

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

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Date: 22 April 2026



AMENDED IN RED

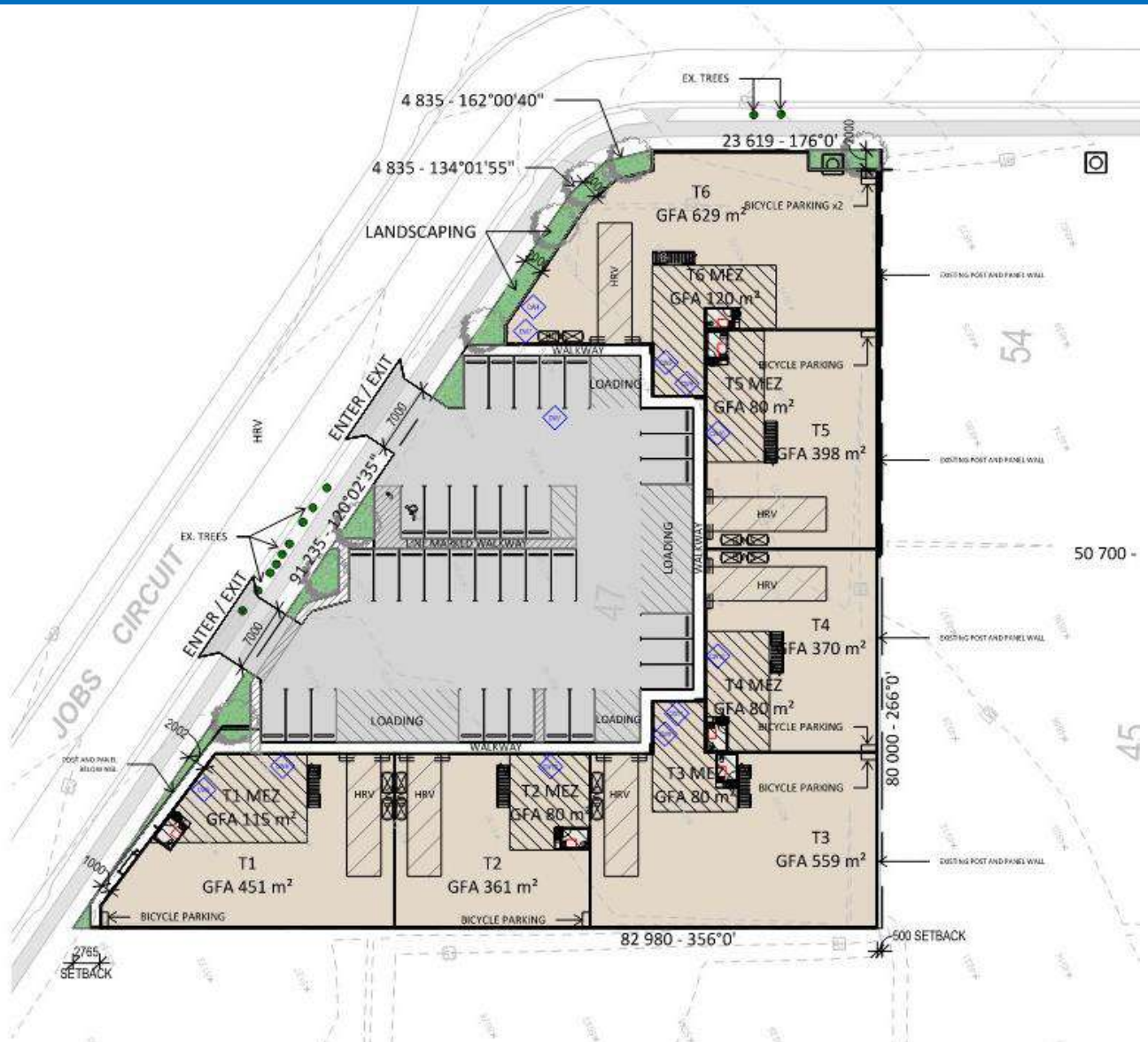
By: Gabrielle Shepherd

Date: 20 April 2026



Owen.

ENGINEERING SERVICES REPORT



PREPARED FOR: V12 DEVELOPMENTS QLD PTY LTD
SITE ADDRESS: LOT 47 JOBS CIRCUIT, YARRABILBA

DOCUMENT CONTROL SHEET

OWEN CONSULTING PTY LTD	Project No.:	2025106 - LOT 47
	Document No.:	2025106 - LOT 47 – ESR
	Title:	Engineering Services Report (ESR)
	Project Manager:	Simon Kealley
Gold Coast Office	Author:	Elijah Kelly
PO Box: 1158 Burleigh Heads, 4220	Client:	V12 Developments QLD Pty Ltd
T: (07) 55 720 702	Project Address:	Lot 47 Jobs Circuit, Yarrabilba, QLD 4207
E: admin@owenconsulting.com.au	Report Synopsis:	Engineering Services Report (ESR) prepared based on current site layout and engineering design.

VERSION REGISTER

Version	Status	Author	Reviewer	Change from Previous Version	Authorised Release	
					Signature	Date
A	For Approval	Elijah Kelly	Simon Kealley	Original Issue		29.01.2026

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TABLE OF CONTENTS

TABLE OF CONTENTS	2
TABLE OF FIGURES	3
TABLE OF TABLES	3
TABLE OF APPENDICES	3
1.0 INTRODUCTION	4
1.1 BACKGROUND	4
1.2 SCOPE	4
1.3 DESIGN BASIS	4
1.4 SITE CHARACTERISTICS	5
2.0 PROPOSED DEVELOPMENT	7
3.0 ROADWORKS	8
3.1 ROADWORKS	8
3.2 VEHICULAR CROSSOVER (VXO) / DRIVEWAYS	8
4.0 EARTHWORKS	9
4.1 GENERAL	9
4.2 ACID SULFATE SOILS	9
5.0 EROSION AND SEDIMENT MANAGEMENT	10
5.1 EROSION AND SEDIMENT CONTROL PHASES	10
5.1.1 SITE ESTABLISHMENT PHASE	10
5.1.2 CONSTRUCTION PHASE	10
5.2 MONITORING AND MAINTENANCE	10
5.3 RESPONSIBILITY AND REPORTING	10
6.0 STORMWATER MANAGEMENT	11
6.1 STORMWATER QUALITY AND QUANTITY MANAGEMENT	11
6.2 FLOOD ASSESSMENT	11
6.3 LAWFUL POINT OF DISCHARGE	12
6.4 PROPOSED DRAINAGE WORKS	12
6.5 PROPOSED DRAINAGE WORKS – STORMWATER DETENTION TANK	12
7.0 WATER RETICULATION	13
7.1 EXISTING WATER INFRASTRUCTURE	13
7.2 PROPOSED WATER CONNECTION	13
7.3 PROPOSED WATER RETICULATION WORKS	13
8.0 SEWER RETICULATION	14
8.1 EXISTING SEWER INFRASTRUCTURE	14
8.2 PROPOSED SEWER CONNECTION	14

8.3	PROPOSED SEWER RETICULATION WORKS.....	14
9.0	ELECTRICAL AND TELECOMMUNICATIONS	15
10.0	GAS	15
11.0	CONCLUSION	16
12.0	APPENDICES.....	17

TABLE OF FIGURES

FIGURE 1.1 – AERIAL VIEW AND LOCALITY PLAN.....	6
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TABLE OF TABLES

TABLE 1.1 – EXISTING SITE CHARACTERISTICS.....	5
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TABLE OF APPENDICES

APPENDIX A – AS-CONSTRUCTED SURVEY PLANS	17
APPENDIX B – PROPOSED DEVELOPMENT PLANS	17
APPENDIX C – DETAILED CIVIL ENGINEERING DESIGN PLANS	17
APPENDIX D – AS-CONSTRUCTED INFRASTRUCTURE ASSETS / DBYD INFORMATION	17
APPENDIX E – LCC CONTOUR, ASS AND FLOOD MAP	17
APPENDIX F – LCC FLOOD REPORT	17
APPENDIX G - YARRABILBA PRECINCT 5A MIBA NORTH STORMWATER MANAGEMENT PLAN.....	17
APPENDIX H – YARRABILBA MILA PRECINCT 2A & PART OF PRECINCT 5 PLAN OF SUBDIVISION	17
APPENDIX I – OCEANPROTECT OCEANGUARD OPERATIONS & MAINTENANCE MANUAL.....	17

1.0 INTRODUCTION

1.1 BACKGROUND

Owen Consulting has been engaged by V12 Developments QLD Pty Ltd (The Applicant) to prepare an Engineering Services Report (ESR) in support of a Development Application to be submitted to Economic Development Queensland (EDQ) for the proposed Industrial Development at Lot 47 Jobs Circuit, Yarrabilba (referred to as the 'subject site' herein).

This report submitted to EDQ provides information to demonstrate that the existing water, sewer and stormwater infrastructure is available to service the development in accordance with the relevant EDQ guidelines, Logan City Council Planning Scheme Policy 5 - Infrastructure and SEQ Water Supply and Sewerage Design and Construction Code. This report also addresses the development of earthworks and vehicular access/egress relevant to the aforementioned Council policies and codes.

1.2 SCOPE

This ESR provides the following.

- An assessment of the development of earthworks and Erosion & Sediment Control.
- An assessment of the development of vehicular access / egress.
- An assessment of the existing stormwater infrastructure and a Lawful Point of Discharge (LPD).
- Addresses the development proposed stormwater management in particular stormwater quality and quantity.
- An assessment of the existing water and sewer infrastructure and connection points.
- Addresses the development of proposed water and sewer infrastructure.
- Identify potential modifications to existing infrastructure.
- An assessment of the existing electricity and telecommunications infrastructure within or adjacent to the subject site.

1.3 DESIGN BASIS

This ESR and the preliminary civil engineering drawings prepared by *Owen Consulting* have been undertaken based on a review of the following:

- Existing As-Constructed Survey Plans (**Appendix A**) completed by *RPS Consulting*.
- Proposed Development Plans (**Appendix B**) completed by *Bruac Design*.
- DBYD and EDQ as-constructed information (**Appendix D**).
- Yarrabilba Precinct 5A MIBA North Stormwater Management Plan (**Appendix G**) completed by *DesignFlow*.
- Yarrabilba MIBA Precinct 2A & Part of Precinct Plan of Subdivision (**Appendix H**) completed by *RPS*.

In accordance with relevant EDQ guidelines and Logan City Council Planning Scheme Policy 5 - Infrastructure the following design standards are applicable:

- Water Supply Code of Australia (SEQ Edition – Version 1.3 – August 2019).
- Gravity Sewerage Code of Australia (SEQ Edition – Version 2.1 – September 2021).
- Water Sensitive Urban Design Technical Guidelines – Healthy Waterways.
- Queensland Urban drainage Manual (QUDM) Forth Edition 2016.
- Australian Standard AS2890 – Off-street Parking Set.
- International Erosion Control Association (IECA) – Best Erosion and Sediment Control.
- AS 3798 – Guidelines on Earthworks for Commercial and Residential Developments.

1.4 SITE CHARACTERISTICS

The subject site is located within the limits of Logan City Council (LCC), however, is situated within the Yarrabilba Priority Development Area (PDA), administered by EDQ. The site comprises three (3) lots (Lot 47 on SP345729) at Lot 47 Jobs Circuit, Yarrabilba. The existing site characteristics have been summarised in Table 1.1 below. An aerial view / locality plan of the subject site is shown in Figure 1.1 which identifies the subject site's proximity to other vacant industrial / commercial allotments that will be constructed in the future, along with a surrounding road network. The subject site is a vacant lot.

TABLE 1.1 – EXISTING SITE CHARACTERISTICS

Feature	Description
Title	Lot 47 on SP345729
Street Address	Lot 47 Jobs Circuit, Yarrabilba, QLD 4207
Site Area	4,470m ² (0.447 ha)
Dimensions	Approximately 91.2m wide northern (front) and 23.6m wide eastern (side) boundaries adjacent to the Jobs Circuit. Approximately 83.0m long western (side) and 80.0m wide southern (rear) boundaries adjacent to vacant industrial allotments.
Existing Dwellings or Structures	No dwelling or structure currently exists on the subject site.
Easement	No easements have been identified within the subject site.
Surrounding Land Use	The adjacent allotments are generally similar industrial / commercial type developments, being classified as 'Priority Development Area' by Logan City Council Interactive Mapping.
Topography	Surveyed levels of the subject site range from RL:51.80m AHD at the north-western corner to approximately RL:50.0m AHD at the south-eastern corner of the site which equates to an average grade of approximately 1.6%. There is an existing retaining wall at the southern (rear) boundary of the subject site.
Vegetation	0% of the subject site is comprised of impervious surface (being roof, concrete pavement surfaces and gravel). The ground surface consists of exposed topsoil with no grassed or vegetated areas.
Vehicle Access	There is no current formalised vehicle access/egress to the subject site.
Information obtained from DBYD, as-constructed information and the detailed survey plan, identifies the following existing stormwater drainage, water reticulation and sewer infrastructure (see below).	
Stormwater Drainage	A 900mm x 900mm field inlet pit constructed over a Ø1050mm stormwater maintenance hole and an associated Ø375mm FRC stormwater pipe are aligned within the subject site at its south-eastern corner.

	This field inlet connects to a stormwater network aligned within Jobs Circuit. The stormwater infrastructure within Jobs Circuit discharges to a regional bioretention basin which is located south-east of the subject site.
Water Reticulation	A Ø150mm PVC-M potable water main is aligned within the Jobs Circuit verge on the same side as the site frontage. Several fire hydrants exist adjacent to the subject site.
Sewer Reticulation	A Ø1050mm sewer maintenance hole and associated Ø150mm PVC-U SN8 sewer main are aligned within the subject site at its south-eastern corner. A Ø150mm PVC-U sewer property connection extends from the sewer maintenance hole within the subject site.



FIGURE 1.1 – AERIAL VIEW AND LOCALITY PLAN

2.0 PROPOSED DEVELOPMENT

The proposed development comprises a Development Application submission to Council, based on the following:

- Six (6) industrial warehouse units;
- Thirty-four (34) on-site carparking spaces.
- Dedicated hardstand pavement areas for vehicular manoeuvring and parking.
- Access / egress to the proposed development will be via two (2) x 7.0m wide vehicle crossovers (VXOs) from Jobs Circuit.
- Dedicated landscaping and grass turf areas at the site frontage.
- The total site area is 4,470m² (or 0.447 ha).

Refer to **Appendix B** for the Proposed Development Plan/s. Refer to **Appendix H** for the Plan of Subdivision.

3.0 ROADWORKS

3.1 ROADWORKS

The subject site has a total road frontage of 114.9m to Jobs Circuit which is a Logan City Council public road.

Jobs Circuit is classified (as per the Logan City Council Planning Scheme Policy 5 - Infrastructure) as an Industrial Access Street being a 18.6-20.6m wide road reserve comprising a 12.0m wide carriageway, including two (2) lanes. The verge profile is a standard cross-fall, generally allowing for a 1.5m wide concrete footpath on both verges. The road seal appears to be dense-graded asphalt and considered to be in good condition.

It is not anticipated that any road upgrading or widening will be required to Jobs Circuit as a direct result of the proposed development nor will it be altering the existing road alignment, structure, material or infrastructure layout provisions as per the Logan City Council Planning Scheme Policy 5 - Infrastructure.

3.2 VEHICULAR CROSSOVER (VXO) / DRIVEWAYS

As part of this development, two (2) new 7.0m concrete VXOs, will be constructed in order to provide access / egress to the proposed development. Each VXO will provide dedicated access to each industrial unit on the subject site. The VXOs are to be constructed of concrete and interfaces with Jobs Circuit at standard VXO longitudinal gradients.

The new VXOs will be designed in accordance with LCC adopted (IPWEAQ) standard drawing RS-051 and specifications. The new VXO shall ensure that any stormwater runoff falls back toward the Jobs Circuit and Franklin Street kerb and channel whilst maintaining the minimum and maximum longitudinal grades as per IPWEAQ standard drawing RS-051 and AS/NZ 2890.2, which can be achieved based on an assessment of the detailed survey existing levels at the kerb & channel and the site boundary.

4.0 EARTHWORKS

4.1 GENERAL

The subject site has been cleared of any structures and all of the site consists of pervious areas, being exposed to topsoil. There is an existing retaining wall at the southern (rear) boundary of the subject site.

Bulk earthworks will be undertaken to achieve suitable building pads and hardstand pavement for a slab on-ground construction. Based on an assessment of the existing site levels and the proposed site levels, the extents of the proposed bulk earthworks are subsequent to the forming of building pads and the cut / fill depth is generally < 0.5m following topsoil removal.

A site geotechnical investigation and reporting by a suitably qualified Geotechnical Engineer is recommended to be completed prior to the detailed design phase of the development. The proposed earthworks over the subject site will be carried out under the appropriate level of geotechnical supervision and testing as set out in AS3798 – 2007 'Guidelines on Earthworks for Commercial and Residential Developments'.

4.2 ACID SULFATE SOILS

The LCC Acid Sulfate Soils (ASS) overlay is relative to land identified in the state planning policy as being subject to acid sulfate soils. The site has been reviewed against the Logan City Council Interactive Mapping which has identified that the subject site is located on land well above the 20.0m AHD level. It is considered that the risk of ASS being present is low and therefore, it is unlikely to encounter any acid sulfate soils at the site.

Based on the geographical location of the subject site the disturbance and / or removal of ASS's is not anticipated. However, any geotechnical assessment should also include an ASS investigation.

Refer to **Appendix E** for the ASS Map obtained from the CoGC City Plan Interactive Mapping System.

5.0 EROSION AND SEDIMENT MANAGEMENT

5.1 EROSION AND SEDIMENT CONTROL PHASES

All erosion and sediment control measures prior to and during construction of the proposed development is to be in accordance with IECA (Australasia) – Best Practice Erosion and Sediment Control Guidelines (current edition).

Refer to the **Appendix C** for the Erosion and Sediment Control Management Plans which detail the necessary controls at all phases of the development.

5.1.1 SITE ESTABLISHMENT PHASE

Prior to construction commencing, the following erosion and sediment control measures are to be implemented:

- Design and implement primary sediment control measures (e.g. sediment basin, sediment traps, catch drains check dams);
- Designate temporary topsoil stockpile location;
- Vehicle shakedown to be installed at site entry/exit;
- Install sediment fences around the proposed bulk earthworks site.

5.1.2 CONSTRUCTION PHASE

During construction phase, the following will be undertaken to minimise water quality impacts:

- All erosion and sediment controls to be maintained in an effective manner and inspected after each rainfall event, with restoration undertaken where necessary;
- Upon construction of pavements and field inlets, ensure sediment barriers are installed at each field inlet;
- Primary sediment control measures (i.e. sediment basin, sediment traps) must not be removed until the site's soil surface has minimum 70% coverage;
- Re-vegetation of all disturbed areas within two weeks of completion.

5.2 MONITORING AND MAINTENANCE

The site supervisor shall conduct the following monitoring and maintenance procedures for all implemented sediment and erosion controls:

- Daily inspections at the end of each construction day and after rainfall events;
- Immediate restoration and additional controls if water quality deterioration is detected downstream;
- Rectify failures in the stormwater system immediately to prevent uncontrolled damage.

5.3 RESPONSIBILITY AND REPORTING

- The contractor shall be responsible for monitoring the performance of all drainage control and erosion and sediment controls;
- Records of any failures to devices should be kept and reported to the Construction Manager;
- Regular inspections of the devices shall be reported to the Construction Manager; and
- Inspections of the devices after heavy rainfall shall be documented and reported to the Construction Manager.

6.0 STORMWATER MANAGEMENT

6.1 STORMWATER QUALITY AND QUANTITY MANAGEMENT

In addition, an approved Stormwater Management Plan for Yarrabilba Precinct 5A MIBA North prepared by *DesignFlow* dated June 2022 was completed as part of the ultimate industrial subdivision (PDA Ref. DEV2022/1306). Refer to **Appendix G**.

As such, the following stormwater quality / quantity improvement devices apply to the proposed development of the subject site.

- Two (2) 800m² bioretention basins located to the south-east of the subject site which has been designed to treat flows from the subject site during the post-development scenario.
- The use of the natural terrain and constructed road crossings (over drainage features and watercourses) to attenuate increased runoff from development and use of detention zones that have been constructed as part of Precincts 1, 2 and 3 which address the development precinct requirements as part of the total site flood management strategy.

Therefore, as a stormwater quality and quantity treatment device exists, no onsite stormwater detention or stormwater quality treatment devices are required to satisfy Council requirements as part of this development.

However, it is proposed to install the following Gross Pollutant Traps in order to satisfy EDQ development requirements.

- One (1) OceanProtect 'OceanGuard' litter baskets to be installed within each of the stormwater field inlets as part of the internal stormwater drainage network.

Further, refer to Section 6.5 which outlines a detention tank to be implemented due to the capacity limitations of the subject site lawful point of discharge.

Refer to **Appendix C** for the stormwater drainage plans for the proposed development.

Refer to **Appendix I** for the OceanProtect OceanGuard Operations & Maintenance Manual.

6.2 FLOOD ASSESSMENT

Based on an assessment of Logan City Council Interactive Mapping system the subject site has been identified to be within a flood hazard area, therefore the LCC flood hazard overlay code is triggered for planning and development.

However, the approved Stormwater Management Plan for Yarrabilba Precinct 5A MIBA North prepared by *DesignFlow* dated June 2022 was completed as part of the ultimate industrial subdivision (PDA Ref. DEV2022/1306) states that no flood management infrastructure is required or proposed as part of the ultimate subdivision due to the use of the natural terrain and constructed road crossings (over drainage features and watercourses) to attenuate increased runoff from development and due to the detention zones that have been constructed as part of Precinct 1, 2 and 3 which addresses development precinct requirements as part of a total site flood management strategy. Therefore, no further flood impact assessment is required. The approved Stormwater Management Plan for Yarrabilba Precinct 5A MIBA North prepared by *DesignFlow* also shows that the subject site is above the 1% AEP flood level.

Refer to **Appendix F** for the LCC flood report.

Refer to **Appendix GH** for the Stormwater Management Plan completed by *DesignFlow*.

Refer to **Appendix H** for the Plan of Subdivision.

6.3 LAWFUL POINT OF DISCHARGE

In accordance with the Queensland Urban Drainage Manual (QUDM) Fourth Edition 2016, when proposing a development, it must demonstrate that a lawful point of discharge (LPD) exists.

A lawful point of discharge exists at a particular location when the following two (2) tests can be demonstrated as per QUDM:

- (i) The location of the discharge is under the lawful control of the local government or other statutory authority from whom permission to discharge has been received. This can include a park, drainage or road reserve, stormwater drainage easement; and
- (ii) In discharging to that location, the discharge will not cause an actionable nuisance (i.e. a nuisance for which the current or some future neighbouring proprietor may bring an action or claim for damages arising out of the nuisance), or environmental or property damage.

Surface runoff from the existing site currently sheet flows from the northern and western boundaries of the existing site in a southern and easterly direction, before being captured by temporary berms at the southern and eastern boundaries of the site. Stormwater runoff then discharges via the temporary berms to the 900mm x 900mm field inlet pit located at the southern-eastern corner of the subject site where it is then conveyed via a Ø375mm FRC stormwater pipe to the stormwater network within Jobs Circuit.

Therefore, the existing 900mm x 900mm field inlet pit and associated Ø375mm FRC stormwater pipe located at the south-eastern corner of the subject site will be considered the lawful point of discharge (LPD) for the site. Furthermore, the 900mm x 900mm field inlet pit and associated Ø375mm FRC stormwater pipe will also satisfy points (i) and (ii) above.

6.4 PROPOSED DRAINAGE WORKS

As shown on the Driveway and Drainage Plan (See **Appendix C**) all roofwater runoff from the new industrial units will be directed via downpipes to their respective internal stormwater drainage network under the hardstand pavement (driveway / car park). Stormwater will then be conveyed into 900mm x 900mm field inlet pit and associated Ø375mm FRC stormwater pipe located at the southern-eastern corner of the subject site. Surface runoff from the hardstand pavement and landscaping areas will be collected by a series of field inlets (internal stormwater drainage network) and directed to the aforementioned existing field inlet pit and associated Ø375mm FRC stormwater pipe at the southern-eastern corner of the subject site. Stormwater runoff from the site within the existing stormwater drainage infrastructure will then discharge to the stormwater network aligned within Jobs Circuit where it will be conveyed downstream for stormwater quality / quantity management.

During major storm events (Q_{50} to Q_{100}) the hardstand pavement areas (car park) will be designed to contain overland flow (from the subject site only) within the pavement and will not be directed towards the new warehouse / industrial buildings. The hardstand pavement area will be designed with grades / falls to direct all overland flow (in a safe manner) to the existing stormwater infrastructure located within Jobs Circuit and Franklin Street. All stormwater flows, up to and including the Q_{100} storm event (or 1% AEP), will be captured and conveyed by the existing stormwater infrastructure within Jobs Circuit.

Refer to **Appendix C** for the stormwater drainage plans.

6.5 PROPOSED DRAINAGE WORKS – STORMWATER DETENTION TANK

As shown on the Driveway and Drainage Plan (See **Appendix C**) an underground stormwater drainage detention tank is to be constructed for the purpose of attenuating the subject site's stormwater major flows, generally 1% AEP (Q_{100}) flow. The purpose of the 'private' tank, spatially located within the subject site property boundaries, is to limit the controlled outflow from the tank before discharging to the nominated lawful point of discharge.

7.0 WATER RETICULATION

7.1 EXISTING WATER INFRASTRUCTURE

Information obtained from EDQ As Constructed Infrastructure Plans and a detailed survey plan identifies the following existing water reticulation infrastructure:

- A Ø150mm PVC-M potable water main is aligned within the Jobs Circuit verge on the same side as the site frontage.
- Several fire hydrants exist within the Jobs Circuit verge adjacent to the subject site.

Refer to **Appendix D** for the information obtained from the EDQ As Constructed Plans which identifies the alignment of the existing water reticulation main.

Refer to **Appendix A** for the existing as-constructed plans by *RPS Consulting*.

7.2 PROPOSED WATER CONNECTION

It is proposed to connect to the existing Ø150mm mPVC potable water main which is aligned within the Jobs Circuit verge in order to service the proposed development. Refer to **Appendix C** for the Sewer and Water Reticulation Plan, which identifies the proposed connection point.

7.3 PROPOSED WATER RETICULATION WORKS

As shown on the Sewer and Water Reticulation Plan prepared by *Owen Consulting* (Refer **Appendix C**) the following water reticulation works are proposed:

- A new water property service connection and water meter will be constructed in order to service the proposed development for potable water and fire-fighting purposes.
- The exact size and arrangement of the water property service and water meter is to be confirmed by the hydraulic consultant. The design of the water property service and water meter will be in accordance with the Water Supply Code of Australia – SEQ Service Providers Edition – Version 1.3 (August 2019).

8.0 SEWER RETICULATION

8.1 EXISTING SEWER INFRASTRUCTURE

Information obtained from EDQ As Constructed Infrastructure Plans and a detailed survey plan identifies the following existing sewer reticulation infrastructure:

- A Ø1050mm sewer manhole and associated Ø150mm PVC-U SN8 sewer main is aligned within the subject site at its south-eastern corner.
- There is a Ø150mm PVC-U sewer property connection extending from the sewer maintenance hole within the subject site.

Refer to **Appendix D** for the information obtained from the EDQ As Constructed Plans which identifies the alignment of the existing sewer gravity main.

Refer to **Appendix A** for the as-constructed survey plans by *RPS Consulting*.

8.2 PROPOSED SEWER CONNECTION

It is proposed to reuse the existing Ø150mm uPVC sewer property connection as identified within **Appendix A**. The sewer property connection within the subject site connects to the Ø1050mm sewer manhole located within the south-eastern corner of the subject site. Refer to **Appendix C** for the Sewer and Water Reticulation plan, which shows the connection point.

8.3 PROPOSED SEWER RETICULATION WORKS

As shown on the Sewer and Water Reticulation Plan prepared by *Owen Consulting* (Refer **Appendix C**) it is proposed to reuse the existing Ø150mm uPVC sewer property connection from the Ø1050mm sewer manhole that currently exists within the subject site. A Ø150mm uPVC SN8 sewer main aligned adjacent to the northern and eastern boundaries of the subject site shall connect the proposed development to the broader sewer network within the ultimate subdivision. The existing Ø150mm uPVC sewer property connection will service the new industrial development in accordance with the Gravity Sewerage Code of Australia – SEQ Service Providers Edition – Version 2.1 (September 2021).

9.0 ELECTRICAL AND TELECOMMUNICATIONS

Information obtained from Dial Before You Dig (DBYD) indicates that the site can be serviced by electrical infrastructure at the following locations:

- Underground electricity (Energex) infrastructure is aligned within Jobs Circuit.

Information obtained from DBYD indicates that the site can be serviced by telecommunications at the following locations:

- Telstra infrastructure is currently unavailable within Jobs Circuit.
- NBN infrastructure is currently unavailable within Jobs Circuit.

It is anticipated that telecommunication services will be made available as part of the ultimate subdivision, however it is recommended that the aforementioned is confirmed with an Electrical Engineer and / or the relevant asset owner.

It is recommended that service locating via electronic location and / or potholing be completed prior to detailed design and construction in order to confirm the exact location and depth of the existing underground utilities, where any proposed works (disturbance) is to be undertaken within the vicinity of the existing infrastructure.

Refer to **Appendix D** for asset owner information obtained from DBYD.

10.0 GAS

Data obtained from DBYD indicates that there is no APA gas main infrastructure located adjacent to the subject site. Refer to **Appendix D** for asset owner information obtained from DBYD.

11.0 CONCLUSION

Following our review of the existing water, sewer and stormwater infrastructure within and surrounding the subject site we hold the opinion that the subject site can be adequately serviced by the existing infrastructure without significant augmentation or modification.

12.0 APPENDICES

APPENDIX A – AS-CONSTRUCTED SURVEY PLANS

APPENDIX B – PROPOSED DEVELOPMENT PLANS

APPENDIX C – DETAILED CIVIL ENGINEERING DESIGN PLANS

APPENDIX D – AS-CONSTRUCTED INFRASTRUCTURE ASSETS / DBYD INFORMATION

APPENDIX E – LCC CONTOUR, ASS AND FLOOD MAP

APPENDIX F – LCC FLOOD REPORT

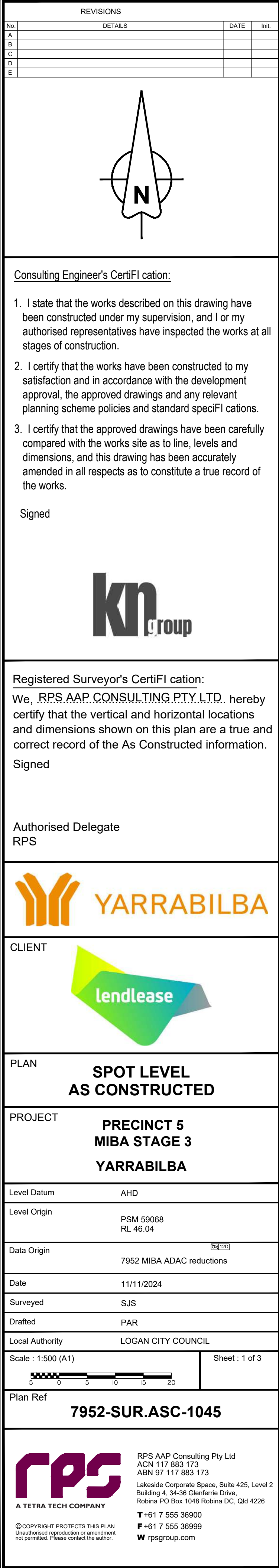
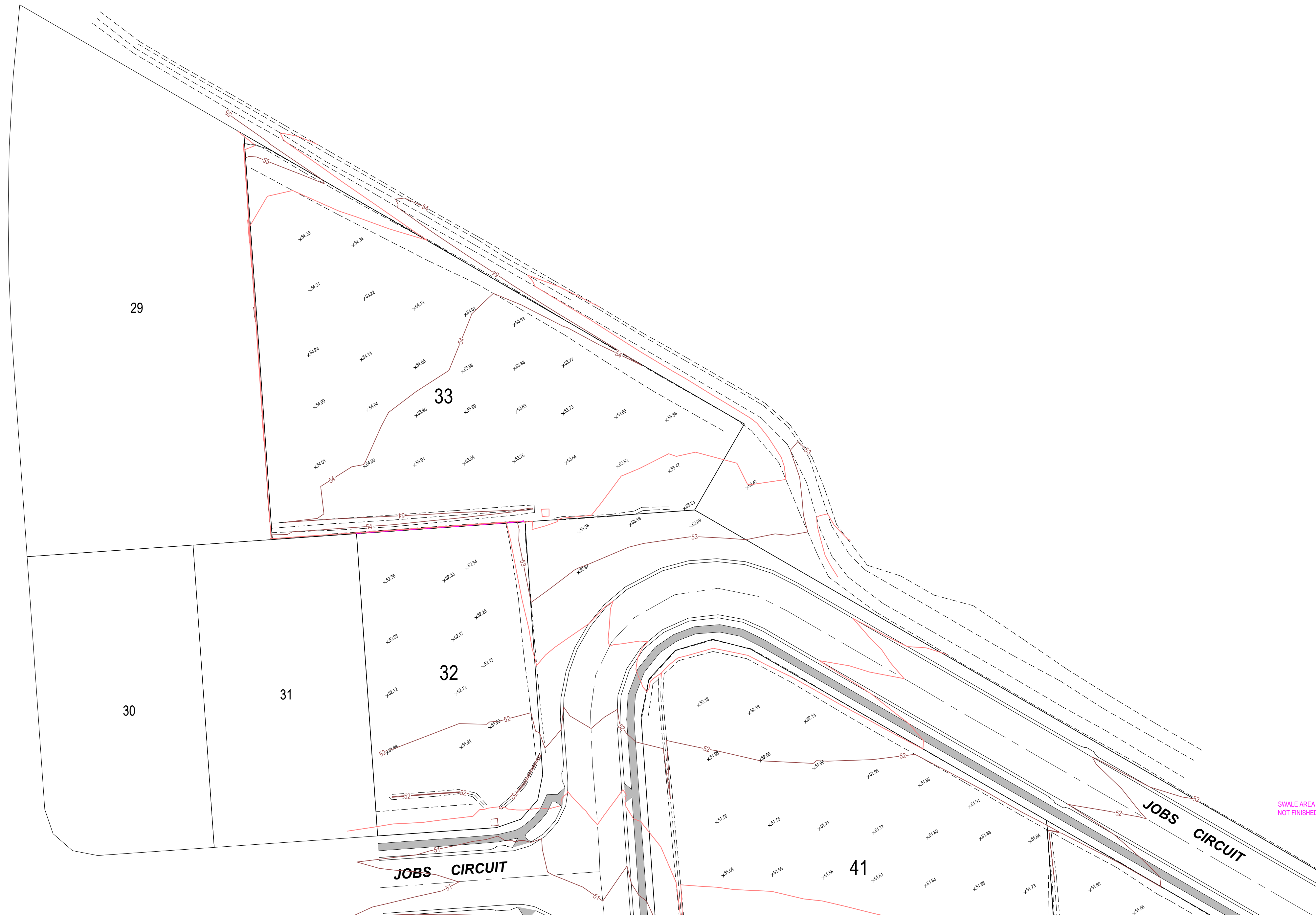
APPENDIX G - YARRABILBA PRECINCT 5A MIBA NORTH STORMWATER MANAGEMENT PLAN

APPENDIX H – YARRABILBA MILA PRECINCT 2A & PART OF PRECINCT 5 PLAN OF SUBDIVISION

APPENDIX I – OCEANPROTECT OCEANGUARD OPERATIONS & MAINTENANCE MANUAL

APPENDIX A

Existing As-Constructed Survey Plans



LEGEND

- SURFACE LEVEL
- - - CHANGE OF GRADE
- RETAINING WALL
- 0.5m CONTOUR
- 1.0m CONTOUR
- CONCRETE FOOTPATH



REVISIONS

No	DETAILS	DATE	INT
A			
B			
C			
D			
E			

Consulting Engineer's Certification:

1. I state that the works described on this drawing have been constructed under my supervision, and I or my authorised representatives have inspected the works at all stages of construction.

2. I certify that the works have been constructed to my satisfaction and in accordance with the development approval, the approved drawings and any relevant planning scheme policies and standard specifications.

3. I certify that the approved drawings have been carefully compared with the works site as to line, levels and dimensions, and this drawing has been accurately amended in all respects as to constitute a true record of the works.

Signed

Registered Surveyor's Certification:

We, RPS AAP CONSULTING PTY LTD, hereby certify that the vertical and horizontal locations and dimensions shown on this plan are a true and correct record of the As Constructed information.

Signed

Authorised Delegate
RPS

CLIENT

PLAN

**SPOT LEVEL
AS CONSTRUCTED**

PROJECT

**PRECINCT 5
MIBA STAGE 3
YARRABILBA**

Level Datum	AHD
Level Origin	PSM 59068 RL 46.04
Data Origin	7952 MIBA ADAC reductions
Date	11/11/2024
Surveyed	SJS
Drafted	PAR
Local Authority	LOGAN CITY COUNCIL

Scale : 1:500 (A1)

Sheet : 2 of 3

Plan Ref

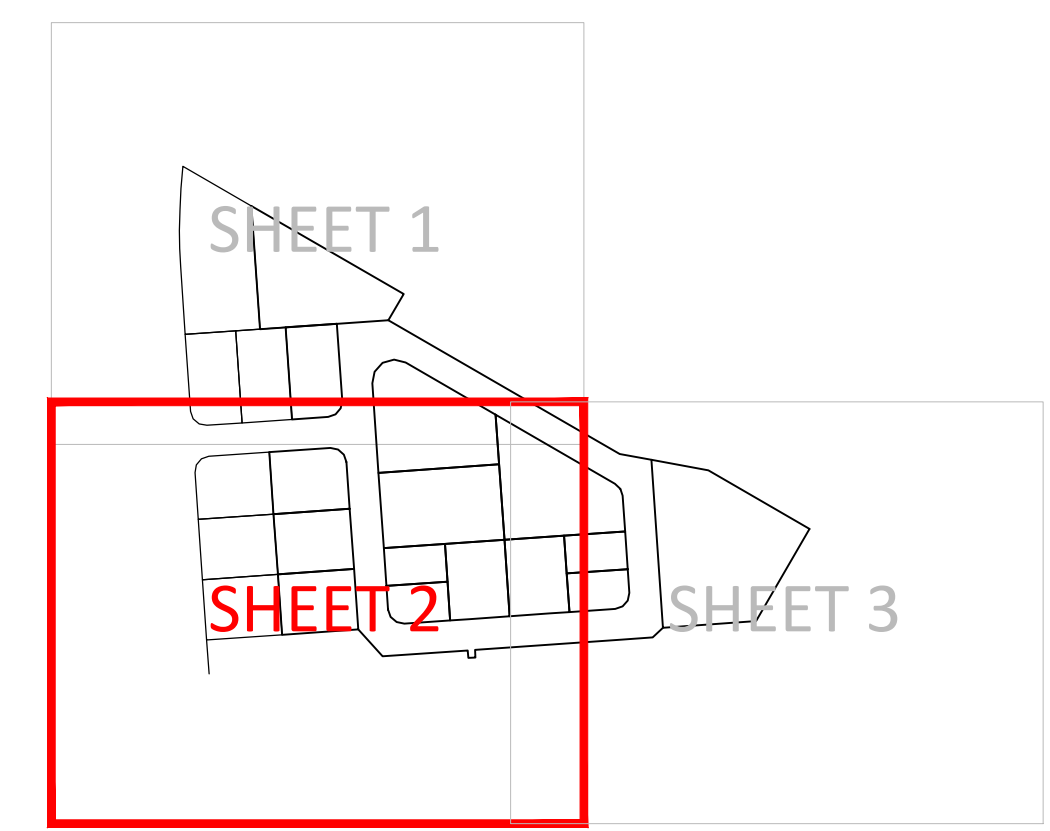
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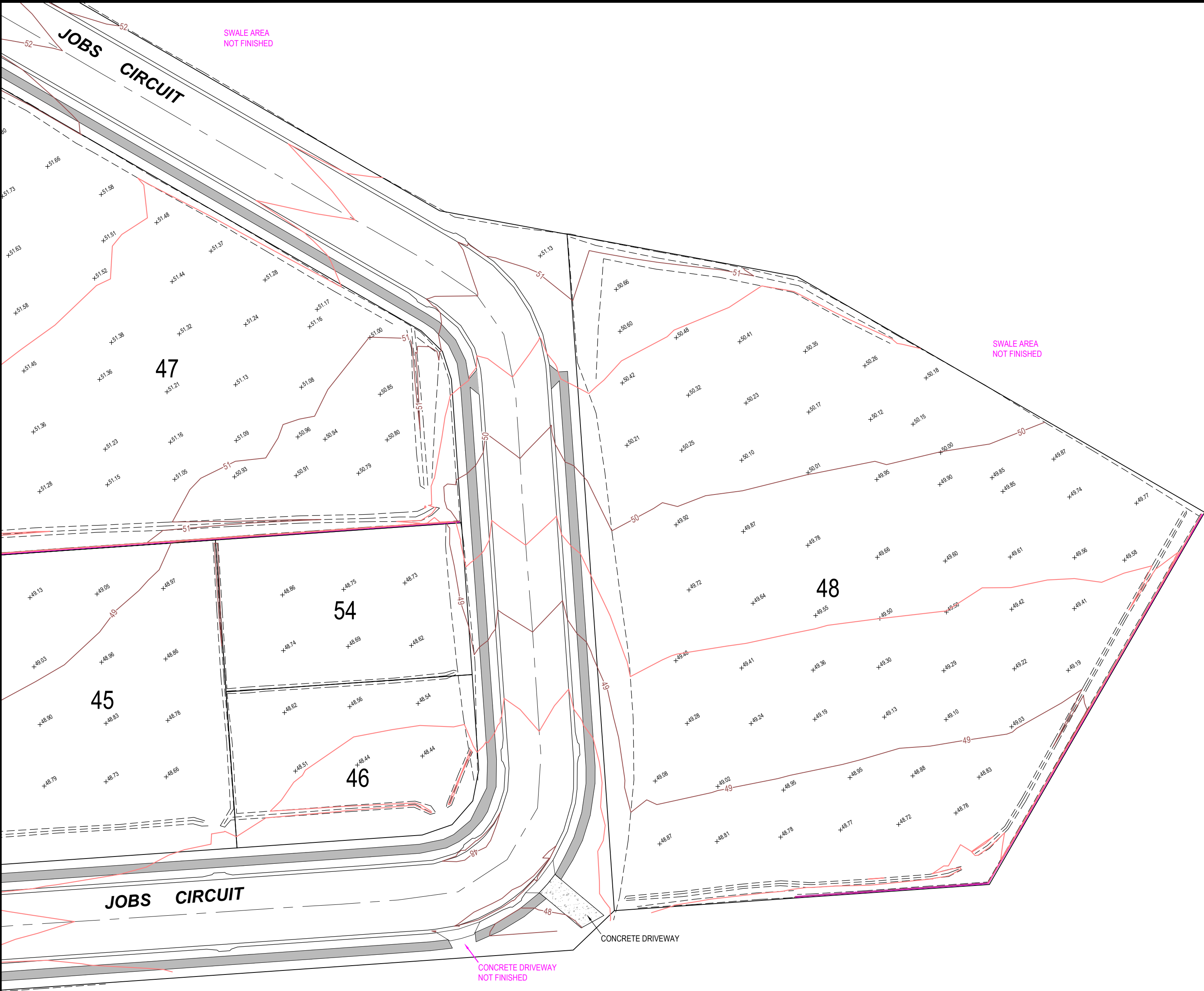
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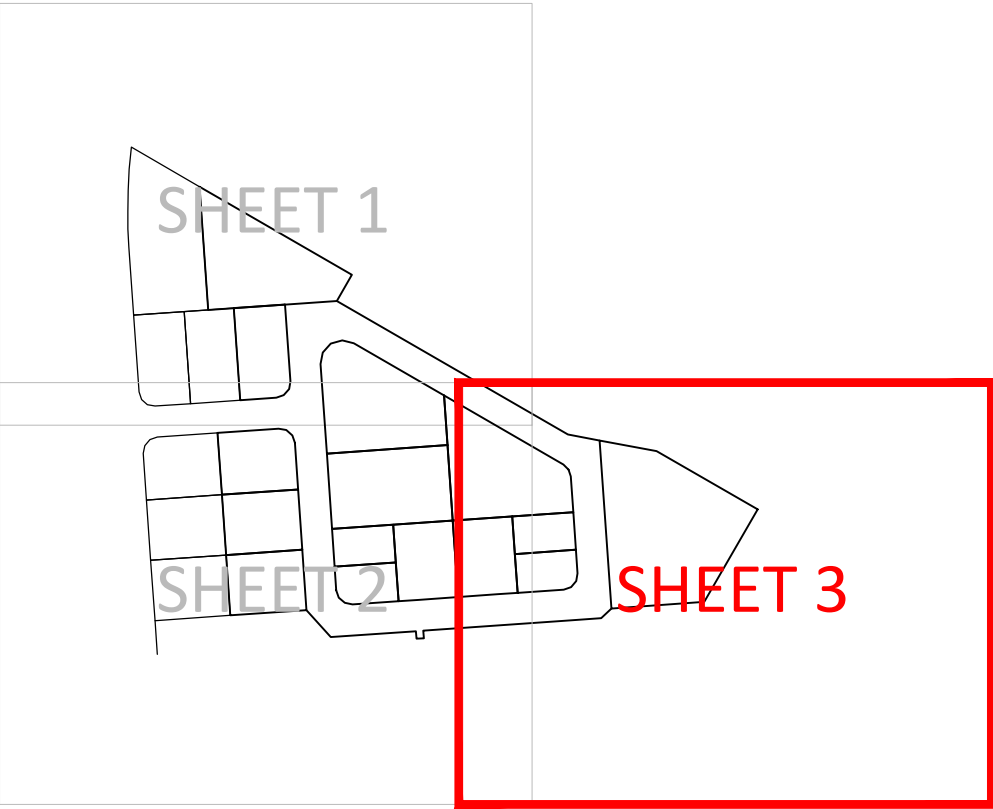
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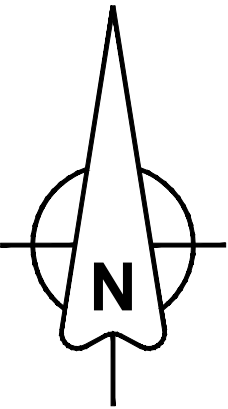




- LEGEND**
- SURFACE LEVEL
 - CHANGE OF GRADE
 - RETAINING WALL
 - 0.5m CONTOUR
 - 1.0m CONTOUR
 - CONCRETE FOOTPATH



REVISIONS			
No.	DETAILS	DATE	INR
A			
B			
C			
D			
E			



Consulting Engineer's Certification:

1. I state that the works described on this drawing have been constructed under my supervision, and I or my authorised representatives have inspected the works at all stages of construction.

2. I certify that the works have been constructed to my satisfaction and in accordance with the development approval, the approved drawings and any relevant planning scheme policies and standard specifications.

3. I certify that the approved drawings have been carefully compared with the works site as to line, levels and dimensions, and this drawing has been accurately amended in all respects as to constitute a true record of the works.

Signed



Registered Surveyor's Certification:

We, RPS AAP CONSULTING PTY LTD., hereby certify that the vertical and horizontal locations and dimensions shown on this plan are a true and correct record of the As Constructed information.

Signed

Authorised Delegate
RPS



PLAN
**SPOT LEVEL
AS CONSTRUCTED**

PROJECT
**PRECINCT 5
MIBA STAGE 3
YARRABILBA**

Level Datum	AHD
Level Origin	PSM 59068 RL 46.04
Data Origin	7952 MIBA ADAC reductions
Date	11/11/2024
Surveyed	SJS
Drafted	PAR
Local Authority	LOGAN CITY COUNCIL
Scale : 1:500 (A1)	Sheet : 3 of 3

Plan Ref
7952-SUR.ASC-1045

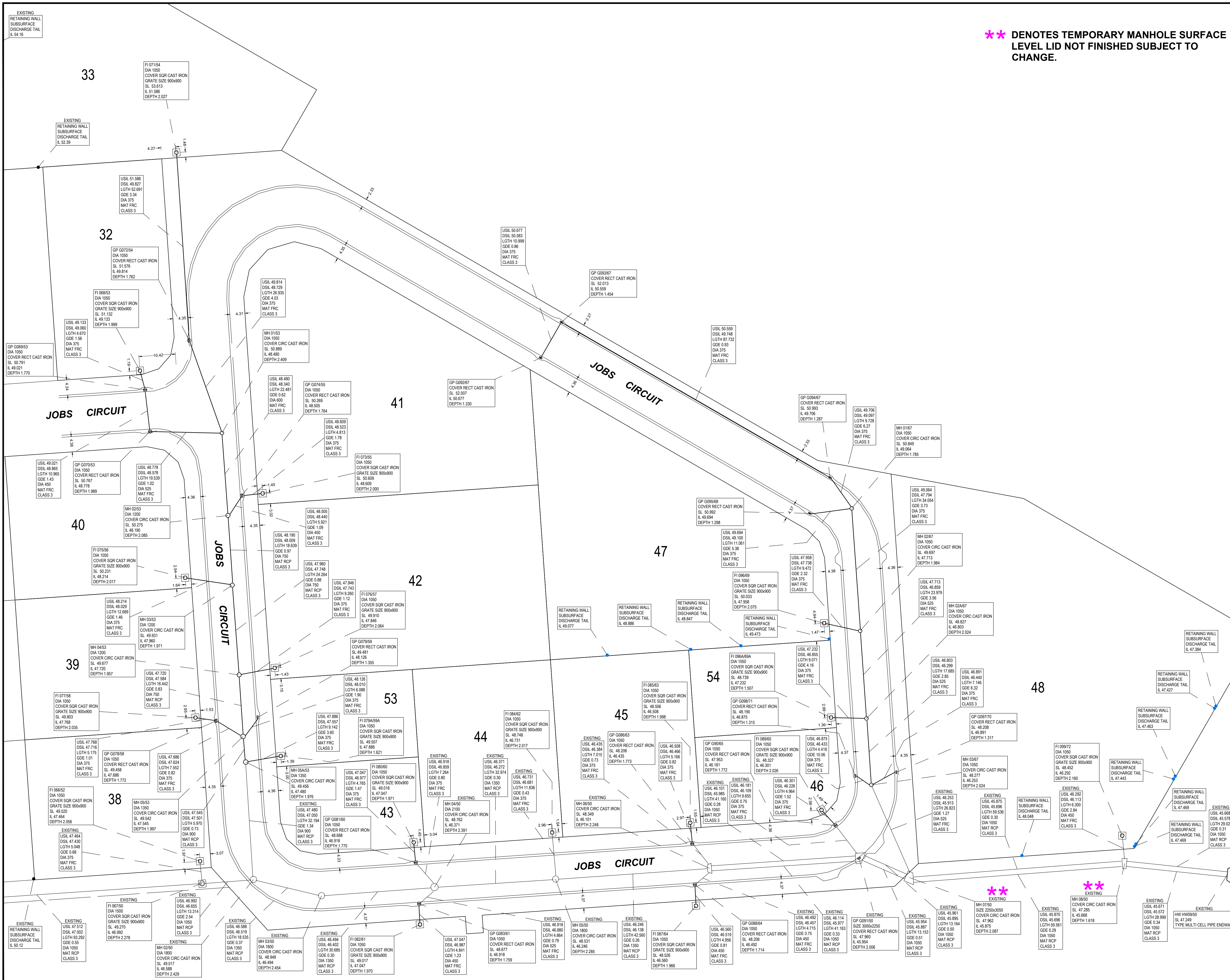


A TETRA TECH COMPANY

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RPS AAP Consulting Pty Ltd
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ABN 97 117 883 173
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*** DENOTES TEMPORARY MANHOLE SURFACE LEVEL LID NOT FINISHED SUBJECT TO CHANGE.

REVISIONS

No.	DETAILS	DATE	INR
A			
B			
C			
D			
E			

Consulting Engineer's Certification:

1. I state that the works described on this drawing have been constructed under my supervision, and I or my authorised representatives have inspected the works at all stages of construction.

2. I certify that the works have been constructed to my satisfaction and in accordance with the development approval, the approved drawings and any relevant planning scheme policies and standard specifications.

3. I certify that the approved drawings have been carefully compared with the works site as to line, levels and dimensions, and this drawing has been accurately amended in all respects as to constitute a true record of the works.

Signed

Registered Surveyor's Certification:

We, RPS AAP CONSULTING PTY LTD., hereby certify that the vertical and horizontal locations and dimensions shown on this plan are a true and correct record of the As Constructed information.

Signed

Authorised Delegate

RPS

CLIENT

PLAN

STORMWATER AS CONSTRUCTED

PROJECT

PRECINCT 5 MIBA STAGE 3 YARRABILBA

Level Datum

AHD

Level Origin

PSM 59068 RL 46.04

Data Origin

7952 MIBA ADAC reductions

Date

17/10/2024

Surveyed

SJS

Drafted

PAR

Local Authority

LOGAN CITY COUNCIL

Scale : 1:500 (A1)

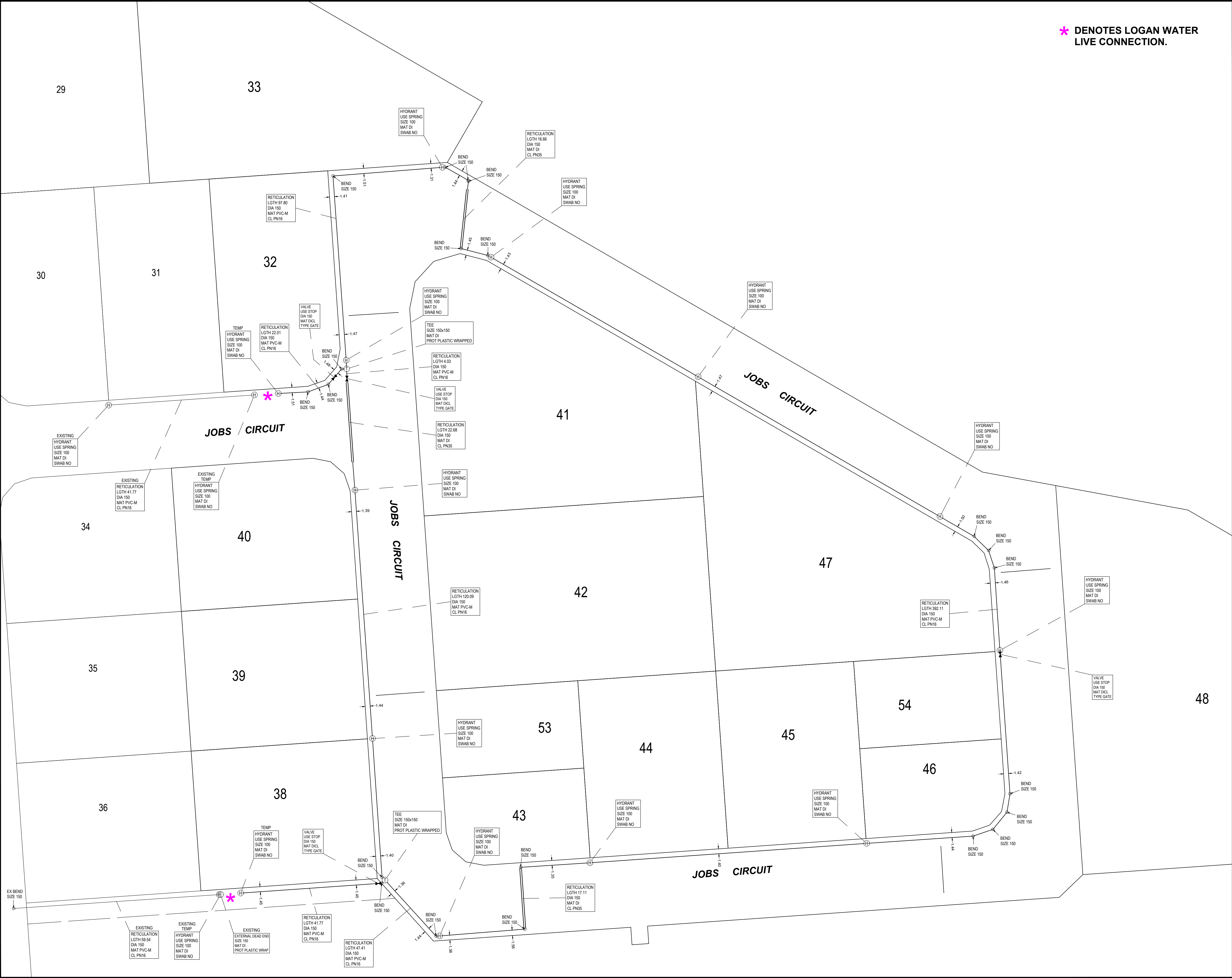
Sheet : 1 of 1

Plan Ref

7952-STM-ASC-1044

RPS AAP Consulting Pty Ltd
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ABN 97 117 883 173
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w rpsgroup.com



* DENOTES LOGAN WATER
LIVE CONNECTION.

REVISIONS

No.	DETAILS	DATE	INR
A			
B			
C			
D			
E			

Consulting Engineer's Certification:

1. I state that the works described on this drawing have been constructed under my supervision, and I or my authorised representatives have inspected the works at all stages of construction.

2. I certify that the works have been constructed to my satisfaction and in accordance with the development approval, the approved drawings and any relevant planning scheme policies and standard specifications.

3. I certify that the approved drawings have been carefully compared with the works site as to line, levels and dimensions, and this drawing has been accurately amended in all respects as to constitute a true record of the works.

Signed

Registered Surveyor's Certification:

We, **RPS AAP CONSULTING PTY LTD.** hereby certify that the vertical and horizontal locations and dimensions shown on this plan are a true and correct record of the As Constructed information.

Signed

Authorised Delegate
RPS

CLIENT

PLAN

**WATER
AS CONSTRUCTED**

PROJECT

**PRECINCT 5
MIBA STAGE 3
YARRABILBA**

Level Datum	AHD
Level Origin	PSM 59068 RL 46.04
Data Origin	7952 MIBA ADAC reductions
Date	10/10/2024
Surveyed	SJS
Drafted	PAR
Local Authority	LOGAN CITY COUNCIL

Scale : 1:500 (A1)

Sheet : 1 of 1

Plan Ref

7952-WAT.ASC-1043

RPS AAP Consulting Pty Ltd
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APPENDIX B

Proposed Development Plans



Proposed Warehouse Development at 31,43,47 Jobs Circuit, Yarrabilba, QLD

PROPOSED WAREHOUSE DEVELOPMENT

LOT 47 YARRABILBA MIBA, YARRABILBA QLD

COVER PAGE

DWG N° BD067-DA00-G by DF
DATE 2026.01.16



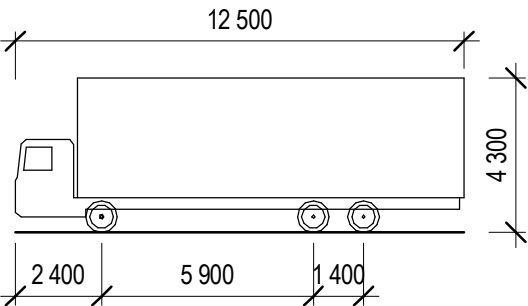
**bruac
design**
BUILDING DESIGN
0416 352 057

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PARKING SCHEDULE SITE 47

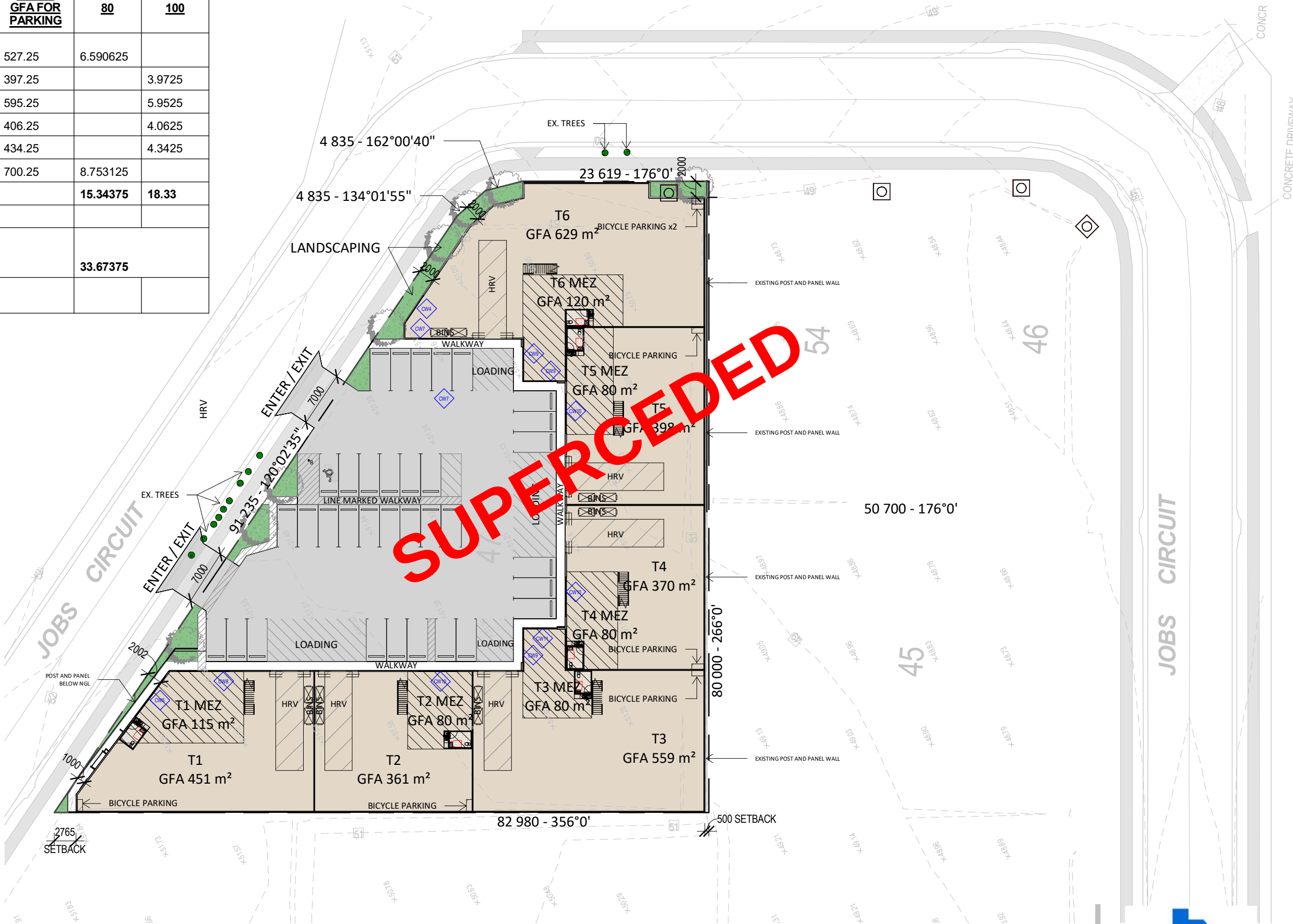
	GF	HRV	GF - HRV	MEZ	TOTAL GFA FOR PARKING	80	100
T1	451	43.75	407.25	120	527.25	6.590625	
T2	361	43.75	317.25	80	397.25		3.9725
T3	559	43.75	515.25	80	595.25		5.9525
T4	370	43.75	326.25	80	406.25		4.0625
T5	398	43.75	354.25	80	434.25		4.3425
T6	629	43.75	585.25	115	700.25	8.753125	
TOTALS	2768			555		15.34375	18.33
TOTAL GFA FOR PARKING	3323					33.67375	

SITE 47: SITE AREA	4,470m ²
T1 GF	451m ²
T1 MEZ	120m ²
T2 GF	361m ²
T2 MEZ	80m ²
T3 GF	559m ²
T3 MEZ	80m ²
T4 GF	370m ²
T4 MEZ	80m ²
T5 GF	398m ²
T5 MEZ	80m ²
T6 GF	629m ²
T6 MEZ	115m ²
TOTAL GF	2768m ²
TOTAL MEZ	555m ²
TOTAL GFA	3323m ²
CAR PARKING	34 PARKINGS
BICYCLE PARKING	7 PARKINGS



HRV - HEAVY RIGID VEHICLE

OVERALL LENGTH	12.500m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.300m
MIN. BODY GROUND CLEARANCE	0.417m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	6.0sec
CURB TO CURB TURNING RADIUS	12.500m



SITE PLAN & GROUND FLOORS

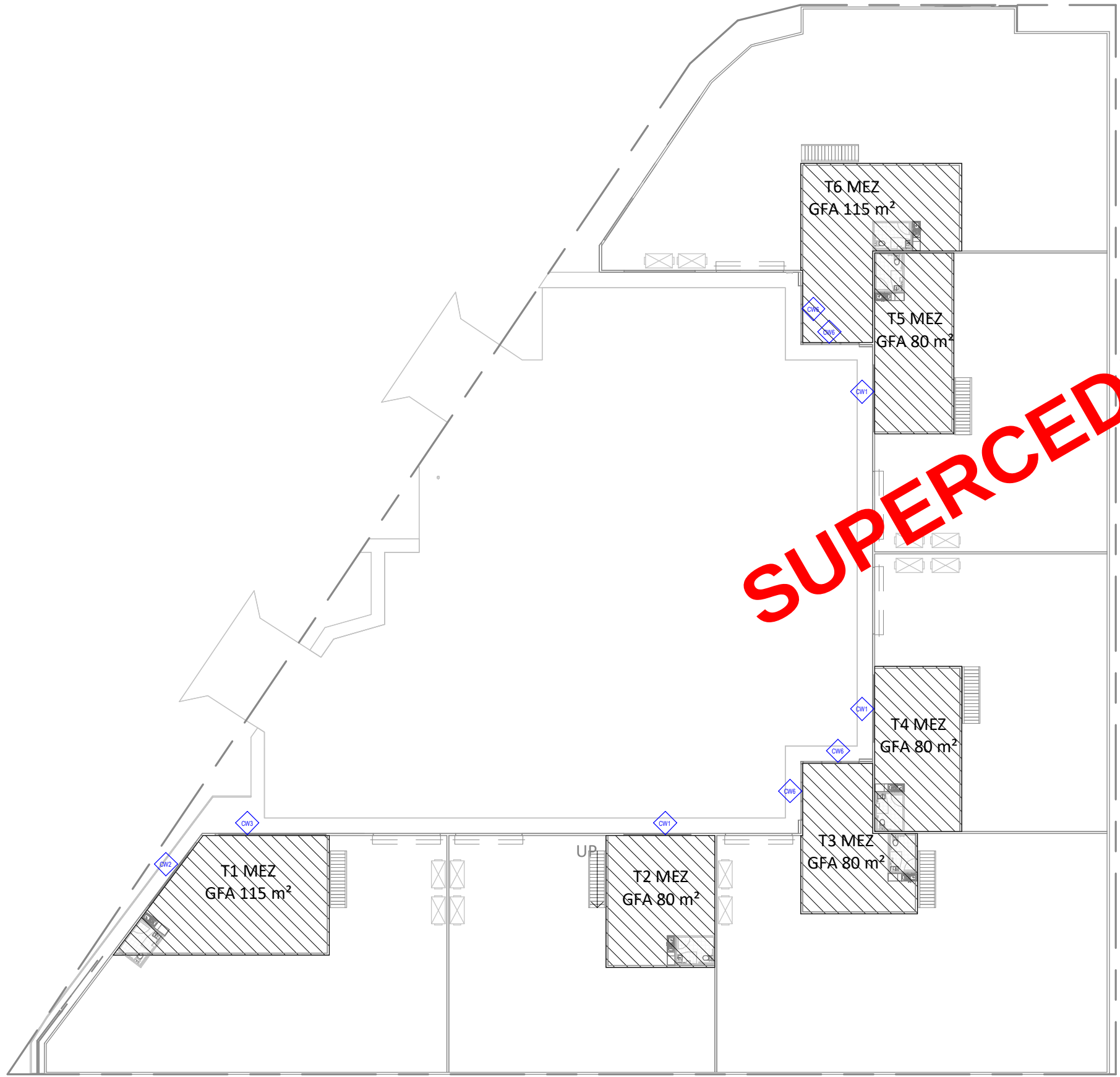
1 : 500

PROPOSED WAREHOUSE DEVELOPMENT

LOT 47 YARRABILBA MIBA, YARRABILBA QLD

PROPOSED SITE & FLOOR PLANS

DWG N° BD067-DA01-I by DF
DATE 2026.01.16



SUPERCEDED

LEVEL 1 OFFICES

1 : 350

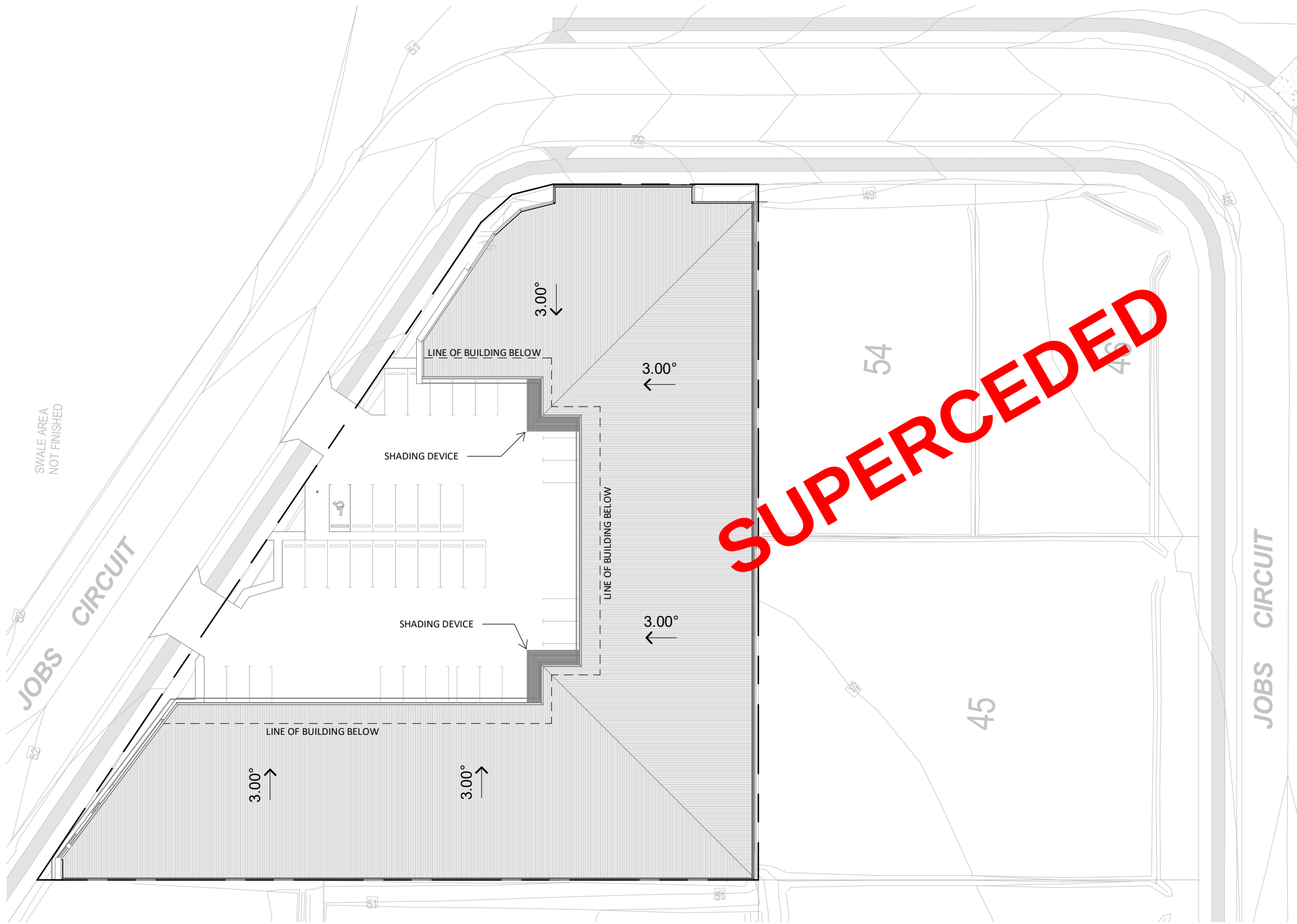
PROPOSED WAREHOUSE DEVELOPMENT

LOT 47 YARRABILBA MIBA, YARRABILBA QLD

PROPOSED L1 FLOOR PLANS

DWG N° BD067-DA03-E by DF
DATE 2026.01.16

**bruac
design**
BUILDING DESIGN
0416 352 057



ROOF NOTES

UNLESS NOTED OTHERWISE:

1. ROOF SHEETING TO BE MONOCLAD 0.42 BMT, COLORBOND SHALE GREY FINISH
2. RIDGE VENT TO BE CORRUGATED 0.42 BMT, COLORBOND SHALE GREY FINISH
3. FLASHINGS, GUTTERS AND SUMPS TO BE COLORBOND
4. BOX GUTTERS TO BE ZINCALUME FINISH AND HAVE MIN. 1:200 FALL
5. WAREHOUSE AND OFFICE ROOFS TO HAVE 60mm THICK LIGHTWEIGHT FOILED FACED BLANKET INSULATION WITH BASE BLANKET R-VALUE OF R1.3, SUPPORTED WITH SAFETY MESH.
6. DOWNPIPES (DP) COLOURS TO BE PAINTED TO MATCH WALL COLOUR BEHIND, DOWNPIPES TO PVC.
7. SERVICES CONTRACTOR TO ALLOW FOR FLASHING AND SEALING OF ALL ROOF PENETRATIONS FOR THEIR RESPECTIVE WORKS. THE FLASHING AND SEALING OF ALL PENETRATIONS IS TO BE CARRIED OUT BY THE ROOFING CONTRACTOR FOR THE PROJECT. ALL PENETRATIONS 150mm AND GREATER REQUIRE FULL LENGTH PAN FLASHINGS TO EXTEND NO LESS THAN 500mm BEYOND THE LOWER SIDE OF THE PENETRATION
8. APPROVED 'GREY' COLOUR ROOFING SEALANT TO BE USED
9. ACCESS TO THIS ROOF IS BY MECHANICAL ACCESS APPARATUS ONLY. ACCESS SHOULD BE BY TRAINED CONTRACTORS. PERSONEL ACCESSING THE ROOF MUST PROVIDE THEIR OWN RISK ANALYSIS AND PROTECTION SYSTEM. ROOF IS DESIGNED TO SUPPORT PLANT EQUIPMENT SHOWN ON THIS DRAWING ONLY

ROOF PLAN

1 : 500

PROPOSED WAREHOUSE DEVELOPMENT

LOT 47 YARRABILBA MIBA, YARRABILBA QLD

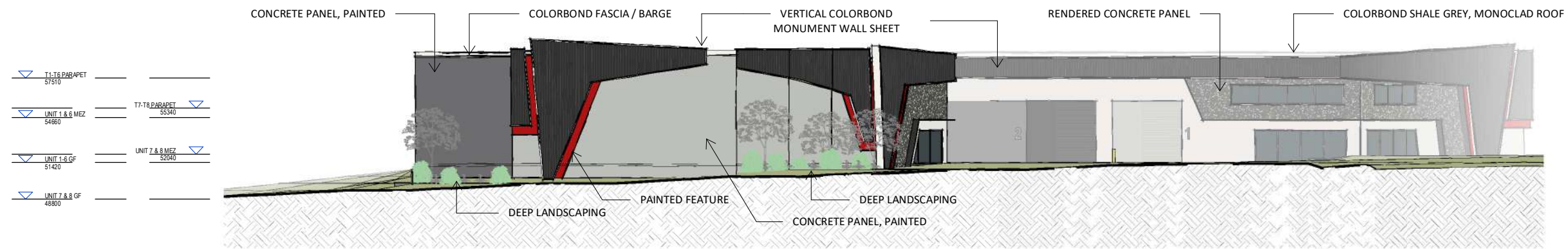
ROOF PLAN

DWG N° BD067-DA04-A by DF
DATE 2026.01.16



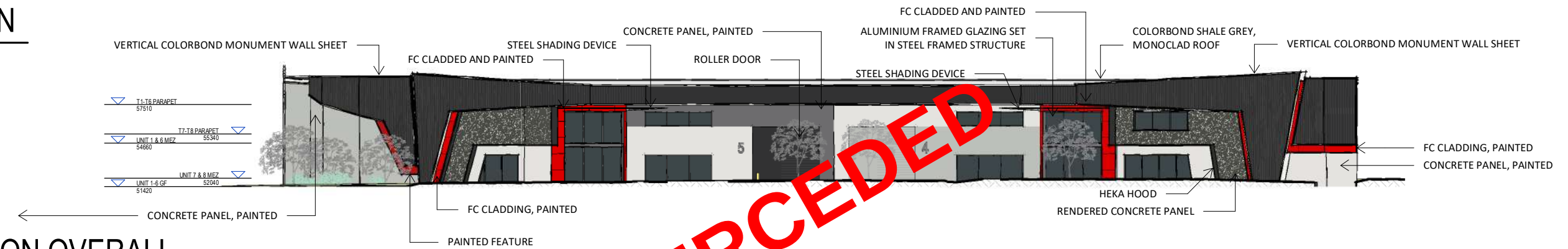
EAST ELEVATION

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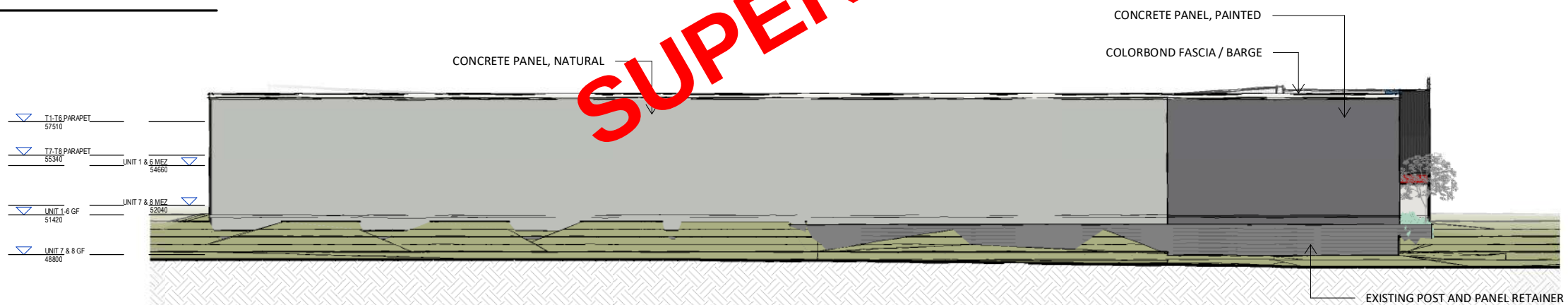
NORTH ELEVATION OVERALL

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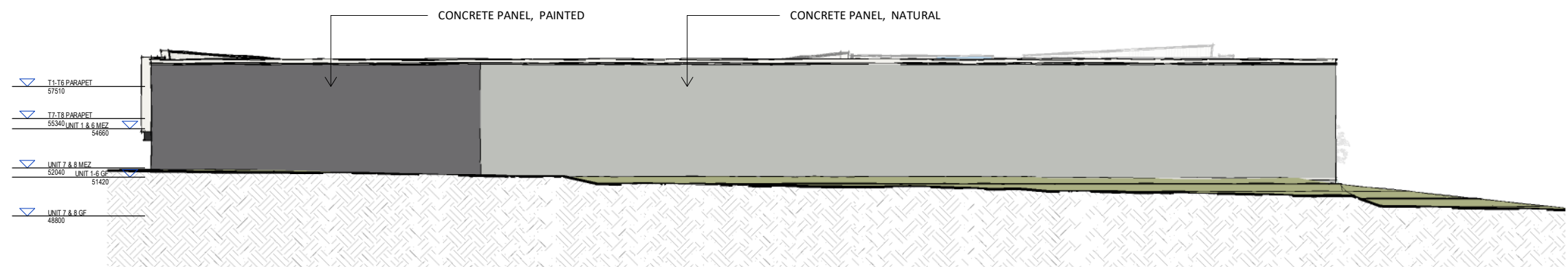
SOUTH ELEVATION OVERALL

1 : 350



WEST ELEVATION OVERALL

1 : 350

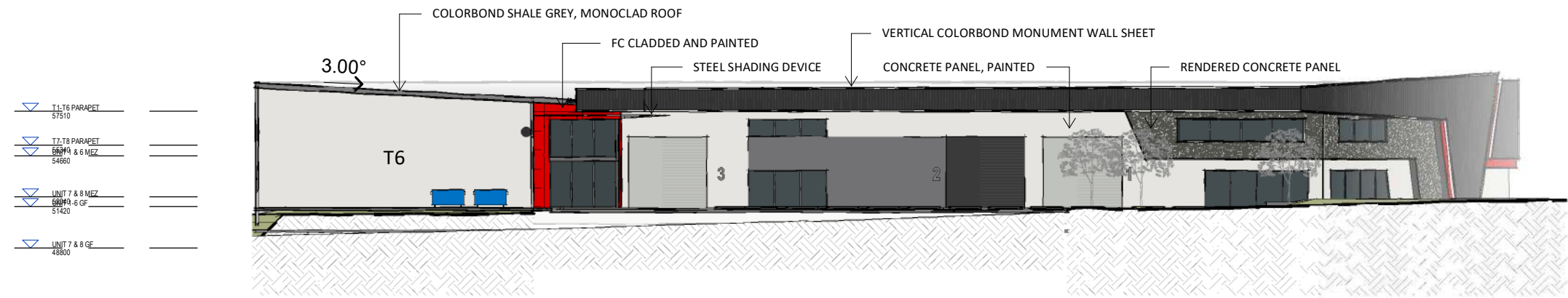


PROPOSED WAREHOUSE DEVELOPMENT

LOT 47 YARRABILBA MIBA, YARRABILBA QLD

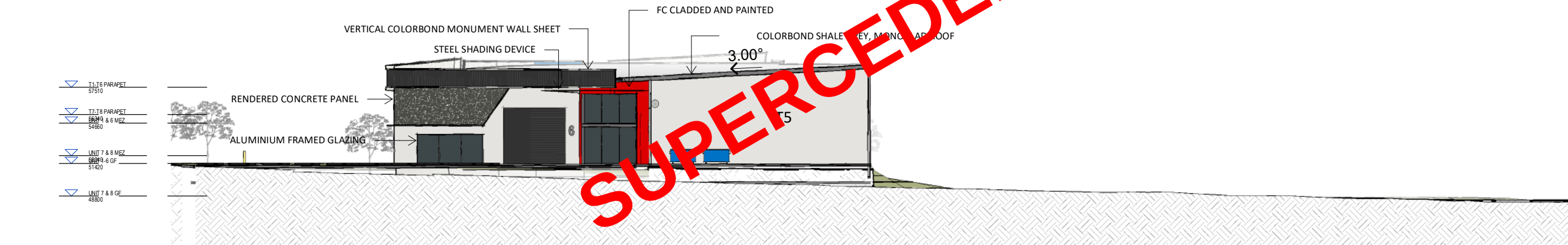
ELEVATIONS

DWG N° BD067-DA05-G by DF
DATE 2026.01.16



EASTERN ELEVATION INTERNAL

1 : 350



WESTERN ELEVATION INTERNAL

1 : 350

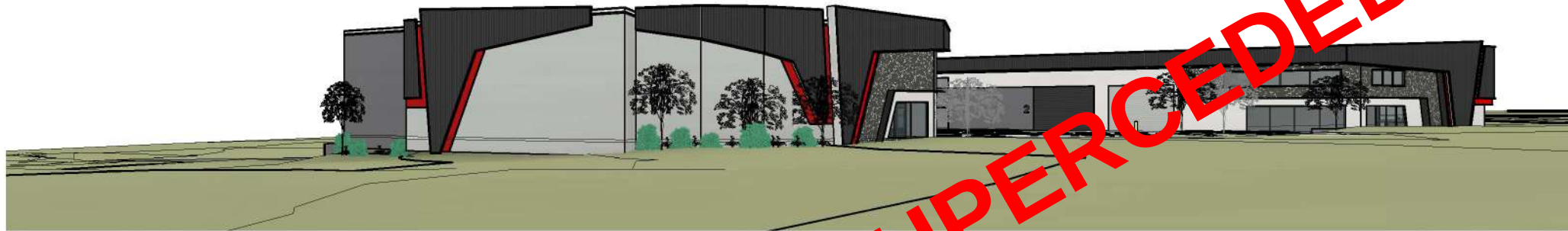
WINDOW SCHEDULE (CW)				
WINDOW NO	QTY	DIMENSIONS (mm)		FINISH / COLOUR
		HEIGHT	WIDTH	
CW1	3	1140	5000	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW2	1	1400	5000	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW3	1	1400	8000	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW4	1	1756	4598	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW5	1	2313	6400	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW6	4	2400	4250	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW7	1	2400	5300	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW8	1	2400	6600	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW9	3	3000	4250	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW10	3	2400	5000	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED
CW11	1	2948	4325	POWDER COATED NON REFLECTIVE ALUMINIUM AND ANIT-REFLECTIVE CLEAR GLASS TO BE USED

PROPOSED WAREHOUSE DEVELOPMENT

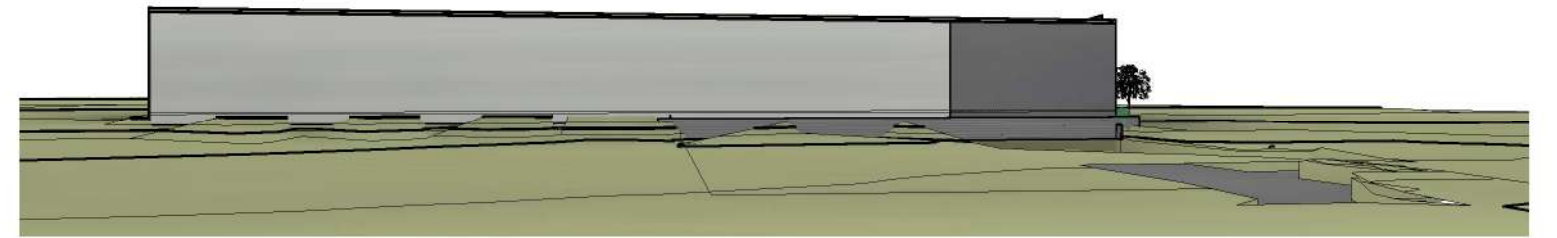
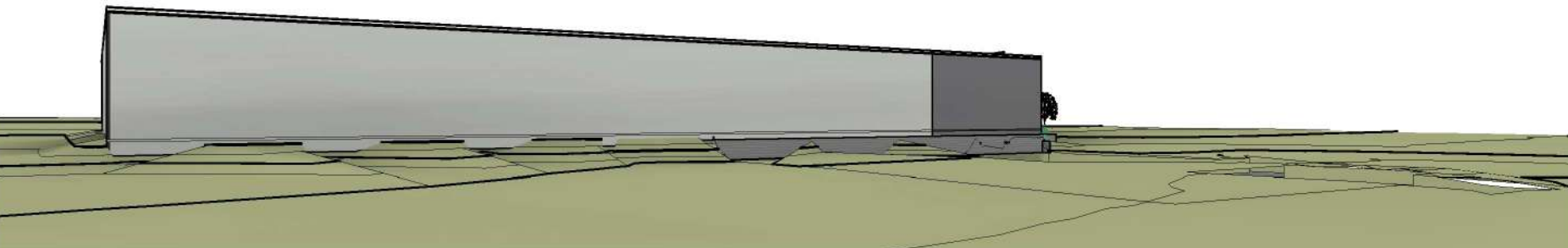
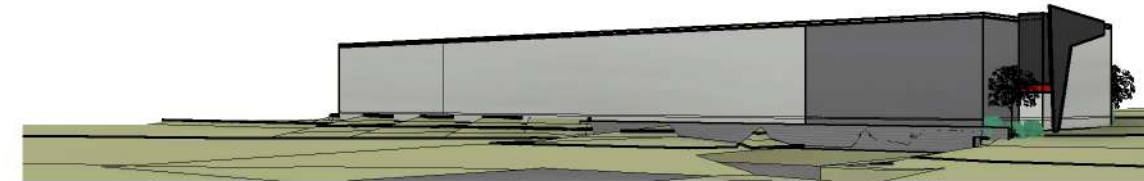
LOT 47 YARRABILBA MIBA, YARRABILBA QLD

ELEVATIONS, SECTIONS & SCHEDULES

DWG N° BD067-DA06-G by DF
DATE 2026.01.16



SUPERCEDED



PROPOSED WAREHOUSE DEVELOPMENT

LOT 47 YARRABILBA MIBA, YARRABILBA QLD

PERSPECTIVE VIEWS

DWG N° BD067-DA07-G by DF
DATE 2026.01.16



**bruac
design**
BUILDING DESIGN
0416 352 057

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APPENDIX C

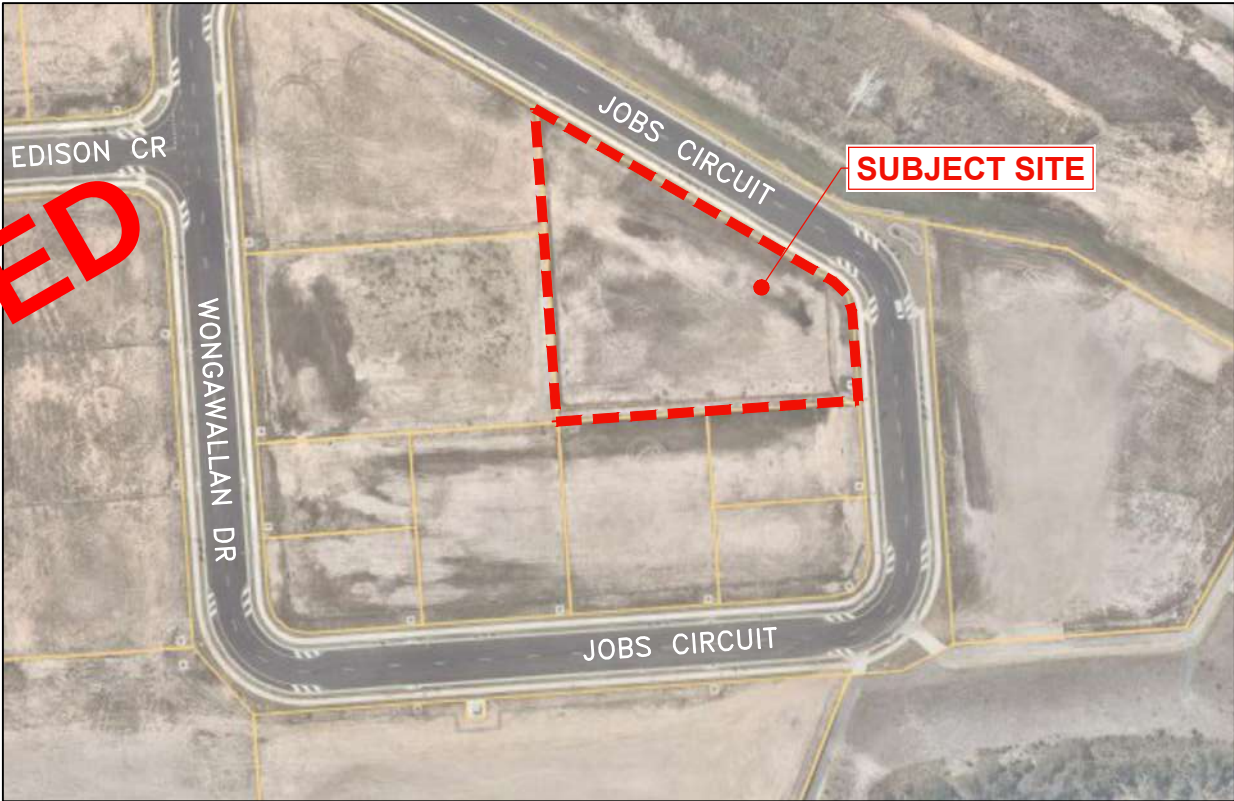
Detailed Civil Engineering Design Plans

VIZ DEVELOPMENTS QLD PTY LTD

YARRABILBA WAREHOUSE DEVELOPMENT - CIVIL WORKS

LOT 47 JOBS CIRCUIT, YARRABILBA, QLD 4207

DRAWING SCHEDULE		
DRAWING No.	REV.	DRAWING TITLE
2025106-OPW-001	A	DRAWING SCHEDULE AND LOCALITY PLAN
2025106-OPW-002	A	DRAWING SET NOTES SHEET 1 OF 2
2025106-OPW-003	A	DRAWING SET NOTES SHEET 2 OF 2
2025106-OPW-004	A	EXISTING FEATURES PLAN
2025106-OPW-010	A	BULK EARTHWORKS PLAN
2025106-OPW-011	A	BULK EARTHWORKS SECTIONS
2025106-OPW-020	A	DRIVEWAY AND DRAINAGE PLAN
2025106-OPW-021	A	DRIVEWAY GRADING PLAN SHEET
2025106-OPW-022	A	SECTIONS AND DETAILS SHEET
2025106-OPW-023	A	LINEMARKING AND SIGNAGE PLAN
2025106-OPW-024	A	STORMWATER DRAINAGE CATCHMENT PLAN
2025106-OPW-025	A	STORMWATER DRAINAGE LONGITUDINAL SECTIONS
DRAWING SCHEDULE - SEWER&WATER		
DRAWING No.	REV.	DRAWING TITLE
2025106-OPW-030	A	SEWER AND WATER DRAWING SCHEDULE AND LOCALITY PLAN
2025106-OPW-031	A	SEWER AND WATER OVERALL RETICULATION PLAN
DRAWING SCHEDULE - VXO		
DRAWING No.	REV.	DRAWING TITLE
2025106-VXO-001	A	VEHICLE CROSSOVER (VXO) DRAWING SCHEDULE AND LOCALITY PLAN
2025106-VXO-002	A	VEHICLE CROSSOVER (VXO) PLAN AND DETAILS - VXO 1
2025106-VXO-003	A	VEHICLE CROSSOVER (VXO) PLAN AND DETAILS - VXO 2



SOURCE: NEARMAP/ AUG-2025

LOCALITY PLAN
SCALE 1: 1000

DETAIL AND LEVEL SURVEY	OWEN REV-B
SITE BENCHMARK: PSM59068 DATUM: RL. 46.040m (AHD) THIS DRAWING SET AND DESIGN IS BASED UPON THE FOLLOWING: LEVEL AND FEATURE (DETAIL) SURVEY DETAIL SURVEY BY: SURVEYOR: KN GROUP DRAWING NUMBER: 23-101-04 REVISION: A IMPORTANT NOTE: THE AFOREMENTIONED DETAIL SURVEY IS BASED ON A LOCAL SITE GRID AND ORIENTATION NOT MGA. THE PRINCIPAL CONTRACTOR IS TO COORDINATE ANY CONSTRUCTION SET-OUT, INCLUDING SURVEY CONTROL, WITH THE AFOREMENTIONED SURVEYOR. BOUNDARY IDENTIFICATION SURVEY IMPORTANT NOTE: THIS DESIGN PACKAGE IS NOT BASED UPON AN IDENTIFICATION SURVEY. PRIOR TO ANY CONSTRUCTION SET-OUT AND / OR ACTUAL CONSTRUCTION THIS DESIGN IS SUBJECT TO REVIEW AND POSSIBLE AMENDMENT TO SUIT AN IDENTIFICATION SURVEY - BEING ISSUED BY THE PRINCIPAL'S SURVEYOR.	

NOTE - PLAN COORDINATION	OWEN REV-B
THIS DESIGN IS BASED UPON COORDINATION WITH THE PROJECT CONSULTANTS DESIGNS MADE AVAILABLE. THE PRINCIPAL CONTRACTOR (PC) IS TO REVIEW THE CIVIL DESIGN IN COORDINATION WITH THE PROJECT CONSULTANTS DESIGNS AND THE PC'S CONSTRUCTION METHODOLOGY AND ADVISE OWEN OF ANY DISCREPANCIES PRIOR TO ANY CONSTRUCTION	
IMPORTANT NOTE - ELECTRONIC FILES	OWEN REV-B
1. ANY CONTRACTOR THAT UTILISES ANY ELECTRONIC FILES PROVIDED BY OWEN CONSULTING FOR THE PURPOSE OF ANY SET-OUT, LEVELING OR ANY OTHER USE IS TO NOTIFY OWEN CONSULTING IMMEDIATELY OF ANY DISCREPANCY BETWEEN ANY ELECTRONIC FILES AND ANY PLANS. CONTINUING WITH ANY WORKS IS AT THE RISK OF THE CONTRACTOR.	
NOTE - ARCHITECTURAL COORDINATION	OWEN REV-B
THIS DRAWING SET AND DESIGN IS BASED UPON THE FOLLOWING ARCHITECTURAL / BUILDING DESIGN LAYOUT BY: CONSULTANT: BRUAC DESIGN GROUND FLOOR / SITE PLAN NUMBER: BD067-DA01-I REVISION: I REVISION DATE: 16.01.26	

PROPERTY DESCRIPTION:
LOT 47 ON SP345729

DESIGN STANDARD AND SPECIFICATIONS (CURRENT EDITIONS)	
SEWER AND WATER	- WATER SUPPLY CODE OF AUSTRALIA (WSA) - LOGAN CITY COUNCIL PLANNING POLICY 5 - INFRASTRUCTURE - SEQ W&S D&C CODE
STORMWATER MANAGEMENT	- WATER SENSITIVE URBAN DESIGN TECHNICAL DESIGN GUIDELINES - HEALTHY WATERWAYS - QUEENSLAND URBAN DRAINAGE MANUAL (QUDM) - LOGAN CITY COUNCIL PLANNING POLICY 5 - INFRASTRUCTURE
ROADWORKS, DRIVEWAYS, VEHICLE CROSSINGS, FOOTPATHS AND VEHICLE PARKING	- QUEENSLAND COMPLETE STREETS - GUIDELINES FOR URBAN STREET DESIGN - AUSTRALIAN STANDARD AS2890 - AUSTROADS - GUIDE TO TRAFFIC MANAGEMENT PART 6A: PEDESTRIAN AND CYCLIST - DTMR - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - LOGAN CITY COUNCIL PLANNING POLICY 5 - INFRASTRUCTURE
SOIL EROSION	INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) - BEST PRACTICE EROSION & SEDIMENT CONTROL
EARTHWORKS	- AUSTRALIAN STANDARD AS3798 - GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS - LOGAN CITY COUNCIL PLANNING POLICY 5 - INFRASTRUCTURE

Owen.

The Rocket, Suite 903, Level 9
203 Robina Town Centre Dr,
Robina QLD 4226
admin@owenconsulting.com.au
P.(07) 5572 0702 A.C.N 121 686 208

CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE	
SCALE 20 10 0 20 40 60 80 100 1:2000	
DO NOT SCALE FROM THIS DRAWING - IF IN DOUBT ASK	
DESIGNED DW	APPROVED
DRAWN DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD
REVIEWED SK	SHON KEALEY 2025 106 2643

NORTH	
DATUM AHD(m)	

CLIENT	
VIZ DEVELOPMENTS QLD PTY LTD	
PROJECT	
WAREHOUSE DEVELOPMENT - CIVIL WORKS LOT 47 ON SP345729 LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207	
A	29.01.26 ISSUED FOR EDQ APPROVAL
ISSUE	DATE
ISSUE DESCRIPTION	

CLIENT	
VIZ DEVELOPMENTS QLD PTY LTD	
PROJECT	
WAREHOUSE DEVELOPMENT - CIVIL WORKS LOT 47 ON SP345729 LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207	
A	29.01.26 ISSUED FOR EDQ APPROVAL
ISSUE	DATE
ISSUE DESCRIPTION	

TITLE	
DRAWING SCHEDULE AND LOCALITY PLAN	
PROJECT No	2025106 LOT 47
DRAWING No	2025106-OPW-001

AMDT
A

NOTES - GENERAL	OWEN REV-B
1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS, ALL COUNCIL CONDITIONS (REFER TO NOTES - SUMMARY), ANY OTHER PROJECT CONSULTANT DRAWINGS & SPECIFICATIONS AND ANY WRITTEN INSTRUCTION. 2. IF CONTRACTOR IDENTIFIES ANY DISCREPANCIES BETWEEN ANY SPECIFICATION THEN IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE SUPERINTENDENT. 3. WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL / RELEVANT AUTHORITY STANDARD DRAWINGS AND SPECIFICATIONS UNLESS NOTED OTHERWISE IN THE PROJECT DRAWINGS OR SPECIFICATIONS. 4. COUNCIL'S STANDARD DRAWINGS AND ENGINEERING GUIDELINES ARE TO BE ADOPTED UNLESS STATED OR SHOWN OTHERWISE. 5. THE CONTRACTOR SHALL COORDINATE THEIR WORK WITH ELECTRICAL & TELECOMMUNICATION PROVIDERS TO ENABLE THE SERVICES TO BE INSTALLED WITHOUT INTERRUPTION. 6. SETOUT INFORMATION IN ELECTRONIC FORMAT IS AVAILABLE UPON REQUEST. 7. ALL LEVELS SHOWN ON THIS DRAWING SET ARE TO AHD. 8. LEVELS FOR CONNECTION TO ANY EXISTING SERVICES / ROAD PAVEMENTS / SURFACE LEVELS SHOWN ON THE DRAWINGS MAY BE VARIED ON-SITE WITH APPROVAL FROM THE SUPERINTENDENT TO ALLOW FOR NEAT FINISH. 9. ALL WORKS ARE TO MATCH NEATLY INTO EXISTING ROADS / PAVEMENTS, SERVICES AND SURFACE LEVELS TO THE SATISFACTION OF COUNCIL / RELEVANT AUTHORITY AND THE SUPERINTENDENT. 10. NOTWITHSTANDING THE EXTENT OF WORKS SHOWN ON THE DRAWINGS, THE CONTRACTOR IS NOT PERMITTED TO CARRY OUT WORKS OUTSIDE THE EXTENT OF THE SITE WITHOUT FIRST OBTAINING THE PERMISSION OF THE ADJOINING LANDOWNER AND SUPERINTENDENT APPROVAL. 11. ANY TREES OR VEGETATION OUTSIDE THE LIMIT OF WORKS THAT ARE TO BE REMOVED OR TRIMMED ARE TO BE IDENTIFIED BY THE CONTRACTOR. ANY WORK IS TO BE APPROVED BY THE SUPERINTENDENT. 12. NO CONSTRUCTION MATERIALS OR MACHINERY SHALL BE STOCKPILED OR STORED ON ANY ADJACENT PROPERTIES OR GOVERNMENT AGENCY / COUNCIL LAND OR ROAD RESERVE WITHOUT PRIOR APPROVAL. 13. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING COUNCIL'S CONSTRUCTION TOLERANCES. ANY WORKS DEEMED NON-ACCEPTABLE BY COUNCIL OR THE SUPERINTENDENT SHALL BE RECTIFIED BY THE CONTRACTOR AT THE CONTRACTORS EXPENSE. 14. ALL PERMITS AND APPROVALS REQUIRED FOR CONSTRUCTION AND TRAFFIC MANAGEMENT SHALL BE OBTAINED BY THE CONTRACTOR AT THE CONTRACTORS EXPENSE. 15. THE SUBSTITUTION OF A MATERIAL OR METHOD SHALL BE APPROVED BY THE SUPERINTENDENT. ANY SUBSTITUTION DOES NOT ALWAYS INDICATE A VARIATION AND THE CONTRACTOR SHALL ADVISE THE SUPERINTENDENT OF ANY ANTICIPATED VARIATION OF THE SUBSTITUTION. 16. A NETWORK OF SURVEY CONTROL MARKS (X,Y,Z) SHALL BE PROVIDED BY THE PRINCIPAL SURVEYOR (UNLESS AGREED OTHERWISE) PRIOR TO THE COMMENCEMENT OF WORKS. 17. THE PRINCIPAL CONTRACTOR IS TO ENSURE THAT SURVEY CONTROL STATIONS ARE NOT DAMAGED OR DISTURBED IN ANY WAY BY CONSTRUCTION ACTIVITIES. COSTS INCURRED BY THE PRINCIPAL'S SURVEYOR RESULTING FROM DAMAGE, MOVEMENT OR ALTERATION OF SURVEY PEGS SHALL BE THE RESPONSIBILITY OF THE PRINCIPAL CONTRACTOR. 18. THE PRINCIPAL CONTRACTOR AND ANY SUB-CONTRACTORS SHALL GAIN ACCESS TO THE SITE AT LOCATIONS APPROVED BY THE SUPERINTENDENT AND THE RELEVANT AUTHORITY. 19. THE PRINCIPAL CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND PROVISION OF ANY TEMPORARY BRACING, SUPPORTING, PROTECTION TO ANY EXISTING FENCING, PIPEWORK, CONDUITS, CULVERTS AND ANY OTHER ABOVE OR UNDERGROUND STRUCTURE OR FEATURE. 20. DO NOT OBTAIN DIMENSIONS FROM SCALING. IF IN DOUBT ASK. 21. NATURAL SURFACE LEVELS SHOWN ON ANY DRAWINGS ARE INDICATIVE ONLY AND SUBJECT TO SITE INVESTIGATION.	

WH&S AND ENVIRONMENTAL	OWEN REV-B
IT IS THE RESPONSIBILITY OF THE PRINCIPAL CONTRACTOR TO ENSURE THAT ALL CONSTRUCTION WORKS COMPLIES WITH THE WH&S ACT 2011 AND THAT ENVIRONMENTAL CONTROL MEASURES ARE ALLOWED FOR TO THE SATISFACTION OF COUNCIL. THIS IS TO INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING: • MAINTAIN SITE CONSTRUCTION DIARY • ENSURE ALL PERSONS ENTERING THE SITE SATISFY ALL WH&S AND INSURANCE REQUIREMENTS • INSTALLATION OF SITE SIGNAGE • TEMPORARY FENCING TO THE FULL EXTENT OF THE SITE AS WOULD BE REASONABLY EXPECTED • DUST AND NOISE CONTROL AND WORKING HOURS • SAFE AND DEDICATED SITE ACCESS • TRAFFIC MANAGEMENT - ALL APPROVED TRAFFIC MANAGEMENT PLAN/S ARE KEPT ON-SITE INCLUDING ALL RELEVANT TRAFFIC CONTROL PERMITS, QPS APPROVALS AND TMR PERMITS.	

NOTES - EXISTING SERVICES	OWEN REV-C
1. THE CONTRACTOR SHALL OBTAIN THE LOCATION OF ALL SERVICES BY A 'DIAL BEFORE YOU DIG' (DBYD) SEARCH, ELECTRONIC DETECTION AND POTHOLING. IT IS THE CONTRACTORS RESPONSIBILITY TO PROTECT THESE SERVICES PRIOR TO WORKING IN THE VICINITY. ANY DAMAGE WILL BE REPAIRED AT THE CONTRACTORS EXPENSE. 3. THE CONTRACTOR IS TO CONFIRM THE ACTUAL LOCATIONS AND DEPTHS OF ALL EXISTING UNDERGROUND SERVICES PRIOR TO CONSTRUCTION WORKS AND COMPARE WITH CURRENT DESIGN PLANS. REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT. 4. WHERE A CONNECTION IS MADE TO ANY ELEMENT OF EXISTING INFRASTRUCTURE, THEN THE LEVEL OF THAT INFRASTRUCTURE MUST BE CHECKED BY THE CONTRACTOR PRIOR TO CONSTRUCTION WORKS AND COMPARED WITH CURRENT DESIGN PLANS. REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT. 5. WHERE NEW SERVICES CROSS OTHER NEW SERVICES OR WHERE NEW SERVICES CROSS EXISTING SERVICES THE CONTRACTOR SHALL CHECK MINIMUM RELEVANT AUTHORITY CLEARANCES BY CHECKING LEVELS ON-SITE AND ADVISE THE SUPERINTENDENT PRIOR TO CONSTRUCTION IF THE MINIMUM CLEARANCE CAN NOT BE ACHIEVED. 6. OWEN CONSULTING ACCEPTS NO RESPONSIBILITY FOR ANY EXISTING SERVICES / INFRASTRUCTURE LOCATED ON-SITE THAT ARE NOT SHOWN ON THESE DRAWINGS OR THE ACCURACY OF EXISTING SERVICES LOCATIONS AND LEVELS SHOWN ON THESE DRAWINGS.	
EXISTING SERVICES LOCATION - QUALITY LEVEL DEFINITION THIS DESIGN RELIES UPON EXISTING SERVICES INFORMATION DERIVED FROM THE FOLLOWING SOURCES - WHERE APPLICABLE: • THE SPATIAL LOCATION OF EXISTING SERVICES AT GROUND SURFACE LOCATED BY A REGISTERED SURVEYOR (QL-A) • THE SPATIAL LOCATION (HORIZONTAL & VERTICAL) OF UNDERGROUND SERVICES BY SURVEY REFERENCE (QL-B) • INFORMATION PROVIDED BY SERVICE OWNER AND / OR RELEVANT AUTHORITY (DEEMED QL-C) • DBYD SEARCH RESULTS (QL-D)	

NOTES - SUMMARY - TO BE READ	OWEN REV-B
1. FOR THE PURPOSE OF THESE NOTES THE TERM ' COUNCIL ' REFERS TO THE LOCAL GOVERNMENT AUTHORITY THAT HAS JURISDICTION OVER THE AREA OF WORK. 2. FOR THE PURPOSE OF THESE NOTES THE TERM ' RELEVANT AUTHORITY ' REFERS TO THE GOVERNMENT OR OTHERWISE AUTHORITY THAT HAS JURISDICTION OVER THE ELEMENT OF WORK BEING CONSTRUCTED. 3. BY UNDERTAKING ANY WORK ON-SITE IT IS ACCEPTED THAT THE PRINCIPAL CONTRACTOR AND ANY SUB-CONTRACTOR HAVE READ AND UNDERSTAND ALL NOTES. 4. THESE NOTES ARE COPYRIGHT OF OWEN CONSULTING.	

NOTES - ROADWORKS	OWEN REV-B
1. CONTRACTOR TO ALLOW FOR STAGING OF ROADWORKS (AS REQUIRED) TO LIMIT THE IMPACT OF THE CONSTRUCTION ON EXISTING TRAFFIC. CONTRACTOR TO MAKE DUE ALLOWANCE FOR ALL PERMIT MANAGEMENT. 2. CONTRACTOR TO CONFIRM CONDUIT REQUIREMENTS FROM LANDSCAPING AND ELECTRICAL/COMMS DRAWINGS AND ALLOW FOR THESE PRIOR TO ANY PAVEMENT CONSTRUCTION. 3. THE CONTRACTOR SHALL ENSURE THAT ALL KERB AND CHANNEL GRADES SHALL NOT FALL BELOW 0.2% AT ANY POINT IRRESPECTIVE OF ROAD CENTRELINE GRADING OR INTERSECTION DESIGN LEVELS. 4. THE CONTRACTOR IS TO ENSURE ALL KERBING DRAINS FREELY AND IS TO NOTIFY THE SUPERINTENDENT IMMEDIATELY IF THIS WILL NOT OCCUR. 5. PAVEMENT SUB-BASE TO EXTEND 150mm (MIN) BEHIND BACK OF KERB OR AS PER COUNCIL STANDARDS. 6. CONTRACTOR TO REINSTATE ANY DAMAGE TO THE EXISTING KERB / FOOTPATH AND PROVIDE 'B' GRADE TURF BEHIND ANY REINSTATED KERB AND TO ALL DISTURBED AREAS. 7. ALL LAYERS OF PAVEMENT WORKS ARE TO BE PROOF ROLLED AND TESTED IN ACCORDANCE WITH COUNCIL REQUIREMENTS, SPECIFICATIONS AND TO THE APPROVAL OF COUNCIL AND THE SUPERINTENDENT. 8. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE SUPERINTENDENT A MINIMUM OF 24 HOURS NOTICE TO ALLOW FOR PAVEMENT INSPECTIONS TO BE BOOKED. 9. SUB-SOIL DRAINAGE SHALL BE INSTALLED UNDER ALL NEW KERB & CHANNEL AND GRADED AT 0.5% (MIN) TO CONNECT WITH DRAINAGE PITS.	

NOTES - STORMWATER DRAINAGE	OWEN REV-B
1. ALL DRAINAGE STRUCTURES ARE TO BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING DOCUMENTS: • DTMR STANDARD DRAWINGS AND SPECIFICATIONS (WHERE APPLICABLE). • COUNCIL DESIGN GUIDELINES, STANDARD DRAWINGS AND SPECIFICATIONS. • ANY MANUFACTURERS STANDARD DRAWINGS AND SPECIFICATIONS. 2. ALL STORMWATER RIGID PIPES ARE TO BE RCP CLASS 2 (MIN). ALL FLEXIBLE PIPES ARE TO BE uPVC CLASS SN8 RRJ OR AS SPECIFIED. 3. THE CLASS OF STORMWATER PIPE SPECIFIED DOES NOT ALLOW FOR ALL CONSTRUCTION VEHICLE LOADINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THERE IS NO DAMAGE TO STORMWATER PIPES ALREADY LAID DURING THE COURSE OF CONSTRUCTION. 4. VIBRATORY TRENCH ROLLER ALLOWED AT DEPTHS OVER 600mm ABOVE TOP OF PIPE. 5. VIBRATORY TRENCH RAMMER ALLOWED AT DEPTHS OVER 450mm ABOVE TOP OF PIPE. 6. COMPACTION WHEELS ARE NOT TO BE USED WITHOUT PERMISSION FROM THE SUPERINTENDENT. 7. ALL TRENCH BACKFILL MATERIAL UNDER THE PAVEMENT SHALL BE CBR 15 OR APPROVED EQUIVALENT. 8. STEEL GRATES AND FRAMES ARE TO BE FABRICATED FROM MILD STEEL AND HOT DIP GALVANISED. ALL GRATES ARE TO BE CLASS D (UNO) AND BICYCLE SAFE IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3996 UNLESS NOTED OTHERWISE. 9. MANHOLE SETOUT POINTS TO CENTRE OF MH. 10. STORMWATER PIPE LENGTHS ARE CALCULATED FROM CENTRE OF PIT/CHAMBER. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE ACTUAL LENGTHS REQUIRED. 11. ANY TEMPORARY STORMWATER DIVERSIONS ARE TO BE APPROVED BY THE SUPERINTENDENT PRIOR TO CONSTRUCTION.	

NOTES - EARTHWORKS	OWEN REV-B
1. ALL EARTHWORKS TO BE CONSTRUCTED TO COUNCIL STANDARDS AND SPECIFICATIONS, AS3798-2007. 2. FIELD DENSITY AND TESTING SHALL BE UNDERTAKEN BY A NATA APPROVED TESTING AUTHORITY IN ACCORDANCE WITH AS3798-2007 AND AS1289. THE FOLLOWING MINIMUM STANDARDS ARE REQUIRED TO BE ACHIEVED: • RESIDENTIAL ALLOTMENTS / PARKS = 95% DDR • PAVEMENTS (>300mm BELOW SUBGRADE) = 95% DDR • PAVEMENTS (<300mm BELOW SUBGRADE) = 98% DDR • BUILDING PAD = 98% DDR 3. ALL EARTHWORKS TO BE CARRIED OUT AT +/-2% OF OPTIMUM MOISTURE CONTENT. 4. FILL OBTAINED FROM SITE CUT IS TO BE CLEAN MATERIAL FREE FROM ANY ORGANIC MATERIAL, ROCK (>75mmØ), DEBRI AND BUILDING MATERIALS. 5. IMPORTED CONTROLLED FILL MATERIAL IS TO BE AS SPECIFIED AND MATERIALS QUALITY REPORT ISSUED TO SUPERINTENDENT. 6. FILL IS TO BE PLACED IN LAYERS NOT EXCEEDING 200mm LOOSE THICKNESS. 7. ALL ALLOTMENTS SHALL GRADE AT A MINIMUM SLOPE OF 1V IN 200H TO THE FRONT BOUNDARY UNLESS DESIGNED OTHERWISE. 8. MAXIMUM BATTER SLOPES TO ANY AREAS OF CUTTING / FILLING ARE TO BE 1V TO 4H UNLESS DESIGNED OTHERWISE. 9. ALL TOPSOIL STRIPPED FROM WORK AREAS SHALL BE STOCKPILED FOR LATER RE-SPREADING TO ALL ALLOTMENTS, BERGES, BATTERS AND DISTURBED AREAS. 10. FENCING TO BE PLACED ON THE DOWNSTREAM SIDE OF ALL STOCKPILE SITES. 11. METHOD OF DISPOSAL OF ALL WASTE MATERIAL SHALL MEET ALL LOCAL / STATE GOVERNMENT REQUIREMENTS AND IS THE RESPONSIBILITY OF THE PRINCIPAL CONTRACTOR. 12. NOTWITHSTANDING THE LIMITS OF CUT AND FILL SHOWN ON THE DRAWINGS THE LIMITS AND FINAL PROFILE MAY BE VARIED ON SITE BY THE SUPERINTENDENT DURING CONSTRUCTION. 13. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE SUPERINTENDENT IF EXISTING GROUND LEVELS SHOWN VARY FROM ACTUAL GROUND LEVEL ENOUGH TO SIGNIFICANTLY EFFECT EARTHWORKS QUANTITIES, TRIGGER A VARIATION OR ALTER DESIGN.	

NOTES - AS CONSTRUCTED (ADAC)	OWEN REV-C
1. THE PRINCIPAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL AS-CONSTRUCTED SURVEY AND PROVISION TO THE SUPERINTENDENT. 2. THE PRINCIPAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE AS-CONSTRUCTED SURVEY TO ENSURE THAT ALL CONSTRUCTED ELEMENTS ARE SURVEYED PRIOR TO ANY BACKFILLING. 3. AS-CONSTRUCTED INFORMATION IS TO REFLECT THE ACTUAL CONSTRUCTION AND ENDORSED BY A REGISTERED SURVEYOR. 4. THE AS-CONSTRUCTED POINTS/LEVELS SHALL BE TAKEN AT THE SAME POINTS/LEVELS LOCATIONS SHOWN ON DESIGN DRAWINGS AND ANY OTHER RELEVANT LOCATIONS TO ALLOW ASSESSMENT AGAINST THE DESIGN INTENT. 5. THE PRINCIPAL CONTRACTOR IS TO ISSUE AS-CONSTRUCTED SURVEY OF ALL CIVIL WORKS DETAILED IN THESE DRAWINGS IN IN ACCORDANCE WITH THE COUNCIL / RELEVANT AUTHORITY 'ASSET DESIGN AS-CONSTRUCTED' (ADAC) STANDARDS.	

NOTES - CONCRETE KERB	OWEN REV-B
1. CONTRACTOR TO ENSURE THAT THE KERBING MACHINE IS SUITABLE FOR THE PROPOSED CONCRETE MIX DESIGN AND KERB PROFILE. 2. PROVIDE MINIMUM 1.0m (UNO) LONG KERB TRANSITIONS BETWEEN DIFFERENT KERB TYPES. 3. UNLESS SHOWN OTHERWISE ON THE DRAWINGS, CONTRACTION JOINTS, SHALL BE FORMED EVERY 2m OF KERB. THE JOINT SHALL BE TOOLED 20mm IN DEPTH TO FORM A NEAT GROOVE OF 5mm WIDTH.	

NOTES - CONSTRUCTION SET-OUT	OWEN REV-B
1. SETOUT CO-ORDINATES / DIMENSIONS ARE TO BE CONFIRMED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCING WORK. DRAWINGS SHALL NOT BE SCALED. 2. SETOUT INFORMATION IN DIGITAL FORMAT IS AVAILABLE UPON REQUEST FROM THE D&C CONTRACTOR. 3. SET-OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION OR FABRICATION IS COMMENCED. 4. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING OF THE DRAWINGS. IF IN DOUBT CONTACT THE SUPERINTENDENT. 5. THE COORDINATE SYSTEM THAT THESE DRAWINGS ARE BASED UPON IS MGA94 AND LEVEL DATUM IS AHD	



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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE	N/A	
DO NOT SCALE FROM THIS DRAWING - IF IN DOUBT ASK	A1	
DESIGNED DW	APPROVED	
DRAWN DW/DS	THESE DESIGNS AND DRAWINGS ARE COPYRIGHT AND ARE NOT TO BE USED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF OWEN CONSULTING PTY LTD.	
REVIEWED SK	ON BEHALF OF OWEN CONSULTING PTY LTD	
	SHAWN KEALEY	
	SPEP No. 29613	

NORTH	
DATUM	AHD(m)

A	29.01.26	ISSUED FOR EDQ APPROVAL	
ISSUE	DATE	ISSUE DESCRIPTION	

CLIENT	VIZ DEVELOPMENTS QLD PTY LTD
PROJECT	WAREHOUSE DEVELOPMENT - CIVIL WORKS
	LOT 47 ON SP345729
	LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE	DRAWING SET NOTES SHEET 1 OF 2
PROJECT No	2025106 LOT 47
DRAWING No	2025106-OPW-002

AMDT
A

NOTES - WATER RETICULATION
OWEN REV-C
1. NOT WITHSTANDING THE DETAILS SHOWN ON THE DRAWINGS ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH WATER SUPPLY CODE OF AUSTRALIA SOUTH-EAST QUEENSLAND SERVICE PROVIDERS EDITION VERSION 1.30 (AUGUST 2019) AND THE SEQ CODE CIVIL IPAM PRODUCT LIST (CURRENT EDITION). 2. POTABLE WATER MAIN SPECIFIED AS 'PVC-M' IS TO BE PVC-M PIPE, SOCKET AND SPIGOT, RRJ CLASS 16, BLUE IN COLOUR TO COMPLY WITH AS/NZS 1477 AND BE COMPATIBLE WITH DICL PIPE FITTINGS TO AS 2280. 3. POTABLE WATER PROPERTY SERVICE PRESSURE PIPE IS TO BE POLYETHYLENE (PE) PE100 PN16 TO COMPLY WITH AS/NZS 4130. 4. DICL PIPES ARE TO BE PN35. 5. ALL DICL PIPES AND FITTINGS ARE TO BE TREATED INTERNALLY AND EXTERNALLY WITH CORROSION PROTECTIVE COATING AS PER AS 4198. 6. ALL FITTINGS ARE TO BE DICL CLASS K9 TO AS 2280. 7. DICL ROAD CROSSINGS ARE TO EXTEND 0.5m BEHIND BACK OF KERB. 8. ALL FASTENERS ARE TO BE STAINLESS STEEL GRADE.316. 9. MARKER PLATES ARE TO BE INSTALLED FOR ALL VALVES, HYDRANTS AND WATER METERS IN ACCORDANCE WITH WSCA STD. DRG. SEQ-WAT-1300-2. 10. ALL HYDRANTS ARE TO BE POSITIONED DIRECTLY OPPOSITE COMMON PROPERTY BOUNDARIES WHERE POSSIBLE - UNO. 11. CONCRETE (STRENGTH GRADE N25) THRUST BLOCKS ARE TO BE CONSTRUCTED AT ALL UN-RESTRAINED VALVES, BENDS, TEES AND DEAD ENDS IN ACCORDANCE WITH WSCA STD. DRG. SEQ-WAT-1205-1. ADOPT BEARING CAPACITY OF: <u>100kPa</u>. (UNO) 12. PIPE BEDDING AND TRENCH BACKFILL TO BE IN ACCORDANCE WITH WSCA STD. DRG. SEQ-WAT-1201-1. 13. ALL TRENCH BACKFILL MATERIAL UNDER ROAD PAVEMENT SHALL BE CBR 15 OR APPROVED EQUIVALENT. COMPACTION RESULTS SHALL BE PROVIDED WHERE WATER TRENCHES CROSS ROADWAYS. 14. WATER PROPERTY SERVICE LOCATIONS AND METERS AT PROPERTY BOUNDARIES ARE TO MAINTAIN THE MINIMUM CLEARANCE WITH ELECTRICAL / TELECOMMUNICATIONS PITS AND PILLARS. THE PRINCIPAL CONTRACTOR IS TO ADVISE THE SUPERINTENDENT IMMEDIATELY IF MINIMUM CLEARANCES CAN NOT BE ACHIEVED ON-SITE. 15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL WATER CONSTRUCTION AND BACTERIAL TESTING REQUIREMENTS WITH COUNCIL / RELEVANT AUTHORITY. 16. IF THE PROJECT BILL OF QUANTITIES (BOQ) DOES NOT INCLUDE SEPARATE ITEM/S FOR ANY TESTING RATES - THEN THE CONTRACTOR'S RATES ARE ADOPTED AS INCLUDING ALL COSTS OF TESTING. 17. DURING CONSTRUCTION THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING AND COORDINATING ANY REQUIRED INSPECTIONS - INCLUDING HOLD POINTS - WITH COUNCIL / RELEVANT AUTHORITY. 18. PRIOR TO ANY CONNECTION TO EXISTING 'LIVE' WATER INFRASTRUCTURE - THE CONTRACTOR IS TO ISSUE TO THE SUPERINTENDENT ANY REQUIRED QUALITY ASSURANCE DOCUMENTATION FOR REVIEW AND APPROVAL BY THE SUPERINTENDENT AND COUNCIL / RELEVANT AUTHORITY.
ABBREVIATIONS:
WSCA - WATER SUPPLY CODE OF AUSTRALIA SOUTH-EAST QUEENSLAND SERVICE PROVIDERS EDITION VERSION 1.30 (AUGUST 2019). DICL - DUCTILE IRON CEMENT LINED

NOTES - SEWER (GRAVITY)
OWEN REV-C
1. NOT WITHSTANDING THE DETAILS SHOWN ON THE DRAWINGS ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH THE GRAVITY SEWERAGE CODE OF AUSTRALIA SOUTH-EAST QUEENSLAND SERVICE PROVIDERS EDITION VERSION 2.1 (SEPTEMBER 2021) AND THE SEQ CODE CIVIL IPAM PRODUCT LIST (CURRENT EDITION). 2. ALL SEWER LENGTHS AND GRADES SHOWN ON THE LONGITUDINAL SECTIONS ARE MEASURED FROM CENTRE OF STRUCTURE TO THE CENTRE OF STRUCTURE. 3. UNPLASTICISED PVC (uPVC) SEWER PIPE TO BE AS/NZS 1260 SN8 AND WITH RUBBER RING JOINT SPIGOT AND SOCKET JOINTS. ALL FITTINGS SHALL BE ELASTOMERIC SEAL JOINTED. 4. PIPE BEDDING AND BACKFILL TO BE IN ACCORDANCE WITH GSCA STD. DRG. SEQ-SEW-1200-2. 5. EMBEDMENT AND TRENCH BACKFILL TO BE IN ACCORDANCE WITH GSCA STD. DRG's. SEQ-SEW-1200-2 AND SEQ-SEW-1201-1 (TYPE 3 SUPPORT) AND ANY RELEVANT COUNCIL STANDARDS FOR ROAD CROSSINGS. 6. ALL TRENCH BACKFILL MATERIAL UNDER ROAD PAVEMENT TO BE CBR 15 (MINIMUM). COMPACTION DENSITY TESTING RESULTS ARE TO BE ISSUED TO THE SUPERINTEBDENT. 7. WHERE SEWER GRAVITY MAINS HAVE A LONGITUDINAL GRADE OF 5% (1 IN 20) OR STEEPER, BULKHEADS TO BE CONSTRUCTED IN ACCORDANCE WITH CLAUSES 8.10, 17.5 & 17.6 OF THE GSCA. 5. WHERE MAINTENANCE STRUCTURES ARE OF A CONCRETE CONSTRUCTION, THEN THE CONCRETE IS TO BE CALCAREOUS AGGREGATE CONCRETE IN ACCORDANCE WITH THE RELEVANT AUTHORITY SPECIFICATIONS. 6. ALL MAINTENANCE STRUCTURES ARE TO HAVE A 600mm CLEAR ACCESS OPENING. 7. MAINTENANCE STRUCTURE COVER FINISHED LEVEL IS TO BE IN ACCORDANCE WITH GSCA STD. DRG. SEQ-SEW-1308-1. 8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL SEWER CONSTRUCTION TESTING REQUIREMENTS WITH COUNCIL / RELEVANT AUTHORITY. 9. IF THE PROJECT BILL OF QUANTITIES (BOQ) DOES NOT INCLUDE SEPARATE ITEM/S FOR ANY TESTING RATES - THEN THE CONTRACTOR'S RATES ARE ADOPTED AS INCLUDING ALL COSTS OF TESTING. 10. DURING CONSTRUCTION THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING AND COORDINATING ANY REQUIRED INSPECTIONS - INCLUDING HOLD POINTS - WITH COUNCIL / RELEVANT AUTHORITY. 11. PRIOR TO ANY CONNECTION TO EXISTING 'LIVE' SEWER INFRASTRUCTURE - THE CONTRACTOR IS TO ISSUE TO THE SUPERINTENDENT ANY REQUIRED QUALITY ASSURANCE DOCUMENTATION FOR REVIEW AND APPROVAL BY THE SUPERINTENDENT AND COUNCIL / RELEVANT AUTHORITY.
ABBREVIATIONS:
GSCA - GRAVITY SEWERAGE CODE OF AUSTRALIA SOUTH-EAST QUEENSLAND SERVICE PROVIDERS EDITION VERSION 2.1 (SEPTEMBER 2021) - STD DRG's TO BE CURRENT REVISION.

SUPERCEDED



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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE		N/A	
DO NOT SCALE FROM THIS DRAWING - IF IN DOUBT ASK		A1	
DESIGNED	DW	APPROVED	
DRAWN	DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD	
REVIEWED	SK	SHON KEALLEY	
		RPEB No. 29613	

NORTH
DATUM
AHD(m)

A	29.01.26	ISSUED FOR EDQ APPROVAL
ISSUE	DATE	ISSUE DESCRIPTION

CLIENT
VIZ DEVELOPMENTS QLD PTY LTD
PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
DRAWING SET NOTES SHEET 2 OF 2
PROJECT No
2025106 LOT 47
DRAWING No
2025106-OPW-003

AMDT
A



LEGEND	
	EXISTING SURFACE CONTOURS (0.50m INTERVAL)
	EXISTING KERB AND CHANNEL
	EXISTING CROWN OF ROAD
	EXISTING STORMWATER DRAINAGE
	EXISTING SEWER GRAVITY
	EXISTING WATER RETICULATION
	EXISTING ELECTRICAL UNDERGROUND
	EXISTING TELECOMMS CONDUIT
	EXISTING STORMWATER SWALE
	EXISTING STORMWATER MAINTENANCE HOLE
	EXISTING STORMWATER FIELD INLET
	EXISTING SEWER MAINTENANCE HOLE
	EXISTING STORMWATER GULLY PIT
	EXISTING TELSTRA PIT
	EXISTING FIRE HYDRANT
	EXISTING WATER METER
	EXISTING WATER VALVE
	SUBJECT SITE BOUNDARY

NOTES - EXISTING SERVICES

- THE CONTRACTOR SHALL OBTAIN THE LOCATION OF ALL SERVICES BY A 'DIAL BEFORE YOU DIG' (DBYD) SEARCH, ELECTRONIC DETECTION AND POTHOLING. IT IS THE CONTRACTORS RESPONSIBILITY TO PROTECT THESE SERVICES PRIOR TO WORKING IN THE VICINITY. ANY DAMAGE WILL BE REPAIRED AT THE CONTRACTORS EXPENSE.
- THE CONTRACTOR IS TO CONFIRM THE ACTUAL LOCATIONS AND DEPTHS OF ALL EXISTING UNDERGROUND SERVICES PRIOR TO CONSTRUCTION WORKS AND COMPARE WITH CURRENT DESIGN PLANS. REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT.
- WHERE A CONNECTION IS MADE TO ANY ELEMENT OF EXISTING INFRASTRUCTURE, THEN THE LEVEL OF THAT INFRASTRUCTURE MUST BE CHECKED BY THE CONTRACTOR PRIOR TO CONSTRUCTION WORKS AND COMPARED WITH CURRENT DESIGN PLANS. REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT.
- WHERE NEW SERVICES CROSS OTHER NEW SERVICES OR WHERE NEW SERVICES CROSS EXISTING SERVICES THE CONTRACTOR SHALL CHECK MINIMUM RELEVANT AUTHORITY CLEARANCES BY CHECKING LEVELS ON-SITE AND ADVISE THE SUPERINTENDENT PRIOR TO CONSTRUCTION IF THE MINIMUM CLEARANCE CAN NOT BE ACHIEVED.
- OWEN CONSULTING ACCEPTS NO RESPONSIBILITY FOR ANY EXISTING SERVICES / INFRASTRUCTURE LOCATED ON-SITE THAT ARE NOT SHOWN ON THESE DRAWINGS OR THE ACCURACY OF EXISTING SERVICES LOCATIONS AND LEVELS SHOWN ON THESE DRAWINGS.

EXISTING SERVICES LOCATION - QUALITY LEVEL DEFINITION

- THIS DESIGN RELIES UPON EXISTING SERVICES INFORMATION DERIVED FROM THE FOLLOWING SOURCES - WHERE APPLICABLE:
- THE SPATIAL LOCATION OF EXISTING SERVICES AT GROUND SURFACE LOCATED BY A REGISTERED SURVEYOR (QL-A)
 - THE SPATIAL LOCATION (HORIZONTAL & VERTICAL) OF UNDERGROUND SERVICES BY SURVEY REFERENCE (QL-B)
 - INFORMATION PROVIDED BY SERVICE OWNER AND / OR RELEVANT AUTHORITY (DEEMED QL-C)
 - DBYD SEARCH RESULTS (QL-D)

NOTE - EXISTING FENCING

THE PRINCIPAL CONTRACTOR IS TO MAKE ALLOWANCE FOR ALL COSTS TO REMOVE / REPLACE ANY EXISTING COMMON PROPERTY BOUNDARY FENCING (IF REQUIRED) TO ALLOW FOR CONSTRUCTION OF ANY ELEMENTS SHOWN. THE LIAISON AND CONSENT WITH ANY ADJACENT LANDOWNERS, INCLUDING GOVERNMENT ENTITIES, IS TO BE ACHIEVED BY THE PRINCIPAL CONTRACTOR PRIOR TO THE REMOVAL / REPLACEMENT OF ANY COMMON PROPERTY BOUNDARY FENCING.

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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

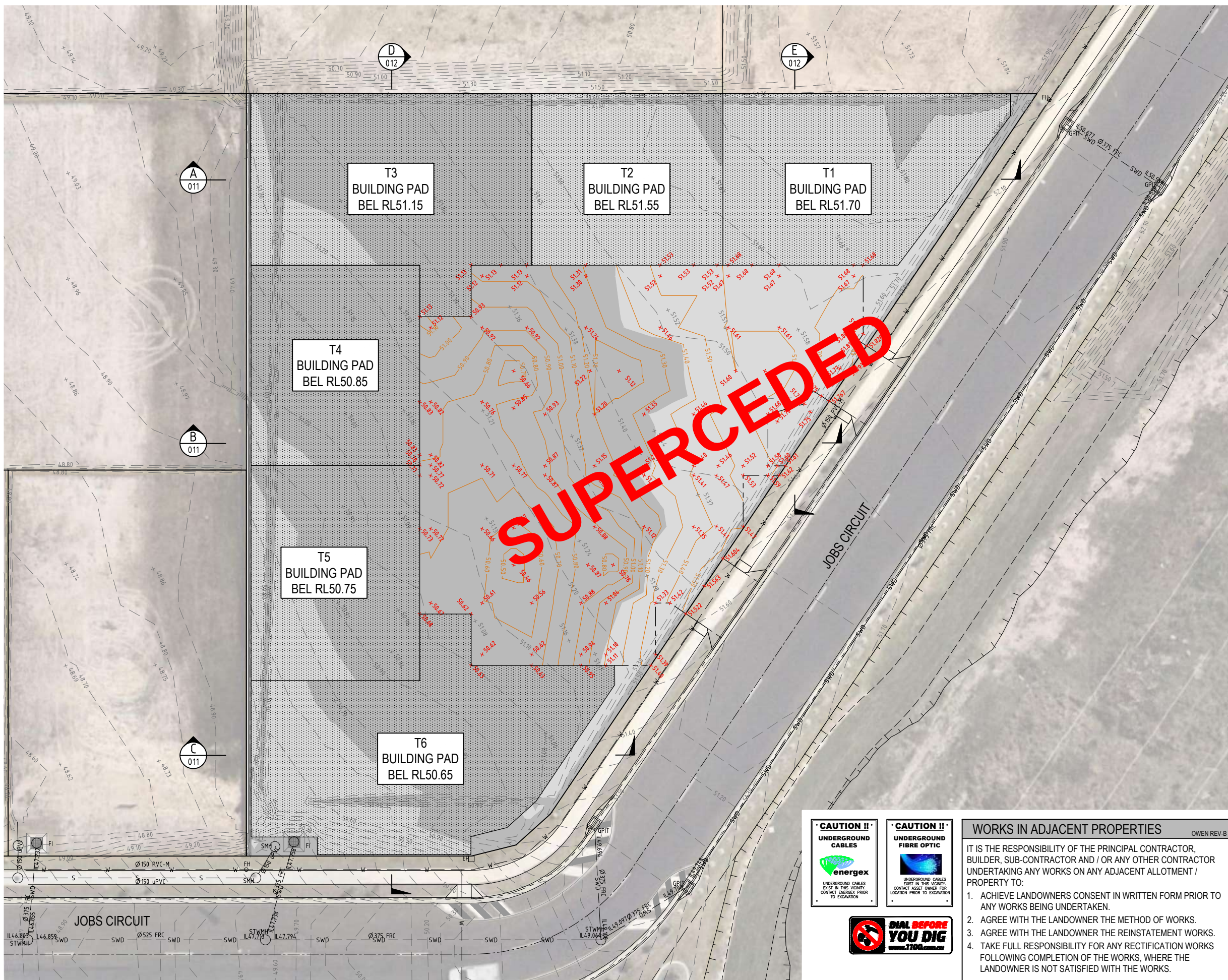
SCALE	
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DESIGNED DW	APPROVED
DRAWN DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD
REVIEWED SK	SHON KEALEY RPEP No. 29619

NORTH
DATUM AHD(m)

ISSUE	
A	29.01.26 ISSUED FOR EDQ APPROVAL
DATE	ISSUE DESCRIPTION

CLIENT
VIZ DEVELOPMENTS QLD PTY LTD
PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
EXISTING FEATURES PLAN
PROJECT No
2025106 LOT 47
DRAWING No
2025106-OPW-004
AMDT
A



LEGEND	
	EXISTING SURFACE CONTOURS (0.50m INTERVAL)
	EXISTING KERB AND CHANNEL
	EXISTING CROWN OF ROAD
	EXISTING STORMWATER DRAINAGE
	EXISTING SEWER GRAVITY
	EXISTING WATER RETICULATION
	EXISTING ELECTRICAL UNDERGROUND
	EXISTING TELECOMMS CONDUIT
	EXISTING STORMWATER MAINTENANCE HOLE
	EXISTING STORMWATER FIELD INLET
	EXISTING SEWER MAINTENANCE HOLE
	EXISTING STORMWATER GULLY PIT
	EXISTING TELSTRA PIT
	EXISTING FIRE HYDRANT
	EXISTING WATER VALVE
	EXISTING SURFACE LEVEL
	DESIGN FINISHED EARTHWORKS LEVEL
	EARTHWORKS DESIGN FINISHED CONTOURS (0.10m INTERVALS)
	PROPOSED NOMINAL KERB LINE
	EARTHWORKS EXTENTS OF CUT
	EARTHWORKS EXTENTS OF FILL
	EARTHWORKS BUILDING PAD

NOTES - EARTHWORKS VOLUMES

TOTAL CUT: -465m³ TOTAL FILL: 217m³
TOTAL CUT TO FILL: 217m³
TOTAL CUT TO SPOIL (OR AS SPECIFIED): -249m³

QUANTITIES SHOWN ARE BASED ON THE FOLLOWING:
BULKING FACTOR
EXCLUDES ANY BULKING OR COMPACTION FACTORS (SOLID QTY'S)
TOPSOIL
THE TOPSOIL THICKNESS IS BASED UPON A REVIEW OF ANY AVAILABLE GEOTECHNICAL TESTING AND REPORTING. WHERE NO REPORTING IS AVAILABLE - THEN 100mm THICKNESS IS ADOPTED. THEREFORE, THE ALLOWED THICKNESS IS AN ESTIMATE ONLY.

- TOPSOIL THICKNESS REMOVAL ALLOWANCE TO ALL AREAS SUBJECT TO WORKS = 100mm
- TOPSOIL SPREAD THICKNESS TO LANDSCAPING = 100mm
- TOPSOIL SPREAD THICKNESS TO BATTERS = N/A
- TOPSOIL SPREAD THICKNESS TO VERGES = N/A

BUILDING/S SLAB FORMATION - ALLOWED FOR ALLOWANCE FOR BUILDING/S SLAB THICKNESS FORMATION IS BASED UPON THAT ADVISED BY THE PROJECT STRUCTURAL ENGINEER - OTHERWISE 150mm IS ADOPTED.

- 150mm THICK BUILDING SLAB
- 50mm THICK BASE LAYER

HARDSTAND PAVEMENT FORMATION - ALLOWED FOR ALLOWANCE FOR PAVEMENT THICKNESS FORMATION IS BASED UPON THE PRELIMINARY PAVEMENT DESIGN'S AS IDENTIFIED IN THIS DRAWING SET OR AS ADVISED BY PROJECT STRUCTURAL ENGINEER - SUBJECT TO DESIGN SUBGRADE CBR TESTS.

- 150mm THICK RIGID (CONCRETE) PAVEMENT
- 50mm THICK BASE LAYER

SERVICE TRENCH SPOIL
SERVICES TRENCH SPOIL FOLLOWING EARTHWORKS IS NOT ALLOWED FOR IN THE QUANTITIES - UNLESS NOTED OTHERWISE. THE CONTRACTOR IS TO MAKE ALLOWANCE.
GEOTECHNICAL INSPECTION AND TESTING AUTHORITY (GITA)
QUANTITIES SHOWN ARE SUBJECT TO ANY INSTRUCTION BY THE PROJECT GITA DURING EARTHWORKS.

CAUTION !!
UNDERGROUND CABLES
energex
UNDERGROUND CABLES EXIST IN THIS VICINITY. CONTACT ENERGEX PRIOR TO EXCAVATION

CAUTION !!
UNDERGROUND FIBRE OPTIC
UNDERGROUND CABLES EXIST IN THIS VICINITY. CONTACT ASSET OWNER FOR LOCATION PRIOR TO EXCAVATION

WORKS IN ADJACENT PROPERTIES

IT IS THE RESPONSIBILITY OF THE PRINCIPAL CONTRACTOR, BUILDER, SUB-CONTRACTOR AND / OR ANY OTHER CONTRACTOR UNDERTAKING ANY WORKS ON ANY ADJACENT ALLOTMENT / PROPERTY TO:

1. ACHIEVE LANDOWNERS CONSENT IN WRITTEN FORM PRIOR TO ANY WORKS BEING UNDERTAKEN.
2. AGREE WITH THE LANDOWNER THE METHOD OF WORKS.
3. AGREE WITH THE LANDOWNER THE REINSTATEMENT WORKS.
4. TAKE FULL RESPONSIBILITY FOR ANY RECTIFICATION WORKS FOLLOWING COMPLETION OF THE WORKS, WHERE THE LANDOWNER IS NOT SATISFIED WITH THE WORKS.

Owen.

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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

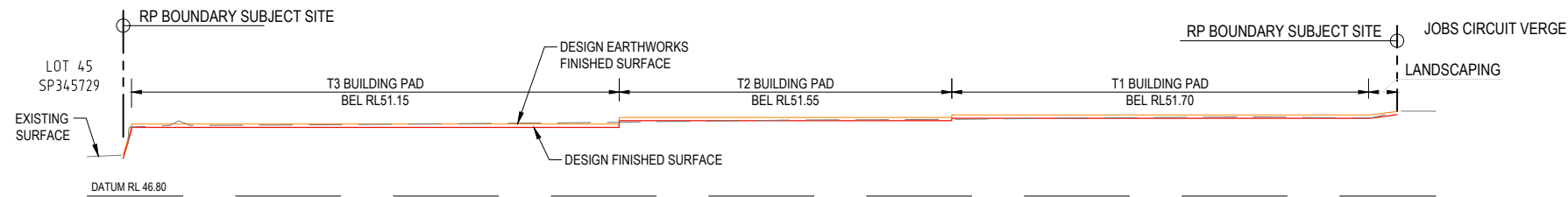
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SHAWN KEALEY
RPEP No. 29619

NORTH
DATUM AHD(m)

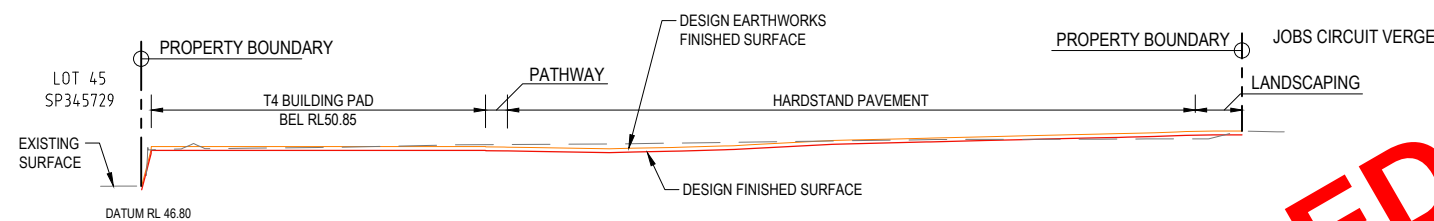
A
29.01.26
ISSUE
DATE
ISSUE DESCRIPTION
ISSUED FOR EQD APPROVAL

CLIENT
VIZ DEVELOPMENTS QLD PTY LTD
PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

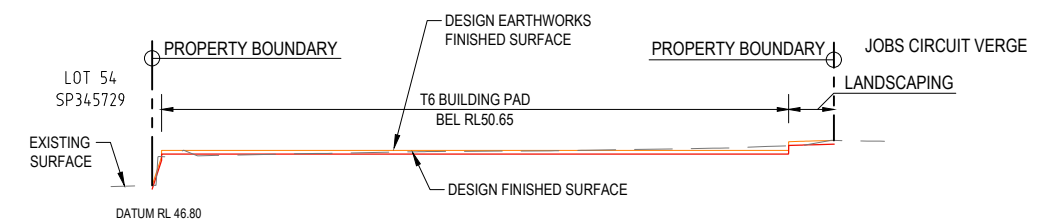
TITLE
BULK EARTHWORKS PLAN
PROJECT No
2025106 LOT 47
DRAWING No
2025106-OPW-010
AMDT
A



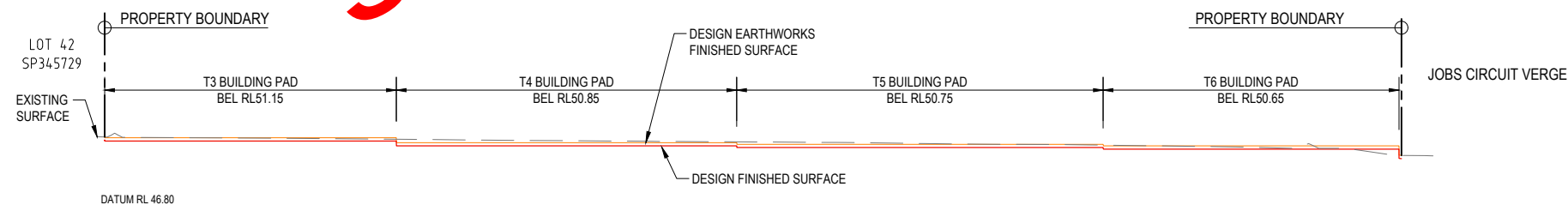
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SCALE 1:200



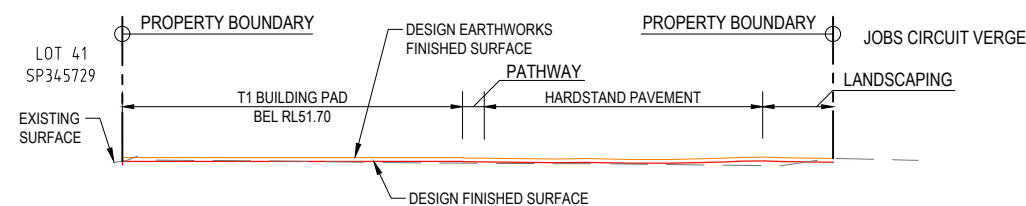
SECTION B
SCALE 1:200



SECTION C
SCALE 1:200



SECTION D
SCALE 1:200



SECTION E
SCALE 1:200

SUPERCEDED

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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE		2 1 0 2 4 6 8 10	1:200
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DRAWN	DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD	
REVIEWED	SK	SHON KEALLEY	RPEP No. 29613

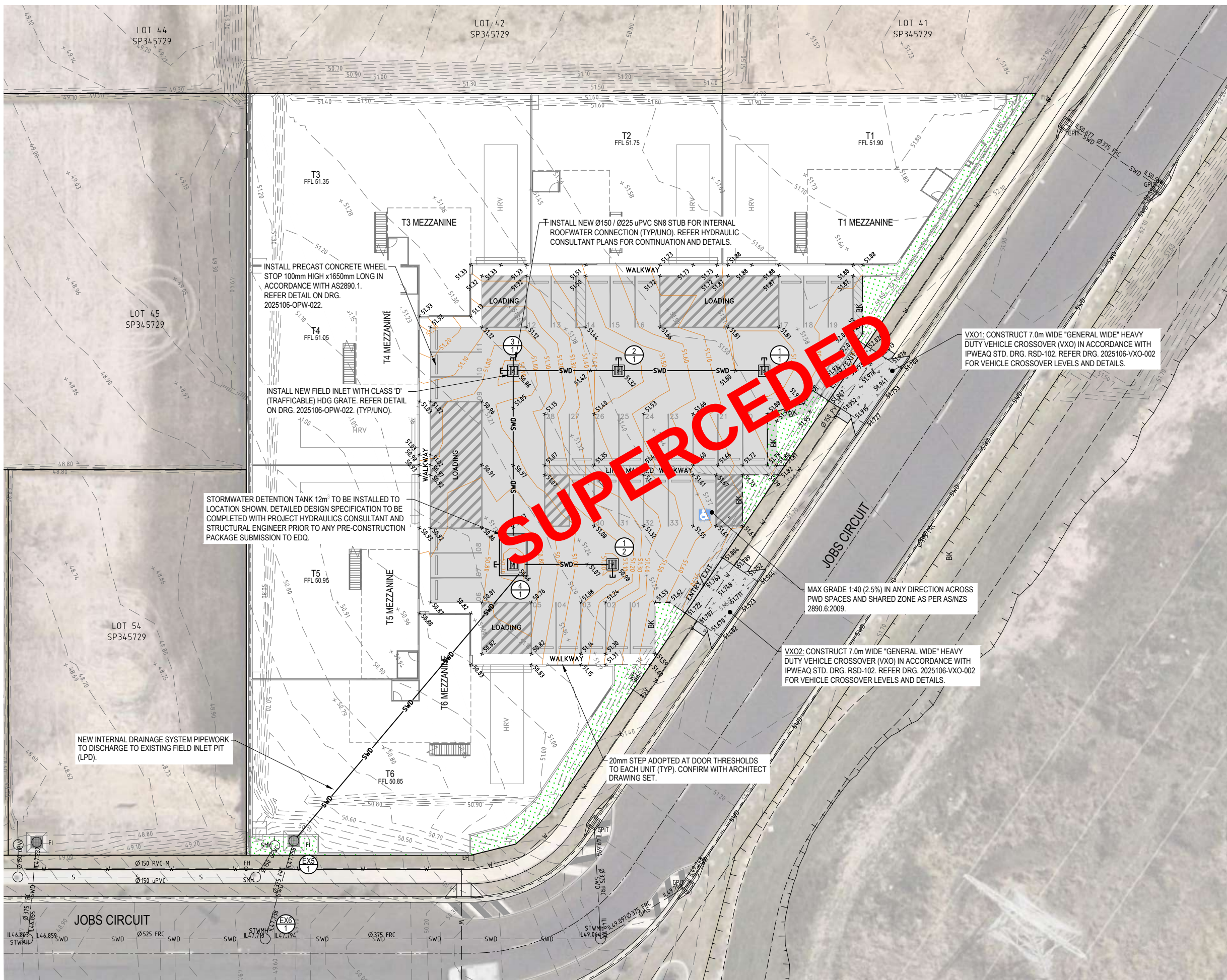
NORTH
DATUM AHD(m)

A	29.01.26	ISSUED FOR EDQ APPROVAL
ISSUE	DATE	ISSUE DESCRIPTION

CLIENT
VIZ DEVELOPMENTS QLD PTY LTD
PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
BULK EARTHWORKS SECTIONS
PROJECT No
2025106 LOT 47
DRAWING No
2025106-OPW-011

AMDT
A



LEGEND	
	EXISTING SURFACE CONTOURS (0.50m INTERVAL)
	EXISTING KERB AND CHANNEL
	EXISTING CROWN OF ROAD
	EXISTING STORMWATER DRAINAGE
	EXISTING SEWER GRAVITY
	EXISTING WATER RETICULATION
	EXISTING ELECTRICAL UNDERGROUND
	EXISTING TELECOMMS CONDUIT
	EXISTING STORMWATER MAINTENANCE HOLE
	EXISTING STORMWATER FIELD INLET
	EXISTING SEWER MAINTENANCE HOLE
	EXISTING STORMWATER GULLY PIT
	EXISTING TELSTRA PIT
	EXISTING FIRE HYDRANT
	EXISTING WATER METER
	EXISTING WATER VALVE
	EXISTING SURFACE LEVEL
	DESIGN FINISHED SURFACE LEVEL (0.10m INTERVAL)
	PROPOSED BARRIER KERB TYPE B2
	PROPOSED STORMWATER DRAINAGE AND STRUCTURE LABEL
	PROPOSED CONCRETE PAVEMENT
	PROPOSED CONCRETE VEHICLE CROSSOVER (VXO)
	PROPOSED LANDSCAPING / TURF (BY OTHERS)
	PROPOSED CONCRETE PATHWAY
	PROPOSED PATHWAY LINEMARKING

NOTES	
1.	FOR DRAWING SET NOTES REFER DRG. 2025106-OPW-002 & 003
2.	DESIGN IS SUBJECT TO ANY EDQ APPROVALS.

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CIVIL ENGINEERS
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DATUM	AHD(m)

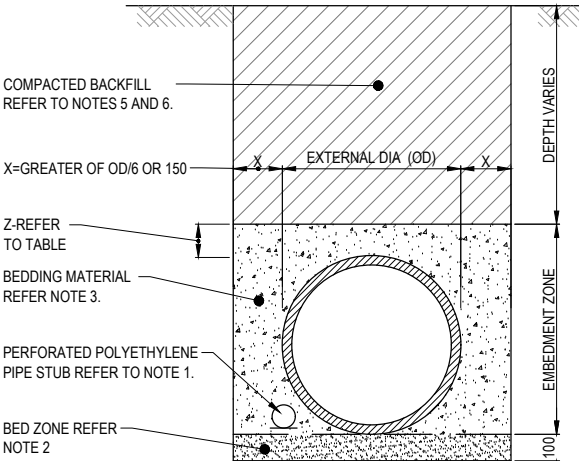
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PROJECT	
WAREHOUSE DEVELOPMENT - CIVIL WORKS	
LOT 47 ON SP345729	
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207	

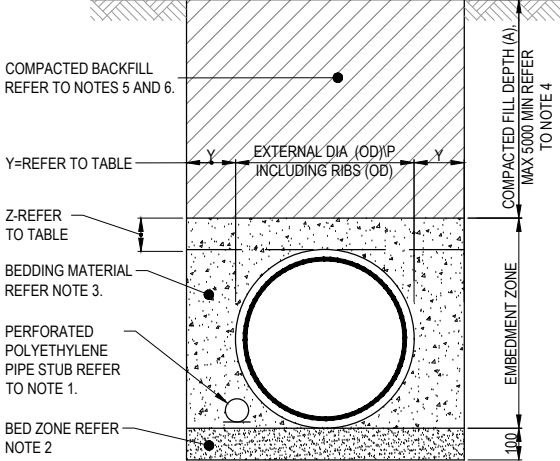
TITLE	
DRIVEWAY AND DRAINAGE PLAN	
PROJECT No	
2025106 LOT 47	
DRAWING No	
2025106-OPW-020	

AMDT
A

EXTERNAL DIAMETER (OD)	SPACING Y	SPACING Z
>150, <=300	150	150
>300, <=450	200	
>450, <=900	300	
>900, <=1500	350	200
>1500	OD/4	300



RIGID SINGLE PIPE - BEDDING DETAIL
SCALE: NTS



FLEXIBLE SINGLE PIPE - BEDDING DETAIL
SCALE: NTS

NOTES: COMPACTION METHOD

- 15 TONNE EXCAVATOR AND COMPACTION WHEEL ALLOWED TO DEPTHS ABOVE THE CROWN OF THE PIPE AS PER TABLE BELOW.
- VIBRATING RAMMER (UP TO 75kg) ALLOWED AT DEPTHS ABOVE THE CROWN AS PER TABLE BELOW
- 2 TONNE VIBRATING TRENCH ROLLER ALLOWED AT DEPTHS ABOVE CROWN OF PIPE AS PER TABLE BELOW.

CLASS OF PIPE	COMPACTION METHOD	DEPTH ABOVE CROWN OF PIPE
CLASS 2	A	700mm MIN
	B	450mm MIN
	C	400mm MIN
CLASS 3	A	450mm MIN
	B	300mm MIN
	C	250mm MIN
CLASS 4	A	350mm MIN
	B	250mm MIN
	C	200mm MIN

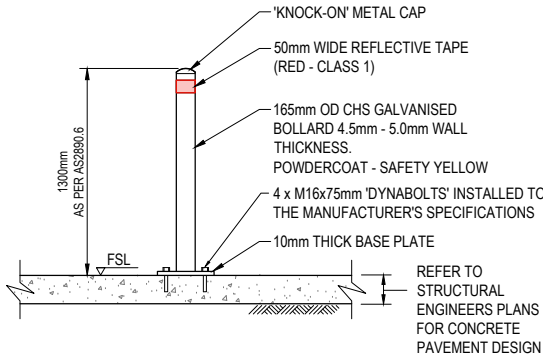
NOTES: CONSTRUCTION METHOD AND BEDDING FOR R.C.P PIPES

- BED AND HAUNCH ZONES ARE TO BE 'COMPACTED SELECT FILL' AS PER TABLE 3 GRADING TO AS 3725.
- SIDE ZONES ARE TO BE 'COMPACTED SELECT FILL' AS PER TABLE 4 GRADING TO AS 3725.
- 'COMPACTED ORDINARY FILL' AND 'BACKFILL' TO BE AS DEFINED IN AS 3725.
- 'D' (DIAMETER) REFERS TO THE OUTSIDE DIAMETER OF THE PIPE
- ALL ZONES ARE TO BE COMPACTED BY APPROVED METHODS TO ACHIEVE DENSITIES AS SPECIFIED IN AS 3725
- THE CONTRACTOR IN TO EXERCISE DUE CARE AND ATTENTION DURING PIPE INSTALLATION ENSURING PIPES ARE NOT DAMAGED DURING CONSTRUCTION. DAMAGED PIPES WILL BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

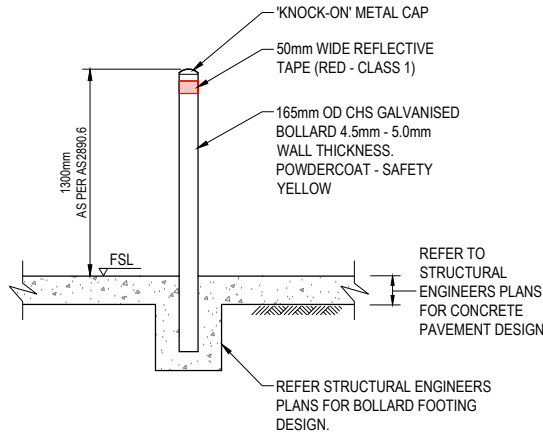
NOTES: RIGID AND FLEXIBLE PIPE

- UNLESS DIRECTED OTHERWISE, PROVIDE PIPE STUB TO DEWATER DRAINAGE TRENCH. STUB TO BE 1000mm LONG x 100mm DIA. CORRUGATED POLYETHYLENE PIPE CLASS 400 TO AS2439 (WITH END CAP) INSTALLED ON THE UP-STREAM FACE OF MANHOLES.
- BED ZONE MATERIAL: 5mm OR 10mm SCREENINGS, OR ALTERNATIVELY WASHED SCREENED BEDDING SAND TO GRADING SPECIFIED BELOW TO BED ZONE.
- EMBEDMENT ZONE MATERIAL: 5mm OR 10mm SCREENINGS.
- FOR FLEXIBLE PIPES, DEPTH OF COMPACTED BACKFILL (A) VARIES:
 - MINIMUM 600 TO UNDERSIDE OF CONSTRUCTED PAVEMENT OR;
 - MINIMUM 750 TO FINISHED SURFACE LEVEL (WHICHEVER IS GREATER)
- COMPACTED BACKFILL UNDER ROADS (RIGID AND FLEXIBLE PIPES): GRANULAR FILL COMPRISING CRUSHED ROCK (75mm MAXIMUM SIZE, NON PLASTIC OPEN GRADED MATERIAL) OR CRUSHED RUN RECYCLED CONCRETE. WHERE APPROVED UNDER SPECIAL CIRCUMSTANCES, STABILISED SAND (1 PART CEMENT TO 12 PARTS SAND BY VOLUME) OR CONTROLLED LOW STRENGTH MATERIAL OR LEAN MIX CONCRETE OR CLASS 3 MATERIAL MAY BE PERMITTED.
- COMPACTED BACKFILL UNDER FOOTPATHS AND BIKEWAYS (RIGID AND FLEXIBLE PIPES): EXCAVATED MATERIAL PROVIDED ADEQUATE COMPACTION CAN BE OBTAINED. ALTERNATIVELY USE GRANULAR FILL.
- INCREASE EXCAVATION LOCALLY AT SPIGOT AND SOCKET JOINTS (RIGID PIPES) TO ENSURE MINIMUM BOTTOM COVER AS SHOWN.
- DIMENSIONS IN MILLIMETERS (U.N.O)

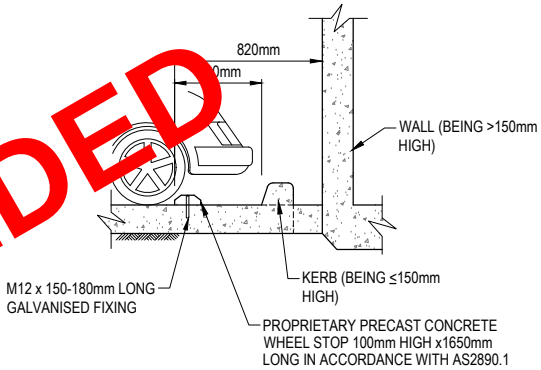
SEIVE SIZE IN mm	PASSING (% BY WEIGHT)
9.5	100
4.75	95-100
2.36	75-90
1.18	15-25
0.60	10-20
0.30	5-10
0.15	0-5



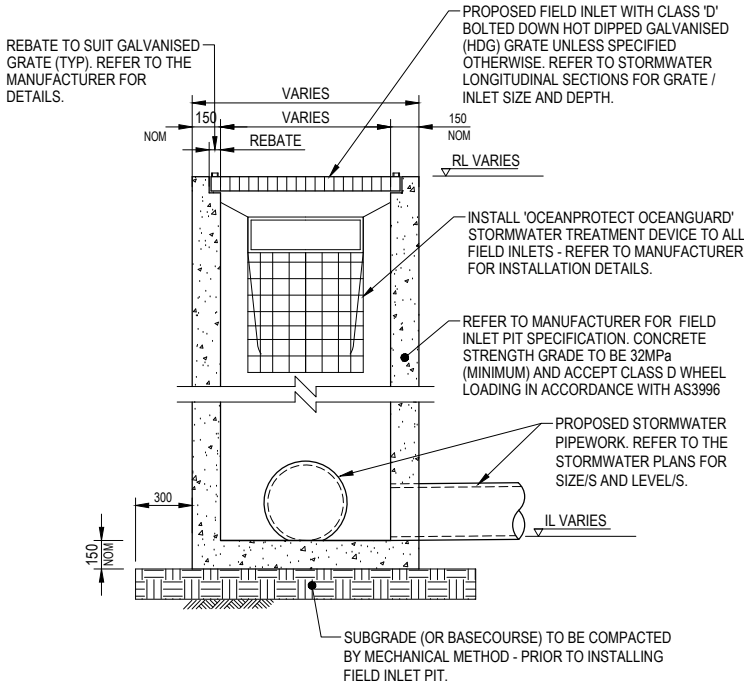
TYPICAL DETAIL - PWD SHARED SPACE - BOLLARD
OPTION 2 - SURFACE MOUNTED
SCALE: NTS



TYPICAL DETAIL - PWD SHARED SPACE - BOLLARD
OPTION 1 - CAST INSITU
SCALE: NTS



TYPICAL DETAIL - WHEEL STOP
SCALE: NTS



TYPICAL DETAIL - PRE-CAST SWD FIELD INLET
WITH QUALITY DEVICE
SCALE: NTS

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LAND DEVELOPMENT

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REVIEWED	SK	SHOWN SEALLEY	
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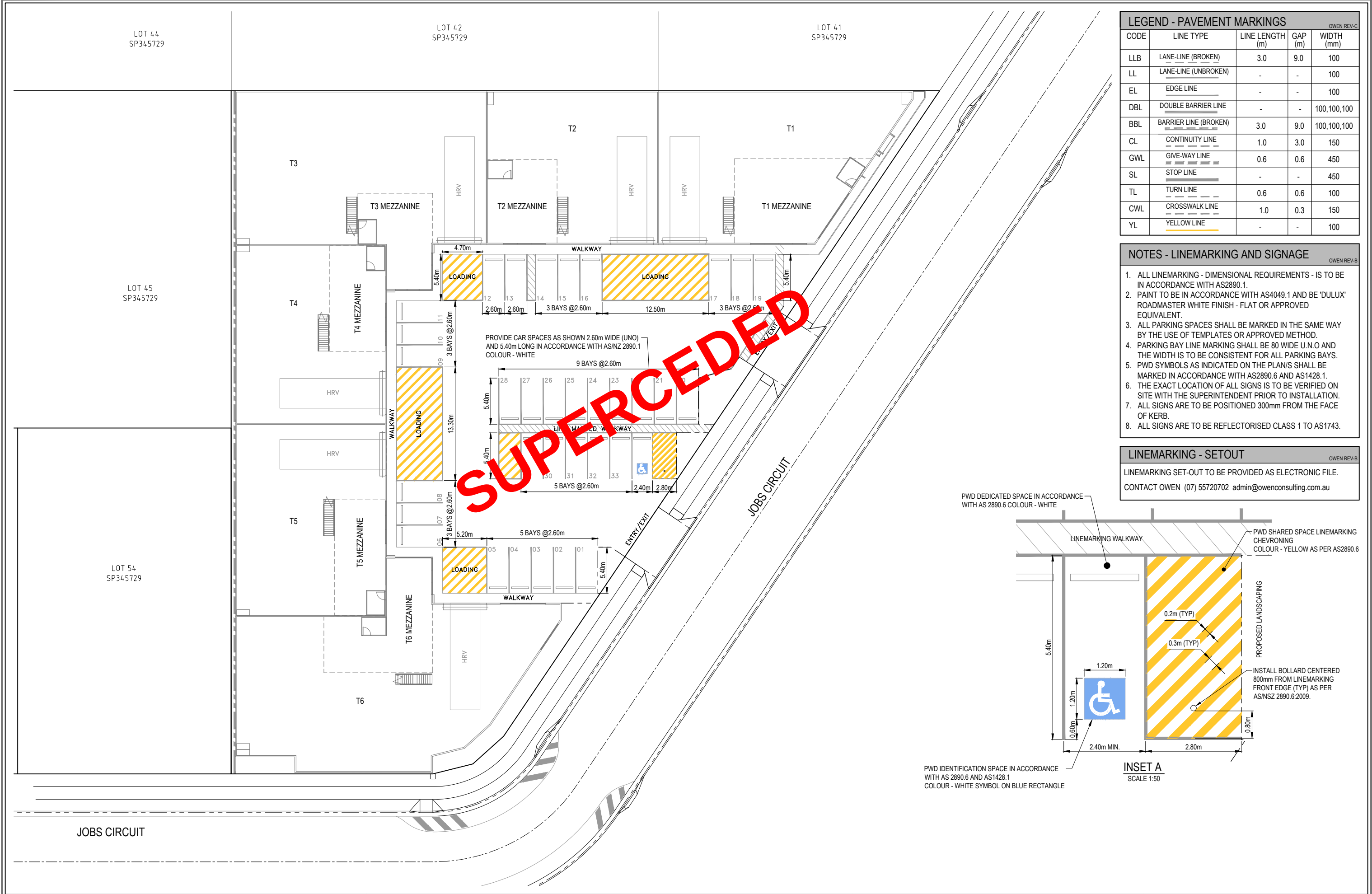
NORTH	
DATUM	AHD(m)

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CLIENT
VIZ DEVELOPMENTS QLD PTY LTD
PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
SECTIONS AND DETAILS SHEET
PROJECT No
2025106 LOT 47
DRAWING No
2025106-OPW-022

AMDT
A



LEGEND - PAVEMENT MARKINGS					OWEN REV-C
CODE	LINE TYPE	LINE LENGTH (m)	GAP (m)	WIDTH (mm)	
LLB	LANE-LINE (BROKEN)	3.0	9.0	100	
LL	LANE-LINE (UNBROKEN)	-	-	100	
EL	EDGE LINE	-	-	100	
DBL	DOUBLE BARRIER LINE	-	-	100,100,100	
BBL	BARRIER LINE (BROKEN)	3.0	9.0	100,100,100	
CL	CONTINUITY LINE	1.0	3.0	150	
GWL	GIVE-WAY LINE	0.6	0.6	450	
SL	STOP LINE	-	-	450	
TL	TURN LINE	0.6	0.6	100	
CWL	CROSSWALK LINE	1.0	0.3	150	
YL	YELLOW LINE	-	-	100	

- NOTES - LINEMARKING AND SIGNAGE
- OWEN REV-B
1. ALL LINEMARKING - DIMENSIONAL REQUIREMENTS - IS TO BE IN ACCORDANCE WITH AS2890.1.

2. PAINT TO BE IN ACCORDANCE WITH AS4049.1 AND BE 'DULUX' ROADMASTER WHITE FINISH - FLAT OR APPROVED EQUIVALENT.

3. ALL PARKING SPACES SHALL BE MARKED IN THE SAME WAY BY THE USE OF TEMPLATES OR APPROVED METHOD.

4. PARKING BAY LINE MARKING SHALL BE 80 WIDE U.N.O AND THE WIDTH IS TO BE CONSISTENT FOR ALL PARKING BAYS.

5. PWD SYMBOLS AS INDICATED ON THE PLAN/S SHALL BE MARKED IN ACCORDANCE WITH AS2890.6 AND AS1428.1.

6. THE EXACT LOCATION OF ALL SIGNS IS TO BE VERIFIED ON SITE WITH THE SUPERINTENDENT PRIOR TO INSTALLATION.

7. ALL SIGNS ARE TO BE POSITIONED 300mm FROM THE FACE OF KERB.

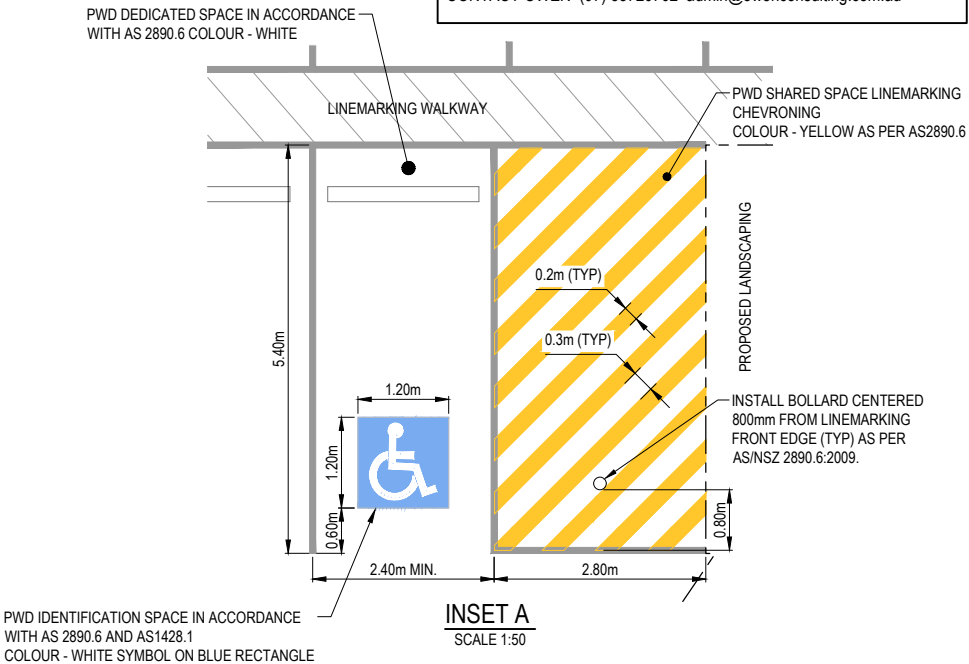
8. ALL SIGNS ARE TO BE REFLECTORISED CLASS 1 TO AS1743.

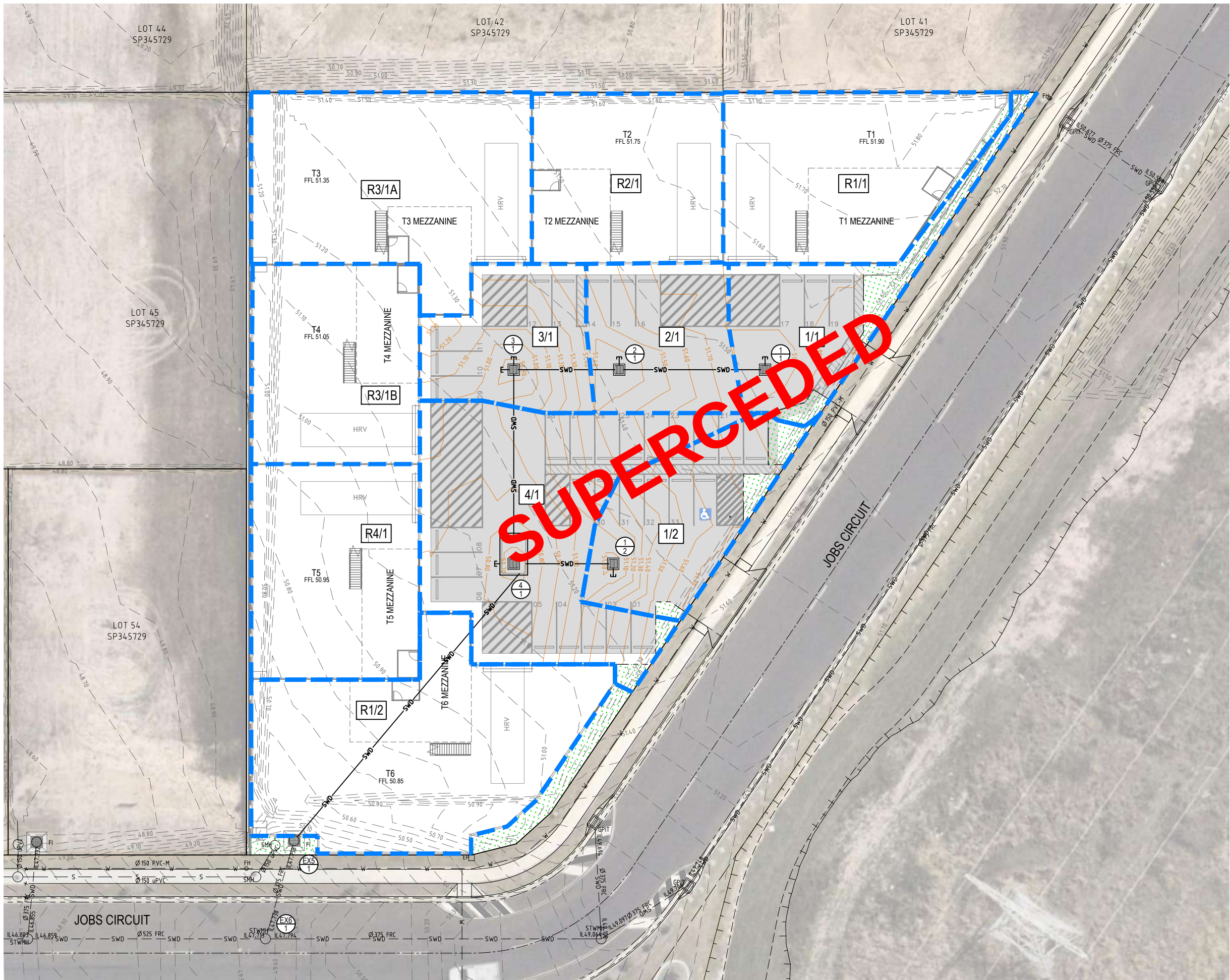
LINEMARKING - SETOUT

OWEN REV-B

LINEMARKING SET-OUT TO BE PROVIDED AS ELECTRONIC FILE.

CONTACT OWEN (07) 55720702 admin@owenconsulting.com.au





LEGEND	
	EXISTING SURFACE CONTOURS (0.50m INTERVAL)
	DESIGN SURFACE CONTOURS (0.1m INTERVAL)
	PROPOSED STORMWATER DRAINAGE AND STRUCTURE LABEL
	CATCHMENT BOUNDARY
	CATCHMENT BOUNDARY LABEL

STORMWATER CATCHMENT AREA TABLE	
CATCHMENT LABEL	CATCHMENT AREA
1/1	0.026 Ha
2/1	0.024 Ha
3/1	0.024 Ha
4/1	0.058 Ha
EX1/1	0.001 Ha
1/2	0.028 Ha
R1/1	0.045 Ha
R2/1	0.036 Ha
R3/1A	0.056 Ha
R3/1B	0.037 Ha
R4/1	0.040 Ha
R1/2	0.063 Ha

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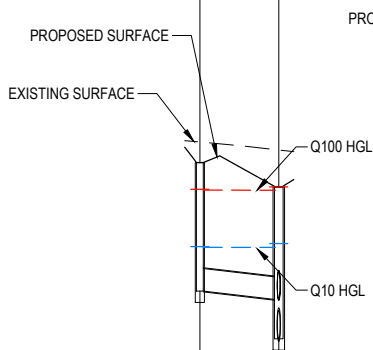
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PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
STORMWATER DRAINAGE CATCHMENT PLAN
PROJECT No
2025106 LOT 47
DRAWING No
2025106-OPW-024
AMDT
A

STRUCTURE NAME	1/2	4/1
STRUCTURE DESCRIPTION	BCC FIELD INLET - 900x900 TYPE 1 900x600 H.D. GRATE	BCC FIELD INLET - 900x900 TYPE 1 H.D. GRATE



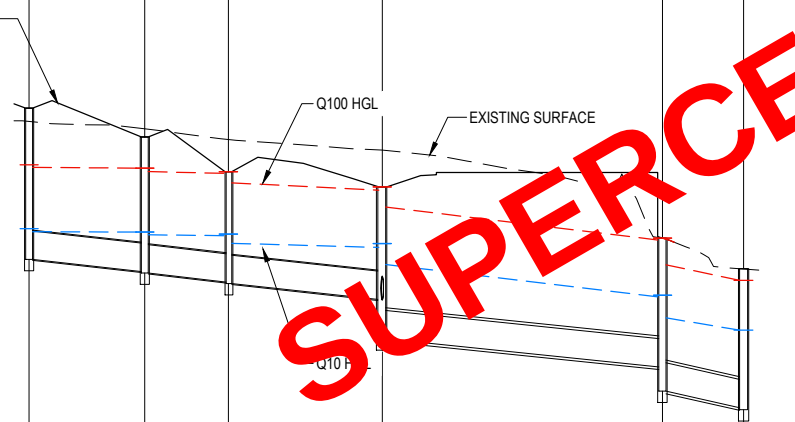
PIPE SIZE (mm)	300
PIPE CLASS & TYPE	uPVC SN8
PIPE GRADE (%)	1.05%
PIPE SLOPE (1 in X)	94.9
FULL PIPE VELOCITY (m/s)	0.19
NORMAL DEPTH VELOCITY (m/s)	1.11
PIPE FLOW (cumecs)	0.014
CAPACITY FLOW (cumecs)	0.117
DATUM RL	42.000

HGL IN PIPE	49.870	49.860	49.859	49.809	49.633
FINISHED (& EXISTING) SURFACE LEVEL	50.980	51.252	50.660	50.660	51.147
DEPTH OF INVERT BELOW FSL	1.700	1.490	2.010	2.010	1.484
INVERT LEVEL	49.280	49.170	48.650	48.650	49.713
CHAINAGE	0.000	10.440m	1		

LINE

1

1/1	2/1	3/1	4/1	EX1/1	EX2/1
BCC FIELD INLET - 900x900 TYPE 1 H.D. GRATE	BCC FIELD INLET - 900x900 TYPE 1 H.D. GRATE	BCC FIELD INLET (ON GRADE) 900x600 H.D. GRATE	BCC FIELD INLET - 900x900 TYPE 1 H.D. GRATE	BCC FIELD INLET (ON GRADE) 900x600 H.D. GRATE	BCC MANHOLE 1050mm DIA



375	375	375	375	375
uPVC SN8	uPVC SN8	uPVC SN8	3	RCP
1.05%	1.08%	1.03%	1.00%	2.05%
95.6	92.2	96.9	99.7	48.8
0.33	0.61	0.97	1.71	1.96
1.44	1.73	1.91	1.76	2.56
0.037	0.067	0.107	0.189	0.216
0.212	0.216	0.211	0.176	0.251
42.000				

50.106	50.066	50.062	50.025	50.014	49.913	49.859	49.909	49.633	49.203	49.226	48.927	48.764
51.700	51.524	51.320	51.427	50.860	51.286	50.660	51.147	49.982	49.982	49.980	49.577	49.572
2.000	1.780	1.800	1.460	1.480	1.490	2.010	1.704	2.024	1.839	1.864	1.839	1.864
49.700	49.540	49.520	49.400	49.380	49.170	48.650	48.278	47.968	47.738	47.713	47.529	47.529
0.000	15.304m	11.065m	20.350m	37.082m	10.728m							

1

Owen.

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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE	HORIZ 10 0 10 20 1:500	VERT 1 0 1 2 1:50	A1
DESIGNED	DW	APPROVED	THESE DESIGNS AND DRAWINGS ARE COPYRIGHT AND ARE NOT TO BE USED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF OWEN CONSULTING PTY LTD.
DRAWN	DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD	SHAWN KEALEY
REVIEWED	SK	RPES No. 29613	

NORTH

DATUM AHD(m)

A	29.01.26	ISSUED FOR EDQ APPROVAL
ISSUE	DATE	ISSUE DESCRIPTION

CLIENT
VIZ DEVELOPMENTS QLD PTY LTD
PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
STORMWATER DRAINAGE LONGITUDINAL SECTIONS
PROJECT No
2025106 LOT 47
DRAWING No
2025106-OPW-025

AMDT
A

LOCATION					TIME		SUB-CATCHMENT RUNOFF						INLET DESIGN						DRAIN DESIGN										HEADLOSSES										PART FULL		DESIGN LEVELS											
					tc	I	C10	C	A	Cx A	+CA	Q					Qg	Qb		tc	I	+CA	Qf	Qm	Qs	Qp	L	S							V2/2g	Ku	hu	Kl	hl	Kw	hw	Sf	hf		Vp							
DESIGN ARI	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY	10yr RUNOFF CO-EFFICIENT	CO-EFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF (C x A)	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW ROAD CAPACITY	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No.	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C x A)	MAJOR FLOW	MAJOR FLOW CAPACITY	MAJOR FLOW CAPACITY	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS (CLASS)	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE CHART No.	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCT. HEADLOSS	LAT. HEADLOSS CO-EFFICIENT	LAT. PIPE STRUCT. HEADLOSS	W.S.E CO-EFFICIENT	CHANGE IN W.S.E	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L x Sf)	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	UPSTREAM H.G.L	LAT. H.G.L	W.S.E.	SURFACE OR K&C INVERT LEVEL	STRUCTURE No.
yrs					%	min	mm/h			ha	ha	ha	l/s	l/s	%	l/s		l/s	l/s		ha	l/s	l/s	l/s	l/s	m	%	mm	m/s	min			m		m	%	m	m	m/s	m	m	m	m	m								
2 100	R2/5	R2/5 to 2/5	R2/5		5.00 5.00	151 305		0.77 1.00	0.028 0.028	0.022 0.028	0.022 0.028	9 24									5.15 5.15	150 301	0.020 0.026	22		26	10.800	100	300(U)	0.36 (1.63)	0.18		Qg 0.004 Qo 0.026 Do 300 Routine 2.2 CHART 48 Du/Do 0.75 Qu/Do 0.34 K 1.61 d/Do 2.0 chrt Qg/Do 0.14 Kg 0.12 d/Do 15 chrt Qg/Do 0.14 Kg 0.14 d/Do 100 Interp value Kg 0.15 Ku=Kw= 176 Combined pipes in line case Join Pipes: 1/5 and R2/5 Vel1 0.226 Vel2 0.192	0.007	1.00	0.088	Eq Dia 378 Angle 234 CHART 33 Angle 0 S/Do 2.5 Du/Do 1.24 Qg/Do 0.14 K 0.64 S/Do 1.02 cor 0.25 Ku Interpolated Ku= 176 Kw= 176 Part full downstream pipe Upstream HGL 53.983 below outlet pipe obv 54.102 Set Kp to 1	1.00 Flow 0.028	0.088	0.05	0.005	0.097 (0.083 ty)	131 (120 ty)	54.102 53.994	53.895 53.792	53.983		53.983	55.130	2/5		

CALCULATIONS TABLE



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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE		N/A	
DO NOT SCALE FROM THIS DRAWING - IF IN DOUBT ASK		A1	
DESIGNED	DW	APPROVED	
DRAWN	DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD	
REVIEWED	SK	SHON KEALLEY	
		RPEB No. 29613	

NORTH	
DATUM	AHD(m)

A	29.01.26	ISSUED FOR EDQ APPROVAL	
ISSUE	DATE	ISSUE DESCRIPTION	

CLIENT		VIZ DEVELOPMENTS QLD PTY LTD
PROJECT		WAREHOUSE DEVELOPMENT - CIVIL WORKS
		LOT 47 ON SP345729
		LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE		STORMWATER DRAINAGE CALCULATION
		TABLE PLAN SHEET 2 OF 2
PROJECT No		2025106 LOT 47
DRAWING No		2025106-OPW-027

AMDT
A

VIZ DEVELOPMENTS QLD PTY LTD

YARRABILBA WAREHOUSE DEVELOPMENT - (SEWER&WATER)

LOT 47 JOBS CIRCUIT, YARRABILBA, QLD 4207

DRAWING SCHEDULE - SEWER&WATER		
DRAWING No.	REV.	DRAWING TITLE
2025106-OPW-030	A	SEWER AND WATER DRAWING SCHEDULE AND LOCALITY PLAN
2025106-OPW-031	A	SEWER AND WATER OVERALL RETICULATION PLAN

PROPERTY DESCRIPTION:
LOTS 47 ON SP345729

DETAIL AND LEVEL SURVEY	OWEN REV-B
SITE BENCHMARK: PSM59068 DATUM: RL. 46.040m (AHD) THIS DRAWING SET AND DESIGN IS BASED UPON THE FOLLOWING: LEVEL AND FEATURE (DETAIL) SURVEY DETAIL SURVEY BY: SURVEYOR: KN GROUP DRAWING NUMBER: 23-101-04 REVISION: A IMPORTANT NOTE: THE AFOREMENTIONED DETAIL SURVEY IS BASED ON A LOCAL SITE GRID AND ORIENTATION NOT MGA. THE PRINCIPAL CONTRACTOR IS TO COORDINATE ANY CONSTRUCTION SET-OUT, INCLUDING SURVEY CONTROL, WITH THE AFOREMENTIONED SURVEYOR. BOUNDARY IDENTIFICATION SURVEY	

NOTE - ARCHITECTURAL COORDINATION	OWEN REV-B
THIS DRAWING SET AND DESIGN IS BASED UPON THE FOLLOWING ARCHITECTURAL / BUILDING DESIGN LAYOUT BY: CONSULTANT: BRUAC DESIGN GROUND FLOOR / SITE PLAN NUMBER: BD067-DA01-I REVISION: I REVISION DATE: 16.01.26	

NOTE - PLAN COORDINATION	OWEN REV-B
THIS DESIGN IS BASED UPON COORDINATION WITH THE PROJECT CONSULTANTS DESIGNS MADE AVAILABLE. THE PRINCIPAL CONTRACTOR (PC) IS TO REVIEW THE CIVIL DESIGN IN COORDINATION WITH THE PROJECT CONSULTANTS DESIGNS AND THE PC'S CONSTRUCTION METHODOLOGY AND ADVISE OWEN CONSULTING OF ANY DISCREPANCIES PRIOR TO ANY CONSTRUCTION	

NOTES - APPROVALS
1. DESIGN IS NOT FOR CONSTRUCTION. 2. DESIGN IS SUBJECT TO OPERATIONAL WORKS SUBMISSION AND APPROVAL.

MINIMUM COVER OVER WATER MAINS		OWEN REV-B
LOCATION	MINIMUM COVER	<200mm DIA
NON-TRAFFICABLE AREAS, DRIVEWAYS, VERGES/FOOTWAYS	0.5m	
CARRIAGEWAYS OF SEALED LOCAL ROADS	0.75m	
CARRIAGEWAYS OF UNSEALED ROADS	0.75m	
CARRIAGEWAYS OF MAJOR ROADS, EMBANKMENTS	0.75m	
INDUSTRIAL AND COMMERCIAL AREAS	0.75m	
IMPORTANT NOTE: IF DURING CONSTRUCTION SET-OUT ON-SITE THE CONTRACTOR IDENTIFIES THAT THE MINIMUM COVER CAN NOT BE ACHIEVED, THEN THE CONTRACTOR IS TO NOTIFY OWEN CONSULTING IMMEDIATELY PRIOR TO CONTINUING WITH CONSTRUCTION.		

NOTES - STANDARDS REFERENCE	OWEN REV-B
1. GSCA - GRAVITY SEWERAGE CODE OF AUSTRALIA SOUTH-EAST QUEENSLAND SERVICE PROVIDERS EDITION VERSION 2.1 (SEPTEMBER 2021) - STD DRG's TO BE CURRENT REVISION. 2. WSCA - WATER SUPPLY CODE OF AUSTRALIA SOUTH-EAST QUEENSLAND SERVICE PROVIDERS EDITION VERSION 1.30 (AUGUST 2019). - STD DRG's TO BE CURRENT REVISION.	

MINIMUM COVER OVER SEWERS		OWEN REV-B
LOCATION	MINIMUM COVER	
PRIVATE PROPERTY & PUBLIC LAND NOT SUBJECT TO VEHICLE LOADING	0.6m	
PRIVATE PROPERTY ZONED RESIDENTIAL SUBJECT TO VEHICLE LOADING	0.75m	
FOOTPATHS, NATURE STRIPS, INDUSTRIAL AND COMMERCIAL LOTS, SEALED ROAD PAVEMENT OTHER THAN MAJOR ROAD SUBJECT TO VEHICULAR LOADING	0.90m	
UNSEALED AND MAJOR ROAD CARRIAGEWAYS	1.20m	
IMPORTANT NOTE: IF DURING CONSTRUCTION SET-OUT ON-SITE THE CONTRACTOR IDENTIFIES THAT THE MINIMUM COVER CAN NOT BE ACHIEVED, THEN THE CONTRACTOR IS TO NOTIFY OWEN CONSULTING IMMEDIATELY PRIOR TO CONTINUING WITH CONSTRUCTION.		

NOTES - EXISTING SERVICES	OWEN REV-C
1. THE CONTRACTOR SHALL OBTAIN THE LOCATION OF ALL SERVICES BY A 'DIAL BEFORE YOU DIG' (DBYD) SEARCH, ELECTRONIC DETECTION AND POTHOLING. IT IS THE CONTRACTORS RESPONSIBILITY TO PROTECT THESE SERVICES PRIOR TO WORKING IN THE VICINITY. ANY DAMAGE WILL BE REPAIRED AT THE CONTRACTORS EXPENSE. 3. THE CONTRACTOR IS TO CONFIRM THE ACTUAL LOCATIONS AND DEPTHS OF ALL EXISTING UNDERGROUND SERVICES PRIOR TO CONSTRUCTION WORKS AND COMPARE WITH CURRENT DESIGN PLANS. REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT. 4. WHERE A CONFLICTION IS MADE TO ANY ELEMENT OF EXISTING INFRASTRUCTURE, THEN THE LEVEL OF THAT INFRASTRUCTURE MUST BE CHECKED BY THE CONTRACTOR PRIOR TO CONSTRUCTION WORKS AND COMPARED WITH CURRENT DESIGN PLANS. REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT. 5. WHERE NEW SERVICES CROSS OTHER NEW SERVICES OR WHERE NEW SERVICES CROSS EXISTING SERVICES THE CONTRACTOR SHALL CHECK MINIMUM RELEVANT AUTHORITY CLEARANCES BY CHECKING LEVELS ON-SITE AND ADVISE THE SUPERINTENDENT PRIOR TO CONSTRUCTION IF THE MINIMUM CLEARANCE CAN NOT BE ACHIEVED. 6. OWEN CONSULTING ACCEPTS NO RESPONSIBILITY FOR ANY EXISTING SERVICES / INFRASTRUCTURE LOCATED ON-SITE THAT ARE NOT SHOWN ON THESE DRAWINGS OR THE ACCURACY OF EXISTING SERVICES LOCATIONS AND LEVELS SHOWN ON THESE DRAWINGS.	

EXISTING SERVICES LOCATION - QUALITY LEVEL DEFINITION
THIS DESIGN RELIES UPON EXISTING SERVICES INFORMATION DERIVED FROM THE FOLLOWING SOURCES - WHERE APPLICABLE: - THE SPATIAL LOCATION OF EXISTING SERVICES AT GROUND SURFACE LOCATED BY A REGISTERED SURVEYOR (QL-A) - THE SPATIAL LOCATION (HORIZONTAL & VERTICAL) OF UNDERGROUND SERVICES BY SURVEY REFERENCE (QL-B) - INFORMATION PROVIDED BY SERVICE OWNER AND / OR RELEVANT AUTHORITY (DEEMED QL-C) - DBYD SEARCH RESULTS (QL-D)

NOTES - DEMOLITION	OWEN REV-B
IT IS THE RESPONSIBILITY OF THE PRINCIPAL CONTRACTOR, BUILDER, SUB-CONTRACTOR AND / OR ANY OTHER CONTRACTOR UNDERTAKING ANY DEMOLITION WORKS TO: 1. SUBMIT AND ACHIEVE ANY NECESSARY APPROVALS FOR ANY DEMOLITION WORKS PRIOR TO ANY DEMOLITION WORKS. 2. THIS PLAN IS INDICATIVE ONLY AND THE EXTENT OF DEMOLITION IS SUBJECT TO CHANGE FROM OTHERS.	

RELEVANT APPLICATION & APPROVAL
RELEVANT APPROVAL(S) AS FOLLOWS: AUTHORITY: REFERENCE No: DATE:



SOURCE: NEARMAP/ AUG-2025

LOCALITY PLAN
SCALE 1: 1000

DESIGN STANDARD AND SPECIFICATIONS (CURRENT EDITIONS)	
SEWER AND WATER	- WATER SUPPLY CODE OF AUSTRALIA (WSA) - LOGAN CITY COUNCIL PLANNING POLICY 5 - INFRASTRUCTURE - SEQ W&S D&C CODE
ROADWORKS, DRIVEWAYS, VEHICLE CROSSINGS, FOOTPATHS AND VEHICLE PARKING	- QUEENSLAND COMPLETE STREETS - GUIDELINES FOR URBAN STREET DESIGN - AUSTRALIAN STANDARD AS2890 - AUSTROADS - GUIDE TO TRAFFIC MANAGEMENT PART 6A: PEDESTRIAN AND CYCLIST - DTMR - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - LOGAN CITY COUNCIL PLANNING POLICY 5 - INFRASTRUCTURE
SOIL EROSION	INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) - BEST PRACTICE EROSION & SEDIMENT CONTROL

WORKS IN ADJACENT PROPERTIES	OWEN REV-B
IT IS THE RESPONSIBILITY OF THE PRINCIPAL CONTRACTOR, BUILDER, SUB-CONTRACTOR AND / OR ANY OTHER CONTRACTOR UNDERTAKING ANY WORKS ON ANY ADJACENT ALLOTMENT / PROPERTY TO: 1. ACHIEVE LANDOWNERS CONSENT IN WRITTEN FORM PRIOR TO ANY WORKS BEING UNDERTAKEN. 2. AGREE WITH THE LANDOWNER THE METHOD OF WORKS. 3. AGREE WITH THE LANDOWNER THE REINSTATEMENT WORKS. 4. TAKE FULL RESPONSIBILITY FOR ANY RECTIFICATION WORKS FOLLOWING COMPLETION OF THE WORKS, WHERE THE LANDOWNER IS NOT SATISFIED WITH THE WORKS.	

Owen.

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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE SCALE 10 0 10 20 30 40 50 1:1000	
DO NOT SCALE FROM THIS DRAWING - IF IN DOUBT ASK	A1
DESIGNED DW	APPROVED
DRAWN DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD
REVIEWED SK	SHON KEALEY RPEB No. 29613

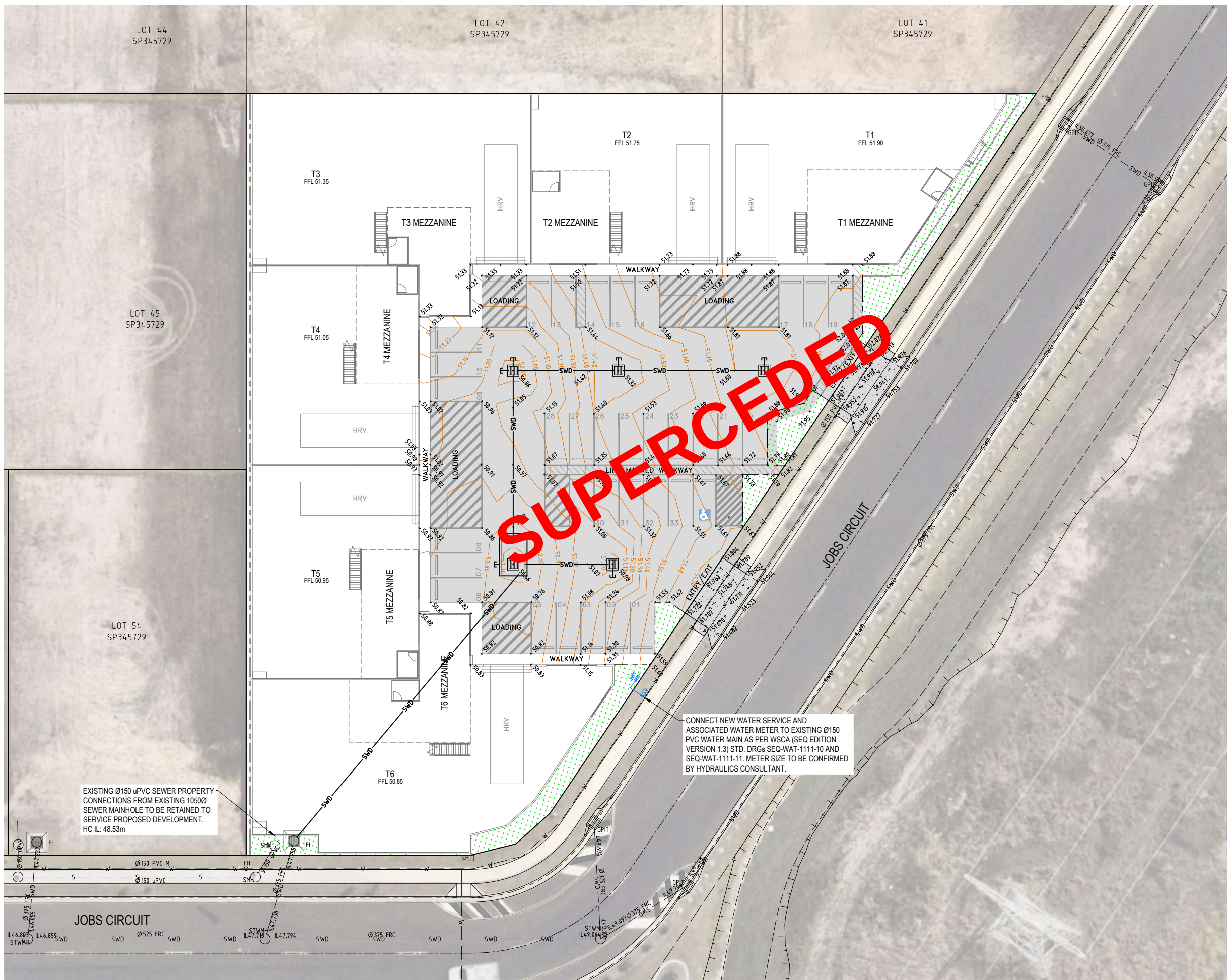


DATUM	AHD(m)
ISSUE	29.01.26
DATE	ISSUED FOR EDQ APPROVAL
ISSUE DESCRIPTION	

CUSTOMER	VIZ DEVELOPMENTS QLD PTY LTD
PROJECT	WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729	
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207	

TITLE	SEWER AND WATER DRAWING SCHEDULE AND LOCALITY PLAN
PROJECT No	2025106 LOT 47
DRAWING No	2025106-OPW-030

AMDT
A



LEGEND	
	EXISTING KERB AND CHANNEL
	EXISTING CROWN OF ROAD
	EXISTING STORMWATER DRAINAGE
	EXISTING SEWER GRAVITY
	EXISTING WATER RETICULATION
	EXISTING ELECTRICAL UNDERGROUND
	EXISTING TELECOMMS CONDUIT
	EXISTING STORMWATER MAINTENANCE HOLE
	EXISTING STORMWATER FIELD INLET
	EXISTING SEWER MAINTENANCE HOLE
	EXISTING STORMWATER GULLY PIT
	EXISTING TELSTRA PIT
	EXISTING FIRE HYDRANT
	EXISTING WATER METER
	EXISTING WATER VALVE
	DESIGN FINISHED SURFACE LEVEL
	DESIGN FINISHED SURFACE CONTOURS (0.05m INTERVAL)
	PROPOSED BARRIER KERB TYPE B2
	PROPOSED STORMWATER DRAINAGE
	PROPOSED CONCRETE PAVEMENT
	PROPOSED CONCRETE VEHICLE CROSSOVER (VXO)
	PROPOSED LANDSCAPING / TURF (BY OTHERS)
	PROPOSED PATHWAY LINEMARKING

NOTES	
1.	REFER TO DRG. 2025106-OPW-002 & 003 FOR DRAWING SET NOTES.
2.	GSCA (SEQ EDITION VER 2.1) STANDS FOR GRAVITY SEWERAGE CODE OF AUSTRALIA SOUTH-EAST QUEENSLAND SERVICE PROVIDERS EDITION VERSION 2.1 (SEPTEMBER 2021).
3.	WSCA (SEQ EDITION VER 1.3) STANDS FOR WATER SUPPLY CODE OF AUSTRALIA SOUTH-EAST QUEENSLAND SERVICE PROVIDERS EDITION VERSION 1.30 (AUGUST 2019).
4.	DESIGN IS SUBJECT TO EDQ APPROVAL.

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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE	
DO NOT SCALE FROM THIS DRAWING - IF IN DOUBT ASK	
DESIGNED DW	APPROVED
DRAWN DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD
REVIEWED SK	SHON KEALEY RPEP No. 29613

NORTH	
DATUM	AHD(m)

A	
ISSUE	29.01.26 ISSUED FOR EDQ APPROVAL
DATE	
ISSUE DESCRIPTION	

CLIENT	
VIZ DEVELOPMENTS QLD PTY LTD	
PROJECT	
WAREHOUSE DEVELOPMENT - CIVIL WORKS	
LOT 47 ON SP345729	
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207	

TITLE	
SEWER AND WATER OVERALL	
RETICULATION PLAN	
PROJECT No	
2025106 LOT 47	
DRAWING No	
2025106-OPW-031	
AMDT	
A	

VIZ DEVELOPMENTS QLD PTY LTD

YARRABILBA WAREHOUSE DEVELOPMENT - CIVIL WORKS (VXO'S NON-STANDARD)

LOT 47 JOBS CIRCUIT, YARRABILBA, QLD 4207

DETAIL AND LEVEL SURVEY

OWEN REV-B

SITE BENCHMARK: PSM59068
DATUM: RL. 46.040m (AHD)
THIS DRAWING SET AND DESIGN IS BASED UPON THE FOLLOWING:

LEVEL AND FEATURE (DETAIL) SURVEY

DETAIL SURVEY BY:
SURVEYOR: KN GROUP
DRAWING NUMBER: 23-101-04
REVISION: A

IMPORTANT NOTE: THE AFOREMENTIONED DETAIL SURVEY IS BASED ON A LOCAL SITE GRID AND ORIENTATION NOT MGA. THE PRINCIPAL CONTRACTOR IS TO COORDINATE ANY CONSTRUCTION SET-OUT, INCLUDING SURVEY CONTROL, WITH THE AFOREMENTIONED SURVEYOR.

NOTE - ARCHITECTURAL COORDINATION

OWEN REV-B

THIS DRAWING SET AND DESIGN IS BASED UPON THE FOLLOWING ARCHITECTURAL / BUILDING DESIGN LAYOUT BY:
CONSULTANT: BRUAC DESIGN
GROUND FLOOR / SITE PLAN NUMBER: BD067-DA01-I
REVISION: I
REVISION DATE: 16.01.26

NOTES - VXO APPROVAL

OWEN REV-B

CONSTRUCTION, INCLUDING ANY DEMOLITION WORK, IS NOT TO BE UNDERTAKEN UNTIL ANY NECESSARY APPLICATIONS HAVE BEEN LODGED WITH COUNCIL / RELEVANT AUTHORITY AND APPROVAL/S ISSUED.

NOTE - PLAN COORDINATION

OWEN REV-B

THIS DESIGN IS BASED UPON COORDINATION WITH THE PROJECT CONSULTANTS DESIGNS MADE AVAILABLE. THE PRINCIPAL CONTRACTOR (PC) IS TO REVIEW THE CIVIL DESIGN IN COORDINATION WITH THE PROJECT CONSULTANTS DESIGNS AND THE PC'S CONSTRUCTION METHODOLOGY AND ADVISE OWEN CONSULTING OF ANY DISCREPANCIES PRIOR TO ANY CONSTRUCTION

WORKS IN ADJACENT PROPERTIES

OWEN REV-B

IT IS THE RESPONSIBILITY OF THE PRINCIPAL CONTRACTOR, BUILDER, SUB-CONTRACTOR AND / OR ANY OTHER CONTRACTOR UNDERTAKING ANY WORKS ON ANY ADJACENT ALLOTMENT / PROPERTY TO:

1. ACHIEVE LANDOWNERS CONSENT IN WRITTEN FORM PRIOR TO ANY WORKS BEING UNDERTAKEN.
2. AGREE WITH THE LANDOWNER THE METHOD OF WORKS.
3. AGREE WITH THE LANDOWNER THE REINSTATEMENT WORKS.
4. TAKE FULL RESPONSIBILITY FOR ANY RECTIFICATION WORKS FOLLOWING COMPLETION OF THE WORKS, WHERE THE LANDOWNER IS NOT SATISFIED WITH THE WORKS.

DRAWING SCHEDULE - VXO		
DRAWING No.	REV.	DRAWING TITLE
2025106-VXO-001	A	VEHICLE CROSSOVER (VXO) DRAWING SCHEDULE AND LOCALITY PLAN
2025106-VXO-002	A	VEHICLE CROSSOVER (VXO) PLAN AND DETAILS - VXO 1
2025106-VXO-003	A	VEHICLE CROSSOVER (VXO) PLAN AND DETAILS - VXO 2

NOTES - VERGE REINSTATEMENT

OWEN REV-B

IMMEDIATELY UPON COMPLETION OF WORKS WITHIN ANY VERGE THE CONTRACTOR IS TO REINSTATE ANY DISTURBED AREAS WITHIN THE VERGE WITH TOPSOIL, TURF AND REINFORCED CONCRETE FOOTPATH (IF APPLICABLE) AS SPECIFIED TO THE SATISFACTION OF COUNCIL AND THE SUPERINTENDENT. NO TRIP HAZARDS WILL BE ACCEPTED BY COUNCIL OR THE SUPERINTENDENT.

NOTES - EXISTING SERVICES

OWEN REV-B

1. THE CONTRACTOR SHALL OBTAIN THE LOCATION OF ALL SERVICES BY A 'DIAL BEFORE YOU DIG' (DBYD) SEARCH, ELECTRONIC DETECTION AND POTHOLING. IT IS THE CONTRACTORS RESPONSIBILITY TO PROTECT THESE SERVICES PRIOR TO WORKING IN THE VICINITY. ANY DAMAGE WILL BE REPAIRED AT THE CONTRACTORS EXPENSE.
2. THE CONTRACTOR IS TO CONFIRM THE ACTUAL LOCATIONS AND DEPTHS OF ALL EXISTING UNDERGROUND SERVICES PRIOR TO CONSTRUCTION WORKS AND COMPARE WITH CURRENT DESIGN PLANS. REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT.
3. WHERE A CONNECTION IS MADE TO ANY ELEMENT OF EXISTING INFRASTRUCTURE, THEN THE LEVEL OF THAT INFRASTRUCTURE MUST BE CHECKED BY THE CONTRACTOR PRIOR TO CONSTRUCTION WORKS AND COMPARED WITH CURRENT DESIGN PLANS. REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT.
4. WHERE NEW SERVICES CROSS OTHER NEW SERVICES OR WHERE NEW SERVICES CROSS EXISTING SERVICES THE CONTRACTOR SHALL CHECK MINIMUM RELEVANT AUTHORITY CLEARANCES BY CHECKING LEVELS ON-SITE AND ADVISE THE SUPERINTENDENT PRIOR TO CONSTRUCTION IF THE MINIMUM CLEARANCE CAN NOT BE ACHIEVED.
5. OWEN CONSULTING ACCEPTS NO RESPONSIBILITY FOR ANY EXISTING SERVICES / INFRASTRUCTURE LOCATED ON-SITE THAT ARE NOT SHOWN ON THESE DRAWINGS OR THE ACCURACY OF EXISTING SERVICES LOCATIONS AND LEVELS SHOWN ON THESE DRAWINGS.

EXISTING SERVICES LOCATION - QUALITY LEVEL DEFINITION

THIS DESIGN RELIES UPON EXISTING SERVICES INFORMATION DERIVED FROM THE FOLLOWING SOURCES - WHERE APPLICABLE:

- THE SPATIAL LOCATION OF EXISTING SERVICES AT GROUND SURFACE LOCATED BY A REGISTERED SURVEYOR (QL-A)
- THE SPATIAL LOCATION (HORIZONTAL & VERTICAL) OF UNDERGROUND SERVICES BY SURVEY REFERENCE (QL-B)
- INFORMATION PROVIDED BY SERVICE OWNER AND / OR RELEVANT AUTHORITY (DEEMED QL-C)
- DBYD SEARCH RESULTS (QL-D)

NOTES - GENERAL - VXO

OWEN REV-B

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS, ALL COUNCIL SPECIFICATIONS (REFER TO NOTES - SUMMARY), ANY OTHER PROJECT CONSULTANT DRAWINGS & SPECIFICATIONS AND ANY WRITTEN INSTRUCTION.
2. WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL / RELEVANT AUTHORITY STANDARD DRAWINGS AND SPECIFICATIONS UNLESS NOTED OTHERWISE IN THE PROJECT DRAWINGS OR SPECIFICATIONS. COUNCIL'S STANDARD DRAWINGS AND SPECIFICATIONS ARE TO BE USED UNLESS STATED OR SHOWN OTHERWISE - IF IN DOUBT - CONTACT OWEN CONSULTING.
3. FINISHED LEVELS SHOWN FOR ON THIS PLAN FOR CONNECTION TO ANY EXISTING ROAD PAVEMENTS OR FOOTPATHS MAY BE VARIED ON-SITE WITH PRIOR APPROVAL FROM THE SUPERINTENDENT.
4. ALL WORKS ARE TO MATCH NEATLY INTO EXISTING ROADS / PAVEMENTS AND FOOTPATH SURFACE LEVELS TO THE SATISFACTION OF COUNCIL / RELEVANT AUTHORITY AND THE SUPERINTENDENT.
5. DO NOT OBTAIN DIMENSIONS FROM SCALING - IF IN DOUBT CONTACT OWEN CONSULTING.

NOTES - CONCRETE WORKS

OWEN REV-B

1. CONSTRUCTION TO BE IN ACCORDANCE WITH AS3600.
2. ALL NEW CONCRETE WORK SHALL MATCH NEATLY TO EXISTING.
3. CONCRETE FINISHES ARE TO BE AS FOLLOWS (UNO):
KERB AND KERB & CHANNEL - SMOOTH FINISH
FOOTPATHS AND DRIVEWAYS - BROOM FINISH IN PERPENDICULAR DIRECTION TO TRAFFIC
4. CONCRETE SPECIFICATION TO BE (UNO):
SLUMP 80mm
MAXIMUM AGGREGATE 20mm
5. CONCRETE STRENGTH GRADE FOR VXO'S AND KERB TO BE N32 (UNO) IN ACCORDANCE WITH AS 1379.
6. ALL TOPSOIL TO BE REMOVED PRIOR TO CONSTRUCTION.
7. UPON REMOVAL OF THE TOPSOIL - ANY POOR / UNSUITABLE SUBGRADE MATERIAL IS TO BE REMOVED AND REPLACED WITH COMPACTED CBR15 (MINIMUM) ROAD BASE IN LAYERS NOT EXCEEDING 150mm THICK.
8. PLACE MEDIUM-DUTY POLYETHYLENE (0.2mm THICK) TO UNDERSIDE OF CONCRETE - FOR FULL EXTENT.
9. ALL REINFORCEMENT TO BE SECURELY TIED PRIOR TO PLACEMENT OF CONCRETE. BAR CHAIRS ARE TO BE IN PLACE.
10. REINFORCEMENT COVER TO BE 40mm (MINIMUM) TO TOP, BOTTOM AND SIDES (INCLUDING FITMENTS).
11. ALIPHATIC ALCOHOL IS TO BE APPLIED TO THE FULL EXTENT OF THE CONCRETE SURFACE AFTER INITIAL SCREEDING. ALIPHATIC ALCOHOL IS TO BE RE-APPLIED AFTER EACH SUBSEQUENT FINISHING OPERATION.
12. NO CONCRETE IS TO BE PLACED ON-SITE WHEN THE TEMPERATURE EXCEED 35 DEGREES CELSIUS.



SOURCE: NEARMAP/ AUG-2025

LOCALITY PLAN
SCALE 1: 1000

PROPERTY DESCRIPTION:
LOT 47 ON SP345729

DESIGN STANDARD AND SPECIFICATIONS (CURRENT EDITIONS)	
ROADWORKS, DRIVEWAYS, VEHICLE CROSSINGS, FOOTPATHS AND VEHICLE PARKING	- QUEENSLAND COMPLETE STREETS - GUIDELINES FOR URBAN STREET DESIGN - AUSTRALIAN STANDARD AS2890 - AUSTROADS - GUIDE TO TRAFFIC MANAGEMENT PART 6A: PEDESTRIAN AND CYCLIST - DTMR - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - LOGAN CITY COUNCIL PLANNING POLICY 5 - INFRASTRUCTURE
DESIGN STANDARD AND SPECIFICATIONS (CURRENT EDITIONS)	
IPWEAQ PCD-101 IPWEAQ RSD-200 IPWEAQ RSD-100 IPWEAQ RSD-101 IPWEAQ RSD-102	- CONCRETE PATHWAY CONSTRUCTION DETAILS - KERB AND CHANNEL PROFILES AND DIMENSIONS - RESIDENTIAL DRIVEWAYS SHEET 1 OF 2 - RESIDENTIAL DRIVEWAYS SHEET 2 OF 2 - HEAVY DUTY



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CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE

SCALE 1:1000

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APPROVED

DRAWN DW/DS

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REVIEWED SK

SHON KEALEY

2025 No. 29613

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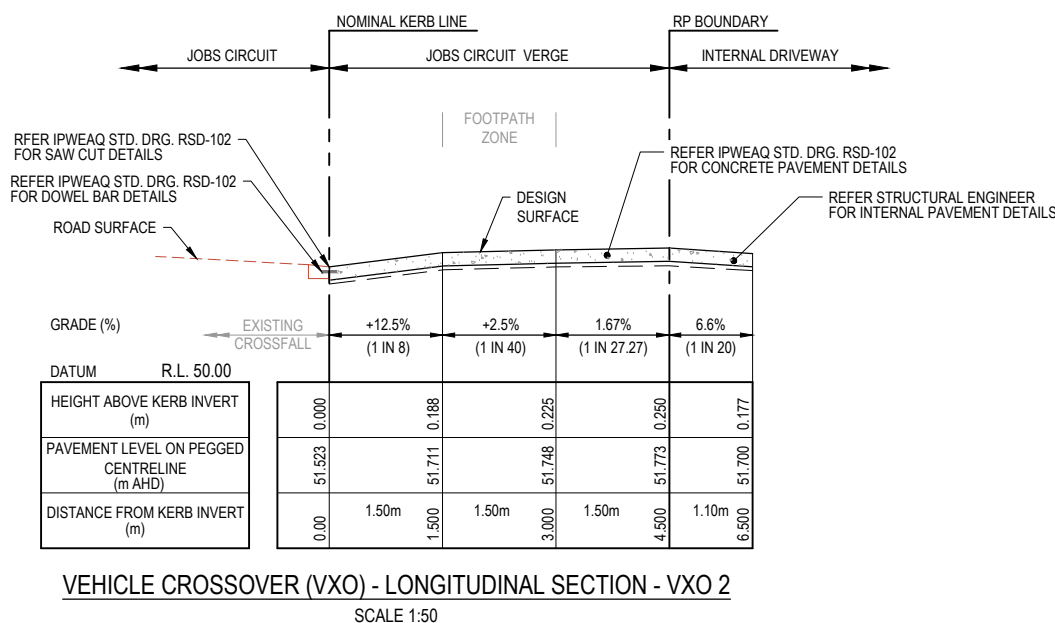
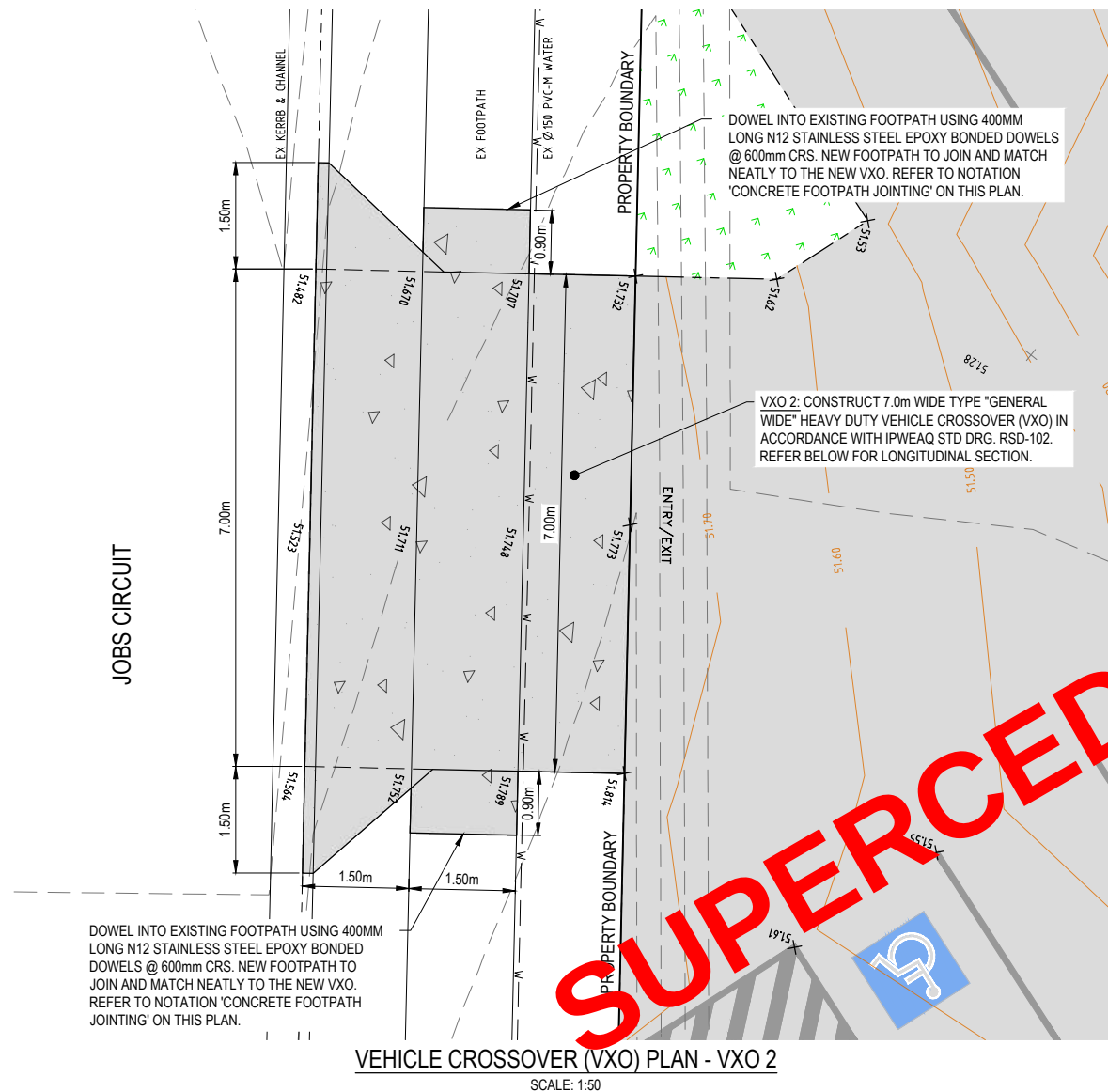


DATUM	AHD(m)	ISSUE	DATE	ISSUE DESCRIPTION
A			29.01.26	ISSUED FOR EDQ APPROVAL

CIENT
VIZ DEVELOPMENTS QLD PTY LTD
PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
VEHICLE CROSSOVER (VXO) DRAWING
SCHEDULE AND LOCALITY PLAN
PROJECT No
2025106 LOT 47
DRAWING No
2025106-VXO-001

AMDT
A



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CIVIL ENGINEERS
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DATUM AHD(m)

ISSUE DATE ISSUE DESCRIPTION

29.01.26 ISSUED FOR EDQ APPROVAL

CLIENT VIZ DEVELOPMENTS QLD PTY LTD

PROJECT WAREHOUSE DEVELOPMENT - CIVIL WORKS

LOT 47 ON SP345729

LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE VEHICLE CROSSOVER (VXO) PLAN AND DETAILS - VXO 2

PROJECT No 2025106 LOT 47

DRAWING No 2025106-VXO-003

AMDT A

SCALE 1:50

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PROJECT WAREHOUSE DEVELOPMENT - CIVIL WORKS

LOT 47 ON SP345729

LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE VEHICLE CROSSOVER (VXO) PLAN AND DETAILS - VXO 2

PROJECT No 2025106 LOT 47

DRAWING No 2025106-VXO-003

AMDT A

CLIENT VIZ DEVELOPMENTS QLD PTY LTD

PROJECT WAREHOUSE DEVELOPMENT - CIVIL WORKS

LOT 47 ON SP345729

LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE VEHICLE CROSSOVER (VXO) PLAN AND DETAILS - VXO 2

PROJECT No 2025106 LOT 47

DRAWING No 2025106-VXO-003

AMDT A

TITLE VEHICLE CROSSOVER (VXO) PLAN AND DETAILS - VXO 2

PROJECT No 2025106 LOT 47

DRAWING No 2025106-VXO-003

AMDT A



VIZ DEVELOPMENTS QLD PTY LTD

EROSION AND SEDIMENT CONTROL MANAGEMENT PLAN

LOT 47 JOBS CIRCUIT, YARRABILBA, QLD 4207

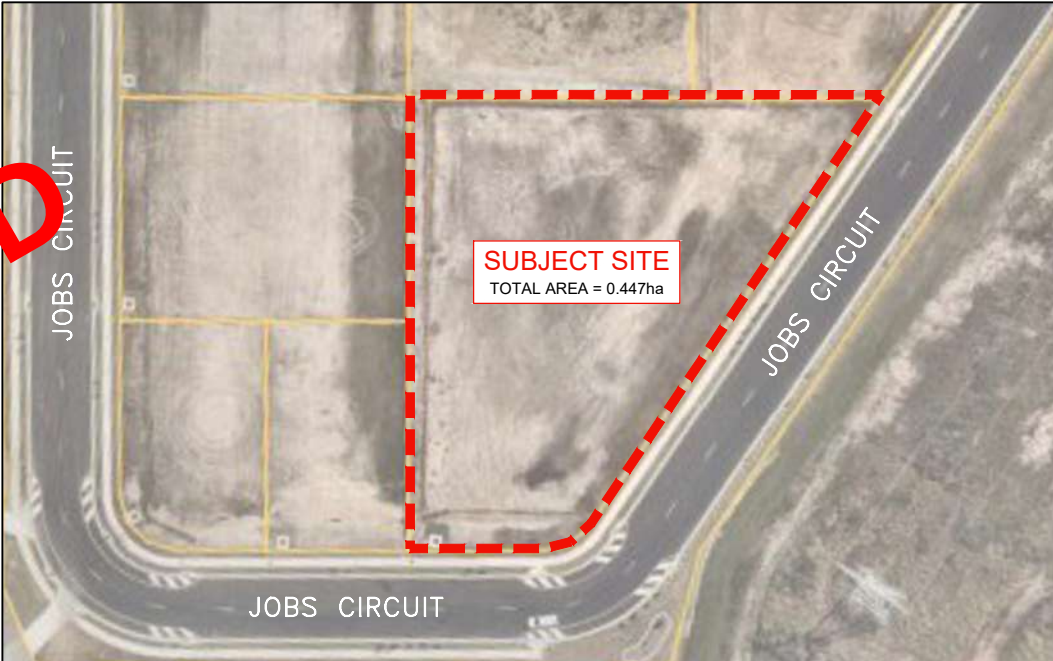
DRAWING SCHEDULE - ESC		
DRAWING No.	REV.	DRAWING TITLE
2025106-ESC-001	A	DRAWING SCHEDULE AND LOCALITY PLAN
2025106-ESC-002	A	DRAWING SET NOTES SHEET
2025106-ESC-003	A	EROSION AND SEDIMENT CONTROL PLAN - PHASE 0 INITIAL SITE ESTABLISHMENT
2025106-ESC-004	A	EROSION AND SEDIMENT CONTROL PLAN - PHASE 1 LAND-CLEARING
2025106-ESC-005	A	EROSION AND SEDIMENT CONTROL PLAN - PHASE 2 EARTHWORKS
2025106-ESC-006	A	EROSION AND SEDIMENT CONTROL PLAN - PHASE 3 ROADWORKS & SERVICES
2025106-ESC-007	A	EROSION AND SEDIMENT CONTROL DETAILS

DESIGN STANDARDS AND GUIDELINES (CURRENT EDITIONS)	
RELEVANT AUTHORITY	LOGAN CITY COUNCIL PLANNING POLICY 5 - INFRASTRUCTURE
EROSION & SEDIMENT CONTROL	INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) - BEST PRACTICE EROSION & SEDIMENT CONTROL
STORMWATER MANAGEMENT	WATER SENSITIVE URBAN DESIGN TECHNICAL GUIDELINES - HEALTHY WATERWAYS STATE PLANNING POLICY (SPP, JULY 2017)
STORMWATER DRAINAGE & RUNOFF	QUEENSLAND URBAN DRAINAGE MANUAL (QUDM) FOURTH EDITION 2016
EARTHWORKS	AS 3798 - GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS

PROPERTY DESCRIPTION:
LOT 47 ON SP345729

DETAIL AND LEVEL SURVEY
OWEN REV-B
SITE BENCHMARK: PSM59068 DATUM: RL. 46.040m (AHD) THIS DRAWING SET AND DESIGN IS BASED UPON THE FOLLOWING: LEVEL AND FEATURE (DETAIL) SURVEY DETAIL SURVEY BY: SURVEYOR: KN GROUP DRAWING NUMBER: 23-101-04 REVISION: A IMPORTANT NOTE: THE AFOREMENTIONED DETAIL SURVEY IS BASED ON A LOCAL SITE GRID AND ORIENTATION NOT MGA. THE PRINCIPAL CONTRACTOR IS TO COORDINATE ANY CONSTRUCTION SET-OUT, INCLUDING SURVEY CONTROL, WITH THE AFOREMENTIONED SURVEYOR. BOUNDARY IDENTIFICATION SURVEY IMPORTANT NOTE: THIS DESIGN PACKAGE IS NOT BASED UPON AN IDENTIFICATION SURVEY. PRIOR TO ANY CONSTRUCTION SET-OUT AND / OR ACTUAL CONSTRUCTION THIS DESIGN IS SUBJECT TO REVIEW AND POSSIBLE AMENDMENT TO SUIT AN IDENTIFICATION SURVEY - BEING ISSUED BY THE PRINCIPAL'S SURVEYOR.

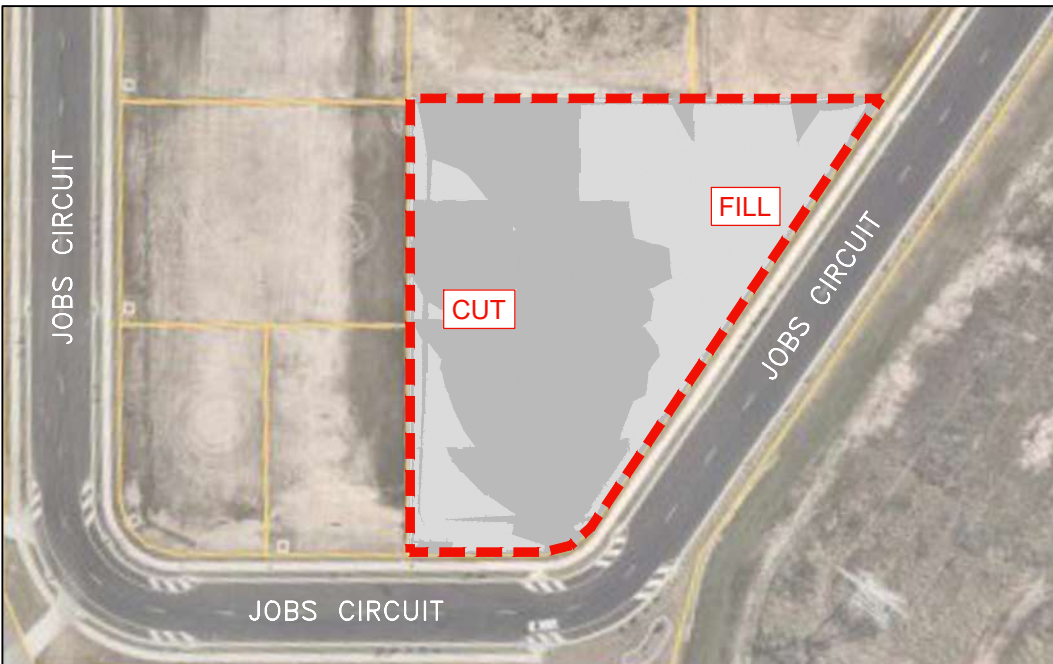
NOTE - ARCHITECTURAL COORDINATION
OWEN REV-B
THIS DRAWING SET AND DESIGN IS BASED UPON THE FOLLOWING ARCHITECTURAL / BUILDING DESIGN LAYOUT BY: CONSULTANT: ARCHITECTS DOVEY & ASSOCIATES GROUND FLOOR / SITE PLAN NUMBER: BD067-DA01-I REVISION: I - 16.01.26
NOTE - PLAN COORDINATION
OWEN REV-B
THIS DESIGN IS BASED UPON COORDINATION WITH THE PROJECT CONSULTANTS DESIGNS MADE AVAILABLE. THE PRINCIPAL CONTRACTOR (PC) IS TO REVIEW THE CIVIL DESIGN IN COORDINATION WITH THE PROJECT CONSULTANTS DESIGNS AND THE PC'S CONSTRUCTION METHODOLOGY AND ADVISE OWEN OF ANY DISCREPANCIES PRIOR TO ANY CONSTRUCTION



SOURCE: NEARMAP/ OCTOBER-2025

SUBJECT SITE - PRE-DEVELOPMENT

SCALE 1: 750



SOURCE: NEARMAP/ OCTOBER-2025

SUBJECT SITE - DISTURBED AREA EXTENTS

SCALE 1: 750

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SCALE	15 0 15 30	1:750
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DRAWN DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD	
REVIEWED SK/EK	SHON KEALEY RPEB No. 29619	

NORTH
DATUM AHD(m)

A	20.01.26	ISSUED FOR EDQ APPROVAL
ISSUE	DATE	ISSUE DESCRIPTION

CLIENT	VIZ DEVELOPMENTS QLD PTY LTD
PROJECT	WAREHOUSE DEVELOPMENT - CIVIL WORKS LOT 47 ON SP345729 LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE	DRAWING SCHEDULE AND LOCALITY PLAN
PROJECT No	2025106 LOT 47
DRAWING No	2025106-ESC-001
AMDT	A

NOTES - SEDIMENT MANAGEMENT
ALL WORK TO BE IN ACCORDANCE WITH INTERNATIONAL EROSION CONTROL ASSOCIATION - AUSTRALASIA BEST PRACTICE MANAGEMENT GUIDELINES.
1. CONSTRUCTION OF ALL SEDIMENT MANAGEMENT DEVICES TO THE SATISFACTION OF COUNCIL'S REPRESENTATIVE. SHALL BE COMPLETED AND EFFECTIVE PRIOR TO: (a) STRIPPING OF TOPSOIL AND GRASS. (b) BULK EARTHWORKS TO THE SITE. (c) SERVICES INSTALLATION. (d) PAVEMENT CONSTRUCTION.
2. ALL SEDIMENT MANAGEMENT MEASURES ARE TO REMAIN IN PLACE UNTIL INSTRUCTION IS RECEIVED FROM THE COUNCIL REPRESENTATIVE OR SUPERINTENDENT TO REMOVE ALL OR PART OF THE SILT CONTROL APPLICATIONS.
3. BOTH TEMPORARY AND PERMANENT SEDIMENT MANAGEMENT/EROSION CONTROL DEVICES SHALL BE MAINTAINED AT A SUITABLE LEVEL/CONDITION THROUGHOUT CONSTRUCTION TO THE SATISFACTION OF THE COUNCIL'S REPRESENTATIVE. SEDIMENT FENCES ARE TO BE CLEANED OUT WHEN CAPACITY IS REDUCED BY 30%.
4. SEDIMENT MANAGEMENT MEASURES ARE TO BE MAINTAINED THROUGHOUT THE MAINTENANCE PERIOD AS DIRECTED.
5. PRIOR TO COMMENCEMENT OF CONSTRUCTION APPROVAL IS TO BE OBTAINED FROM COUNCIL FOR THE LOCATION OF THE SITE ACCESS POINT AND SHAKE DOWN AREA WHICH ARE TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
6. IF SEDIMENT AND EROSION CONTROL DEVICES HAVE BEEN FOUND TO BE DEFECTIVE IN SERVICE, CORRECTIVE ACTION IS TO BE UNDERTAKEN IMMEDIATELY WHICH MAY INCLUDE AMENDMENTS/ADDITIONS TO THE ORIGINAL APPROVED SEDIMENT AND EROSION CONTROL PLANS.
7. ANY SILT OR SEDIMENT ON EXISTING ROADS CAUSED BY THE MOVEMENT OF CONSTRUCTION TRAFFIC IS TO BE REMOVED DAILY BY APPROVED METHODS.
8. TEMPORARY DRAINAGE CONTROL FLOW SHOULD BE DIVERTED AROUND THE WORK SITE WHERE POSSIBLE.
9. ALL DRAINAGE, EROSION AND SEDIMENT CONTROLS TO BE INSTALLED AND BE OPERATIONAL BEFORE COMMENCING "UP-SLOPE" EARTHWORKS.
10. ALL CONTROL MEASURES TO BE INSPECTED AT LEAST WEEKLY AND AFTER SIGNIFICANT RUNOFF PRODUCING STORMS.
11. CONTROL MEASURES MAY BE REMOVED WHEN ON-SITE EROSION IS CONTROLLED AND 70% OF PERMANENT SOIL COVERAGE IS OBTAINED OVER ALL UPSTREAM DISTURBED LAND.
12. IN AREAS WHERE RUNOFF TURBIDITY IS TO BE CONTROLLED, EXPOSED SURFACES TO BE EITHER MULCHED, COVERED WITH EROSION CONTROL BLANKETS OR TURFED IF EARTHWORKS ARE EXPECTED TO BE DELAYED FOR MORE THAN 14 DAYS.
13. STRAW BALE SEDIMENT TRAPS ARE A SECONDARY OPTION WHICH GENERALLY NOT BE USED IF OTHER OPTIONS ARE AVAILABLE.

NOTES - SEDIMENT FENCE
MATERIALS
1. FABRIC: POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN FABRIC, AT LEAST 700MM IN WIDTH AND A MINIMUM UNIT WEIGHT OF 140GSM. ALL FABRICS TO CONTAIN ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OR 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).
2. FABRIC REINFORCEMENT: WIRE OR STEEL MESH MAXIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200MM.
3. SUPPORT STAKES: 1.5KG/M (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING FABRIC.
INSTALLATION
1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, AND REQUIRED TYPE OF FABRIC (IF SPECIFIED). IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, FABRIC TYPE, OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
2. TO THE MAXIMUM DEGREE PRACTICAL AND WHERE THE PLANS ALLOW, ENSURE THE FENCE IS LOCATED: (i) TOTALLY WITHIN THE PROPERTY BOUNDARY; (ii) ALONG A LINE OF CONSTANT ELEVATION WHEREVER PRACTICAL; (iii) AT LEAST 2M FROM THE TOE OF ANY FILLING OPERATIONS THAT MAY RESULT IN SHIFTING SOIL/FILL DAMAGING FENCE.
3. INSTALL RETURNS WITHIN THE FENCE AT MAXIMUM 20M INTERVALS IF THE FENCE IS INSTALLED ALONG THE CONTOUR, OR 5 TO 10M MAXIMUM SPACING (DEPENDING ON SLOPE) IF THE FENCE IS INSTALLED AT AN ANGLE TO THE CONTOUR THE 'RETURNS' SHALL CONSIST OF EITHER: (i) V-SHAPED SECTION EXTENDING AT LEAST 1.5M UP THE SLOPE; OR (ii) SANDBAG OR ROCK/AGGREGATE CHECKDAM A MINIMUM 1/3 AND MAXIMUM 1/2 FENCE HEIGHT, AND EXTENDING AT LEAST 1.5M UP THE SLOPE.
4. ENSURE THE EXTREME ENDS OF THE FENCE ARE TURNED UP THE SLOPE AT LEAST 1.5M, OR AS NECESSARY, TO MINIMISE WATER BYPASSING AROUND THE FENCE.
5. ENSURE THE SEDIMENT FENCE IS INSTALLED IN A MANNER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE FENCE, AND THE UNDESIRABLE DISCHARGE OF WATER AROUND THE END OF THE FENCE.
6. IF THE SEDIMENT FENCE IS TO BE INSTALLED ALONG THE EDGE OF EXISTING TREES, ENSURE CARE IS TAKEN TO PROTECT THE TREES AND THEIR ROOT SYSTEMS DURING INSTALLATION OF THE FENCE. DO NOT ATTACH THE FABRIC TO THE TREES.
7. UNLESS DIRECTED BY THE SUPERVISOR OR THE APPROVED PLANS, EXCAVATE A 200MM WIDE BY 200MM DEEP TRENCH ALONG THE PROPOSED FENCE LINE, PLACING THE EXCAVATED MATERIAL ON THE UP SLOPE SIDE OF THE TRENCH.
8. ALONG THE LOWER SIDE OF THE TRENCH, APPROPRIATELY SECURE THE POSTS INTO THE GROUND NO GREATER THAN 3M IF SUPPORTED BY A TOP SUPPORT WIRE OR WEIR MESH BACKING, OTHERWISE NO GREATER THAN 2M.
9. IF SPECIFIED, SECURELY ATTACH THE ASUPPORT WIRE OR MESH TO THE UP-SLOPE SIDE OF THE POSTS WITH THE MESH EXTENDING AT LEAST 200MM INTO THE EXCAVATED TRENCH. ENSURE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE POSTS EVEN WHEN DIRECTING A FENCE AROUND THE CORNER OF A SHARP CHANGE OF DIRECTION.
10. WHEREVER POSSIBLE, CONSTRUCT THE SEDIMENT FENCE FROM A CONTINUOUS ROLL OF FABRIC. TO JOIN FABRIC EITHER: (i) ATTACH EACH END TO TWO OVERLAPPING POSTS WITH FABRIC FOLDING AROUND THE ASSOCIATED POST ONE TURN, AND WITH THE TWO POSTS TIED TOGETHER WITH WIRE OR (ii) OVERLAP THE FABRIC TO THE NEXT ADJACENT SUPPORT POST.
11. SECURELY ATTACH THE FABRIC TO THE SUPPORT POSTS USING TIE WIRE AT MAXIMUM 150MM SPACING.
12. ENSURE THE COMPLETED SEDIMENT FENCE IS AT LEAST 450MM, BUT NOT MORE THAN 700MM HIGH. IF A SPILL-THROUGH WEIR IS INSTALLED, ENSURE THE CREST OF THE WEIR IS AT LEAST 300MM ABOVE THE GROUND LEVEL.
13. BACKFILL THE TRENCH AND TAMP THE FILL TO FIRMLY ANCHOR THE BOTTOM OF THE FABRIC AND MESH TO PREVENT WATER FROM FLOWING UNDER THE FENCE.

NOTES - GULLY GRATE/SAG PIT
MATERIAL
1. SOCKS: MINIMUM 200mm DIAMETER SYNTHETIC OR BIODEGRADABLE TUBES MANUFACTURED FROM NON-WOVEN OR COMPOSITE FABRIC SUITABLE FOR THE 'FILTRATION' OF COARSE SEDIMENT.
INSTALLATION
1. REFER TO APPROVED PLANS FOR THE LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
2. ENSURE THE SOCKS ARE PLACED INDIVIDUALLY OR COLLECTIVELY (AS A SINGLE SEDIMENT TRAP) SUCH THAT: (i) LEAKAGE AROUND OR UNDER THE SOCKS IS MINIMISED; (ii) ADJOINING SOCKS ARE TIGHTLY BUTTED OR OVERLAPPED AT LEAST 450mm; (iii) THE SURFACE AREA OF POTENTIAL WATER PONDING UP-SLOPE OF EACH SEDIMENT TRAP IS MAXIMISED; (iv) TO THE MAXIMUM DEGREE PRACTICAL, ALL SEDIMENT-LADEN WATER WILL PASS THROUGH THE FORMED POND BEFORE FLOWING OVER THE DOWN-SLOPE END OF THE SEDIMENT TRAP.
3. WHEN PLACED ACROSS THE INVERT OF MINOR DRAINS, ENSURE THE SOCKS ARE PLACED SUCH THAT: (i) THE CREST OF THE DOWNSTREAM SOCK IS LEVEL WITH THE CHANNEL INVERT AT THE IMMEDIATE UPSTREAM SOCK (IF ANY); (ii) EACH SOCK EXTENDS UP THE CHANNEL BANKS SUCH THAT THE CREST OF THE SOCK AT ITS LOWEST POINT IS LOWER THAN GROUND LEVEL AT EITHER END OF THE SOCK.
4. IF STAKES ARE REQUIRED TO ANCHOR THE SOCKS, THE SPACING DOES NOT EXCEED 1.2m. SIX TIMES THE SOCK DIAMETER (WHICHEVER IS THE LARGER) MAXIMUM STAKE SPACING OF 0.3m APPLIED WHEN USED TO FORM CHECK DAMS.
MAINTENANCE
1. INSPECT ALL CHECK SOCKS PRIOR TO FORECAST RAIN DAILY DURING EXTENDED PERIODS OF RAINFALL, AFTER SIGNIFICANT RUNOFF PRODUCING STORMS OR OTHERWISE AFTER FORTNIGHTLY INTERVALS.
2. REPAIR OR REPLACE DAMAGED SOCKS.
3. THE BULK OF THE SEDIMENT COLLECTED BEHIND THE FILTER SOCKS SHOULD BE REMOVED BY SHOVEL AFTER EACH STORM EVENT.
4. REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
REMOVAL
1. ALL SAND, SOIL, SEDIMENT OR MUD MUST BE PHYSICALLY REMOVED FROM SEALED SURFACES, FIRST USING A SQUARE-EDGED SHOVEL, AND THEN A STIFF-BRISTLED BROOM, AND THEN BY A MECHANICAL VACUUM UNIT, IF AVAILABLE.
2. IF NECESSARY FOR SAFETY REASONS, THE SEALED SURFACE SHALL ONLY BE WASHED CLEAN AFTER ALL REASONABLE EFFORTS HAVE BEEN TAKEN TO SHOVEL AND SWEEP THE MATERIALS FROM THE SURFACE.
3. DISPOSE OF COLLECTED SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
4. ALL SYNTHETIC (PLASTIC) MESH OR OTHER NON READILY BIODEGRADABLE MATERIALS MUST BE REMOVED FROM THE SITE ONCE THE SLOPE OR DRAIN IS STABILISED, OR THE SOCKS HAVE DETERIORATED TO A POINT WHERE THEY ARE NO LONGER PROVIDING THERE INTENDED DRAINAGE OR SEDIMENT CONTROL FUNCTION.

NOTES - CONSTRUCTION EXIT - VIBRATION GRID
INSTALLATION
1. REFER TO APPROVED PLANS FOR LOCATION AND DIMENSIONAL DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE APPOINTED ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
2. CLEAR THE LOCATION OF THE VIBRATION GRID, REMOVING STUMPS, ROOTS AND OTHER VEGETATION TO PROVIDE FIRM FOUNDATION SO THAT THE ROCK IS NOT PRESSED INTO SOFT GROUND. CLEAR SUFFICIENT WIDTH TO ALLOW PASSAGE OF LARGE VEHICLES, BUT CLEAR ONLY THAT NECESSARY FOR EXIT. DO NOT CLEAR ADJACENT AREAS UNTIL THE REQUIRED EROSION AND SEDIMENT CONTROL DEVICES ARE IN PLACE.
3. GRADE THE LOCATION OF THE VIBRATION GRID SO THAT RUNOFF FROM THE UNIT WILL NOT FLOW INTO THE STREET OR ADJOINING PROPERTIES, BUT WILL FLOW TOWARDS AN APPROPRIATE-TRAPPING DEVICE.
4. ENSURE THAT INSTALLATION OF THE VIBRATION GRID HAS ADEQUATE SEDIMENT STORAGE VOLUME UNDER THE GRID. WHERE NECESSARY, INSTALL SUITABLE PRECAST SEDIMENT COLLECTION CHAMBERS.
5. PLACE A ROCK PAD/RAMP FORMING A MINIMUM 200MM THICK LAYER OF CLEAN, OPEN-VOID ROCK OVER THE ROADWAY BETWEEN THE VIBRATION GRID AND THE SEALED STREET TO PREVENT TYRES FROM PICKING UP MORE SOIL AFTER THEY HAVE BEEN CLEANED.
6. THE TOTAL LENGTH OF THE VIBRATION GRID AND ROCK RAMPS SHOULD BE AT LEAST 15M WHERE PRACTICABLE, AND AS WIDE AS THE FULL WIDTH OF THE ENTRY OR EXIT AND AT LEAST 3M. THE ROCK RAMP SHOULD COMMENCE AT THE EDGE OF THE OFF-SITE SEALED ROAD OR PAVEMENT.
7. FLARE THE END OF THE ROCK PAD WHERE IT MEETS THE PAVEMENT SO THAT THE WHEELS OF TURNING VEHICLES DO NOT TRAVEL OVER UNPROTECTED SOIL.
MAINTENANCE
1. INSPECT VIBRATION GRID PRIOR TO FORECAST RAIN, DAILY EXTENDED PERIODS OF RAINFALL AND AFTER SIGNIFICANT RUNOFF-PRODUCING RAINFALL OR OTHERWISE AFTER FORTNIGHTLY INTERVALS.
2. IF SAND, SOIL, SEDIMENT OR MUD IS TRACKED OR WASHED ONTO THE ADJACENT SEALED ROADWAY, THEN SUCH MATERIAL MUST BE PHYSICALLY REMOVED, FIRST USING A SQUARE-EDGED SHOVEL, AND THEN A STIFF-BRISTLED BROOM.
3. IF NECESSARY FOR SAFETY REASONS, THE ROADWAY SHALL ONLY BE WASHED CLEAN AFTER ALL REASONABLE EFFORTS HAVE BEEN TAKEN TO SHOVEL AND SWEEP THE MATERIAL FROM THE ROADWAY.
4. WHEN THE VOIDS BETWEEN THE ROCK BECOMES FILLED WITH MATERIAL AND THE EFFECTIVENESS OF THE ROCK RAMPS ARE REDUCED TO A POINT WHERE SEDIMENT IS BEING TRACKED OFF THE SITE, A NEW 100MM LAYER OF ROCK MUST BE ADDED AND/OR THE ROCK PAD MUST BE EXTENDED.
5. ENSURE ALL ASSOCIATED DRAINAGE CONTROL MEASURES ARE MAINTAINED IN ACCORDANCE WITH THEIR DESIRED OPERATIONAL CONDITION.
6. DISPOSE OF SEDIMENT AND DEBRIS IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.
REMOVAL
1. THE VIBRATION GRID SHOULD BE REMOVED ONLY AFTER IT IS NO LONGER NEEDED AS A SEDIMENT CONTROL DEVICE.
2. REMOVE MATERIALS AND COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
3. RE-GRADE AND STABILISE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.

NOTES - ROCK FILTER WEIR
MATERIALS
• SUPPORT POSTS/STAKES: 1500MM2 (MIN) HARDWOOD, 2500MM2 (MIN) SOFTWOOD, OR 1.5KG/M (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING WIRE MESH.
• WIRE MESH: WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200MM.
• PRIMARY CORE ROCK: 15 TO 75MM ROUND OR CRUSHED (ANGULAR) ROCK.
• AGGREGATE FILTER: 15 TO 25MM CLEAN AGGREGATE.
• GEOTEXTILE FILTER FABRIC: HEAVY-DUTY NON-WOVEN, NEEDLE-PUNCHED FILTER FABRIC, MINIMUM 'BIDIM' A34 OR EQUIVALENT.
• WOVEN FLOW CONTROL FABRIC: MINIMUM UNIT WEIGHT OF 140GSM, WITH ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE.
• ARMOUR ROCK (SPLASH PAD): WELL GRADED, HARD, ANGULAR, EROSION RESISTANT ROCK, WITH MEAN SIZE NOT LESS THAN 225MM.
INSTALLATION
1. REFER TO PLANS FOR LOCATION AND CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
2. COVER THE FOUNDATION AREA AND CUT-OFF TRENCH WITH HEAVY-DUTY FILTER FABRIC. OVERLAP ADJOINING FABRIC SHEETS A MINIMUM OF 600MM AT ALL JOINTS.
3. INSTALL THE SUPPORT POSTS AT A MAXIMUM 600MM CENTRES, AND ATTACH THE WIRE MESH TO THE INSIDE OF THE POSTS. INSTALL THE PARALLEL WIRE MESH FENCES AT THE SPACING AND NUMBER SPECIFIED IN THE APPROVED PLANS.
4. PLACE FILTER CLOTH AND/OR WOVEN FABRIC (AS SPECIFIED) ON THE UPSTREAM SIDE OF THE MOST DOWNSTREAM FENCE.
5. INSTALL THE INTERNAL FILTER MEDIUM BETWEEN THE PARALLEL FENCES. IF AGGREGATE IS USED, IT SHOULD BE PLACED IN MAXIMUM 400MM LIFTS. AFTER EACH 400MM LIFT, LACE DIAGONAL SUPPORT POSTS TOGETHER USING FENCING WIRE TO IMPROVE STABILITY OF THE WEIR. REPEAT THIS PROCESS UNTIL THE WEIR REACHES THE SPECIFIED HEIGHT.
6. CLEAR THE SETTLING POND AREA OF WOODY VEGETATION AND ORGANIC MATTER TO THE DIMENSIONS SPECIFIED WITHIN THE PLANS.
7. WHERE NECESSARY, EXCAVATE THE UPSTREAM SETTLING POND AND/OR SEDIMENT STORAGE PIT IN ACCORDANCE WITH THE APPROVED PLANS. EXCAVATED PITS TYPICALLY HAVE SIDE SLOPES OF 2:1(H:V) OR FLATTER UNLESS STEEPER SLOPES ARE KNOWN TO BE STABLE.
8. TAKE ALL NECESSARY MEASURE TO MINIMISE THE SAFETY RISK CAUSED BY THE STRUCTURE.
MAINTENANCE
1. CHECK ALL SEDIMENT WEIRS AFTER EACH RUNOFF EVENT AND MAKE REPAIRS IMMEDIATELY.
2. INSPECT ALL EMBANKMENTS FOR UNDERCUTTING OR UNDESIRABLE SEEPAGE FLOWS.
3. IDEALLY, SEDIMENT WEIRS SHOULD DISCHARGE (FROM FULL) OVER NO LESS THAN 8 HOURS. IF DRAINAGE IS TOO RAPID, THEN ADDITIONAL FILTER AGGREGATE MAY BE REQUIRED TO ACHIEVE OPTIMUM HYDRAULIC PERFORMANCE.
4. IF FLOW THROUGH THE STRUCTURE IS REDUCED TO AN UNACCEPTABLE LEVEL, THE UPSTREAM FILTER MEDIUM (AGGREGATE OR FILTER CLOTH) SHOULD BE REMOVED AND REPLACED.
5. IF A GREATER DEGREE OF WATER TREATMENT (FILTRATION) IS REQUIRED, EXTRA GEOTEXTILE FILTER FABRIC SHOULD BE PLACED OVER THE UPSTREAM FACE OF THE STRUCTURE.
6. CHECK THE STRUCTURE AND DOWNSTREAM CHANNEL BANKS FOR DAMAGE FROM OVERTOPPING FLOWS. MAKE REPAIRS AS NECESSARY.
7. IMMEDIATELY REPLACE ANY ROCK DISPLACED FROM THE DOWNSTREAM SPLASH PAD.
8. REMOVE SEDIMENT AND RESTORE ORIGINAL SEDIMENT STORAGE VOLUME WHEN COLLECTED SEDIMENT EXCEEDS 10% OF THE SPECIFIED STORAGE VOLUME.
9. DISPOSE OF SEDIMENT AND DEBRIS IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.
REMOVAL
1. WHEN THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILISED, REMOVE ALL MATERIALS INCLUDED DEPOSITED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
2. ALL WATER AND SEDIMENT SHOULD BE REMOVED FROM THE SETTLING POND PRIOR TO THE DAM'S REMOVAL. DISPOSE OF SEDIMENT AND WATER IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.
3. BRING THE DISTURBED AREA TO A PROPER GRADE, THEN SMOOTH, COMPACT AND STABILISE AND/OR REVEGETATE AS REQUIRED TO MINIMISE THE EROSION HAZARD.



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CIVIL ENGINEERS
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LAND DEVELOPMENT

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VIZ DEVELOPMENTS QLD PTY LTD

PROJECT

WAREHOUSE DEVELOPMENT - CIVIL WORKS

LOT 47 ON SP345729

LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE

DRAWING SET NOTES SHEET

PROJECT No

2025106 LOT 47

DRAWING No

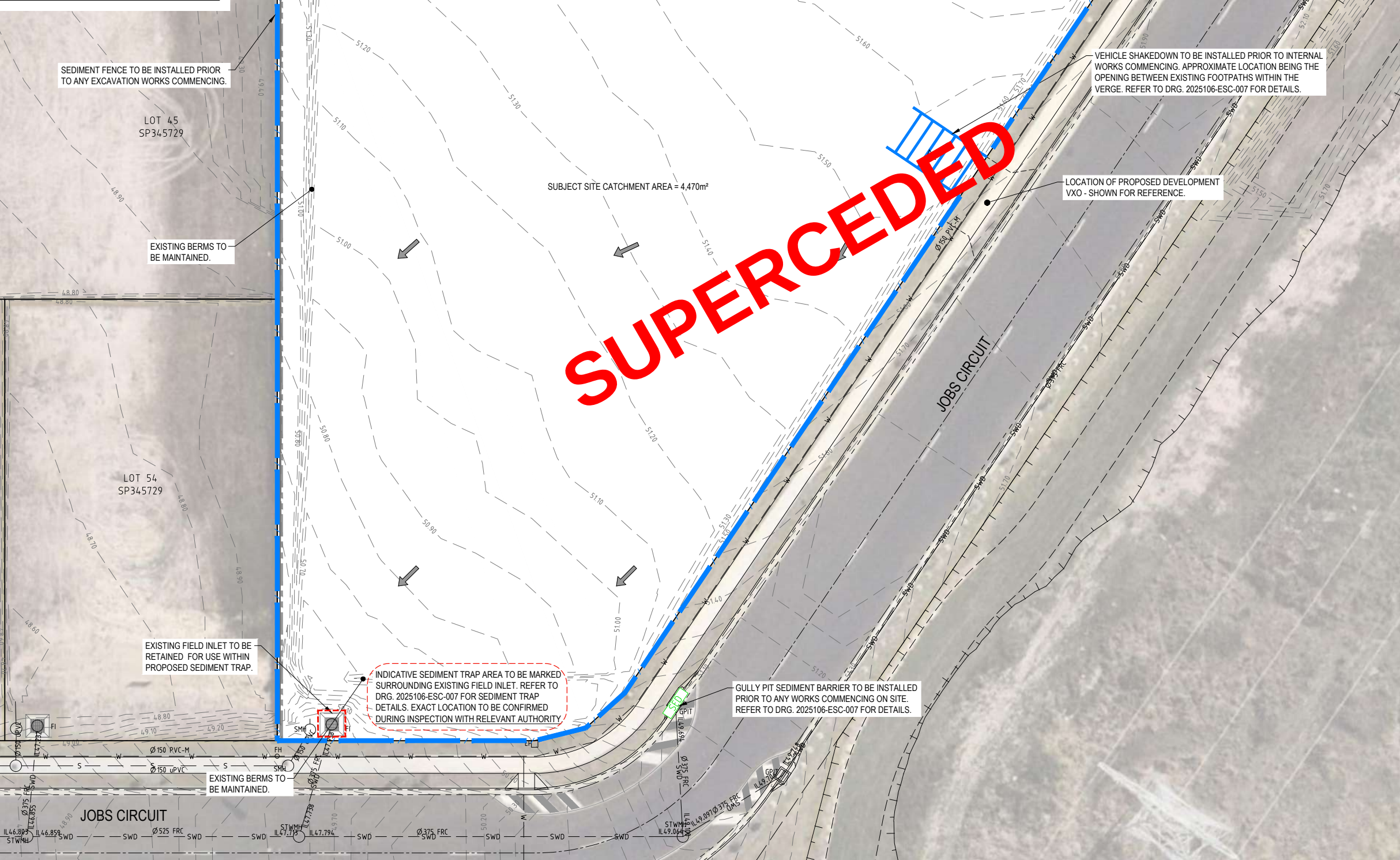
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EROSION RISK ASSESSMENT	
SOIL LOSS RATE (T/HA/YR)	EROSION RISK
0-150	VERY LOW
150-225	LOW
225-500	MEDIUM
500-1500	HIGH
>1500	EXTREME

THE EROSION RISK TABLE HAS BEEN EXTRACTED FROM IECA (AUSTRALASIA) - BEST PRACTICE EROSION AND SEDIMENT CONTROL (BPESC) - CHAPTER 4.4. BASED ON THE SOIL LOSS RATE OF 75T/HA/YR, THE SUBJECT SITE EROSION RISK IS **VERY LOW**.



LEGEND - PHASE 0	
	EXISTING SURFACE CONTOURS
	SEDIMENT FENCE
	GENERAL DIRECTION OF OVERLAND FLOW
	VEHICLE SHAKEDOWN
	PROPOSED GULLY PIT SEDIMENT BARRIER

PHASE 0 MEASURES - PRIOR TO PRE-START:	
1.	CONTRACTOR TO MARK ON-SITE THE EXTENTS OF SEDIMENT TRAP AREA WITH PEGS (OR SIMILAR)
2.	CONTRACTOR TO MARK ON-SITE THE EXTENTS (INDICATIVE) OF TOPSOIL STOCKPILE/S LOCATION WITH PEGS (OR SIMILAR)
3.	INSTALL VEHICLE SHAKEDOWNS
4.	INSTALL SEDIMENT FENCE

NOTES - PHASE 0	
1.	REFER TO DRG 2025106-ESC-007 FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.
2.	MEASURES SHOWN ON THIS PLAN ARE TO BE IMPLEMENTED PRIOR TO PRE-START INSPECTION WITH RELEVANT AUTHORITIES
3.	THE MEASURES SHOWN ON THIS PLAN ARE A MINIMUM ONLY. ALL RESPONSIBILITY FOR EROSION AND SEDIMENT CONTROL IS DELEGATED TO THE CONTRACTOR UNTIL ACHIEVING ON-MAINTENANCE APPROVAL.
4.	THE CONTRACTOR AT A MINIMUM IS TO COMPLY WITH HEALTHY WATERWAYS "CONTROLLING STORMWATER POLLUTION ON YOUR BUILDING SITE" AND ALL ASSOCIATED DOCUMENTATION AND CHECKLISTS.

SUBJECT SITE SOIL CLASSIFICATION	
A SOIL CLASSIFICATION HAS BEEN MADE FOR THE SUBJECT SITE BASED ON AVAILABLE DATA FROM CSIRO SOIL AND LANDSCAPE GRID OF AUSTRALIA. THE CRITICAL SOIL CONSIDERED IN SOIL LOSS CALCULATIONS IS THE SUBSOIL WHICH WILL BE EXPOSED UPON STRIPPING OF TOPSOIL.	
IN THIS CASE, THE SUBJECT SITE SUBSOIL IS SANDY-LOAM .	
IF THE CONTRACTOR ON SITE IDENTIFIES ANY DISPARITIES OF SUBSOIL TYPE THAT VARIES FROM THE ABOVE, OR IF ANY IMPORTED SOILS VARY FROM THE ABOVE, THE CONSULTING ENGINEER IS TO BE CONTACTED AS ADJUSTMENTS MAY BE REQUIRED TO THE EROSION AND SEDIMENT CONTROLS.	
IF DISPERSIVE SOILS ARE IDENTIFIED ON SITE, THE CONTRACTOR MUST CONTACT THE CONSULTING ENGINEERS IMMEDIATELY .	

SEDIMENT CONTROL STANDARD REQUIREMENTS:SOIL LOSS CALCULATIONS	
THE REQUIREMENT FOR A SEDIMENT BASIN (TYPE 1 SEDIMENT CONTROL) HAS BEEN ASSESSED IN ACCORDANCE WITH IECA (AUSTRALASIA) - BEST PRACTICE EROSION AND SEDIMENT CONTROL (BPESC) - TABLE 4.5.1 SEDIMENT CONTROL STANDARD BASED ON SOIL LOSS RATE. RUSLE EQUATION HAS BEEN USED TO DETERMINE SITE SOIL LOSS RATE (A).	
SITE CATCHMENT AREA: 4,470m² RUSLE EQUATION: $A = R \times K \times LS \times C \times P$	
R (RAINFALL EROSIVITY) = 3705 (BRISBANE REFERENCE) K (SOIL ERODIBILITY) = 0.030 (SANDY LOAM) LS (TOPOGRAPHIC FACTOR) = 0.52 (105m LENGTH, 1.6% GRADIENT) C (COVER FACTOR) = 1.0 (CONSTRUCTION CONDITIONS) P (PRACTICE FACTOR) = 1.3 (COMPACTED CONSTRUCTION SURFACE)	
THEREFORE, ANNUAL SOIL LOSS (A) = 75 T/HA/YR	
ACCORDING TO BPESC GUIDELINES, TYPE 2 CONTROL APPLIES FOR A $\geq 75T/HA/YR$ AND A $\leq 150T/HA/YR$ WHEN SITE AREA $> 2,500m^2$.	
THEREFORE, TYPE 2 SEDIMENT CONTROL TECHNIQUES HAVE BEEN ADOPTED FOR THE SITE - AS IDENTIFIED.	
SEDIMENT BASIN (TYPE 1 SEDIMENT CONTROL) IS NOT REQUIRED.	

EROSION & SEDIMENT CONTROL PLAN PHASE 0 INITIAL SITE ESTABLISHMENT

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PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
EROSION AND SEDIMENT CONTROL PLAN -
PHASE 0 INITIAL SITE ESTABLISHMENT
PROJECT No
2025106 LOT 47
DRAWING No
2025106-ESC-003
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A



LEGEND - PHASE 1

55

EXISTING SURFACE CONTOURS

SEDIMENT FENCE

DIRTY WATER CATCH DRAIN

GENERAL DIRECTION OF OVERLAND FLOW

VEHICLE SHAKE DOWN

PROPOSED GULLY PIT SEDIMENT BARRIER

EXCAVATED SEDIMENT TRAP

PHASE 1 MEASURES - LAND-CLEARING

1. INSTALL SEDIMENT TRAP.

2. CUT / PROFILE DIRTY WATER CATCH DRAIN'S.

3. MAINTAIN SEDIMENT FENCES, REPLACE AS REQUIRED.

4. MAINTAIN VEHICLE SHAKEDOWN AND REPAIR AS REQUIRED.

5. MAINTAIN GULLY PIT SEDIMENT BARRIERS AND REPAIR AS REQUIRED.

NOTES - PHASE 1

1. REFER TO DRG. 2025106-ESC-007 FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.

2. THE MEASURES SHOWN ON THIS PLAN ARE A MINIMUM ONLY.

3. THE CONTRACTOR AT A MINIMUM IS TO COMPLY WITH HEALTHY WATERWAYS "CONTROLLING STORMWATER POLLUTION ON YOUR BUILDING SITE" AND ALL ASSOCIATED DOCUMENTATION AND CHECKLISTS.

LAND-CLEARING LIMITS
(BASED ON EROSION RISK)

SOIL LOSS RATE (T/HA/YR)	EROSION RISK	MAXIMUM WEEKS OF LAND CLEANING
75	VERY LOW	8 WEEKS

THE TABLE ABOVE OUTLINES THE MAXIMUM WEEKS OF LAND CLEARING WORKS PRIOR TO UNDERTAKING BULK EARTHWORKS.

IF THERE ARE PROLONGED PERIODS OF DELAYS OR SITE SHUTDOWNS DURING THE LAND CLEARING AND SUBSEQUENT EARTHWORKS STAGES, THE CONTRACTOR IS TO INSTALL ADDITIONAL EROSION CONTROL MEASURES SUCH AS MULCHING OR SOIL BINDER (OR SIMILAR) TO ENSURE EROSION OF EXPOSED SOIL IS MINIMISED IN ACCORDANCE WITH IECA (AUSTRALASIA) - BEST PRACTICE EROSION AND SEDIMENT CONTROL GUIDELINES.

EROSION & SEDIMENT CONTROL PLAN PHASE 1 LAND-CLEARING

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WAREHOUSE DEVELOPMENT - CIVIL WORKS

LOT 47 ON SP345729

LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE

EROSION AND SEDIMENT CONTROL PLAN -

PHASE 1 LAND-CLEARING

PROJECT NO

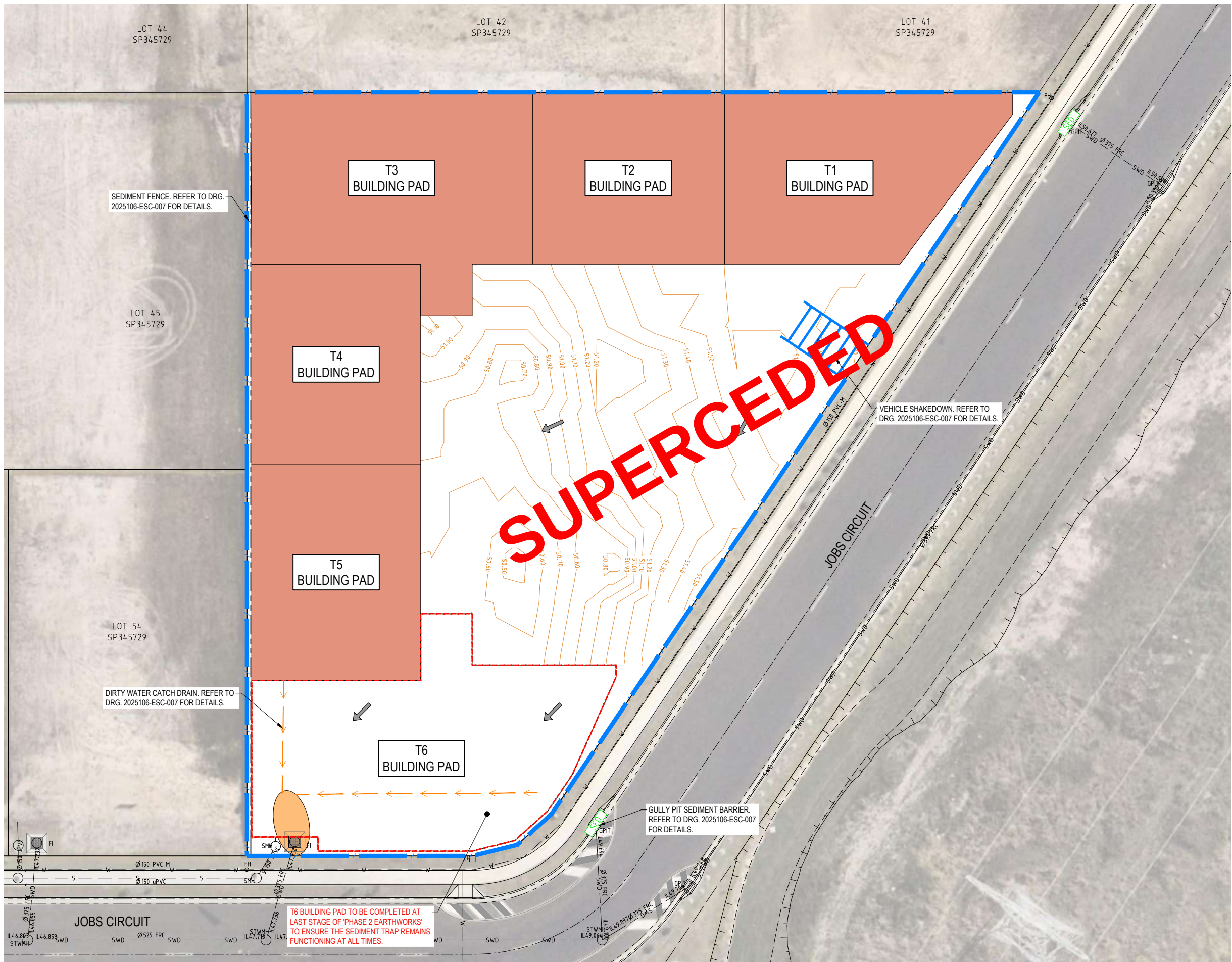
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LEGEND - PHASE 2	
	EARTHWORKS FINISHED SURFACE CONTOURS
	SEDIMENT FENCE
	DIRTY WATER CATCH DRAIN
	GENERAL DIRECTION OF OVERLAND FLOW
	VEHICLE SHAKE DOWN
	PROPOSED GULLY PIT SEDIMENT BARRIER
	EXCAVATED SEDIMENT TRAP

PHASE 2 MEASURES - EARTHWORKS	
1.	MAINTAIN SEDIMENT FENCE AND REPLACE AS REQUIRED.
2.	MAINTAIN DIRTY WATER CATCH DRAINS AND LINER
3.	INSTALL CHECK DAMS - IF DIRECTED
4.	MAINTAIN THE SEDIMENT TRAP DEVICE AND CLEAN CONSISTENTLY
5.	MAINTAIN GULLY PIT SEDIMENT BARRIERS AND REPAIR REQUIRED.

NOTES - PHASE 2	
1.	REFER TO DRG. 2025106-ESC-007 FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.
2.	THE MEASURES SHOWN ON THIS PLAN ARE A MINIMUM ONLY.
3.	THE CONTRACTOR AT A MINIMUM IS TO COMPLY WITH HEALTHY WATERWAYS "CONTROLLING STORMWATER POLLUTION ON YOUR BUILDING SITE" AND ALL ASSOCIATED DOCUMENTATION AND CHECKLISTS.

EROSION & SEDIMENT CONTROL PLAN - PHASE 2 EARTHWORKS

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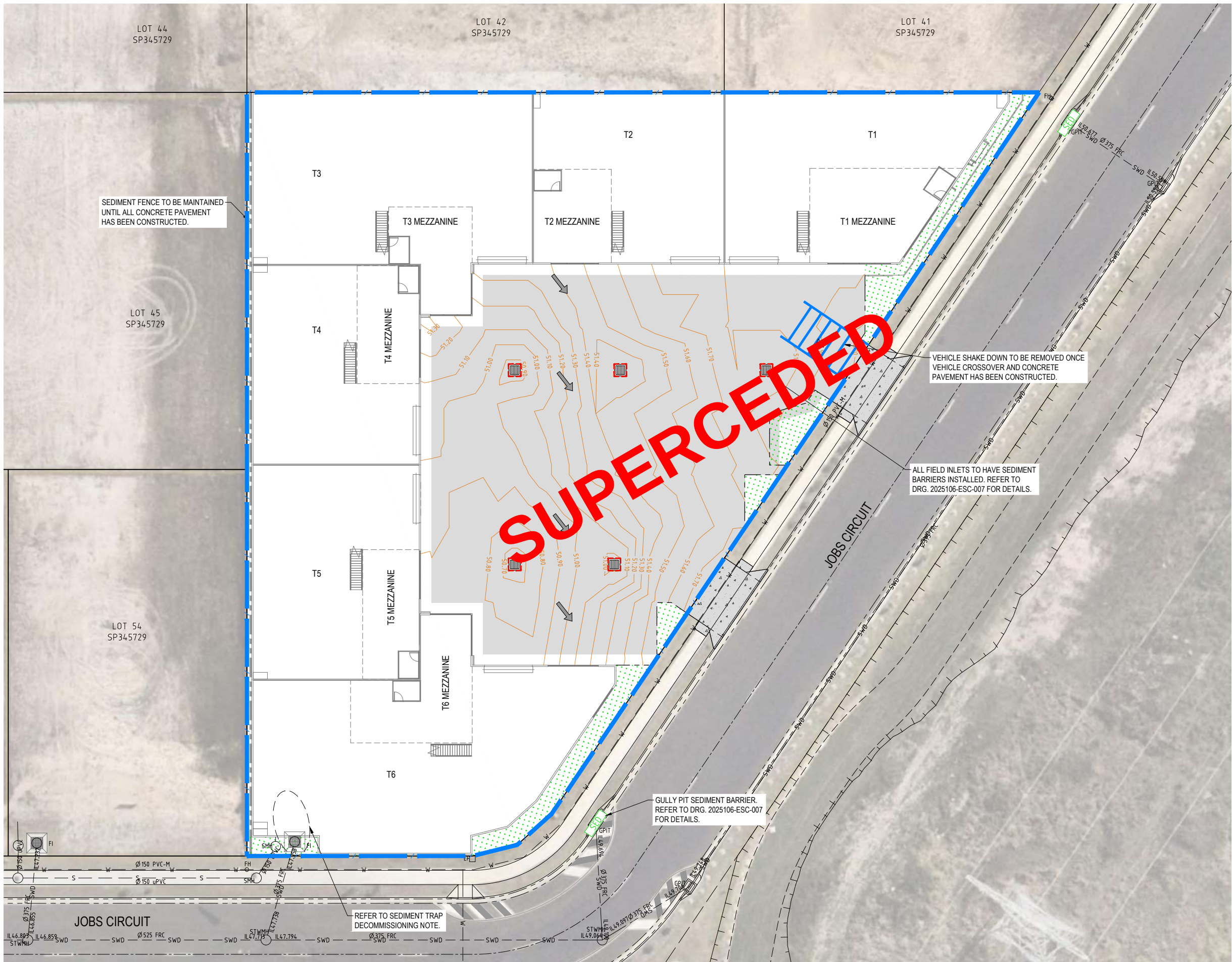
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PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
EROSION AND SEDIMENT CONTROL PLAN -
PHASE 2 EARTHWORKS
PROJECT No
2025106 LOT 47
DRAWING No
2025106-ESC-005
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LEGEND - PHASE 3

5.00

SED

DESIGN FINISHED SURFACE CONTOURS

SEDIMENT FENCE

GENERAL DIRECTION OF OVERLAND FLOW

VEHICLE SHAKEDOWN

PROPOSED GULLY PIT SEDIMENT BARRIER

FIELD INLET SEDIMENT BARRIER

EXTENTS OF PROPOSED CONCRETE HARDSTAND

PROPOSED LANDSCAPING EXTENTS

PHASE 3 MEASURES:

1.

2.

3.

4.

5.

6.

7.

MAINTAIN SEDIMENT FENCE AND REPLACE AS REQUIRED.

MAINTAIN VEHICLE SHAKEDOWN AND REPAIR OR REPLACE AS REQUIRED.

INSTALL FIELD INLET SEDIMENT BARRIERS.

REMOVE SEDIMENT FENCE AND VEHICLE SHAKEDOWN ONCE CONCRETE PAVEMENT HAS BEEN CONSTRUCTED.

REMOVE SEDIMENT TRAP AND CATCH DRAIN SECTIONS ONCE UP-SLOPE DRAINAGE AREA HAS BEEN STABILISED.

REMOVE PHASE 3 TREATMENTS ONCE ALL WORKS ARE COMPLETED.

LANDSCAPE AREA TO EXTENTS SHOWN.

NOTES - PHASE 3

1.

2.

3.

REFER TO DRG 2025106-ESC-007 FOR NOTES AND DETAILS.

THE MEASURES SHOWN ON THIS PLAN ARE INDICATIVE. THE CONTRACTOR SHALL CARRY OUT ALL WORKS IN ACCORDANCE WITH THE CONTRACTORS SEDIMENT AND EROSION CONTROL PLAN. ALL RESPONSIBILITY FOR SEDIMENT AND EROSION CONTROL IS DELEGATED TO THE CONTRACTOR BY THE APPLICANT AND THE LAND OWNERS UNTIL THE ON MAINTENANCE INSPECTION.

THE CONTRACTOR AT A MINIMUM IS TO COMPLY WITH HEALTHY WATERWAYS "CONTROLLING STORMWATER POLLUTION ON YOUR BUILDING SITE" AND ALL ASSOCIATED DOCUMENTATION AND CHECKLISTS.

SEDIMENT TRAP DE-COMMISSIONING NOTE:

ONCE THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILISED, THE SEDIMENT TRAP AND CATCH DRAINS CAN BE DE-COMMISSIONED IN ACCORDANCE WITH IECA (AUSTRALASIA) - BEST PRACTICE EROSION AND SEDIMENT CONTROL GUIDELINES. ENSURE THAT THE DISTURBED AREA IS STABILISED APPROPRIATELY TO AVOID ANY SAFETY ISSUES.

SITE STABILISATION / REVEGETATION TIMING (BASED ON EROSION RISK)

SOIL LOSS RATE (T/HA/YR)	EROSION RISK	MAXIMUM DAYS TO STABILISE / REVEGETATE SITE
75	VERY LOW	30 DAYS

THE TABLE ABOVE OUTLINES THE MAXIMUM DAYS AFTER COMPLETING WORKS TO STABILISE / REVEGETATE ANY DISTURBED SOIL SURFACES.

AS THERE IS A VERY LOW EROSION RISK, THE DISTURBED SOIL SURFACES MUST ACHIEVE MINIMUM 60% COVER WITHIN THE ABOVE MAXIMUM DAYS AFTER COMPLETION OF WORKS.

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CIVIL ENGINEERS

PUBLIC WORKS

INFRASTRUCTURE

LAND DEVELOPMENT

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WAREHOUSE DEVELOPMENT - CIVIL WORKS

LOT 47 ON SP345729

LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE

EROSION AND SEDIMENT CONTROL PLAN - PHASE 3 ROADWORKS & SERVICES

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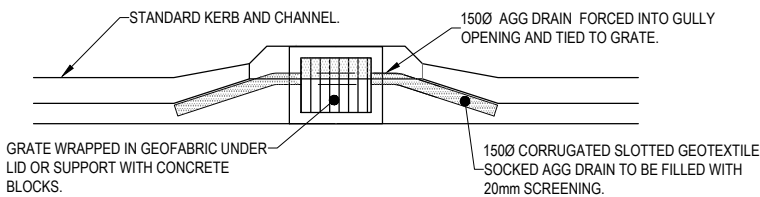
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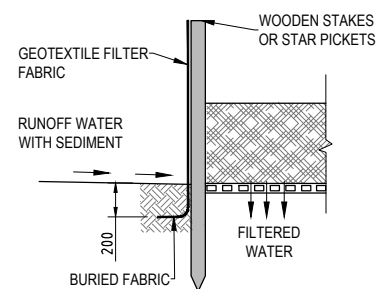
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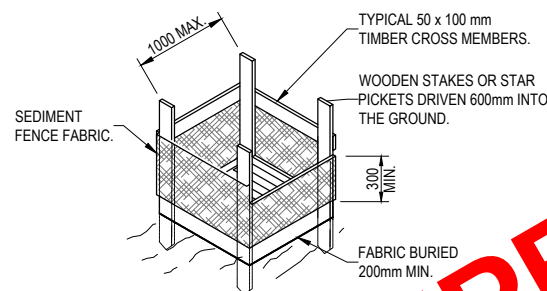
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GULLY PIT SEDIMENT BARRIER DETAIL
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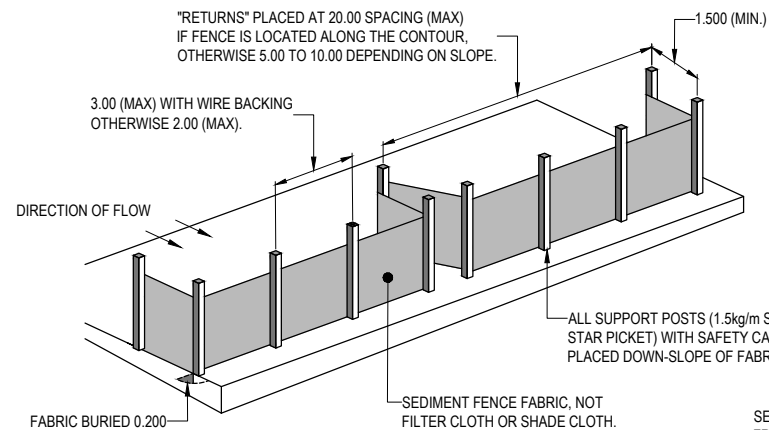


FIELD INLET SEDIMENT BARRIER
SCALE N.T.S.

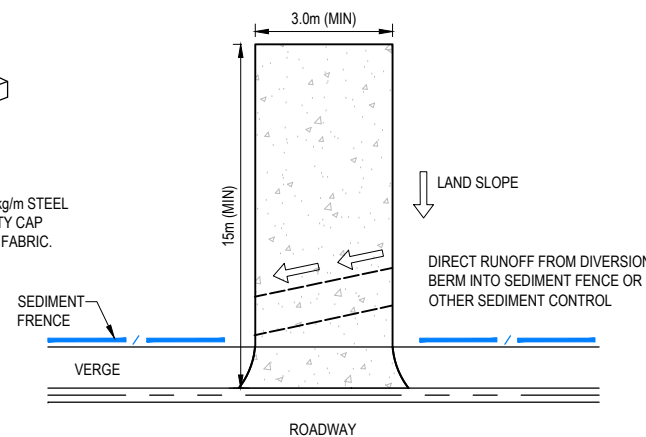


FIELD INLET SEDIMENT BARRIER
SCALE N.T.S.

SUPERCEDED



GEOTEXTILE SEDIMENT FENCE
SCALE N.T.S.



VEHICLE SHAKE DOWN DETAIL
SCALE N.T.S.

NOTES - SEDIMENT TRAP

CONSTRUCTION

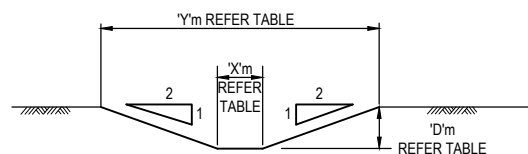
1. REFER TO PLANS FOR LOCATION AND CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
2. EXCAVATE THE TRAP IN ACCORDANCE WITH THE APPROVED PLANS. UNLESS OTHERWISE SPECIFIED, THE EXCAVATED PIT SHOULD HAVE A SIDE SLOPE OF 2:1(H:V) OR FLATTER.
3. APPROPRIATELY STABILISE ANY BANK SUBJECT TO DIRECT INFLOW.
4. ESTABLISH ALL NECESSARY UP-SLOPE DRAINAGE CONTROL MEASURES TO ENSURE THAT SEDIMENT-LADEN RUNOFF IS APPROPRIATELY DIRECTED INTO THE SEDIMENT TRAP.
5. TAKE ALL NECESSARY MEASURE TO MINIMISE THE SAFETY RISK CAUSED BY THE STRUCTURE.

MAINTENANCE

1. CHECK EXCAVATED SEDIMENT TRAPS AFTER EACH RUNOFF EVENT AND MAKE REPAIRS IMMEDIATELY.
2. INSPECT THE BANKS FOR SLUMPING OR EXCESSIVE SCOUR.
3. IF FLOW THROUGH THE STRUCTURE IS REDUCED TO AN UNACCEPTABLE LEVEL DUE TO BLOCKAGE OF THE OUTLET STRUCTURE (IF ANY), THEN MAKE ALL NECESSARY REPAIRS AND MAINTENANCE TO RESTORE THE DESIRED FLOW CONDITIONS.
4. CHECK THE STRUCTURE AND SURROUNDING CHANNEL BANKS FOR DAMAGE FROM OVERTOPPING FLOWS AND MAKE REPAIRS AS NECESSARY.
5. REMOVE SEDIMENT AND RESTORE ORIGINAL SEDIMENT STORAGE VOLUME WHEN COLLECTED SEDIMENT EXCEEDS 30% OF THE PIT VOLUME.
6. DISPOSE OF SEDIMENT AND DEBRIS IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

REMOVAL

1. WHEN THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILISED, REMOVE ALL MATERIALS INCLUDED DEPOSITED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
2. ALL WATER AND SEDIMENT SHOULD BE REMOVED FROM THE BASIN PRIOR TO THE DAM'S REMOVAL. DISPOSE OF SEDIMENT AND WATER IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.
3. BRING THE DISTURBED AREA TO A PROPER GRADE, THEN SMOOTH, COMPACT AND STABILISE AND/OR REVEGETATE AS REQUIRED.



CATCH DRAIN WITH DOWN SLOPE BANK
SCALE N.T.S.

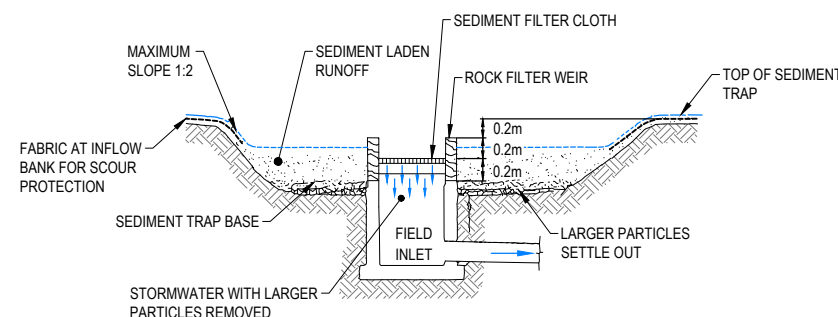
CATCH DRAIN DESIGN TABLE	
MAX CATCHMENT AREA FOR DRAIN (Ha)	0.255
PEAK DESIGN STORM EVENT (BASED ON <12 MONTH ANTICIPATED DESIGN LIFE)	1 IN 2 YR ARI
Tc (min)	12.7
Q2 (m³/s)	0.04
X (m)	0.50
Y (m)	1.42
V (m/s)	0.70
CATCH DRAIN LINING	N/A
ROCK CHECK DAM	N/A
FLOW DEPTH (m)	0.08
D (m) INCLUDES 150MM FREEBOARD	0.23
CHANNEL SLOPE (%)	1.00

SEDIMENT TRAP DESIGN TABLE		
CRITICAL SEDIMENT SIZE (mm)	WATER PONDING TEMPERATURE (C°)	SURFACE AREA PER UNIT DISCHARGE (m²/m³/s)
0.10	15	160

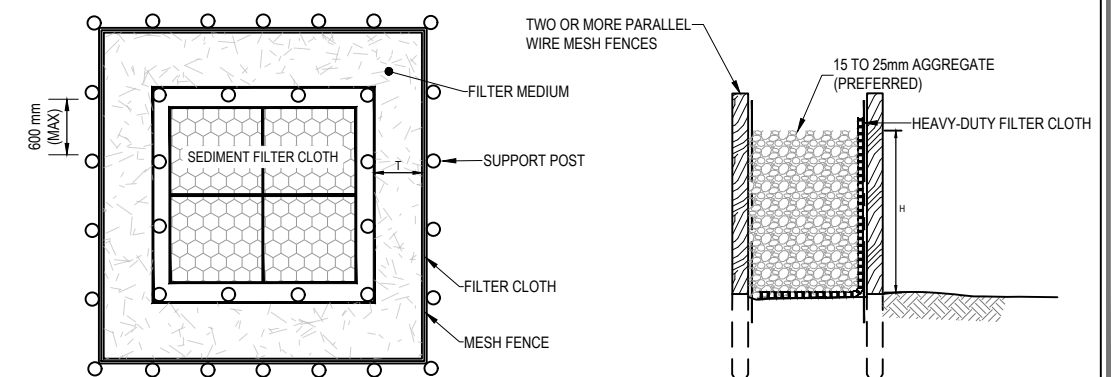
BASED ON A CATCHMENT DISCHARGE (Q2) OF 0.064m³/s DURING LAND CLEARING / EARTHWORKS, THE REQUIRED **SEDIMENT TRAP SURFACE AREA IS 10.24m²**.

DESIGN IS GENERALLY IN ACCORDANCE WITH IECA / CATCHMENT & CREEKS PTY LTD VERSION 2 - 2010.

CONSERVATIVE ASSUMPTIONS ARE MADE FOR THE CRITICAL SEDIMENT SIZE AND THE PONDING WATER TEMPERATURE.



EXCAVATED FIELD INLET SEDIMENT TRAP WITH ROCK FILTER WEIR TYPICAL DETAILS
SCALE N.T.S.



ROCK FILTER WEIR - FIELD INLET PROTECTION PLAN VIEW
SCALE N.T.S.

ROCK FILTER WEIR WITH GEOTEXTILE FILTER
SCALE N.T.S.

Owen.

The Rocket, Suite 903, Level 9
203 Robina Town Centre Dr,
Robina QLD 4226
admin@owenconsulting.com.au
P.(07) 5572 0702 A.C.N 121 686 208

CIVIL ENGINEERS
PUBLIC WORKS
INFRASTRUCTURE
LAND DEVELOPMENT

SCALE	0.2 0 0.2 0.4 0.6 0.8 1.0	SCALE	0.2 0 0.2 0.4 0.6 0.8 1.0
DO NOT SCALE FROM THIS DRAWING - IF IN DOUBT ASK		DO NOT SCALE FROM THIS DRAWING - IF IN DOUBT ASK	
DESIGNED	EK	APPROVED	SHON KEALLEY
DRAWN	DW/DS	ON BEHALF OF OWEN CONSULTING PTY LTD	
REVIEWED	SK/EK	2025 106 LOT 47	

NORTH

DATUM AHD(m)

ISSUE

DATE

ISSUE DESCRIPTION

20.01.26

ISSUED FOR EDQ APPROVAL

20.01.26

ISSUED FOR EDQ APPROVAL

20.01.26

ISSUED FOR EDQ APPROVAL

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20.01.26

ISSUED FOR EDQ APPROVAL

20.01.26

CLIENT
VIZ DEVELOPMENTS QLD PTY LTD
PROJECT
WAREHOUSE DEVELOPMENT - CIVIL WORKS
LOT 47 ON SP345729
LOT 47 JOBS CIRCUIT, YARRABILBA QLD 4207

TITLE
EROSION AND SEDIMENT CONTROL DETAILS
PROJECT No
2025106 LOT 47
DRAWING No
2025106-ESC-007
AMDT
A

APPENDIX D

As-Constructed Infrastructure Assets / DBYD Information

Before You Dig Australia (BYDA)

Asset Location Response



PO Box 3226 Logan City DC QLD 4114 • 150 Wembley Road, Logan Central
p (07) 3412 3412 • e council@logan.qld.gov.au • www.logan.qld.qov.au • ABN 21-627-796 435



Owen Consulting - Elijah Kelly
The Rocket, Suit 903, Level 9 203 Robina Town Centre Drive
Robina QLD 4226
elijahk@owenconsulting.com.au

Logan City Council has been advised that you have placed an enquiry through the Before You Dig Australia service. Our records indicate the enquiry with the following details are affecting Logan City Council asset(s).

Enquiry Details	
Sequence Number	266318988
Enquiry Date	07/01/2026 11:33
Response	AFFECTED
Address	Jobs Circuit Yarrabilba
Location in Road	
Activity	Planning and Design

Please review plans attached and contact Logan City Council prior to commencing works:

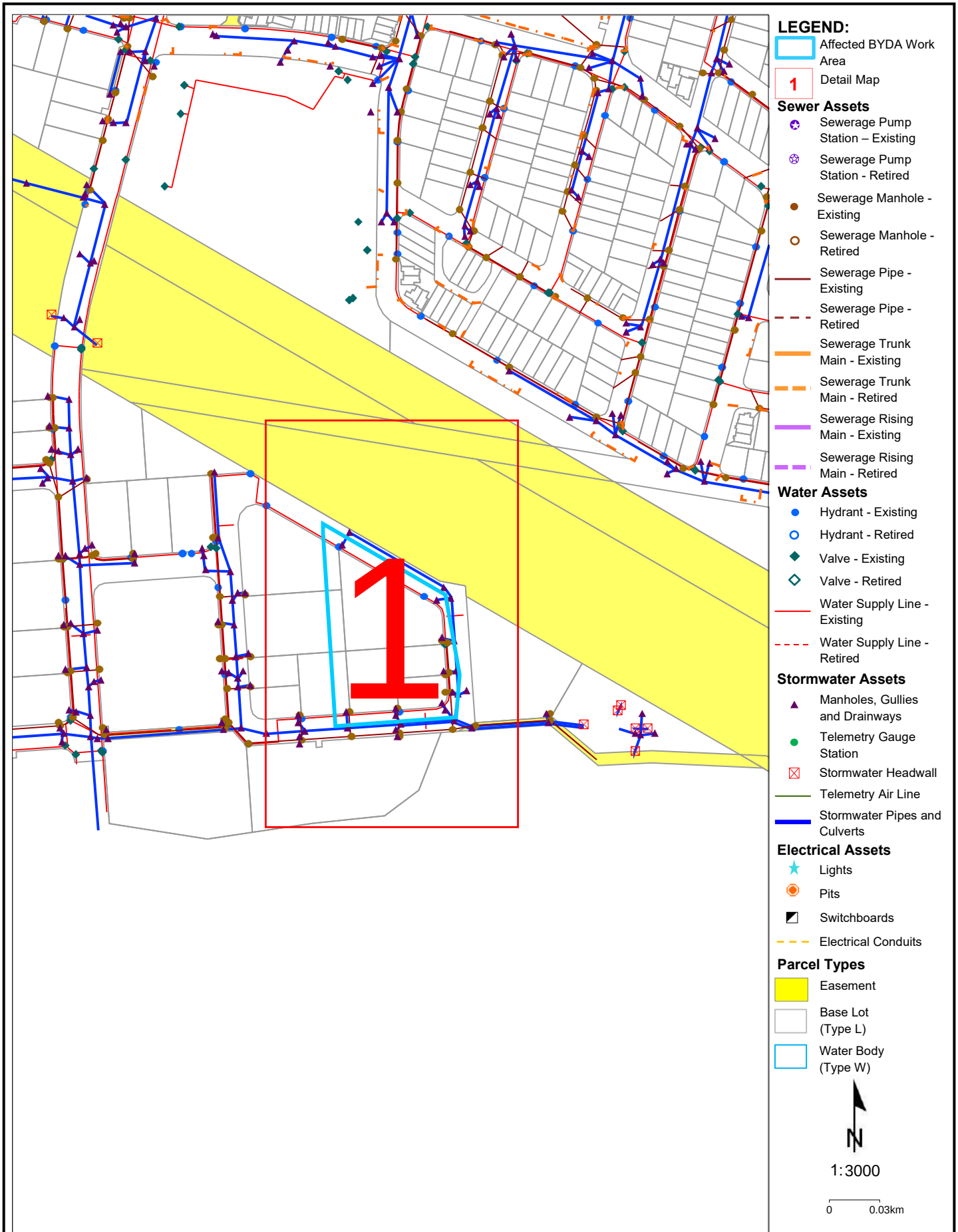
Logan City Council now provides a limited amount of As-Constructed and Drainage Plans on-line, click on the [Logan City As-Constructed Plans](#) link and type in the property address you are seeking. Unfortunately, not all properties will have plan records accessible on-line. The following options are available to customers should a record not be available:

- For **As Constructed Private Sewer/Roofwater (Inside Properties)**
Contact *Development Assessment, Building & Plumbing*
p: (07) 3412 5269
Alternatively visit our Website Link to the relevant PS1 or PS2 forms:
[Logan City As-Constructed Plans](#)
- For **As Constructed Private Sewer/Water/Stormwater (Outside Properties)**
Contact *Road Infrastructure Planning*
p: (07) 3412 5282
Alternatively visit our Website Link for PS3 forms:
[Logan City As-Constructed Plans](#)

If you need more assistance please call us on 07 3412 3412 or email us at council@logan.qld.gov.au.

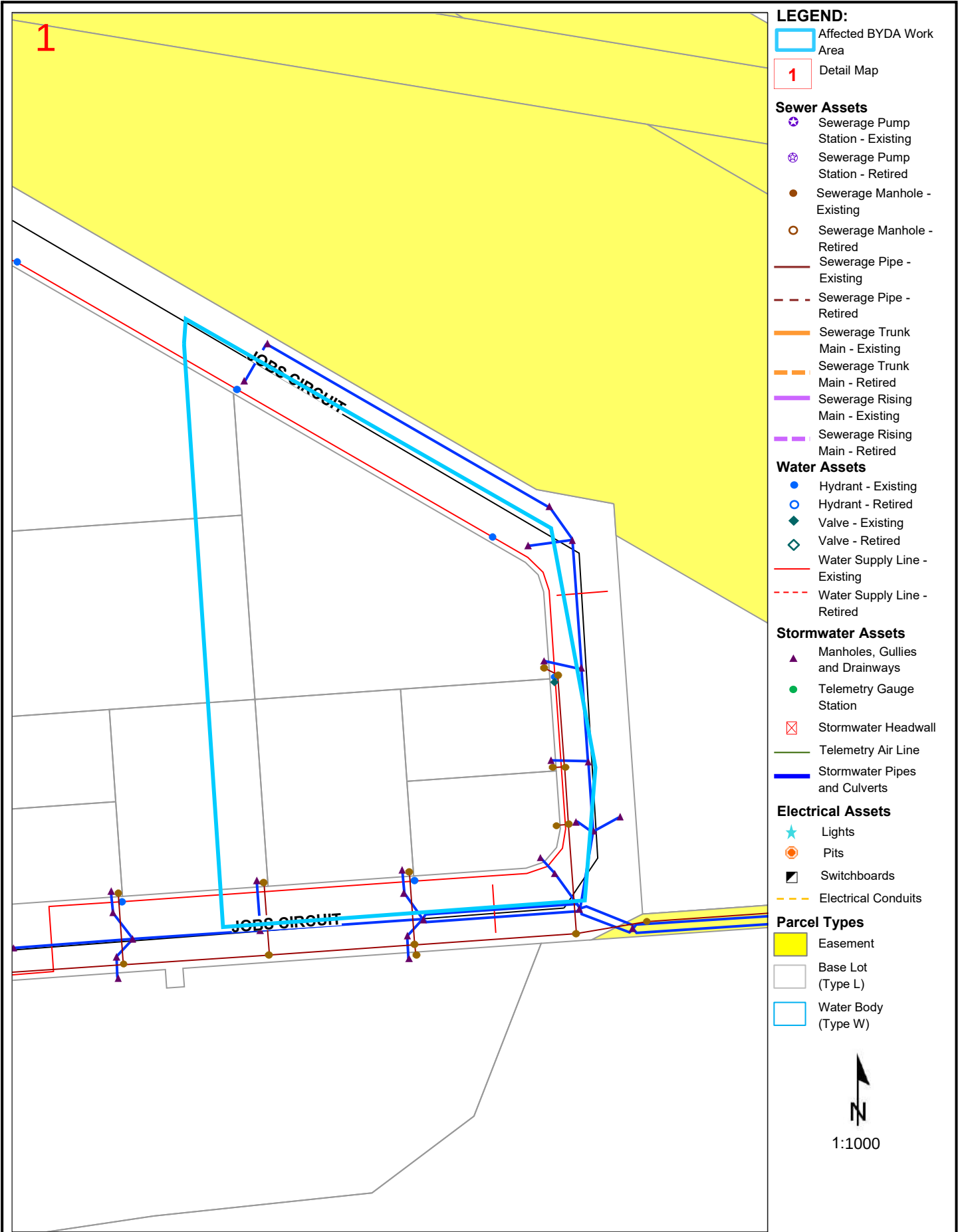
Disclaimer: This document is confidential to the addressee and may also be privileged, and neither confidentiality nor privilege is waived, lost or destroyed by virtue of it being transmitted to an incorrect addressee. Unauthorised use of the contents is therefore strictly prohibited. Any information contained in this document that has been extracted from Council's records is believed to be accurate, but no responsibility is assumed for any error or omission. Council will only accept responsibility for information contained under official letterhead and duly signed by, or on behalf of, Chief Executive Officer.

Logan City Council's infrastructure dates back over many years and may include manufactured materials containing asbestos. You are solely responsible for ensuring that appropriate care is taken at all times and that you comply with all mandatory requirements relating to such matters, including but not limited to "workplace health and safety".



Disclaimer: The plans are indicative only and while all reasonable care has been taken in producing this information, Logan City Council does not warrant the accuracy, completeness or currency of this information and accepts no responsibility for, or in connection with any loss or damage suffered as a result of any inaccuracies, errors or omissions or your reliance on this information. Base material reproduced with permission of the Director-General, Department of Natural Resources and Mines. The State of Queensland (Department of Natural Resources and Mines).

Logan City Council's infrastructure dates back over many years and may include manufactured materials containing asbestos. You are solely responsible for ensuring that appropriate care is taken at all times and that you comply with all mandatory requirements relating to such matters, including but not limited to "workplace health and safety".



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Logan City Council's infrastructure dates back over many years and may include manufactured materials containing asbestos. You are solely responsible for ensuring that appropriate care is taken at all times and that you comply with all mandatory requirements relating to such matters, including but not limited to "workplace health and safety".



BYDA

Sequence: 266318989
Date: 07/01/2026
Scale: 1:1025
Tile No: **OVERVIEW**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV - <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan



DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor Pelican Corp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.



BYDA

Sequence: 266318989
Date: 07/01/2026

Scale: 1:500
Tile No: **Tile No: 1**

**CAUTION - HIGH
VOLTAGE**

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV - <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan



DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor Pelican Corp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.



BYDA

Sequence: 266318989
Date: 07/01/2026
Scale: 1:500
Tile No: **Tile No: 2**

CAUTION - HIGH
VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV - <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan



DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor Pelican Corp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.



BYDA

Sequence: 266318989
Date: 07/01/2026
Scale: 1:500
Tile No: **Tile No: 3**

CAUTION - HIGH
VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV - <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan



DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor Pelican Corp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.



BYDA

Sequence: 266318989
Date: 07/01/2026

Scale: 1:500
Tile No: **Tile No: 4**

**CAUTION - HIGH
VOLTAGE**

LEGEND

-  Substation
-  Cable Marker
-  Pit
-  Pole
-  Pillar
-  LV Cable (up to 1kV)
-  HV Cable (1kV - <33kV)
-  HV Cable (33kV and over)
-  Pit Boundary
-  Planned Work Area

AS5488 Category "D" Plan



DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor Pelican Corp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

APA

Australia's energy
infrastructure partner



Before You Dig Australia

Classification: Networks

Enquiry date	07/01/2026
Sequence number	266318990
Work site address	Jobs Circuit Yarrabilba QLD 4207



Enquiry Date: 07/01/2026
Enquirer: Elijah Kelly
Sequence Number: 266318990
Work Site Address: Jobs Circuit
Yarrabilba
QLD 4207

Thank you for your Before You Dig enquiry regarding the location of gas assets.

We confirm there are NO Gas Assets located in close vicinity of the above location.

Caution: Damage to gas assets may result in explosion, fire and personal injury.

Please ensure you read and comply with all the relevant information contained in this response to your BYDA enquiry.

Before You Dig Checklist



1. Plan

- Review maps provided with this BYDA response and confirm the location of your work site is correct.



2. Prepare

- Electronically locate gas assets and mark locations.
- Note: Look for visible evidence of gas assets at the worksite which may not be shown on plans.



3. Pothole

- Not applicable where no gas assets present.



4. Protect

- Not applicable where no gas assets present.



5. Proceed

- Only proceed with your work once you are confident no gas assets are located in vicinity to your work location.
- APA BYDA response (including maps) are on site for reference at all times, and less than 30 days old.

Contacts

Contacts APA Group	
Enquiry	Contact Numbers
General enquiries or feedback regarding this information or gas assets.	APA – Before You Dig Officer Phone: 1800 085 628 Email: BYDA_APA@apa.com.au
Gas Emergencies	Phone: 1800 GAS LEAK (1800 427 532)

Site Watch

Site Watch is where an APA field officer attends your work site to monitor and ensure controls are in place to protect critical gas assets from damage during work.

The following rates* apply for this service (1 hour minimum charge):

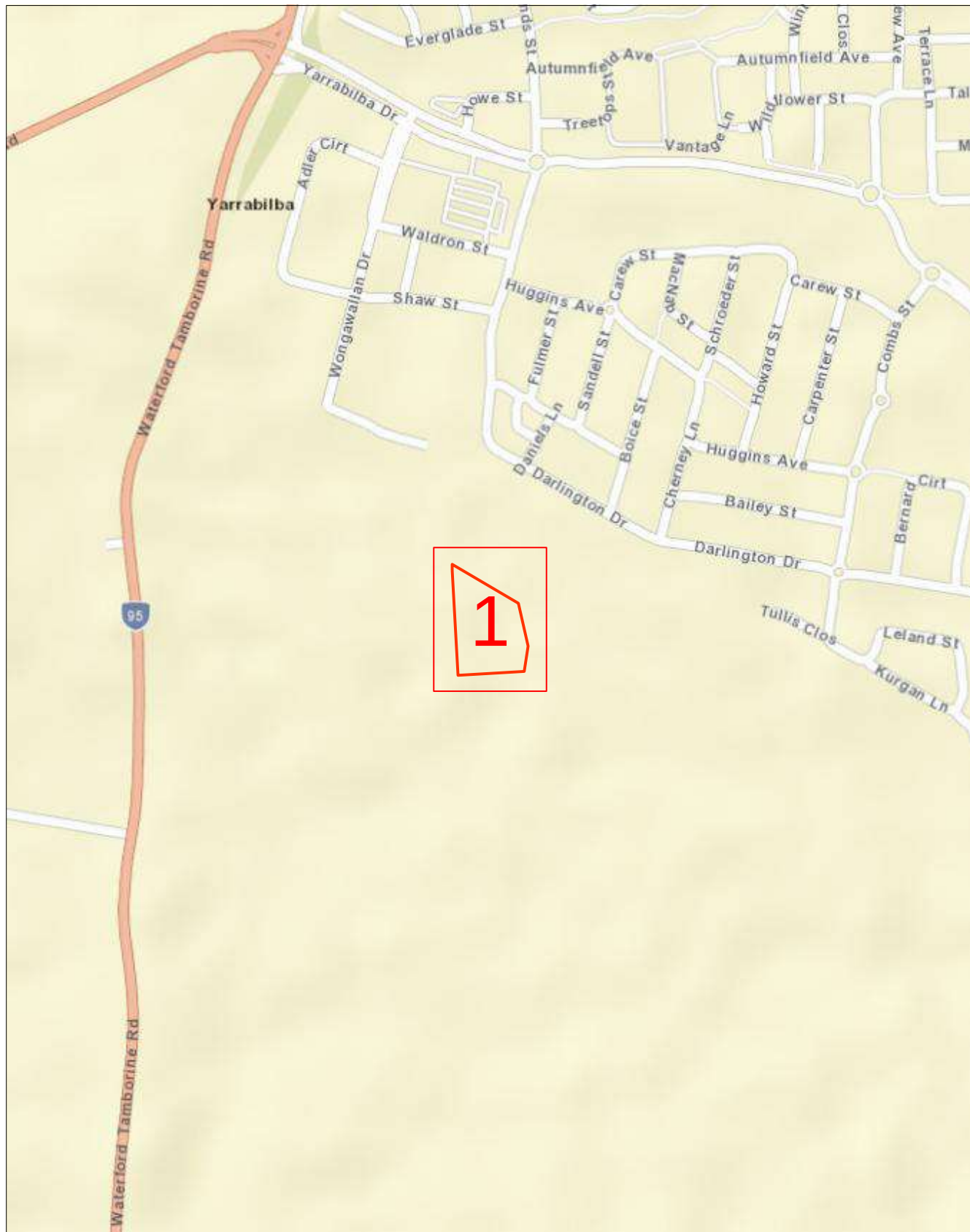
Item	Rate (excl. gst)
Site Watch – Business Hours	\$143.42 per hour
Site Watch – After Hours	\$175.06 per hour
Cancellation Fee	\$286.84
<i>Fee applies where cancelations received after 12pm (midday), 1 business day prior to the booking</i>	

Contact APA – Before You Dig officer for state specific hours of business.

**The specified rates do not apply to Origin Energy LPG assets. All charges and invoicing related to these assets will be administered directly by Origin Energy. For further information contact Origin Energy.*

Site Jobs Circuit
Address: Yarrabilba
QLD 4207

Sequence 266318990
Number:



Scale 1: 6000

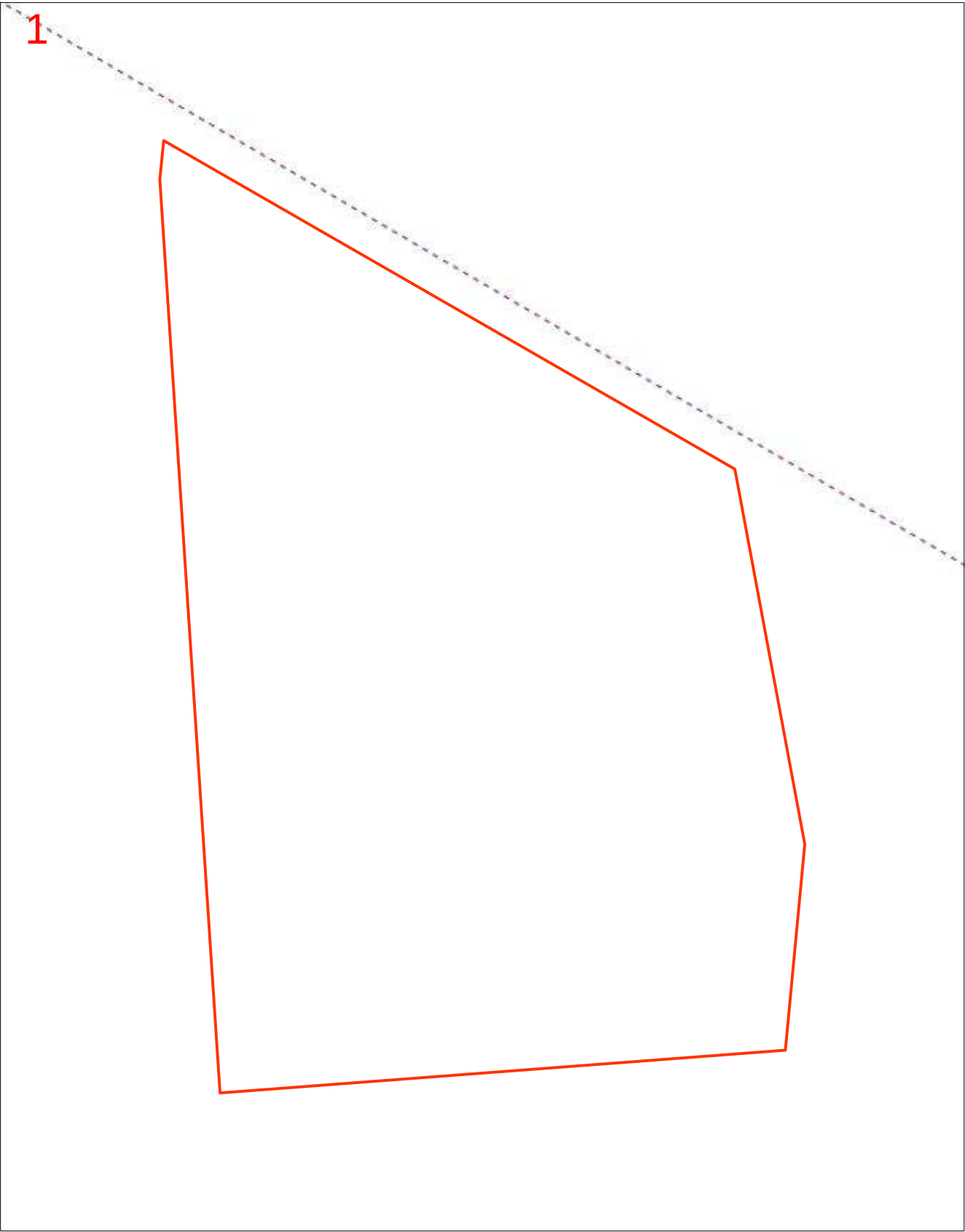
Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS,
© OpenStreetMap contributors, and the GIS User Community



Enquiry Area

Map Key Area





Scale 1: 700

Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS,
© OpenStreetMap contributors, and the GIS User Community



Enquiry Area



Map Key Area



Legend

PIPE LEGEND: GAS TYPE AND PRESSURE

	Low pressure	Medium pressure	High pressure	Transmission
Natural gas				
Natural gas – proposed				
LPG (yellow dash)	not applicable			not applicable
Hydrogen blended (aqua dash)	not applicable			not applicable

PIPE LEGEND: SPECIAL DESIGNATION

	Low pressure	Medium pressure	High pressure	Transmission
Critical main (yellow highlight)				
Casing (grey highlight)				not applicable

These designations typically apply to any pipe type and pressure

PIPE LEGEND: OTHER STATUS

Abandoned pipe	
Idle or inactive pipe	

ABBREVIATION

BoK	Back of kerb	FoK	Front of kerb
C	Depth of cover	NTI	Not tied in
CP	Cathodic protection		

OBJECT SYMBOLS

Valve		CP test station		Syphon	
Buried valve		CP anode		Marker	
Regulator station		CP bond wire		Part service ^A	
Gas connected property		CP rectifier terminal			

^AA live gas service terminated underground within the property boundary, available for future extension to the gas meter.

PIPE CODE AND MATERIAL

P*	Polyethylene (PE)	CU	Copper
P3	Polyvinyl chloride (PVC)	N2	Nylon
S*	Steel	W2	Wrought galv iron
C*	Cast iron	W3	PE coat wrought galv iron

INTERPRETATION EXAMPLE

	High pressure, 40 mm polyethylene in an 80 mm cast iron casing
	Medium pressure, 63 mm steel

Pipe diameter in millimetres is shown before pipe code.
40P6 = 40 mm nominal diameter

This map was created in colour and should be printed in colour

Important information

- Refer to requirements relating to construction, excavation and other work activities in the **APA Guidelines for Works Near Existing Gas Assets** document with this BYDA response.
- BYDA enquiries are valid for 30 days. If your works commence after 30 days from the date of this response a new enquiry is required to validate location information.
- **For some BYDA enquiries, you may receive two (2) responses from APA. Please read both responses carefully as they relate to different assets.**
- Gas (inlet) services connecting Gas Assets in the street to the gas meter on the property are not marked on the map. South Australia Only – if a meter box is installed on the property, a sketch of the gas service location may be found inside the gas meter box. APA does not guarantee the accuracy or completeness of these sketches.

Free Gas Pipeline Awareness Training and Information

PROFESSIONALS

APA offers online and in-person toolbox forums to support safe work near underground gas assets. Topics include distribution and transmission pipelines, the permit process, and gas emergencies, with content suited for companies of all sizes. A Continuing Professional Development certificate is available upon completion.

Scan the QR code to register for an online toolbox, or email damageprevention@apa.com.au to request an in-person presentation.

HOMEOWNERS

If you're working near your home's gas pipes stay safe and view APA's video guide '**Working Safely Near Gas Lines: A DIY Homeowner's Guide**' which offers simple tips to avoid damaging gas pipes.

Scan the QR code to view the video, or for more information email damageprevention@apa.com.au



Disclaimer and legal details

- This information is valid for 30 days from the date of this response.
- This information has been generated by an automated system based on the area highlighted in your BYDA request and has not been independently verified.
- Map location information is provided as AS5488-2022 Quality Level D, as such supplied location information is indicative only.
- Whilst APA has taken reasonable steps to ensure that the information supplied is accurate, the information is provided strictly on the condition that no assurance, representation, warranty or guarantee (express or implied) is given by APA in relation to the information (including without limitation quality, accuracy, reliability, completeness, currency, sustainability, or suitability for any particular purpose) except that the information has been disclosed in good faith.
- Any party who undertakes activities in the vicinity of APA operated assets has a legal duty of care that must be observed. This legal obligation requires all parties to adhere to a standard of reasonable care while performing any acts that could foreseeably harm these assets



Cable Plan

48



Report Damage:<https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-1>
Ph - 13 22 03
Email - Telstra.Plans@team.telstra.com
Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

TELSTRA LIMITED A.C.N. 086 174 781

Generated On 07/01/2026 12:37:47

Sequence Number: 266318991

Please read Duty of Care prior to any excavating

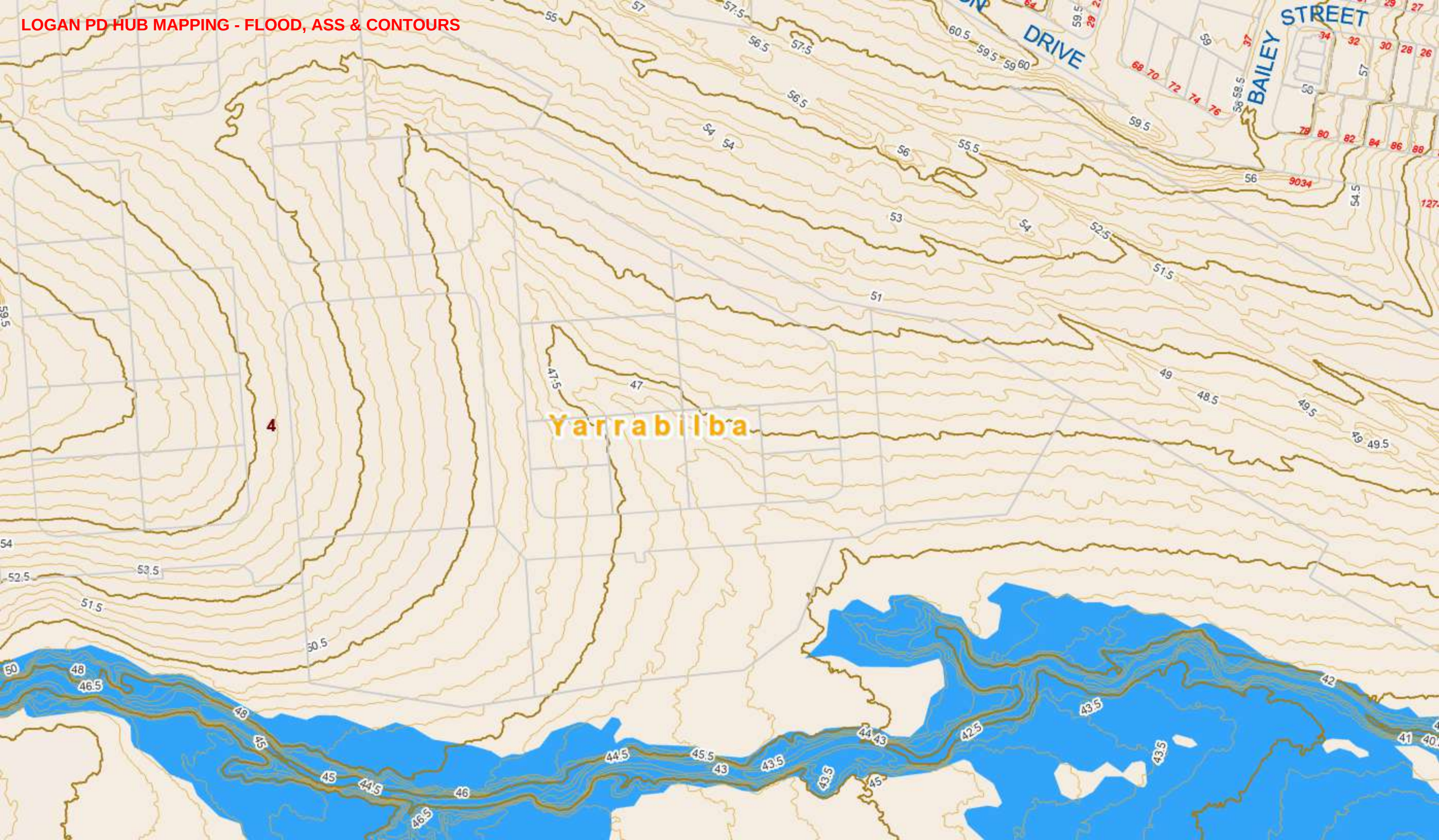
WARNING

Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works. See the Steps- Telstra Duty of Care that was provided in the email response.

APPENDIX E

LCC Contour, ASS and Flood Maps

LOGAN PD HUB MAPPING - FLOOD, ASS & CONTOURS



APPENDIX F

LCC Flood Report

PROPERTY FLOOD REPORT



Property Details

Address: 31 Jobs Circuit YARRABILBA QLD 4207

Lot/Plan: Lot 47 SP 345729

Size/Area: 4,467 m²

Property Key: 416037

Catchment(s): Logan River, Quinzeh Creek

View Logan's [catchments and waterways map](#) (PDF)



Summary Flood Assessment

The table below presents the flood risks applicable to the selected property. There may be multiple studies and flood scenarios affecting the property, particularly for larger sites.

Assessment	Details
Other information	YARRABILBA - IMPORTANT: Flood management works being delivered for development in Yarrabilba may have changed the flood risk information for this property. Please refer to the information linked below and contact Economic Development Queensland for help if needed. Yarrabilba Flood Information
Risk area(s)	High, Low
Investigation area	Not applicable
Isolation risk	Not applicable
River flooding	Not applicable
Creek flooding	20% chance of a flood this size or larger happening in any given year
Overland flow	Applies. It is possible that flooding from a local waterway which has not yet been studied may also impact the property. Please contact Council for further advice. Overland flow is water (stormwater run-off) that travels over land during heavy rainfall events. It generally occurs quickly and for short durations.

Latest Flood Risk

The extract below comes from the flood risk map based on the latest (most recent) flood studies accepted by Council applicable for this property.



LEGEND



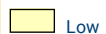
High

Floodwaters may be deep or fast flowing, or have a relatively high chance of occurrence (e.g. 80% chance in 30 years). Conditions may pose a risk to life and cause damage to buildings, possibly severe. Limited development may be considered if not increasing the flood risk exposure for people or property. These areas are generally better suited to environmental, recreational and some agricultural uses.



Moderate

Less frequently affected by flooding or if more frequent, with shallow or slower moving floodwater. Conditions may pose an unacceptable risk to people or property if not mitigated. Development may be tolerable if measures are taken to address flood impacts, protect people and limit damage.



Low

Extremely unlikely chance of flooding (1% chance or less over a 30 year period) and/or relatively shallow or benign flooding conditions. Development is generally acceptable except for essential community infrastructure (e.g. emergency services). Vulnerable uses (e.g. childcare, aged care) may be ok subject to building, site access and safe shelter mitigation measures. Shows the full floodplain under the largest flood that could conceivably occur.



Investigation area

Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Development should avoid these areas until further investigation (updated flood study or localised risk assessment) is completed.



The flood studies this map is based on consider the impacts of climate change, as required by Queensland's planning legislation and policies. The map considers the whole floodplain for Logan and reflects a risk-based approach that takes into account:

- How likely a flood of a given size is in any given year, and
- What the impact or level of danger of that flood is.

Flood Levels

The table below displays flood levels from the most recently accepted flood studies affecting this property. To view the flood study documents please see the [Flood page](#) on Council's website. The levels are measured in Australian Height Datum (AHD), where sea level is approximately zero (0) metres. The level displayed in the table below is the maximum flood level on the property for that event (likelihood). For some properties, particularly large properties or those on a significant slope, flood levels can vary significantly.

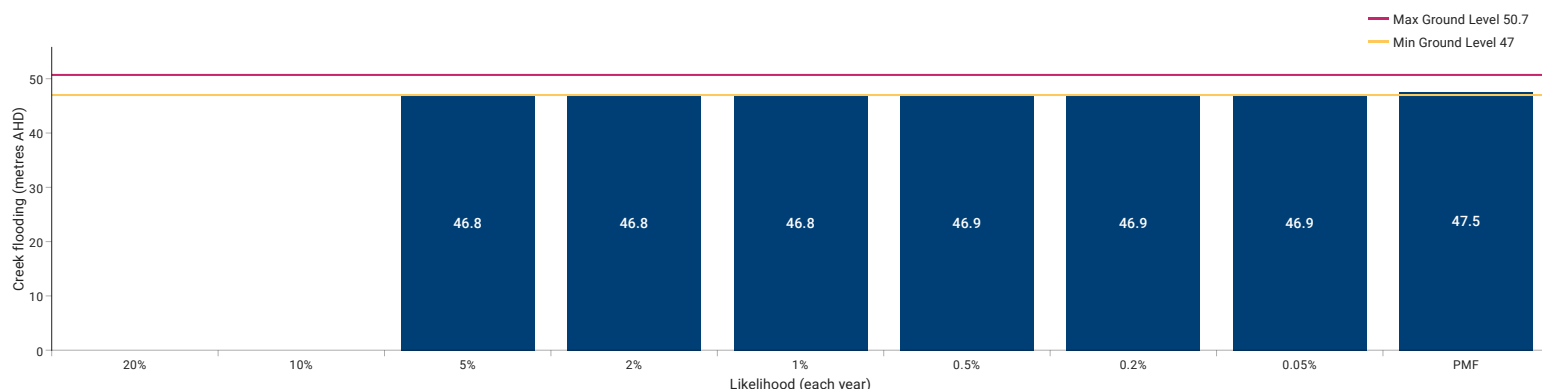
The most likely flood scenarios is shown at the top of the table, with the Probable Maximum Flood (PMF) at the bottom, being the least likely but most serious flood scenario.

Some properties may be impacted by only river flooding or only creek flooding, and some may be impacted by both. There may also be other sources of inundation that may impact the property and affect flood levels, based on overland flow or local creeks where studies have not yet been completed.

Study: Quinzeh Creek Flood Study 2023

Likelihood (each year)	Creek flooding
20% chance	Not applicable
10% chance	Not applicable
5% chance	46.8 metres AHD
2% chance	46.8 metres AHD
1% chance	46.8 metres AHD
0.5% chance	46.9 metres AHD
0.2% chance	46.9 metres AHD
0.05% chance	46.9 metres AHD
PMF	47.5 metres AHD

Flood and Ground Levels in metres AHD



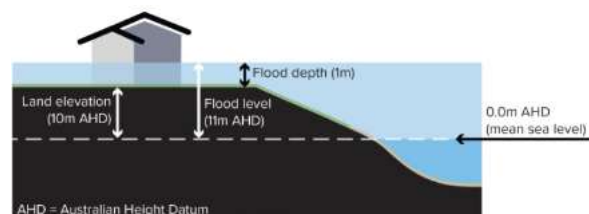
Ground Levels

Ground levels are based on an aerial LiDAR (Light Detection and Ranging) survey, which uses millions of laser point measurements to build a model of the ground surface. The source of the data is displayed in the table below so that you know when the survey was conducted.

Ground level	Details
Minimum ground level	47.0 metres AHD
Maximum ground level	50.7 metres AHD

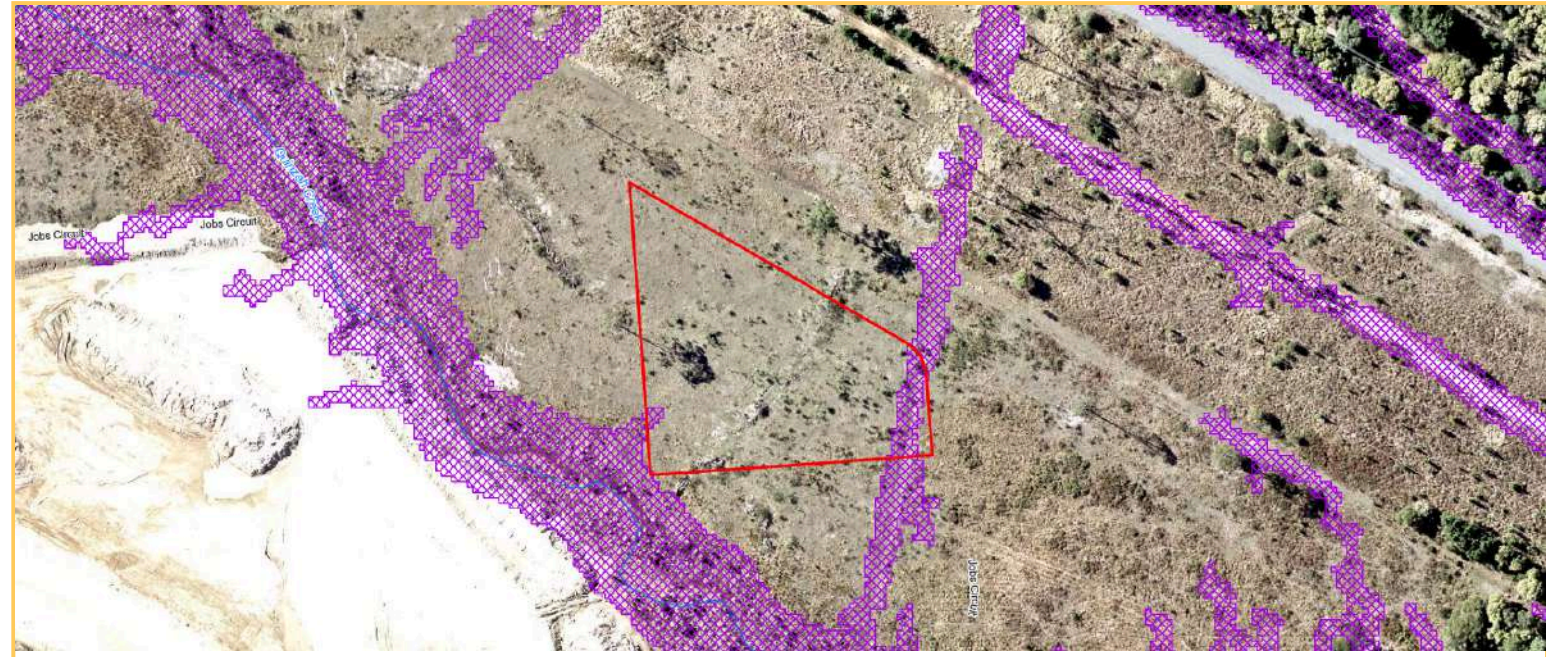
Source: 2021 Digital elevation model (1 metre grid)

The projected flood depth (how deep the water may be above ground, in metres) is the difference between the flood levels in the section above and the ground levels in this table. The diagram below provides an example (land elevation is ground level).



Overland Flow

Overland flow is water (stormwater/rainfall run-off) that exceeds the capacity of drains, pipes and channels during heavy rainfall events and travels over land towards waterways. It generally occurs quickly and for shorter periods of time. The impact of overland flow is dependent on local conditions, so the mapping is a guide only. It is possible that flooding from a local waterway which has not yet been studied may also impact the property. Please contact Council for further advice.

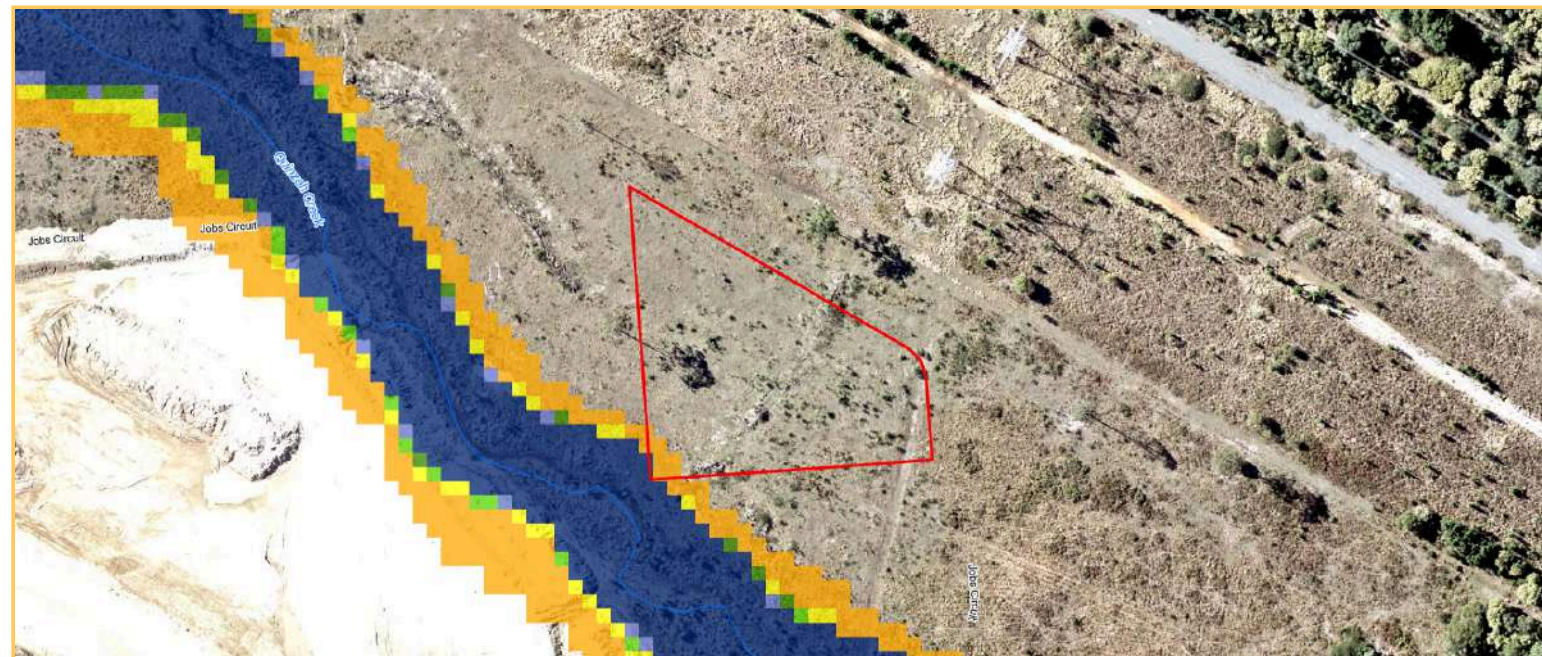


LEGEND

 Overland flow extent (areas possibly impacted)

Future Climate Scenarios

This extract comes from the map showing the projected extent of flooding (affected areas) for multiple flood scenarios for all relevant flood studies, **including the projected impacts of climate change**. This map corresponds with the flood levels provided in the table above for the 5%, 2%, 1%, 0.5%, 0.05% and Probable Maximum Flood (PMF) scenarios.



LEGEND

5% chance

The areas modelled to be impacted by a flood that has a 5% (or 1 in 20) chance of happening in any given year, or 80% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

2% chance

The areas modelled to be impacted by a flood that has a 2% (or 1 in 50) chance of happening in any given year, or 45% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

1% chance

The areas modelled to be impacted by a flood that has a 1% (or 1 in 100) chance of happening in any given year, or 25% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

0.5% chance

The areas modelled to be impacted by a flood that has a 0.5% (or 1 in 200) chance of happening in any given year, or 15% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

0.05% chance

The areas modelled to be impacted by a flood that has a 0.05% (or 1 in 2000) chance of happening in any given year. This is an extremely unlikely flood event with a 1% chance of happening over a 30 year period, not including the impacts of climate change.

PMF

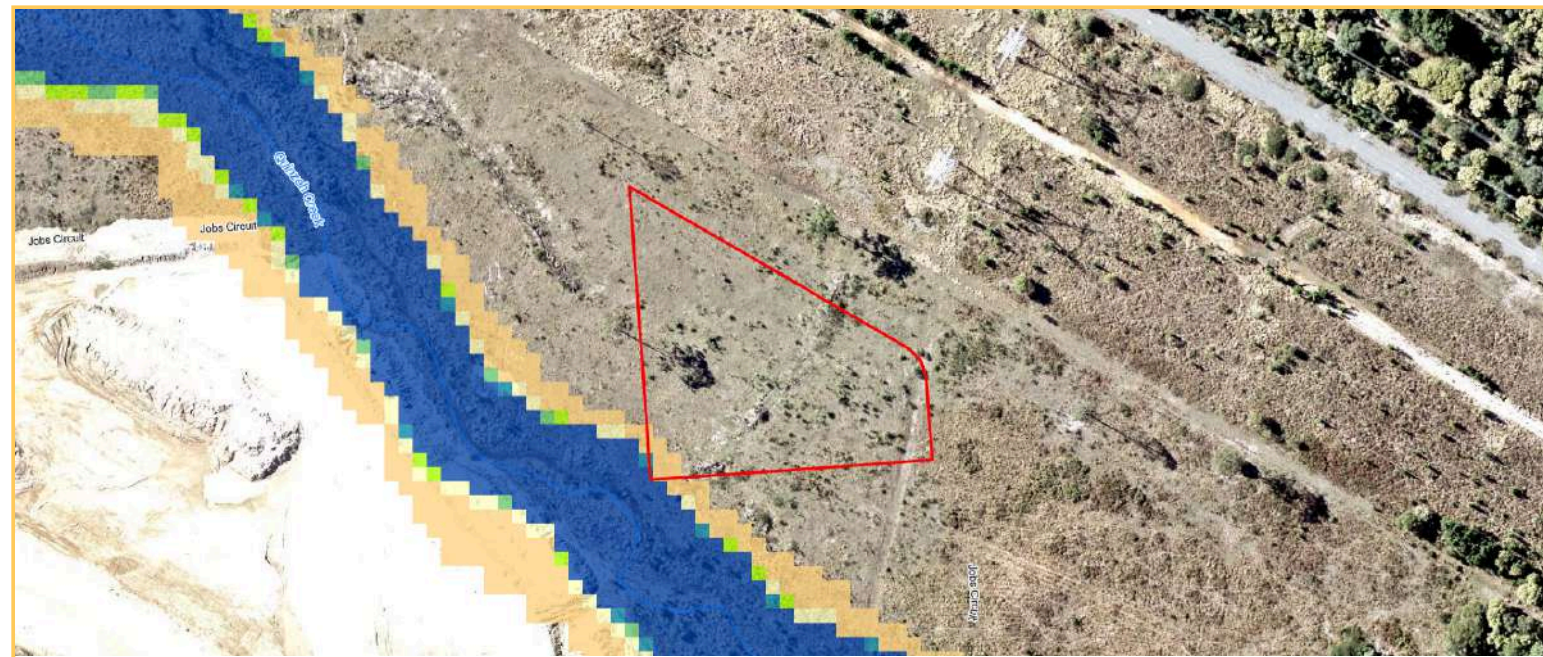
The PMF or probable maximum flood scenario represents the full extent of the floodplain, or the most serious flood that could be expected to occur. This is usually estimated based on the probable maximum rainfall, not including the impacts of climate change.

Investigation area

Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Further investigation is needed.

Current Climate Scenarios

This extract comes from the map showing flood affected areas **without** considering the impacts of climate change. This map represents modelled flooding under current conditions, and can be used for insurance purposes.



LEGEND

 5% chance

The areas modelled to be impacted by a flood that has a 5% (or 1 in 20) chance of happening in any given year, or 80% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

 2% chance

The areas modelled to be impacted by a flood that has a 2% (or 1 in 50) chance of happening in any given year, or 45% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

 1% chance

The areas modelled to be impacted by a flood that has a 1% (or 1 in 100) chance of happening in any given year, or 25% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

 0.5% chance

The areas modelled to be impacted by a flood that has a 0.5% (or 1 in 200) chance of happening in any given year, or 15% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

 0.05% chance

The areas modelled to be impacted by a flood that has a 0.05% (or 1 in 2000) chance of happening in any given year. This is an extremely unlikely flood event with a 1% chance of happening over a 30 year period, not including the impacts of climate change.

 PMF

The PMF or probable maximum flood scenario represents the full extent of the floodplain, or the most serious flood that could be expected to occur. This is usually estimated based on the probable maximum rainfall, not including the impacts of climate change

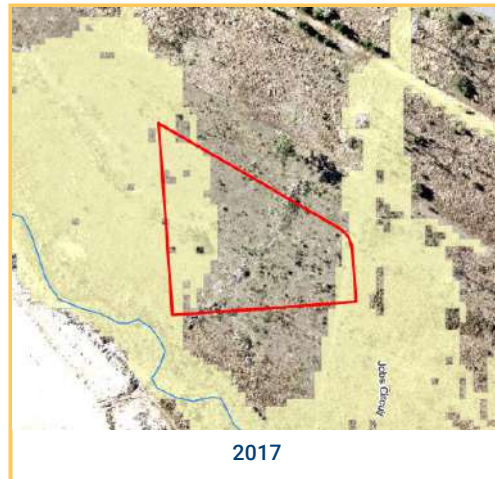
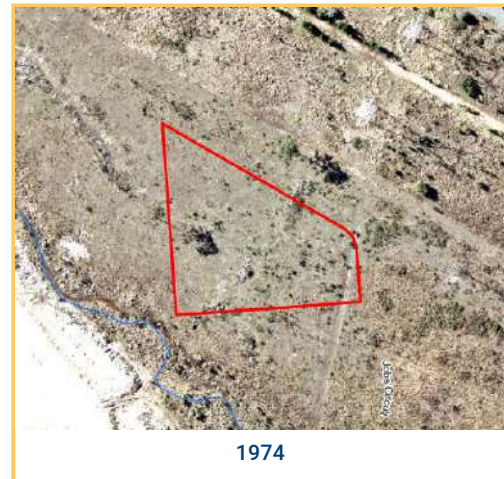
 Investigation area

Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Further investigation is needed.

Historic Flood Events

Based on the best information available to Council, the table below indicates whether or not the selected property may have been impacted by significant historic flood events. It is possible that other creek flooding or overland flow, which is not included in Council's mapping of these events, may have impacted the property.

Flood event	Property impacted
1974	No
2017 (after ex Tropical Cyclone Debbie)	Yes
2022 (late February / early March)	No



Planning Scheme Maps

The selected property is shown below on an extract of the Flood Overlay Maps from the Logan Planning Scheme 2015 V9.2 with TLPI No. 1/2024. Various provisions of the planning scheme which refer to properties affected by the Flood Overlay Maps will apply to the flood affected areas for the purposes of planning and development. This may include, for example, raised building floor levels and achieving safe vehicle access to the road network.

OM-05.01 Isolated islands



OM-05.02 High flow area



OM-05.04 Flood risk areas



MAP LEGEND



High

Floodwaters may be deep or fast flowing, or have a relatively high chance of occurrence (e.g. 80% chance in 30 years). Conditions may pose a risk to life and cause damage to buildings, possibly severe. Limited development may be considered if not increasing the flood risk exposure for people or property. These areas are generally better suited to environmental, recreational and some agricultural uses.



Moderate

Less frequently affected by flooding or if more frequent, with shallow or slower moving floodwater. Conditions may pose an unacceptable risk to people or property if not mitigated. Development may be tolerable if measures are taken to address flood impacts, protect people and limit damage.



Low

Extremely unlikely chance of flooding (1% chance or less over a 30 year period) and/or relatively shallow or benign flooding conditions. Development is generally acceptable except for essential community infrastructure (e.g. emergency services). Vulnerable uses (e.g. childcare, aged care) may be ok subject to building, site access and safe shelter mitigation measures. Shows the full floodplain under the largest flood that could conceivably occur.



Investigation area

Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Development should avoid these areas until further investigation (updated flood study or localised risk assessment) is completed.

MAP LEGEND



High flow area

High hazard areas of flooding where significant (deeper, faster) flow of water occurs and in which a building is vulnerable to structural damage or failure from floodwater. Classified as H5 or H6 in the Australian Institute of Disaster Resilience (AIDR) Guideline 7-3 'Flood Hazard'.



High flood island

Areas which are isolated from flood-free land (surrounded by floodwater) but retain a portion of the area as flood free in a probable maximum flood (PMF).



Low flood island

Areas which are surrounded by floodwater and at first isolated from flood-free land, then completely inundated by floodwater (submerged) as the flood continues to rise.



Meadowbrook flood assessment area

Area where the function of important community infrastructure needs to be maintained. Flood mitigation measures and comprehensive emergency management planning is required to adequately manage the risk for flood events.



If more recent flood studies have been completed and accepted by Council, the Latest Flood Risk Map shown at the top of this report may be different from the planning scheme map. The latest flood information should be used to inform development decisions and will be incorporated into the planning scheme in a future amendment.

Further Information

1. Floods are highly unpredictable and variable, and properties may be affected by other sources of potential flooding. Each flood and its impact is different. Areas that were not flooded previously may be affected by future events. Areas that have been previously flooded may be impacted in different ways. This online report cannot take all of this into account.
2. The flood mapping and levels in this report are based on data from flood studies undertaken at a particular time and are subject to change. For example, if the method for calculating flood levels is updated, industry guidelines are updated or more recent information becomes available, this may result in changes to the information in this report. In areas where development is ongoing, the flood mapping and levels may not reflect developed conditions.
3. Flood studies do not create risk. They help us to understand the risk, based on relevant legislation and Queensland Government policies and guidelines. Flood studies also consider a range of other factors such as rainfall and river level information from recent events, climate change and trends, the impacts of development, changes to catchment conditions, new technologies and industry best practice (which help to improve accuracy).
4. Flood studies and models are developed from the best information available at the time. They do not tell you how the flood waters might behave, how quickly they may rise, or how dangerous the flooding will be. The models also cannot represent changes that have occurred since they were developed which may impact flood behaviour, such as earthworks, new developments or road infrastructure.
5. This report is not a substitute for independent professional advice. You should engage the services of a Registered Professional Engineer of Queensland (RPEQ) to get site specific information regarding the flood risk to your property, and how that might affect any proposed building or development work.
6. While Logan City Council takes reasonable care in producing this report, it does not guarantee that the information is accurate, complete or current. Logan City Council does not accept any responsibility for any loss or damage (however it was caused) in connection with the use of or reliance on the information in this report.

Contact Information

Where to go for further information depends on the type of information you need. Please refer to the [Flood Risk Fact Sheet](#) or contact Council using the details below.

Topic	Contact Details
Flood studies and modelling information, and the flood risk on your property	Contact Council on 07 3412 3412 or email council@logan.qld.gov.au . Further information about flooding and flood studies is available on the Flood page on Council's website.
Planning and development enquiries or proposals	Contact Council on 07 3412 3412 or email development@logan.qld.gov.au . Before lodging a development application, pre-lodgement advice is recommended.
Building information	Contact Council on 07 3412 3412 or email council@logan.qld.gov.au . You can also contact a private building certifier .
Properties in Priority Development Areas	Contact Economic Development Queensland . Council is not the planning authority for these properties.
Independent advice about flooding on your property	Contact a registered engineer through the Board of Professional Engineers of Queensland: Phone: 07 3210 3100 Email: admin@bpeg.qld.gov.au Web: Home - Board of Professional Engineers Queensland (bpeg.qld.gov.au)

APPENDIX G

Yarrabilba Precinct 5A MIBA North Stormwater Management Plan

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2022/1306
Date: 3 February 2023



YARRABILBA PRECINCT 5A MIBA NORTH STORMWATER MANAGEMENT PLAN

VERSION 1

DesignFlow
Prepared for Lendlease
June 2022

Document Control Sheet

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Suggested Reference:	Yarrabilba Precinct 5A MIBA North Stormwater Management Plan – Version 1 (DesignFlow, 2022)
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Author(s):	Nic Smith
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Potential implications of climate change

Unless expressly stated otherwise, historical climate data has been used in, or underpins, the analyses that are presented in this report. The historical climate is not necessarily a valid indicator of future climate, which may contain prolonged periods that are wetter or drier than the historical record used for this analysis. There is significant uncertainty surrounding how climate, and in particular, rainfall, will be impacted by various levels of greenhouse gas accumulation in the atmosphere. Rainfall has a much greater spatial variability than temperature and some areas are likely to become wetter whilst other areas become drier. Further to this there may be changes in the seasonality and intensity of rainfall. Such changes in climate could affect the conclusions and recommendations of this report.

Inherent natural variability in soils and plants

Where particular types of soils are recommended, such recommendations are based on information provided by soils suppliers, laboratories and published industry guidelines. There can be inconsistencies in the behaviour of soils under field conditions compared to laboratory conditions, and, for both natural and blended soils, many soils are non-homogenous and properties and behaviour can be variable. Where particular plant species have been recommended, such recommendations are based on botanical knowledge and observations of similar species growing in similar, but not identical conditions. Plants can be sensitive to subtle changes in climate, hydrology, soil and surrounding ecological conditions. Further to this, plant health is often closely linked to the level of maintenance provided. No warranty or guarantee, whether explicit or implied is made with respect to the suitability or performance of soils or plant species recommended in this report.

Table of Contents

1	INTRODUCTION	1
2	SITE CHARACTERISTICS	2
2.1	LOCATION.....	2
2.2	TOPOGRAPHY, CATCHMENTS AND DDRAINAGE.....	2
2.3	GEOLOGY AND SOILS	4
2.4	VEGETATION	4
2.5	WATERWAYS.....	5
2.6	PROPOSED DEVELOPMENT	5
3	STORMWATER QUALITY	7
3.1	DESIGN OBJECTIVES.....	7
3.2	STORMWATER QUALITY MANAGEMENT STRATEGY	7
3.3	STORMWATER QUALITY ASSESSMENT	1
3.4	COMPLIANCE AND CERTIFICATION.....	5
4	STORMWATER QUANTITY	6
5	EROSION AND SEDIMENT CONTROL	8
5.1	DESIGN OBJECTIVES.....	8
5.2	MANAGEMENT STRATEGY	9
5.3	MONITORING AND AUDITING	11
6	CONCLUSION	13
7	REFERENCES	14

List of Tables

Table 1: Stormwater quality objectives	7
Table 2: Stormwater treatment elements	8
Table 3: Stormwater treatment basins concept design levels summary	8
Table 4: MUSIC modelling parameters.....	2
Table 5: MUSIC model catchment split data	4
Table 6: MUSIC results	4
Table 7: Construction phase stormwater quality	8

List of Figures

Figure 1: Yarrabilba Precinct 5A MIBA North locality.....	3
Figure 2: Existing topography, catchments and drainage	3
Figure 3: Geology and soils.....	4
Figure 4: Precinct 5A MIBA North proposed layout (RPS).....	6
Figure 5: Precinct 5A MIBA North stormwater quality management strategy	1
Figure 6: MUSIC model layout.....	1
Figure 7: 1% AEP Flood levels and preliminary earthworks.....	6
Figure 8: Drainage diversion external to development footprint	7
Figure 9: ESC strategy – existing levels.....	10
Figure 10: ESC Strategy – final levels.....	10

1 INTRODUCTION

The Yarrabilba Priority Development (PDA) is located within the Logan City Council area and occupies a former pine plantation located south of Logan Village. The Yarrabilba PDA was declared by regulation under the Economic Development Act (2012). Yarrabilba is part of a regional growth area identified in the South East Queensland Regional Plan, which identifies a need for a further 70,000 dwellings across a number of localities in the Logan City Council area by 2031. The Yarrabilba development aims to provide approximately 17,000 dwellings for a population of 45,000.

Precinct 5A MIBA North (subject site) covers an area of approximately 31.3 hectares (ha) which includes just under 14 ha of development lots, 4 ha of roads and around 13.2 ha of powerline easement and stormwater treatment areas.

This document presents the stormwater management strategy for the subject site to meet the requirements set out in the Context Planning Area Strategy. These are generally consistent with the *State Planning Policy, Yarrabilba Total Water Cycle Management Strategy* (DesignFlow, 2021) and *Yarrabilba Stormwater Infrastructure Master Plan* (DesignFlow, 2021). This report provides details of the proposed stormwater treatment measures including location, conceptual sizing and functional earthworks.

This report focusses on the construction phase erosion/sediment control, stormwater quality and waterway elements specific to Precinct 5A. Flood management has been addressed separately in *the Yarrabilba (Quinze Creek) Flood Study – Version 1* (DesignFlow, 2017) as the flood management strategy spans numerous current and future precincts requiring site wide planning. No flood infrastructure is required within the subject precinct.

2 SITE CHARACTERISTICS

2.1 LOCATION

Development Precinct 5A MIBA North lies in the western portion of the Lendlease site bordering the southern edge of existing Precinct 1 and Waterford Tamborine Road as shown in Figure 1. The precinct covers a total area of 31.3 ha across 5 stages which includes a significant area of existing powerline easement and buffer defining the northern extent of the precinct.

2.2 TOPOGRAPHY, CATCHMENTS AND DRAINAGE

The existing topography across the precinct ranges from low-moderate grades (approximately 2% on ridgeline increasing to around 5% in drainage gullies and up to 7% in the south-west corner near Waterford Tamborine Road). Elevations range from approximately 45 mAHD at the eastern development edge up to 60 mAHD at the western interface with Waterford Tamborine Road.

As illustrated in Figure 2, the northern portion of the subject site drains in a southward direction from the powerline easement to a broad shallow gully running eastward through the site. This also captures a 15 ha external catchment from west of Waterford Tamborine Road. The southern portion of site is characterised by a low ridgeline separating the gully described above and the main ephemeral waterway forming the western tributary of upper Quinzeh Creek. This waterway extends west under Waterford Tamborine Road and drains the external rural residential catchment through the Yarrabilba site.

2.2.1 Lawful Point of Discharge

The lawful point of discharge for stormwater from Precinct 5A MIBA North is South into the western tributary of Quinzeh Creek as illustrated in Figure 2. This watercourse is a drainage feature under the Water Act (2000) and a moderate risk waterway under the Fisheries Act 1994. This waterway remains within the Yarrabilba site until such time as it discharges north of the site (between Precinct 3A and 3C) near Steele Road approximately 3 km downstream.

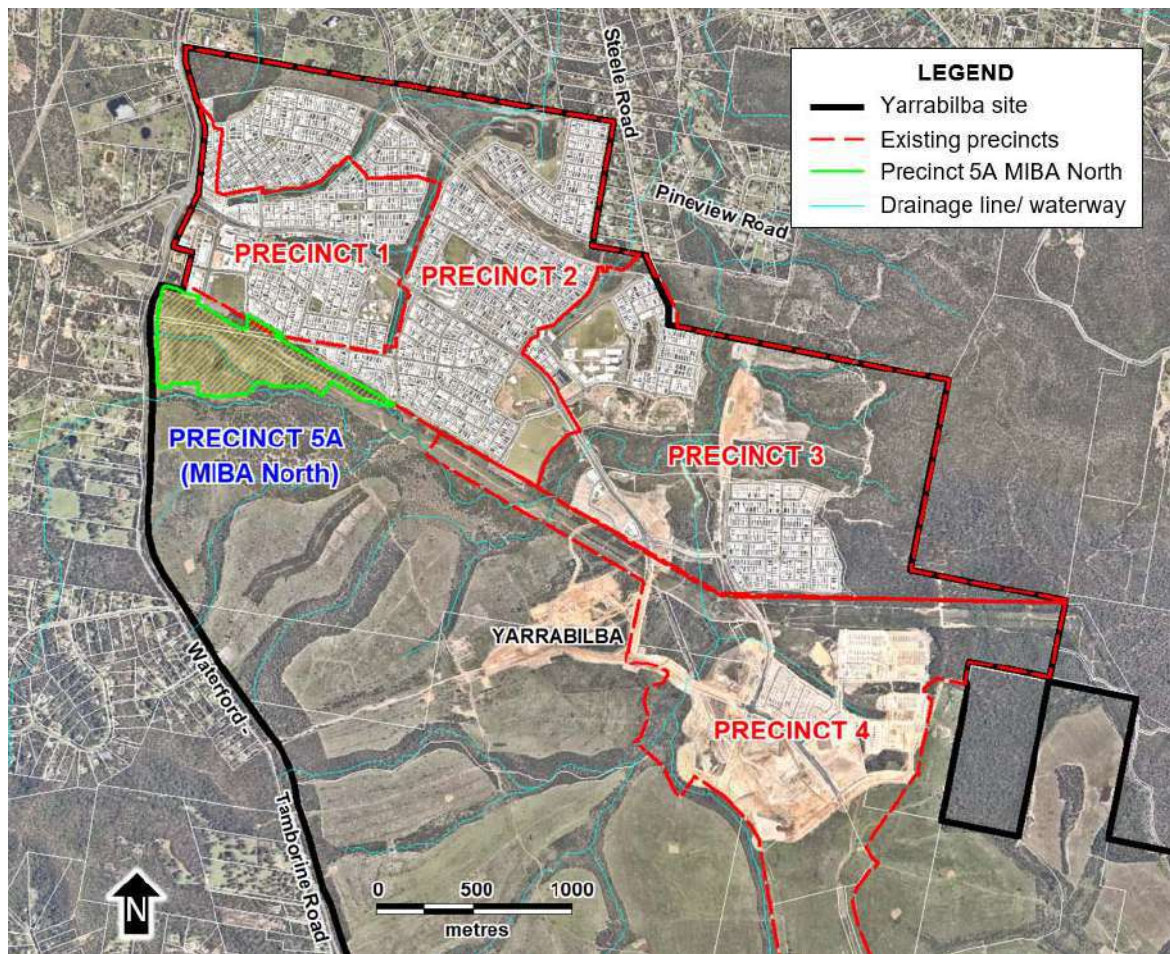


Figure 1: Yarrabilba Precinct 5A MIBA North locality

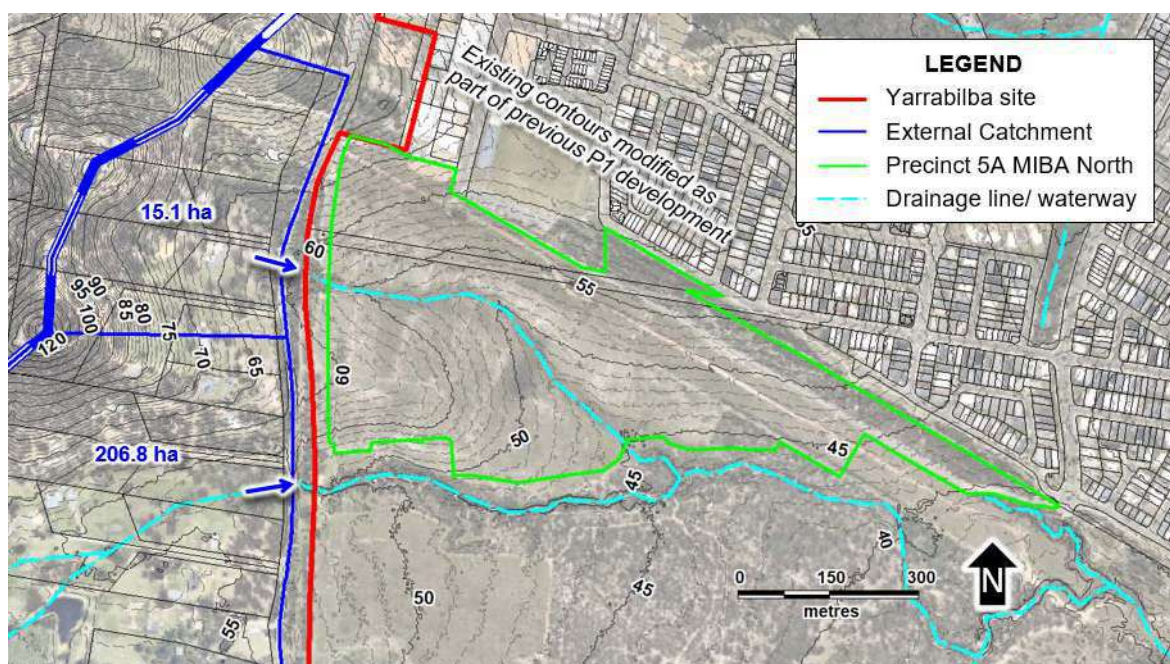


Figure 2: Existing topography, catchments and drainage

2.3 GEOLOGY AND SOILS

Geological mapping indicates Precinct 5A is located across two geological units:

- Woogaroo sub-group (RJbw)
- Alluvium (Qa)

Broad scale geotechnical investigations completed across the site (Bowler, 2004) indicate subsurface soils are typically sands overlying silty clays and weathered sandstones. The soil conditions for much of Precinct 5A MIBA are not expected to vary significantly from those encountered in the balance of Precinct 3 and 4 previously (i.e. those within the lower slope development zones). The alluvium zones (southern edge of P5 MIBA north) have often displayed deep sand zones in localised areas of previous precincts where historic channel/creek incisions have been filled with sediment eroded from upslope catchments. Further site specific geotechnical investigations will occur within Precinct 5A MIBA North to confirm soil conditions for civil engineering design.



Figure 3: Geology and soils

2.4 VEGETATION

The majority of the Yarrabilba site was previously pine plantation, with most vegetation associated with grassland or pine and eucalypt/acacia regrowth of limited ecological value. Historical aerial imagery illustrates grassland and pine areas represent roughly 80% of the existing land use across the Yarrabilba site, which have subsequently been covered with regrowth. Moderate to dense vegetation generally occurs along drainage lines in the development area.

Vegetation management will generally be undertaken in accordance with *Yarrabilba Development: Natural Environment Site Strategy* (Natura Consulting, 2012) which

highlights vegetation management procedures with regards to clearing approvals, revegetation, monitoring/compliance and design requirements. Strategy 14 in the CPAS provides the individual mapping for waterway, flora and fauna constraints as well as bushfire setbacks for the Precinct 5A MIBA North development.

2.5 WATERWAYS

There are no mapped waterways within Precinct 5A MIBA north boundary that are to be retained. The existing drainage line through the centre of the site (Figure 2) has been reviewed by Natura Pacific and not deemed a waterway for the purpose of ecological protection, buffering or rehabilitation as it was primarily a drainage overland path dominated by exotic pine (*Pinus elliottii*) and lantana (*Lantana camara*). These weeds were subsequently cleared as part of land management practices between 2017 and 2019. As part of development, this drainage (largely from external catchment west of Waterford Tamborine Road) is to be diverted south along the western boundary of the development via an open grassed drain towards the main waterway. Ultimately, this will be formalised further as part of the future Waterford Tamborine Road realignment and upgrade (currently in planning and design phase). This is discussed further in Section 4.

The main waterway (western tributary of upper Quinzeh Creek) lies south of and outside the Precinct 5A MIBA North boundary and while not forming part of this development application, has been included in the site planning for the purpose of waterway setbacks. A detailed survey was undertaken for this waterway and vegetation in order to assign the minimum waterway buffers set out in the *Stormwater Infrastructure Master Plan* (DesignFlow, 2021). In conjunction with existing vegetation and bushfire considerations, the development extent has been defined outside this waterway corridor.

As described in the approved CPAS, no part of MIBA North extends into the retained waterway (or buffers) to the south so no further assessment or reporting of waterway management will be made in this report. It does, however, acknowledge the future rehabilitation works that need to be managed as part of the subsequent expansion of the MIBA area to the south. The overall condition of this waterway is generally rated as 'poor' in the *Yarrabilba General Waterway Condition Assessment* (DesignFlow, 2021) and future rehabilitation will be critical to the improvement of this waterway for long term ecological and geomorphological benefits.

2.6 PROPOSED DEVELOPMENT

The proposed development includes lots, roads and drainage reserve to support mixed industry and business land use. The precinct boundary also includes an existing major powerline easement traversing the northern extent. The total precinct covers 31.3 hectares including approximately 14 hectares of lots, 4 hectares of roads, 1.3 hectares stormwater treatment and the balance 12 hectares of powerline easement. The precinct layout is shown in Figure 4.

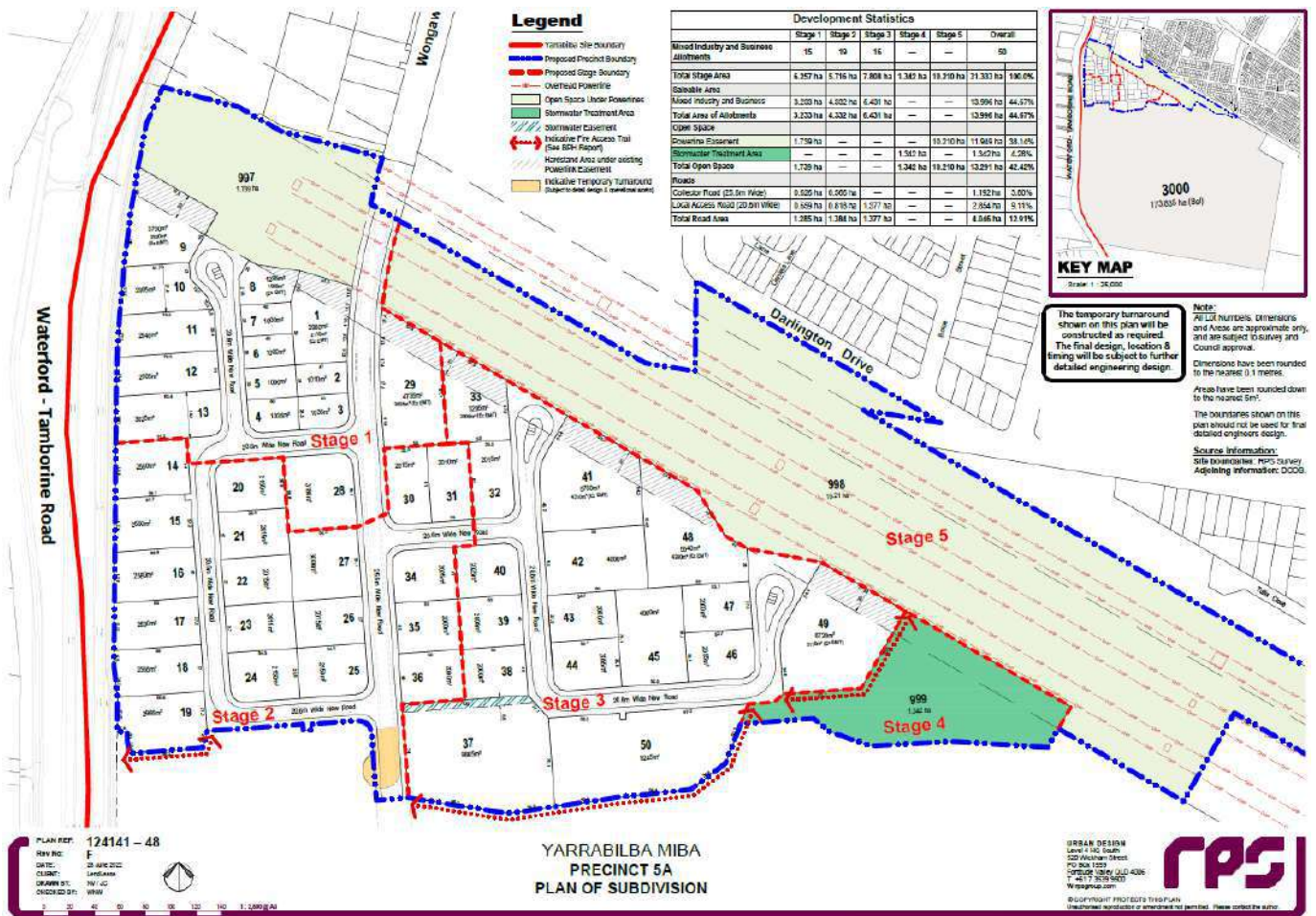


Figure 4: Precinct 5A MIBA North proposed layout (RPS)

3 STORMWATER QUALITY

3.1 DESIGN OBJECTIVES

The stormwater quality management objectives that apply to the operational phase of Yarrabilba Precinct 5A are listed in Table 5 as defined by *the Yarrabilba – Stormwater Infrastructure Master Plan* (DesignFlow, 2021), which are consistent with the State Planning Policy (DSDIP, 2017).

These objectives require the reduction of pollutant loads discharged from the development site once all construction works are complete. These load reductions are aimed at protecting the environmental values of downstream receiving waterways from the impacts of urban stormwater runoff.

Table 1: Stormwater quality objectives

Pollutant	Discharge criteria (% reduction in mean annual load)
Total suspended solids (TSS)	80%
Total phosphorous (TP)	60%
Total nitrogen (TN)	45%
Gross pollutants (GP)	90%

3.2 STORMWATER QUALITY MANAGEMENT STRATEGY

A stormwater management strategy has been developed for Precinct 5A MIBA north based on a review of the site characteristics, constraints, masterplan for the proposed development zones and discussions with Lendlease. The proposed strategy has been developed in collaboration with the design team to ensure the proposed strategy is well integrated with both engineering and landscape aspects of the design.

When developing the treatment strategy, a number of guiding principles were considered:

- Adopt multiple use open space principles where possible
- Locate treatments in waterway buffer zones, where applicable, as per *Yarrabilba – Stormwater Infrastructure Master Plan* (DesignFlow, 2021) and the *MIBA North Context Plan Area Strategy* (RPS, 2021).
- Adopt similar treatment philosophy as per Precinct 1, 2 and 3 developments to retain consistency across the development
- Integrate with landscape outcomes
- Minimise the impact on existing vegetation and adjacent aquatic ecosystems

Being a comparatively small and contained local catchment, the stormwater quality strategy relies on a single end-of-pipe treatment system capturing the majority of the developed parts of the precinct. Secondary to this is the drainage management of the northern powerline easement interface (undeveloped zone requiring clean water diversion around site) and the western interface with Waterford Tamborine Road (future road upgrade corridor by the Department of Transport and Main Roads (DTMR)). A very minor area of road at the southern boundary will discharge untreated in the short-term until future precinct expansion to the south occurs at which time this catchment will drain to future treatment areas.

Figure 5 shows the overall proposed treatment strategy for Precinct 5A with details of treatment provided in Table 2 and the relevant flood immunity provided in Table 3. Further details of performance assessments of the proposed treatment strategy are presented in Section 6.3.

Table 2: Stormwater treatment elements

Treatment Type and ID	Size	Catchments	Comment
Sediment Pond 5A1	350m ²	5A1	Inlet pond to Bioretention basins 5A2 and 5A3
Bioretention Basins 5A2 - 5A3	2 x 800m ²	5A1	Split inflow to each basin from sediment pond
Swale 1A	Varies	1A, E1, E2	Manages part of existing Precinct 1 plus diverts easement runoff around development

The concept design for the sediment pond and bioretention basins has been documented in the functional design plans by KN Group (Appendix A). Key design parameters are summarised in Table 3. These are subject to detailed design as part of operational works.

Table 3: Stormwater treatment basins concept design levels summary

	Design Level (mAHD)
Sediment pond (NWL)	45.6
Bioretention surface	45.5
Embankment (external)	46.5 (min.)
1% AEP Flood level (adjacent waterway)	44.0 (approx.)

Notes:

NWL = Normal water level

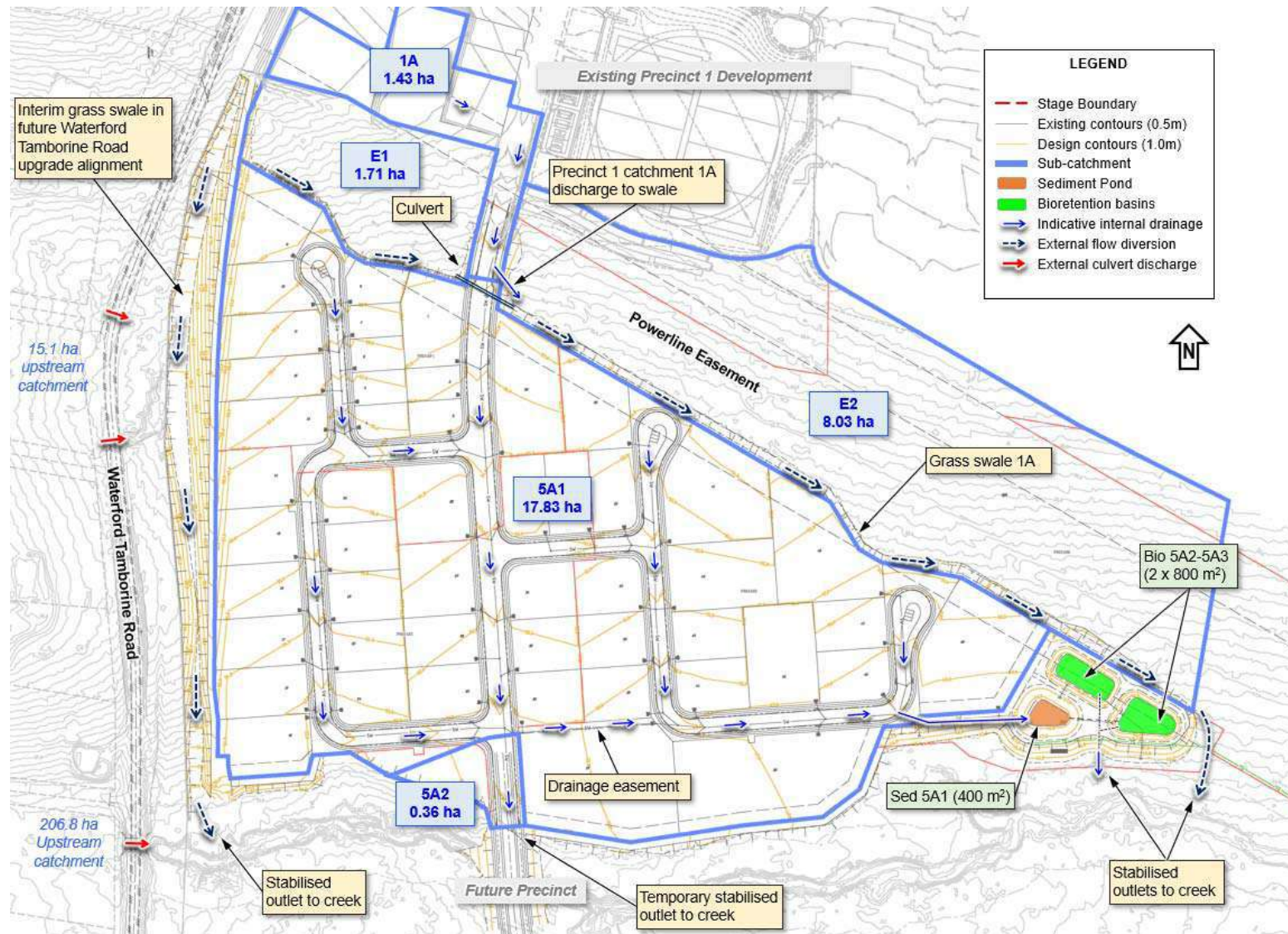


Figure 5: Precinct 5A MIBA North stormwater quality management strategy

3.3 STORMWATER QUALITY ASSESSMENT

MUSIC modelling was conducted to assess the stormwater treatment performance of the proposed treatment strategy. MUSIC Version 6.3 was used for the assessments.

3.3.1 Model Structure

The structure of the MUSIC model is shown in Figure 6 with the general data provided in Table 4.

MUSIC model parameters were adopted generally in accordance with the *MUSIC Modelling Guidelines* (Water by Design, 2010) using 10 years (1990-2000) of modified Shailer Park meteorological data. Six minute rainfall data and monthly average evapotranspiration data was used. The Shailer Park station was selected for adoption as it is the closest rainfall station to the site with 6 minute data. The rainfall data set was modified to generate a data set closer representing Logan Village rainfall. The Shailer Park 6 minute rainfall was reduced by a factor of 0.849 to produce a rainfall data set with a similar annual total to Logan Village (950mm) for the period considered. Discussion of this was provided in Section 5.1 of the *Precinct 1 Stormwater Management Plan* (DesignFlow, 2011) and has been consistently used in all subsequent applications since that time.

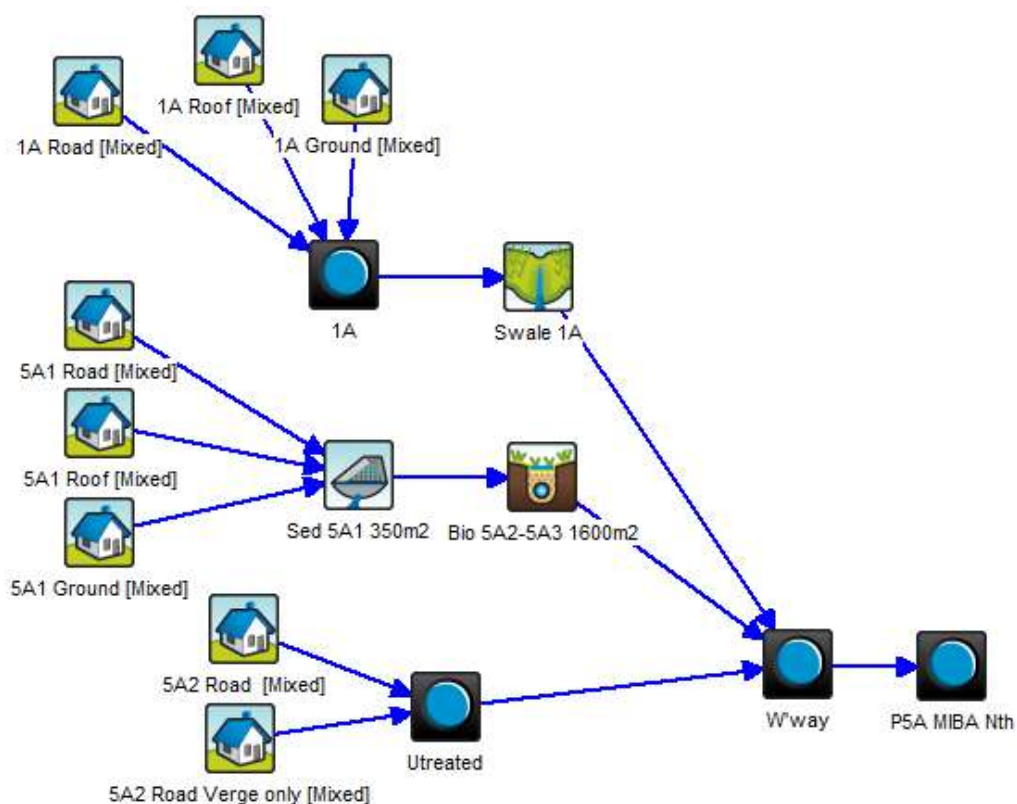


Figure 6: MUSIC model layout

Table 4: MUSIC modelling parameters

Parameter	Value
Source Data	
Rainfall data set	1990-99– Modified Shailer Park Station 040715
Modelled time step	6 minute
Mean annual rainfall 1990-2000	950 mm
Potential evapotranspiration	1,446 mm
Soil properties (runoff generation parameters)	Table 3.7 Music Modelling Guidelines (as appropriate depending on land use)
Pollutant concentrations (base flow and storm flow concentration)	Table 3.8 Music Modelling Guidelines (as appropriate depending on land use)
Percent impervious	Table 3.5 and 3.6 Music Modelling Guidelines (as appropriate depending on land use)
Treatment Devices	
Bioretention	Filter media depth = 0.6 m Extended detention depth = 0.3 m Extended detention area = Bio + sed pond Seepage = 0 mm/hr TN content 400 mg/kg Orthophosphate content 30mg/kg
Sediment Basin	Extended detention depth (EDD) = 0.01 m (extended detention area included in bio basin – see above) Evaporative loss 75% of PET Notional detention time = <0.1hr (upstream of bio)
Swale	Length = 100m ¹ Slope = 2% Base width = 5m Top width = 8m Depth = 0.5m Vegetation height = 50mm (assume mowed)

Notes:

1. Actual swale length is in the order of 580m, however combined site objectives (excluding easement catchment) can be readily achieved with a swale length of 100m so this is used for conservative modelling.

3.3.2 Assumptions

1. Water quality management measures are sized only for the portion of each catchment undergoing development (i.e. excludes undeveloped/revegetated powerline easement)
2. While the combined catchments of 1A, E1 and E2 discharge via a grassed swale approximately 580m in length, a conservative modelling approach has adopted only developed catchment 1A discharging into a 100m section of swale to illustrate more than adequate swale length exists. If the full easement catchment was included (as a developed source load) discharging to the full swale length (or even 50% of swale given distributed inflow), overall pollutant load reductions would be higher than reported in Section 3.3.4 below. This approach therefore remains conservative at this concept design phase.
3. A split catchment approach was adopted for industrial areas. Split land use percent imperviousness is generally in accordance with Table 3.5 in MUSIC Modelling Guidelines (Water by Design, 2010/2019) with ground level imperviousness adopted as 80% (commercial) as the more conservative approach than industrial.
4. Lot and road reserve areas were measured from development layout with roof area proportion assigned as 65% of lot areas (which equates to approximately 50% of overall catchment area, in line with MUSIC Guidelines) and balance as ground level (see item 3 above). This is conservative for the purpose of initial assessment. Where roof areas are lower (and correspondingly impervious ground areas are higher), treatment performance will improve from that reported in Section 3.3.4 below.
5. Bioretention default values for TN and OP content have been adopted as 400mg/kg and 30mg/kg respectively as per Water by Design advice (and in line with MUSIC Guideline 2019)
6. Sediment ponds have been modelled with large unrestricted outlet to bioretention (i.e. inlet zone to bioretention basins). Extended detention (ED) area for bioretention therefore includes area of sediment pond (with sediment pond ED depth set to minimum depth of 0.01m)

3.3.3 Catchment Data

The catchment areas draining to each treatment system have been derived from the urban design and drainage layouts for sub-stages where available. Table 2 previously identified catchments areas contributing to each treatment element. Table 5 below lists the catchment area, land use and percent impervious for each sub-catchment modelled with the detailed breakdown of surface types. Catchment E1 and E2 are identified below but excluded from MUSIC source catchment as these are not undergoing development. They do however discharge to Swale 1A as discussed previously in Section 3.3.2.

Table 5: MUSIC model catchment split data

Catchment ID	Total Area (ha)	Surface Type	Sub-Area (ha)	Impervious %
5A1	17.83	Road	3.84	75%
		Roof	9.09	100%
		Ground	4.90	80%
5A2	0.36	Road	0.18	75%
		Verge only	0.18	0%
1A	1.43	Road	0.34	75%
		Roof	0.71	100%
		Ground	0.38	80%
E1 ¹	1.71	Open Space	1.71	0%
E2 ¹	8.03	Open Space	8.03	0%
Total	29.36		29.36	57%

Notes:

1. Catchment E1 and E2 excluded from MUSIC source catchment as these are not undergoing development. They do however discharge to Swale 1A as discussed previously in Section 3.3.2.

3.3.4 Results

The results of the MUSIC modelling are presented in Table 6. All water quality objectives can be readily achieved with the proposed treatment strategy including offset for the minor catchment 5A2 which discharges untreated.

Table 6: MUSIC results

Catchments	Treatment ID	Pollutant	Inflows (kg/yr)	Outflows (kg/yr)	Reduction (%)
5A1	Sed 5A1+Bio 5A2/5A3	TSS	20500	3390	83.5
		TP	48.9	13.2	72.9
		TN	336	163	51.5
		GP	3600	0	100
1A	Swale 1A	TSS	1730	275	84.1
		TP	3.95	1.73	56.3
		TN	27	21.8	19.1
		GP	288	0	100
5A2	No treatment	TSS	956	956	0
		TP	1.55	1.55	0
		TN	4.87	4.87	0
		GP	33.4	33.4	0
Total Precinct 5A MIBA North (✓ denotes compliance with water quality objectives)		TSS	23200	4620	80.1 ✓
		TP	54.4	16.5	69.6 ✓
		TN	368	190	48.4 ✓
		GP	3920	33.4	99.1 ✓

3.4 COMPLIANCE AND CERTIFICATION

Design and construction certification of operational stormwater quality measures is to occur in accordance with the following guidelines:

- Water by Design (2104). *Bioretention Technical Design Guidelines (Version 1.1)* Healthy Waterways Ltd, Brisbane
- Water by Design (2009), Construction and Establishment Guidelines: Swales, Bioretention Systems and Wetlands, SEQ Healthy Waterways Partnership. Brisbane, Queensland.
- Water by Design (2012), *Transferring Ownership of Vegetated Stormwater Assets Version 1*. Healthy Waterways Partnership. Brisbane, Queensland.

4 STORMWATER QUANTITY

In line with the CPAS prepared for P5 MIBA North, flood management will generally be undertaken in accordance with the *Yarrabilba Development: Flood Risk Management Strategy* (BMTWBM, 2012) (as referenced in the *Yarrabilba – Stormwater Infrastructure Master Plan* (DesignFlow, 2021)) which beneficially exploits the use of the natural terrain and constructed road crossings (over drainage features and watercourses) to attenuate increased runoff from development. It should be noted that flood mitigation infrastructure is not constructed solely for a single stage or precinct, but functions as part of a total site flood management strategy that addresses current and future development precinct requirements. A number of these detention zones have been constructed in Precinct 1, 2 and 3 to date in advance of the urban development within the catchment. No flood management infrastructure is required or proposed as part of the Precinct 5A MIBA North area and no further flood impact assessment is therefore required as part of this stormwater management plan.

A review of the preliminary earthworks design of the proposed development area in relation to local flood levels is provided in Figure 7. This indicates that P5A MIBA North is well above the 1% AEP flood level being conveyed through the western tributary of upper Quinzeh Creek. This is based on the latest available flood model data (with consideration of the future ultimate Waterford Tamborine Road upgrade and drainage) and will be subject to ongoing review as part of the expansion of the master planned developed of Yarrabilba.

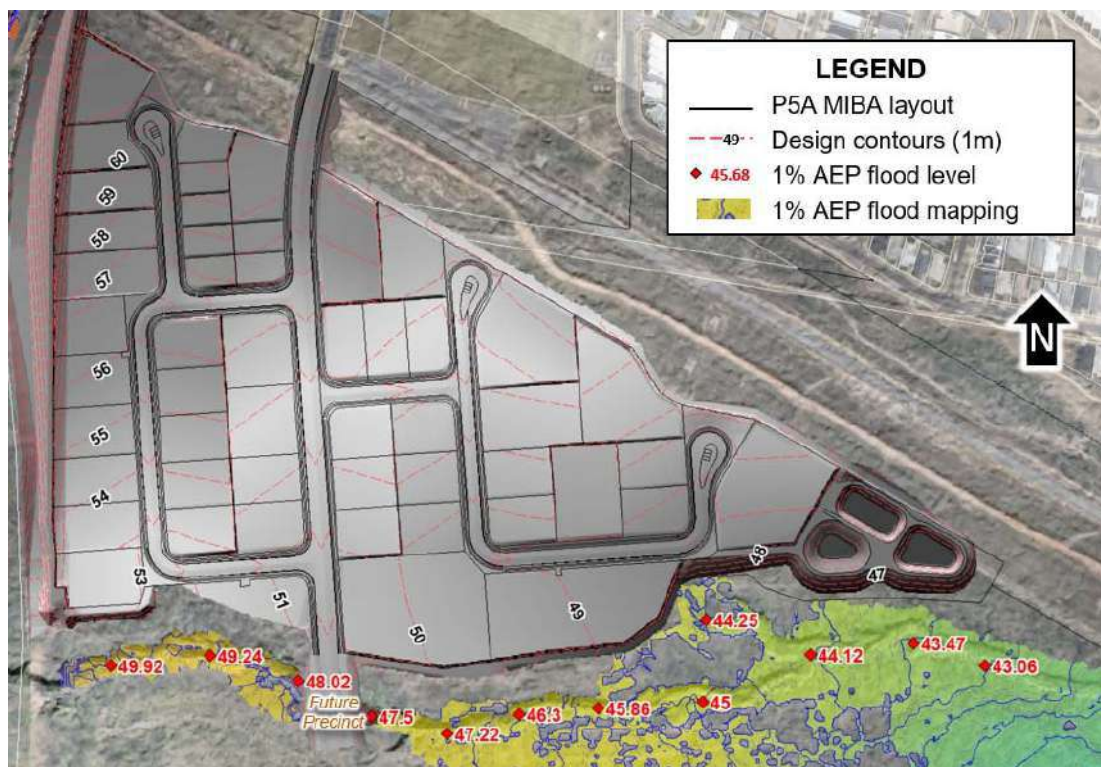


Figure 7: 1% AEP Flood levels and preliminary earthworks

As noted previously in Section 3.2, two key areas exist for drainage management from non-development areas due to the filling of the P5A MIBA north zone to create lots. These drainage diversions are the northern edge of development (power line easement) and western edge (Waterford Tamborine Road).

The northern powerline easement drain simply functions to capture clean water runoff from the vegetated easement corridor as well as a small portion of the existing precinct 1 development immediately north and divert it east around the MIBA development (and stormwater treatment basins) and discharge to the existing waterway. This diversion will comprise a grassed swale combined with stabilised outlet zone interfacing the waterway corridor). Indicative layout and sizing of this swale has been provided on the KN Group functional design drawings in Appendix A.

The western diversion drain will be provided as an interim drain until such time as the Waterford Tamborine Road upgrade/realignment occurs. This drain functions similar to the proposed ultimate road duplication design by capturing all localised crossroad culvert drainage and conveying it south towards the main creek line (western tributary of upper Quinzech Creek). This drain will have major 1% AEP storm capacity of approximately 5.2 m³/s to account for current external catchment discharge under Waterford Tamborine Road. This open drain be grassed with localised rock stabilised outlet zone interfacing the waterway corridor.

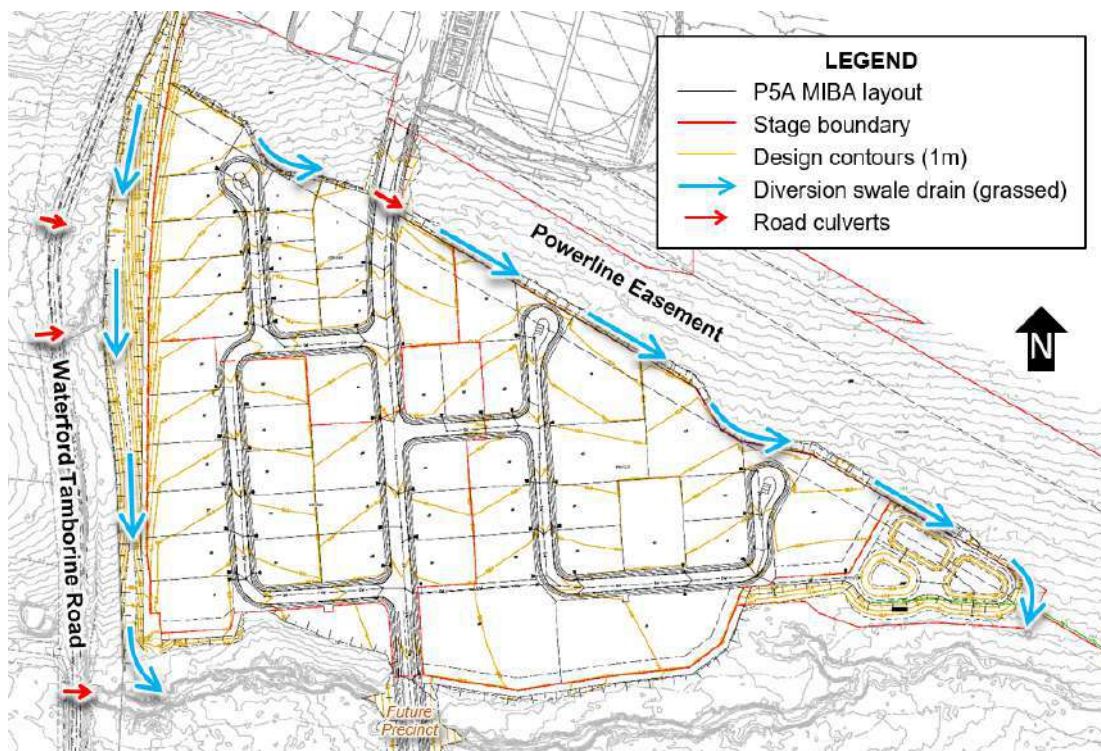


Figure 8: Drainage diversion external to development footprint

5 EROSION AND SEDIMENT CONTROL

5.1 DESIGN OBJECTIVES

The management of stormwater runoff during the construction phase is a critical part of protecting the Yarrabilba waterways and drainage lines. Construction phase design objectives for Precinct 5A are provided in Table 7 which are generally in accordance with the *Yarrabilba – Stormwater Infrastructure Master Plan* (DesignFlow, 2021) and the State Planning Policy (DSDIP, 2017).

Table 7: Construction phase stormwater quality

Issue	Desired outcomes
Drainage control	1. Manage stormwater flows around or through areas of exposed soil to avoid contamination. 2. Manage sheet flows in order to avoid or minimise the generation of rill or gully erosion. 3. Provide stable concentrated flow paths to achieve the construction phase stormwater management design objectives for temporary drainage works (part 2). 4. Provide emergency spillways for sediment basins to achieve the construction phase stormwater management design objectives for emergency spillways on temporary sediment basins (part 3).
Erosion control	1. Stage clearing and construction works to minimise the area of exposed soil at any one time. 2. Effectively cover or stabilise exposed soils prior to predicted rainfall. 3. Prior to completion of works for the development, and prior to removal of sediment controls, all site surfaces must be effectively stabilised* using methods which will achieve effective short-term stabilisation.
Sediment control	1. Direct runoff from exposed site soils to sediment controls that are appropriate to the extent of disturbance and level of erosion risk. 2. All exposed areas greater than 2500 metres² must be provided with sediment controls which are designed, implemented and maintained to a standard which would achieve at least 80% of the average annual runoff volume of the contributing catchment treated (i.e. 80% hydrological effectiveness) to 50mg/L Total Suspended Solids (TSS) or less, and pH in the range (6.5–8.5).
Litter, hydrocarbons and other contaminants	1. Remove gross pollutants and litter. 2. Avoid the release of oil or visible sheen to released waters. 3. Dispose of waste containing contaminants at authorised facilities.
Waterway stability and flood flow management	1. Where measures are required to meet post-construction waterway stability objectives (specified in table B), these are either installed prior to land disturbance and are integrated with erosion and sediment controls, or equivalent alternative measures are implemented during construction. 2. Earthworks and the implementation of erosion and sediment controls are undertaken in ways which ensure flooding characteristics (including stormwater quantity characteristics) external to the development site are not worsened during construction for all events up to and including the 1 in 100 year ARI (1% AEP).

*Note: An effectively stabilised surface is defined as one that does not, or is not likely to result in visible evidence of soil loss caused by sheet, rill or gully erosion or lead to sedimentation water contamination.

5.2 MANAGEMENT STRATEGY

5.2.1 Local Erosion and Sediment Control

Erosion and sediment control (ESC) will occur on a development stage by stage basis in accordance with *Best Practice Erosion and Sediment Control* (IECA, 2008) to achieve the objectives listed in Table 1. This will involve a combination of:

- Erosion control - Ensuring that all exposed surfaces are stabilised as soon as possible and that erosion of un-stabilised areas of works are minimised
- Drainage control - Ensuring that provision is made to control all on site runoff to designated treatment areas and to enable appropriate bypass of external flows which do not require treatment
- Sediment capture - Ensuring that mobilised sediment is captured through a combination of source controls such as silt fences and appropriately designed sediment basins. Where possible sediment basins for construction will be located within the voids required for the future stormwater quality treatment systems (sediment basins, bioretention basins, wetlands etc.).

The details of the local erosion and sediment controls for each stage of development are not provided in this report given the high level nature of the document. However, prior to any works commencing on a particular development stage in Precinct 5A MIBA North, a site specific Erosion and Sediment Control Plan (E&SCP) will be documented for the development stage in question prior to works starting. This will occur as part of the operational works application but can be adjusted by the contractor and site supervisor prior to commencement of construction provided the E&SCP complies with Best Practice Erosion and Sediment Control (IECA, 2008) and delivers the objectives listed previously in Table 7.

A current bulk earthworks application has occurred across the subject site to enable the placement of fill from another works precinct. To support this, an existing Erosion and Sediment Control Strategy (ESCS) was prepared and is provided in Appendix B. This strategy will continue to be implemented as part of ongoing bulk earthworks works (with detailed works specific erosion and sediment control plans to be prepared and periodically updated by the principal contractor in line with works program). Extracts from the existing and ultimate levels earthworks and ESC approach are provided in Figure 9 and Figure 10 respectively.

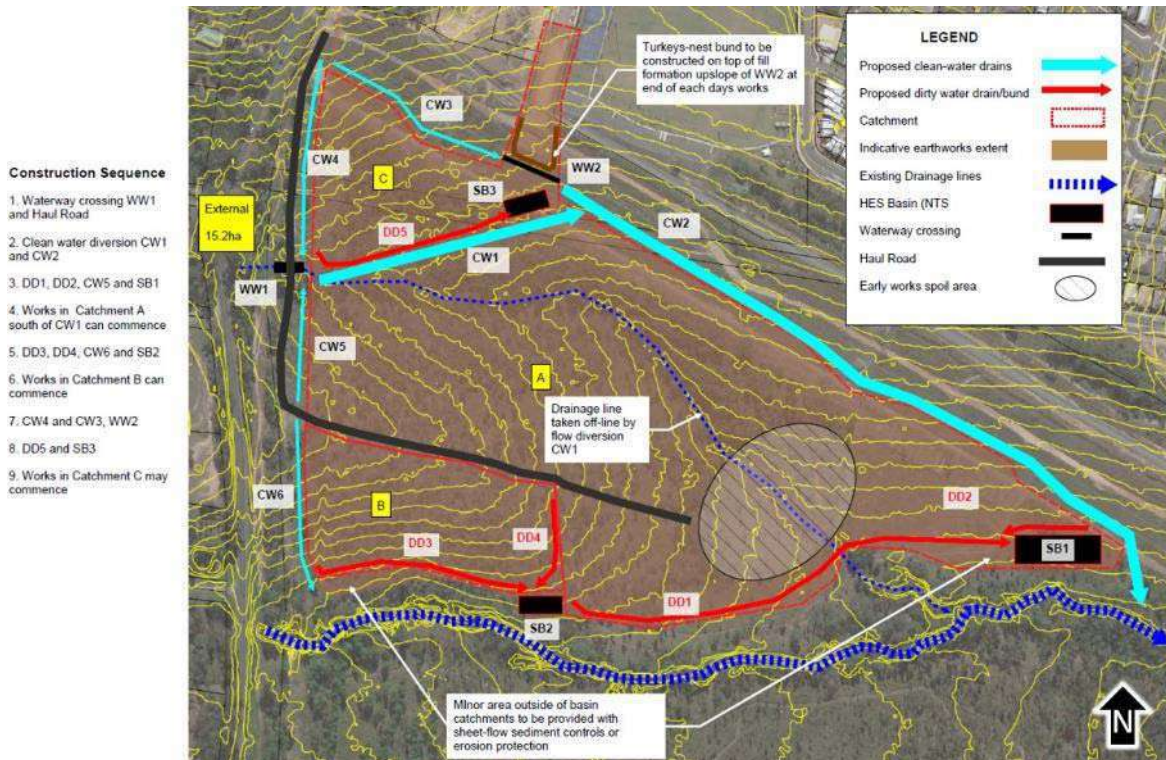


Figure 9: ESC strategy – existing levels

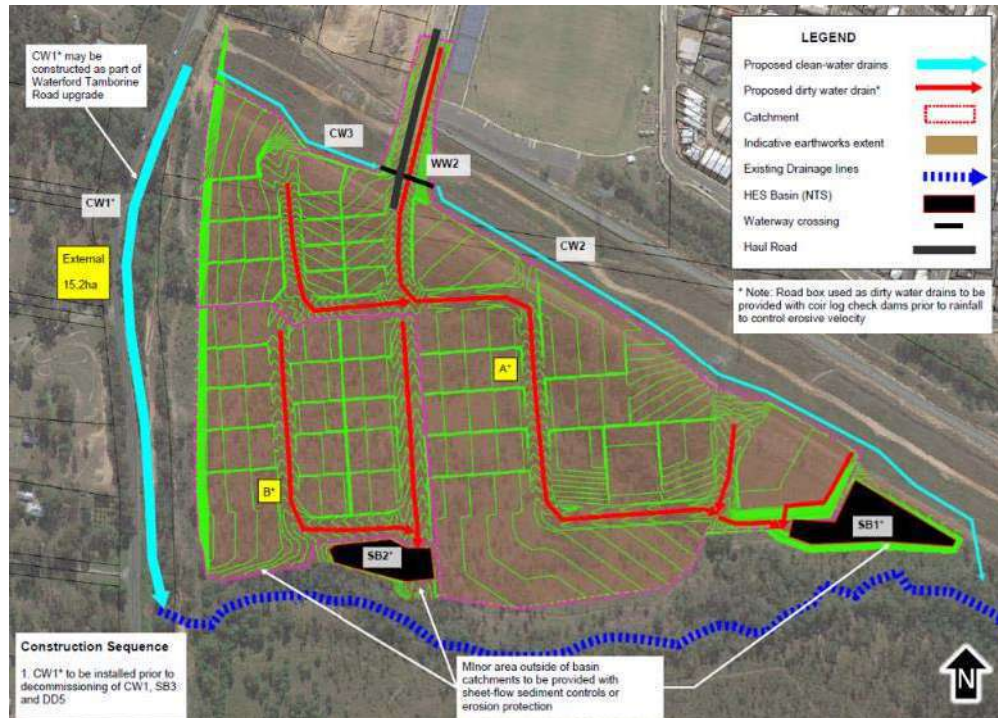


Figure 10: ESC Strategy – final levels

5.2.2 High Efficiency Sediment (HES) Basins

Given the importance of managing construction runoff into the waterways downstream of Yarrabilba and the potential impact on the ecology and residents, HES sediment basins are being strategically adopted (where practical) across Precinct 5A MIBA North. HES basins offer an improved technology for construction sediment management which essentially converts batch sediment basins into continuous flow treatment systems that respond in real time to storm events. The design sought to be achieved by HES basins that ensures at least 80% of the average annual runoff volume treated to 50mg/L TSS or less

The HES basin essentially comprises:

- Flocculent dosing system
- Inlet zone for mixing, flow distribution and efficient removal of coarse sediment
- Settling basin
- Outlet(s)

Implementation of HES basins have the potential to significantly reduce the fine and dispersive sediment load discharge from the site by a further 50% compared to traditional batch sediment basins.

5.3 MONITORING AND AUDITING

5.3.1 Principal Contractor

Site inspections and monitoring are to be undertaken by the principal contractor in accordance with Sections 6.17 and 7.4 of *the Best Practice Erosion and Sediment Control Document* (IECA, 2008) as detailed below. Best practice site management requires all ESC measures to be inspected at the following frequencies and include the following checks as a minimum:

Daily site inspections (during rainfall):

- All drainage, erosion and sediment control measures
- Occurrences of excessive sediment deposition (whether on-site or off-site)
- All site discharge points (including dewatering activities as appropriate)

Weekly site inspections (even if work is not occurring on-site)

- All drainage, erosion and sediment control measures
- Occurrences of excessive sediment deposition (whether on-site or off-site)
- Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements
- Litter and waste receptors
- Oil, fuel and chemical storage facilities

Prior to anticipated runoff producing rainfall (within 24 hours of expected rainfall)

- All drainage, erosion and sediment control measures
- All temporary flow diversion and drainage works

Following runoff producing rainfall (within 18 hours of rainfall event)

- All drainage, erosion and sediment control measures
- Occurrences of excessive sediment deposition (whether on-site or off-site)
- Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements

5.3.2 CPESC Compliance Audits

The ESC measures implemented at the site are proposed to be inspected on a bi-monthly to quarterly basis by a CPESC (Certified Professional in Erosion and Sediment Control) who is independent of the principal contractor and an audit report kept on file. The purpose of the audits is to ensure the developer and the contractors are meeting their obligations for ESC under the Environmental Protection Act (EP Act). The site will be assessed against these requirements in accordance with *Procedural Guideline: Standard work method for the assessment of the lawfulness of releases to waters from construction sites in South East Queensland EM1135* (DEHP, 2011).

The compliance audits will involve:

- Site inspection with the contractors to assess ESC actions on the site against the ESC plans and the requirements of EP Act and DEHP Procedural Guideline.
- Identifying non-compliances on the site, photographing and recording these for reporting.
- Where the rectification action is simple, these will be recorded and verbally communicated to the contractor for action.
- Review of any water quality and rainfall information for the site
- Compilation of a ESC Audit report which:
 - Identifies the ESC obligations
 - ESC issue and non-compliances
 - Actions (simple) to be taken to rectify the issues and non-compliances.

The triggers for inspections and reporting by the CPESC are as follows:

- Prior to the commencement of clearing works in each catchment
- Prior to the commencement of bulk earthworks;
- Prior to the commencement of civil works; and
- At regular monthly intervals during works.

6 CONCLUSION

A stormwater management strategy for Yarrabilba Precinct 5A MIBA North development has been prepared to meet the requirements of the Yarrabilba Stormwater Infrastructure Master Plan (DesignFlow, 2021) and Precinct 5A Context Plan Area Strategy.

The strategy includes a range of treatment measures including sediment ponds, bioretention systems and swales that integrate with the local urban and natural environment to ensure the stormwater quality objectives are achieved for the overall precinct while providing protection or enhancement to the local waterways and amenity. Sufficient space has been allowed for in the development layout for the stormwater treatment measures which have been verified via preliminary earthworks plans. Site design has also ensured all development lots are above the local 1% AEP flood level and provided with adequate flow conveyance drains for external catchment discharge.

Setback to local waterway and vegetation corridors have guided the development layout with due consideration for future development expansion and waterway rehabilitation to the south of the subject site.

Construction phase stormwater management objectives have been established for the site, in accordance with State Planning Policy (DSDIP, 2017). The preliminary locations of sediment basins have been provided with an Erosion and Sediment Control strategy to be developed as part of detailed design for operational works. Audits will be completed during construction to ensure compliance with State Planning Policy and Environment Protection Act.

7 REFERENCES

DesignFlow (2021) *Yarrabilba Total Water Cycle Management Strategy*

DesignFlow (2021) *Yarrabilba Stormwater Infrastructure Master Plan*

DesignFlow (2021) *Yarrabilba General Waterway Condition Assessment*

DesignFlow (2017) *Yarrabilba (Quinzeh Creek) Flood Study - Version 1*

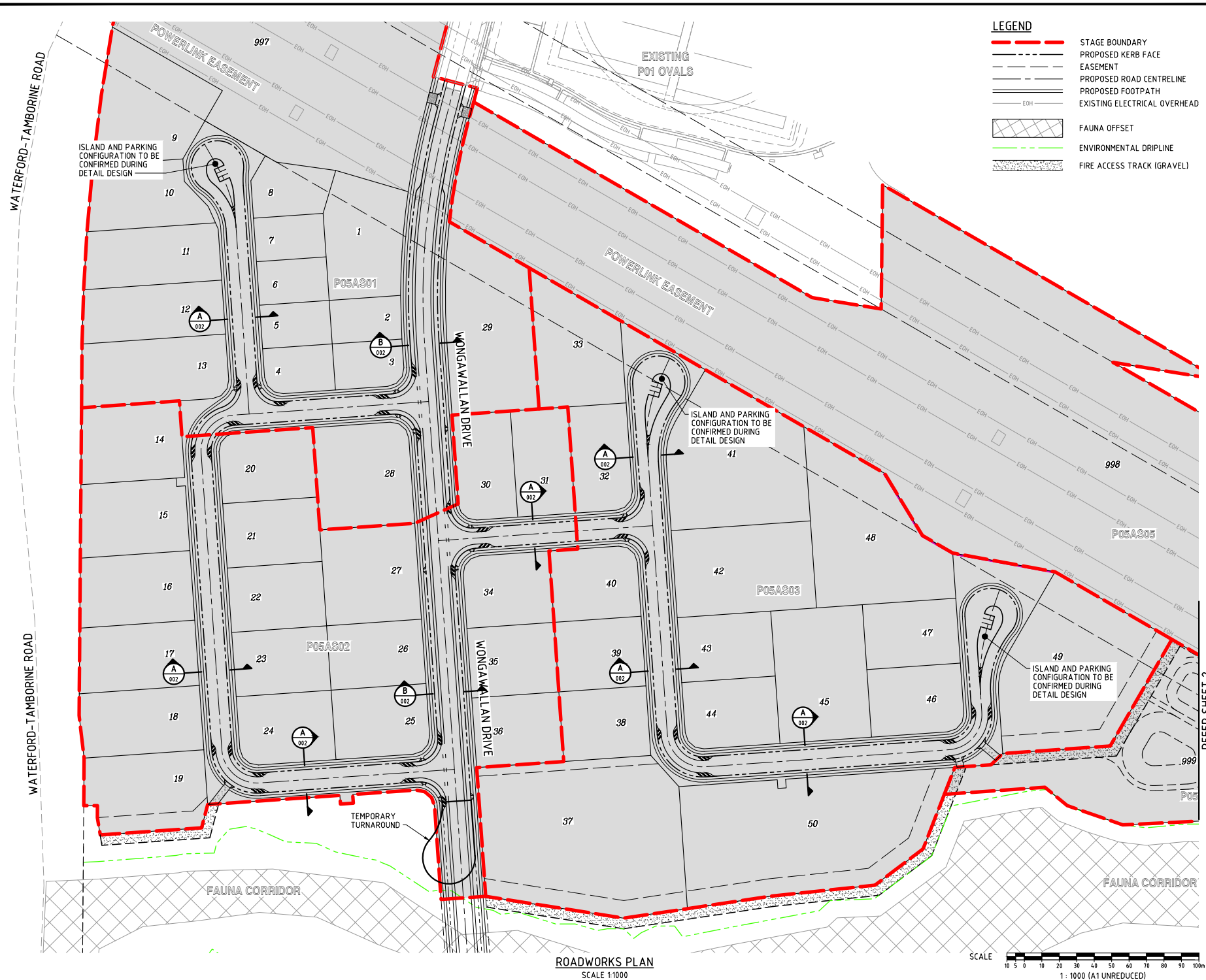
DSDIP (2017) *State Planning Policy*

Lendlease (2021) *Yarrabilba MIBA North Context Planning Area Strategy – Precinct 2A & Part of Precinct 5*

Natura Consulting (2012) *Yarrabilba Development: Natural Environment Site Strategy*

Natura Consulting (2012) *Natural Environment Site Strategy (NESS)*

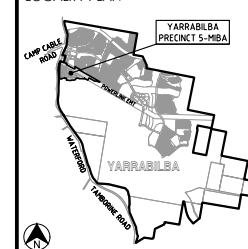
Water by Design (2010). *MUSIC Modelling Guidelines. SEQ Healthy Waterways Partnership.*



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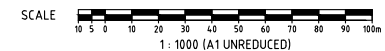
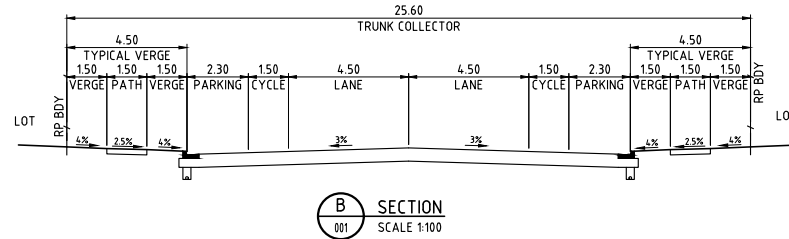


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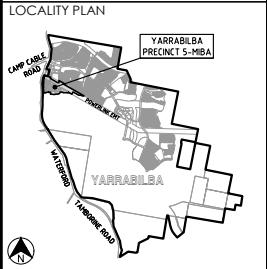
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 STAGE BOUNDARY
 PROPOSED KERB FACE
 EASEMENT
 PROPOSED ROAD CENTRELINE
 PROPOSED FOOTPATH
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 FAUNA OFFSET
 ENVIRONMENTAL DRIPLINE
 FIRE ACCESS TRACK (GRAVEL)

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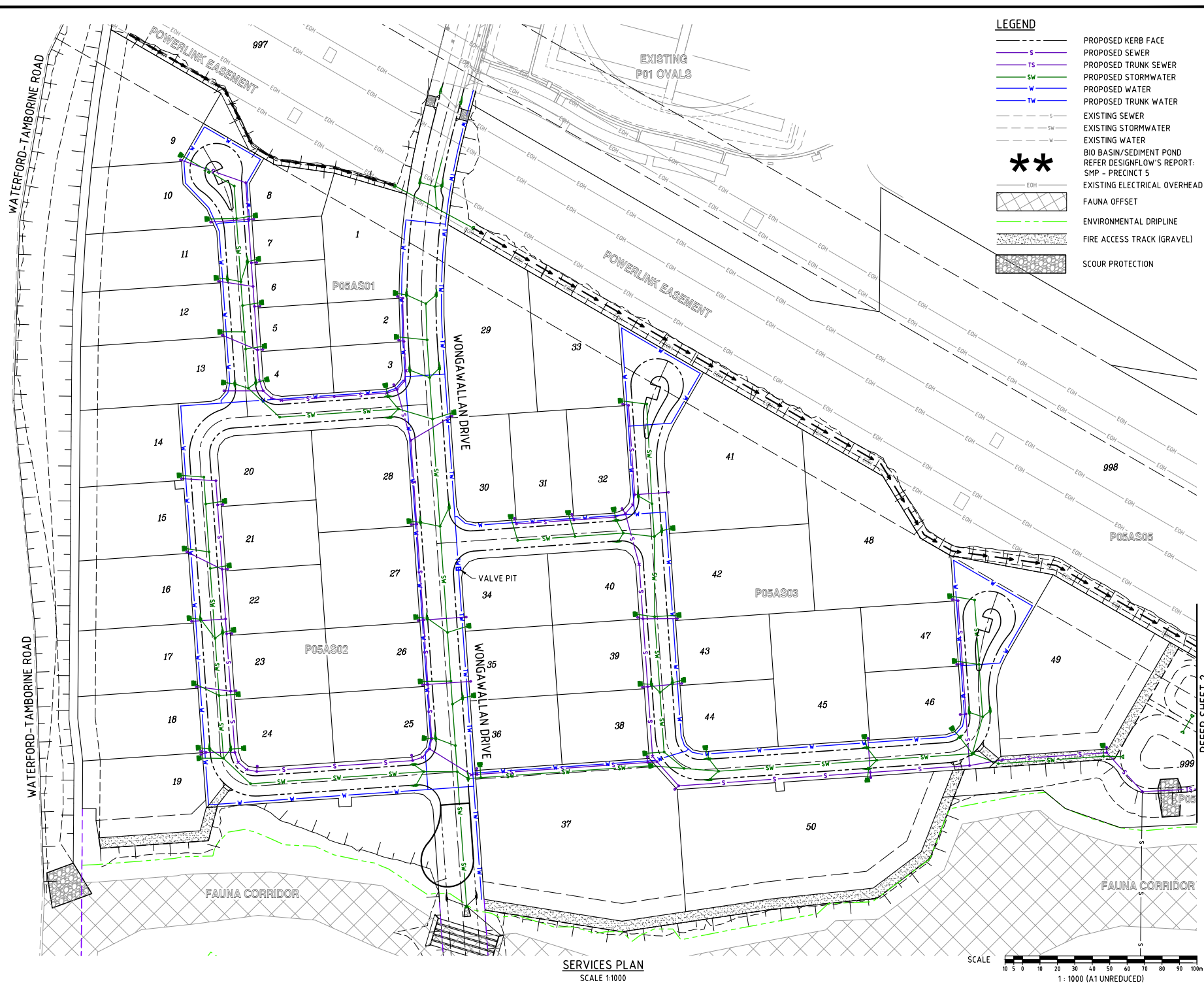


YARRABILBA
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P05A FUNCTIONAL LAYOUT
ROADWORKS PLAN
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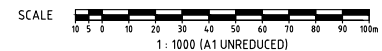
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	PROPOSED STORMWATER
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	PROPOSED TRUNK WATER
	EXISTING SEWER
	EXISTING STORMWATER
	EXISTING WATER
	BIO BASIN/SEDIMENT POND
	REFER DRAINAGE'S REPORT:
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PROPOSED FOOTPATH
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- FAUNA OFFSET
- ENVIRONMENTAL DRIPLINE
- FIRE ACCESS TRACK (GRAVEL)
PROPOSED RETAINING WALL 1.5-2.0m
PROPOSED RETAINING WALL 2.0-2.5m

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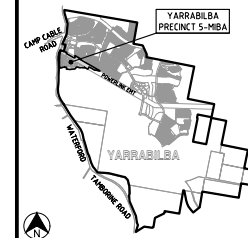
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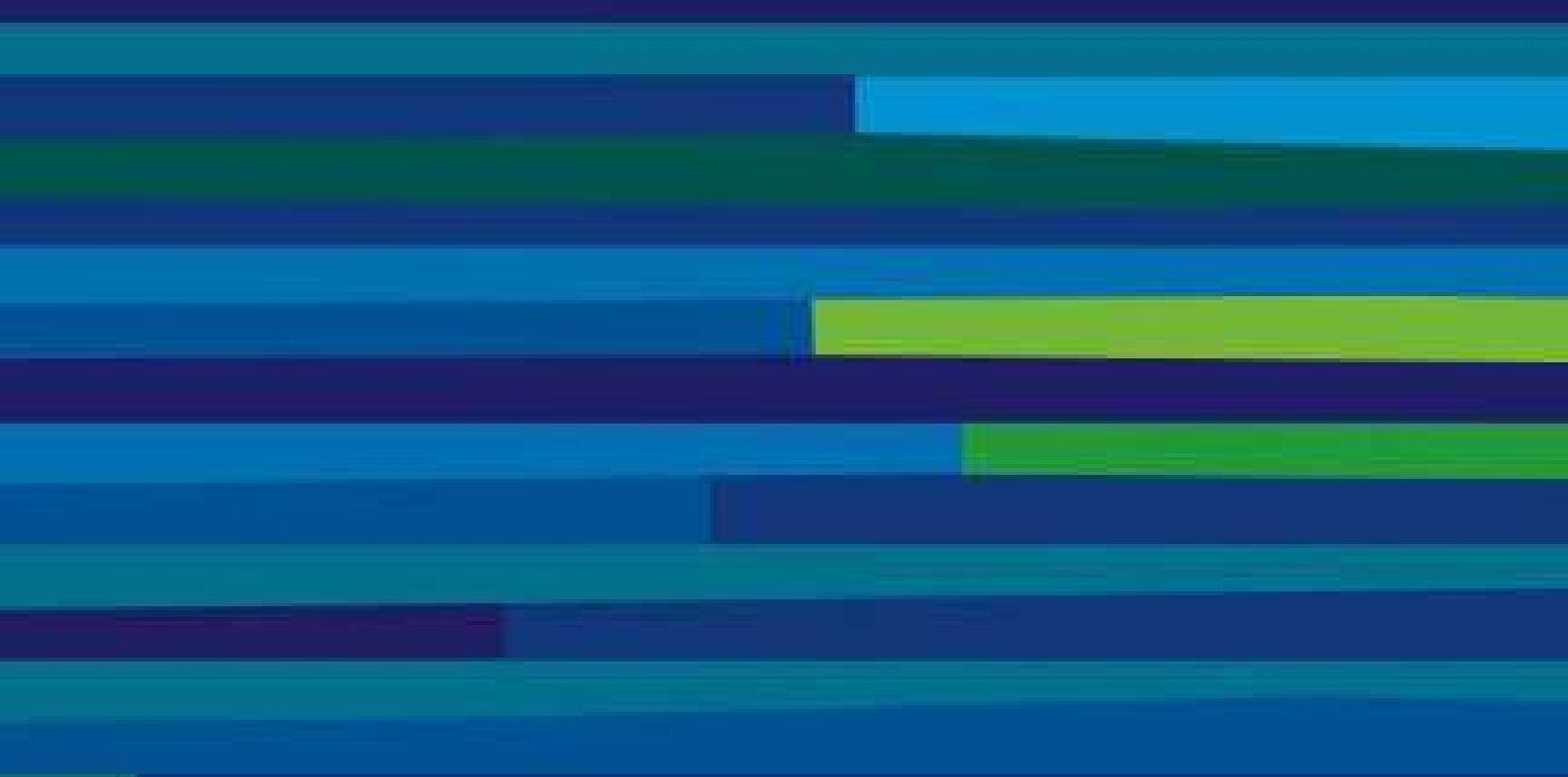
PRECINCT 5 MIBA NORTH

EROSION AND SEDIMENT CONTROL STRATEGY

VERSION 1

DesignFlow

Prepared for Lendlease
October 2021



Document Control Sheet

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Potential implications of climate change

Unless expressly stated otherwise, historical climate data has been used in, or underpins, the analyses that are presented in this report. The historical climate is not necessarily a valid indicator of future climate, which may contain prolonged periods that are wetter or drier than the historical record used for this analysis. There is significant uncertainty surrounding how climate, and in particular, rainfall, will be impacted by various levels of greenhouse gas accumulation in the atmosphere. Rainfall has a much greater spatial variability than temperature and some areas are likely to become wetter whilst other areas become drier. Further to this there may be changes in the seasonality and intensity of rainfall. Such changes in climate could affect the conclusions and recommendations of this report.



Table of Contents

1	INTRODUCTION	1
1.1	SCOPE AND FRAMEWORK.....	1
1.2	PROPOSED DEVELOPMENT	1
2	SITE CHARACTERISTICS	3
2.1	TOPOGRAPHY, CATCHMENTS AND DRAINAGE	3
2.2	SOILS	3
2.3	CLIMATE	6
2.4	FLOODING	7
3	DESIGN OBJECTIVES	8
4	EROSION AND SEDIMENT CONTROL STRATEGY	12
4.1	STRATEGIES FOR SPECIFIC SITE SUB-CATCHMENTS	12
4.2	EXISTING LEVELS	12
4.3	FINAL LEVELS	14
4.4	EROSION CONTROL	14
4.5	DRAINAGE CONTROL	16
4.6	SEDIMENT CONTROL	18
4.7	RIPARIAN WORKS	19
4.8	CONSTRUCTION SEQUENCE	20
5	MONITORING	21
6	REFERENCES.....	22
	APPENDIX A HES BASIN SIZING CALCULATIONS	A-2
	APPENDIX B STANDARD DRAWINGS	B-1

List of Tables

Table 1: Construction Phase Stormwater Design Objectives	8
Table 2: Construction Phase Stormwater Design Objectives for temporary drainage works .	9
Table 3: Construction Phase Stormwater Design Objectives for emergency spillways on temporary sediment basins.....	9
Table 4: Erosion risk by time of year.....	14
Table 5: Erosion performance targets and example methods	16
Table 6: Preliminary Type-B HES Basin Properties	18

List of Figures

Figure 1: Site locality	2
Figure 2: Bulk earthworks extent.....	2
Figure 3: Bulk earthworks sub-catchments – existing levels	4
Figure 4: Bulk earthworks sub-catchments – final levels	5
Figure 5: Rainfall Statistics.....	6
Figure 6: 1% AEP flood extent (DesignFlow, 2020)	7
Figure 7: Conceptual High-Efficiency Sediment (HES) Basin Type-B Functional Layout	10
Figure 8: Strategy Elements (Existing Levels)	13
Figure 9: Strategy Elements (Final Levels).....	15

1 INTRODUCTION

1.1 SCOPE AND FRAMEWORK

MIBA North is located immediately south of the existing powerline easement and immediately west of Waterford Tamborine Road within the Yarrabilba PDA. The location of the works is shown in Figure 1.

This Erosion and Sediment Control Strategy (ESCS) has been prepared to support a bulk earthworks application over the area and demonstrates how best practice erosion and sediment control will be delivered over the area. Sizing is provided for major controls such as sediment basins and major drainage features. The ESCS will be supported by detailed Erosion and Sediment Control Plans (ESCP's) which will be prepared by the Contractor for individual works areas before works commence and will contain detailed sizing for all components.

This ESCS therefore documents the following:

- Site characteristics and constraints relevant to ESC management
- Design objectives to be achieved by the ESCS and individual ESCPs
- ESC strategy elements for major site catchments, including:
 - o location and size of major sediment controls (i.e. basins),
 - o key phasing considerations,
 - o strategies for riparian works and
 - o approaches to revegetation

1.2 PROPOSED DEVELOPMENT

The development layout and ultimate stormwater drainage and treatment strategy is still under development. The earthworks are required at this time in order to commence removal of material from other areas of the Yarrabilba development. Ultimately the MIBA North works will provide a mix of business and industry uses and link to the existing MIBA South development through the extension of Wongawallen Drive.

The works include the filling of an existing drainage line which flows diagonally through the works area and has a catchment which extends west of Waterford Tamborine Road. Temporary diversion of this external catchment is required to facilitate the proposed earthworks, with the ultimate diversion to occur in conjunction with the duplication of Waterford Tamborine Rad.

The extent of earthworks encompassed by this ESCS is shown in Figure 2.

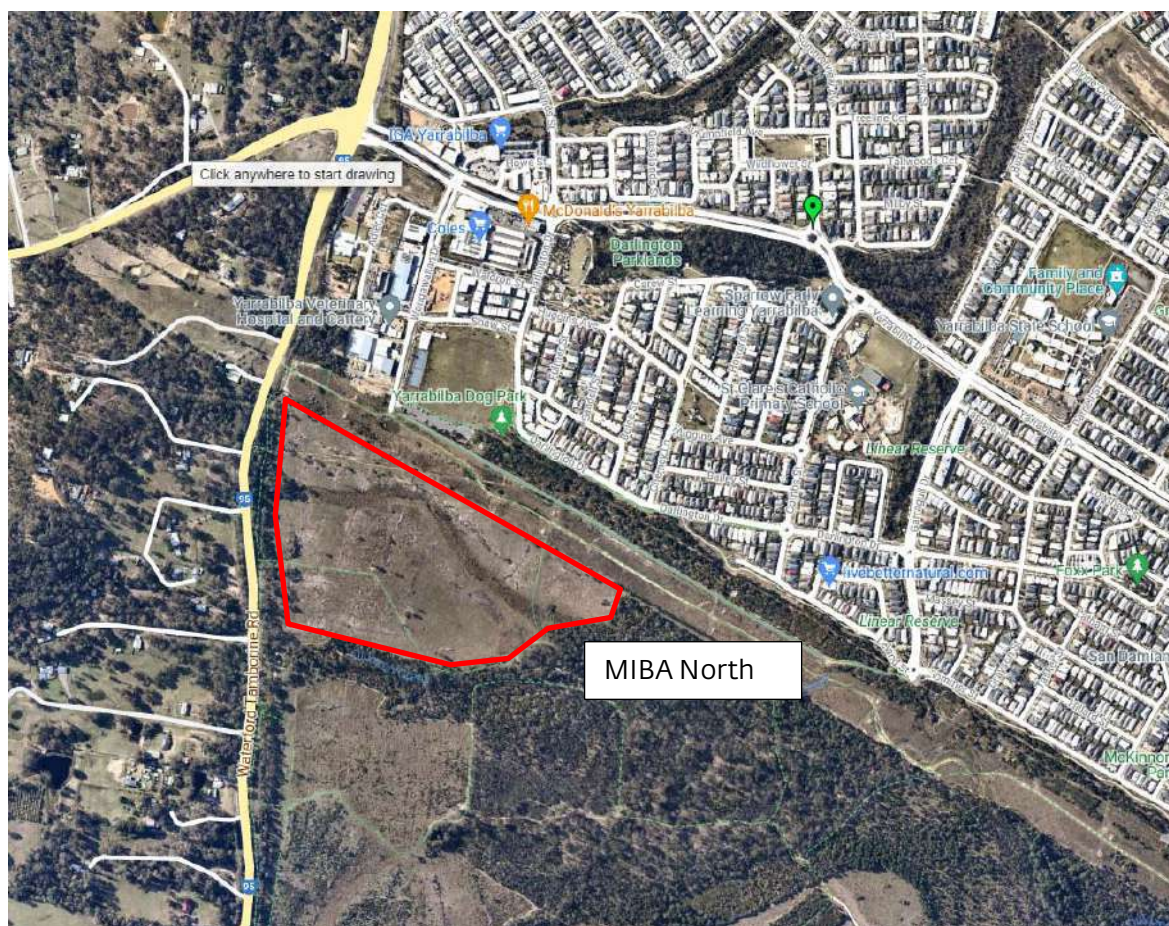


Figure 1: Site locality



Figure 2: Bulk earthworks extent

2 SITE CHARACTERISTICS

2.1 TOPOGRAPHY, CATCHMENTS AND DRAINAGE

The bulk earthworks catchments based on existing and final earthworks levels and provided in Figure 3 and Figure 4 respectively. Major existing and proposed drainage features are included in these figures to aid interpretation. The sub-catchment areas are similar between earthworks phases, with the most significant change occurring when sub-catchment C becomes part of sub-catchment A* when the ~15ha external catchment which originates West of Waterford Tamborine Road is diverted around the works area. This diversion is expected to occur as part of the duplication of Waterford Tamborine Road.

For this ESCS a conservative approach has been adopted and sediment controls have been sized for each sub-catchment based on the largest of either the existing or final sub-catchment areas. The footprint provided by the end-of-line ultimate bioretention basin system provides an excellent opportunity for locating sediment basins to control water quality during the construction phase of the development for sub-catchments A/A* and B/B* and are a crucial part of the ESCS documented in Section 4.

For sub-catchment C, there is no space provided for an ultimate bioretention system within this sub-catchment, so a sediment basin will necessarily impede the works to some extent.

2.2 SOILS

No specific sampling and laboratory testing of soils has been undertaken for the ESCS. It is recommended that prior to works commencing in a specific area, the Contractor should undertake soil sampling and laboratory analysis to inform the detailed ESCP's. Soil testing should be undertaken in accordance with IECA (2008) Chapter 3 and Appendix C9, and should include as a minimum 2 boreholes for each works area and testing of a representative topsoil and sub-soil sample for the following:

- Topsoil:
 - o Soil pH
 - o EC
 - o Organic carbon
 - o TN, nitrate
 - o Exchangeable basic and acidic cations (Ca, Mg, K, Na, Al)
 - o Plant available phosphorus and potassium
- Subsoil
 - o PSD
 - o pH and EC
 - o Emerson Class number
 - o Dispersion percentage

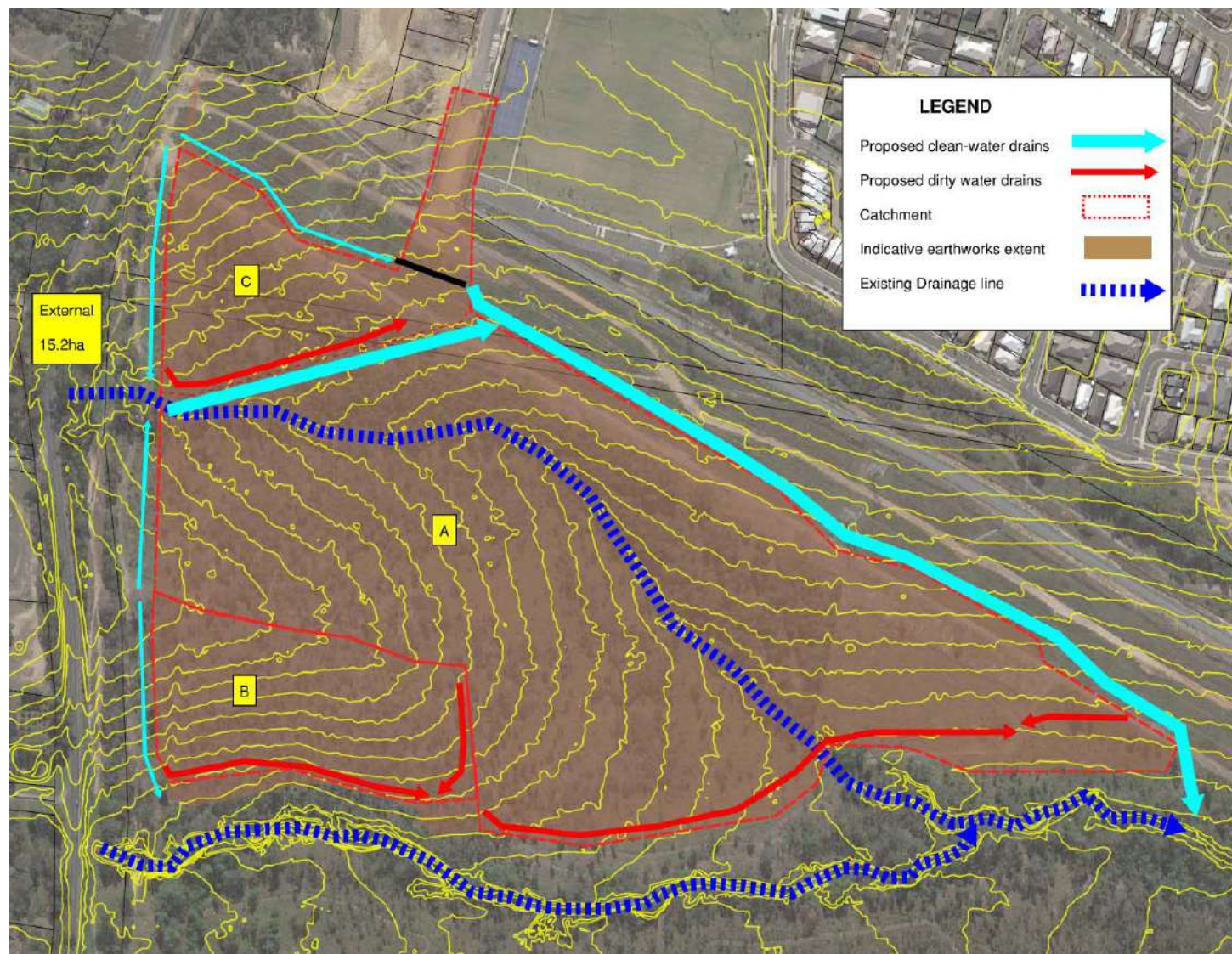


Figure 3: Bulk earthworks sub-catchments – existing levels

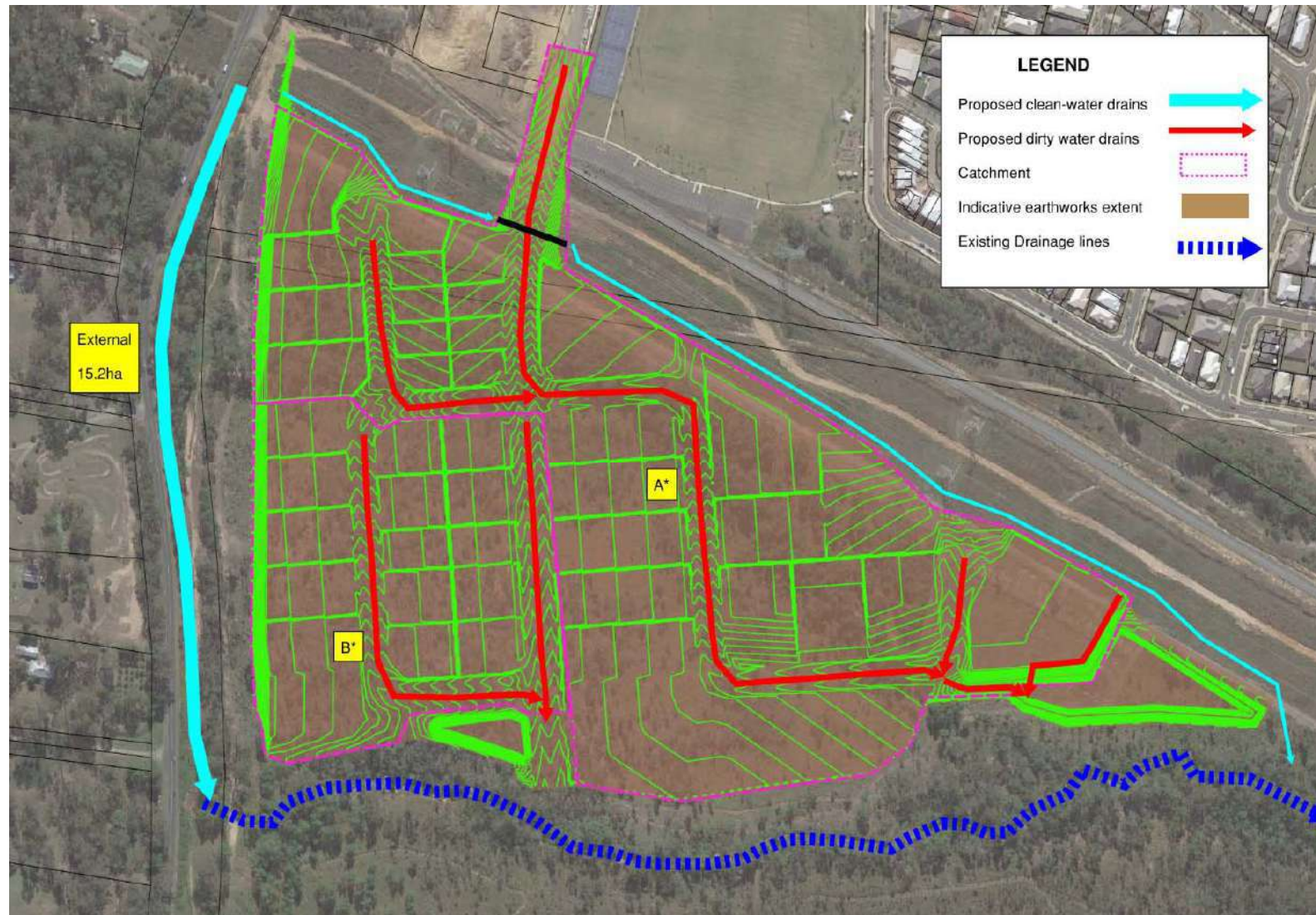


Figure 4: Bulk earthworks sub-catchments – final levels

Topsoil testing is particularly important in order to ensure successful revegetation and the contractor is to apply ameliorants to topsoil as required based on the results of testing.

In the absence of other information, it has been assumed for this ESCS that site soils will be dispersive and construction runoff will require treatment with a chemical flocculent/coagulant to remove fine and dispersive sediment prior to discharge.

Visually, there are clear signs of dispersive soils within the site, with severe gully erosion present in places. This has specific implications for drainage controls and the construction of sediment basin embankments from in-situ material. These structures can suffer from failure if dispersive soils are not managed appropriately and specific geotechnical advice, based on soil testing, should be sought.

2.3 CLIMATE

Average rainfall data is plotted in Figure 5. It can be seen that the lowest rainfall months based on the long-term average are July – September, and high risk works such as riparian activities should be programmed to occur during this part of the year.

It should however be noted that high rainfall can occur at any time of year in South-East Queensland and controls are still required for works regardless of the month in which they occur.

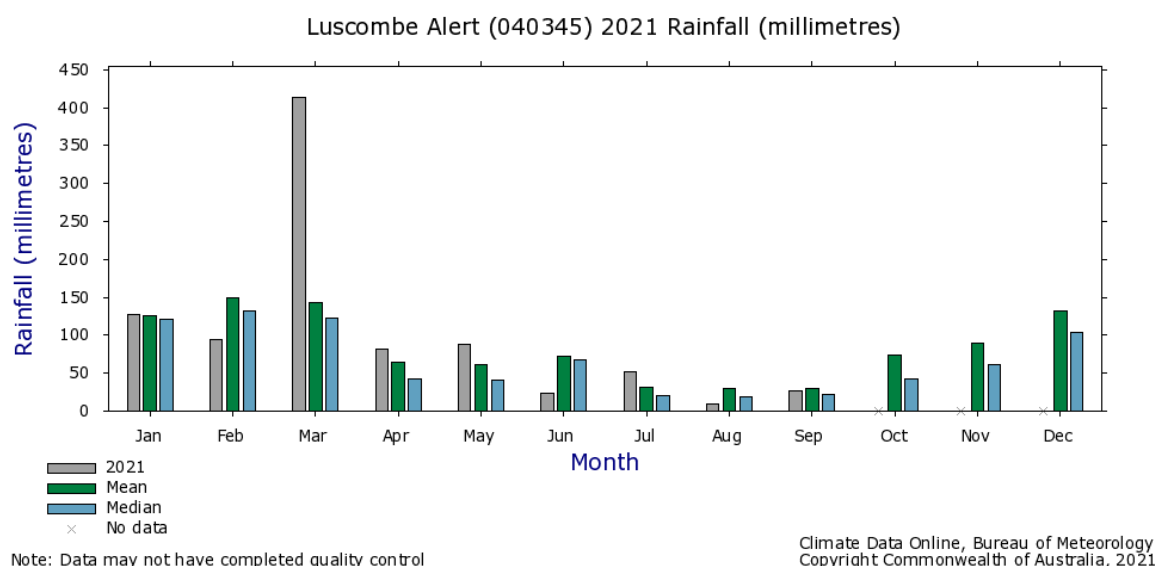


Figure 5: Rainfall Statistics

2.4 FLOODING

Flooding characteristics at the site have been established by modelling undertaken by DesignFlow (2020). The ultimate 1%AEP flood event inundation plan is shown below in Figure 6. It can be seen that the majority of the bulk earthworks areas are outside of the 1%AEP flood extent. Quinzeh Creek, located immediately South of the works, is a heavily incised channel and there is little overbank flows to the North.

The local drainage line which flows through the works has an estimated Q2 (39% AEP) flowrate of 1.9m³/s which will need to be diverted around the active works area. This flowrate is significant, and care will need to be taken where this flow diversion re-enters Quinzeh Creek to avoid scour and erosion of the creek channel. Entering at an oblique angle and providing adequate energy dissipation and scour protection will be key to minimising this risk.

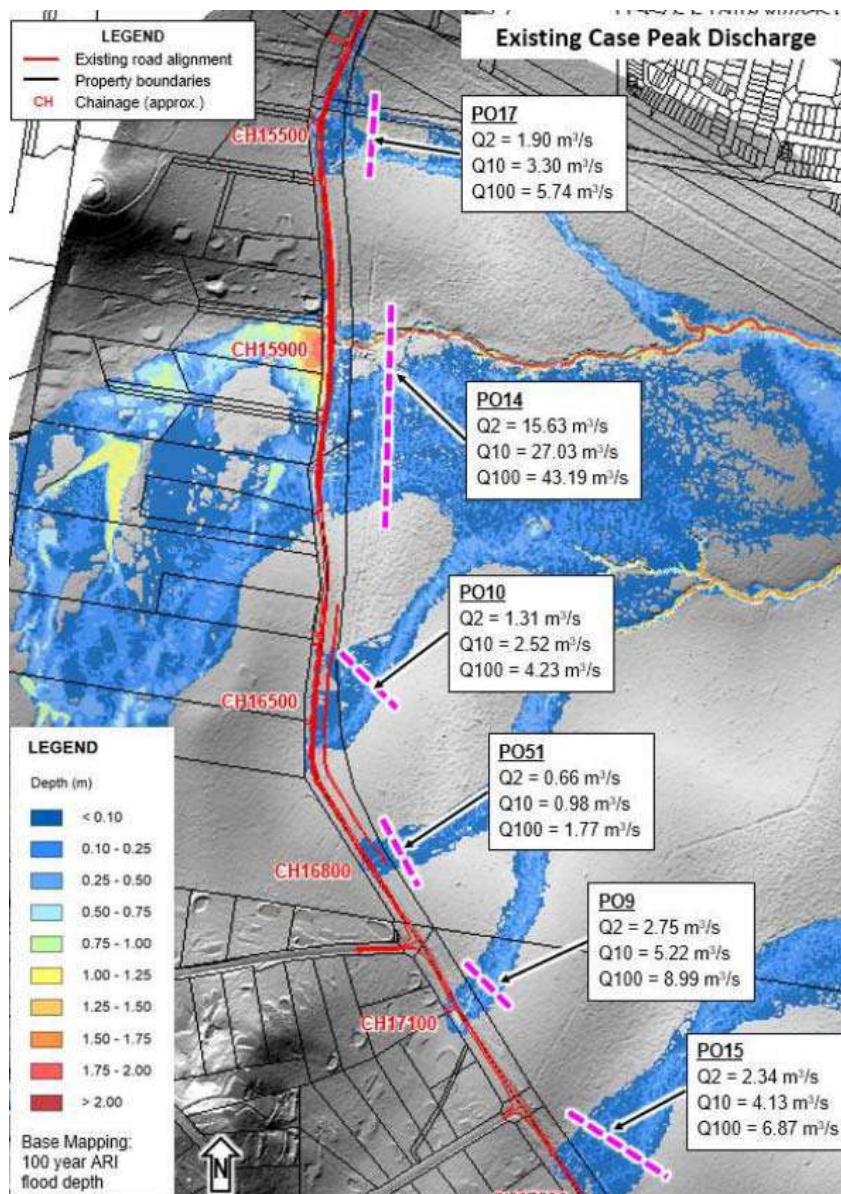


Figure 6: 1% AEP flood extent (DesignFlow, 2020)

3 DESIGN OBJECTIVES

The design objectives relevant to the construction phase of development works are specified in Appendix 2 of the State Planning Policy 2017 (SPP2017). These are reproduced in Table 1, Table 2 and Table 3 below.

Table 1: Construction Phase Stormwater Design Objectives

Issue	Desired outcomes
Drainage control	1. Manage stormwater flows around or through areas of exposed soil to avoid contamination. 2. Manage sheet flows in order to avoid or minimise the generation of rill or gully erosion. 3. Provide stable concentrated flow paths to achieve the construction phase stormwater management design objectives for temporary drainage works (part 2). 4. Provide emergency spillways for sediment basins to achieve the construction phase stormwater management design objectives for emergency spillways on temporary sediment basins (part 3).
Erosion control	1. Stage clearing and construction works to minimise the area of exposed soil at any one time. 2. Effectively cover or stabilise exposed soils prior to predicted rainfall. 3. Prior to completion of works for the development, and prior to removal of sediment controls, all site surfaces must be effectively stabilised¹³ using methods which will achieve effective short-term stabilisation.
Sediment control	1. Direct runoff from exposed site soils to sediment controls that are appropriate to the extent of disturbance and level of erosion risk. 2. All exposed areas greater than 2500 metres² must be provided with sediment controls which are designed, implemented and maintained to a standard which would achieve at least 80% of the average annual runoff volume of the contributing catchment treated (i.e. 80% hydrological effectiveness) to 50mg/L Total Suspended Solids (TSS) or less, and pH in the range (6.5–8.5).
Litter, hydrocarbons and other contaminants	1. Remove gross pollutants and litter. 2. Avoid the release of oil or visible sheen to released waters. 3. Dispose of waste containing contaminants at authorised facilities.
Waterway stability and flood flow management	1. Where measures are required to meet post-construction waterway stability objectives (specified in table B), these are either installed prior to land disturbance and are integrated with erosion and sediment controls, or equivalent alternative measures are implemented during construction. 2. Earthworks and the implementation of erosion and sediment controls are undertaken in ways which ensure flooding characteristics (including stormwater quantity characteristics) external to the development site are not worsened during construction for all events up to and including the 1 in 100 year ARI (1% AEP).

Table 2: Construction Phase Stormwater Design Objectives for temporary drainage works

Temporary drainage works	Anticipated operation design life and minimum design storm event		
	< 12 months	12–24 months	> 24 months
Drainage structure	1 in 2 year ARI/39% AEP	1 in 5 year ARI/18% AEP	1 in 10 year ARI/10% AEP
Where located immediately up-slope of an occupied property that would be adversely affected by the failure or overtopping of the structure	1 in 10 year ARI/10% AEP		
Culvert crossing	1 in 1 year ARI/63% AEP		

Table 3: Construction Phase Stormwater Design Objectives for emergency spillways on temporary sediment basins

Drainage structure	Anticipated operation design life and minimum design storm event		
	< 3 months	3–12 months	> 12 months
Emergency spillways on temporary sediment basins	1 in 10 year ARI/10% AEP	1 in 20 year ARI/5% AEP	1 in 50 year ARI/2% AEP

The design objectives specified in the SPP2017 generally reflect accepted best practice in Australia, however the Sediment Control (2) objective is a higher standard than required in other states and is reflective of both the pronounced wet season and degree of development activity which occur in Queensland.

Healthy Land and Water (2017) provide a range of strategies for achieving the requirements of the sediment control design objective which are summarised below:

1. High Efficiency Sediment (HES) Basins:

Install and operate Type-A or Type-B sediment basins designed in accordance with IECA Appendix B (2019), described as High-Efficiency Sediment (HES) basins. These are sediment basins which have automated dosing of chemicals which assist flocculation/coagulation of fine and dispersive sediment and which operate on a continuous-flow basis. Type-A basins incorporate a floating decant as the primary outlet while Type-B basins can remain full between events and have only a spillway outlet. A conceptual layout for a Type-B HES basin is provided in Figure 7.

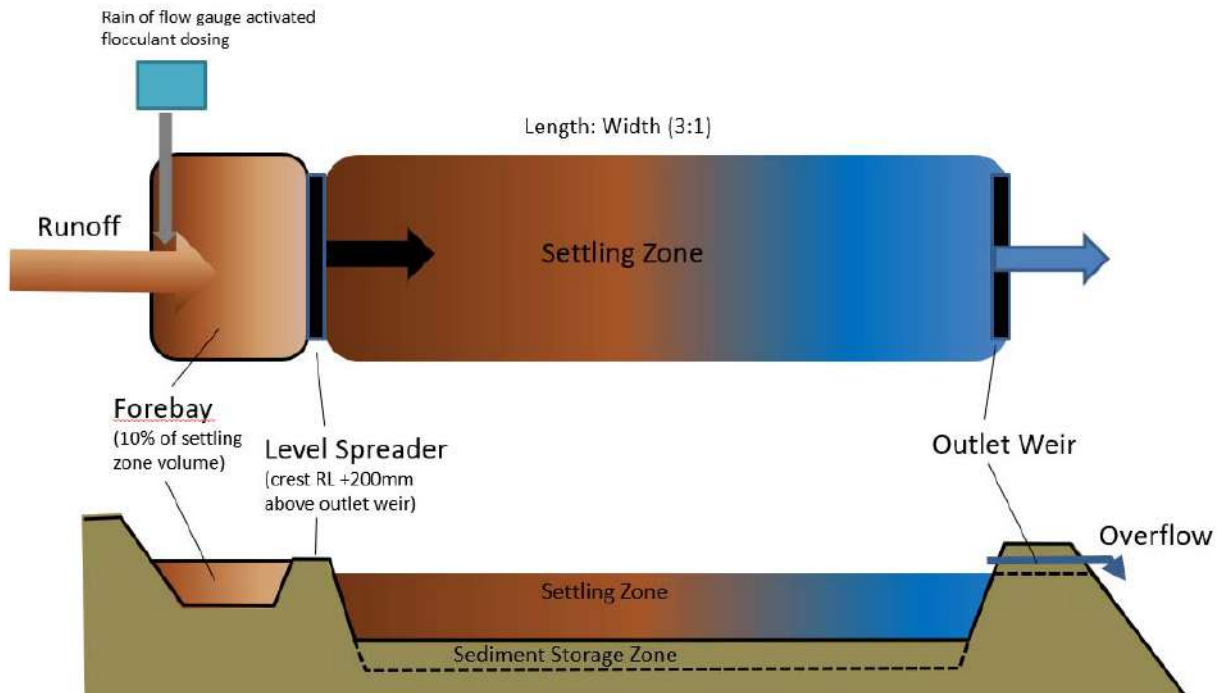


Figure 7: Conceptual High-Efficiency Sediment (HES) Basin Type-B Functional Layout

2. Large Batch Basins:

Batch sediment basins (Type D) designed in accordance with IECA (2008) will not comply with the SPP2017 design objective. Modified batch basin designs may be possible for some sites, however for most sites the batch basins would need to be impractically large or require impractical treatment and dewatering strategies to meet the design objective. If the batch basin is proposed to be treated and emptied within 2 days of rainfall ceasing, then the required basin settling volume is 650m³/ha for SkyRidge Estate. Sediment storage volumes need to be provided in addition to the above volumes, consistent with IECA Appendix B (2019).

3. Total Capture:

For flat sites, with no external catchment, perimeter bunding may be appropriate where it can be shown that the bund height is sufficient to capture the anticipated (average) wet season rainfall completely (i.e. total capture). A simple water-balance calculation and earthworks sections showing the bund arrangements and capture volumes will be sufficient to show that this strategy can be implemented. However careful consideration will be required for how this strategy can continue to operate beyond earthworks stage to when civil construction is being undertaken or nearing completion.

4. Alternative Innovative Measures:

Alternative measures may be implemented where it can be shown through long-term water-balance modelling that the measures will achieve the release criteria of

50mg/L TSS for at least 80% of the average annual runoff volume. This would need to be documented and justified in the detailed ESC Plan(s).

5. Erosion Control:

Effective erosion control can be implemented in lieu of requiring sediment control specified above. For small areas, which are unable to drain to a basin, this could be achieved by implementing contingency measures prior to rainfall, such as covering exposed soil with blankets (mulch or synthetic) or spray-on soil binders. In these circumstances the erosion controls must result in an effectively stabilised surface prior to rainfall to justify the exclusion of sediment controls.

Each of the above approaches has been considered and specific recommendations provided for the site catchments in Section 4.1.

4 EROSION AND SEDIMENT CONTROL STRATEGY

4.1 STRATEGIES FOR SPECIFIC SITE SUB-CATCHMENTS

The overall strategy during construction for each of the site sub-catchments and discharge locations are discussed below and shown in Figure 8 and Figure 9. Considerations for the detailed design of erosion, drainage and sediment controls are provided in Sections 4.4 to 4.6.

The overall strategy is provided based on two phases – existing levels and final levels. Transition between these two phases is a gradual process and the detailed construction ESCP's may need to show a number of interim plans to cover this transition.

4.2 EXISTING LEVELS

A key feature of this strategy is the diversion of the existing drainage line which currently bisects the works area. This diversion (CW1 and CW2) needs to occur prior to any other works within sub-catchment A.

Within each of the site sub-catchments (A, B and C), the strategy is simple, with Type-B HES basins provided at the low-point of each sub-catchment. The basins are fed through the provision of dirty-water diversion drains, while external 'clean' catchments are diverted around the works by clean water diversion drains. Small areas which fall outside of the sediment basin catchments can be managed with sheet-flow sediment controls such as sediment fencing.

Sediment basin SB1 (sub-catchment A) and SB2 (Sub-catchment B) are located in the ultimate footprint of WSUD treatment systems. The basin locations can remain static throughout construction and should be constructed based on the maximum catchment size which will occur at any point during construction. For SB1, this will be the catchment based on existing levels, while for SB2 this is the catchment based on final levels.

Both SB1 and SB2 are located in areas which will ultimately be filled. It is important to note that this basin (as for all controls listed in this section) needs to be functional before topsoil stripping occurs throughout the contributing sub-catchments. The basins are likely to be constructed as a combination of cut and filling in order to command the identified sub-catchments based on existing levels. Filling for the bioretention footprint would therefore need to be delayed until the last phase of earthworks, once the contributing catchments have been stabilised and the sediment basin can be decommissioned.

Sediment basin SB3 (sub-catchment C) is not located within any future WSUD footprint and is a temporary basin which will ultimately need to be removed to facilitate filling. The removal of SB3 is dependent on the decommissioning of CW1 and the commissioning of CW1*.

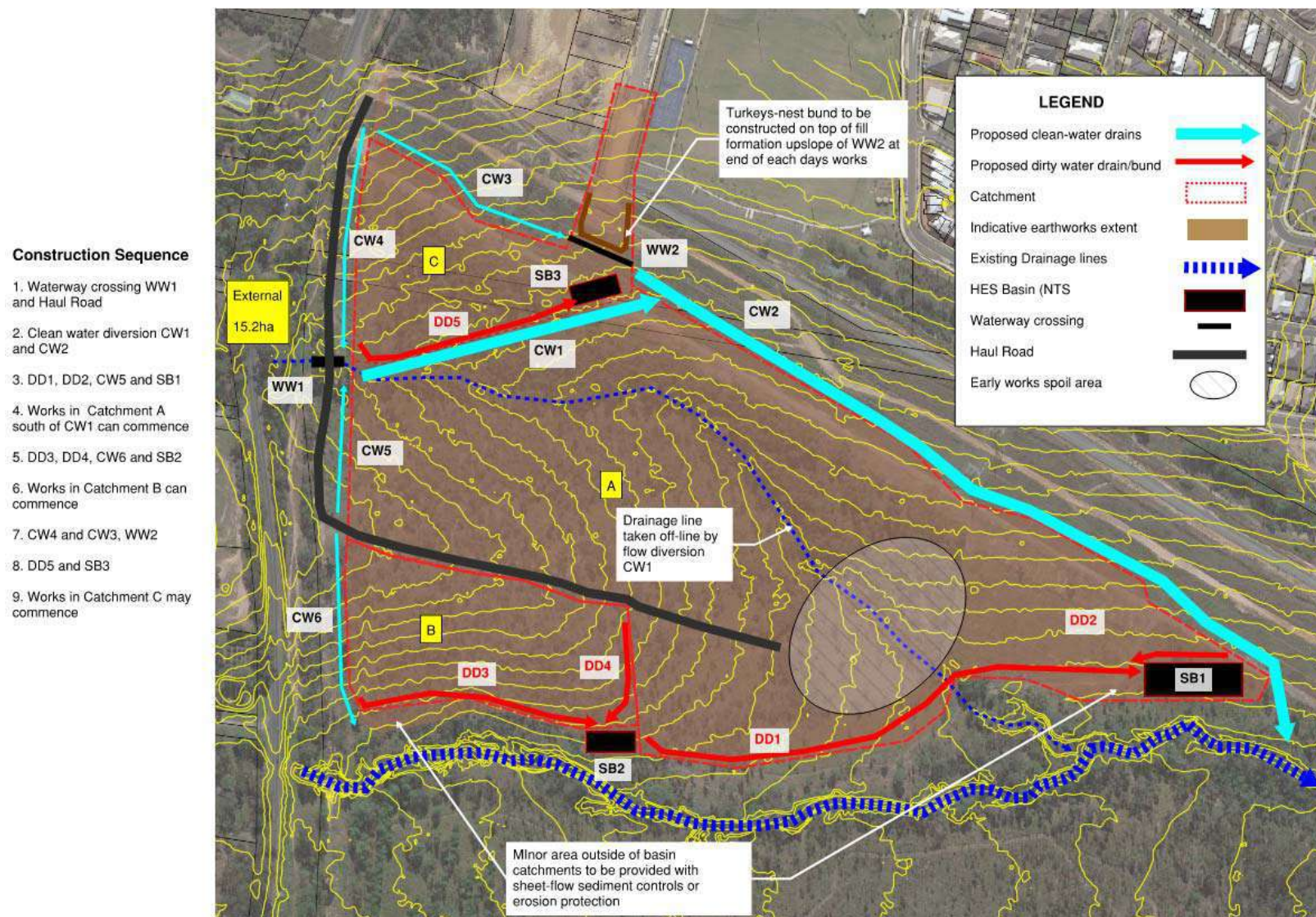


Figure 8: Strategy Elements (Existing Levels)

4.3 FINAL LEVELS

The key difference between the 'existing levels' and 'final levels' strategy is the management of the external catchment west of Waterford Tamborine Road. The final levels strategy relies on this external catchment being diverted through clean water channel CW1* which remains west of the works area and diverts the catchment to Quinzeh Creek.

This channel (CW1*) may be constructed as part of the Waterford Tamborine Road upgrade. However, if the earthworks needs to be completed ahead of this upgrade, then an equivalent of CW1* will need to be constructed within the site as part of the earthworks.

Once CW1* (or equivalent) is delivered, then SB3 and the previous diversion channel (CW1) may be decommissioned and earthworks can progress in the area previously occupied by these features.

Sediment controls within sub-catchments A* and B* remain as Type-B HES basins, with small areas which fall outside of the sediment basin catchments managed by sheet-flow sediment controls such as sediment fencing. Dirty-water drains will be provided by the road box (as it is formed), with coir-log check dams provided within the road box prior to rainfall, in order to minimise erosion within the road box itself.

4.4 EROSION CONTROL

The following discussion relates to general earthworks areas. Specific discussion on riparian works are provided in Section 4.7.

IECA (2008) identifies erosion risk based on average monthly rainfall and provides best practice rehabilitation requirements for different times of the year based on this risk. The erosion risk for the subject site for different times of the year is shown in Table 4.

Table 4: Erosion risk by time of year

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High	High	High	High	High	Moderate	Very Low	Very Low	Very Low	Moderate	Moderate	High

The requirements for land clearing and rehabilitation vary depending on the time of year (i.e. level of risk). The performance targets, based broadly on IECA (2008) and example methods of achieving those targets are provided in Table 5. The detailed ESCPs for each works area are to provide specific details on how the performance targets are to be achieved.

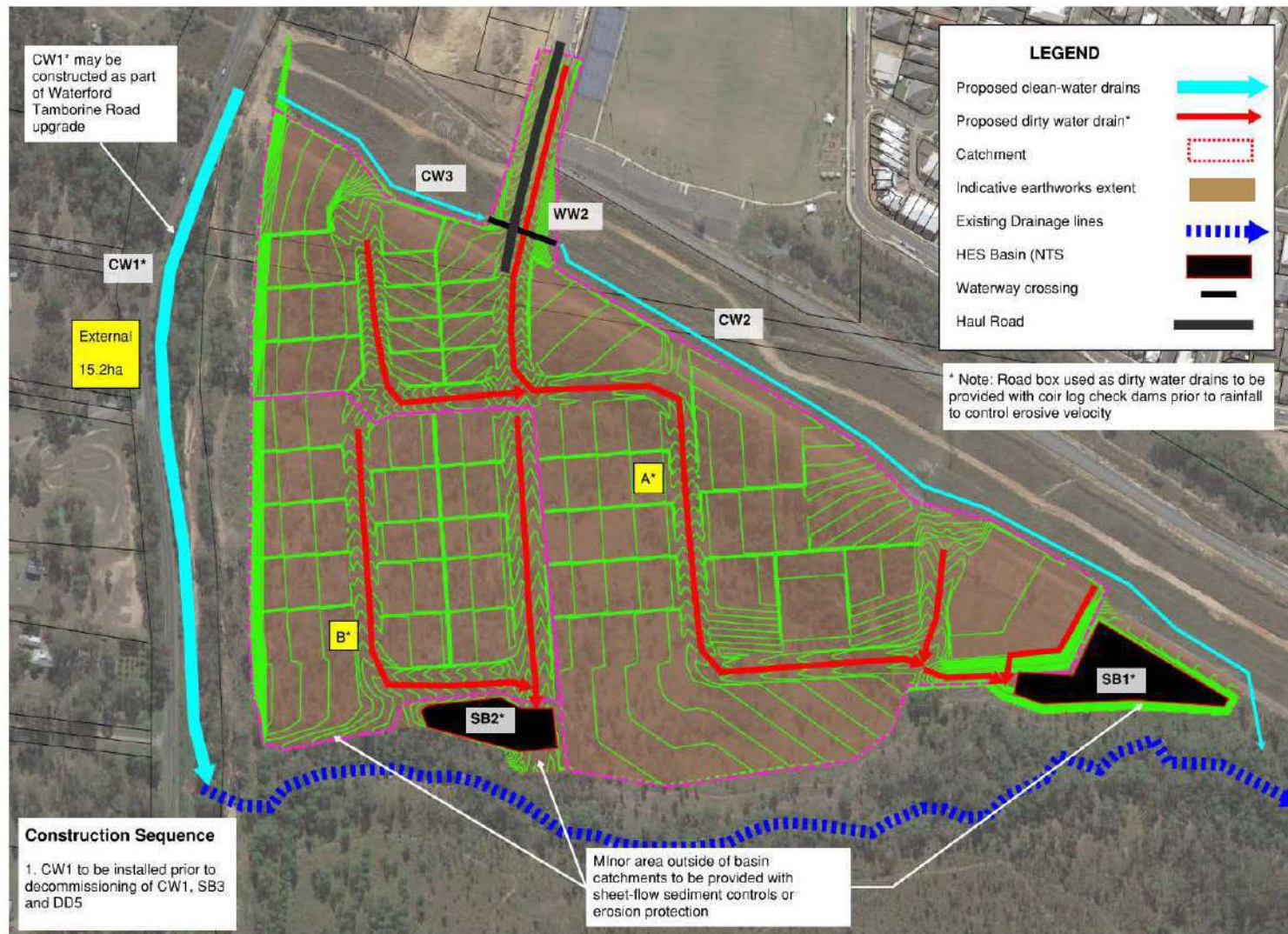


Figure 9: Strategy Elements (Final Levels)

Table 5: Erosion performance targets and example methods

Erosion Risk	Performance Target	Example Method
Very Low	- Land clearing limited to 8 weeks worth of construction work. - Disturbed areas stabilised with 60% cover within 30 days of finished levels being reached or works delayed for more than 30 days	- Future lots stabilised with drill seeding of annual and perennial grass species, with soil amelioration based on soil tests. - Steep areas where drill seeding not possible stabilised with hydromulch
Moderate	- Land clearing limited to 6 weeks worth of construction work. - Disturbed areas stabilised with 70% cover within 20 days of finished levels being reached or works delayed for more than 20 days	- Future lots stabilised with drill seeding of annual and perennial grass species, with soil amelioration based on soil tests. Soil binder provided for short-term stabilisation over seeded areas. - Steep areas where drill seeding not possible stabilised with bonded-fibre matrix. - Provided within 20 days of final levels being reached.
High	- Land clearing limited to 4 weeks worth of construction work. - Disturbed areas stabilised with 75% cover within 10 days of finished levels being reached or works delayed for more than 10 days	- Future lots stabilised with drill seeding of annual and perennial grass species, with soil amelioration based on soil tests. Soil binder provided for short-term stabilisation over seeded areas. - Steep areas where drill seeding not possible stabilised with bonded-fibre matrix. - Provided within 10 days of final levels being reached.

Table 5 refers to short-term stabilisation requirements. As the earthworks areas may remain undeveloped for an extended period of time, the sediment controls will need to remain in place and continue to be actively managed until effective long-term erosion control (i.e. vegetative cover) is achieved based on the cover requirements for the highest monthly erosion risk (i.e. 75% cover).

4.5 DRAINAGE CONTROL

Drainage controls are required to limit flow path lengths in order to prevent or minimise rill erosion and to ensure clean external catchments are diverted around the works and disturbed catchments are directed to appropriate sediment controls such as HES basins.

Table 2 and Table 3 provide design standards for drainage controls. As the site exhibits visual signs of the presence of dispersive soils, specific measures will need to be applied

to drainage controls to prevent severe erosion, such as topsoil capping or addition of gypsum to diversion drains prior to lining.

Details of drainage controls will be provided with the detailed ESCP's. Preliminary sizing is however provided for two key aspects which can be used as a comparison for the sizing in the detailed ESCPs:

1. Culvert crossing WW1 of the Haul Road, which is necessary for the early works to commence; and
2. Diversion channel CW1/CW2.

4.5.1 Culvert Crossing WW1

Table 3 specifies a design standard of 1:1yr ARI for the conveyance of the waterway crossing. However, the crossing should also be constructed to remain stable during overtopping flows between the 1:1yr to 1:10yr ARI (IECA, 2008). For this reason, the standard drawing for waterway crossings (TCC-01 – refer Appendix B) identifies the culverts to be placed in rock fill rather than earth or fine aggregate.

The 1:1yr ARI peak flow has been estimated using the modified rational method and based on an external catchment area of 15.2ha and a time of concentration of ?? minutes. This provided a peak flow estimate of 1.6m³/s.

Indicate culvert sizing can be determined based on inlet control design nomographs and assuming a nominal cover of 500mm above the culvert invert. This results in a culvert size of 2/675RCP.

This sizing is preliminary and survey of the crossing location will be required to refine the sizing based on actual available head (cover). Sizing of culverts may also need to be increased dependent on the waterway crossing cross-section, in order to ensure that the 1:10yr flow is contained to over-top only in the area of rock fill.

4.5.2 Diversion Channel CW1

Table 3 specifies a design standard of 1:2yr ARI for drainage controls which are required to operate for 12 months or less. DesignFlow (2020) provide an estimate of Q₂ at this location of 1.90m³/s.

Based on existing contours, the available fall for CW1 is 2m, resulting in an average longitudinal grade for CW1 of 0.4%. Preliminary channel properties to convey this flow would be base width 3m, side slopes 1:3, channel depth min 0.52m and geofabric lining.

It is however recommended that a larger channel is installed where possible in order to provide for the conveyance of larger events and greater construction flexibility. For example, if the channel is to remain in place for greater than 24 months, then a 1:10yr ARI design standard is required. This would increase the channel base width by 2m (to 5m) and the depth by 200mm (to 0.54m).

4.6 SEDIMENT CONTROL

4.6.1 High Efficiency Sediment Basins

Type-B Basins

Appendix A contains full calculations for each of the HES basins identified in Figure 8 and Figure 9. The HES basins are Type-B, with sizing determined from the procedures documented in IECA (2019). The basin and catchment properties are summarised below in Table 6.

The scour velocity checks provided in Appendix A indicate that for some basins the velocity may be an issue. It is recommended that permeable baffles be implemented in all HES basins in order to improve the distribution of velocities across the basin section and minimise the risk of resuspension.

Table 6: Preliminary Type-B HES Basin Properties

Basin ID	Sub-Catchments	Catchment Area (ha)	Existing or Final Contours?	Basin Volume (m ³)	Basin Area (m ²)
SB1	A	15.2	Existing	4,425	2,883
SB1*	A*	14.4	Final	4,278	2,801
SB2	B	2.6	Existing	876	796
SB2*	B*	5.7	Final	2,040	1,518
SB3	C	2.6	Existing	858	784

Each Type-B basin should be provided with an automatic dosing unit. Flow-based dosing would be preferable for Basins SB1/1* and SB2/2* compared to rainfall-activated dosing due to the extent of earthworks and changes to the contributing catchment which will occur. For basin SB3 a rainfall activated doser would be appropriate.

A suitable flocculant and dosing rate will need to be determined based on jar testing. Suitable candidate products would be chitosan and aluminium-chloro-hydrate (ACH).

Standard drawings for HES basins are provided in Appendix B.

Sheet flow controls

Small areas which cannot drain to sediment basins (for example, fill batters) should be provided with sheet-flow sediment controls such as sediment fencing. These areas are expected to be small based on the current earthworks design.

Wongawollan Drive Controls

The northern section of the Wongawollan Drive extension consists of a fill embankment which will be cut-off from the sediment basins SB3 or SB1 by the clean-water diversion channel until the final formation levels are achieved.

As the embankment levels come up, a turkeys nest bund should be created at the top of the formation to fully contain any runoff generated by the formation. Captured runoff can either be treated in-situ prior to discharge or pumped to SB3 for treatment.

The batters of the formation which cannot flow to a sediment basin should be provided with sheet-flow sediment controls such as sediment fencing. These areas should also be progressively stabilised as final levels are achieved.

4.7 RIPARIAN WORKS

Riparian works are required for the construction of CW1 and WW1.

For WW1, it is proposed that this area is isolated using a cofferdam (earth bund – geofabric covered) on the upslope side of works and either a gravity or pumped flow diversion is provided to convey minor flows around the works area. A contingency should be kept on site consisting of geofabric/erosion control blankets and if rain is forecast then the channel invert in the works area should be stabilised using these blankets in order to prevent erosion caused by overtopping of the upslope bund.

Diversion channel CW1 should be constructed offline, with the existing drainage line kept in place and conveying all flows until CW1 is complete.

In terms of rehabilitation once WW1 and the haul road is removed, IECA (2008) provides minimum requirements for land clearing and rehabilitation associated with riparian works. These requirements provide generous timeframes for rehabilitation which are inconsistent with the significant water quality risk posed by these types of works.

It is proposed that the following land clearing and rehabilitation performance requirements are adopted instead:

1. Waterway works are scheduled to occur during periods of very low erosion risk (July-September), or at other times of the year only where the exposed area which may be exposed to flows can be limited to an area which can be stabilised prior to forecast rainfall
2. Flow diversions are to remain in place until the area of work has been stabilised (90% cover) using methods suitable for the expected velocity

Where possible, stabilisation should utilise the ultimate landscape outcome proposed for the riparian area. Where this is not specified, then methods which are suitable for the expected velocities and degree of inundation should be implemented, such as erosion control blankets.

4.8 CONSTRUCTION SEQUENCE

Specific construction and ESC sequencing requirements identified as part of this strategy are summarised below.

- Construction of the riparian works (WW1 and CW1) are high risk and need to be given priority and should be scheduled to occur in the driest time of the year (June-September).
- Before works (apart from ESC) in Catchment A commence, the following is required (in order):
 - o Waterway crossing WW1 and Haul Road
 - o Clean water diversion CW1 and CW2
 - o DD1, DD2, CW5 and SB1
 - o Works in Catchment A south of CW1 can commence
- Before works (apart from ESC) in Catchment B commence, the following is required (in order):
 - o DD3, DD4, CW6 and SB2
 - o Works in Catchment B can commence
- Before works (apart from ESC) in Catchment C commence, the following is required (in order):
 - o CW4 and CW3, WW2
 - o DD5 and SB3
 - o Works in Catchment C may commence
- Clean water drain CW1* is required to be installed prior to decommissioning and filling in the area of CW1, SB3 and DD5. For all other areas, controls are required to remain in place until 75% vegetative surface cover is achieved in each sub-catchment.

5 MONITORING

Automatic monitoring of water quality (turbidity and pH) should be implemented at the discharge of each Type-B sediment basin and an alert generated if the water quality targets specified in Table 1 are exceeded.

It is recommended that monthly audits are undertaken of the works by a CPESC independent of the Principal Contractor. Monthly auditing should be undertaken following the procedures which would be followed should a compliance inspection be undertaken by Department of Environment and Science (DES) officers.

These procedures are documented in *Procedural guide – Releases to waters from land development sites and construction sites 2500m² and greater* (DES, 2021).

6 REFERENCES

Department of Environment and Science (2021) *Procedural guide – Releases to waters from land development sites and construction sites 2500m² and greater*
https://environment.des.qld.gov.au/__data/assets/pdf_file/0021/215418/procedural-guide-water-release-large-sites.pdf

DesignFlow (2020) *Waterford Tamborine Road Upgrade – Hydraulic Assessment version 2*

International Erosion Control Association (2008) *Best Practice Erosion and Sediment Control*

International Erosion Control Association (2019) *Appendix B – Sediment Basin Design and Construction*

The State of Queensland (2017) *State Planning Policy*

APPENDIX A HES BASIN SIZING CALCULATIONS

Table A1: HES Basin sizing calculations

		Q3mth Design Flowrate Calc.						Settling Zone						Forebay		Sediment Storage Zone			Overall Dimensions relative to spillway crest (excl. Forebay)						Spillway Calculations								
Basin ID	Catchment Area (Ha)	C ₁₀	C ₁	t _c	I _{1yr,1c} (mm/hr)	Q1yr (m ³ /s)	Q3mth (m ³ /s)	Residence Time (hr)	Settling Zone Depth (m)	Ave. settling zone area (m ²)	Settling Volume (m3)	W:L (1:X)	Scour Velocity (m/s)	Forebay Min. Depth (m)	Forebay Vol (m ³)	Sed Storage Vol (m3)	Sed Storage depth (approx.) (m3)	Batter (1:X)	Width (m)	Length (m)	Depth (m)	Area (m2)	Vol Total (m3)	Vol Total (m3/ha)	Basin Design Life	Design ARI	C	I (mm/hr)	Q (m ³ /s)	Head over spillway (m)	Spillway crest length (m)	Spillway Crest RL (m)	Min Embankment RL (m)
SB-1	15.21	0.7	0.56	24	55.8	1.32	0.66	1.33	1.5	2107	3161	3	0.042	1	316	948	0.5	3	31.0	93.0	2.0	2883	4425	291	3-12 months	1:20yr	0.74	117	3.63	0.2	23.9	0	0.65
SB-2	2.58	0.7	0.56	18	65.1	0.26	0.13	1.33	1.5	417	625	3	0.018	1	63	188	0.6	3	16.3	48.9	2.1	796	876	339	3-12 months	1:20yr	0.74	136	0.72	0.2	4.7	0	0.65
SB-3	2.6	0.7	0.56	19	63.3	0.26	0.13	1.33	1.5	409	613	3	0.018	1	61	184	0.6	3	16.2	48.5	2.1	784	858	330	3-12 months	1:20yr	0.74	133	0.71	0.2	4.6	0	0.65
SB-1*	14.37	0.7	0.56	23	57.1	1.28	0.64	1.33	1.5	2037	3056	3	0.041	1	306	917	0.5	3	30.6	91.7	2.0	2801	4278	298	3-12 months	1:20yr	0.74	120	3.52	0.2	23.2	0	0.65
SB-2*	5.67	0.7	0.56	16	69	0.61	0.30	1.33	1.5	971	1457	3	0.028	1	146	437	0.6	3	22.5	67.5	2.1	1518	2040	360	3-12 months	1:20yr	0.74	144	1.67	0.2	11.0	0	0.65

APPENDIX H

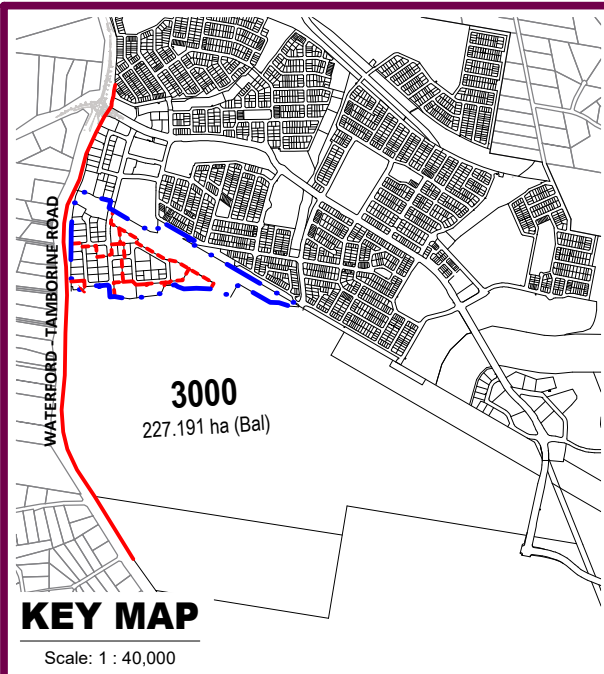
Yarrabilba MILA Precinct 2A & Part of Precinct 5 Plan of Subdivision

Waterford - Tamborine Road

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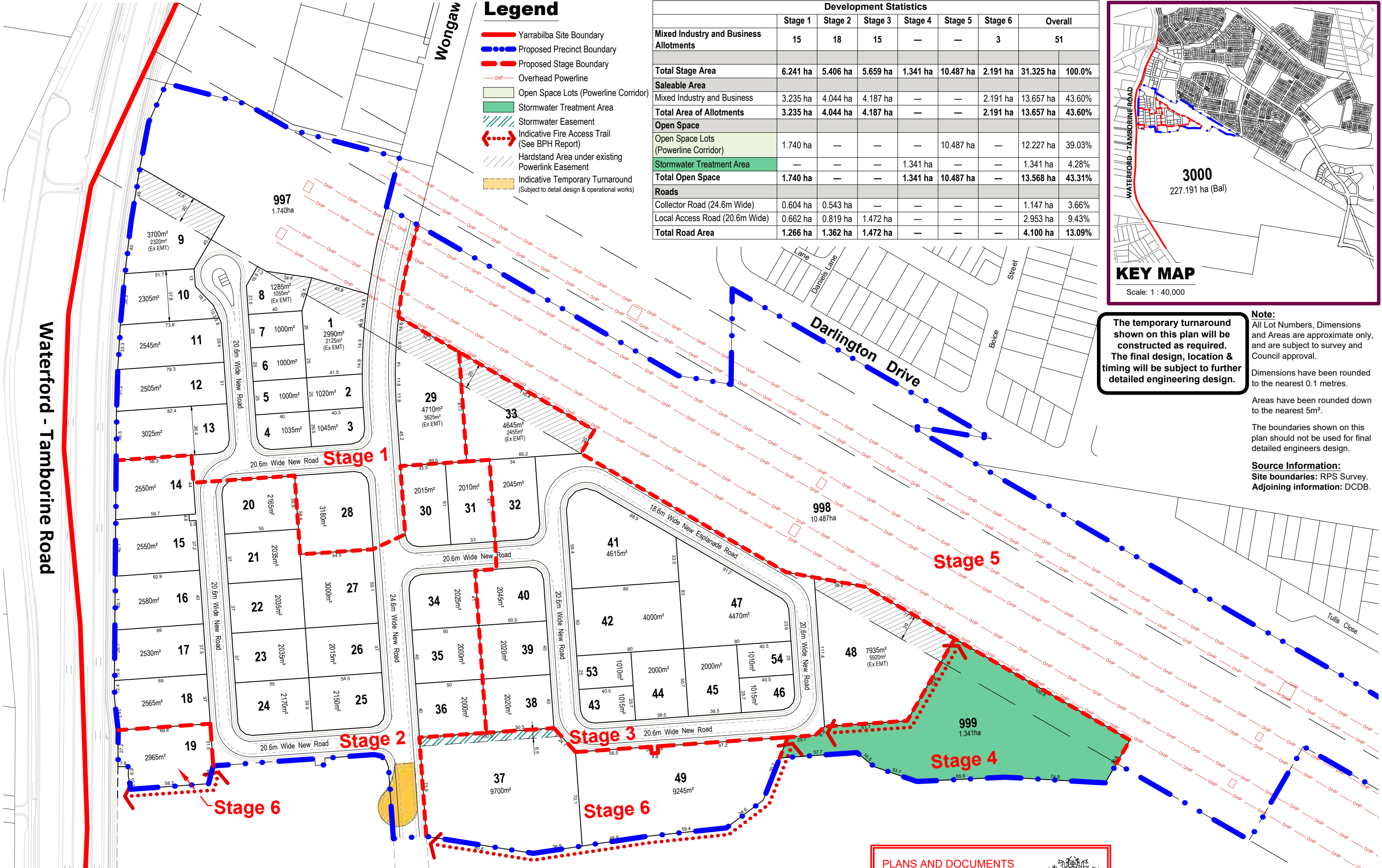
- Legend**
- Yarrabilba Site Boundary
 - Proposed Precinct Boundary
 - Proposed Stage Boundary
 - Overhead Powerline
 - Open Space Lots (Powerline Corridor)
 - Stormwater Treatment Area
 - Stormwater Easement
 - Indicative Fire Access Trail (See BPH Report)
 - Hardstand Area under existing Powerlink Easement
 - Indicative Temporary Turnaround (Subject to detail design & operational works)

Development Statistics							
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Overall
Mixed Industry and Business Allotments	15	18	15	—	—	3	51
Total Stage Area	6.241 ha	5.406 ha	5.659 ha	1.341 ha	10.487 ha	2.191 ha	31.325 ha 100.0%
Saleable Area							
Mixed Industry and Business	3.235 ha	4.044 ha	4.187 ha	—	—	2.191 ha	13.657 ha 43.60%
Total Area of Allotments	3.235 ha	4.044 ha	4.187 ha	—	—	2.191 ha	13.657 ha 43.60%
Open Space							
Open Space Lots (Powerline Corridor)	1.740 ha	—	—	—	10.487 ha	—	12.227 ha 39.03%
Stormwater Treatment Area	—	—	—	1.341 ha	—	—	1.341 ha 4.28%
Total Open Space	1.740 ha	—	—	1.341 ha	10.487 ha	—	13.568 ha 43.31%
Roads							
Collector Road (24.6m Wide)	0.604 ha	0.543 ha	—	—	—	—	1.147 ha 3.66%
Local Access Road (20.6m Wide)	0.662 ha	0.819 ha	1.472 ha	—	—	—	2.953 ha 9.43%
Total Road Area	1.266 ha	1.362 ha	1.472 ha	—	—	—	4.100 ha 13.09%



The temporary turnaround shown on this plan will be constructed as required. The final design, location & timing will be subject to further detailed engineering design.

Note:
All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.
Dimensions have been rounded to the nearest 0.1 metres.
Areas have been rounded down to the nearest 5m².
The boundaries shown on this plan should not be used for final detailed engineers design.
Source Information:
Site boundaries: RPS Survey.
Adjoining information: DCDB.



PLAN REF: 124141 - 48
Rev No: L
DATE: 19 December 2023
CLIENT: LendLease
DRAWN BY: NF
CHECKED BY: WNW



YARRABILBA MIBA
Precinct 2A & Part of Precinct 5
Plan of Subdivision

PLANS AND DOCUMENTS referred to in the PDA
DEVELOPMENT APPROVAL
Approval no: DEV2022/1306/7
Date: 26 February 2024



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Legend

- Proposed Precinct Boundary
- Mixed Industry and Business
- Open Space Lots (Powerline Corridor)
- Hardstand Area under existing Powerlink Easement (See Design Criteria Note L)
- 2m Landscape & Building Exclusion Zone (See Design Criteria Note K)
- Bushfire Buffer Zone (See Design Criteria Note C)
- Indicative Fire Access Trail (See BPH Report)
- Stormwater Treatment Area
- Stormwater Easement
- Optional Built to Boundary Wall
- No Vehicle Access

DESIGN CRITERIA

Development is to be in accordance with the provision of the Industry and Business Area - PDA Guideline No. 10 (May 2015 version), except for the following provisions:

- All advertising devices are to be in accordance with Logan City Council's Planning Scheme.
- End of trip facilities can be provided by operators if deemed necessary.
- Location of storage facilities for flammable materials are to be outside the bushfire buffer zones for Lots 19, 37, 48 & 49, and storage of flammable materials is not to be above ground for all lots.
- All refuse storage areas, materials, plant areas and services will be suitably screened from to all boundaries.
- Buildings are shaped, designed and finished so that the maximum length of unvaried or unarticulated (blank) wall does not exceed 20 metres (unless facing a side or rear property boundary).
- Roofing materials are pre coloured and non-reflective.
- Glazing treatment must use non-reflective materials/products.

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2022/1306/7
Date: 26 February 2024



- Where buildings face the public realm areas, including streets, parks and walkways, significant overlooking and surveillance opportunities must be incorporated with positive CPTED practice. Where public use walkways are incorporated between or within sites, the buildings must front activated zones to these walkways in accordance with positive CPTED practice.
- All service areas, plant and air conditioning plant is to be screened, integrated into the building, or located on the roof with screening.
- Site coverage may be up to 80% provided:
 - All other landscaping and development requirements of the Plan of Development are complied with;
 - Development is in context with, and visually compatible with the appearance of any neighbouring buildings;
 - Adequate pedestrian access and amenity is provided at ground level.
- Waterford-Tamborine Rd frontage:
 - Building development along the Waterford Tamborine Road must be setback a minimum of 2.0 metres;
 - Any building located within 3.0m of Waterford Tamborine Road must include an articulated facade and a minimum of 2 colours (which may contain glazing).
- Powerlink Easement - Compliance Assessment is to be accompanied by written approval from Powerlink for any works and improvements within the hardstand area (Lots 1, 8, 9, 29, 33, and 48).
- Zero setbacks to side and rear boundaries will be permitted subject to sight lines and other constraints affecting adjoining development.
- Bicycle parking will be provided at the rate of one space per five car parking spaces.
- Landscaping:-
 - Preference is to be given to utilising plant species that are native and endemic to the area and are low maintenance species.
 - All street frontages, not developed as Built to Boundary buildings will require a 2.0m minimum width landscape strip, except at vehicular and pedestrian access points.
 - Provide a continuous 2.0m wide landscape strip to Waterford-Tamborine Rd frontage so that all external service and utility areas are screened from view from Waterford-Tamborine Road.
 - Provide a 1.8m high black tubular steel fence (or similar) along the Waterford-Tamborine Rd frontage.

- Canopy trees and landscape will be provided by Lendlease within the street and verge. These must be retained as part of the development and incorporated into any final verge surface treatments.
- Car parking:-
 - Car parking will be provided in accordance with Table 1.
 - Service vehicles must enter and leave the Site in a forward direction.
 - Where an onsite refuse collection area is provided, access and manoeuvring areas are designed and provided to enable access by a refuse collection vehicle based on the Design Service Vehicle in Austroads/Standards Australia HB72 Design Vehicles and Turning Path Templates.
 - All premises are identified by the provision of a street number in a prominent location, preferably near the site entry, i.e. on the kerb or letterbox or by signage on the building or site.
 - Where more than one lot is purchased by the same owner or adjoining lots are being developed at the same time, shared parking and access at the side and rear of lots is encouraged between adjoining properties to improve parking efficiency.

DEVELOPMENT STANDARDS

All engineering works are to comply with the PDA Guideline No. 13 Engineering Standards, dated September 2017.

Driveway construction is to be in accordance with Council standards.

TABLE 1

Approved Uses *	Car Parking Rate
Agricultural Supply Store	1 space per 100m ² of site area
Business	1 space per 30m ² of GFA
Bulk landscape supplies	1 space per 400m ² of site area with a minimum of 6 spaces
Service Industry (Car Wash)	1 space per employee if not part of a service station
Educational Establishment (excl. Primary and Secondary School)	1 space per employee; plus 1 space per 5 students for year 12 students and above; plus 1 visitor space per 10 students and 1 bus space per 50 students
Emergency Services	Sufficient spaces to accommodate the number of vehicles likely to be parked at any one time
Food premises	1 space per 10m ² of GFA for the first 200m ² of GFA plus 1 space per 20m ² of GFA thereafter
Garden centre	1 space per 300m ² of display area with a minimum of 6 spaces; plus 1 space per 20m ² of indoor retail use area
Shop (Hardware and Trade Supplies)	1 space per 60m ² of GFA
Indoor Entertainment	1 space per 10m ² of GFA
Indoor sport and recreation	1 space per 15m ² of GFA
Low Impact Industry #	2 spaces per tenant + 1 per 100m ² of GFA
Medium Impact Industry # ^	1 space per 80m ² of GFA up to 500m ² ; plus 1 space per 100m ² GFA thereafter
Outdoor sales	1 space per 300m ² of display area; plus 1 space per 1.5 employees
Outdoor Sport and Recreation (All other uses)	Subject to traffic assessment
Outdoor Sport and Recreation (Bowling green)	4 spaces for the first rink; plus 2 spaces for the subsequent rink
Outdoor Sport and Recreation (Clubhouse)	1 space per 30m ² of GFA
Place of Assembly	1 space per 10m ² of GFA
Research and Technology Facility	2 spaces per tenant + 1 per 100m ² of GFA
Service Industry	1 space per 50m ² of GFA
Showroom	1 space per 35m ² of GFA
Telecommunications Facility	1 space per employee with a minimum of 2 spaces
Indoor Entertainment (Theatre)	1 space per 8 seats
Service Industry (Transport Depot)	1 car space for every truck space; plus 1 space per 2 non-driver employees
Utility Installation	1 space per employee with a minimum of 2 spaces
Veterinary Hospital	1 space per 30m ² of GFA
Warehouse	1 space per 2 employees or, 1 space per 100m ² GFA, whichever is greater
Wholesale Nursery	1 space per employee plus 1 visitor space
Funeral Parlour	1 space per employee plus 1 space per 10m ² of GFA associated with a chapel
Warehouse (Self Storage)	1 space per 100 storage units plus 1 space per employee

Waterford - Tamborine Road

Note:

All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Source Information:

Site boundaries: RPS Survey.
Adjoining information: DCDB.

Note:

* denotes where relevant GLA caps apply for the zone as below

- Retail uses - up to a maximum of 1,200m²
- Showroom - up to 40,000m²
- Commercial uses - up to 40,000m²

includes ancillary shop for the sale of goods directly associated with a low impact or medium impact industry use

^ Medium Impact Industry is excluded from Lots 1, 8, 9, 29, 33, and 48.

YARRABILBA MIBA Precinct 2A & Part of Precinct 5 Plan of Development

DRAFT
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PLAN REF: 124141 - 52

Rev No: L

DATE: 19 December 2023

CLIENT: LendLease

DRAWN BY: NF

CHECKED BY: WNW



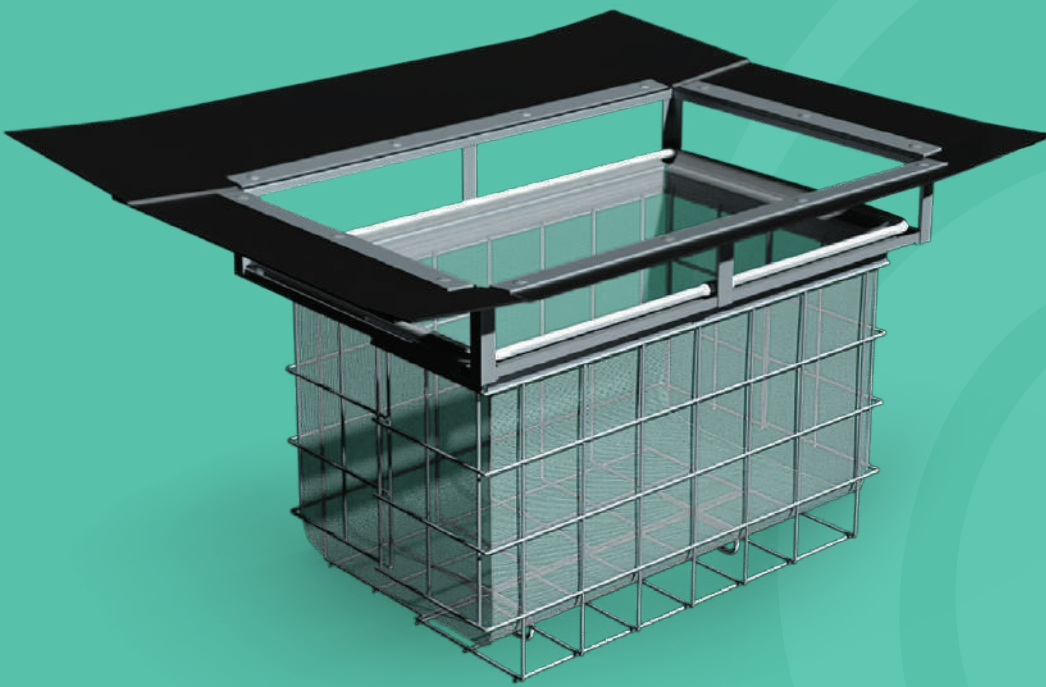
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APPENDIX I

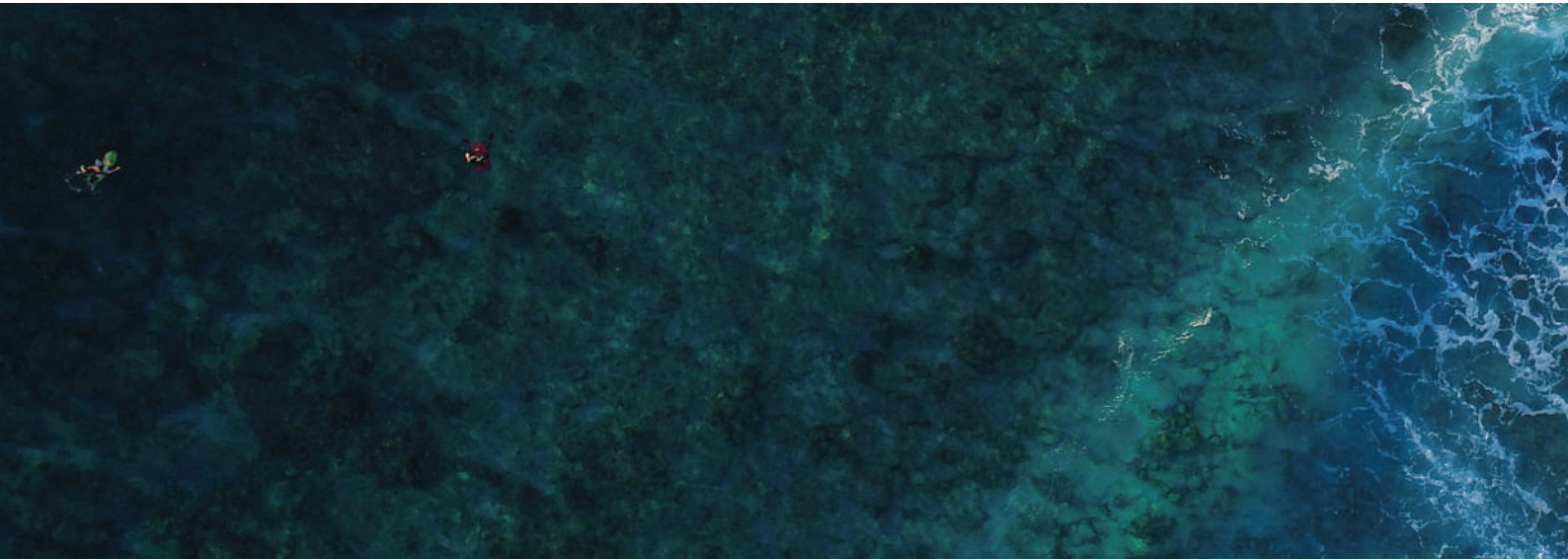
OceanProtect OceanGuard Operations & Maintenance Manual

OceanGuard®

Operations & Maintenance Manual



Stopping Pollution Entering Waterways



www.oceanprotect.com.au

Introduction	3
Health and Safety	4
How does it work?	5
Maintenance Procedures	6
Maintenance Services	7



Introduction

The primary purpose of stormwater treatment devices is to capture and prevent pollutants from entering waterways, maintenance is a critical component of ensuring the ongoing effectiveness of this process. The specific requirements and frequency for maintenance depends on the treatment device and pollutant load characteristics of each site. This manual has been designed to provide details on the cleaning and maintenance processes for the OceanGuard® as recommended by the manufacturer (Ocean Protect).

The OceanGuard® technology is a gully pit basket designed to fit within new and existing gully pits to remove pollution from stormwater runoff. The system has a choice of filtration liners, designed to remove gross pollutants, solids, and other attached pollutants as either a standalone technology or as part of a 'treatment train' (e.g. with StormFilter®, Jellyfish® or biofiltration). OceanGuards are highly effective, easy to install and simple to maintain.

Why do I need to perform maintenance?

Adhering to the inspection and maintenance schedule of any stormwater treatment device is essential to ensuring that it functions properly throughout its design life.

During each inspection and clean, details of the mass, volume and type of material that has been collected by the device should be recorded. This data will assist with the revision of future management plans and help determine maintenance interval frequency. It is also essential that qualified and experienced personnel carry out all maintenance (including inspections, recording and reporting) in a systematic manner.

Maintenance of your stormwater management system is essential to ensuring ongoing at-source control of stormwater pollution. Maintenance also helps prevent structural failures (e.g. prevents blocked outlets) and aesthetic failures (e.g. debris build up), but most importantly ensures the long term effective operation of the OceanGuard®.

Health and Safety

Access to pits containing an OceanGuard® typically requires removing (heavy) access covers/grates, but typically it is not necessary to enter into a confined space. Pollutants collected by the OceanGuard® will vary depending on the nature of your site. There is potential for these materials to be harmful. For example, sediments may contain heavy metals, carcinogenic substances or sharp objects such as broken glass and syringes. For these reasons, there should be no primary contact with the waste collect and all aspects of maintaining and cleaning your OceanGuard® require careful adherence to Occupational Health and Safety (OH&S) guidelines.

It is important to note that the same level of care needs to be taken to ensure the safety of non-work personnel, as a result it may be necessary to employ traffic/pedestrian control measures when the device is situated in, or near areas with high vehicular/pedestrian activity.

Personnel health and safety

Whilst performing maintenance on the OceanGuard®, precautions should be taken in order to minimise (or when possible prevent) contact with sediment and other captured pollutants by maintenance personnel. In order to achieve this the following personal protective equipment (PPE) is recommended:

- Puncture resistant gloves
- Steel capped safety boots
- Long sleeve clothing, overalls or similar skin protection
- Eye protection
- High visibility clothing or vest

During maintenance activities it may be necessary to implement traffic control measures. Ocean Protect recommend that a separate site specific traffic control plan is implemented as required to meet the relevant governing authority guidelines.

The OceanGuard® is designed to be maintained from surface level, without the need to enter the pit. However depending on the installation configuration, location and site specific maintenance requirements it may be necessary to enter a confined space occasionally. It is recommended that all maintenance personnel evaluate their own needs for confined space entry and compliance with relevant industry regulations and guidelines. Ocean Protect maintenance personnel are fully trained and carry certification for confined space entry.

How does it work?

OceanGuard® is designed to intercept stormwater as it enters the stormwater pits throughout a site. The OceanGuard® has diversion panels that sit flush with the pit walls, this ensures that as stormwater enters at the top of the pit it is directed to the middle of the insert where the Filtration bag is situated. The filtration bag allows for screening to occur removing 100% of pollutants greater than the opening of the filtration material (200micron, 1600micron bags available).

During larger rain events the large flows overflow slots in the flow diverter of the OceanGuard® ensure that the conveyance of stormwater is not impeded thus eliminating the potential for surface flooding. As the flow subsides, the captured pollutants are held in the OceanGuard® filtration bag. The waste then starts to dry which reduces the magnitude of organic material decomposition transitioning between maintenance intervals.

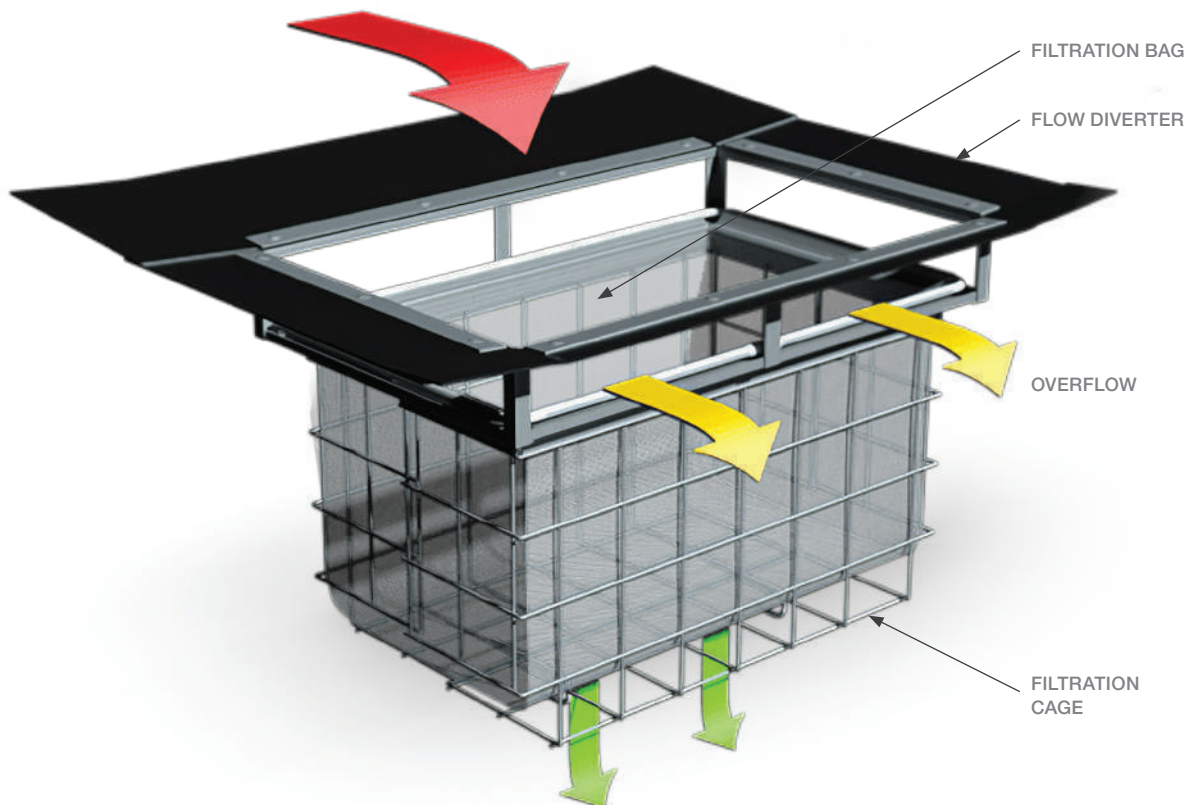


Figure 1: OceanGuard® components

Maintenance Procedures

To ensure that each OceanGuard® achieves optimal performance, it is advisable that regular maintenance is performed. The OceanGuard® requires 1-6 minor services annually (3 to 4 typical), pending the outcome of these inspections additional maintenance servicing may be required.

Primary types of maintenance

The table below outlines the primary types of maintenance activities that typically take place as part of an ongoing maintenance schedule for the OceanGuard®.

Service Type	Description of Typical Activities	Frequency
Minor Service	Filter bag inspection and evaluation Removal of capture pollutants Disposal of material	1-6 Times Annually
Major Service	Filter Bag Replacement Support frame rectification	As required

Maintenance requirements and frequencies are dependent on the pollutant load characteristics of each site. The frequencies provided in this document represent what the manufacturer considers to be best practice to ensure the continuing operation of the device is in line with the original design specification.

Minor Service

This service is designed to return the OceanGuard® back to optimal operating performance. This type of service can be undertaken either by hand or with the assistance of a Vacuum unit.

Hand Maintenance

- 1 Establish a safe working area around the OceanGuard®
- 2 Remove access cover/grate
- 3 Use two lifting hooks to remove the filtration bag
- 4 Empty the contents of the filtration bag into a disposal container
- 5 Inspect and evaluate the filtration bag
- 6 Inspect and evaluate remaining OceanGuard® components (i.e. flow diverter, filtration cage and supporting frame)
- 7 Rejuvenate filtration bag by removing pollutant build up with a stiff brush, additionally the filtration bag can be washed using high pressure water
- 8 Re-install filtration bag and replace access cover/grate

Vacuum Maintenance

- 1 Establish a safe working area around the OceanGuard®
- 2 Remove access cover/grate
- 3 Vacuum captured pollutants from the filtration bag
- 4 Remove filtration bag
- 5 Inspect and evaluate the filtration bag
- 6 Inspect and evaluate remaining OceanGuard® components (i.e. flow diverter, filtration cage and supporting frame)
- 7 Rejuvenate filtration bag by removing pollutant build up with a stiff brush, additionally the filtration bag can be washed using high pressure water
- 8 Re-install filtration bag and replace access cover/grate

Major Service (Filter Bag Replacement)

For the OceanGuard®, a major service is a reactionary process based on the outcomes from the minor service.

Trigger Event from Minor Service	Maintenance Action
Filtration bag inspection reveals damage	Replace the filtration bag ^[1]
Component inspection reveals damage	Perform rectification works and if necessary replace components ^[1]

^[1] Replacement filtration bags and components are available for purchase from Ocean Protect

Additional Types of Maintenance

Occasionally, events on site can make it necessary to perform additional maintenance to ensure the continuing performance of the device.

Hazardous Material Spill

If there is a spill event on site, all OceanGuard® pits that potentially received flow should be inspected and cleaned. Specifically, all captured pollutants from within the filtration bag should be removed and disposed in accordance with any additional requirements that may relate to the type of spill event. All filtration bags should be rejuvenated (replaced if required) and re-installed.

Blockages

The OceanGuard's internal high flow bypass functionality is designed to minimise the potential of blockages/flooding and this configuration has been field proven for over twenty years. Flooding caused by an OceanGuard® style of pit basket is extremely rare and in the unlikely event that flooding occurs around the stormwater pit the following steps should be undertaken to assist in diagnosing the issue and implementing the appropriate response.

- 1 Inspect the OceanGuard® flow diverter, ensuring that they are free of debris and pollutants
- 2 Perform a minor service on the OceanGuard®
- 3 Remove the OceanGuard® to access the pit and inspect both the inlet and outlet pipes, ensuring they are free of debris and pollutants

Major Storms and Flooding

In addition to the scheduled activities, it is important to inspect the condition of the OceanGuard® after a major storm event. The inspection should focus on checking for damage and higher than normal sediment accumulation that may result from localised erosion. Where necessary damaged components should be replaced and accumulated pollutants disposed.

Disposal of Waste Materials

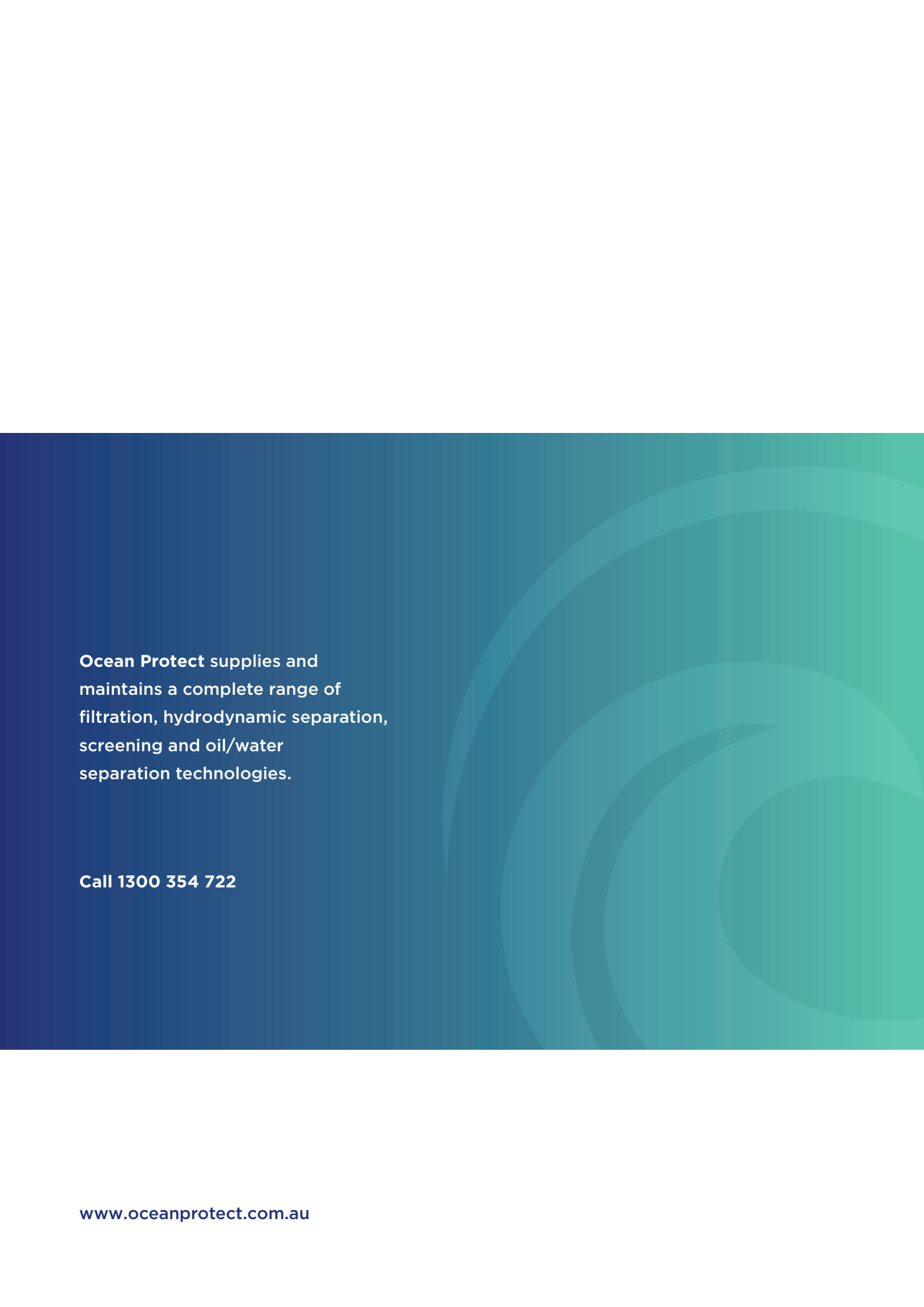
The accumulated pollutants found in the OceanGuard® must be handled and disposed of in a manner that is in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. If the filtration bag has been contaminated with any unusual substance, there may be additional special handling and disposal methods required to comply with relevant government/authority/industry regulations.

Maintenance Services

With over a decade and a half of maintenance experience Ocean Protect has developed a systematic approach to inspecting, cleaning and maintaining a wide variety of stormwater treatment devices. Our fully trained and professional staff are familiar with the characteristics of each type of system, and the processes required to ensure its optimal performance.

Ocean Protect has several stormwater maintenance service options available to help ensure that your stormwater device functions properly throughout its design life. In the case of our OceanGuard®, we offer long term pay-as-you-go contracts, pre-paid once off servicing and replacement filter bags.

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



Ocean Protect supplies and maintains a complete range of filtration, hydrodynamic separation, screening and oil/water separation technologies.

Call 1300 354 722

www.oceanprotect.com.au

Owen.

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