OR SIMILAR
COLOUR: DARK
FINISH: EXPRESSED GROOVES/JOINTS, OR PLAIN

**CODE: FC2**
MATERIAL: FIBRE CEMENT CLADDING OR SIMILAR
COLOUR: WHITE
FINISH: PLAIN PANELS WITH EXPRESSED JOINT

## ROOFING FINISHES

**CODE: RF1**
MATERIAL: PROFILED METAL ROOF SHEETING
COLOUR: LIGHT
FINISH: PROFILED

**CODE: RF2**
MATERIAL: SLIMLINE METAL AWNING
COLOUR: DARK
FINISH: FLAT

PRELIMINARY

Clarke Hopkins Clarke
**Austral Square**
330-350 Eighth Avenue AUSTRAL NSW 2179
Project No. 22108

Scale 1 : 50 @ A1
0 5m

**Finishes Schedule**
14.06.2023

**DA6.1** P3

**www.chc.com.au** | studio@chc.com.au | 03 9419 4340 | NSW Nominated Architect: Jordan Curran (10259)

EIGHTH AVENUE

WARRAWAL AVENUE

EXISTING LOT BOUNDARY

PROPOSED LOT BOUNDARY

S 1.2

S 5.2

S 2.6

PIAZZA

S 1.4

S 2.4

AREA DENOTED BY DASHED LINE IS SHOWN CUT AT LOWER GROUND LEVEL

S 2.5

**PROPOSED BUILDING**

LOWER GROUND: FFL 74.500
UPPER GROUND: FFL 78.400
LEVEL 1: FFL 83.400

OPEN MALL

KIOSK

KIOSK

RL 79.000

1:20

RL 78.400

S 2.3

S 2.2

S 2.1

S 5.1

S 3.4

S 3.1

S 3.3

S 3.2

S 4.1

S 1.3

CONTINUED ON DRAWING DA6.3

Clarke Hopkins Clarke

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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

Scale 1 : 200 @ A1

0 6m

PRELIMINARY

# Signage Location Site Plan - Part 1

14.06.2023

# DA6.2 P3

**PROPOSED BUILDING**

LOWER GROUND: FFL 74.500
UPPER GROUND: FFL 78.400
LEVEL 1: FFL 83.400

*CONTINUED ON DRAWING DA6.2*

FL 78.400

S 2.5 S 3.4 S 5.2 S 5.2 S 5.2 S 2.1 S 2.3 S 5.2 S 5.2 S 5.2 S 5.2 S 5.1 S 5.1 S 5.1 S 5.1 S 5.1 S 5.1 S 3.1 S 3.3 S 3.2 S 4.1 S 1.3 S 4.1 S 4.1 S 4.1 S 4.1 S 4.1 S 4.1 S 4.1 S 4.1 S 4.1 S 1.1 S 1.3

Ellipse to be inset

WARRAWAL AVENUE

PROPOSED LOT BOUNDARY

AUGER STREET

EXISTING LOT BOUNDARY

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Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

Scale 1 : 200 @ A1

0 6m

PRELIMINARY

# Signage Location Site Plan - Part 2

14.06.2023

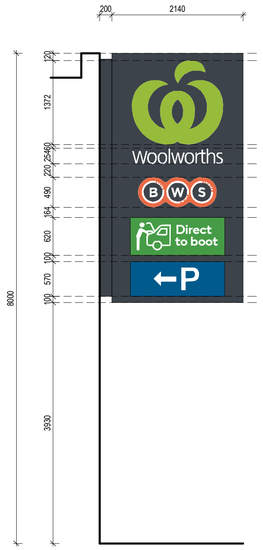
# DA6.3 P3

S 1.1

**WOOLWORTHS PYLON SIGN - 8m**

SPECIAL SIGN 2140mm x 600mm x 8000mm. DOUBLE SIDED.
INTERNALLY ILLUMINATED SIGNAGE ELEMENTS.
MOUNTED TO GROUND.

REFER SIGNS B18/B19 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)




S 1.2

**WOOLWORTHS PYLON SIGN - CANTILEVERED**

SPECIAL SIGN 2140mm x 600mm x 4070mm. DOUBLE SIDED.
INTERNALLY ILLUMINATED SIGNAGE ELEMENTS.
MOUNTED TO SIDE OF BUILDING.

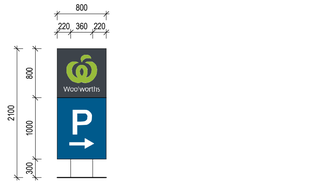
REFER SIGNS B18/B19 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)

S 2.1

**EXTERNAL FACADE SIGN**

COMBINED SIGN 11630mm x 1880mm OVERALL. (1500mm HIGH WW LOGO)
INTERNALLY ILLUMINATED SIGN.
MOUNTED TO FACADE OF BUILDING.

REFER SIGN B11 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)

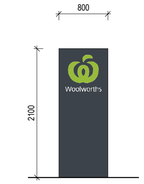



S 1.3

**PARKING DIRECTIONAL SIGN**

MINI-PYLON SIGN 800mm x 200mm x 2100mm.
DOUBLE SIDED. MOUNTED TO GROUND.
INTERNALLY ILLUMINATED SIGNAGE ELEMENTS.

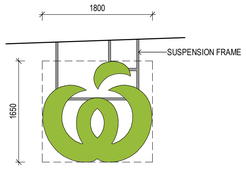
REFER SIGN DETAILS SG-05 (D, E, F) IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)




S 1.4

**MINI PYLON SIGN**

MINI-PYLON SIGN 800mm x 200mm x 2100mm.
DOUBLE SIDED. MOUNTED TO GROUND.
INTERNALLY ILLUMINATED SIGNAGE ELEMENTS.

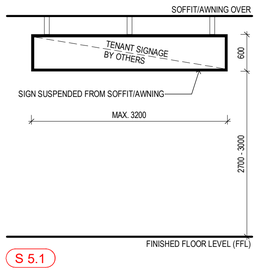



S 2.4

**SUSPENDED SPECIAL SIGN**

SUSPENDED LOGO 1800mm x 1650mm
INTERNALLY ILLUMINATED SIGN.
SUSPENDED FROM ROOF ELEMENT.

REFER SIGNS B46/B47 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)




S 5.1

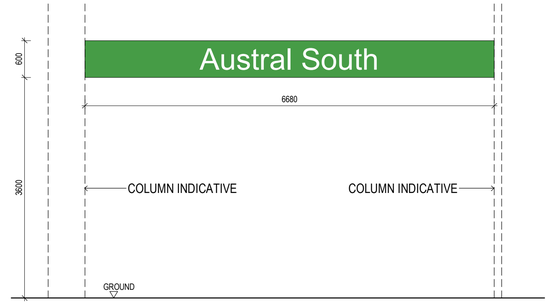
**TENANT SIGNAGE - AWNING SUSPENDED**

SUSPENDED SIGN 3200mm x 600mm.
MOUNTED FROM AWNING/SOFFIT.
DOUBLE SIDED. INTERNALLY ILLUMINATED.

S 2.2

**INFILL CANOPY SIGN**

BACKED LETTERING AND LOGO 6679mm x 1400mm OVERALL.
(1000mm HIGH WW LOGO)
INTERNALLY ILLUMINATED SIGN.




S 2.3

**COLOUR BAND SIGNAGE BEAM**

SUSPENDED INDIVIDUAL LETTERING AND LOGO 4920mm x 1000mm OVERALL.
FLAT SIGNAGE. SUSPENDED BETWEEN FEATURE ENTRY CANOPY COLUMNS.

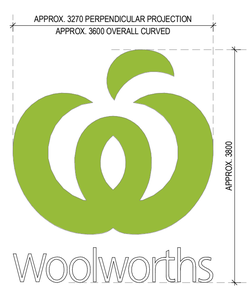
REFER SIGN B46/B47 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)

S 3.4

**DIRECT TO BOOT - CANOPY SIGNAGE 1**

FASCIA SIGNAGE .
FLAT SIGNAGE.
MOUNTED TO FACE OF DIRECT TO BOOT CANOPY.

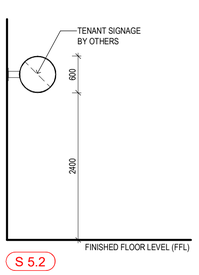
REFER SIGNS C25/C26 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)




S 2.6

**EXTERNAL FACADE SIGN - CURVED**

CURVED SIGN 3600mm x 3800mm OVERALL. (3000mm HIGH WW LOGO)
INTERNALLY ILLUMINATED SIGN.
MOUNTED TO FACADE OF BUILDING.




S 5.2

**TENANT SIGNAGE - ROUND BLADE**

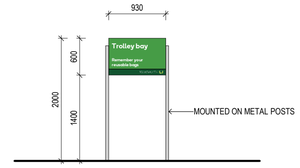
ROUND BLADE SIGN 600mm diam.
MOUNTED PERPENDICULAR TO BUILDING.
DOUBLE SIDED. INTERNALLY ILLUMINATED.

S 2.5

**CARPARK SIGNAGE - LOADING DOCK**

PANEL SIGN 930mm x 1200mm.
MOUNTED ON WALL.
SINGLE SIDED.

REFER SIGNS B43 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)

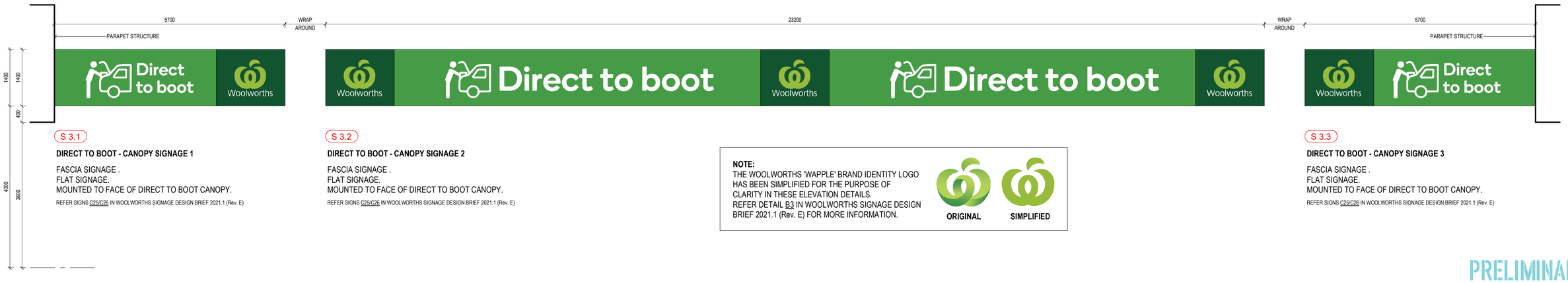



S 4.1

**CARPARK SIGNAGE - TROLLEY BAY LANDSCAPE**

FREESTANDING SIGN 930mm x 600mm.
MOUNTED ON GROUND AT 2000mm OVERALL.
DOUBLE SIDED.

REFER SIGNS B26 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)




S 3.1

**DIRECT TO BOOT - CANOPY SIGNAGE 1**

FASCIA SIGNAGE .
FLAT SIGNAGE.
MOUNTED TO FACE OF DIRECT TO BOOT CANOPY.

REFER SIGNS C25/C26 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)

S 3.2

**DIRECT TO BOOT - CANOPY SIGNAGE 2**

FASCIA SIGNAGE .
FLAT SIGNAGE.
MOUNTED TO FACE OF DIRECT TO BOOT CANOPY.

REFER SIGNS C25/C26 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)

S 3.3

**DIRECT TO BOOT - CANOPY SIGNAGE 3**

FASCIA SIGNAGE .
FLAT SIGNAGE.
MOUNTED TO FACE OF DIRECT TO BOOT CANOPY.

REFER SIGNS C25/C26 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E)

**NOTE:**
THE WOOLWORTHS 'WAPPLE' BRAND IDENTITY LOGO HAS BEEN SIMPLIFIED FOR THE PURPOSE OF CLARITY IN THESE ELEVATION DETAILS.
REFER DETAIL B3 IN WOOLWORTHS SIGNAGE DESIGN BRIEF 2021.1 (Rev. E) FOR MORE INFORMATION.

**ORIGINAL** **SIMPLIFIED**

PRELIMINARY

***ARTIST'S IMPRESSION***
***VIEW FROM CARPARK, LOOKING NORTH***

PRELIMINARY

Clarke Hopkins Clarke
**Austral Square**
330-350 Eighth Avenue AUSTRAL NSW 2179
Job No. 22108
**www.chc.com.au** | studio@chc.com.au | 03 9419 4340

Scale @ A3

**3D Perspectives - Sheet 1**
14.06.2023

**DA7.1** P4

***ARTIST'S IMPRESSION***
***VIEW FROM CARPARK, LOOKING NORTH THROUGH OPEN MALL AREA***

PRELIMINARY

Clarke Hopkins Clarke
**Austral Square**
330-350 Eighth Avenue AUSTRAL NSW 2179
Job No. 22108
**www.chc.com.au** | studio@chc.com.au | 03 9419 4340

Scale @ A3

**3D Perspectives - Sheet 2**
14.06.2023

**DA7.2** P4

***ARTIST'S IMPRESSION***
***VIEW FROM EIGHTH AVENUE, LOOKING SOUTH***

PRELIMINARY

Clarke Hopkins Clarke
**Austral Square**
330-350 Eighth Avenue AUSTRAL NSW 2179
Job No. 22108
www.chc.com.au | studio@chc.com.au | 03 9419 4340

Scale @ A3

**3D Perspectives - Sheet 3**
14.06.2023

**DA7.3** P4

***ARTIST'S IMPRESSION***
***VIEW FROM EIGHTH AVENUE, LOOKING SOUTH TOWARD OPEN MALL***

PRELIMINARY

Clarke Hopkins Clarke
**Austral Square**
330-350 Eighth Avenue AUSTRAL NSW 2179
Job No. 22108
**www.chc.com.au** | studio@chc.com.au | 03 9419 4340

Scale @ A3

**3D Perspectives - Sheet 4**
14.06.2023

**DA7.4** P4

***ARTIST'S IMPRESSION***
***ISOMETRIC VIEW FROM EIGHTH AVENUE***

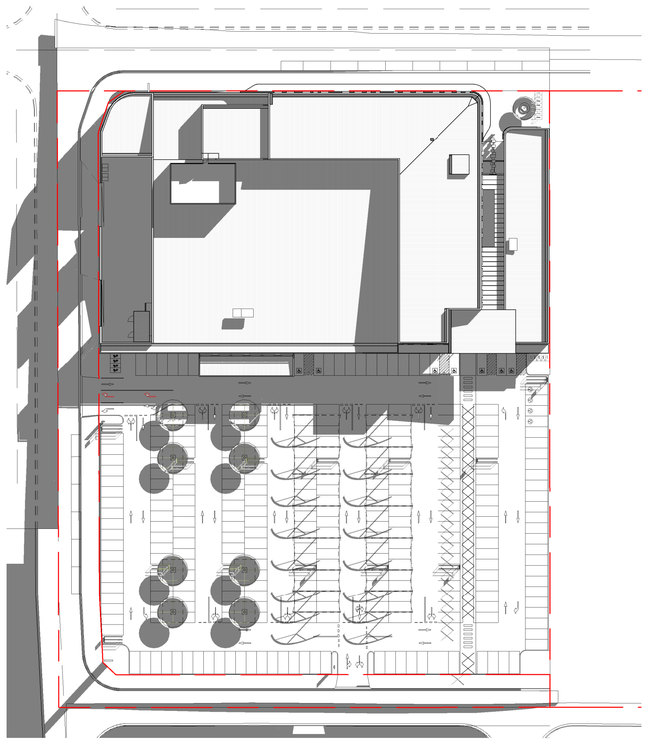
PRELIMINARY

Clarke Hopkins Clarke
**Austral Square**
330-350 Eighth Avenue AUSTRAL NSW 2179
Job No. 22108
**www.chc.com.au** | studio@chc.com.au | 03 9419 4340

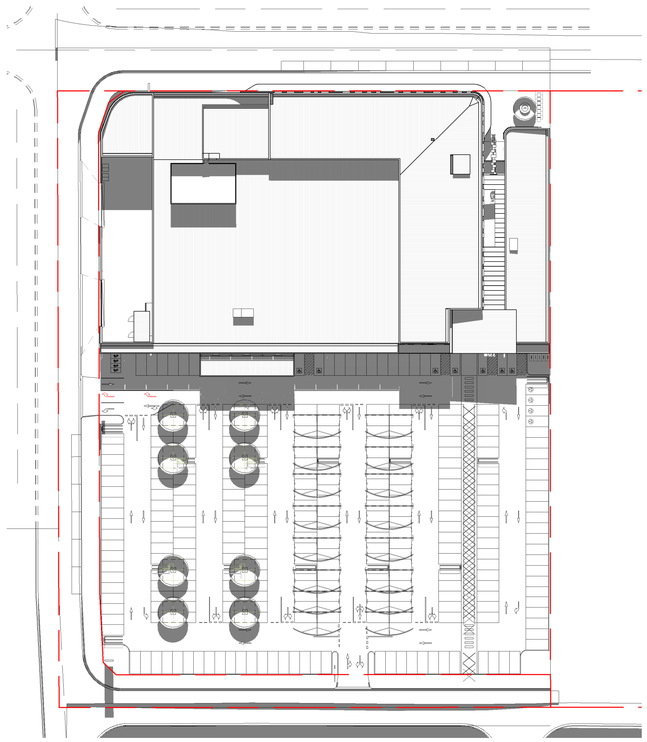
Scale @ A3

**3D Perspectives - Sheet 5**
14.06.2023

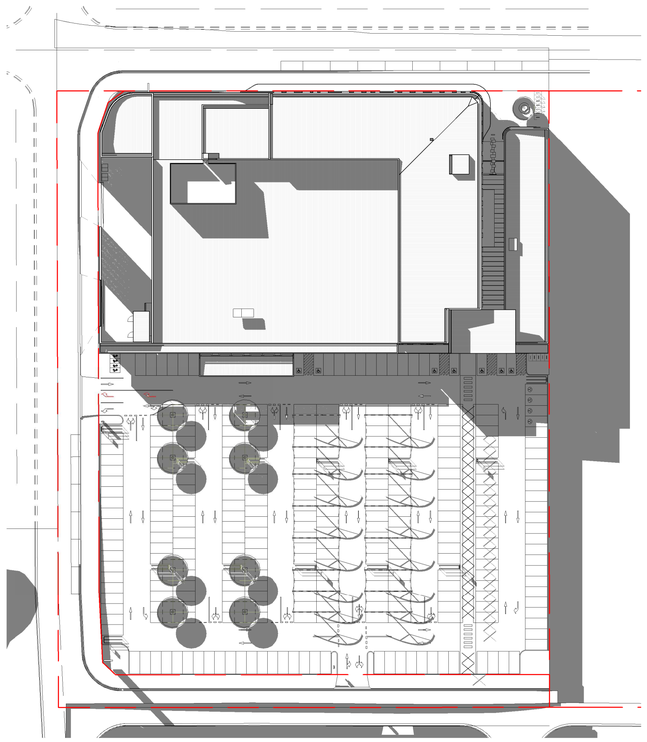
**DA7.5** P3



Shadows for June 22 at 0900 (9am)



Shadows for June 22 at 1200 (12 noon)



Shadows for June 22 at 1500 (3pm)

Clarke Hopkins Clarke

www.chc.com.au | studio@chc.com.au | 03 9419 4340

Job No. 22108

**Austral Square**

330-350 Eighth Avenue AUSTRAL NSW 2179

Scale 1 : 750 @ A1

0 22.5m

PRELIMINARY

# Shadow Diagrams

14.06.2023

# DA8.1 P1

# APPENDIX C – DIVERSI HYDRAULIC MODELLING RESULTS

| AEP | Pit, Node or Basin Name | Sub-Catchment Area (ha) | Land-Use Type (ILSAX) | Percent-age (%) | Constant Flow Time (minutes) | Total Entry Time, $t_c$ (minutes) | Peak Sub-Catchment Flowrate ($m^3/s$) "worst storm" | Origin of Approach Flows | Overflows Approaching Pit: Peak Flowrate ($m^3/s$) | Flow Width (m) | Depth x Velocity ($m^2/s$) | Inlet Family | Inlet Size | Peak Approach Flow ($m^3/s$) | Bypass Flow(s) ($m^3/s$) | Peak Flow in Pipe ($m^3/s$) | Reach Length (m) | Pipe Slope (%) | Pipe Diameter (mm) | U/S Pipe Invert Level (m) | D/S Pipe Invert Level (m) | U/S HGL in Pipe (m) | D/S HGL in Pipe (m) | Pipe Flow Velocity (m/s) | Pressure Change Coeff. Ku | Water Surface Elevation (m) | Ground Surface Level (m) | Pit Free-board (m) | Pit Name |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20% | **G\1** | 0.1348 | Paved | 95 | 5 | 5 | 0.041 | H\1 | 0.003 | 0.35 | 0.02 | Sutherland | Sutherland | 0.044 | 0.008 | 0.036 | 5.565 | 1.01 | 375 | 69.42 | 69.364 | 70.726 | 70.724 | 0.33 | 1.5 | 70.73 | 71.036 | 0.3 | **G\1** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **B\2** | 0.0326 | Paved | 95 | 5 | 5 | 0.01 | B\3 | 0 | 0 | 0 | Sutherland | Sutherland | 0.01 | 0 | 0.396 | 6.219 | 1 | 525 | 69.343 | 69.281 | 70.553 | 70.5 | 1.83 | 1 | 70.72 | 70.934 | 0.21 | **B\2** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **B\1** | 0.0067 | Paved | 95 | 5 | 5 | 0.002 | B\2 | 0 | 0 | 0 | | | 0.002 | 0.397 | | | | | | | | | | | 70.5 | 69.806 | | **B\1** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **P\1** | 0.0241 | Paved | 90 | 5 | 5 | 0.007 | | | | | DC Pits | IAD 900x6 | 0.007 | 0 | 0.007 | 8.715 | 1 | 150 | 70.084 | 69.997 | 70.366 | 70.347 | 0.41 | 1.5 | 70.38 | 70.838 | 0.46 | **P\1** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\2** | | Paved | | | | | L\3 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0 | 0 | 0.094 | 23.722 | 1 | 300 | 69.977 | 69.74 | 70.218 | 69.978 | 1.57 | 1.5 | 70.35 | 70.925 | 0.58 | **L\2** |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\1** | | Paved | | | | | L\2 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0 | 0 | 0.094 | 4.982 | 3.13 | 375 | 69.147 | 68.991 | 69.851 | 69.837 | 0.85 | 1.5 | 69.91 | 70.669 | 0.76 | **L\1** |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **A\2** | 0.0637 | Paved | 90 | 5 | 5 | 0.019 | L\1 | 0 | 0 | 0 | Sutherland | Sutherland | 0.024 | 0.002 | 0.644 | 5.617 | 1 | 600 | 68.967 | 68.911 | 69.573 | 69.511 | 2.28 | 1 | 69.84 | 70.433 | 0.6 | **A\2** |
| | | | Supp. | 0 | 2 | | | A\3 | 0.005 | 0.47 | 0.02 | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L/15** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | | | | | DC Pits | IAD 900x6 | 0.007 | 0 | 0.007 | 10.006 | 3.09 | 150 | 73.3 | 72.991 | 73.378 | 73.083 | 0.78 | 1.5 | 73.39 | 74.078 | 0.69 | **L/15** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L/14** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L/15 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.015 | 10.103 | 3.4 | 150 | 72.961 | 72.618 | 73.075 | 72.739 | 1.06 | 1.5 | 73.08 | 73.742 | 0.66 | **L/14** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\13** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L/14 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.022 | 10.064 | 3.5 | 150 | 72.588 | 72.236 | 72.72 | 72.368 | 1.36 | 1.5 | 72.74 | 73.37 | 0.63 | **L\13** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\12** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L\13 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.029 | 10.12 | 3.39 | 225 | 72.208 | 71.865 | 72.349 | 71.957 | 1.88 | 1.5 | 72.37 | 72.986 | 0.62 | **L\12** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\11** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L\12 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.037 | 10.027 | 3.31 | 225 | 71.747 | 71.415 | 71.908 | 71.666 | 1.23 | 1.5 | 71.93 | 72.609 | 0.68 | **L\11** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\10** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L\11 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.042 | 10.038 | 2.92 | 225 | 71.379 | 71.086 | 71.587 | 71.505 | 1.1 | 1.5 | 71.67 | 72.245 | 0.58 | **L\10** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\9** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L\10 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.049 | 10.04 | 1.76 | 225 | 71.065 | 70.888 | 71.398 | 71.287 | 1.24 | 1.5 | 71.51 | 71.919 | 0.41 | **L\9** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\8** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L\9 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.056 | 10.04 | 1.82 | 225 | 70.858 | 70.675 | 71.147 | 71.002 | 1.42 | 1.5 | 71.29 | 71.634 | 0.35 | **L\8** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\7** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L\8 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.063 | 10.04 | 1.48 | 300 | 70.653 | 70.504 | 70.945 | 70.906 | 0.9 | 1.5 | 71 | 71.43 | 0.43 | **L\7** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\6** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L\7 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.067 | 10.035 | 1.04 | 300 | 70.484 | 70.38 | 70.836 | 70.787 | 0.95 | 1.5 | 70.91 | 71.262 | 0.36 | **L\6** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\5** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L\6 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.074 | 10.03 | 1.01 | 300 | 70.296 | 70.195 | 70.703 | 70.644 | 1.05 | 1.5 | 70.79 | 71.139 | 0.35 | **L\5** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\4** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | L\5 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.081 | 10.03 | 1 | 300 | 70.177 | 70.077 | 70.544 | 70.474 | 1.14 | 1.5 | 70.64 | 71.039 | 0.39 | **L\4** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **L\3** | 0.0241 | Paved | 90 | 5 | 5 | 0.007 | L\4 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.007 | 0 | 0.088 | 1.287 | 1.01 | 300 | 70.056 | 70.043 | 70.358 | 70.347 | 1.24 | 1.5 | 70.47 | 70.938 | 0.46 | **L\3** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **N\5** | 0.0278 | Paved | 90 | 5 | 5 | 0.008 | | | | | Sutherland | Sutherland | 0.008 | 0 | 0.008 | 11.7 | 3.62 | 150 | 74.263 | 73.839 | 74.347 | 73.949 | 0.82 | 1.5 | 74.36 | 75.036 | 0.68 | **N\5** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **N\4** | 0.0225 | Paved | 90 | 5 | 5 | 0.007 | N\5 | 0 | 0 | 0 | Sutherland | Sutherland | 0.007 | 0 | 0.015 | 9.377 | 3.3 | 150 | 73.811 | 73.502 | 73.924 | 73.734 | 1.05 | 1.5 | 73.95 | 74.581 | 0.63 | **N\4** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **N\3** | 0.024 | Paved | 90 | 5 | 5 | 0.007 | N\4 | 0 | 0 | 0 | Sutherland | Sutherland | 0.007 | 0 | 0.022 | 1.307 | 1.53 | 150 | 73.471 | 73.451 | 73.621 | 73.582 | 1.35 | 1.5 | 73.73 | 74.245 | 0.51 | **N\3** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **N\2** | | Paved | | | | | N\3 | 0 | 0 | 0 | Sutherland | Sutherland | 0 | 0 | 0.024 | 19.13 | 3.42 | 150 | 73.424 | 72.77 | 73.558 | 72.876 | 1.77 | 1.5 | 73.58 | 74.196 | 0.62 | **N\2** |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |

| REV | DATE | AMENDMENT / DESCRIPTION | DRN | DES | CHK | APP |
|---|---|---|---|---|---|---|
| 1 | 28/06/2022 | ISSUE FOR CONSTRUCTION APPROVAL | NJT | DK | JGC | PGD |

SCALE:

DRAWING DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CLIENT:

OZLAND DEVELOPER GROUP

**FOR CONSTRUCTION APPROVAL**

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PROJECT:
**355-357 EIGHTH AVENUE, AUSTRAL**
RESIDENTIAL SUBDIVISION

TITLE:
STORMWATER CALCULATIONS SHEET 1 OF 2
20% AEP HYDAULIC

| PROJECT No.: | DRG No.: | REV: |
|---|---|---|
| 20093 | C040 | 1 |

C:\DIVERSI CONSULTING\AP - 3. PROJECTS\20200\20093 - 355 EIGHTH AVE, AUSTRALIS.DWG Wednesday, 20 March 2019 1:02:14 PM

C:\DIVERSI\CONSULTING\AP - 3_PROJECTS\20093\20093 - 355 EIGHTH AVE, AUSTRAL\DRW\20093-C041
Wednesday, 20 March 2019 1:02:14 PM

| | Pit, Node | Sub- | Land- | | Constant | Total | Peak Sub- | | Overflows Approaching Pit | | | | | Peak | | Peak | | | | U/S Pipe | D/S Pipe | U/S | D/S | Pipe | Pressure | Water | Ground | Pit | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | or Basin | Catchment | Use | Percent- | Flow | Entry | Catchmen | Origin of | Peak | Flow | Depth x | Inlet | Inlet | Approach | Bypass | Flow in | Reach | Pipe | Pipe | Invert | Invert | HGL | HGL | Flow | Change | Surface | Surface | Free- | Pit |
| AEP | Name | Area | Type | age | Time | Time, $t_c$ | Flowrate | Approach | Flowrate(s | Width | Velocity | Family | Size | Flow | Flow(s) | Pipe | Length | Slope | Diameter | Level | Level | in Pipe | in Pipe | Velocity | Coeff. | Elevation | Level | board | Name |
| | | (ha) | (ILSAX) | (%) | (minutes) | (minutes) | ($m^3$/s) | Flows | ($m^3$/s) | (m) | ($m^2$/s) | | | ($m^3$/s) | ($m^3$/s) | ($m^3$/s) | (m) | (%) | (mm) | (m) | (m) | (m) | (m) | (m/s) | Ku | (m) | (m) | (m) | |
| 20% | **N\1** | | Paved | | | | | N\2 | 0 | 0 | 0 | Sutherland | Sutherland | 0 | 0 | 0.023 | 4.576 | 3.69 | 375 | 71.968 | 71.799 | 72.106 | 72.092 | 0.62 | 1.5 | 72.11 | 73.508 | 1.4 | **N\1** |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **A\6** | 0.0602 | Paved | 90 | 5 | 5 | 0.018 | N\1 | 0 | 0 | 0 | Sutherland | Sutherland | 0.018 | 0.001 | 0.416 | 30.395 | 3.18 | 525 | 71.621 | 70.654 | 72.055 | 71.125 | 2.17 | 1 | 72.09 | 73.233 | 1.14 | **A\6** |
| | | | Supp. | 0 | 2 | | | A\7 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **A\5** | 0.0964 | Paved | 90 | 5 | 5 | 0.029 | A\6 | 0.001 | 0.22 | 0.01 | Sutherland | Sutherland | 0.03 | 0.003 | 0.442 | 39.382 | 3.02 | 525 | 70.617 | 69.429 | 71.059 | 70.494 | 2.27 | 1 | 71.13 | 72.23 | 1.1 | **A\5** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **A\4** | 0.1275 | Paved | 90 | 5 | 5 | 0.038 | A\5 | 0.003 | 0.39 | 0.02 | Sutherland | Sutherland | 0.041 | 0.006 | 0.481 | 41.129 | 0.5 | 600 | 69.399 | 69.193 | 70.339 | 70.074 | 1.7 | 1 | 70.49 | 71.077 | 0.58 | **A\4** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **A\3** | 0.1293 | Paved | 90 | 5 | 5 | 0.039 | A\4 | 0.006 | 0.6 | 0.02 | Sutherland | Sutherland | 0.045 | 0.005 | 0.518 | 20.614 | 0.9 | 600 | 69.173 | 68.987 | 69.986 | 69.837 | 1.83 | 0.5 | 70.07 | 70.639 | 0.57 | **A\3** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **C\1** | | Paved | | | | | | | | | Sutherland | Sutherland | 0 | 0 | 0.011 | 11.358 | 4.61 | 375 | 72.434 | 71.91 | 72.735 | 72.726 | 0.11 | 1.5 | 72.74 | 74.436 | 1.69 | **C\1** |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **A\7** | 0.0116 | Paved | 90 | 5 | 5 | 0.003 | C\1 | 0 | 0 | 0 | Sutherland | Sutherland | 0.003 | 0 | 0.384 | 18.163 | 1.33 | 450 | 71.89 | 71.648 | 72.528 | 72.092 | 2.42 | 0.5 | 72.73 | 73.882 | 1.16 | **A\7** |
| | | | Supp. | 0 | 2 | | | A\8 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **Q\1** | | Paved | | | | | | | | | Sutherland | Sutherland | 0 | 0 | 0.002 | 10.952 | 3.23 | 375 | 73.893 | 73.539 | 73.953 | 73.953 | 0.21 | 1.5 | 73.95 | 75.837 | 1.88 | **Q\1** |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **B\6** | 0.0082 | Paved | 95 | 5 | 5 | 0.003 | Q\1 | 0 | 0 | 0 | Sutherland | Sutherland | 0.003 | 0 | 0.273 | 28.244 | 1.9 | 450 | 73.519 | 72.981 | 73.886 | 73.408 | 1.97 | 1.5 | 73.95 | 75.48 | 1.53 | **B\6** |
| | | | Supp. | 0 | 2 | | | B\7 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **B\5** | 0.0224 | Paved | 95 | 5 | 5 | 0.007 | B\6 | 0 | 0 | 0 | Sutherland | Sutherland | 0.007 | 0 | 0.296 | 40.361 | 3.93 | 450 | 72.958 | 71.37 | 73.335 | 72.07 | 2.08 | 1.5 | 73.41 | 74.572 | 1.16 | **B\5** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **B\4** | 0.0319 | Paved | 95 | 5 | 5 | 0.01 | B\5 | 0 | 0 | 0 | Sutherland | Sutherland | 0.01 | 0 | 0.323 | 40.084 | 3.61 | 450 | 71.237 | 69.791 | 71.746 | 71.218 | 2.03 | 1.5 | 72.07 | 72.941 | 0.87 | **B\4** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **B\3** | 0.0323 | Paved | 95 | 5 | 5 | 0.01 | B\4 | 0 | 0 | 0 | Sutherland | Sutherland | 0.01 | 0 | 0.356 | 40.804 | 1 | 525 | 69.771 | 69.363 | 71.008 | 70.724 | 1.64 | 1.5 | 71.22 | 71.459 | 0.24 | **B\3** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **F\1** | 0.0394 | Paved | 95 | 5 | 5 | 0.012 | | | | | Sutherland | Sutherland | 0.012 | 0 | 0.013 | 11.173 | 1.76 | 375 | 70.941 | 70.744 | 71.135 | 71.125 | 0.23 | 1.5 | 71.14 | 72.448 | 1.31 | **F\1** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **E\1** | 0.0312 | Paved | 95 | 5 | 5 | 0.01 | F\1 | 0.005 | 0.38 | 0.03 | Sutherland | Sutherland | 0.01 | 0 | 0.02 | 11.22 | 1.05 | 375 | 70.004 | 69.886 | 70.482 | 70.494 | 0.18 | 1.5 | 70.48 | 71.207 | 0.73 | **E\1** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **D\1** | 0.0575 | Paved | 95 | 5 | 5 | 0.018 | E\1 | 0.009 | 0.79 | 0.03 | Sutherland | Sutherland | 0.018 | 0.001 | 0.019 | 9 | 1 | 375 | 69.44 | 69.35 | 69.839 | 69.837 | 0.17 | 1.5 | 69.84 | 70.433 | 0.59 | **D\1** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **K\1** | 0.0656 | Paved | 95 | 5 | 5 | 0.02 | | | | | Sutherland | Sutherland | 0.02 | 0.001 | 0.019 | 12.01 | 3.97 | 375 | 73.462 | 72.985 | 73.566 | 73.408 | 0.76 | 1.5 | 73.57 | 75.1 | 1.53 | **K\1** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **H\1** | 0.0837 | Paved | 95 | 5 | 5 | 0.026 | J\1 | 0.004 | 1.82 | 0 | Sutherland | Sutherland | 0.03 | 0.003 | 0.027 | 11.41 | 1 | 375 | 69.947 | 69.833 | 71.223 | 71.218 | 0.24 | 1.5 | 71.23 | 71.848 | 0.62 | **H\1** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **J\1** | 0.1045 | Paved | 95 | 5 | 5 | 0.032 | K\1 | 0.001 | 1.04 | 0 | Sutherland | Sutherland | 0.033 | 0.004 | 0.037 | 11.886 | 3.58 | 375 | 71.858 | 71.432 | 72.059 | 72.07 | 0.61 | 1.5 | 72.06 | 73.422 | 1.36 | **J\1** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **B\7** | 0.9 | Paved | 100 | 7 | 7 | 0.264 | | | | | DC Pits | Capped St | 0.264 | 0 | | 19.139 | 2.72 | 450 | 74.413 | 73.893 | | | | 0 | 74.65 | 76.116 | 1.46 | **B\7** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 0 | 7 | 7 | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | **A\8** | 1.27 | Paved | 100 | 7 | 7 | 0.373 | | | | | DC Pits | Capped St | 0.373 | 0 | | 18.947 | 3.59 | 450 | 72.95 | 72.27 | | | | 0 | 73.23 | 74.596 | 1.37 | **A\8** |
| | | | Supp. | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 0 | 7 | 7 | | | | | | | | | | | | | | | | | | | | | | | |

**NOTES**

This sheet presents results from a pipe system model using ILSAX, the rational method, extended rational method (ERM), or the ARR 2016 initial loss - continuing loss (IL-CL) model implemented in the DRAINS program,(www.watercom.com.au) involving considerable calculations with multiple rainfall patterns, and complex hydraulic computations. Therefore, unlike older rational method calculation sheets, this sheet does not portray hand calculations.
It presents the key model inputs and outputs of interest to reviewers.

Depending on inputs, the table may show results for a minor storm, a major storm, or both.
There may be multiple rows for up to three overflow routes coming to a pit.
You can edit headings or delete columns or rows.

| REV | DATE | AMENDMENT / DESCRIPTION | DRN | DES | CHK | APP |
|---|---|---|---|---|---|---|
| 1 | 28/06/2022 | ISSUE FOR CONSTRUCTION APPROVAL | NJT | DK | JGC | PGD |

SCALE:

DRAWING DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

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**FOR CONSTRUCTION APPROVAL**

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PROJECT:
**355-357 EIGHTH AVENUE, AUSTRAL**
RESIDENTIAL SUBDIVISION

TITLE:
STORMWATER CALCULATIONS SHEET 2 OF 2
20% AEP HYDAULIC

PROJECT No.: 20093 | DRG No.: C041 | REV: 1

| AEP | Pit, Node or Basin Name | Sub-Catchment Area (ha) | Land-Use Type (ILSAX) | Percent-age (%) | Constant Flow Time (minutes) | Total Entry Time, $t_c$ (minutes) | Peak Sub-Catchmen Flowrate ($m^3/s$) *w orst storm | Origin of Approach Flows | Overflows Approaching Pit: Peak Flowrate(s ($m^3/s$) | Flow Width (m) | Depth x Velocity ($m^2/s$) | Inlet Family | Inlet Size | Peak Approach Flow ($m^3/s$) | Bypass Flow(s) ($m^3/s$) | Peak Flow in Pipe ($m^3/s$) | Reach Length (m) | Pipe Slope (%) | Pipe Diameter (mm) | U/S Pipe Invert Level (m) | D/S Pipe Invert Level (m) | U/S HGL in Pipe (m) | D/S HGL in Pipe (m) | Pipe Flow Velocity (m/s) | Pressure Change Coeff. Ku | Water Surface Elevation (m) | Ground Surface Level (m) | Pit Free-board (m) | Pit Name |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1% | **G\1** | 0.1348 | Paved | 95 | 5 | 5 | 0.081 | H\1 | 0.019 | 1.01 | 0.05 | Sutherland | Sutherland | 0.1 | 0.037 | 0.064 | 5.565 | 1.01 | 375 | 69.42 | 69.364 | 70.841 | 70.835 | 0.58 | 1.5 | 70.86 | 71.036 | 0.17 | **G\1** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **B\2** | 0.0326 | Paved | 95 | 5 | 5 | 0.02 | B\3 | 0.263 | 3.71 | 0.17 | Sutherland | Sutherland | 0.283 | 0.187 | 0.554 | 6.219 | 1 | 525 | 69.343 | 69.281 | 70.503 | 70.4 | 2.56 | 1 | 70.84 | 70.934 | 0.1 | **B\2** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **B\1** | 0.0067 | Paved | 95 | 5 | 5 | 0.004 | B\2 | 0.187 | 1.81 | 0.27 | | | 0.191 | 0.739 | | | | | | | | | | | 70.4 | 69.806 | | **B\1** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **P\1** | 0.0241 | Paved | 90 | 5 | 5 | 0.014 | | | | | DC Pits | IAD 900x6 | 0.014 | 0.025 | 0.013 | 8.715 | 1 | 150 | 70.084 | 69.997 | 70.838 | 70.916 | 0.75 | 1.5 | 70.84 | 70.838 | 0 | **P\1** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\2** | | Paved | | | | | L\3 | 0.14 | 4 | 0.05 | DC Pits | IAD 900x6 | 0.14 | 0.053 | 0.126 | 23.722 | 1 | 300 | 69.977 | 69.74 | 70.724 | 70.406 | 1.78 | 1.5 | 70.92 | 70.925 | 0.01 | **L\2** |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\1** | | Paved | | | | | L\2 | 0.053 | 2.05 | 0.07 | DC Pits | IAD 900x6 | 0.053 | 0 | 0.165 | 4.982 | 3.13 | 375 | 69.147 | 68.991 | 70.237 | 70.193 | 1.49 | 1.5 | 70.41 | 70.669 | 0.26 | **L\1** |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **A\2** | 0.0637 | Paved | 90 | 5 | 5 | 0.038 | L\1 | 0 | 0 | 0 | Sutherland | Sutherland | 0.395 | 0.286 | 0.933 | 5.617 | 1 | 600 | 68.967 | 68.911 | 69.64 | 69.511 | 3.3 | 1 | 70.19 | 70.433 | 0.24 | **A\2** |
| | | | Supp. | 0 | 2 | 5 | | A\3 | 0.357 | 5.36 | 0.17 | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L/15** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | | | | | DC Pits | IAD 900x6 | 0.014 | 0 | 0.014 | 10.006 | 3.09 | 150 | 73.3 | 72.991 | 73.819 | 73.732 | 0.81 | 1.5 | 73.87 | 74.078 | 0.21 | **L/15** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L/14** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L/15 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.014 | 0.005 | 0.023 | 10.103 | 3.4 | 150 | 72.961 | 72.618 | 73.602 | 73.37 | 1.32 | 1.5 | 73.73 | 73.742 | 0.01 | **L/14** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\13** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L/14 | 0.005 | 0.39 | 0.03 | DC Pits | IAD 900x6 | 0.019 | 0.018 | 0.031 | 10.064 | 3.5 | 150 | 72.588 | 72.236 | 73.21 | 72.926 | 1.77 | 1.5 | 73.37 | 73.37 | 0 | **L\13** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\12** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L\13 | 0.018 | 0.84 | 0.05 | DC Pits | IAD 900x6 | 0.032 | 0 | 0.057 | 10.12 | 3.39 | 225 | 72.208 | 71.865 | 72.77 | 72.607 | 1.44 | 1.5 | 72.93 | 72.986 | 0.06 | **L\12** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\11** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L\12 | 0 | 0 | 0 | DC Pits | IAD 900x6 | 0.014 | 0.01 | 0.061 | 10.027 | 3.31 | 225 | 71.747 | 71.415 | 72.428 | 72.245 | 1.53 | 1.5 | 72.61 | 72.609 | 0 | **L\11** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\10** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L\11 | 0.01 | 0.56 | 0.04 | DC Pits | IAD 900x6 | 0.024 | 0.027 | 0.058 | 10.038 | 2.92 | 225 | 71.379 | 71.086 | 72.084 | 71.919 | 1.45 | 1.5 | 72.25 | 72.245 | 0 | **L\10** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\9** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L\10 | 0.027 | 1.14 | 0.06 | DC Pits | IAD 900x6 | 0.041 | 0.044 | 0.056 | 10.04 | 1.76 | 225 | 71.065 | 70.888 | 71.779 | 71.634 | 1.4 | 1.5 | 71.92 | 71.919 | 0 | **L\9** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\8** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L\9 | 0.044 | 1.77 | 0.07 | DC Pits | IAD 900x6 | 0.058 | 0.065 | 0.065 | 10.04 | 1.82 | 225 | 70.858 | 70.675 | 71.532 | 71.426 | 1.64 | 1.5 | 71.63 | 71.634 | 0 | **L\8** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\7** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L\8 | 0.065 | 2.11 | 0.08 | DC Pits | IAD 900x6 | 0.079 | 0.046 | 0.079 | 10.04 | 1.48 | 300 | 70.653 | 70.504 | 71.33 | 71.262 | 1.12 | 1.5 | 71.43 | 71.43 | 0 | **L\7** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\6** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L\7 | 0.046 | 1.92 | 0.06 | DC Pits | IAD 900x6 | 0.06 | 0.069 | 0.079 | 10.035 | 1.04 | 300 | 70.484 | 70.38 | 71.19 | 71.139 | 1.11 | 1.5 | 71.26 | 71.262 | 0 | **L\6** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\5** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L\6 | 0.069 | 2.45 | 0.07 | DC Pits | IAD 900x6 | 0.083 | 0.089 | 0.086 | 10.03 | 1.01 | 300 | 70.296 | 70.195 | 71.08 | 71.039 | 1.22 | 1.5 | 71.14 | 71.139 | 0 | **L\5** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\4** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | L\5 | 0.089 | 2.75 | 0.08 | DC Pits | IAD 900x6 | 0.103 | 0.102 | 0.095 | 10.03 | 1 | 300 | 70.177 | 70.077 | 70.98 | 70.938 | 1.34 | 1.5 | 71.04 | 71.039 | 0 | **L\4** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **L\3** | 0.0241 | Paved | 90 | 5 | 5 | 0.014 | L\4 | 0.102 | 4.41 | 0.06 | DC Pits | IAD 900x6 | 0.116 | 0.14 | 0.113 | 1.287 | 1.01 | 300 | 70.056 | 70.043 | 70.918 | 70.916 | 1.6 | 1.5 | 70.94 | 70.938 | 0 | **L\3** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **N\5** | 0.0278 | Paved | 90 | 5 | 5 | 0.016 | | | | | Sutherland | Sutherland | 0.016 | 0.001 | 0.016 | 11.7 | 3.62 | 150 | 74.263 | 73.839 | 74.698 | 74.574 | 0.89 | 1.5 | 74.76 | 75.036 | 0.28 | **N\5** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **N\4** | 0.0225 | Paved | 90 | 5 | 5 | 0.013 | N\5 | 0.001 | 0.2 | 0.01 | Sutherland | Sutherland | 0.014 | 0.007 | 0.023 | 9.377 | 3.3 | 150 | 73.811 | 73.502 | 74.45 | 74.245 | 1.28 | 1.5 | 74.57 | 74.581 | 0.01 | **N\4** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **N\3** | 0.024 | Paved | 90 | 5 | 5 | 0.014 | N\4 | 0.007 | 0.44 | 0.03 | Sutherland | Sutherland | 0.021 | 0.03 | 0.031 | 1.307 | 1.53 | 150 | 73.471 | 73.451 | 74.197 | 74.186 | 1.75 | 1.5 | 74.25 | 74.245 | 0 | **N\3** |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | **N\2** | | Paved | | | | | N\3 | 0.03 | 4 | 0.02 | Sutherland | Sutherland | 0.03 | 0.013 | 0.032 | 19.13 | 3.42 | 150 | 73.424 | 72.77 | 73.961 | 73.205 | 1.84 | 1.5 | 74.19 | 74.196 | 0.01 | **N\2** |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |

Wednesday, 20 March 2019 1:02:14 PM C:\DIVERSI CONSULTING\AP - 3. PROJECTS\2020\20093 - 355 EIGHTH AVE, AUSTRALIS.DWG\20093-C042

| REV | DATE | AMENDMENT / DESCRIPTION | DRN | DES | CHK | APP |
|---|---|---|---|---|---|---|
| 1 | 28/06/2022 | ISSUE FOR CONSTRUCTION APPROVAL | NJT | DK | JGC | PGD |

SCALE:

DRAWING DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CLIENT:

OZLAND DEVELOPER GROUP

**FOR CONSTRUCTION APPROVAL**

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PROJECT:
**355-357 EIGHTH AVENUE, AUSTRAL**
RESIDENTIAL SUBDIVISION

TITLE:
STORMWATER CALCULATIONS SHEET 1 OF 2
1% AEP HYDAULIC

| PROJECT No.: | DRG No.: | REV: |
|---|---|---|
| 20093 | C042 | 1 |

0 10 20 30 40 50 60 70 80 90 100

| | Pit, Node or Basin | Sub-Catchment | Land-Use | | Constant Flow | Total Entry | Peak Sub-Catchmen | Origin of | Overflows Approaching Pit | | | | | Peak | | Peak | | | | | U/S Pipe | D/S Pipe | U/S | D/S | Pipe | Pressure | Water | Ground | Pit | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AEP | Name | Area | Type | Percent-age | Time | Time, $t_c$ | Flowrate | Approach Flows | Peak Flowrate(s | Flow Width | Depth x Velocity | Inlet Family | Inlet Size | Approach Flow | Bypass Flow(s) | Flow in Pipe | Reach Length | Pipe Slope | Pipe Diameter | Invert Level | Invert Level | HGL in Pipe | HGL in Pipe | Flow Velocity | Change Coeff. | Surface Elevation | Surface Level | free-board | Name |
| | | (ha) | (ILSAX) | (%) | (minutes) | (minutes) | ($m^3$/s) | | ($m^3$/s) | (m) | ($m^2$/s) | | | ($m^3$/s) | ($m^3$/s) | ($m^3$/s) | (m) | (%) | (mm) | (m) | (m) | (m) | (m) | (m/s) | Ku | (m) | (m) | (m) | |
| 1% | N\1 | | Paved | | | | | N\2 | 0.013 | 4 | 0.01 | Sutherland | Sutherland | 0.013 | 0 | 0.044 | 4.576 | 3.69 | 375 | 71.968 | 71.799 | 73.195 | 73.192 | 0.4 | 1.5 | 73.2 | 73.508 | 0.3 | N\1 |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | A\6 | 0.0602 | Paved | 90 | 5 | 5 | 0.036 | N\1 | 0 | 0 | 0 | Sutherland | Sutherland | 0.366 | 0.267 | 0.594 | 30.395 | 3.18 | 525 | 71.621 | 70.654 | 72.809 | 72.23 | 2.74 | 1 | 73.19 | 73.233 | 0.04 | A\6 |
| | | | Supp. | 0 | 2 | 5 | | A\7 | 0.33 | 3.37 | 0.24 | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | A\5 | 0.0964 | Paved | 90 | 5 | 5 | 0.057 | A\6 | 0.267 | 3.45 | 0.19 | Sutherland | Sutherland | 0.324 | 0.313 | 0.6 | 39.382 | 3.02 | 525 | 70.617 | 69.429 | 71.84 | 71.077 | 2.77 | 1 | 72.23 | 72.23 | 0 | A\5 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | A\4 | 0.1275 | Paved | 90 | 5 | 5 | 0.075 | A\5 | 0.313 | 4.7 | 0.17 | Sutherland | Sutherland | 0.388 | 0.417 | 0.61 | 41.129 | 0.5 | 600 | 69.399 | 69.193 | 70.886 | 70.561 | 2.16 | 1 | 71.08 | 71.077 | 0 | A\4 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | A\3 | 0.1293 | Paved | 90 | 5 | 5 | 0.076 | A\4 | 0.417 | 5.78 | 0.19 | Sutherland | Sutherland | 0.493 | 0.357 | 0.677 | 20.614 | 0.9 | 600 | 69.173 | 68.987 | 70.425 | 70.193 | 2.4 | 0.5 | 70.56 | 70.639 | 0.08 | A\3 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | C\1 | | Paved | | | | | | | | | Sutherland | Sutherland | 0 | 0 | 0.02 | 11.358 | 4.61 | 375 | 72.434 | 71.91 | 73.892 | 73.882 | 0.18 | 1.5 | 73.91 | 74.436 | 0.53 | C\1 |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | A\7 | 0.0116 | Paved | 90 | 5 | 5 | 0.007 | C\1 | 0 | 0 | 0 | Sutherland | Sutherland | 0.255 | 0.33 | 0.503 | 18.163 | 1.33 | 450 | 71.89 | 71.648 | 73.668 | 73.192 | 3.16 | 0.5 | 73.88 | 73.882 | 0 | A\7 |
| | | | Supp. | 0 | 2 | 5 | | A\8 | 0.248 | 4.01 | 0.15 | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 10 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | Q\1 | | Paved | | | | | | | | | Sutherland | Sutherland | 0 | 0 | 0.045 | 10.952 | 3.23 | 375 | 73.893 | 73.539 | 75.49 | 75.48 | 0.41 | 1.5 | 75.51 | 75.837 | 0.33 | Q\1 |
| | | | Supp. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | B\6 | 0.0082 | Paved | 95 | 5 | 5 | 0.005 | Q\1 | 0 | 0 | 0 | Sutherland | Sutherland | 0.005 | 0.128 | 0.399 | 28.244 | 1.9 | 450 | 73.519 | 72.981 | 75.053 | 74.563 | 2.51 | 1.5 | 75.48 | 75.48 | 0 | B\6 |
| | | | Supp. | 0 | 2 | 5 | | B\7 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | B\5 | 0.0224 | Paved | 95 | 5 | 5 | 0.013 | B\6 | 0.128 | 2.54 | 0.13 | Sutherland | Sutherland | 0.141 | 0.095 | 0.452 | 40.361 | 3.93 | 450 | 72.958 | 71.37 | 73.949 | 72.941 | 2.84 | 1.5 | 74.56 | 74.572 | 0.01 | B\5 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | B\4 | 0.0319 | Paved | 95 | 5 | 5 | 0.019 | B\5 | 0.095 | 2.11 | 0.12 | Sutherland | Sutherland | 0.114 | 0.176 | 0.433 | 40.084 | 3.61 | 450 | 71.237 | 69.791 | 72.378 | 71.459 | 2.72 | 1.5 | 72.94 | 72.941 | 0 | B\4 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | B\3 | 0.0323 | Paved | 95 | 5 | 5 | 0.019 | B\4 | 0.176 | 2.71 | 0.16 | Sutherland | Sutherland | 0.195 | 0.263 | 0.432 | 40.804 | 1 | 525 | 69.771 | 69.363 | 71.194 | 70.835 | 1.99 | 1.5 | 71.46 | 71.459 | 0 | B\3 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | F\1 | 0.0394 | Paved | 95 | 5 | 5 | 0.024 | | | | | Sutherland | Sutherland | 0.024 | 0.002 | 0.032 | 11.173 | 1.76 | 375 | 70.941 | 70.744 | 72.236 | 72.23 | 0.29 | 1.5 | 72.25 | 72.448 | 0.2 | F\1 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | E\1 | 0.0312 | Paved | 95 | 5 | 5 | 0.019 | F\1 | 0.011 | 0.58 | 0.04 | Sutherland | Sutherland | 0.021 | 0.001 | 0.031 | 11.22 | 1.05 | 375 | 70.004 | 69.886 | 71.086 | 71.077 | 0.28 | 1.5 | 71.1 | 71.207 | 0.1 | E\1 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | D\1 | 0.0575 | Paved | 95 | 5 | 5 | 0.035 | E\1 | 0.018 | 1.22 | 0.04 | Sutherland | Sutherland | 0.036 | 0.005 | 0.031 | 9 | 1 | 375 | 69.44 | 69.35 | 70.196 | 70.193 | 0.28 | 1.5 | 70.2 | 70.433 | 0.23 | D\1 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | K\1 | 0.0656 | Paved | 95 | 5 | 5 | 0.04 | | | | | Sutherland | Sutherland | 0.04 | 0.006 | 0.034 | 12.01 | 3.97 | 375 | 73.462 | 72.985 | 74.578 | 74.563 | 0.31 | 1.5 | 74.6 | 75.1 | 0.5 | K\1 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | H\1 | 0.0837 | Paved | 95 | 5 | 5 | 0.05 | J\1 | 0.019 | 4 | 0.01 | Sutherland | Sutherland | 0.069 | 0.019 | 0.051 | 11.41 | 1 | 375 | 69.947 | 69.833 | 71.485 | 71.459 | 0.46 | 1.5 | 71.53 | 71.848 | 0.32 | H\1 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | J\1 | 0.1045 | Paved | 95 | 5 | 5 | 0.063 | K\1 | 0.006 | 1.82 | 0.01 | Sutherland | Sutherland | 0.069 | 0.019 | 0.062 | 11.886 | 3.58 | 375 | 71.858 | 71.432 | 72.956 | 72.941 | 0.56 | 1.5 | 72.98 | 73.422 | 0.44 | J\1 |
| | | | Supp. | 0 | 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | B\7 | 0.9 | Paved | 100 | 7 | 7 | 0.501 | | | | | DC Pits | Capped St | 0.501 | 0 | | 19.139 | 2.72 | 450 | 74.413 | 73.893 | | | | 0 | 76.07 | 76.116 | 0.05 | B\7 |
| | | | Supp. | 0 | 2 | 7 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 0 | 7 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1% | A\8 | 1.27 | Paved | 100 | 7 | 7 | 0.707 | | | | | DC Pits | Capped St | 0.707 | 0.248 | | 18.947 | 3.59 | 450 | 72.95 | 72.27 | | | | 0 | 74.58 | 74.596 | 0.01 | A\8 |
| | | | Supp. | 0 | 2 | 7 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Grassed | 0 | 7 | | | | | | | | | | | | | | | | | | | | | | | | |

**NOTES**

This sheet presents results from a pipe system model using ILSAX, the rational method, extended rational method (ERM), or the ARR 2016 initial loss - continuing loss (IL-CL) model implemented in the DRAINS program,(www.watercom.com.au) involving considerable calculations with multiple rainfall patterns, and complex hydraulic computations. Therefore, unlike older rational method calculation sheets, this sheet does not portray hand calculations.
It presents the key model inputs and outputs of interest to reviewers.

Depending on inputs, the table may show results for a minor storm, a major storm, or both.
There may be multiple rows for up to three overflow routes coming to a pit.

C:\DIVERSI CONSULTING\AP - 3. PROJECTS\2020\20093 - 355 EIGHTH AVE, AUSTRALIS.DWG Wednesday, 20 March 2019 1:02:14 PM

| REV | DATE | AMENDMENT / DESCRIPTION | DRN | DES | CHK | APP |
|---|---|---|---|---|---|---|
| 1 | 28/06/2022 | ISSUE FOR CONSTRUCTION APPROVAL | NJT | DK | JGC | PGD |

SCALE:

DRAWING DIMENSIONS IN METRES UNLESS NOTED OTHERWISE

CLIENT: OZLAND DEVELOPER GROUP

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PROJECT: **355-357 EIGHTH AVENUE, AUSTRAL**
RESIDENTIAL SUBDIVISION

TITLE: STORMWATER CALCULATIONS SHEET 2 OF 2
1% AEP HYDAULIC

PROJECT No.: 20093 | DRG No.: C043 | REV: 1

henry&hymas

# APPENDIX D – (LCC) DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

LIVERPOOL CITY COUNCIL

# DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

## RAINGARDEN DESIGN

### SCHEDULE OF DRAWINGS

| DRG No. | DRAWING TITLE | REV |
|---|---|---|
| 30013411-001 | COVER SHEET AND SCHEDULE OF DRAWINGS | 02 |
| 30013411-002 | RAIN GARDEN DESIGN GENERAL NOTES | 01 |
| 30013411-010 | RAIN GARDEN DESIGN GENERAL ARRANGEMENT & DRAINAGE PLAN - INTERSECTION (16m ROAD) | 02 |
| 30013411-011 | RAIN GARDEN DESIGN GENERAL ARRANGEMENT & DRAINAGE PLAN - T JUNCTION OPTION 1 (16m ROAD) | 02 |
| 30013411-012 | RAIN GARDEN DESIGN GENERAL ARRANGEMENT & DRAINAGE PLAN - T JUNCTION OPTION 2 (16m ROAD) | 02 |
| 30013411-013 | RAIN GARDEN DESIGN GENERAL ARRANGEMENT & DRAINAGE PLAN - ROAD BEND (16m ROAD) | 02 |
| 30013411-014 | RAIN GARDEN DESIGN GENERAL ARRANGEMENT & DRAINAGE PLAN - INTERSECTION (20m COLLECTOR ROAD) | 01 |
| 30013411-015 | RAIN GARDEN DESIGN GENERAL ARRANGEMENT & DRAINAGE PLAN - T JUNCTION OPTION 1 (20m COLLECTOR ROAD) | 01 |
| 30013411-016 | RAIN GARDEN DESIGN GENERAL ARRANGEMENT & DRAINAGE PLAN - T JUNCTION OPTION 2 (20m COLLECTOR ROAD) | 01 |
| 30013411-017 | RAIN GARDEN DESIGN GENERAL ARRANGEMENT & DRAINAGE PLAN - ROAD BEND (20m COLLECTOR ROAD) | 01 |
| 30013411-018 | RAIN GARDEN DESIGN INTERIM SILT PLAN TYPICAL DETAILS | 01 |
| 30013411-020 | RAIN GARDEN DESIGN SECTIONS - SHEET 1 OF 2 | 02 |
| 30013411-021 | RAIN GARDEN DESIGN SECTIONS - SHEET 1 OF 2 | 02 |
| 30013411-022 | RAIN GARDEN DESIGN TYPICAL DETAILS | 02 |

150 mm ON ORIGINAL

A1

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30013411\110_CADD\CAD\DWG\30013411-001.dwg
PLOT DATE: 10 Feb 2021 TIME: 16:38:10

EXTERNAL REFERENCE FILES: X_30013411_SMEC_A1

| REV | DATE | AMENDMENT / REVISION DESCRIPTION | WVR No | APPROVAL |
|---|---|---|---|---|
| 01 | 18.12.2020 | ISSUED FOR CLIENT REVIEW | 001 | AC |
| 02 | 10.02.2020 | FINAL | 002 | AC |

| TITLE | NAME |
|---|---|
| DRAFTER | R.PHILLIS |
| DRAFTING CHECK | T.LITTLE |
| DESIGNER | G.NAGHIB |
| DESIGN CHECK | N.PANNIPITIYA |
| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING

DESIGNER: SMEC
Member of the Surbana Jurong Group
ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH
RAINGARDEN DESIGN
COVER SHEET AND SCHEDULE OF DRAWINGS

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
|---|---|---|---|
| AS NOTED | FINAL | 30013411-001 | 02 |

# BIORETENTION SYSTEM SPECIFICATION

1. REFERENCED DOCUMENTS. THE FOLLOWING DOCUMENTS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE:
   - 1.1. STANDARDS:
     - 1.1.1. AS 1289 – METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES
     - 1.1.2. AS 1289.5.4.1-2007– SOIL COMPACTION AND DENSITY TESTS--COMPACTION CONTROL TEST--DRY DENSITY RATIO, MOISTURE VARIATION AND MOISTURE RATIO
     - 1.1.3. AS 1289.5.7.1–2006 – SOIL COMPACTION AND DENSITY TESTS--COMPACTION CONTROL TEST--HILF DENSITY RATIO AND HILF MOISTURE VARIATION (RAPID METHOD)
     - 1.1.4. AS 2758 – AGGREGATES AND ROCK FOR ENGINEERING PURPOSES
     - 1.1.5. AS 4419 – SOILS FOR LANDSCAPING AND GARDEN USE
     - 1.1.6. AS 4454 – COMPOSTS, SOIL CONDITIONERS AND MULCHES
   - 1.2. OTHER PUBLICATIONS:
     - 1.2.1. GUIDELINES FOR SOIL FILTER MEDIA IN BIORETENTION SYSTEMS (FAWB) – THE CURRENT VERSION OF THE GUIDELINE CAN BE FOUND AT HTTP://WWW.MONASH.EDU.AU/FAWB/
     - 1.2.2. CONSTRUCTION AND ESTABLISHMENT GUIDELINES – SWALES, BIORETENTION SYSTEMS AND WETLANDS (WATER BY DESIGN) HTTP://WATERBYDESIGN.COM.AU/CEGUIDE/
     - 1.2.3. TRANSFERRING OWNERSHIP OF VEGETATED STORMWATER ASSETS (WATER BY DESIGN) HTTP://WATERBYDESIGN.COM.AU/TRANSFERGUIDE/
     - 1.2.4. BIORETENTION TECHNICAL DESIGN GUIDELINES (WATER BY DESIGN) HTTP://WATERBYDESIGN.COM.AU/TECHGUIDE/
     - 1.2.5. WATER SENSITIVE URBAN DESIGN FIELD GUIDE (WATER BY DESIGN)
2. ABBREVIATIONS AND DEFINITIONS:
   - 2.1. THE BIORETENTION SYSTEM SPECIFICATION CONSISTS OF THE FOLLOWING ABBREVIATIONS AND DEFINITIONS:
   - 2.2. FILTER: SOIL LAYER WHICH ACTS AS A POLLUTANT FILTER AND SUPPORTS PLANT GROWTH.
   - 2.3. IMPERMEABLE LINERS: THE LINER THAT PREVENTS WATER MOVEMENT BETWEEN THE FILTER AND THE SURROUNDING SOILS AND DEFINES THE EDGE OF THE SYSTEM
   - 2.4. TRANSITION LAYER: LAYER TO SEPARATE FILTER LAYER FROM THE DRAINAGE LAYER TO AVOID MIGRATION OF SOILS FROM THE FILTER TO THE DRAINAGE LAYER
   - 2.5. DRAINAGE LAYER: RELATIVELY FREE DRAINING LAYER TO CONVEY INFILTRATED WATER TO THE UNDERDRAINAGE.
   - 2.6. UNDER-DRAINS: SLOTTED DRAINS COLLECT TREATED STORMWATER FROM THE DRAINAGE LAYER AT THE BASE OF THE BIORETENTION SYSTEM.
3. TEST METHODS AND STANDARDS:
   - 3.1. THE FOLLOWING TEST METHODS AND STANDARDS ARE TO BE USED AS SPECIFIED IN THE ABOVE GUIDELINES WHEN CONDUCTING TESTS ASSOCIATED WITH THIS SPECIFICATION:
   - 3.2. THE HYDRAULIC CONDUCTIVITY OF POTENTIAL FILTER MEDIA SHALL BE MEASURED USING THE ASTM F1815–11 METHOD
   - 3.3. PARTICLE SIZE DISTRIBUTION: AS1289.3.6.1 – 1995
   - 3.4. SOILS FOR LANDSCAPING AND GARDEN USE: AS4419 – 2003.
4. MATERIALS:
   - 4.1. MATERIALS SHALL MEET THE REQUIRED SPECIFICATIONS DETAILED IN SECTION 8 FILTER MEDIA, SECTION 9 TRANSITION LAYER, SECTION 10 DRAINAGE LAYER, SECTION 11 UNDER DRAINAGE, SECTION 12 PERMEABLE LINER, SECTION 13 IMPERMEABLE LINER AND SECTION 14 LANDSCAPING OF THIS DOCUMENT.
   - 4.2. ALL MATERIALS MUST BE CERTIFIED BY THE SUPPLIER WITH CERTIFICATION AND DELIVERY SUPPLY DOCKETS SHALL BE PROVIDED ON REQUEST TO CERTIFY THE MATERIAL DELIVERED IS THE MATERIAL TESTED.
5. TIMING AND EROSION AND SEDIMENT CONTROL:
   - 5.1. THE TIMING OF CIVIL AND LANDSCAPE WORKS FOR BIORETENTION SYSTEMS MUST BE CAREFULLY PLANNED TO ENSURE THAT BOTH THE BIORETENTION SYSTEM AND THE DOWNSTREAM WATERWAYS, ARE NOT IMPACTED BY STORMWATER AND SEDIMENT (E.G. THROUGH BEST PRACTICE EROSION AND SEDIMENT CONTROL). IN PARTICULAR, THE DRAINAGE LAYER, TRANSITION LAYER AND FILTER MEDIA MUST NOT BE PLACED UNTIL THE RISK OF HIGH SEDIMENT LOADING FROM UPSTREAM CONSTRUCTION ACTIVITIES HAS BEEN MITIGATED. THE CONSTRUCTION SEQUENCE MUST BE APPROVED BY THE SUPERINTENDENT.
   - 5.2. EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION MUST BE DELIVERED IN ACCORDANCE WITH ALL LEGISLATIVE REQUIREMENTS INCLUDING, WHERE REQUIRED, THE PREPARATION OF SITE-SPECIFIC ESC PLAN/S IN ACCORDANCE WITH CURRENT BEST PRACTICE EROSION AND SEDIMENT CONTROL (E.G. IECA 2008, OR LATEST VERSION).
6. EARTHWORKS AND HYDRAULIC STRUCTURES:
   - 6.1. THE CONSTRUCTION OF HYDRAULIC STRUCTURES MUST ENSURE THE DESIGN LEVELS ARE ACHIEVED. BUNDS/ EMBANKMENTS SURROUNDING THE SYSTEM SHALL BE AT CORRECT LEVELS. THE BELOW TABLE SUMMARISES THE CONSTRUCTION TOLERANCES FOR EACH ELEMENT OF A TYPICAL BIORETENTION SYSTEM.
   - 6.2. BIORETENTION SYSTEMS TOLERANCES

| BIORETENTION ELEMENT | TOLERANCE (UNLESS SPECIFIED OTHERWISS) |
|---|---|
| HYDRAULIC STRUCTURES | +/- 25mm (+/- 15mm FOR STREETSCAPE SYSTEMS) |
| EARTHWORKS | +/- 50mm |
| UNDER-DRAINAGE | +/- 25mm |
| DRAINAGE AND TRANSITION LAYERS | + 25mm |
| SURFACE LEVEL | +/- 25mm<br>+/- 40mm FOR FILTER MEDIA >300m² PROVIDED THE AVERAGE EXTENDED DETENTION REQUIREMENT IS WITHIN 25mm OF THE DESIGN REQUIREMENT |
| EMBANKMENTS AND BUNDS | -25mm, +50mm |

7. MAINTENANCE ACCESS:
   - 7.1. MAINTENANCE ACCESS IS PROVIDED IN ACCORDANCE WITH THE DESIGN DRAWINGS.
8. FILTER MEDIA:
   - 8.1. MATERIALS A FUNDAMENTAL PART OF BIORETENTION SYSTEMS IS THE FILTER MEDIA. THE MAIN ROLE OF THE FILTER MEDIA IS TO SUPPORT VEGETATION AND REMOVE POLLUTANTS. FILTER MEDIA SHOULD BE LOAMY SAND THAT HAS HIGH PERMEABILITY WHEN COMPACTED. IT SHOULD NOT CONTAIN ANY RUBBISH OR DELETERIOUS MATERIAL. THE LOAMY SAND SHOULD CONTAIN SOME ORGANIC MATTER TO IMPROVE WATER-HOLDING CAPACITY AND PLANT HEALTH, BUT IT SHOULD BE LOW IN NUTRIENT CONTENT. THE FILTER MEDIA MUST BE COMPLIANT WITH AS4419 – SOILS FOR LANDSCAPING AND GARDEN USE, AND MEET THE FOLLOWING REQUIREMENTS:

| PARAMETER | TEST METHOD IN ACCORDANCE WITH | REQUIREMENT |
|---|---|---|
| SATURATED HYDRAULIC CONDUCTIVITY | ASTM f1815–11 | 50–300 mm/hr (240 PREFFERED) |
| pH | AS 4419 | 5.5 – 7.5 |
| ELECTRICAL CONDUCTIVITY | AS 4419 | <1.2 dS/m |
| NITROGEN CONTENT | AS 4419 | <800mg/kg |
| PHOSPHORUS CONTENT | AS 4419 | <40 mg/kg |
| ORGANIC CONTENT | AS 4419 | 3% – 10%<br>WHERE ORGANIC CONTENT IS BELOW THIS THRESHOLD, THE FILTER MEDIA MAY BE AMELIORATED BY ADDING 50mm OF COMPOST AND TINING IT INTO THE TOP 150mm OF FILTER MEDIA |
| PARTICLE SIZE DISTRIBUTION | AS 1289.3.6.1 – 1995 | CLAY & SILT 3 – 6% (<0.05mm)<br>VERY FINE SAND 5 – 30% (0.05 – 0.15mm)<br>FINE SAND 10 – 30% (0.15 – 0.25mm)<br>MEDIUM TO COARSE SAND 40 – 60% (0.25 – 1.0mm)<br>COARSE SAND 7 – 10% (1.0 – 2.0mm)<br>FINE GRAVEL <3% (2.0 – 3.4%) |

SOURCE: GUIDELINES FOR SOIL FILTER MEDIA IN BIORETENTION SYSTEMS (FAWB) AND BIORETENTION TECHNICAL DESIGN GUIDELINES (WATER BY DESIGN) FILTER MEDIA MUST BE FREE OF WEEDS AND PROPAGATES.

FILTER MEDIA PARAMETERS AND PARTICLE SIZE DISTRIBUTION TO BE APPROVED BY CONSULTANT BEFORE CONSTRUCTION. OTHER CHARACTERISTICS OF THE FILTER MEDIA REQUIRED FOR PLANT GROWTH SHOULD BE CONFIRMED WITH A SOIL ANALYSIS OR CONFIRMED WITH A HORTICULTURIST/LANDSCAPE ARCHITECT.

- 8.2. TESTING FREQUENCY
  SUITABLE FILTER MEDIA CAN BE DELIVERED TO SITE OR IMPORTED SAND CAN BE AMELIORATED TO MEET THE ABOVE SPECIFICATION. IN EITHER CASE, THE MEDIA SHALL BE TESTED AGAINST THE ABOVE PARAMETERS AT ONE SAMPLE PER 500 M3 OF FILTER MEDIA. FOR SOIL SUPPLIED TO SITE, TESTING MUST BE UNDERTAKEN ON THE ACTUAL MATERIAL TO BE DELIVERED TO THE BIORETENTION SYSTEM. THE SUPPLIER AND CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING THE FILTER MEDIA MEETS THE SPECIFICATION AND THE CORRECT MATERIAL IS DELIVERED TO SITE PRIOR TO INSTALLATION.
- 8.3. INSTALLATION AND COMPACTION
  WHEN INSTALLING, THE FOLLOWING SPECIFICATIONS SHALL BE APPLIED:
  - 8.3.1. FILTER MEDIA SHALL BE INSTALLED AND COMPACTED IN TWO LIFTS FOR DEPTHS OF OVER 500 MM. COMPACTION SHALL BE LIGHT AND EVEN ACROSS THE SURFACE
  - 8.3.2. THE TOP SURFACE OF THE DRAINAGE LAYER, TRANSITION LAYER AND THE FILTER MEDIA LAYER SHALL BE LEVEL AND FREE FROM LOCALISED DEPRESSIONS TO ENSURE EVEN DISTRIBUTION OF STORMWATER FLOWS ACROSS THE SURFACE AND PREVENT LOCALISED PONDING.
  - 8.3.3. FILTER FABRIC MUST NOT BE USED BETWEEN DRAINAGE LAYER, TRANSITION LAYER AND THE FILTER MEDIA LAYERS OR WRAPPED AROUND THE UNDER-DRAINAGE

9. TRANSITION LAYER
   - 9.1. TRANSITION LAYERS PREVENT FILTER MEDIA MIGRATING INTO THE DRAINAGE LAYER.
     - 9.1.1. MATERIALS
       - 9.1.1.1. TRANSITION LAYER SHALL BE MINIMUM THICKNESS OF 100mm COARSE SAND UNLESS OTHERWISE SPECIFIED (TYPICALLY 1MM PARTICLE SIZE DIAMETER) WITH <2% FINES.
       - 9.1.1.2. A PARTICLE SIZE DISTRIBUTION FOR THE SAND SHALL BE OBTAINED TO ENSURE THAT IT MEETS THE FOLLOWING CRITERIA (VICROADS).
       - 9.1.1.3. D15 (TRANSITION LAYER) ≤ 5 X D85 (FILTER MEDIA)
   - 9.2. TESTING
     A SAMPLE OF THE PROPOSED TRANSITION LAYER IS TO BE PROVIDED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO INSTALLATION. THE SUPERINTENDENT MAY REQUIRE THE TRANSITION LAYER TO BE TESTED TO ENSURE ITS PARTICLE SIZE
10. DRAINAGE LAYER:
    DRAINAGE LAYERS CONVEY INFILTRATED WATER INTO THE SLOTTED UNDER-DRAINAGE PIPES.
    - 10.1. MATERIALS
      - 10.1.1. DRAINAGE LAYER SHALL BE COMPRISED OF FINE GRAVEL (NOMINAL 2–5 MM) WITH <2% FINES AND A MINIMUM SATURATED HYDRAULIC CONDUCTIVITY OF 400 MM/HR. THE DEPTH OF THE DRAINAGE LAYER SHALL ENSURE AT LEAST 50 MM OF AGGREGATE COVER OVER ALL PERFORATED UNDER-DRAINAGE PIPES.
      - 10.1.2. A PARTICLE SIZE DISTRIBUTION FOR THE GRAVEL SHALL BE OBTAINED TO ENSURE THAT IT MEETS THE FOLLOWING BRIDGING CRITERIA (VICROADS): D15 (DRAINAGE LAYER) ≤ 5 X D85 (TRANSITION LAYER)
    - 10.2. TESTING A SAMPLE OF THE PROPOSED DRAINAGE LAYER IS TO BE PROVIDED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO INSTALLATION. THE SUPERINTENDENT MAY REQUIRE THE DRAINAGE LAYER TO BE TESTED TO ENSURE ITS PARTICLE SIZE.
11. UNDER-DRAINAGE
    - 11.1. MATERIALS EITHER SLOTTED RIGID PIPE (HDPE OR SIMILAR) OR AG-PIPE CAN BE USED FOR UNDER-DRAINAGE AS SPECIFIED IN THE CONSTRUCTION DRAWINGS. WHEN INSTALLING, THE FOLLOWING SPECIFICATIONS SHALL BE CONSIDERED:
      - 11.1.1. TYPICALLY 100 MM-SLOTTED HDPE PIPE IS THE PREFERRED TYPE OF RIGID PIPE
      - 11.1.2. THE SLOTS IN THE PIPE SHALL NOT ALLOW THE DRAINAGE LAYER AGGREGATE TO FREELY ENTER THE PIPE. UNDER-DRAINAGE WITH SLOT WIDTH OF 2 MM OR SMALLER IS PREFERRED, MAXIMUM 4MM WIDE, WITH MINIMUM 1,500 MM² OPENINGS/M).
      - 11.1.3. UNDER-DRAINAGE PIPES MUST NOT BE SURROUNDED BY ANY GEOFABRIC OR SOCK.
    - 11.2. INSTALLATION
      - 11.2.1. THE MAXIMUM SPACING OF UNDER-DRAINS FOR BIO-RETENTION SYSTEMS <100 M2 IS 1.5 M FROM CENTRE TO CENTRE. FOR BIORETENTION SYSTEMS >100 M2 THE MAXIMUM SPACING CAN BE INCREASED TO 2.0 – 2.5 M IF SPECIFIED IN THE CONSTRUCTION DRAWINGS.
      - 11.2.2. THE UNDER-DRAINS SHALL BE SLOPED TOWARDS THE OUTLET PIT (MIN. 0.5% LONGITUDINAL GRADE) AND THE BASE OF FILTRATION TRENCH SHALL BE FREE FROM LOCALISED DEPRESSIONS. FOR BIORETENTION SYSTEMS WITH A SATURATED ZONE A 0% PIPE GRADE IS ACCEPTABLE.
      - 11.2.3. ALL JUNCTIONS AND CONNECTIONS SHALL BE APPROPRIATELY SEALED.
      - 11.2.4. UNDER-DRAINAGE PIPES SHALL BE SEALED INTO THE OVERFLOW PIT.
      - 11.2.5. ALL UNDER DRAINAGE PIPES TO HAVE RAISED CLEAN OUT POINTS CONSTRUCTED FROM NON-SLOTTED PIPES WHICH EXTEND TO 150 MM ABOVE FILTER MEDIA SURFACE
      - 11.2.6. JOINTS TO BE RUBBER RING JOINT, BENDS SHOULD BE 45° TO ENSURE THAT THE PIPE CAN BE FLUSHED
12. PERMEABLE LINER (WHERE SPECIFIED)
    - 12.1. A PERMEABLE GEOTEXTILE LINER FABRIC MUST BE USED TO LINE THE OUTSIDE OF THE BIORETENTION SYSTEM.
    - 12.2. THE LINER MUST EXTEND AT LEAST 500 MM BEYOND THE TOP OF THE SIDES AND MUST BE KEYED INTO BATTER AND COVERED BY AT LEAST 200 MM OF TOPSOIL.
    - 12.3. THE LINER MUST BE RESISTANT TO ALL SOIL ACIDS AND ALKALIS, RESISTANT TO MICROORGANISMS AND COMPLY WITH THE REQUIREMENTS OF AS3706.12 AND AS3706.13.
13. IMPERMEABLE LINER (WHERE SPECIFIED)
    - 13.1. MATERIALS LINER OPTIONS INCLUDE CLAY, GEOSYNTHETIC BENTONITE CLAY LINERS OR HIGH-DENSITY POLY ETHYLENE (HDPE) LINERS. REFER TO THE PROJECT DRAWINGS FOR LINER DETAILS.
    - 13.2. INSTALLATION MUST BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND DESIGN DRAWINGS AND ACHIEVE THE FOLLOWING:
      - 13.1.1. THE LINERS SHALL BE KEYED INTO THE BATTERS AND TO THE EMBANKMENTS.
      - 13.1.2. LINERS MUST BE SEALED AROUND PROTRUSIONS SUCH AS OUTLET PIPES.
      - 13.1.3. MUST ACHIEVE A MAXIMUM PERMEABILITY OF 1X10-9M/S
14. LANDSCAPING
    - 14.1. REFER TO LANDSCAPE DESIGN DRAWINGS AND TECH. NOTE.
    - 14.2. BATTER SLOPES MUST HAVE MIN 200 MM TOPSOIL WHICH MUST BE TESTED BY A NATA-ACCREDITED LABORATORY IN ACCORDANCE WITH AS 4419.
    - 14.3. SUBSOILS TO BE CULTIVATED TO 150 MM PRIOR TO PLACING TOPSOIL ON BATTER SLOPES.
    - 14.4. PLANTING DENSITIES AND SPECIES MUST BE CONSISTENT WITH THE LANDSCAPE DESIGN DRAWINGS. NO SUBSTITUTIONS SHOULD BE MADE UNLESS APPROVED BY THE SUPERINTENDENT.
    - 14.5. PLANTS SUPPLIED TO SITE MUST:
      - 14.5.1. BE GROWN IN CLEAN, WEED- AND PEST-FREE CONDITIONS;
      - 14.5.2. BE WELL DEVELOPED, SUN-HARDENED AND CONTAIN A FULLY ESTABLISHED ROOT BALL THAT DOES NOT CRUMBLE WHEN REMOVED FROM ITS CONTAINER.
      - 14.5.3. BE AT LEAST 200 MM HIGH.
      - 14.5.4. SHOW NO SIGN OF PEST AND DISEASE
      - 14.5.5. SHOW NO SIGNS OF NUTRIENT DEFICIENCY
      - 14.5.6. BE FREE FROM WEEDS AND BE CLEARLY LABELLED
      - 14.5.7. BE SUPPLIED IN A CONTAINER THAT IS AT LEAST: 90 MM HIGH X 50 MM WIDE
    - 14.6. PREPARING FILTER MEDIA: UNLESS SPECIFIED OTHERWISE, EACH PLANT MUST RECEIVE AT LEAST 10 G OF SLOW-RELEASE NATIVE FERTILIZER IN GRANULAR OR TABLET FORM. PRE-HYDRATED WATER CRYSTALS MAY BE APPLIED AT 1-2% BY WEIGHT.
    - 14.7. MULCH MUST BE APPLIED IN ACCORDANCE WITH THE DESIGN DRAWINGS AND DESIGN TECH. NOTE, BE APPLIED PRIOR TO PLANTING, PROVIDE COVERAGE OF THE SOIL AND NOT EXCEED 75 MM THICKNESS, AND BE KEPT 50 MM CLEAR OF PLANT STEMS. UNLESS OTHERWISE SPECIFIED, MULCH SHOULD BE FINE SUGAR CANE MULCH SECURED IN PLACE BY A LOOSE WEAVE JUTE NET PINNED AT 500 MM CENTRES.
    - 14.8. FILTER MEDIA SURFACE AND PLANT STOCK ARE TO BE WATERED IMMEDIATELY PRIOR TO PLANTING. UNLESS OTHERWISE SPECIFIED, PLANTS SHOULD BE PLANTED IN CLUMPS OF THE SAME SPECIES, AND LARGE MONOCULTURES AVOIDED.
    - 14.9. PLANT METHOD MUST MINIMISE SOIL COMPACTION AND ENSURE THAT ALL ROOTS ARE COVERED BY AT LEAST 10 – 20 MM OF SOIL, AVOID COVERING PLANT CROWN
    - 14.10. UNLESS SPECIFIED OTHERWISE, THE FOLLOWING IRRIGATION SCHEDULE APPLIES DURING PLANT ESTABLISHMENT (AT 2.5 – 5 L PER PLANT PER WEEK) – WEEK 1-5 FIVE WATERINGS PER WEEK – WEEK 6-10 THREE WATERINGS PER WEEK – WEEK 11-15 TWO WATERINGS PER WEEK – THEREAFTER AS REQUIRED TO SUSTAIN PLANTS UNTIL SUCCESSFUL ESTABLISHMENT
    - 14.11. REPLANTING MUST OCCUR DURING THE ESTABLISHMENT PERIOD IF LESS THAN 90% OF PLANTS SURVIVE.
    - 14.12. SUCCESSFUL PLANT ESTABLISHMENT IN BIORETENTION SYSTEMS IS CONSIDERED WHEN THE PLANTS ARE ROBUST AND SELF-SUSTAINING, AND MEET THE FOLLOWING CRITERIA. – VEGETATION MUST COVER AT LEAST 90% OF THE BIORETENTION SURFACE WITH MULCH COVERING THE REMAINDER (< 10% MULCH VISIBLE FROM ABOVE) – AVERAGE GROUNDCOVER PLANT HEIGHT MUST BE GREATER THAN 500 MM. – PLANTS MUST BE HEALTHY AND FREE FROM DISEASE. – NO WEEDS OR LITTER TO BE PRESENT.
15. CERTIFICATION AND CHAIN OF CUSTODY
    - 15.1. THE FOLLOWING CERTIFICATION AND THE CHAIN OF CUSTODY APPLIES TO BIORETENTION MEDIA:
      - 15.1.1. THE SUPPLIER AND CONTRACTOR ARE RESPONSIBLE FOR ENSURING THE BIORETENTION MEDIA MEETS THE SPECIFICATIONS OUTLINED IN THESE GUIDELINES AND THAT THE CORRECT MATERIAL IS DELIVERED TO SITE. THE SUPPLIER MUST ARRANGE FOR TESTING OF THE FILTER MEDIA BY A SOIL LABORATORY CERTIFIED FOR THE METHODS IN ACCORDANCE WITH THE REQUIREMENTS LISTED ABOVE. ON THE BASIS OF THE TESTING, THE SOIL LABORATORY AND SUPPLIER MUST CERTIFY THE MATERIAL MEETS THESE SPECIFICATIONS. THE SUPPLIER MUST PROVIDE THE CERTIFICATION AND LABORATORY TEST RESULTS TO THE CONTRACTOR WITH THE SUPPLY DOCKET.
      - 15.1.2. THE CONTRACTOR PROVIDES A COPY OF THE SUPPLIER'S CERTIFICATION, TEST RESULTS AND SUPPLY DOCKET TO THE SITE SUPERINTENDENT OR BIORETENTION DESIGNER FOR REVIEW.
      - 15.1.3. FOLLOWING REVIEW OF THE CERTIFICATION, TEST RESULTS AND THE SUPPLY DOCKET, THE SITE SUPERINTENDENT OR BIORETENTION DESIGNER APPROVES INSTALLATION OF THE BIORETENTION MEDIA.
      - 15.1.4. THE RELEVANT SECTIONS OF THE BIORETENTION MEDIA SIGN-OFF FORM AS PER THE CONSTRUCTION AND ESTABLISHMENT GUIDELINES (WATER BY DESIGN) SHOULD BE COMPLETED AND SIGNED. THIS SIGN-OFF FORM IS PROVIDED AS PART OF THE CONSTRUCTION CERTIFICATION BY THE SITE SUPERINTENDENT OR BIORETENTION DESIGNER.
16. HOLD POINTS
    - 16.1. THE FOLLOWING HOLD POINTS MUST BE OBSERVED IN ACCORDANCE WITH THE MOST RECENT WATER BY DESIGN CONSTRUCTION CHECKLISTS AND SUPERINTENDENT APPROVAL IS REQUIRED FOR WORKS TO PROCEED:
      - 16.1.1. PRESTART MEETING
      - 16.1.2. COMPLETION OF HYDRAULIC STRUCTURES AND UNDER-DRAINAGE
      - 16.1.3. PRIOR TO PLACING FILTER MEDIA
      - 16.1.4. AFTER PLACEMENT OF FILTER MEDIA (PRIOR TO APPLYING MULCH AND PLANTING).
17. COMPLIANCE TESTING (FOR ON-MAINTENANCE OR OFF-MAINTENANCE)
    - 17.1. COMPLIANCE TESTING MUST BE IN ACCORDANCE WITH CHAPTER 5 OF TRANSFERRING OWNERSHIP OF VEGETATED STORMWATER ASSETS (WATER BY DESIGN). CHECKLISTS MUST BE COMPLETED AND SIGNED BY THE SUPERINTENDENT.

150 mm ON ORIGINAL

A1

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30013411\30013411.110_CADD\CAD\DWG\30013411-002.dwg
PLOT DATE: 10 Feb 2021 TIME: 16:38:52

EXTERNAL REFERENCE FILES: X_30013411_SMEC_A1

| REV | DATE | AMENDMENT / REVISION DESCRIPTION | WVR No | APPROVAL |
|---|---|---|---|---|
| 01 | 18.12.2020 | ISSUED FOR CLIENT REVIEW | 001 | AC |
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| TITLE | NAME |
|---|---|
| DRAFTER | R.PHILLIS |
| DRAFTING CHECK | T.LITTLE |
| DESIGNER | G.NAGHIB |
| DESIGN CHECK | N.PANNIPITIYA |
| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING

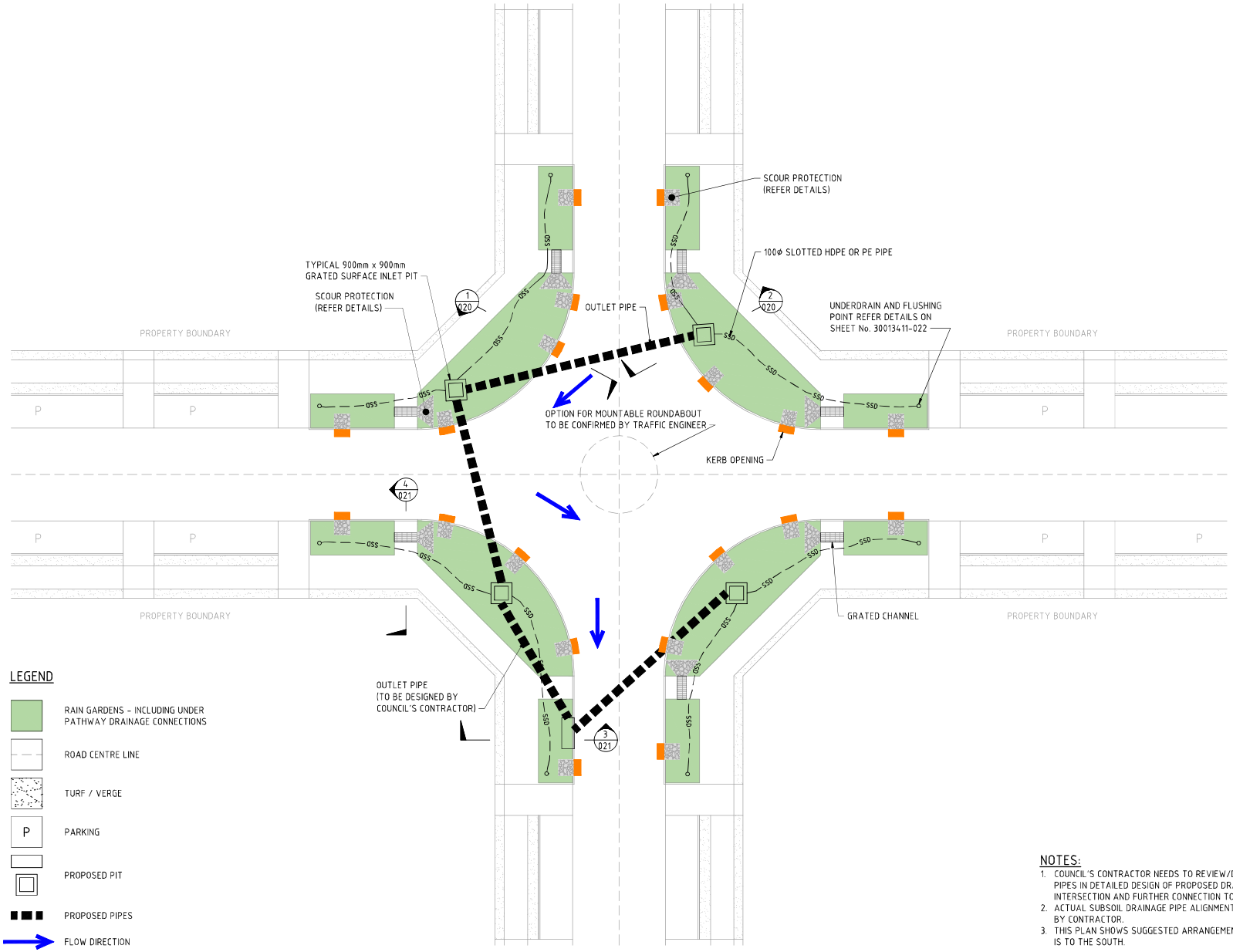
DESIGNER: SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

RAINGARDEN DESIGN GENERAL NOTES

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
|---|---|---|---|
| AS NOTED | FINAL | 30013411-002 | 02 |




NOTES:

1. COUNCIL'S CONTRACTOR NEEDS TO REVIEW/DESIGN THE PROPOSED PITS AND PIPES IN DETAILED DESIGN OF PROPOSED DRAINAGE SYSTEM AT THE INTERSECTION AND FURTHER CONNECTION TO AN EXISTING DRAINAGE NETWORK.
2. ACTUAL SUBSOIL DRAINAGE PIPE ALIGNMENT AND LOCATION TO BE DETERMINED BY CONTRACTOR.
3. THIS PLAN SHOWS SUGGESTED ARRANGEMENT WHEN GENERAL GROUND SLOPE IS TO THE SOUTH.

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30013411\110_CADD\CAD\DWG\30013411-010.dwg
PLOT DATE: 10 Feb 2021 TIME: 16:59:20

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| DRAFTER | R.PHILLIS |
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| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING
SCALE 1:125 (1.25 0 2.5 5)

DESIGNER: SMEC
Member of the Surbana Jurong Group
ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

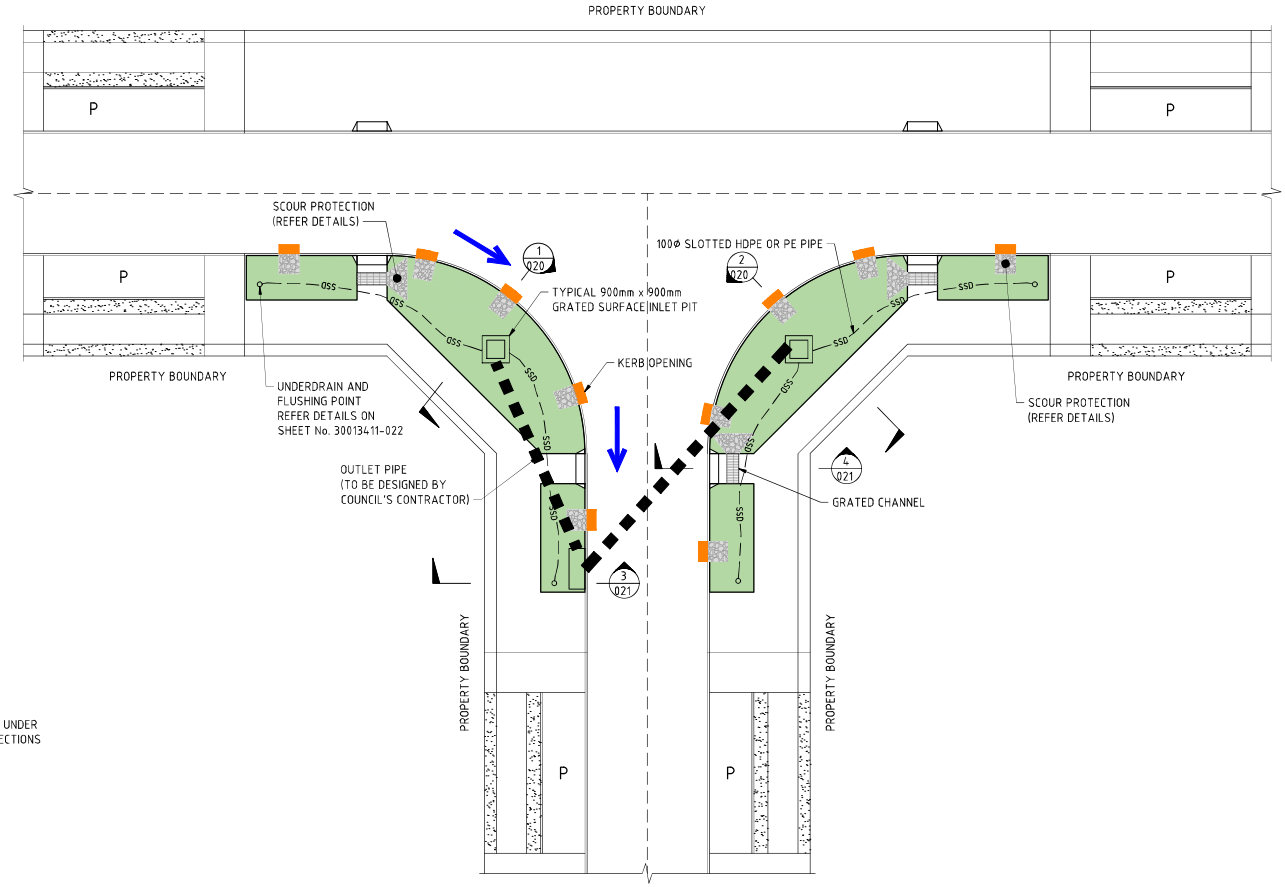
CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# RAINGARDEN DESIGN
# GENERAL ARRANGEMENT & DRAINAGE PLAN
# INTERSECTION (16m ROAD)

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
|---|---|---|---|
| AS NOTED | FINAL | 30013411-010 | 02 |

150 mm ON ORIGINAL
A1




## LEGEND

- RAIN GARDENS - INCLUDING UNDER PATHWAY DRAINAGE CONNECTIONS
- ROAD CENTRE LINE
- TURF / VERGE
- P — PARKING
- PROPOSED PIT
- PROPOSED PIPES
- FLOW DIRECTION

## NOTES:

1. COUNCIL'S CONTRACTOR NEEDS TO REVIEW/DESIGN THE PROPOSED PITS AND PIPES IN DETAILED DESIGN OF PROPOSED DRAINAGE SYSTEM AT THE T-JUNCTION AND FURTHER CONNECTION TO AN EXISTING DRAINAGE NETWORK.
2. ACTUAL SUBSOIL DRAINAGE PIPE ALIGNMENT AND LOCATION TO BE DETERMINED BY CONTRACTOR.

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30013\30013411\110_CADD\CAD\DWG\30013411-011.dwg
PLOT DATE: 10 Feb 2021 TIME: 16:59:48

EXTERNAL REFERENCE FILES: X_30013411_SMEC_A1 X_PLAN

| REV | DATE | AMENDMENT / REVISION DESCRIPTION | WVR No | APPROVAL |
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| 01 | 18.12.2020 | ISSUED FOR CLIENT REVIEW | 001 | AC |
| 02 | 10.02.2020 | FINAL | 002 | AC |

| TITLE | NAME |
|---|---|
| DRAFTER | R.PHILLIS |
| DRAFTING CHECK | T.LITTLE |
| DESIGNER | G.NAGHIB |
| DESIGN CHECK | N.PANNIPITIYA |
| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING: SCALE 1:125 (1.25 0 2.5 5)

DESIGNER: SMEC — Member of the Surbana Jurong Group — © ABN 47 065 475 149 — SMEC PROJECT No 300xxxxx

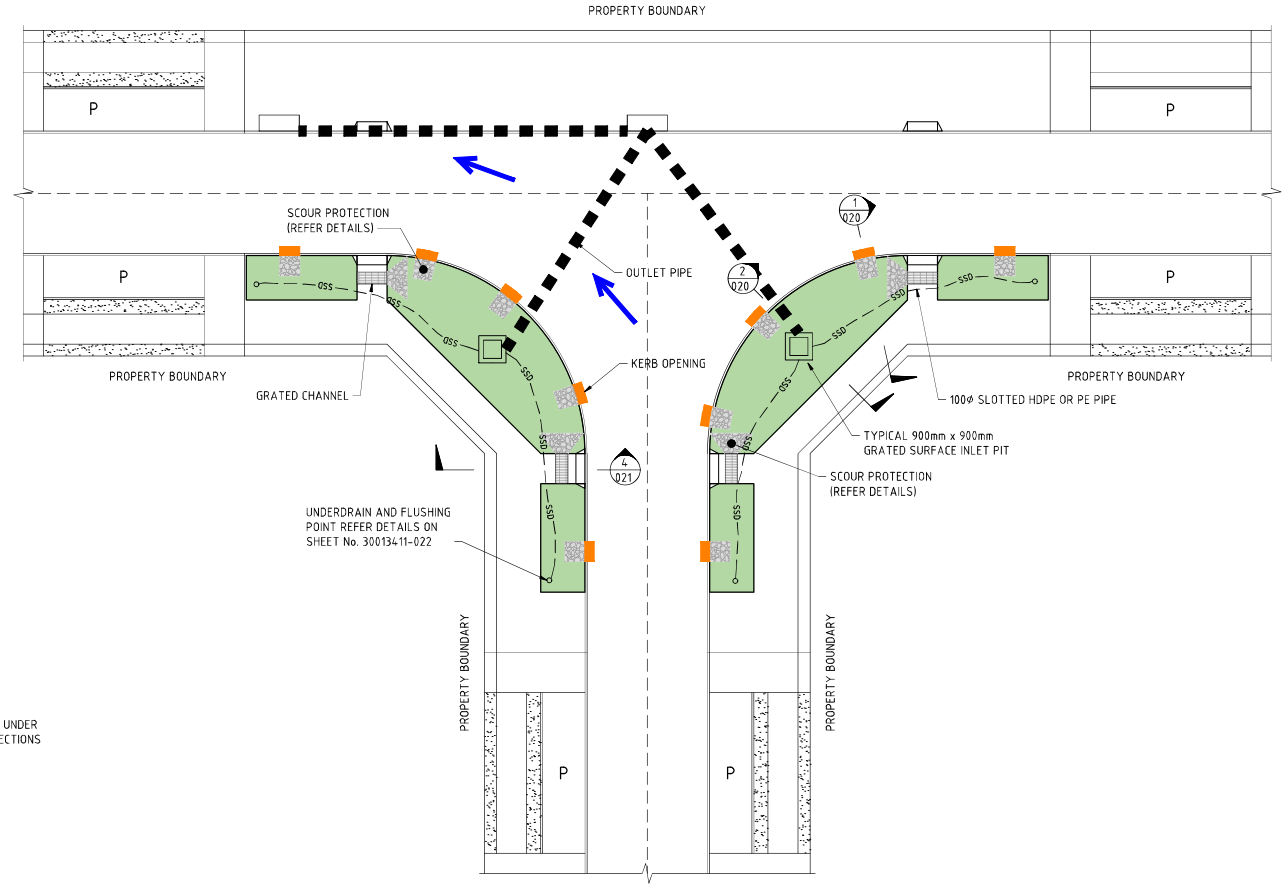
CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

RAINGARDEN DESIGN
GENERAL ARRANGEMENT & DRAINAGE PLAN
T JUNCTION OPTION 1 (16m ROAD)

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
|---|---|---|---|
| AS NOTED | FINAL | 30013411-011 | 02 |

150 mm ON ORIGINAL — A1




## LEGEND

- RAIN GARDENS – INCLUDING UNDER PATHWAY DRAINAGE CONNECTIONS
- ROAD CENTRE LINE
- TURF / VERGE
- PARKING
- PROPOSED PIT
- PROPOSED PIPES
- FLOW DIRECTION

## NOTES:

1. COUNCIL'S CONTRACTOR NEEDS TO REVIEW/DESIGN THE PROPOSED PITS AND PIPES IN DETAILED DESIGN OF PROPOSED DRAINAGE SYSTEM AT THE T-JUNCTION AND FURTHER CONNECTION TO AN EXISTING DRAINAGE NETWORK.
2. ACTUAL SUBSOIL DRAINAGE PIPE ALIGNMENT AND LOCATION TO BE DETERMINED BY CONTRACTOR.

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3001\30013411\110_CADD\CAD\DWG\30013411-012.dwg
PLOT DATE: 10 Feb 2021 TIME: 17:00:30

EXTERNAL REFERENCE FILES: X_30013411_SMEC_A1 X_PLAN

| REV | DATE | AMENDMENT / REVISION DESCRIPTION | WVR No | APPROVAL |
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| 01 | 18.12.2020 | ISSUED FOR CLIENT REVIEW | 001 | AC |
| 02 | 10.02.2020 | FINAL | 002 | AC |

| TITLE | NAME |
|---|---|
| DRAFTER | R.PHILLIS |
| DRAFTING CHECK | T.LITTLE |
| DESIGNER | G.NAGHIB |
| DESIGN CHECK | N.PANNIPITIYA |
| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING: SCALE 1:125 (1.25 0 2.5 5)

DESIGNER: SMEC — Member of the Surbana Jurong Group — © ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# RAINGARDEN DESIGN
# GENERAL ARRANGEMENT & DRAINAGE PLAN
# T JUNCTION OPTION 2 (16m ROAD)

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
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| AS NOTED | FINAL | 30013411-012 | 02 |

150 mm ON ORIGINAL
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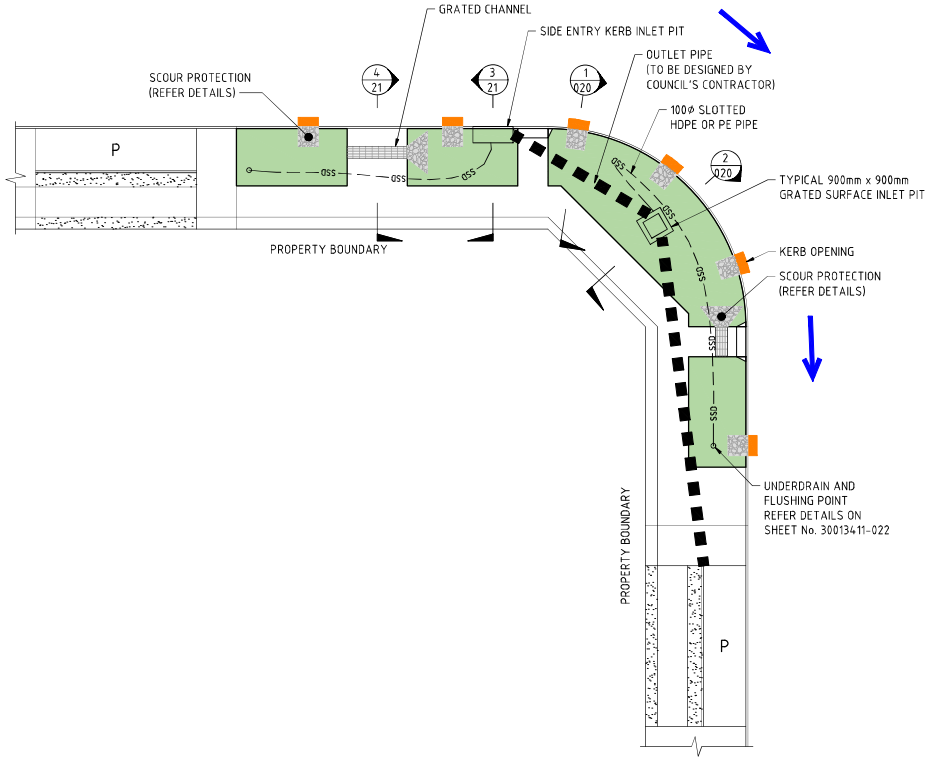


## LEGEND

- RAIN GARDENS – INCLUDING UNDER PATHWAY DRAINAGE CONNECTIONS
- TURF / VERGE
- P — PARKING
- PROPOSED PIT
- PROPOSED PIPES
- FLOW DIRECTION

## NOTES:

1. COUNCIL'S CONTRACTOR NEEDS TO REVIEW/DESIGN THE PROPOSED PITS AND PIPES IN DETAILED DESIGN OF PROPOSED DRAINAGE SYSTEM AT THE ROAD BEND AND FURTHER CONNECTION TO AN EXISTING DRAINAGE NETWORK.
2. ACTUAL SUBSOIL DRAINAGE PIPE ALIGNMENT AND LOCATION TO BE DETERMINED BY CONTRACTOR.

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30013411\110_CADD\CAD\DWG\30013411-013.dwg
PLOT DATE: 10 Feb 2021 TIME: 17:00:59

EXTERNAL REFERENCE FILES: X_30013411_SMEC_A1 X_PLAN

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| 01 | 18.12.2020 | ISSUED FOR CLIENT REVIEW | 001 | AC |
| 02 | 10.02.2020 | FINAL | 002 | AC |

| TITLE | NAME |
|---|---|
| DRAFTER | R.PHILLIS |
| DRAFTING CHECK | T.LITTLE |
| DESIGNER | G.NAGHIB |
| DESIGN CHECK | N.PANNIPITIYA |
| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING: SCALE 1:125 (1.25 0 2.5 5)

DESIGNER: SMEC — Member of the Surbana Jurong Group — ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# RAINGARDEN DESIGN
# GENERAL ARRANGEMENT & DRAINAGE PLAN
# ROAD BEND (16m ROAD)

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
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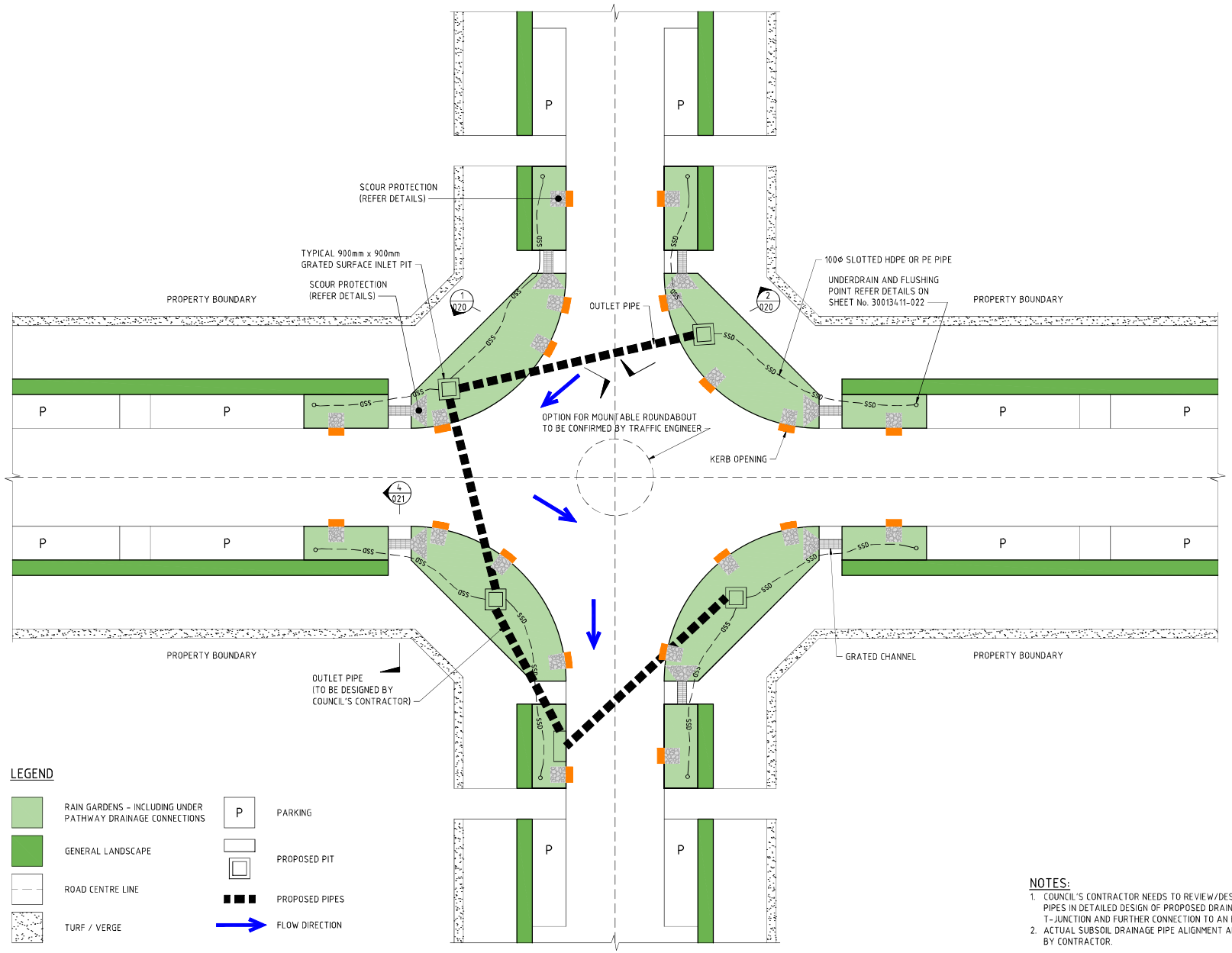
| AS NOTED | FINAL | 30013411-013 | 02 |

150 mm ON ORIGINAL — A1




## LEGEND

- RAIN GARDENS – INCLUDING UNDER PATHWAY DRAINAGE CONNECTIONS
- GENERAL LANDSCAPE
- ROAD CENTRE LINE
- TURF / VERGE
- P — PARKING
- PROPOSED PIT
- PROPOSED PIPES
- FLOW DIRECTION

## NOTES:

1. COUNCIL'S CONTRACTOR NEEDS TO REVIEW/DESIGN THE PROPOSED PITS AND PIPES IN DETAILED DESIGN OF PROPOSED DRAINAGE SYSTEM AT THE T-JUNCTION AND FURTHER CONNECTION TO AN EXISTING DRAINAGE NETWORK.
2. ACTUAL SUBSOIL DRAINAGE PIPE ALIGNMENT AND LOCATION TO BE DETERMINED BY CONTRACTOR.

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30013\30013411\110_CADD\CAD\DWG\30013411-014.dwg
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| | | | | | | DRAFTING CHECK | T.LITTLE |
| | | | | | | DESIGNER | G.NAGHIB |
| | | | | | | DESIGN CHECK | N.PANNIPITIYA |
| | | | | | | PROJECT MANAGER | G.NAGHIB |
| | | | | | | PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING: SCALE 1:125 (1.25 0 2.5 5)

DESIGNER: SMEC — Member of the Surbana Jurong Group — © ABN 47 065 475 149 — SMEC PROJECT No 300xxxxx

CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# RAINGARDEN DESIGN
# GENERAL ARRANGEMENT & DRAINAGE PLAN
# INTERSECTION (20m ROAD)

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
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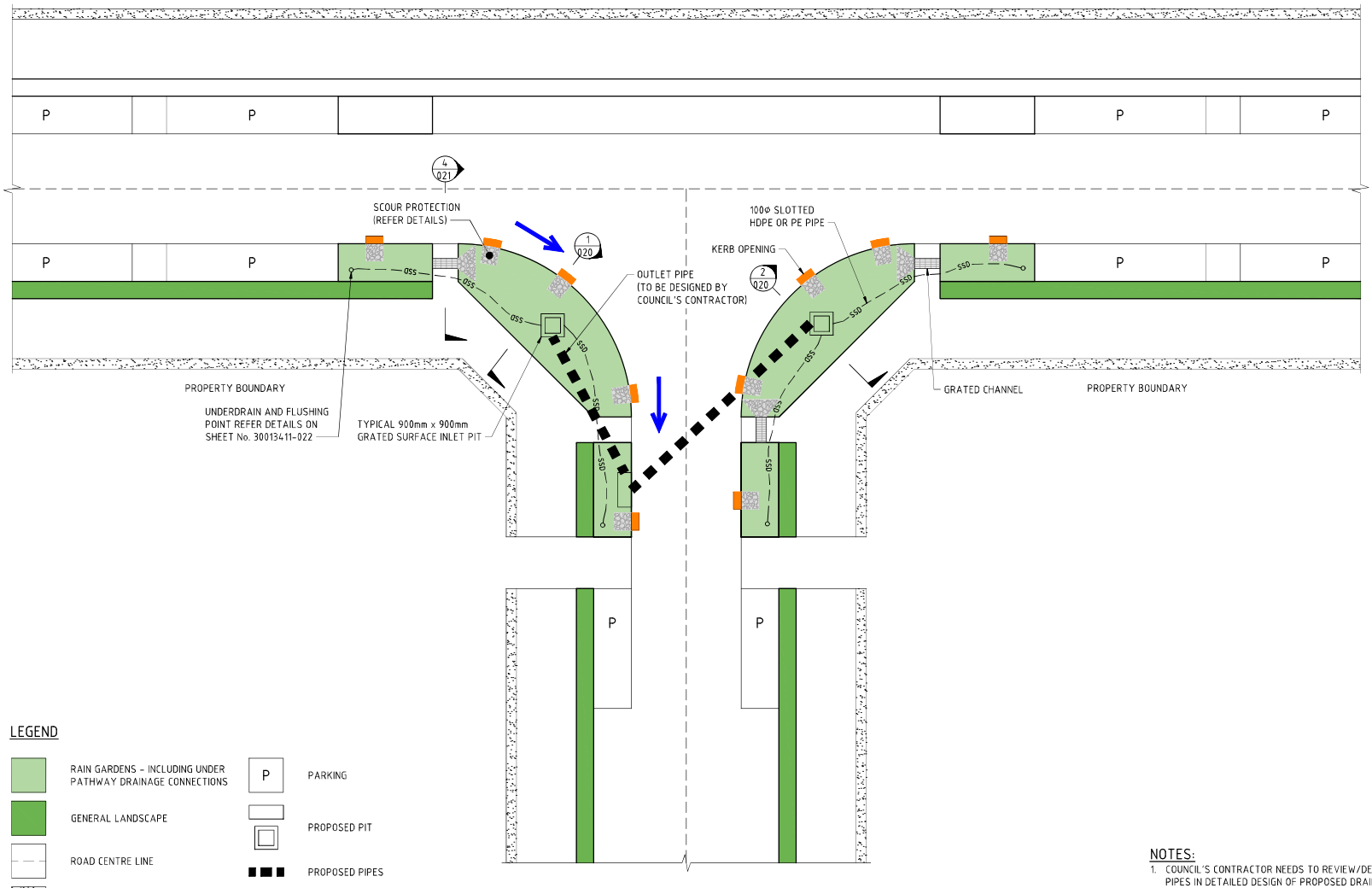
| AS NOTED | FINAL | 30013411-014 | 01 |

150 mm ON ORIGINAL — A1




## LEGEND

- RAIN GARDENS – INCLUDING UNDER PATHWAY DRAINAGE CONNECTIONS
- GENERAL LANDSCAPE
- ROAD CENTRE LINE
- TURF / VERGE
- P — PARKING
- PROPOSED PIT
- PROPOSED PIPES
- FLOW DIRECTION

## NOTES:

1. COUNCIL'S CONTRACTOR NEEDS TO REVIEW/DESIGN THE PROPOSED PITS AND PIPES IN DETAILED DESIGN OF PROPOSED DRAINAGE SYSTEM AT THE T-JUNCTION AND FURTHER CONNECTION TO AN EXISTING DRAINAGE NETWORK.
2. ACTUAL SUBSOIL DRAINAGE PIPE ALIGNMENT AND LOCATION TO BE DETERMINED BY CONTRACTOR.

150 mm ON ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3001\30013411\110_CADD\CAD\DWG\30013411-015.dwg
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| | | | | | | DRAFTING CHECK | T.LITTLE |
| | | | | | | DESIGNER | G.NAGHIB |
| | | | | | | DESIGN CHECK | N.PANNIPITIYA |
| | | | | | | PROJECT MANAGER | G.NAGHIB |
| | | | | | | PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING: SCALE 1:125 (1.25 0 2.5 5)

DESIGNER: SMEC — Member of the Surbana Jurong Group — ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# RAINGARDEN DESIGN
# GENERAL ARRANGEMENT & DRAINAGE PLAN
# T JUNCTION OPTION 1 (20m ROAD)

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
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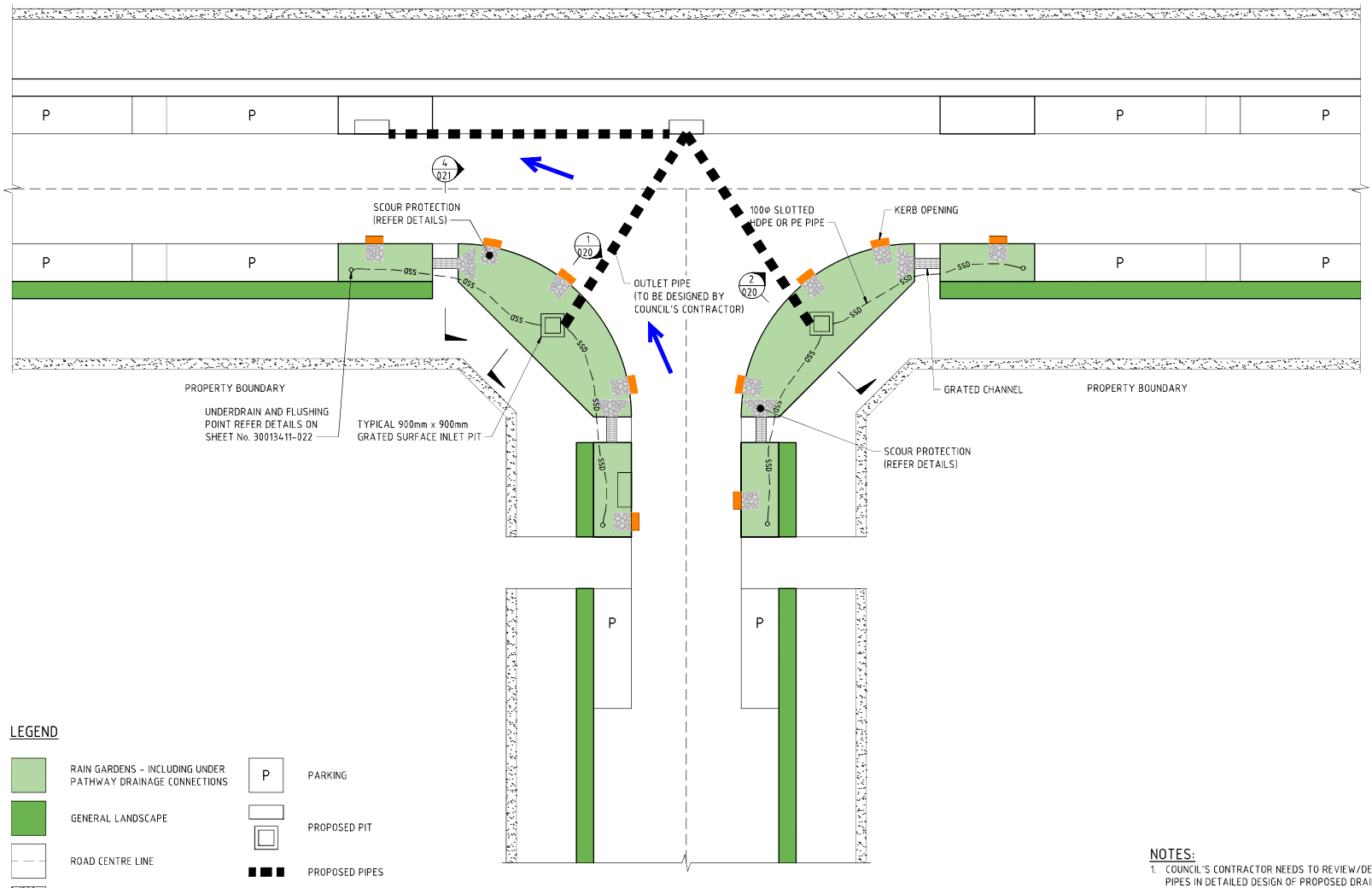


## LEGEND

- RAIN GARDENS – INCLUDING UNDER PATHWAY DRAINAGE CONNECTIONS
- GENERAL LANDSCAPE
- ROAD CENTRE LINE
- TURF / VERGE
- P — PARKING
- PROPOSED PIT
- PROPOSED PIPES
- FLOW DIRECTION

## NOTES:

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2. ACTUAL SUBSOIL DRAINAGE PIPE ALIGNMENT AND LOCATION TO BE DETERMINED BY CONTRACTOR.

150 mm ON ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3001\30013411\110_CADD\CAD\DWG\30013411-016.dwg
PLOT DATE: 10 Feb 2021 TIME: 17:02:37

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| | | | | | | DRAFTING CHECK | T.LITTLE |
| | | | | | | DESIGNER | G.NAGHIB |
| | | | | | | DESIGN CHECK | N.PANNIPITIYA |
| | | | | | | PROJECT MANAGER | G.NAGHIB |
| | | | | | | PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING: SCALE 1:125 (1.25 0 2.5 5)

DESIGNER: SMEC — Member of the Surbana Jurong Group — ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

RAINGARDEN DESIGN
GENERAL ARRANGEMENT & DRAINAGE PLAN
T JUNCTION OPTION 2 (20m ROAD)

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
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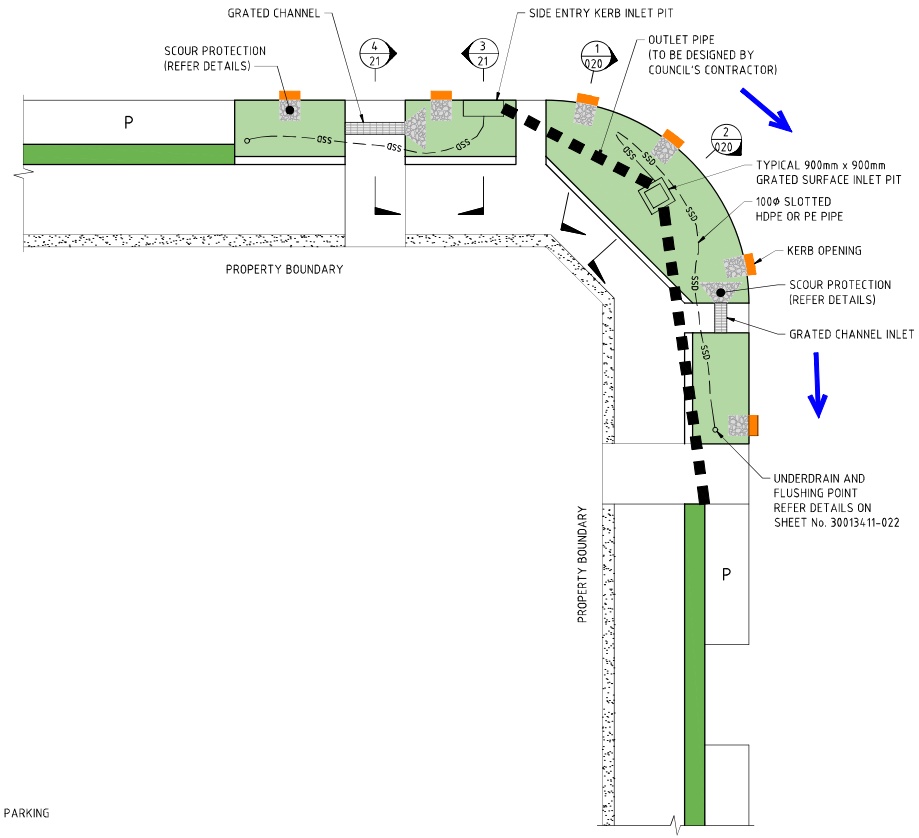


## LEGEND

- RAIN GARDENS – INCLUDING UNDER PATHWAY DRAINAGE CONNECTIONS
- GENERAL LANDSCAPE
- ROAD CENTRE LINE
- TURF / VERGE
- P — PARKING
- PROPOSED PIT
- PROPOSED PIPES
- FLOW DIRECTION

## NOTES:

1. COUNCIL'S CONTRACTOR NEEDS TO REVIEW/DESIGN THE PROPOSED PITS AND PIPES IN DETAILED DESIGN OF PROPOSED DRAINAGE SYSTEM AT THE T-JUNCTION AND FURTHER CONNECTION TO AN EXISTING DRAINAGE NETWORK.
2. ACTUAL SUBSOIL DRAINAGE PIPE ALIGNMENT AND LOCATION TO BE DETERMINED BY CONTRACTOR.

150 mm ON ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30013411\110_CADD\CAD\DWG\30013411-017.dwg
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| | | | | | | DESIGNER | G.NAGHIB |
| | | | | | | DESIGN CHECK | N.PANNIPITIYA |
| | | | | | | PROJECT MANAGER | G.NAGHIB |
| | | | | | | PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING: SCALE 1:125 (1.25 0 2.5 5)

DESIGNER: SMEC — Member of the Surbana Jurong Group — ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# RAINGARDEN DESIGN
# GENERAL ARRANGEMENT & DRAINAGE PLAN
# ROAD BEND (20m ROAD)

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
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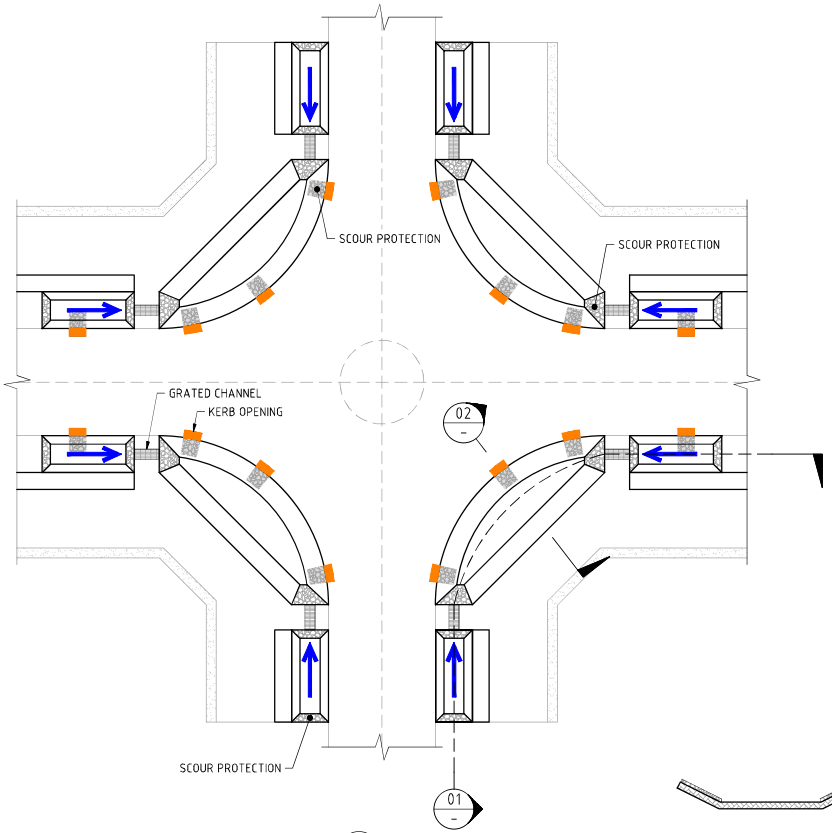
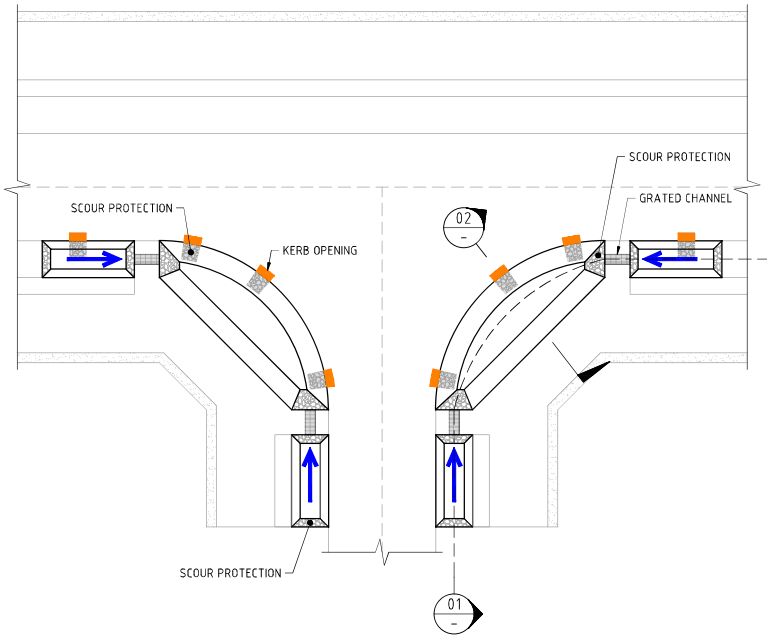
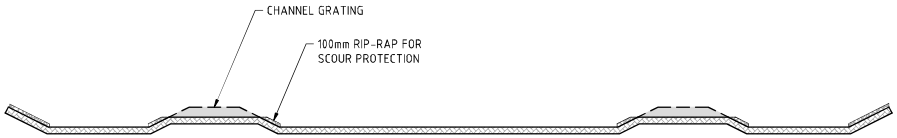
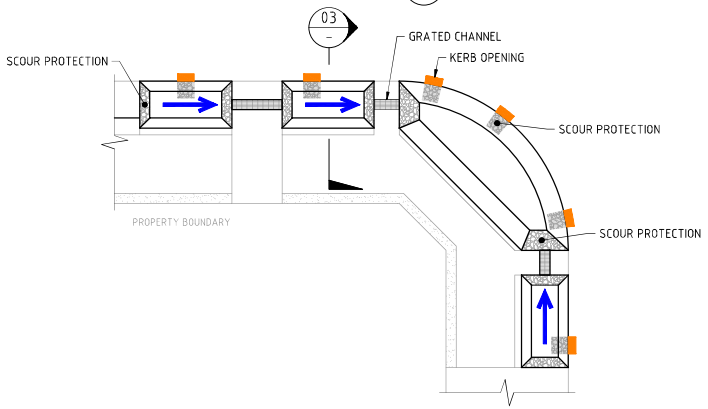
| AS NOTED | FINAL | 30013411-017 | 01 |



INTERIM SILT TRAP

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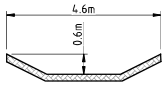
SCALE 1:75




SECTION 02
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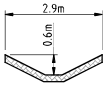


SECTION 03
SCALE 1:75

LEGEND

ROAD CENTRE LINE

TURF / VERGE

FLOW DIRECTION

## INTERIM SILT TRAP GENERAL NOTES

RAINGARDENS ARE USUALLY INSTALLED AFTER THE UPSTREAM CATCHMENT IS 95% DEVELOPED BECAUSE OF POTENTIAL CLOGGING DURING DEVELOPMENT CONSTRUCTION WORKS. IN THE INTERIM CONDITIONS, EXCAVATED SEDIMENT TRAPS (SILT TRAPS) ARE SUGGESTED AS SEDIMENT CONTROL MEASURE AND LATER WILL BE RETROFITTED INTO RAINGARDEN.

1. CONSTRUCTION
   - 1.1. SOME OF THESE INTERIM SILT TRAPS MAY NOT BE USED. THE LOCATIONS TO BE CONFIRMED BASED ON PROPOSED TOPOGRAPHY (ROAD LEVELS, AND PROPOSED DRAINAGE DESIGN) IN DETAIL DESIGN STAGE.
   - 1.2. THE CURRENT PLAN ONLY SUGGEST PROPOSED LOCATION OF SILT TRAPS AND SOME GENERAL DETAILS. EROSION SEDIMENT CONTROL (ESC) PLAN NEEDS TO BE DEVELOPED FOR EACH SPECIFIC SITE IN DETAIL DESIGN STAGE. FURTHERMORE, THE ESC PLAN SHOULD INCORPORATE THE CURRENT PROPOSED INTERIM SILT TRAPS AND REQUIRED SAFETY MEASURES.
   - 1.3. THE APPROVED CONSTRUCTION CONTRACTOR, IN COORDINATION WITH COUNCIL, MUST CONSIDER SOME SAFETY MEASURES FOR PEDESTRIANS DURING AND POST CONSTRUCTION OF THE INTERIM SILT TRAPS.
   - 1.4. UNLESS OTHERWISE SPECIFIED IN EROSION SEDIMENT CONTROL PLAN FOR THE SITE, OR ADVISED BY AN APPROVED CONTRACTOR, THE EXCAVATED SILT TRAP SHOULD HAVE SIDE SLOPE OF 1(V):2(H).
   - 1.5. DEPTH OF THE INTERIM SILT TRAP IS SUGGESTED AS 0.6M. IF REQUIRED, DEPTH CAN INCREASE TO 1M PROVIDED THAT SAFEY MEASURES ARE IN PLACE DURING AND AFTER CONSTRUCTION PERIOD.
   - 1.6. APPROPRIATELY STABLISE ANY BANK SUBJECT TO DIRECT INFLOW.
   - 1.7. ESTABLISH ALL NECESSARY UP-SLOPE DRAINAGE CONTROL MEASURES TO ENSURE THAT SEDIMENT -LADEN RUNOFF IS APPROPRIATELY DIRECTED INTO THE SEDIMENT TRAP.
   - 1.8. EXCAVATED SEDIMENT TRAP SHOULD NOT BE USED IN DISPERSIVE SOIL AREAS WITHOUT EXPERT ADVICE.

2. MAINTENANCE
   - 2.1. INTERIM SILT TRAPS NEEDS TO BE CHECKED AFTER EACH RUNOFF EVENT AND REPAIRED IMMEDIATELY.
   - 2.2. SIDE SLOPES TO BE CHECKED FOR EXCESSIVE SCOUR.
   - 2.3. THE STRUCTURE AND SURROUNDING CHANNEL BANKS ARE TO BE CHECKED FOR DAMAGE DUE TO OVERTOPPING FLOWS AND FURTHER REPAIRED AS REQUIRED.
   - 2.4. RESTORE ORIGINAL SEDIMENT STORAGE VOLUME BY REMOVING SEDIMENT EXCEEDING 30% OF THE EXCAVATED SILT TRAP VOLUME.
   - 2.5. DISPOSE ACCUMULATED SEDIMENT AND DEBRIS SAFELY WITHOUT CREATING POLLUTION HAZARD OR AN EROSION.

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PLOT DATE: 11 Feb 2021 TIME: 15:18:38

EXTERNAL REFERENCE FILES: X_30013411_SMEC_A1 X_PLAN

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| 01 | 10.02.2020 | FINAL | 002 | AC |

| TITLE | NAME |
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| DRAFTER | R.PHILLIS |
| DRAFTING CHECK | T.LITTLE |
| DESIGNER | G.NAGHIB |
| DESIGN CHECK | N.PANNIPITIYA |
| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING
SCALE 1:125 1.25 0 2.5 5

DESIGNER: SMEC
Member of the Surbana Jurong Group
ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

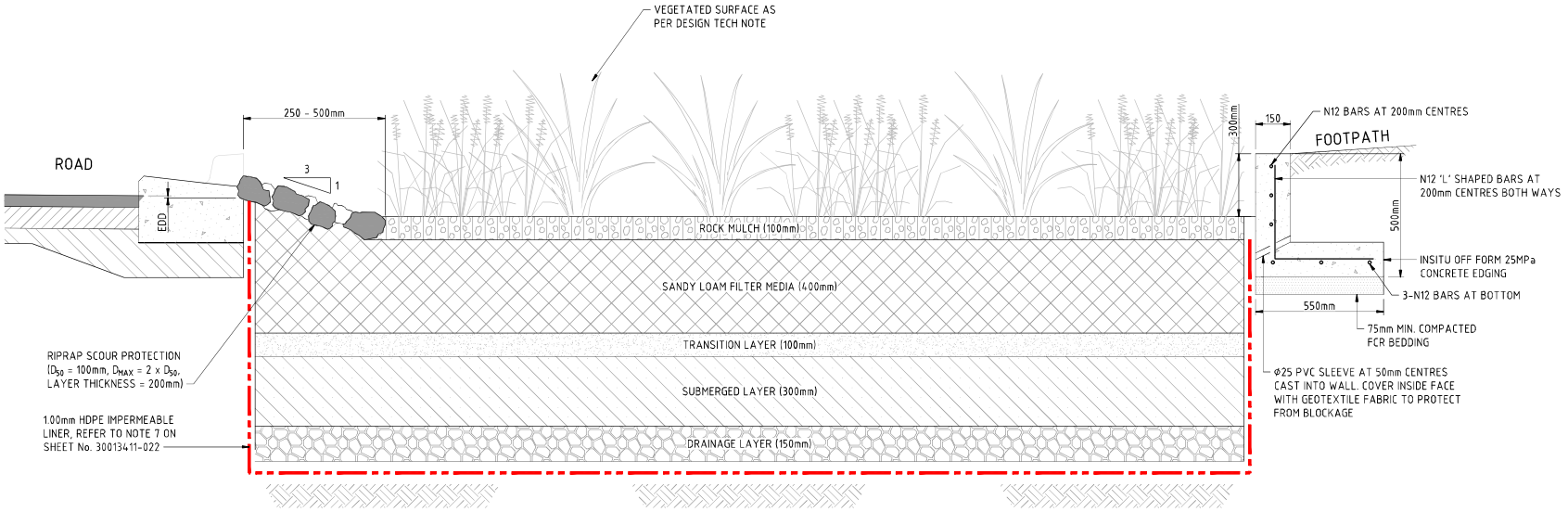
CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# RAINGARDEN DESIGN INTERIM SILT PLAN TYPICAL DETAILS

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
|---|---|---|---|
| AS NOTED | FINAL | 30013411-018 | 01 |

150 mm ON ORIGINAL
A1

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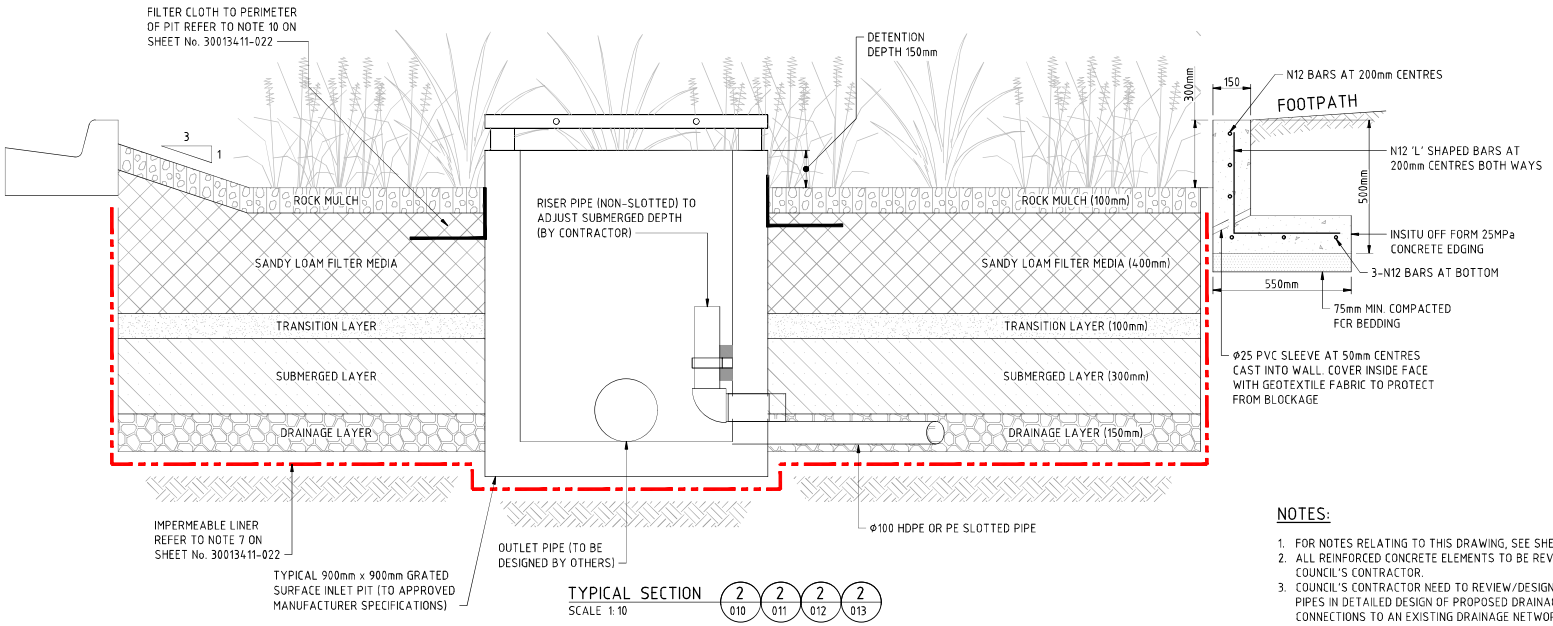


TYPICAL SECTION 2 010 | 2 011 | 2 012 | 2 013
SCALE 1: 10

## NOTES:

1. FOR NOTES RELATING TO THIS DRAWING, SEE SHEET No. 30013411-002 & 022.
2. ALL REINFORCED CONCRETE ELEMENTS TO BE REVIEWED/DESIGNED BY COUNCIL'S CONTRACTOR.
3. COUNCIL'S CONTRACTOR NEED TO REVIEW/DESIGN THE PROPOSED PITS AND PIPES IN DETAILED DESIGN OF PROPOSED DRAINAGE SYSTEM AND FURTHER CONNECTIONS TO AN EXISTING DRAINAGE NETWORK.

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3001\30013411\110_CADD\CAD\DWG\30013411-020.dwg
PLOT DATE: 10 Feb 2021 TIME: 17:04:00

| EXTERNAL REFERENCE FILES | REV | DATE | AMENDMENT / REVISION DESCRIPTION | WVR No | APPROVAL |
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| | 02 | 10.02.2020 | FINAL | 002 | AC |

| TITLE | NAME |
|---|---|
| DRAFTER | R.PHILLIS |
| DRAFTING CHECK | T.LITTLE |
| DESIGNER | G.NAGHIB |
| DESIGN CHECK | N.PANNIPITIYA |
| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING
SCALE 1:10 0,1 0 0,1 0,2 0,3 0,4 0,5

DESIGNER: SMEC
Member of the Surbana Jurong Group
ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

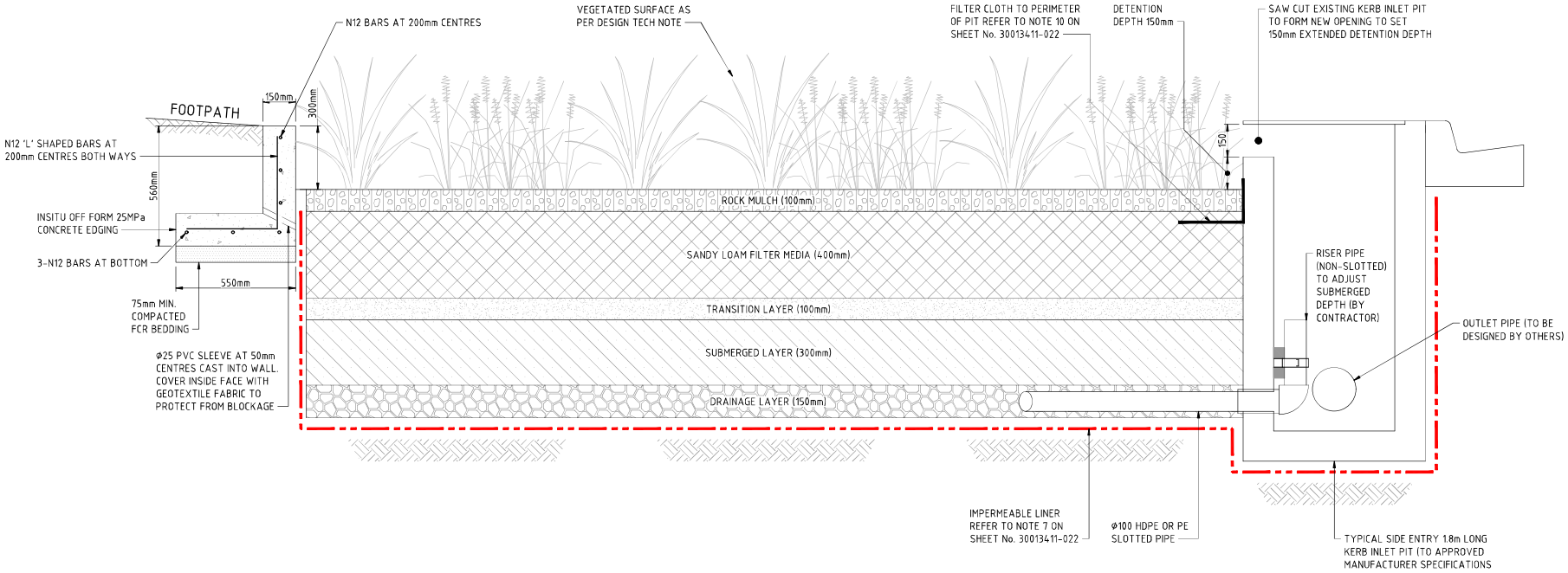
CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

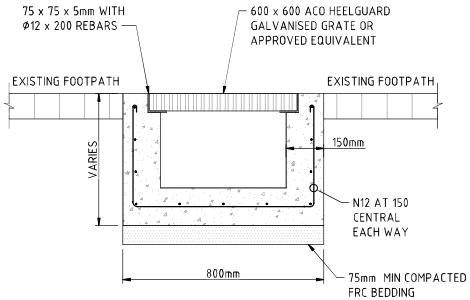
# RAINGARDEN DESIGN SECTIONS SHEET 1 OF 2

| SCALE | PHASE | PROJECT / DRAWING No. | REVISION |
|---|---|---|---|
| AS NOTED | FINAL | 30013411-020 | 02 |

150 mm ON ORIGINAL
A1




TYPICAL SECTION 3/010 3/011 3/012 3/013
SCALE 1:10




TYPICAL SECTION 4/011 4/012 4/013
SCALE 1:10

## NOTES:

1. FOR NOTES RELATING TO THIS DRAWING, SEE SHEET No. 30013411-002 & 022.
2. ALL REINFORCED CONCRETE ELEMENTS TO BE REVIEWED/DESIGNED BY COUNCIL'S CONTRACTOR.
3. COUNCIL'S CONTRACTOR NEED TO REVIEW/DESIGN THE PROPOSED PITS AND PIPES IN DETAILED DESIGN OF PROPOSED DRAINAGE SYSTEM AND FURTHER CONNECTIONS TO AN EXISTING DRAINAGE NETWORK.

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3001\30013411\110_CADD\CAD\DWG\30013411-021.dwg
PLOT DATE: 10 Feb 2021 TIME: 17:04:27

| EXTERNAL REFERENCE FILES | REV | DATE | AMENDMENT / REVISION DESCRIPTION | WVR No | APPROVAL |
|---|---|---|---|---|---|
| X_30013411_SMEC_A1 | 01 | 18.12.2020 | ISSUED FOR CLIENT REVIEW | 001 | AC |
| | 02 | 10.02.2020 | FINAL | 002 | AC |

| TITLE | NAME |
|---|---|
| DRAFTER | R.PHILLIS |
| DRAFTING CHECK | T.LITTLE |
| DESIGNER | G.NAGHIB |
| DESIGN CHECK | N.PANNIPITIYA |
| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING
SCALE 1:10 0,1 0 0,1 0,2 0,3 0,4 0,5

DESIGNER: SMEC
Member of the Surbana Jurong Group
ABN 47 065 475 149
SMEC PROJECT No 300xxxxx

CLIENT: LIVERPOOL CITY COUNCIL

PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# RAINGARDEN DESIGN SECTIONS SHEET 2 OF 2

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
|---|---|---|---|
| AS NOTED | FINAL | 30013411-021 | 02 |

150 mm ON ORIGINAL
A1
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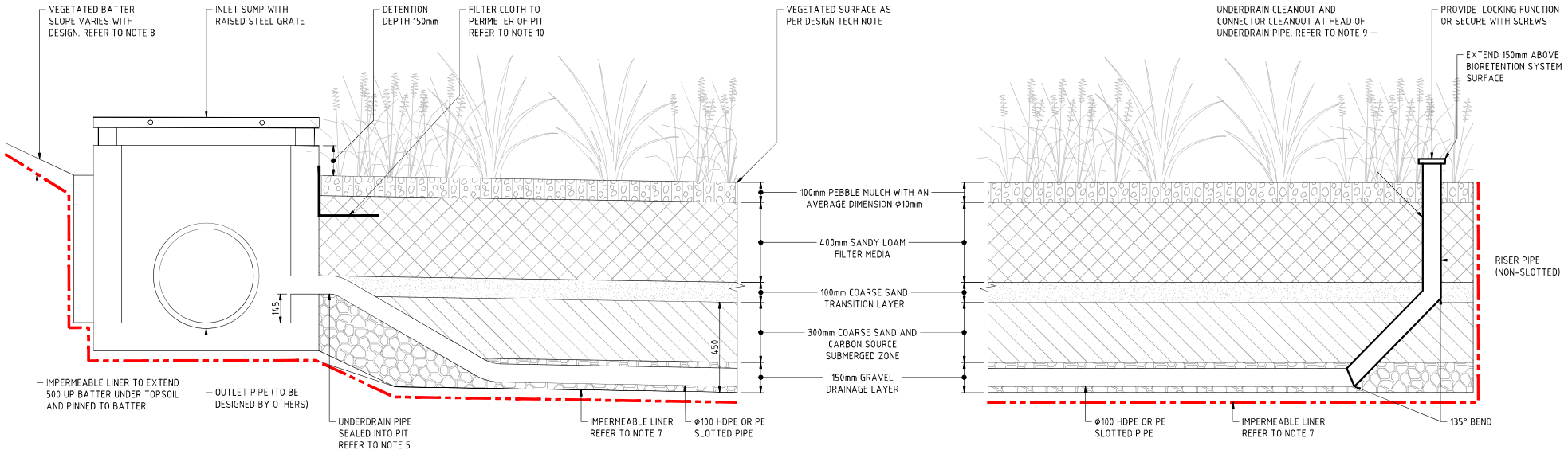


TYPICAL GRATED OUTLET PIT DETAIL NEAR A BATTER
SCALE 1:10

TYPICAL CLEANOUT PIPE DETAIL
SCALE 1:10

## NOTES:

1. BIORETENTION SYSTEM SURFACE IS TOP SURFACE LEVEL OF FILTER MEDIA.
2. FILTER MEDIA SPECIFICATION SHALL BE IN ACCORDANCE WITH THE 'ADOPTION GUIDELINES FOR STORMWATER BIOFILTERATION SYSTEMS' (CRC FOR WATER SENSITIVE CITIES) AND BIORETENTION SYSTEM SPECIFICATION NOTE.
3. HYDRAULIC CONDUCTIVITY SHALL BE IN ACCORDANCE WITH SYSTEM SPECIFICATION NOTE. THE NUMBER OF SAMPLES TO BE TESTED SHALL BE IN ACCORDANCE WITH THE 'CONSTRUCTION AND ESTABLISHMENT GUIDELINES- SWALES, BIORETENTION SYSTEMS AND WETLANDS' (WATER BY DESIGN).
4. CONSTRUCTION TOLERANCES SHALL BE IN ACCORDANCE WITH BIORETENTION SYSTEM SPECIFICATION NOTE AND WATER BY DESIGN GUIDELINE.
5. TRANSITION LAYER AND DRAINAGE LAYER DEPTHS MAY VARY WITH DESIGN. DEPTHS AND SPECIFICATIONS TO BE IN ACCORDANCE WITH PROJECT DRAWINGS AND THE 'BIORETENTION TECHNICAL DESIGN GUIDELINES' (WATER BY DESIGN)
6. UNDERDRAIN PIPES SHALL BE SEALED INTO PITS USING GROUT OR OTHER APPROVED WATER TIGHT SEAL.
7. IMPERMEABLE LINER CAN BE CONSTRUCTED BY USING COMPACTED CLAY OR SYNTHETIC LINER WITH PERMEABILITY OF NO GREATER THAN 1 X 10-9 M/S. IMPERMEABLE LINER TO BE SEALED AROUND ALL PROTRUSIONS. SYNTHETIC LINERS TO BE INSTALLED AND SEALED IN ACCORDANCE WITH MANUFACTURES REQUIREMENTS. GEOSYNTHETIC BENTONITE CLAY LINERS PREFERRED.
8. VEGETATED BATTER SLOPE AND PLANTING TO BE IN ACCORDANCE WITH DESIGN TECH. NOTE.
9. VERTICAL SOLID (NON-SLOTTED) PIPE SECTION ATTACHED TO THE END OF EACH UNDERDRAIN FOR INSPECTION/CLEAN OUT PURPOSES IN ACCORDANCE WITH THE PROJECT DRAWINGS AND THE 'BIORETENTION TECHNICAL DESIGN GUIDELINES' (WATER BY DESIGN).
10. FILTER CLOTH TO BE FIXED TO PERIMETER OF PIT TO AVOID RUNNELLING OF WATER BETWEEN PIT AND SOIL INTERFACE. BEGIN FILTER CLOTH 100MM ABOVE SURFACE, EXTEND TO 100MM BELOW SURFACE AND CONTINUE 300MM HORIZONTALLY INTO FILTER MEDIA.

150 mm ON ORIGINAL
A1

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30013411\110_CADD\CAD\DWG\30013411-022.dwg
PLOT DATE: 10 Feb 2021 TIME: 17:04:53
EXTERNAL REFERENCE FILES: X_30013411_SMEC_A1

| REV | DATE | AMENDMENT / REVISION DESCRIPTION | WVR No | APPROVAL |
|---|---|---|---|---|
| 01 | 18.12.2020 | ISSUED FOR CLIENT REVIEW | 001 | AC |
| 02 | 10.02.2020 | FINAL | 002 | AC |

| TITLE | NAME |
|---|---|
| DRAFTER | R.PHILLIS |
| DRAFTING CHECK | T.LITTLE |
| DESIGNER | G.NAGHIB |
| DESIGN CHECK | N.PANNIPITIYA |
| PROJECT MANAGER | G.NAGHIB |
| PROJECT DIRECTOR | M.BOX |

SCALES AT A1 SIZE DRAWING
SCALE 1:10 0.1 0 0.1 0.2 0.3 0.4 0.5

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PROJECT TITLE: DEVELOPMENT OF STREETSCAPE RAINGARDEN MASTERPLAN FOR AUSTRAL AND LEPPINGTON NORTH

# RAINGARDEN DESIGN TYPICAL DETAILS

| SCALE | PHASE | PROJECT / DRAWING No | REVISION |
|---|---|---|---|
| AS NOTED | FINAL | 30013411-022 | 02 |