Queensland Government

ADG

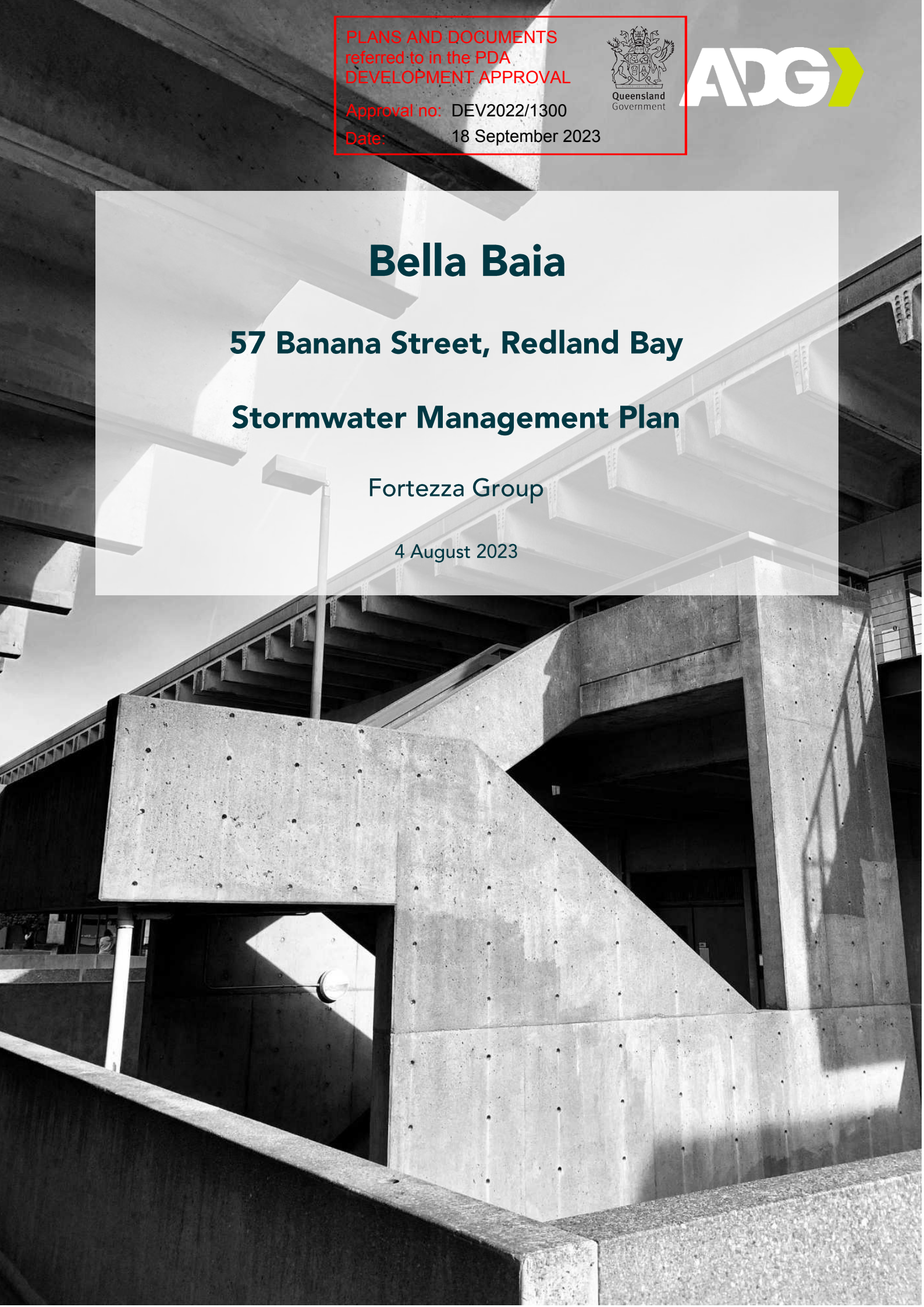
Bella Baia

57 Banana Street, Redland Bay

Stormwater Management Plan

Fortezza Group

4 August 2023



DOCUMENT VERIFICATION

Job Title **Bella Baia**

Job Number 26164

Document Title Stormwater Management Plan

DOCUMENT CONTROL

Date	Document / Description	Revision No.	Author	Reviewer
18.07.22	Stormwater Management Plan	00	M Klein	K Griffin
07.07.23	Updated Site Layout	01	M Brown	D Saul
21.07.23	Issused for Approval	02	M Brown	D Saul
04.08.23	Updated Architectural Plans	03	M Brown	D Saul

APPROVAL FOR ISSUE

Name	Signature	Date
Matthew Brown		04.08.23
Michael Lepelaar (RPEQ: 11171)		04.08.23

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FIGURES

TABLES

APPENDICES

EXECUTIVE SUMMARY

ADG Engineers (Aust.) Pty Ltd has been engaged by Fortezza Group to prepare a Stormwater Management Plan suitable for submission to Economic Development Queensland in support of a Development Application for a proposed residential apartment development, which is named Bella Baia and is located within the Weinam Creek Priority Development Area at 57 Banana Street, Redland Bay 4165 QLD.

This Stormwater Management Plan has been revised following changes to the site layout and the commencement of roadworks and service relocation surrounding the site, which necessitate modification to the stormwater management strategy.

This report aims to assess the proposed development requirements with relation to both stormwater quantity and quality.

A stormwater management plan is required to comply with the Weinam Creek Stormwater Infrastructure Plan, which stipulates in the Healthy Waters Code requirements regarding the removal of gross pollutants, suspended solids, nitrogen and phosphorus to target reduction levels.

The following stormwater quality improvement devices are proposed for the site:

- One (1) Ocean guard Filter;
- Three (3) SPEL Stormfilters (460 PSORB) within in a minimum 3m^2 Stormfilter chamber; and
- A grass-lined swale.

In accordance with the Weinam Creek Priority Development Area Stormwater Infrastructure Plan, no stormwater detention is required as the site discharges directly to Moreton Bay.

All relevant standards and guidelines are addressed in this Stormwater Management Plan including criteria from the Council City Plan.

1 INTRODUCTION

1.1 General

ADG Engineers (Aust.) Pty Ltd has been engaged by Fortezza Group to prepare a Stormwater Management Plan (SMP) suitable for submission to Economic Development Queensland (EDQ) in support of a Development Application associated with a proposed residential development named Bella Bai, which is located within the Weinam Creek Priority Development Area (WC PDA) at 57 Banana Street, Redland Bay 4165 QLD, henceforth referred to as *the site*.

This SMP has been revised following changes to the site layout and the commencement of roadworks and service relocation surrounding the site, which necessitate modification to the stormwater management strategy.

The development consists of a multi-storey apartment building over a basement carpark. This report aims to assess the proposed development requirements with relation to both stormwater quantity and quality.

The purpose of this SMP is to provide advice as to the development proposal detailed in the architectural drawings in **Appendix A**. The works described herein are subject to further approvals and cover works required to service the proposed development with regard to stormwater treatment.

1.2 Background Information

This report was compiled using information from the following sources:

- Architectural plans supplied by HAL Architectects (refer to **Appendix A**);
- Detailed Surveys (refer to **Appendix B**);
- EDQ Approved Design Drawings for ongoing Weinam Creek Priority Development Area Stage 3A (refer to **Appendix C**);
- Google Maps and Nearmap Aerial Imagery.

1.3 Property Details

The site is located in Redland Bay, Queensland. The site is bound by existing residential lots to the north and south, Banana Street to the east and Outridge Street to the west. The existing vacant lot to the north of the site has been resumed and roadworks are presently underway that will result in construction of a new road (Hamilton Street) along the northern boundary of the site, as shown in **Figure 2**.

The land titles that make up the site are given in **Table 1**. Refer to the detailed surveys in **Appendix B** for further details. **Figure 1** displays the site locality.

Table 1 – Property Detail

Lot Title	Lot 8 on RP80201
Street Address	57 Banana Street, Redland Bay 4165 QLD
Site Area	835m^2

Figure 1 – Locality Map (Accessed 01.06.2022 from Google Maps)

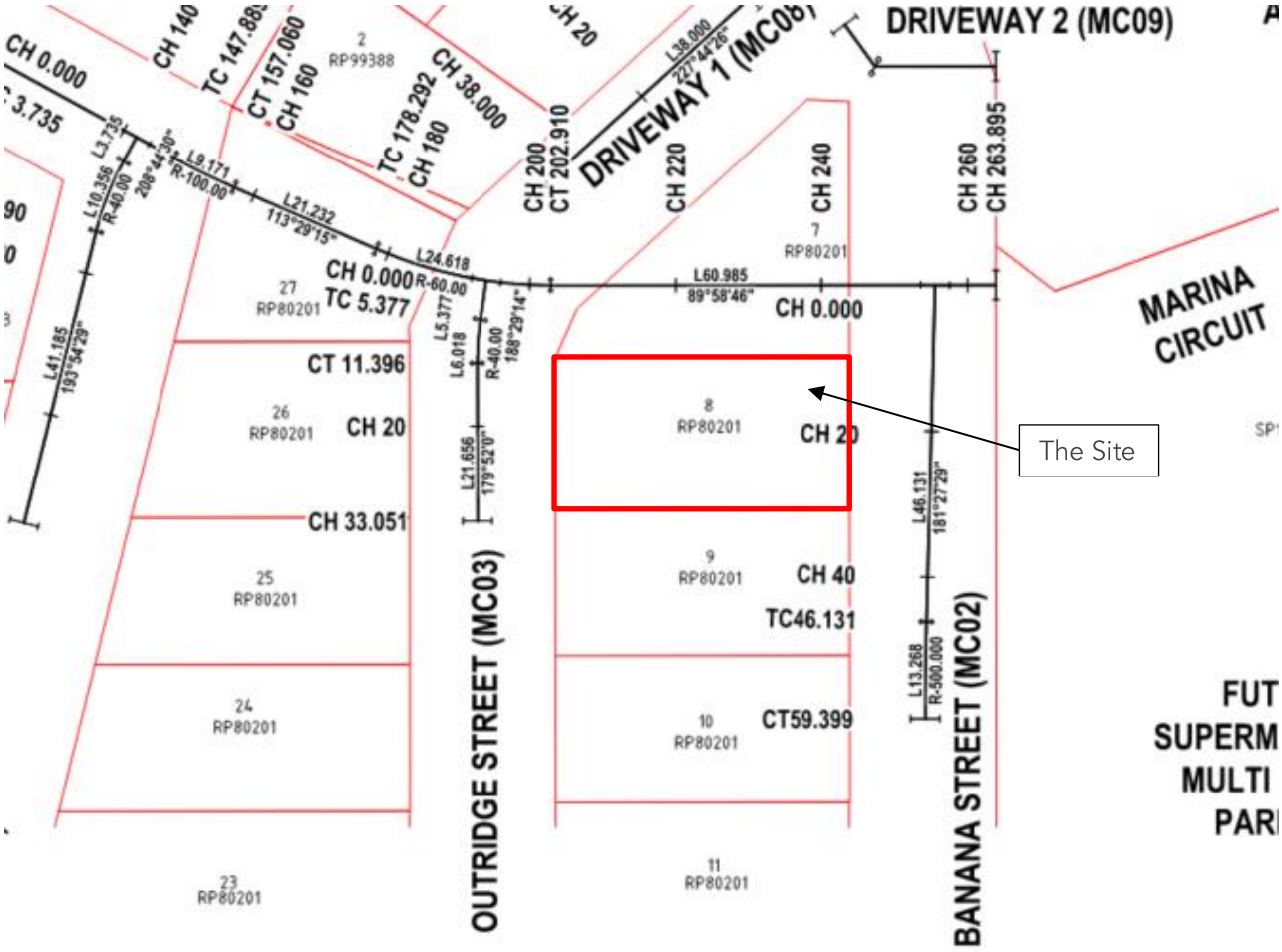


Figure 2 – New Road Alignment (EDQ Design Drawing C-1005[5], dated 06/10/2022)

1.4 Existing Site

The proposed development is located across 57 Banana Street, Redland Bay QLD within the WC PDA and Economic Development Queensland will be the assessing authority. The existing site is occupied by a two-storey detached residential dwelling with surfaces typically grading in the order of 1%. The site is estimated to have a fraction impervious of approximately 50% and the remaining area occupied by landscaping and open space. **Figure 3** demonstrates the existing site conditions.

Figure 3 – Site Condition (Nearmap Image dated 22.03.2022)

2 PROPOSED DEVELOPMENT

The proposed development as described in the architectural drawings in **Appendix A** is a multi-storey apartment building over basement carpark. A breakdown of the post-developed surface areas exposed to rainfall is presented in **Table 2**. Refer to SK02 in **Appendix D** for further information.

Table 2 – Proposed Development Areas

Catchment ID	Land Type	Area (m^2)	Percentage of Total Site Area
B1 (Directed into Stormsack upstream of Stormfilters)	Roof	35	4%
	Pool	27	3%
	Landscaping	199	24%
	Hardstand	345	41%
B2 (Discharges directly into Stormfilters)	Landscaping	143	17%
	Hardstand	47	6%
	Driveway	40	5%
Total		835	100%

2.1 Existing Stormwater Infrastructure

The detailed site survey has identified the following stormwater infrastructure within the vicinity of the site:

- A 0.82m (approx.) deep gully pit in the Outridge Street kerb & channel west of the site;
- A DN300 Fibre Reinforced Concrete Pipe (FRC) flows from the abovementioned gully pit to a maintenance hole on the non-development side of Outridge Street; and
- A DN450 Reinforced Concrete Pipe (RCP) flows north-east along Outridge Street to the intersection with Banana Street.

EDQ Approved Design Drawings for ongoing Weinam Creek Priority Development Area Stage 3A has identified the following under construction stormwater infrastructure within the vicinity of the site:

- The stormwater infrastructure on Outridge Street opposite the site is proposed to be replaced with larger pipes and structures in adjusted locations; and
- A new lip-in-line stormwater gully pit on Hamilton Street, over a DN450 SRCP CL3 pipe flowing north under the road, joining the stormwater infrastructure draining from Outridge Street.

Refer to the detailed surveys in **Appendix B** for and the EDQ Approved Design Drawings in **Appendix C** for further information regarding the existing stormwater infrastructure.

2.2 Lawful Point of Discharge

It is proposed that a new stormwater connection will be constructed from the site to the gully pit planned for construction on the development side of Hamilton Street (under construction). Refer to SK02 in **Appendix D** for sketch plans of the post-developed site catchment plan.

2.3 External Catchments

No external catchments of significance have been identified.

3 STORMWATER QUANTITY ASSESSMENT

In accordance with the RCC Stormwater Infrastructure Plan for the Weinam Creek PDA, no stormwater detention is required as the site discharges directly to Moreton Bay.

4 FLOODING

4.1 Sources of Flooding

The flood risk to the site comes from high tidal conditions in Redland Bay. The tidal conditions used to inform design levels across the site are shown below:

- Highest Astronomical Tide (2022 Conditions) 1.63m AHD;
- Highest Astronomical Tide (2070 Conditions) 1.98m AHD;
- Highest Astronomical Tide (2100 Conditions) 2.37m AHD; and
- Storm Tide (2100 Conditions) 3.22m AHD. (Adopted Designated Flood Level)

4.2 Minimum Required Levels

A review of Queensland's Urban Drainage Manual (QUDM) has identified acceptable minimum design levels for basement entry, ground floor carparking and apartments.

The storm tide 2100 level is at 3.22m AHD. While not required by QUDM, the basement entry has had an additional 50mm freeboard added to the storm tide 2100 level, resulting in a minimum design level of 3.27m AHD. Ground floor carparking and non-habitable floors have been assigned a minimum design level equal to the storm tide 2100 level of 3.22m AHD. Habitable floor apartments require an additional 300mm freeboard above the storm tide 2100 level, resulting in a minimum design level of 3.52m AHD. These adopted design levels are outlined in **Table 3**.

Table 3 - Adopted Design Levels

Use	Tidal Condition	Minimum Design Level
Basement Entry	Storm Tide – 2100 + 50 mm Freeboard	3.27 m AHD
Ground Floor Carpark	Storm Tide – 2100	3.22 m AHD
Apartments	Storm Tide – 2100 for Non-Habitable Floor + 300 mm Freeboard to Habitable Floor	3.22 m AHD for Non-Habitable Floor 3.52 m AHD for Habitable Floor

4.3 Recommendation

The minimum design levels have been summarised in **Table 3**.

5 STORMWATER QUALITY ASSESSMENT

This assessment identifies issues relating to stormwater runoff quality and assesses possible methods of treatment and the subsequent impacts on the drainage strategy. The aim of this section of the report is to determine practical approaches in achieving improvements for the quality of the stormwater run-off from the site as set out by the State Planning Policy and the MUSIC Modelling Guidelines.

This section will address the following:

- Runoff to treatment devices; and
- Ensuring treatment device selection criteria is in accordance with Industry Best Practice and, WSUD Engineering Guidelines.

5.1 Site Analysis and Design Strategy

The landscaped and hardstand area for the proposed development are summarised in **Table 2** of this report.

Currently no stormwater quality management measures are in place for the subject site. The proposed development offers the opportunity to provide stormwater quality treatment where none exists at present.

A MUSIC model analysis was undertaken to determine the extent of the treatment required for the site and it was determined that one (1) Oceanguard filter, a grass-lined swale and three (3) Ocean Protect 460mm Psorb filters are adequate to achieve the pollutant reduction targets discussed in Section 5.2. Refer to SK02 in **Appendix D** for details on the respective catchments.

5.2 MUSIC Modelling Results

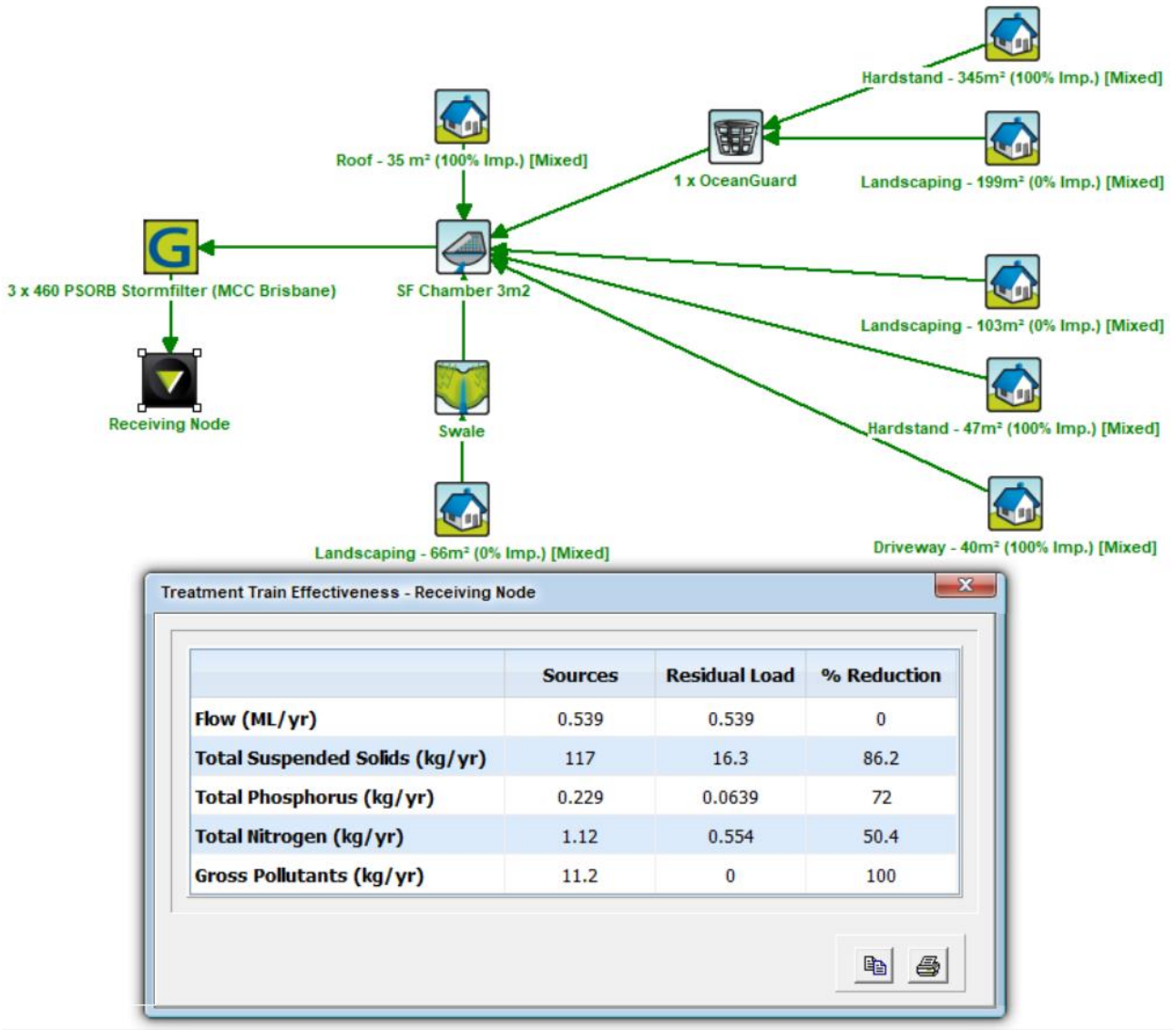
The sites stormwater run-off was modelled using MUSIC version 6.3.0. The 6-minute rainfall data from the 40265 Redlands monitoring site was utilised in the modelling.

The utilised data was over a 10-year timeframe from 1/01/1997 to 31/12/2006. Pollutant export parameters for the catchment's different land use types were applied in accordance with Table 3.8 of the MUSIC Modelling Guidelines. The objective was to achieve the desired target pollutant reduction levels as specified in AO9.1 of the RCC Healthy Waters Code. The target pollutant reduction targets are as follows:

- 80% Reduction in Total Suspended Solids (TSS);
- 60% Reduction in Total Phosphorus (TP);
- 45% Reduction in Total Nitrogen (TN); and
- 90% Reduction in Gross Pollutants.

The results of the model are shown on the following page in **Figure 4** to meet the percent reduction water quality objectives identified by the Council City Plan.

Refer to **Appendix E** for further information on the MUSIC Model outputs compiled by ADG.



	Sources	Residual Load	% Reduction
Flow (ML/yr)	0.539	0.539	0
Total Suspended Solids (kg/yr)	117	16.3	86.2
Total Phosphorus (kg/yr)	0.229	0.0639	72
Total Nitrogen (kg/yr)	1.12	0.554	50.4
Gross Pollutants (kg/yr)	11.2	0	100

Figure 4 – Treatment Train

The MUSIC results meet the percent reduction water quality objectives identified by Council City Plan.

5.3 Construction Phase

During the construction phase of this development, there is a higher risk of sedimentation transport during construction due to the large areas of disturbed land. An Erosion and Sediment Control (ESC) plan is required for the lodgement of operational works and the following construction phase of the development.

An ESC is required for the lodgement of operational works and shall be implemented during the construction phase of the development as follows:

Stage 1: Pre-construction

- All ESC devices are to be installed prior to any earth disturbing activities

Stage 2: Construction

- All ESC devices are to be maintained to operational levels, as specified in the management plans

and drawings.

- The maintenance plan needs to be in accordance with the Water by Design Construction and Establishment Guidelines.
- During excavation, the contractor shall provide a temporary sediment basin (sump pit) and pump out stormwater only once the water has settled and has achieved an acceptable quality to the satisfaction of Council (i.e. no turbidity and acceptable pH levels).

Stage 3: Pre-Operational Stage (all disturbed areas stabilized, 90% of all structures completed)

- All ESC devices can be removed only if approved by the superintendent and engineers.

5.4 Operational Phase

Once directed to be commissioned by the superintendent and engineers, the Stormwater Quality Improvement Devices (SQIDs) will provide the required level of stormwater quality treatment to runoff from the site prior to discharging into Council's stormwater drainage infrastructure. It is expected that sediment laden runoff and the erosion potential at the subject site during the operational phase will be minimal. This is due to the high amount of permanent impervious area in the form of roofs, paths, courtyards, driveways and other impervious areas. The proposed landscaped areas will be maintained in a manner that will minimise erosion.

5.5 Lifecycle Costs

A lifecycle cost analysis is not a part of the scope of this report. All the recommended water quality treatment infrastructure lies within the development site and it shall be maintained and serviced by the owners of the development at no cost to Council.

5.6 Water Quality Monitoring

No water quality monitoring is proposed for this development at this stage due to the nature of the development and the fact that no monitoring currently takes place.

5.7 Maintenance

The site operator will be responsible for organising all monitoring and maintenance activities associated with the operation of the proposed treatment devices in accordance with manufacturer specifications where relevant.

6 CONCLUSION

Detailed design is to confirm the water quality and quantity recommendations. In preparing this report, we have achieved all requirements for stormwater management plans as described in Council's City Plan.

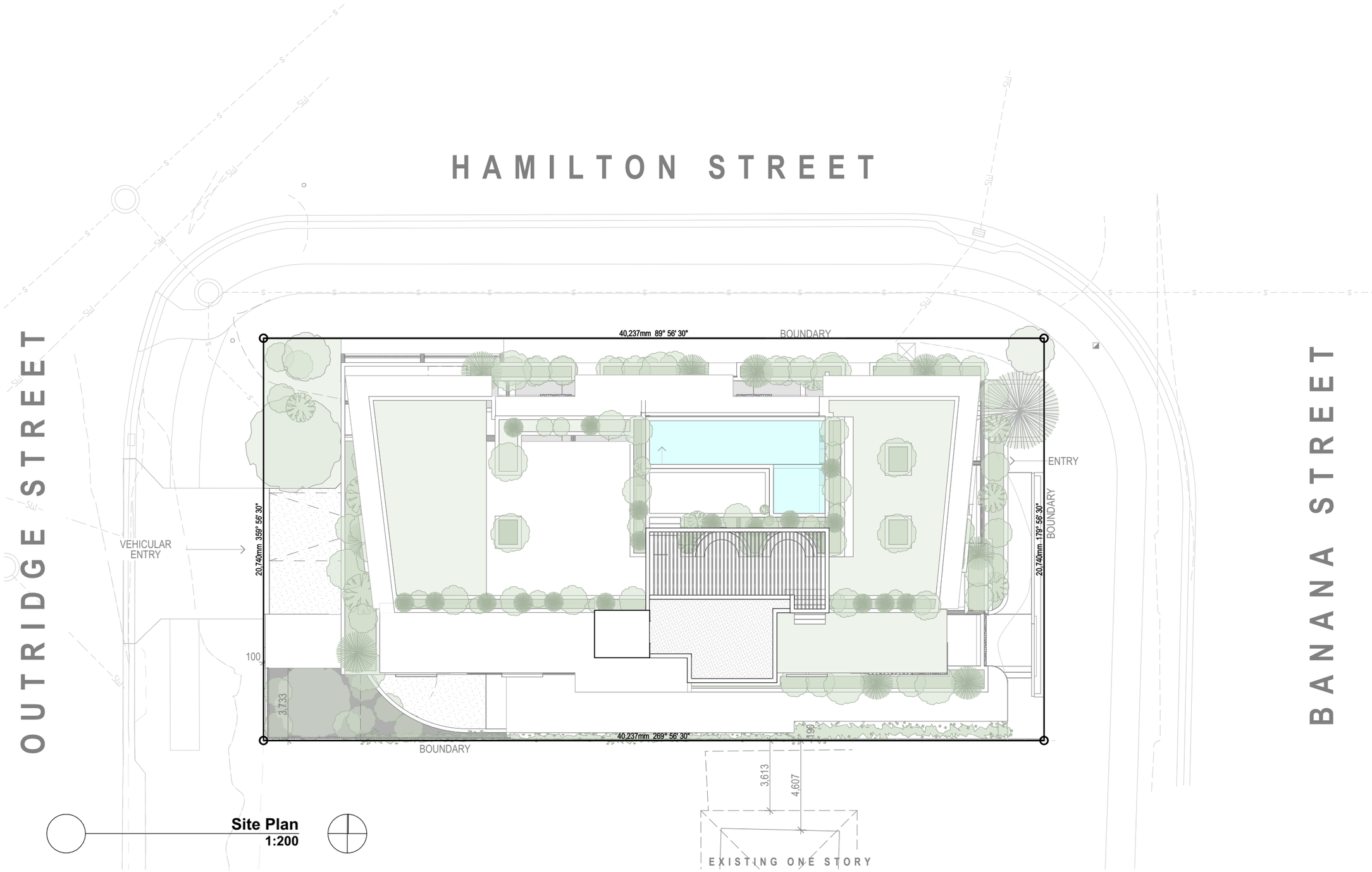
In accordance with the Weinam Creek Stormwater Infrastructure Plan, no stormwater detention is required as the site discharges directly to Moreton Bay.

The following stormwater quality improvement devices are proposed for the site:

- One (1) Ocean guard Filter;
- Three (3) SPEL Stormfilters (460 PSORB) within in a 3m^2 Stormfilter chamber; and
- A grass-lined swale.

Detailed engineering diagrams and management requirements for the proposed development are to be submitted to Council for approval prior to any works commencing on site with design certification prepared by a qualified stormwater engineer or scientist.

Appendix A
Architectural Drawings



Site Plan
1:200

ChID	Change Name

TOWN PLANNING DRAWINGS

General Notes

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Do not scale off drawings.
All levels are approximate only and are subject to confirmation by licenced surveyor.
All workmanship, materials and construction to comply with the Queensland Building Act 1975, the Queensland Development Code, the Building Code of Australia 2019, Premises Standard and AS1428.1.
Work to be carried out in a neat and appropriate manner.
Where ambiguities or discrepancies exist, Hayes Anderson Lynch Architects Pty. Ltd. shall be contacted for clarification.

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ADAPTABLE UNIT

DEEP PLANTING AREA

Date	Issue	Details	Checked
24/07/23	P	SW Pit Added	RH
15/05/23	N	Revised Town Planning	EA
07/02/23	M	Roof Terrace Reconfiguration	EA
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14/07/22	B	Detention tanks added	EA
09/06/22	A	Lodgement Issue	EA

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Project
Apartment Development
57 Banana Street, Redland Bay, QLD 4165

Drawing Title
Site Plan

Scale @ A3	Drawn:	Checked:
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Project Number	**Drawing Number**	**Issue**
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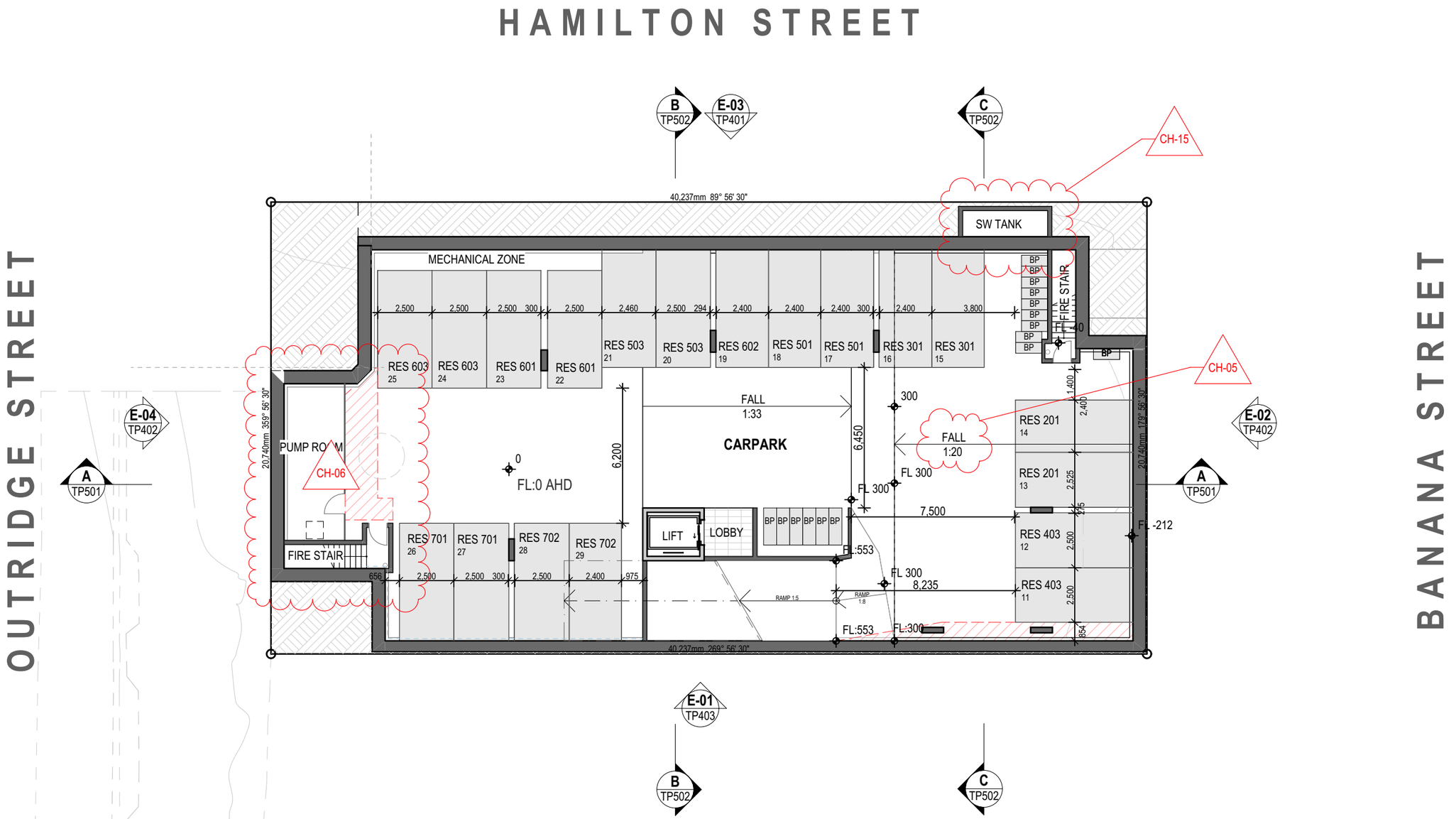
NOTE:
These drawings are for BUILDING APPLICATION purposes only



Basement -1
1:200

ChID	Change Name
CH-05	Fall in Basement Added
CH-06	Pump Room and MSSB Moved
CH-15	SW Tank Added

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TOWN PLANNING DRAWINGS

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Drawing Title
Basement -1 Floor Plan

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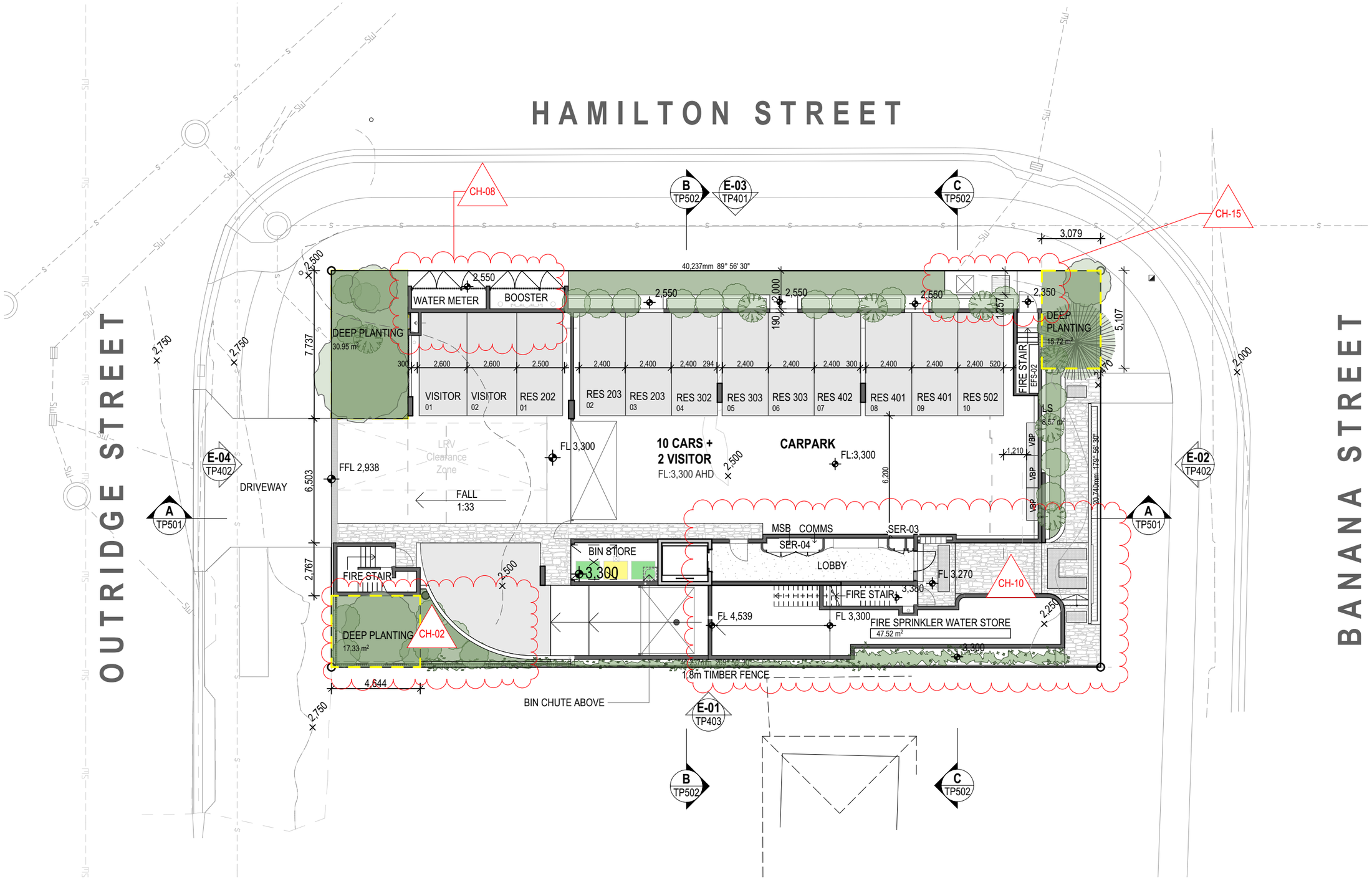

Ground Floor Plan
1:200

ChID	Change Name
CH-02	PMT area removed, added space for deep plenting
CH-08	Water Meter and Booster swapped and Mech Riser Added
CH-10	Services Reconfigured. Fire Sprinkler storage, MSB and Comms
CH-15	SW Tank Added

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Drawing Title
Ground Floor Plan

Scale @ A3	Drawn:	Checked:
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Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP202**	P

Level 2 Floor Plan
1:200

ChID	Change Name

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Drawing Title
Level 2 Floor Plan

Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP203**	P

Level 3 Floor Plan
1:200

ChID	Change Name

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Drawing Title
Level 3 Floor Plan

Scale @ A3	Drawn:	Checked:
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H4474BAN	**TP204**	P

Level 4-6 Floor Plan
1:200

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10/12/22	I	TP Information Request	EA
30/11/22	H	Window Schedule	EA
24/10/22	G	Futher Issues Response	EA
05/10/22	F	Futher Issues Response	EA
15/09/22	E	IR Response	EA
01/09/22	D	Prelim IR Response	EA
20/07/22	C	Updated Facade	EA
14/07/22	B	Detention tanks added	EA
09/06/22	A	Lodgement Issue	EA

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Project
Apartment Development
57 Banana Street, Redland Bay, QLD 4165

Drawing Title
Level 4-6 Floor Plan

Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP205**	P

Level 7 Floor Plan
1:200

ChID	Change Name

NOTE:
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TOWN PLANNING DRAWINGS

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ADAPTABLE UNIT

DEEP PLANTING AREA

Date	Issue	Details	Checked
24/07/23	P	SW Pit Added	RH
15/05/23	N	Revised Town Planning	EA
07/02/23	M	Roof Terrace Reconfiguration	EA
01/02/23	L	Loft Removed	EA
22/12/22	K	Lvl 4-6 Kitchen Layout	EA
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10/12/22	I	TP Information Request	EA
30/11/22	H	Window Schedule	EA
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05/10/22	F	Futher Issues Response	EA
15/09/22	E	IR Response	EA
01/09/22	D	Prelim IR Response	EA
20/07/22	C	Updated Facade	EA
14/07/22	B	Detention tanks added	EA
09/06/22	A	Lodgement Issue	EA

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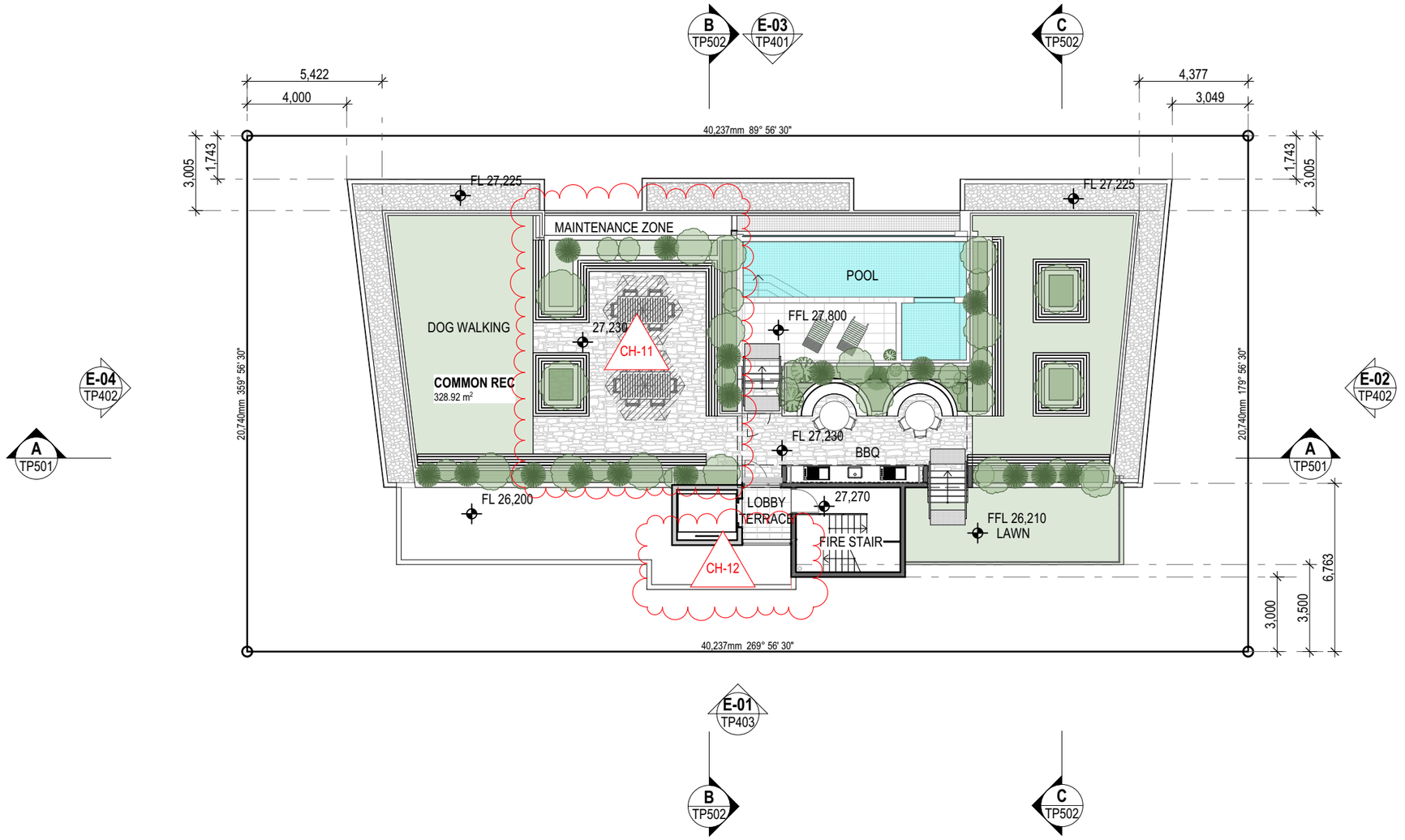
Project
Apartment Development
57 Banana Street, Redland Bay, QLD 4165

Drawing Title
Level 7 Floor Plan

Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP206**	P



Roof Terrace Floor Plan
1:200

ChID	Change Name
CH-11	Roof Communal Area reconfigured
CH-12	Screen Removed

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TOWN PLANNING DRAWINGS

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DEEP PLANTING AREA

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Project
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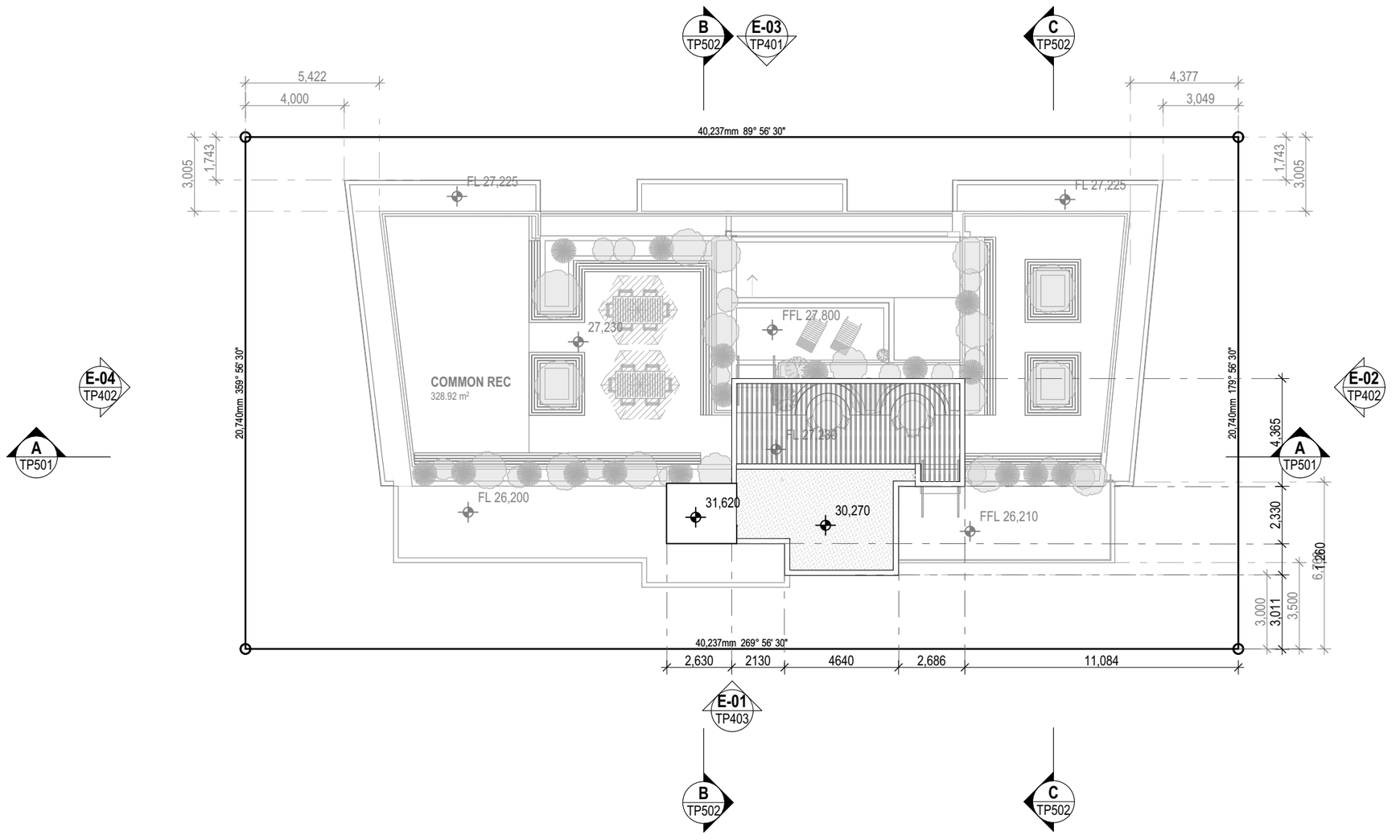
Drawing Title
Roof Terrace Plan

Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP207**	P



Roof Plan
1:200

ChID	Change Name

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TOWN PLANNING DRAWINGS

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ADAPTABLE UNIT

DEEP PLANTING AREA

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09/06/22	A	Lodgement Issue	EA

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Project
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Drawing Title
Roof Plan

Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP208**	P

North Elevation
1:200

ChID	Change Name
CH-11	Roof Communal Area reconfigured
CH-14	Adjusted Levels to suite Structural Coordination

MATERIALS & COLOURS

- P-01. Painted Render Dulux 'Lexicon' or Similar
- P-02. Painted Render Dulux 'Raku or Similar
- P-02. Painted Render Dulux 'Domino' or Similar
- P-04. Painted Render Dulux 'Electro Dark Bronze' or Similar
- P-05. (OFC) Grey Paint

FENESTRATION / BALUSTRADES

- Window Glass Dark Bronze Aluminium powder coated frame
- Sliding Doors Aluminium Powder Coated - Dark Bronze
- Balustrade Glass Tinted Glass on Spigots
- Solid Balustrade

ARCHITECTURAL ELEMENTS

- AS-01. Medium Bronze Vertical screen - flat profile
- AS-02. Medium Bronze Vertical screen - round profile
- AS-03 Medium Bronze - Privacy window screen- Angled Flat profile or similar
- GS-01. 100 % Obscure Window Glass or Similar
- VG-01. Vertical Garden - Wire Trellis System or similar
- AW-01. Sun Shade Louvres Powder Coated to Match window frames

ROOF

- Soffits Timber look horizontal cladding or Similar
- Fascia To Match Colobond 'Night Sky' or Similar

FEATURE ARCHITECTURAL ELEMENTS

- FB-01. Face brick - Stretcher bond or Similar
- FB-02. Feature Face Brick - Angled Bond or Similar
- MS Mosaic Tiles Everglade Eco outdoor or Similar

TOWN PLANNING DRAWINGS

General Notes

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ADAPTABLE UNIT

DEEP PLANTING AREA

Date	Issue	Details	Checked
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15/05/23	N	Revised Town Planning	EA
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01/09/22	D	Prelim IR Response	EA
20/07/22	C	Updated Facade	EA
14/07/22	B	Detention tanks added	EA
09/06/22	A	Lodgement Issue	EA

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Apartment Development
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Drawing Title
North Elevation

Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP401**	P

E-02 East Elevation
1:200

E-04 West Elevation
1:200

ChID	Change Name
CH-02	PMT area removed, added space for deep planting
CH-13	Material Changes
CH-14	Adjusted Levels to suite Structural Coordination

MATERIALS & COLOURS

- P-01. Painted Render Dulux 'Lexicon' or Similar
- P-02. Painted Render Dulux 'Raku or Similar
- P-02. Painted Render Dulux 'Domino' or Similar
- P-04. Painted Render Dulux 'Electro Dark Bronze' or Similar
- P-05. (OFC) Grey Paint

FENESTRATION / BALUSTRADES

- Window Glass Dark Bronze Aluminium powder coated frame
- Sliding Doors Aluminium Powder Coated - Dark Bronze
- Balustrade Glass Tinted Glass on Spigots
- Solid Balustrade

ARCHITECTURAL ELEMENTS

- AS-01. Medium Bronze Vertical screen - flat profile
- AS-02. Medium Bronze Vertical screen - round profile
- AS-03 Medium Bronze - Privacy window screen- Angled Flat profile or similar
- GS-01. 100 % Obscure Window Glass or Similar
- VG-01. Vertical Garden - Wire Trellis System or similar
- AW-01. Sun Shade Louvres Powder Coated to Match window frames

ROOF

- Soffits Timber look horizontal cladding or Similar
- Fascia To Match Colobond 'Night Sky' or Similar

FEATURE ARCHITECTURAL ELEMENTS

- FB-01. Face brick - Stretcher bond or Similar
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TOWN PLANNING DRAWINGS

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ADAPTABLE UNIT

DEEP PLANTING AREA

Date	Issue	Details	Checked
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30/11/22	H	Window Schedule	EA
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05/10/22	F	Futher Issues Response	EA
15/09/22	E	IR Response	EA
01/09/22	D	Prelim IR Response	EA
20/07/22	C	Updated Facade	EA
14/07/22	B	Detention tanks added	EA
09/06/22	A	Lodgement Issue	EA

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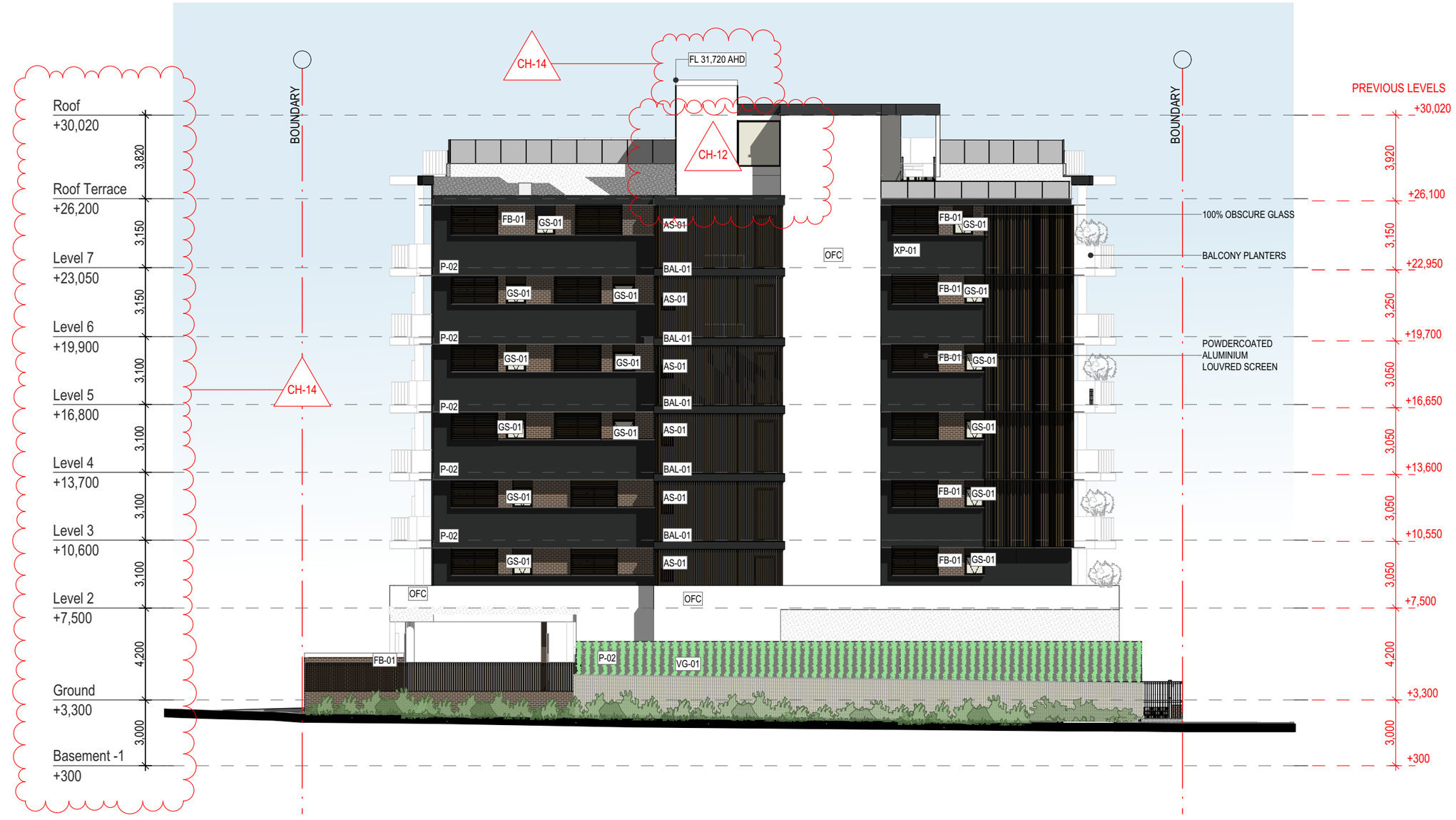
Drawing Title
East & West Elevation

Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP402**	P



E-01 **South Elevation**
1:200

ChID	Change Name
CH-12	Screen Removed
CH-14	Adjusted Levels to suite Structural Coordination

LEGEND

AS-#	ALLUMINIUM PRIVACY SCREEN
AW	ALLUMINIUM AWNING
BAL-#	TINTED GLASS BALUSTRADE
FS-#	FEATURE STONE
P-#	RENDERED PAINT
OFC	OFF FORM CONCRETE - VJ PROFILE

MATERIALS & COLOURS

- P-01. Painted Render Dulux 'Lexicon' or Similar
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- P-02. Painted Render Dulux 'Domino' or Similar
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FENESTRATION / BALUSTRADES

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ADAPTABLE UNIT

DEEP PLANTING AREA

Date	Issue	Details	Checked
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20/07/22	C	Updated Facade	EA
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09/06/22	A	Lodgement Issue	EA

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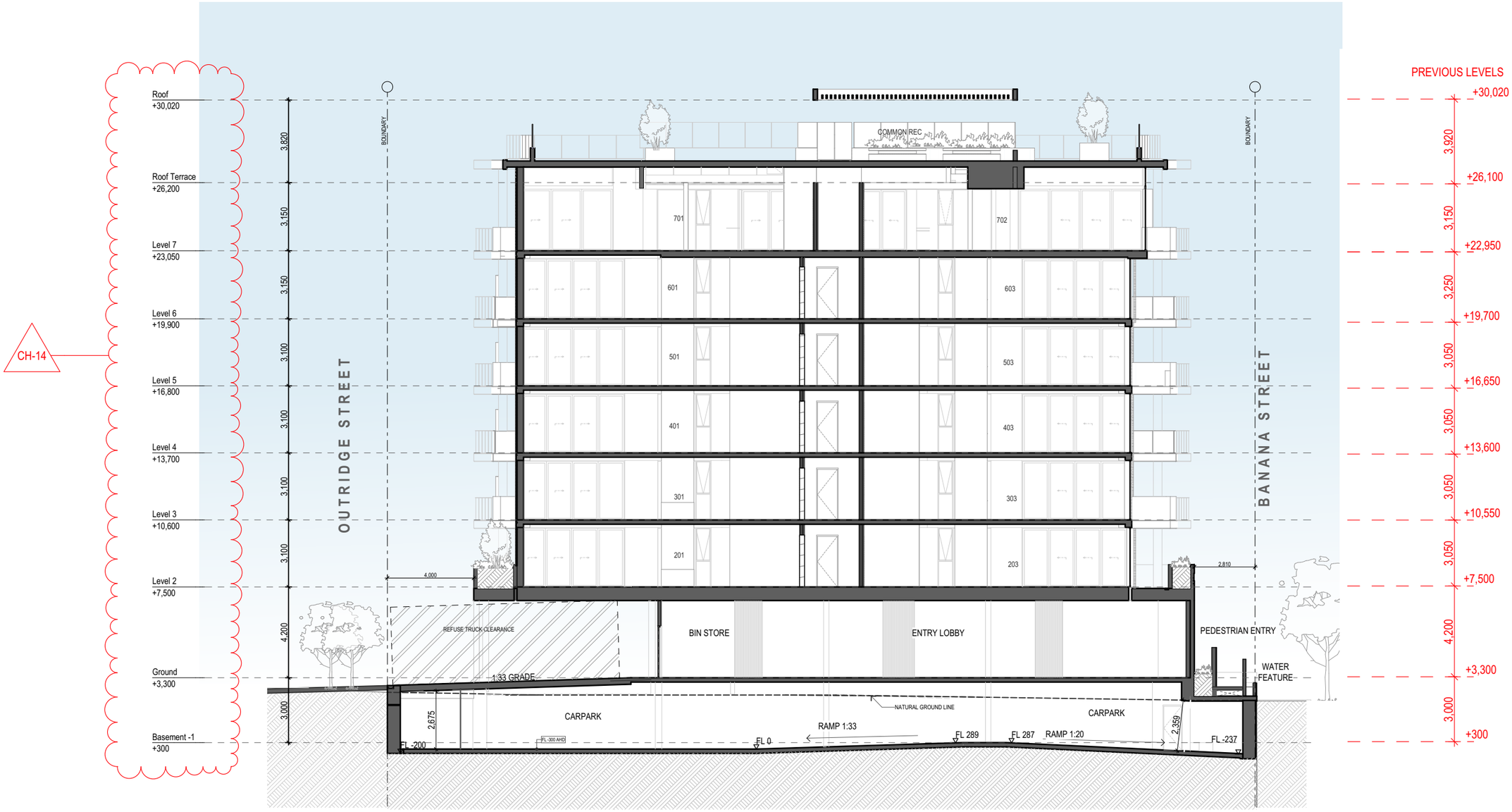
Drawing Title
South Elevation

Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP403**	P



Section A
1:200

ChID	Change Name
CH-14	Adjusted Levels to suite Structural Coordination

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TOWN PLANNING DRAWINGS

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Project
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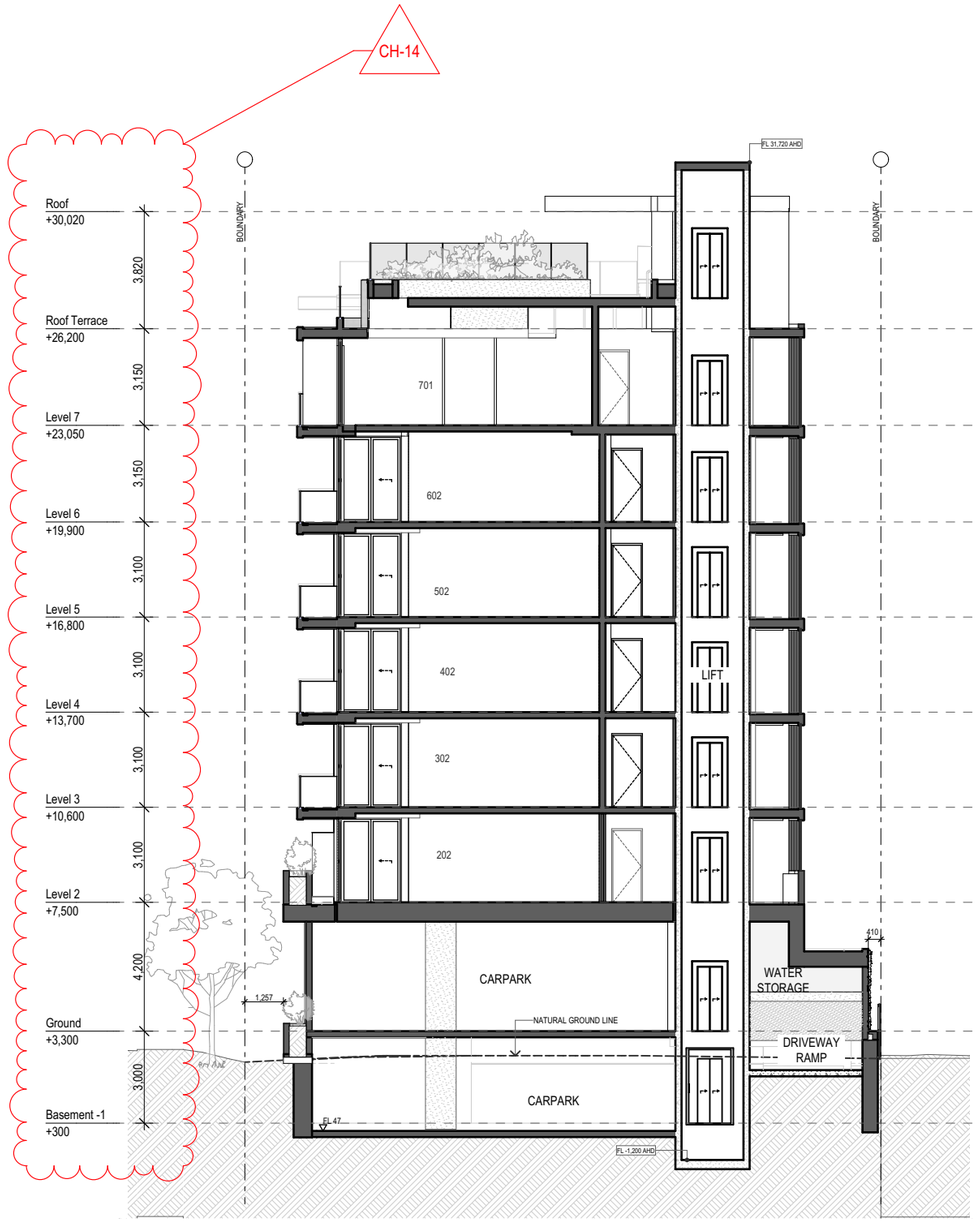
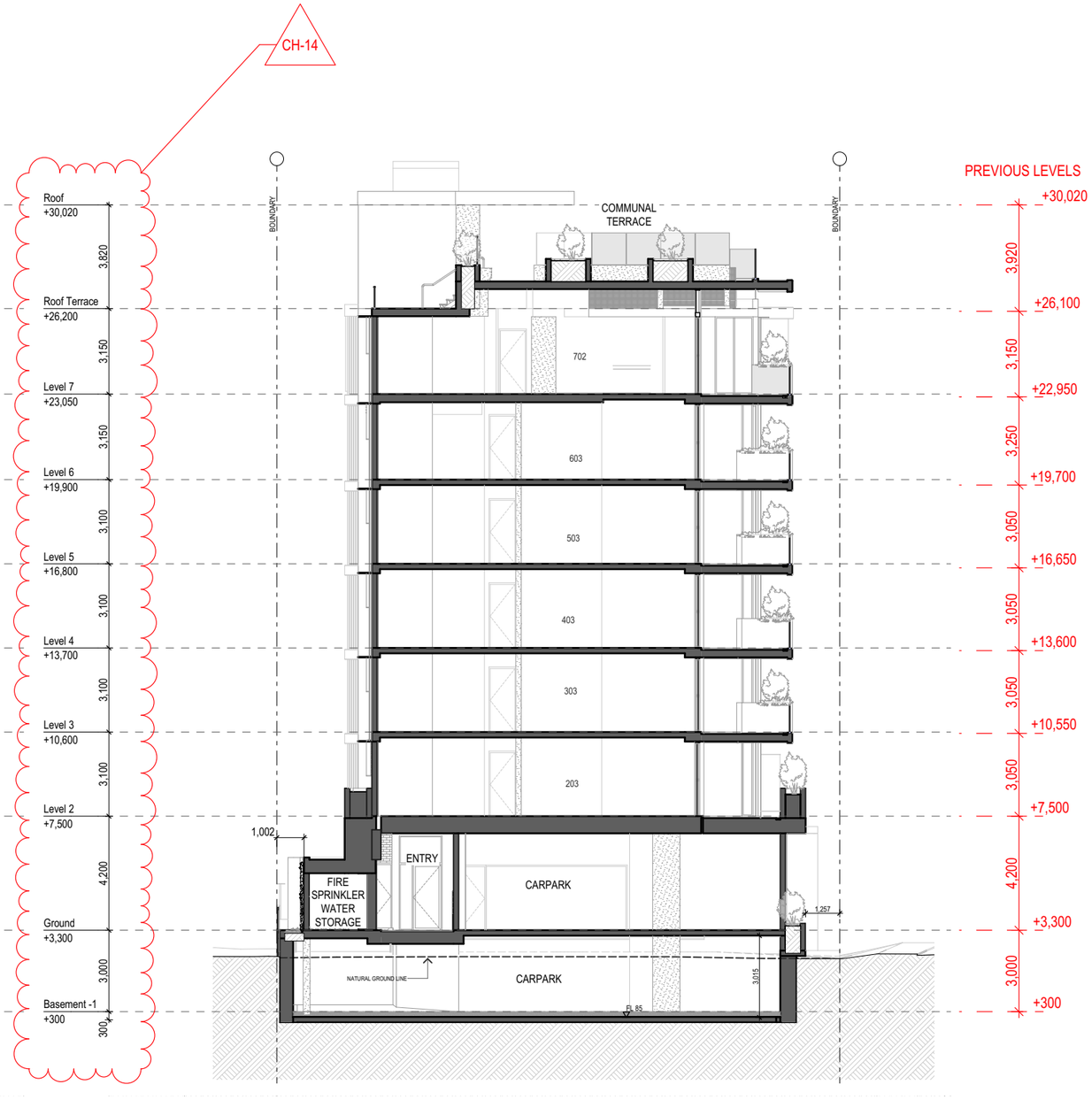
Drawing Title
Sections

Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP501**	P



Section B
1:200



Section C
1:200

ChID	Change Name
CH-14	Adjusted Levels to suite Structural Coordination

NOTE:
Boundary, contours, levels, and site services information is shown indicatively only, based on eBimap. It is subject to confirmation by a licensed Surveyor in the form of an Identification Survey

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TOWN PLANNING DRAWINGS

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ADAPTABLE UNIT

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Project
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Drawing Title
Sections

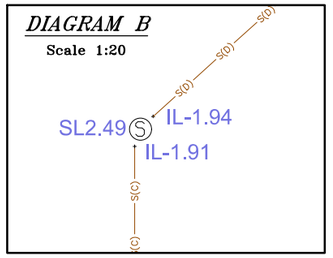
Scale @ A3	Drawn:	Checked:
1:200	RH	RH
Project Number	**Drawing Number**	**Issue**
H4474BAN	**TP502**	P

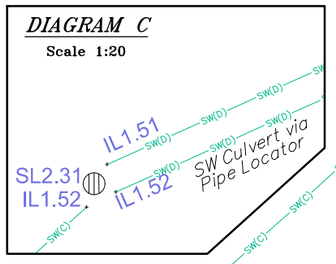
Appendix B
Detailed Surveys

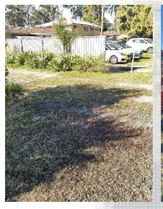
LEGEND

- BOUNDARY CORNER
- SURVEY MARK
- TREE
- DEAD TREE
- SHRUB OR SMALL BUSH
- TRAFFIC SIGNALS PIT
- TRAFFIC LIGHTS
- TELECOMMS PIT
- UNKNOWN MANHOLE
- SEWER MANHOLE
- SEPTIC TANK
- FIELD INLET
- INSPECTION OPENING
- ELECTRICITY MANHOLE
- ELECTRICITY BOX
- ELECTRICITY PIT
- ELECTRICITY POLE
- ELECTRICITY STAY POST
- TELECOM POLE
- LIGHT POLE
- STORMWATER MANHOLE
- GULLY TRAP
- SW CULVERT
- WATER METER
- FIRE HYDRANT
- SLUICE VALVE
- VALVE
- WATER TAP
- RAIN WATER OUTLET
- STREET SIGN
- GAS METER
- DISABLED ZONE
- BOLLARD
- POST/COLUMN
- HILLS HOIST
- CROWN OF ROAD
- CHANGE OF GRADE
- TOP OF BANKS
- TOE OF BANKS
- EAVE/GUTTER/RIDGE
- BUILDING
- GARDEN/VEGETATION
- FENCE/GATE
- D — DRAIN
- US — UNKNOWN SERVICE
- W — OVERHEAD ELECTRICITY
- T(OH) — OVERHEAD TELECOMMS
- T — TELECOMMS
- UG — UNDERGROUND ELECTRICITY
- S — SEWERAGE
- W — WATER
- SW — STORMWATER
- G — GAS
- 43,00 — MAJOR CONTOUR INTERVAL
- 42,25 — MINOR CONTOUR INTERVAL
- *(A) — SERVICE QUALITY LEVEL A
- *(B) — SERVICE QUALITY LEVEL B
- *(C) — SERVICE QUALITY LEVEL C
- *(D) — SERVICE QUALITY LEVEL D

TOP - Top of Pipe







Note:
Underlying image derived from Nearmap and may not reflect current site conditions.

Note:
The position & depth of underground service lines shown over part of the site have been determined by 1300 Locate. The ground surface level spray marks of the service lines have been surveyed and presented on this plan. Client is advised to check with the service locator for any associated reports and council/service provider asset records

Note:
Relatively low ground levels exist on site. Site may be subject to flooding. Client should check for minimum floor level requirements with Council.

Note:
An Identification survey is recommended to accurately determine site boundaries prior to any detailed design or construction.

Note:
The ground levels shown hereon are surface levels at time of survey and are not necessarily natural ground levels.

Quality Level C – Surveyed invert level is assumed as alignment without any confirmation of service alignment between access points.

Quality Level D – Service lines are drafted via existing records, and are unable to be confirmed by survey data. Intended to indicate presence of service only.

Notes

This plan is prepared for the purpose of designing new construction on the land and should not be used for any other purpose.
Underground services shown hereon have been located by field survey where possible. Prior to any Demolition, Construction or Excavation on the site, the relevant Authority should be contacted for the possible location of further underground services.
The Real Property Boundaries have not been defined by this survey and have been compiled from RP80201 & IS257549. Exact Bearings, Dimensions and Areas are subject to a Cadastral Survey. Check Title for any Easements.

.....
Cadastral Surveyor Date. 23/06/2023

Associated Consultants

1300 LOCATE ™
1300 562 283
Pipe & Cable Locators
Asset Protection

Client

BELLA BAIA TRUST

Revision Table

Rev:	Date:	Description
A	26/04/22	Original issue of plan.
B	23/06/22	Additional Service Location Added.

Project
Plan of Contour Detail Survey
Over Lot 8 on RP80201
57 Banana Street

REDLAND BAY
Redland City Council

LEVEL DATUM	AHD	Co–ordinate System:	
ORIGIN PSM no. 113437 RL 1·986m		Assumed	
		SCALE	1:150 @ A1
Date	20/04/22		
Surveyed	ETG	Magnet Drawing Ref (.mjo):	
Drawn	ETG	9744–300 ETG 20–04–2022	
Checked	RRI/MS	Reduced	ETG

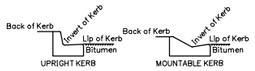
Statewide survey group
ABN 77 088 374 869
CONSULTING SURVEYORS AND TOWN PLANNERS
3/123 Link Road Victoria Point, QLD 4165
Email: info@statewidesurvey.com.au
Phone: 1300 362 094

SSG REF NO. 9744–23 | REVISION B | SHEET 2 OF 3

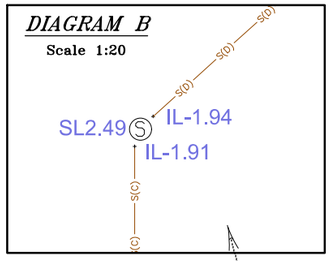
PLAN NO. 9744–300

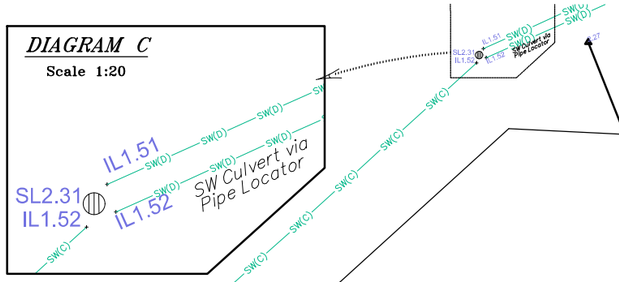
LEGEND

- BOUNDARY CORNER
- SURVEY MARK
- TREE
- DEAD TREE
- SHRUB OR SMALL BUSH
- TRAFFIC SIGNALS PIT
- TRAFFIC LIGHTS
- TELECOMMS PIT
- UNKNOWN MANHOLE
- SEWER MANHOLE
- SEPTIC TANK
- FIELD INLET
- INSPECTION OPENING
- ELECTRICITY MANHOLE
- ELECTRICITY BOX
- ELECTRICITY PIT
- ELECTRICITY POLE
- ELECTRICITY STAY POST
- TELECOM POLE
- LIGHT POLE
- STORMWATER MANHOLE
- GULLY TRAP
- SW CULVERT
- WATER METER
- FIRE HYDRANT
- SLUICE VALVE
- VALVE
- WATER TAP
- RAIN WATER OUTLET
- STREET SIGN
- GAS METER
- DISABLED ZONE
- BOLLARD
- POST/COLUMN
- HILLS HOIST
- CROWN OF ROAD
- CHANGE OF GRADE
- TOP OF BANKS
- TOE OF BANKS
- EAVE/GUTTER/RIDGE
- BUILDING
- GARDEN/VEGETATION
- FENCE/GATE
- D — DRAIN
- US — UNKNOWN SERVICE
- W — OVERHEAD ELECTRICITY
- T(OH) — OVERHEAD TELECOMMS
- T — TELECOMMS
- UG — UNDERGROUND ELECTRICITY
- S — SEWERAGE
- W — WATER
- SW — STORMWATER
- G — GAS
- 43,00 — MAJOR CONTOUR INTERVAL
- 42,25 — MINOR CONTOUR INTERVAL
- *(A) — SERVICE QUALITY LEVEL A
- *(B) — SERVICE QUALITY LEVEL B
- *(C) — SERVICE QUALITY LEVEL C
- *(D) — SERVICE QUALITY LEVEL D



TOP - Top of Pipe





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Cadastral Surveyor Date. 23/06/2023

Associated Consultants

1300 LOCATE
1300 562 283
Pipe & Cable Locators
Asset Protection

Client

BELLA BAIA TRUST

Revision Table

Rev:	Date:	Description
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B	23/06/22	Additional Service Location Added.

Project

Plan of Contour Detail Survey
Over Lot 8 on RP80201
57 Banana Street

REDLAND BAY
Redland City Council

LEVEL DATUM	AHD	Co-ordinate System:	
ORIGIN PSM no. 113437 RL 1·986m		Assumed	
		SCALE	1:150 @ A1
Date	20/04/22		
Surveyed	ETG	Magnet Drawing Ref (.mjo):	
Drawn	ETG	9744-300 ETG 20-04-2022	
Checked	RRI/MS	Reduced	ETG

Statewide survey group
ABN 77 088 374 869
CONSULTING SURVEYORS AND TOWN PLANNERS
3/123 Link Road Victoria Point, QLD 4165
Email: info@statewidesurvey.com.au
Phone: 1300 362 094

SSG REF NO. 9744-23 | REVISION B | SHEET 3 OF 3

PLAN NO. 9744-300

Appendix C
EDQ Approved Design Drawings

PLOT DATE :- 6 October 2022 10:22 AM

WEINAM CREEK PRIORITY DEVELOPMENT AREA - STAGE 3A

WEINAM CREEK, REDLAND BAY.

FOR REDLAND INVESTMENT CORPORATION.

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL

Approval no: DEV2022/1279

Date: 05/12/2022

Queensland Government

DRAWING INDEX

STANDARD DRAWINGS - REDLAND CITY COUNCIL

R-RCC-1	DOMESTIC DRIVEWAY CROSSOVER
R-RCC-2	COMMERCIAL/INDUSTRIAL/MULTIPLE DWELLING/APARTMENT BUILDING DRIVEWAY CROSSOVER (TYPE A)
R-RCC-3	COMMERCIAL/INDUSTRIAL DRIVEWAY CROSSOVER (TYPE B)
R-RCC-4	CONCRETE FOOTPATH AND SHARED USE PATHS
R-RCC-5	FOOTPATH PROFILE
R-RCC-6	PUBLIC UTILITIES IN ROAD RESERVE - CORRIDORS AND ALIGNMENTS
R-RCC-7	PUBLIC UTILITIES IN ROAD RESERVE - CONDUIT SECTIONS

STANDARD DRAWINGS - W.S.A.A.

WAT-1201	EMBEDMENT & TRENCHFILL TYPICAL ARRANGEMENT
WAT-1202	STANDARD EMBEDMENT ALL PIPE TYPES
WAT-1205	THRUST BLOCK DETAILS CONCRETE BLOCKS
WAT-1207	THRUST AND ANCHOR BLOCKS GATE VALVES AND VERTICAL BENDS
WAT-1300	VALVE AND HYDRANT IDENTIFICATION MARKERS & MARKER POSTS
WAT-1301	TYPICAL VALVE & HYDRANT INSTALLATION VALVE ARRANGEMENT
WAT-1302	TYPICAL VALVE & HYDRANT INSTALLATION HYDRANTS AND AIR RELIEF VALVES
WAT-1303	TYPICAL SURFACE FITTING INSTALLATION GATE VALVE SURFACE BOXES NON TRAFFICABLE
WAT-1305	TYPICAL SURFACE FITTING INSTALLATION HYDRANT SURFACE BOXES TRAFFICABLE AND NON-TRAFFICABLE
WAT-1313	FLANGED JOINTS BOLTING DETAILS

STANDARD DRAWINGS - IPWEAQ

DS-010	STORMWATER ACCESS CHAMBER DETAIL 1050 TO 2100 DIAMETER
DS-011	ACCESS CHAMBER ROOF SLABS DIA 1050 - 2100
DS-013	ACCESS CHAMBER ROOF SLAB - RECTANGULAR STANDARD REINFORCEMENT
DS-019	MANHOLE COVER (ROADWAY) 1050 TO 2100 DIAMETER
DS-030	BEDDING AND BACKFILLING - EXCAVATION, BEDDING AND BACKFILLING OF CONVERT-FIBRE REINFORCED DRAINAGE PIPES
DS-040	SEDIMENT CONTROL DEVICES SEDIMENT FENCE, ENTRY/EXIT SEDIMENT TRAP
DS-041	SEDIMENT CONTROL DEVICES KERB AND FIELD INLETS - CHECK DAMS & STRAW BALES
DS-050	DRAINAGE PITS FIELD INLET TYPE 1 AND TYPE 2
DS-063	DRAINAGE PITS KERB INLET-LIP IN LINE GENERAL ARRANGEMENT
RS-080	KERB AND CHANNEL - PROFILES AND DIMENSIONS
RS-090	KERB RAMPS - RAMPED PEDESTRIAN CROSSINGS
RS-094	KERB RAMPS - LOCATIONS AND CONFIGURATIONS
RS-130	ROAD FURNITURE - STREET NAME SIGN AND LOCATION (FINGERBOARD)
RS-131	ROAD FURNITURE - TRAFFIC SIGN INSTALLATION DETAILS
RS-140	SUBSOIL DRAINS - DETAILS AND LOCATION
RS-170	PAVEMENT EXTENSION - TRENCHING AND WIDENING

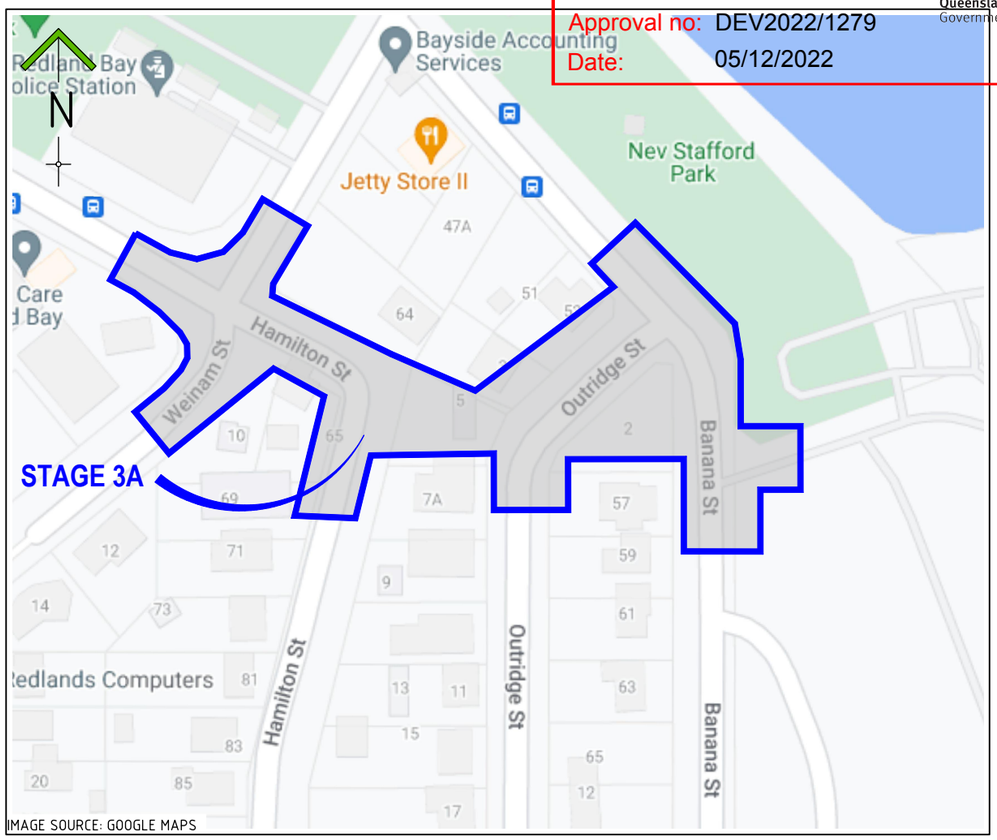


IMAGE SOURCE: GOOGLE MAPS

LOCALITY PLAN

SCALE: NTS

STANDARD DRAWINGS - TMR

SD-1304	PIPE CULVERTS - WINGWALLS, HEADWALLS AND APRON FOR PIPE DIAMETER 750 TO 2400 - DRAWING 1 OF 2 TO 2 OF 2
SD-1305	PIPE CULVERTS - HEADWALL AND APRON FOR PIPE DIAMETER 375 TO 675
SD-1308	ACCESS CHAMBER - ROOF SLABS 1050 TO 2100
SD-1356	ROAD EDGE AND GUIDE POSTS - TIMBER AND TUBULAR STEEL POST AND INSTALLATION DETAILS
SD-1359	CULVERTS - INSTALLATION, BEDDING AND FILLING/BACKFILLING AGAINST/OVER CULVERTS

STANDARD DRAWINGS - TRANSLINK

DRG-5-0022	PTIM, BUS STOP INFRASTRUCTURE CHAPTER INTERMEDIATE STOP - SITE LAYOUT - WITH INDENTED BUS BAY
DRG-5-0025	PTIM, BUS STOP INFRASTRUCTURE CHAPTER INTERMEDIATE STOP - SITE LAYOUT - ACCESS EXAMPLES

THE ORIGINAL PLANS OF THIS PLAN SET WERE PRODUCED USING COLOUR FOR GREATER CLARITY AND OBJECT DEFINITION. WORKING WITH A BLACK AND WHITE COPY MAY CAUSE ERRORS. IF THESE DRAWINGS ARE NOT IN COLOUR THEN YOU ***DO NOT*** HAVE THE CORRECT PRESENTATION AND SHOULD SEEK ADVICE.

NOTWITHSTANDING THAT EXISTING SERVICES MAY OR MAY NOT BE SHOWN ON THESE DRAWINGS. NO RESPONSIBILITY IS TAKEN BY ESQ FOR THIS INFORMATION, WHICH HAS BEEN SUPPLIED BY OTHERS. EXISTING SERVICES ARE PROVIDED FOR INFORMATION ONLY. NO CONSTRUCTION WORK SHALL BE UNDERTAKEN UNTIL SERVICE LOCATIONS HAVE BEEN CONFIRMED ON SITE WITH THE RELEVANT AUTHORITY.

	REVISIONS	ISSUE DATE
5		
4		
3		
2		
1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE: NTS

DO NOT SCALE FROM PLAN

FOR APPROVAL

APPROVED:

RPEQ: 26951

APPROVED DATE: 06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: LOCALITY PLAN & DRAWING INDEX — A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 1 of 72 DRAWINGS

Job No. FC-22-014-3A

DWG No. C-1001

0 1 2 3 4 5

PLOT DATE :- 6 October 2022 10:22 AM

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2022/1279

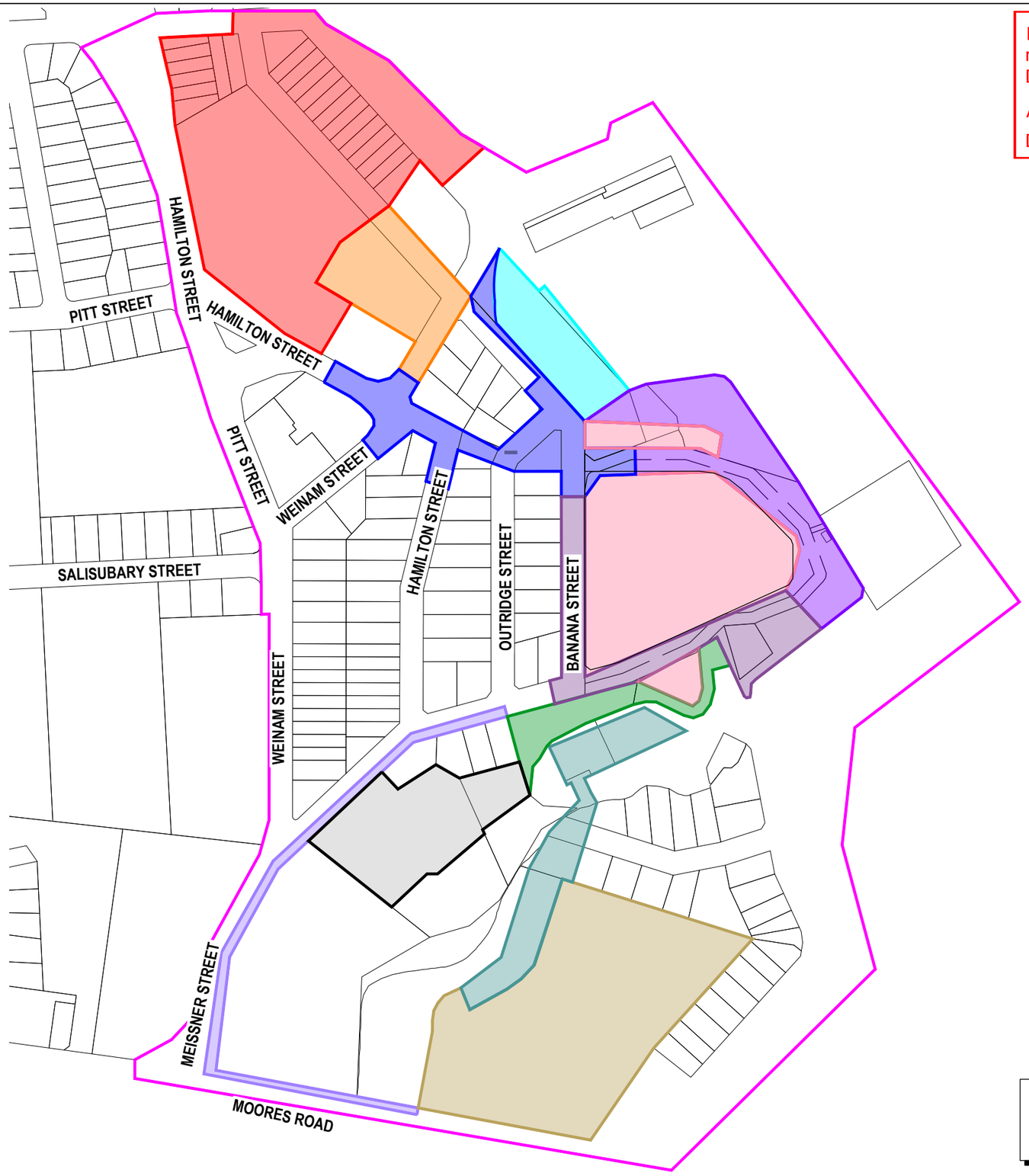
Date: 05/12/2022

Queensland Government

N

LEGEND

- STAGE 1
- STAGE 2
- STAGE 3A (CURRENT STAGE)
- STAGE 3B PART A
- STAGE 3B PART B
- STAGE 3C
- STAGE 3D
- STAGE 3E
- STAGE 3F
- STAGE 4
- STAGE 5
- STAGE 6
- PROJECT BOUNDARY
- PROPOSED LOT BOUNDARY
- PROPOSED EASEMENT
- EXISTING LOT BOUNDARY



NOTES:

1. ALL BOUNDARIES SHOWN ON THIS PLAN ARE SUBJECT TO FINAL SURVEY
2. CONTOURS SHOWN DEPICT EXISTING SURFACE AND ARE AT 0.25m INTERVALS.

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	REVISIONS	ISSUE DATE
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1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:

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SCALE 1:4000 (m)

DO NOT SCALE FROM PLAN

FOR APPROVAL

APPROVED:

RPEQ: 26951

APPROVED DATE: 06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **KEY PLAN** — A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 2 of 72 DRAWINGS

Job No. FC-22-014-3A

DWG No. C-1002

0 1 2 3 4 5

PLOT DATE :- 6 October 2022 10:22 AM

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2022/1279

Date: 05/12/2022

Queensland Government

N

902
SP223465

1
RP855150

WEINAM STREET NORTH

BANANA STREET NORTH

1
RP80201

REDLAND BAY

167
SP279927

2
RP80201

4
RP80201

5
RP80201

HAMILTON STREET

11
SP117640

3
RP80201

6
RP80201

FUTURE APARTMENTS

1
SP169111

2
RP99388

7
RP80201

MARINA CIRCUIT

WEINAM STREET SOUTH

119
RP30543

120
RP30543

27
RP80201

2
SP115173

8
RP80201

197
SP123870

26
RP80201

8
RP107394

9
RP80201

7
RP107394

9
RP107394

25
RP80201

HAMILTON STREET SOUTH

10
RP107394

24
RP80201

OUTRIDGE STREET

10
RP80201

BANANA STREET SOUTH

FUTURE SUPERMARKET & MULTI STORY PARKING

11
RP107394

23
RP80201

11
RP80201

LEGEND

- 1:500 LAYOUT
- 1:250 LAYOUT
- EXISTING LOT BOUNDARY

	REVISIONS	ISSUE DATE
5		
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2		
1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:

0 10 20 30
SCALE 1:1000 (m)

DO NOT SCALE FROM PLAN

FOR APPROVAL

APPROVED:

RPEQ: 26951

APPROVED DATE: 06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **ESTATE PLAN** — A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 3 of 72 DRAWINGS

Job No. FC-22-014-3A

DWG No. C-1003

0 1 2 3 4 5

PLOT DATE :- 6 October 2022 10:22 AM

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL

Approval no: DEV2022/1279

Date: 05/12/2022

Queensland Government

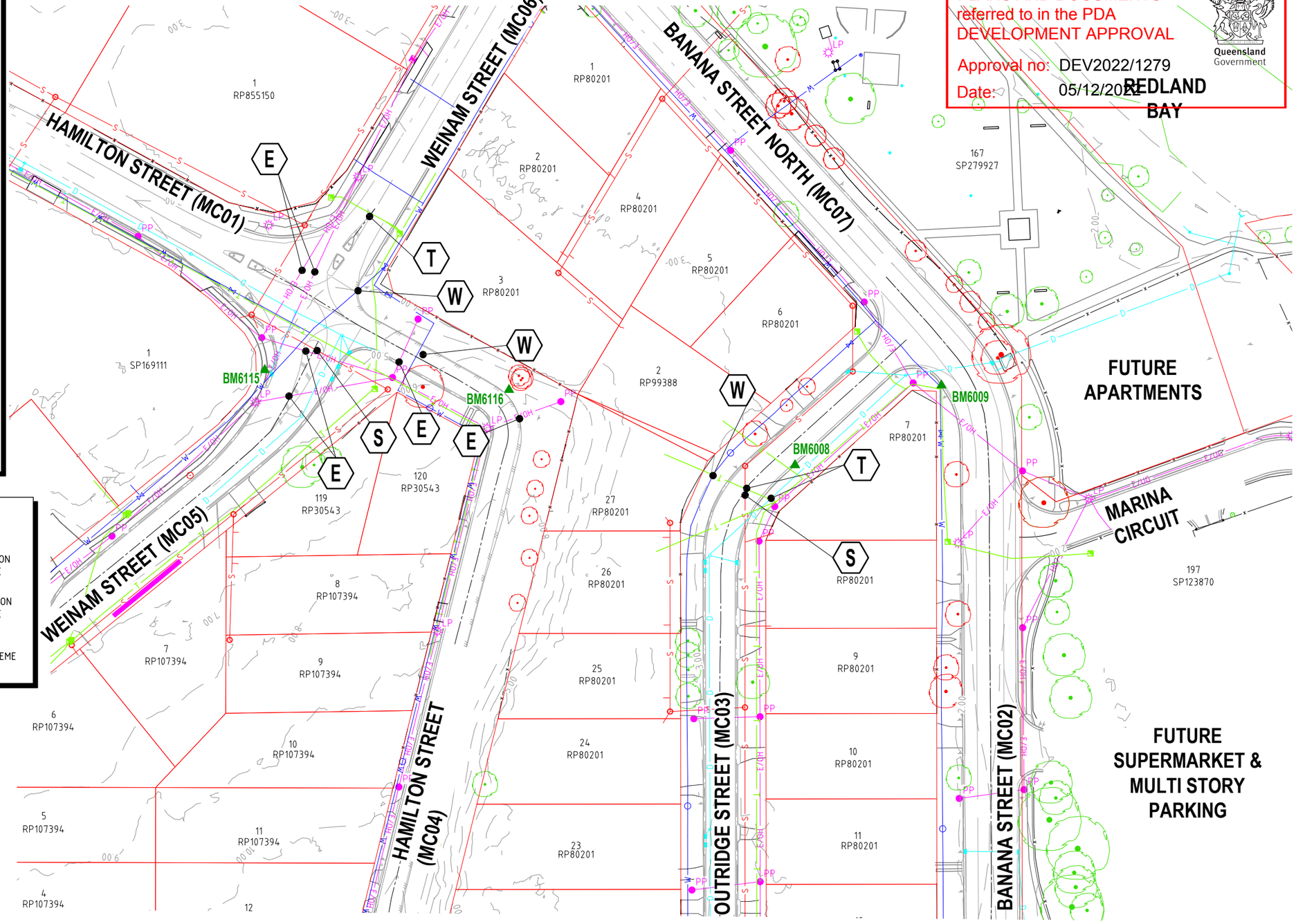
LEGEND

- EXISTING POWERPOLE
- EXISTING LIGHTPOLE
- EXISTING ELECTRICAL STRUCTURE
- EXISTING OVER HEAD ELECTRICITY LINE
- EXISTING 150ø GRAVITY SEWER MAIN
- EXISTING WATER CONDUIT
- EXISTING 100ø WATERMAIN
- EXISTING FIRE HYDRANT
- EXISTING STOP/SLUICE VALVE
- EXISTING DRAINAGE CHAMBER
- EXISTING DRAINAGE PIPE
- EXISTING TELSTRA LINE
- EXISTING TELSTRA OR NBN STRUCTURE
- EXISTING CONCRETE EDGE
- EXISTING GATES
- EXISTING FENCE
- EXISTING CONTOURS
- EXISTING LOT BOUNDARY
- EXISTING BOTTOM OF BATTER
- EXISTING TOP OF BATTER
- EXISTING KERB AND CHANNEL
- EXISTING ROAD CROWN
- EXISTING ROAD SIGNAGE
- EXISTING PAVEMENT SURFACING
- EXISTING CONCRETE
- EXISTING TREE TO RAMIAN
- EXISTING TREE TO REMOVE

- **T** DEPICTS EXISTING TELSTRA SERVICE. ACTUAL LOCATION TO BE CONFIRMED ON SITE. EXTREME CAUTION TO BE TAKEN DURING CONSTRUCTION.
- **S** DEPICTS EXISTING SEWER SERVICE. ACTUAL LOCATION TO BE CONFIRMED ON SITE. EXTREME CAUTION TO BE TAKEN DURING CONSTRUCTION.
- **W** DEPICTS EXISTING WATER SERVICE. ACTUAL LOCATION TO BE CONFIRMED ON SITE. EXTREME CAUTION TO BE TAKEN DURING CONSTRUCTION.
- **E** DEPICTS EXISTING OVERHEAD ELECTRICAL SERVICE. ACTUAL LOCATION TO BE CONFIRMED ON SITE. EXTREME CAUTION TO BE TAKEN DURING CONSTRUCTION.

NOTE:
CONTOURS SHOWN DEPICT EXISTING SURFACE AND ARE AT 1.0m INTERVALS.

DIAL BEFORE YOU DIG
PHONE 1100
www.1100.com.au
ARRANGE FOR LOCATIONS ON SITE BY THE APPROPRIATE AUTHORITIES BEFORE DIGGING. CALL 48 HOURS BEFORE YOU DIG.



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OVERHEAD ELECTRICAL NOTE:
EXISTING OVERHEAD ELECTRICITY WITHIN AREA OF WORKS. CARE TO BE TAKEN DURING CONSTRUCTION.

SURVEY STATION SETOUT TABLE

STN	EASTING	NORTHING	LEVEL
BM6008	30480.888	143954.685	2.453
BM6009	30515.403	143973.484	2.254
BM6115	30355.892	143977.118	4.499
BM6116	30413.471	143972.428	6.089

	REVISIONS	ISSUE DATE
5		
4		
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2		
1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:
0 10 20 30
SCALE 1:1000 (m)
DO NOT SCALE FROM PLAN

FOR APPROVAL
APPROVED:
RPEQ: 26951
APPROVED DATE: 06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **EXISTING SITE FEATURES** A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

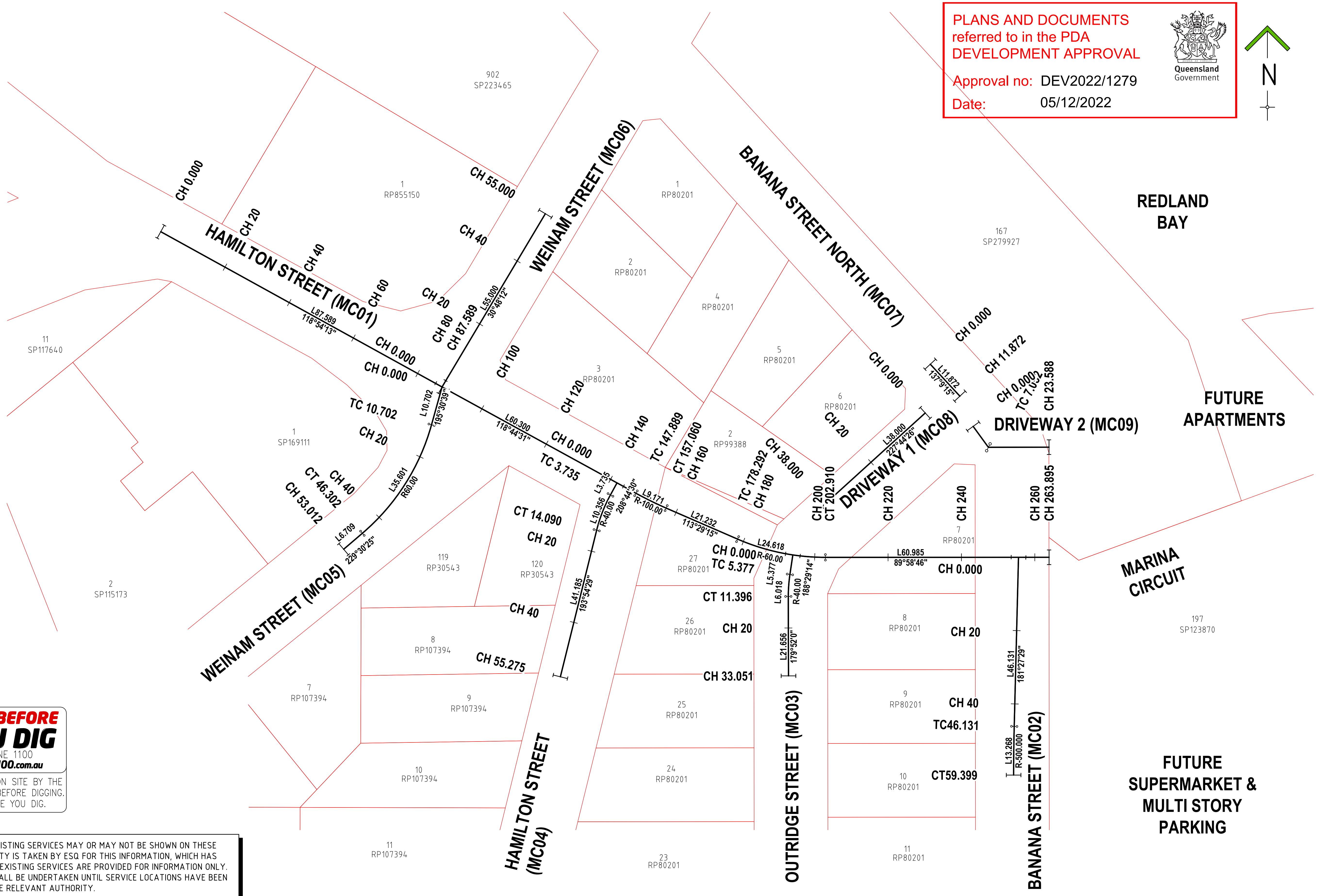
No. 4 of 72 DRAWINGS
Job No. FC-22-014-3A
DWG No. C-1004
0 1 2 3 4 5

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL

Queensland Government

Approval no: DEV2022/1279

Date: 05/12/2022



DIAL BEFORE YOU DIG
PHONE 1100
www.1100.com.au

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0	ISSUE FOR APPROVAL	8/8/2022

SCALE: 0 10 20 30 SCALE 1:1000 (m)

DO NOT SCALE FROM PLAN

FOR APPROVAL

APPROVED:

RPEQ: 26951

APPROVED DATE: 06/10/22

ESQ Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **CONTROL LINE SETOUT SHEET-1**

A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 5 of 72 DRAWINGS

Job No. FC-22-014-3A

DWG No. C-1005

0 1 2 3 4 5

PLOT DATE :- 6 October 2022 10:22 AM

GENERAL NOTES:

1. ALL BOUNDARIES SHOWN ON THIS PLAN ARE SUBJECT TO FINAL SURVEY.
2. FOR LINE MARKING AND SINAGE DETAILS REFER 200 SERIES DRAWINGS.
3. FOR DRAINAGE DETAILS REFER 300 SERIES DRAWINGS.
4. FOR SEWER DETAILS REFER 400 SERIES DRAWINGS.
5. FOR WATER DETAILS REFER 500 SERIES DRAWINGS.
6. CONSTRUCT KERB RAMPS IN ACCORDANCE WITH IPWEA STD DWG. RS-090
7. CONSTRUCT CONCRETE FOOTPATHS IN ACCORDANCE WITH REDLAND CITY COUNCIL STD DWG. R-RCC-4 & 5.
8. FOR DRIVEWAY AND FOOTPATH KERB RAMP REFER 500 SERIES DRAWINGS NO C-1008
9. REFER TO DWG C-0202 FOR DRAWING LEGEND.

NOTWITHSTANDING THAT EXISTING SERVICES MAY OR MAY NOT BE SHOWN ON THESE DRAWINGS. NO RESPONSIBILITY IS TAKEN BY ESQ FOR THIS INFORMATION, WHICH HAS BEEN SUPPLIED BY OTHERS. EXISTING SERVICES ARE PROVIDED FOR INFORMATION ONLY. NO CONSTRUCTION WORK SHALL BE UNDERTAKEN UNTIL SERVICE LOCATIONS HAVE BEEN CONFIRMED ON SITE WITH THE RELEVANT AUTHORITY.

RETAINING WALL NOTE:

SUPPLY AND INSTALLATION OF ALL RETAINING WALLS TO BE ADBRI CONCRETE SLEEPER RETAINING WALL SYSTEM OR APPROVED EQUIVALENT.

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL

Approval no: DEV2022/1279

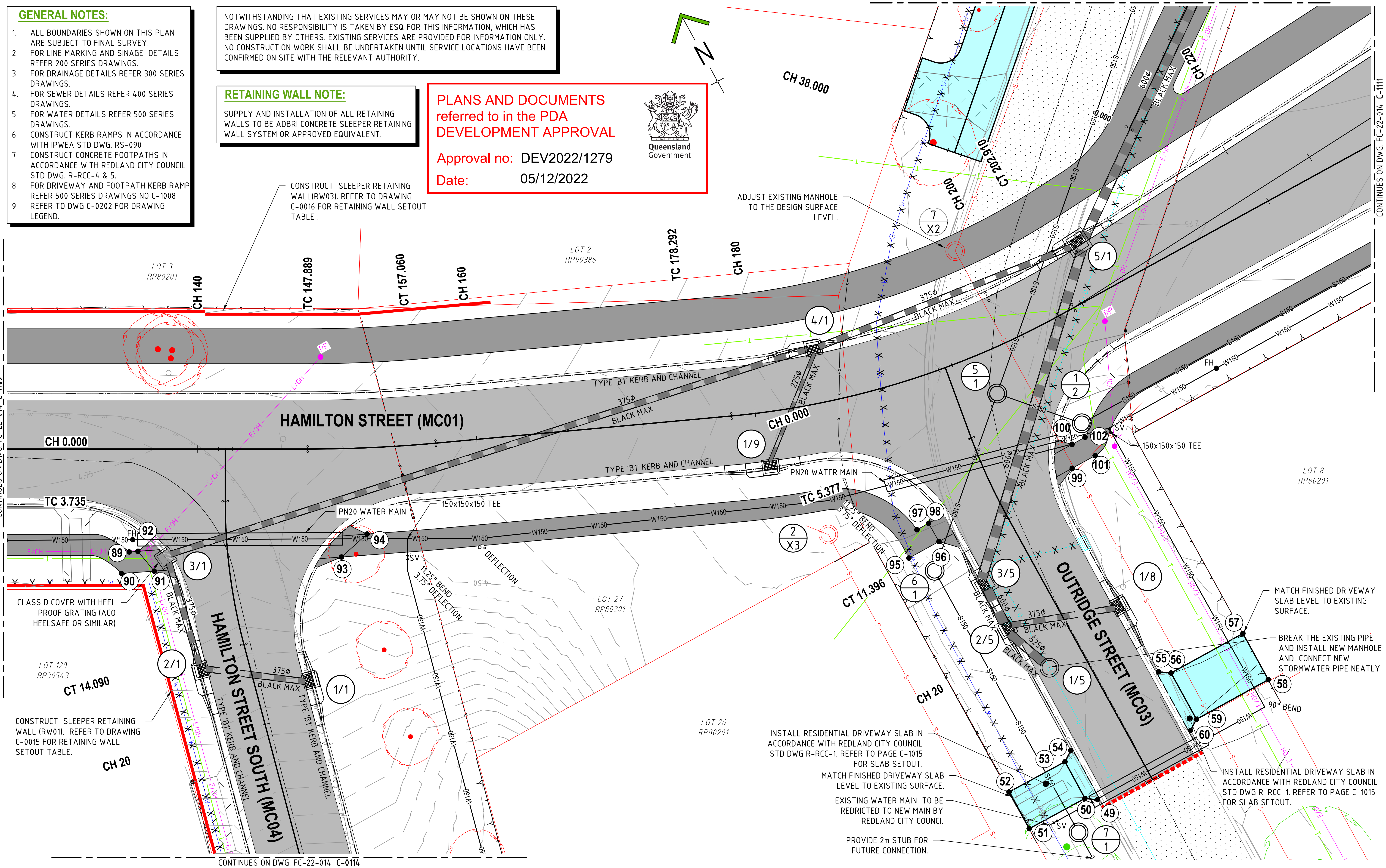
Date: 05/12/2022

Queensland Government

CONTINUES ON DWG. FC-22-014 C-1115

CONTINUES ON DWG. FC-22-014 C-1111

CONTINUES ON DWG. FC-22-014 C-1109



CONTINUES ON DWG. FC-22-014 C-0114

REVISIONS		ISSUE DATE
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1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

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DO NOT SCALE FROM PLAN

FOR APPROVAL

APPROVED:

RPEQ: 26951

APPROVED DATE: 06/10/22

ESQ Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **DESIGN DETAIL - SHEET 3** A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 39 of 72 DRAWINGS

Job No. FC-22-014-3A

DWG No. C-1110

0 1 2 3 4 5

PLOT DATE :- 6 October 2022 10:22 AM

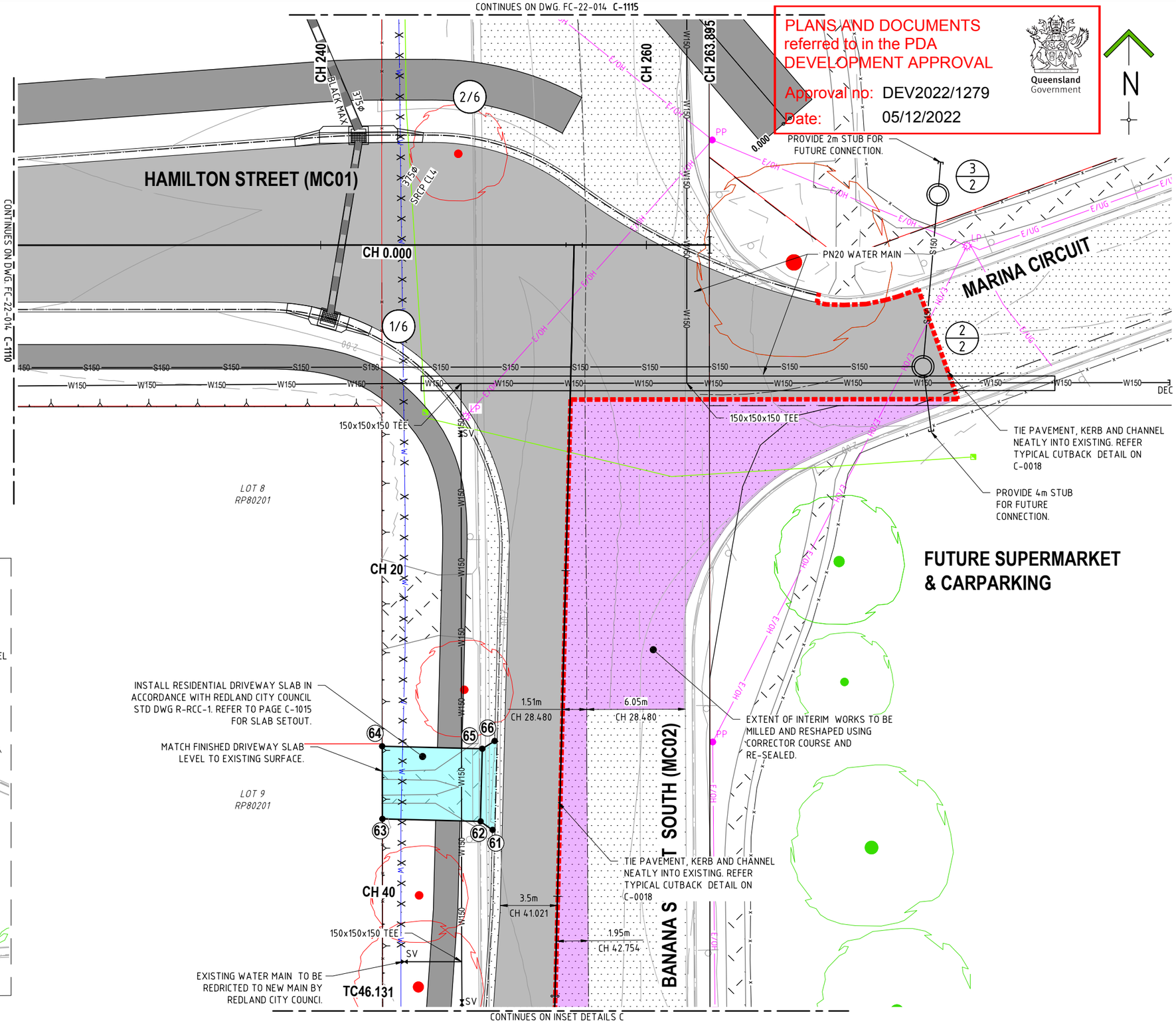
NOTWITHSTANDING THAT EXISTING SERVICES MAY OR MAY NOT BE SHOWN ON THESE DRAWINGS. NO RESPONSIBILITY IS TAKEN BY ESQ FOR THIS INFORMATION, WHICH HAS BEEN SUPPLIED BY OTHERS. EXISTING SERVICES ARE PROVIDED FOR INFORMATION ONLY. NO CONSTRUCTION WORK SHALL BE UNDERTAKEN UNTIL SERVICE LOCATIONS HAVE BEEN CONFIRMED ON SITE WITH THE RELEVANT AUTHORITY.

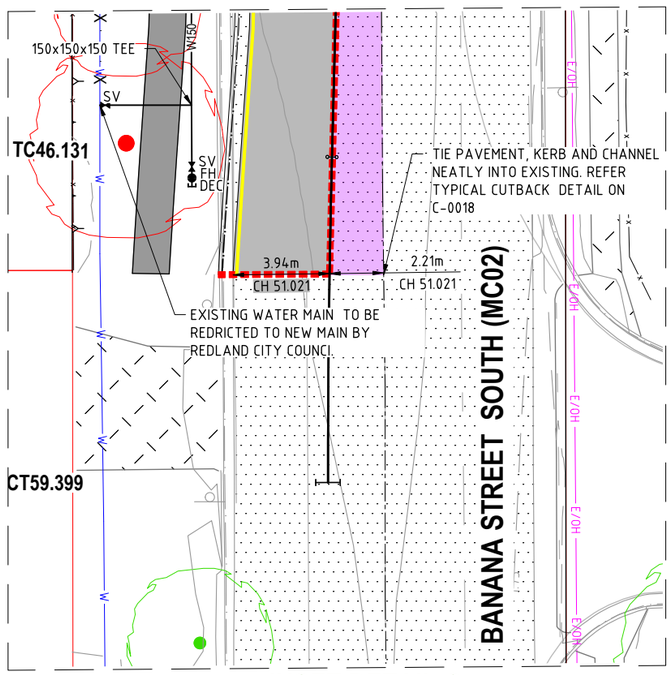
GENERAL NOTES:

1. ALL BOUNDARIES SHOWN ON THIS PLAN ARE SUBJECT TO FINAL SURVEY.
2. FOR LINE MARKING AND SINAGE DETAILS REFER 200 SERIES DRAWINGS.
3. FOR DRAINAGE DETAILS REFER 300 SERIES DRAWINGS.
4. FOR SEWER DETAILS REFER 400 SERIES DRAWINGS.
5. FOR WATER DETAILS REFER 500 SERIES DRAWINGS.
6. CONSTRUCT KERB RAMPS IN ACCORDANCE WITH IPWEA STD DWG. RS-090
7. CONSTRUCT CONCRETE FOOTPATHS IN ACCORDANCE WITH REDLAND CITY COUNCIL STD DWG. R-RCC-4 & 5.
8. FOR DRIVEWAY AND FOOTPATH KERB RAMP REFER 500 SERIES DRAWINGS NO C-1008
9. REFER TO DWG C-0202 FOR DRAWING LEGEND.

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL
Approval no: DEV2022/1279
Date: 05/12/2022

Queensland Government





INSET DETAIL C

	REVISIONS	ISSUE DATE
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1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:
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SCALE 1:250 (m)
DO NOT SCALE FROM PLAN

FOR APPROVAL
APPROVED:
RPEQ: 26951
APPROVED DATE: 06/10/22

ESQ Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **DESIGN DETAIL - SHEET 4** A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 40 of 72 DRAWINGS
Job No. FC-22-014-3A
DWG No. C-1111
0 1 2 3 4 5

PLOT DATE :- 6 October 2022 10:22 AM

LINEMARKING SETOUT TABLE

POINT ID	EASTING	NORTHING
33	30449.447	143951.834
34	30454.340	143949.957
35	30459.378	143948.514
36	30453.322	143946.607
37	30464.031	143944.051
38	30463.458	143940.147
39	30463.273	143936.205
40	30463.288	143929.600
41	30474.609	143946.863
42	30507.159	143946.875
43	30511.717	143949.350
44	30515.793	143944.682
45	30519.567	143946.543
46	30522.561	143938.763
47	30522.400	143938.708
48	30533.924	143927.337
49	30533.890	143937.704
50	30538.106	143937.836
51	30542.239	143938.674
52	30548.383	143940.793

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL

Approval no: DEV2022/1279

Date: 05/12/2022

Queensland Government

AMENDED IN RED

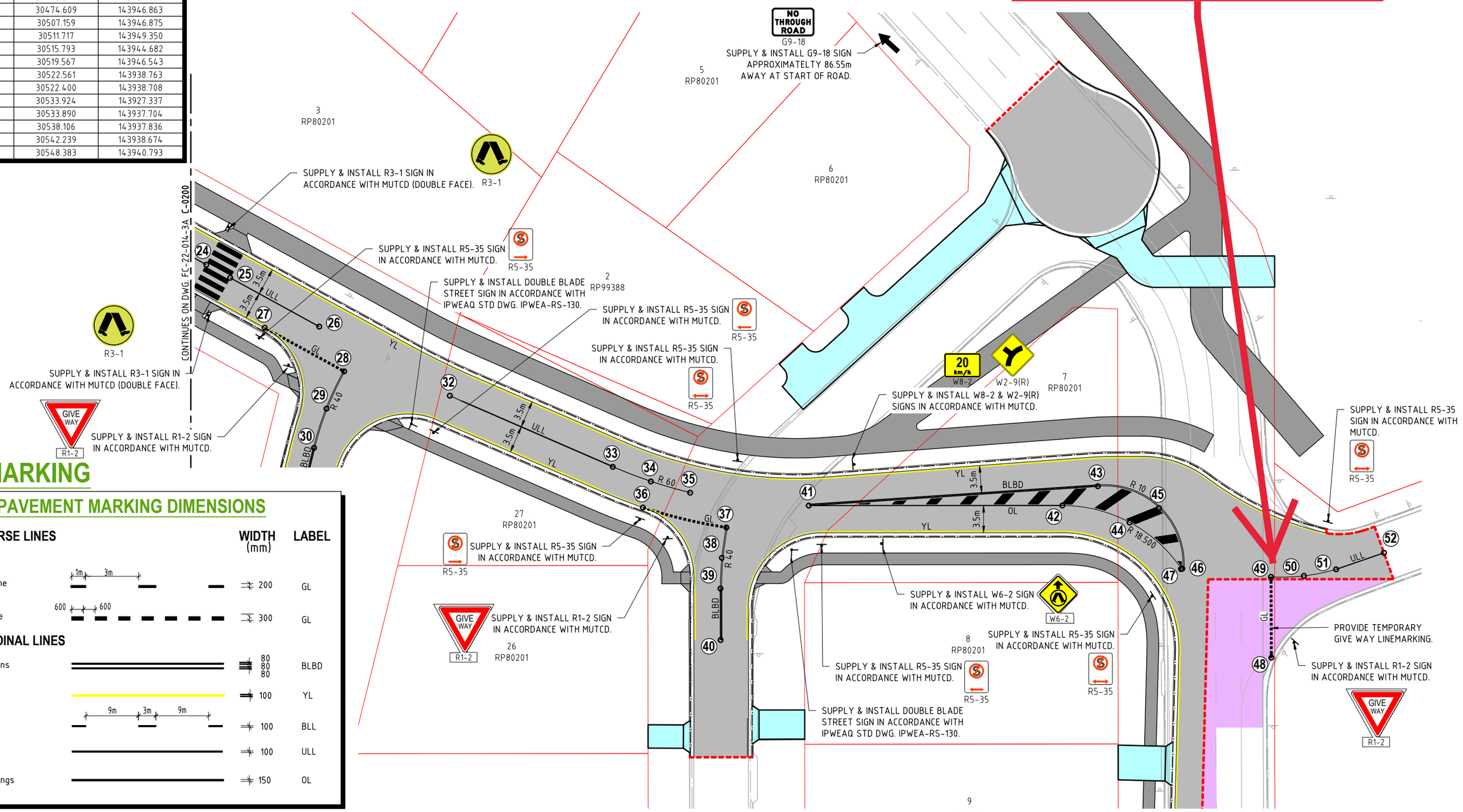
By: Gehan DeSilva

Date: 08/11/2022

Queensland Government

AMENDED IN RED: The turn path for the right turn movement of the 14.5m bus into Marina Circuit traverses the 'Give Way' line. Amend the location of the 'Give Way' line with sight distance criteria addressed.

N



LINEMARKING

PAVEMENT MARKING DIMENSIONS

TRANSVERSE LINES	WIDTH (mm)	LABEL
Continuity Line (1m, 3m)	200	GL
Give Way Line (600, 600)	300	GL
LONGITUDINAL LINES		
Both Directions	80 80 80	BLBD
No Stopping	100	YL
Broken (9m, 3m, 9m)	100	BLL
Unbroken	100	ULL
Outline Markings	150	OL

	REVISIONS	ISSUE DATE
5		
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1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:

0 5 10 15

SCALE 1:500 (m)

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FOR APPROVAL

APPROVED:

RPEQ:26951

APPROVED DATE:06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **LINE MARKING AND SIGNAGE DRAWING - SHEET 2** A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 47 of 72 DRAWINGS

Job No. FC-22-014-3A

DWG No. C-1201

0 1 2 3 4 5

PLOT DATE :- 6 October 2022 10:22 AM

PLANS AND DOCUMENTS
referred to in this PDA
DEVELOPMENT APPROVAL
Approval no: DEV2022/1279
Date: 05/12/2022

Queensland Government

N

BANANA STREET NORTH

5
RP80201

1/7
0.4057ha

6
RP80201

2
RP99388

CONTINUES ON DWG. FC-22-014_C-1300

CONSTRUCT HEADWALL
ACCORDANCE WITH TMR STD
DWG SD-1304 AND PLACE 8.78m² ROCK
PROTECTION, NOM. 200mm Dia, 300m DEEP.

9/1
8/1
1/7
7/1
6/1

PROPOSED SURFACE DRAIN AT 0.5%
MINIMUM GRADE TO BAY

7
RP80201

E: 30489.1665
N: 143967.1216
IL: 2.3m

E: 30523.704
N: 143960.338
IL: 1.9454m

4/1
5/1
0.0183ha
5/1

HAMILTON STREET (MC01)

2/6
2/6
0.1321ha

1/6
1/6
0.1628ha

3/5
2/5
1/5
1/8

OUTRIDGE STREET

8
RP80201

BANANA STREET SOUTH

197
SP123870

9
RP80201

NOTE:
REFER TO C-1300 FOR STORMWATER NOTE, SYMBOL & LEGEND

NOTWITHSTANDING THAT EXISTING SERVICES MAY OR MAY NOT BE SHOWN ON THESE DRAWINGS. NO RESPONSIBILITY IS TAKEN BY ESQ FOR THIS INFORMATION, WHICH HAS BEEN SUPPLIED BY OTHERS. EXISTING SERVICES ARE PROVIDED FOR INFORMATION ONLY. NO CONSTRUCTION WORK SHALL BE UNDERTAKEN UNTIL SERVICE LOCATIONS HAVE BEEN CONFIRMED ON SITE WITH THE RELEVANT AUTHORITY.

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SCALE:
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SCALE 1:500 (m)
DO NOT SCALE FROM PLAN

FOR APPROVAL
APPROVED:
RPEQ: 26951
APPROVED DATE: 06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **DRAINAGE LAYOUT PLAN - SHEET 2** A3

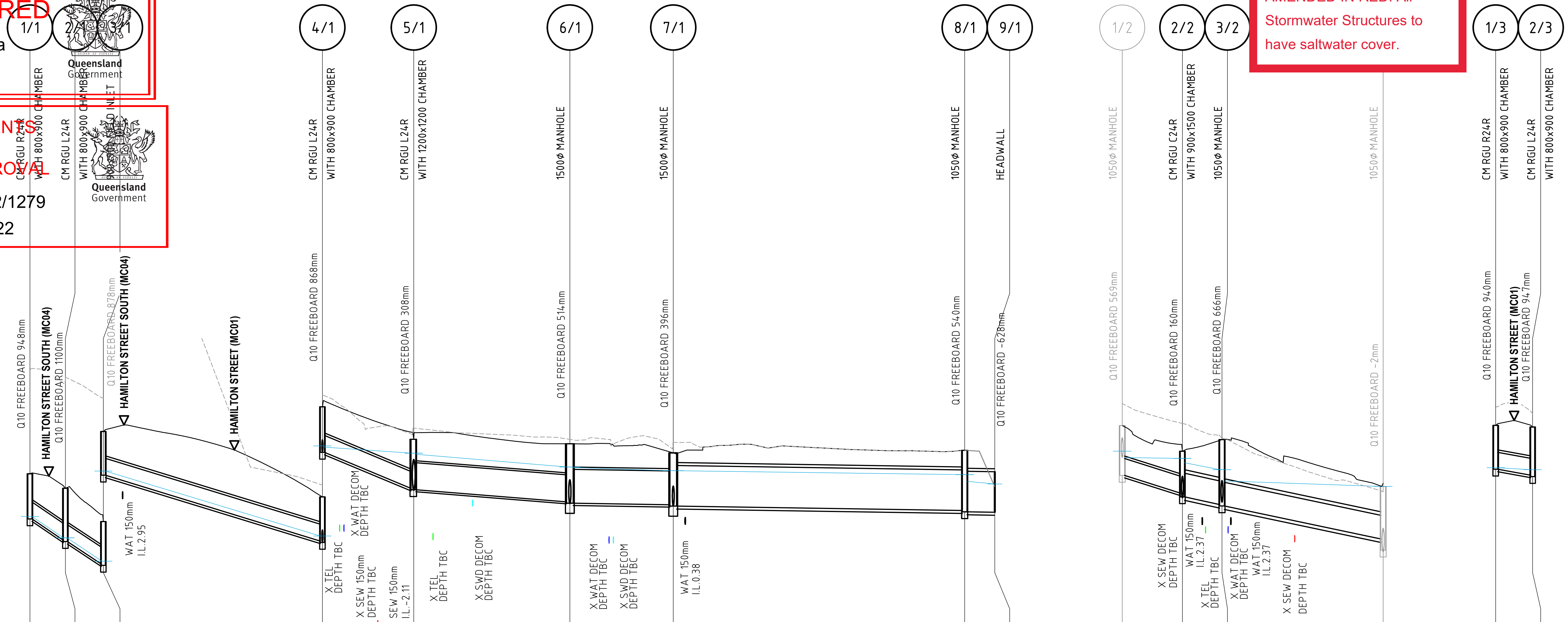
PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 50 of 72 DRAWINGS
Job No. FC-22-014-3A
DWG No. C-1302
0 1 2 3 4 5

AMENDED IN RED
By: Gehan DeSilva
Date: 08/11/2022
Queensland Government

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL
Approval no: DEV2022/1279
Date: 05/12/2022
Queensland Government

AMENDED IN RED: All Stormwater Structures to have saltwater cover.



LINE 1

	1/1–2/1	2/1–3/1	3/1–4/1	4/1–5/1	5/1–6/1	6/1–7/1	7/1–8/1	8/1–9/1
PIPE SIZE (mm)	375	375	375	375	600	750	900	900
PIPE CLASS	Black Max	Black Max	Black Max	Black Max	SRCP Cl 3	SRCP Cl 3	SRCP Cl 3	SRCP Cl 3
PIPE GRADE (%)	6.01%	5.88%	3.01%	3.94%	0.77%	0.15%	0.15%	0.15%
PIPE SLOPE (1 in X)	16.6	17.0	33.3	25.4	129.3	666.7	666.7	666.7
PIPE FLOW (cumecs)	0.021	0.049	0.058	0.103	0.486	0.584	0.684	0.682
MAX CAPACITY RATIO	3%	8%	13%	21%	62%	135%	98%	97%
VELOCITY AT MAX FLOW (m/s)	2.16	2.97	2.41	1.28	1.72	1.32	1.16	1.24
PEAK VELOCITY (m/s)	2.28	3.00	2.64	1.52	1.72	1.32	1.16	1.24
DATUM RL	-2.000		-4.000	-6.000				
DEPTH TO INVERT	1.002 / 1.153	1.183 / 0.941	0.971 / 0.982	1.012 / 1.090	1.120 / 1.289	1.319 / 1.151	1.181 / 1.336	1.366 / 0.900
Q10 HGL ELEVATION	4.548 / 4.075	4.069 / 3.566	3.557 / 2.115	2.087 / 1.954	1.929 / 1.648	1.635	1.564 / 1.477	1.329
INVERT LEVEL OF DRAIN	4.494 / 4.021	3.991 / 3.495	3.465 / 2.002	1.972 / 1.172	1.142 / 0.873	0.843 / 0.809	0.779 / 0.682	0.652 / 0.642
DESIGN (& EXISTING) SURFACE LEVEL	(7.819) / 5.174	(7.639) / 4.435	(7.167) / 2.984	(3.246) / 2.261	(2.511) / 2.162	(2.260) / 1.960	(2.194) / 2.018	1.211
CHAINAGE	7.869	8.440	48.661	20.293	34.674	22.973	64.741	6.688

Additional values: Design surface level 5.496 and chainage 0.000 at 1/1; chainages 7.869, 16.308, 64.969, 85.262, 119.936, 142.909, 207.650, 214.338 at nodes 2/1–9/1; beyond 9/1: depth to invert 0.900, Q10 HGL 1.270, invert level 0.642.

LINE 2

	1/2–2/2	2/2–3/2	3/2–end
PIPE SIZE (mm)	375	525	525
PIPE CLASS	Black Max	Black Max	Black Max
PIPE GRADE (%)	2.93%	1.96%	2.05%
PIPE SLOPE (1 in X)	34.2	51.1	48.9
PIPE FLOW (cumecs)	0.133	0.338	0.345
MAX CAPACITY RATIO	31%	39%	39%
VELOCITY AT MAX FLOW (m/s)	1.20	1.56	1.59
PEAK VELOCITY (m/s)	2.59	2.59	1.59
DATUM RL	-4.000		
DEPTH TO INVERT	1.107 / 0.929	1.013 / 1.441	1.471 / 1.044
Q10 HGL ELEVATION	3.856 / 3.837	3.742 / 3.588	3.337 / 3.216
INVERT LEVEL OF DRAIN	3.460 / 3.068	2.984 / 2.812	2.782 / 2.050
DESIGN (& EXISTING) SURFACE LEVEL	(5.055) / 3.997	(4.613) / 4.254	(4.296) / 3.283
CHAINAGE	13.369	8.788	35.804

Additional values: at 1/2 Q10 HGL 3.998, surface level 4.566, chainage 0.000; node chainages 13.369, 22.157, 57.961; beyond end: depth to invert 1.294, Q10 HGL 3.195, invert level 1.800, surface level (3.094).

LINE 3

	1/3–2/3
PIPE SIZE (mm)	375
PIPE CLASS	Black Max
PIPE GRADE (%)	1.62%
PIPE SLOPE (1 in X)	61.8
PIPE FLOW (cumecs)	0.005
MAX CAPACITY RATIO	2%
VELOCITY AT MAX FLOW (m/s)	0.57
PEAK VELOCITY (m/s)	1.02
DATUM RL	-4.000
DEPTH TO INVERT	0.974 / 1.070
Q10 HGL ELEVATION	3.630 / 3.587
INVERT LEVEL OF DRAIN	3.597 / 3.464
DESIGN (& EXISTING) SURFACE LEVEL	(4.987) / 4.534
CHAINAGE	8.202

Additional values: at 1/3 Q10 HGL 3.631, surface level 4.571, chainage 0.000; at 2/3 chainage 8.202, surface level (4.830).

	REVISIONS	ISSUE DATE
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1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:
HORIZONTAL SCALE 1:1000 (m) 0 10 20 30
VERTICAL SCALE 1:100 (m) 0 1 2 3
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APPROVED:
RPEQ: 26951
APPROVED DATE: 06/10/22

ESQ Engineering Solutions Qld Pty Ltd
REDLAND INVESTMENT CORPORATION

TITLE: **DRAINAGE LONGITUDINAL SECTIONS - SHEET 1** A3

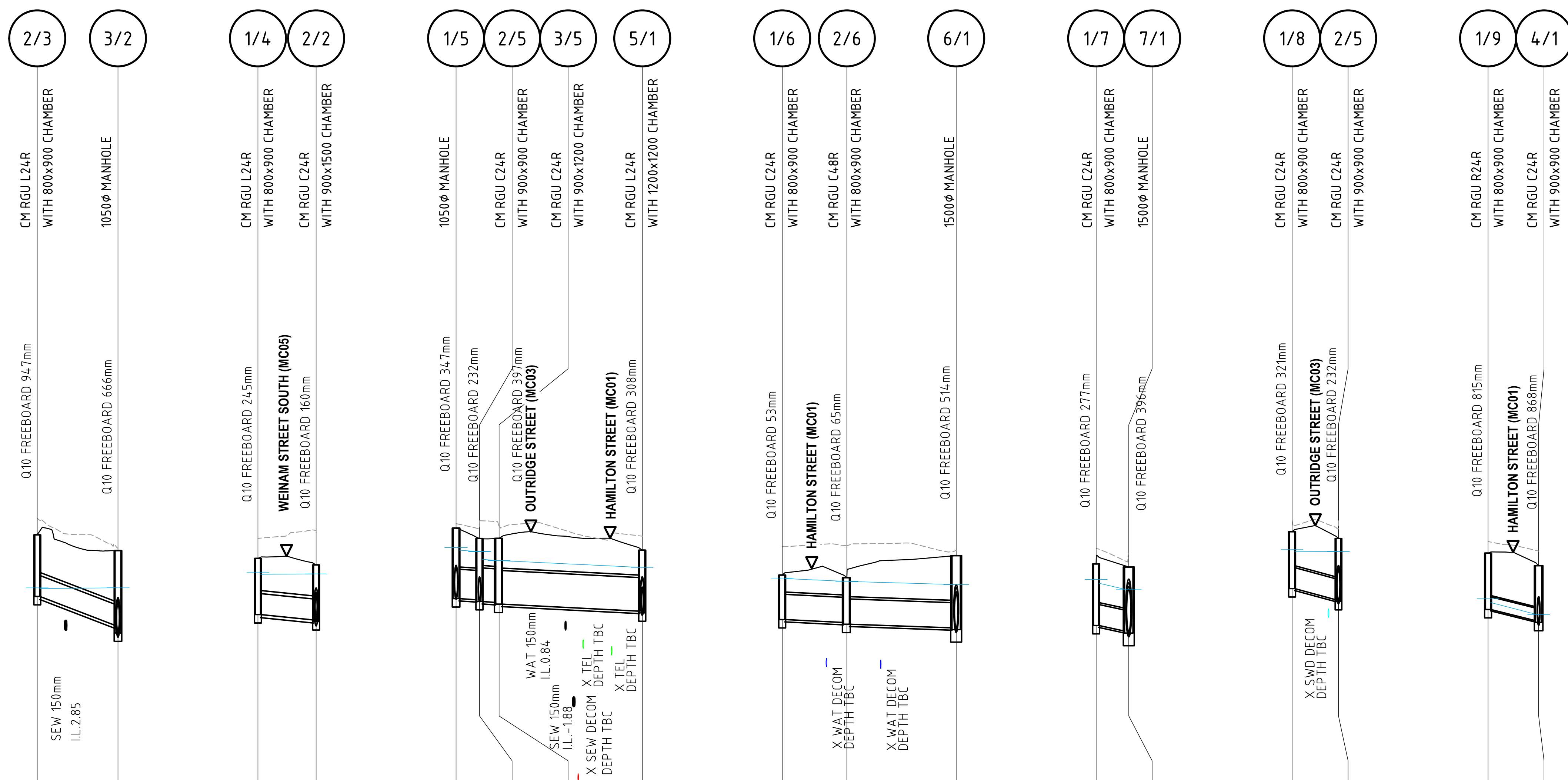
PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 51 of 72 DRAWINGS
Job No. FC-22-014-3A
DWG No. C-1303
0 1 2 3 4 5

AMENDED IN RED: All Stormwater Structures to have saltwater cover.

AMENDED IN RED
By: Gehan DeSilva
Date: 08/11/2022
Queensland Government

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL
Approval no: DEV2022/1279
Date: 05/12/2022
Queensland Government



LINE 3

PIPE SIZE (mm)	375
PIPE CLASS	Black Max
PIPE GRADE (%)	3.58%
PIPE SLOPE (1 in X)	28.0
PIPE FLOW (cumecs)	0.017
MAX CAPACITY RATIO	4%
VELOCITY AT MAX FLOW (m/s)	0.21
PEAK VELOCITY (m/s)	1.53
DATUM RL	-4.000
DEPTH TO INVERT	1.070 1.100 1.335 1.471
Q10 HGL ELEVATION	3.587 3.575 3.588 3.337
INVERT LEVEL OF DRAIN	3.464 3.434 2.918 2.782
DESIGN (& EXISTING) SURFACE LEVEL	4.534 (4.830) 4.254 (4.296)
CHAINAGE	8.202 14.420 22.622

LINE 4

PIPE SIZE (mm)	375
PIPE CLASS	Black Max
PIPE GRADE (%)	0.92%
PIPE SLOPE (1 in X)	108.3
PIPE FLOW (cumecs)	0.056
MAX CAPACITY RATIO	23%
VELOCITY AT MAX FLOW (m/s)	0.50
PEAK VELOCITY (m/s)	0.64
DATUM RL	-4.000
DEPTH TO INVERT	1.003 0.983 1.013
Q10 HGL ELEVATION	3.868 3.830 3.837 3.742
INVERT LEVEL OF DRAIN	3.110 3.014 2.984
DESIGN (& EXISTING) SURFACE LEVEL	4.114 (4.472) 3.997 (4.613)
CHAINAGE	0.000 10.390 10.390

LINE 5

PIPE SIZE (mm)	525	600	600
PIPE CLASS	SRCP Cl 3	SRCP Cl 3	SRCP Cl 3
PIPE GRADE (%)	0.50%	0.50%	0.49%
PIPE SLOPE (1 in X)	200.0	200.0	204.6
PIPE FLOW (cumecs)	0.215	0.374	0.380
MAX CAPACITY RATIO	49%	60%	61%
VELOCITY AT MAX FLOW (m/s)	0.99	1.32	1.34
PEAK VELOCITY (m/s)	1.13	1.60	1.74
DATUM RL	-6.000		
DEPTH TO INVERT	1.261 1.095	1.125 1.145	1.175 1.090 1.120
Q10 HGL ELEVATION	2.309 2.261 2.237	2.098 2.075	2.073 1.954 1.929
INVERT LEVEL OF DRAIN	1.395 1.374	1.344 1.327	1.297 1.172 1.142
DESIGN (& EXISTING) SURFACE LEVEL	2.656 (2.733) 2.470	(2.786) 2.472	(2.705) 2.261 (2.511)
CHAINAGE	0.000 4.190 4.190	3.487 7.678	25.572 33.249

LINE 6

PIPE SIZE (mm)	450	450
PIPE CLASS	SRCP Cl 4	SRCP Cl 3
PIPE GRADE (%)	0.46%	0.33%
PIPE SLOPE (1 in X)	218.7	299.6
PIPE FLOW (cumecs)	0.060	0.108
MAX CAPACITY RATIO	31%	66%
VELOCITY AT MAX FLOW (m/s)	0.38	0.68
PEAK VELOCITY (m/s)	0.38	0.68
DATUM RL	-6.000	
DEPTH TO INVERT	0.795 0.802	0.832 1.289 1.319
Q10 HGL ELEVATION	1.763 1.753 1.706	1.701 1.648 1.635
INVERT LEVEL OF DRAIN	1.021 0.969	0.939 0.873 0.843
DESIGN (& EXISTING) SURFACE LEVEL	1.816 (2.324) 1.770	(2.339) 2.162 (2.260)
CHAINAGE	0.000 11.542 11.542	19.532 31.074

LINE 7

PIPE SIZE (mm)	375
PIPE CLASS	SRCP Cl 3
PIPE GRADE (%)	1.72%
PIPE SLOPE (1 in X)	58.3
PIPE FLOW (cumecs)	0.105
MAX CAPACITY RATIO	46%
VELOCITY AT MAX FLOW (m/s)	0.95
PEAK VELOCITY (m/s)	0.95
DATUM RL	-6.000
DEPTH TO INVERT	1.100 1.144 1.181
Q10 HGL ELEVATION	1.738 1.672 1.564
INVERT LEVEL OF DRAIN	0.916 0.816 0.779
DESIGN (& EXISTING) SURFACE LEVEL	2.016 (2.290) 1.960 (2.194)
CHAINAGE	0.000 5.827 5.827

LINE 8

PIPE SIZE (mm)	375
PIPE CLASS	SRCP Cl 3
PIPE GRADE (%)	2.41%
PIPE SLOPE (1 in X)	41.4
PIPE FLOW (cumecs)	0.033
MAX CAPACITY RATIO	12%
VELOCITY AT MAX FLOW (m/s)	0.30
PEAK VELOCITY (m/s)	0.60
DATUM RL	-6.000
DEPTH TO INVERT	1.017 1.095 1.125
Q10 HGL ELEVATION	2.270 2.241 2.237 2.098
INVERT LEVEL OF DRAIN	1.574 1.374 1.344
DESIGN (& EXISTING) SURFACE LEVEL	2.591 (2.791) 2.470 (2.786)
CHAINAGE	0.000 8.283 8.283

LINE 9

PIPE SIZE (mm)	225
PIPE CLASS	SRCP Cl 3
PIPE GRADE (%)	2.21%
PIPE SLOPE (1 in X)	45.2
PIPE FLOW (cumecs)	0.028
MAX CAPACITY RATIO	42%
VELOCITY AT MAX FLOW (m/s)	1.07
PEAK VELOCITY (m/s)	1.09
DATUM RL	-5.000
DEPTH TO INVERT	1.006 0.982 1.012
Q10 HGL ELEVATION	2.393 2.326 2.115 2.087
INVERT LEVEL OF DRAIN	2.202 2.002 1.972
DESIGN (& EXISTING) SURFACE LEVEL	3.208 (3.415) 2.984 (3.246)
CHAINAGE	0.000 9.034 9.034

	REVISIONS	ISSUE DATE
5		
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1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:
HORIZONTAL SCALE 1:1000 (m) 0 10 20 30
VERTICAL SCALE 1:100 (m) 0 1 2 3
DO NOT SCALE FROM PLAN

FOR APPROVAL
APPROVED:
RPEQ: 26951
APPROVED DATE: 06/10/22

ESQ Engineering Solutions Qld Pty Ltd

REDLAND INVESTMENT CORPORATION

TITLE: **DRAINAGE LONGITUDINAL SECTIONS - SHEET 2** A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 52 of 72 DRAWINGS
Job No. FC-22-014-3A
DWG No. C-1304
0 1 2 3 4 5

PLOT DATE :- 6 October 2022 10:22 AM

AMENDED IN RED: All Stormwater Structures to have saltwater cover.

AMENDED IN RED

By: Gehan DeSilva

Date: 08/11/2022

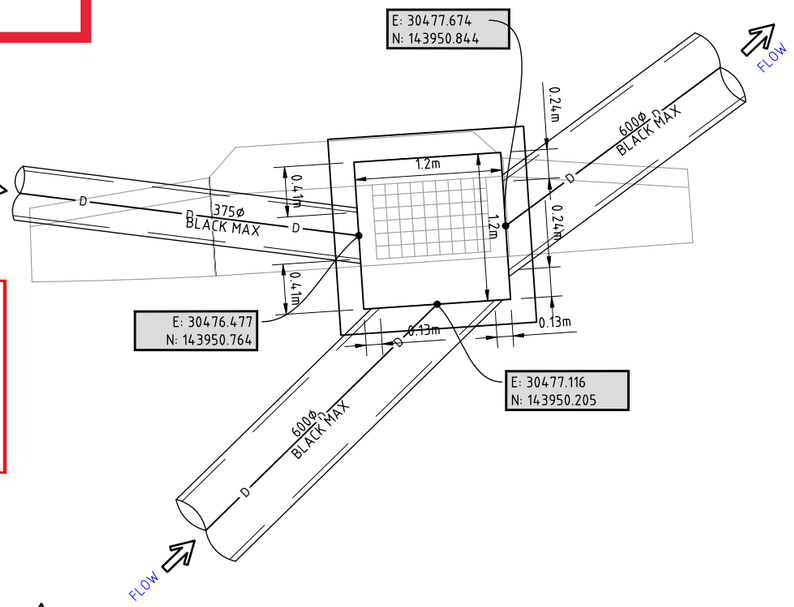
Queensland Government

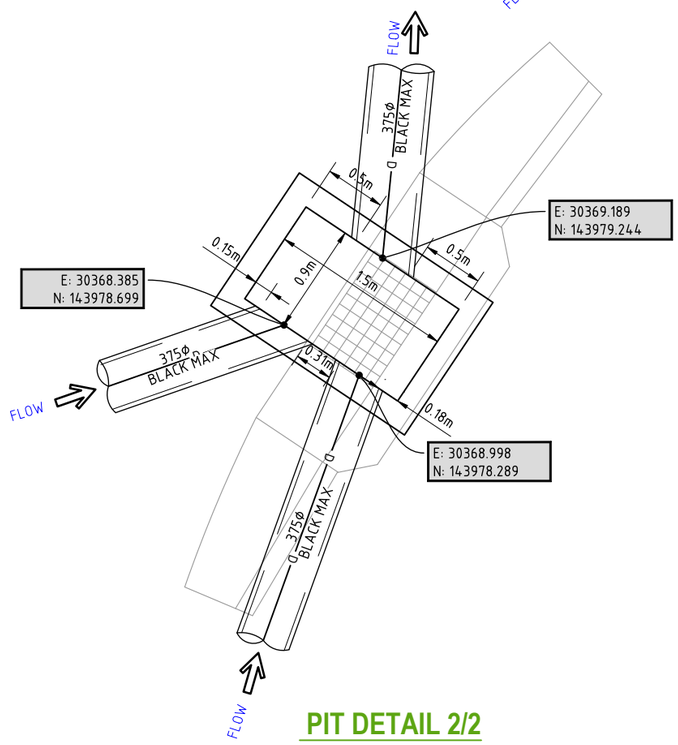
PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL

Approval no: DEV2022/1279

Date: 05/12/2022

Queensland Government





PIT DETAIL 2/2

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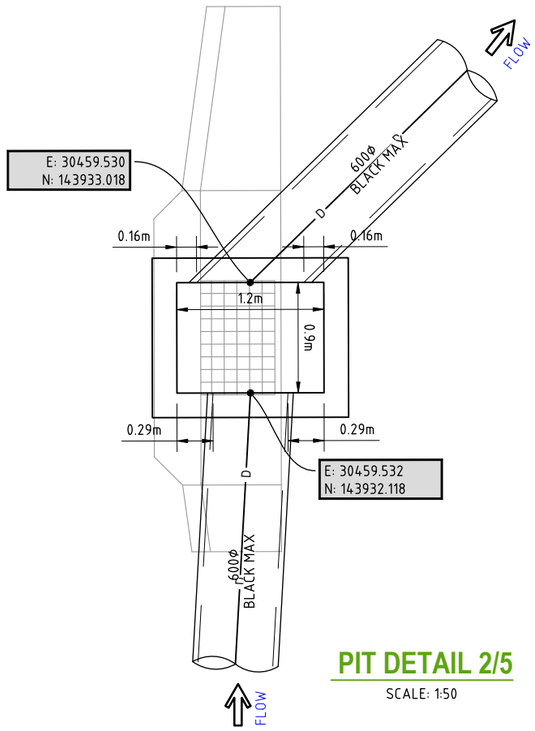

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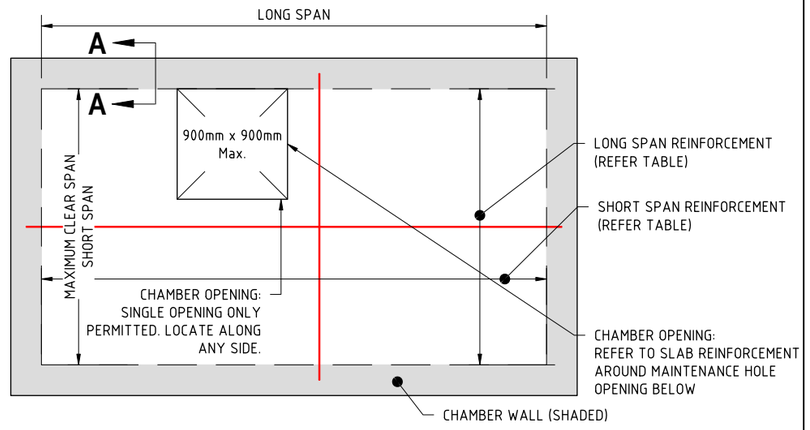
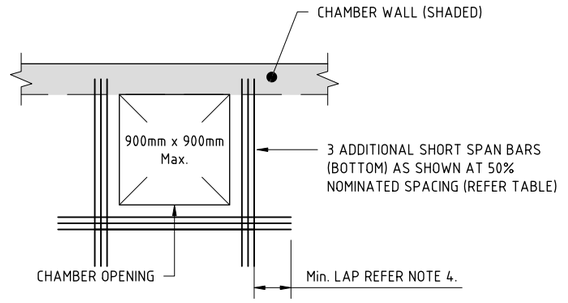


TYPICAL ROOF SLAB REINFORCEMENT

REINFORCEMENT TABLE

MAXIMUM CLEAR SPAN (mm)	REINFORCEMENT (45mm BOTTOM COVER)	
	SHORT SPAN	LONG SPAN
1200	N12 @ 200	N12 @ 200
1500	N12 @ 150	N12 @ 200
1800	N16 @ 200	N12 @ 200



SLAB REINFORCEMENT AROUND MAINTENANCE HOLE OPENING

	REVISIONS	ISSUE DATE
5		
4		
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2		
1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:

DO NOT SCALE FROM PLAN

FOR APPROVAL

APPROVED:

RPEQ: 26951

APPROVED DATE: 06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: OVERSIZE PIT DETAILS

A3

PROJECT:

WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A

WEINAM CREEK REDLAND BAY

FOR REDLAND INVESTMENT CORPORATION

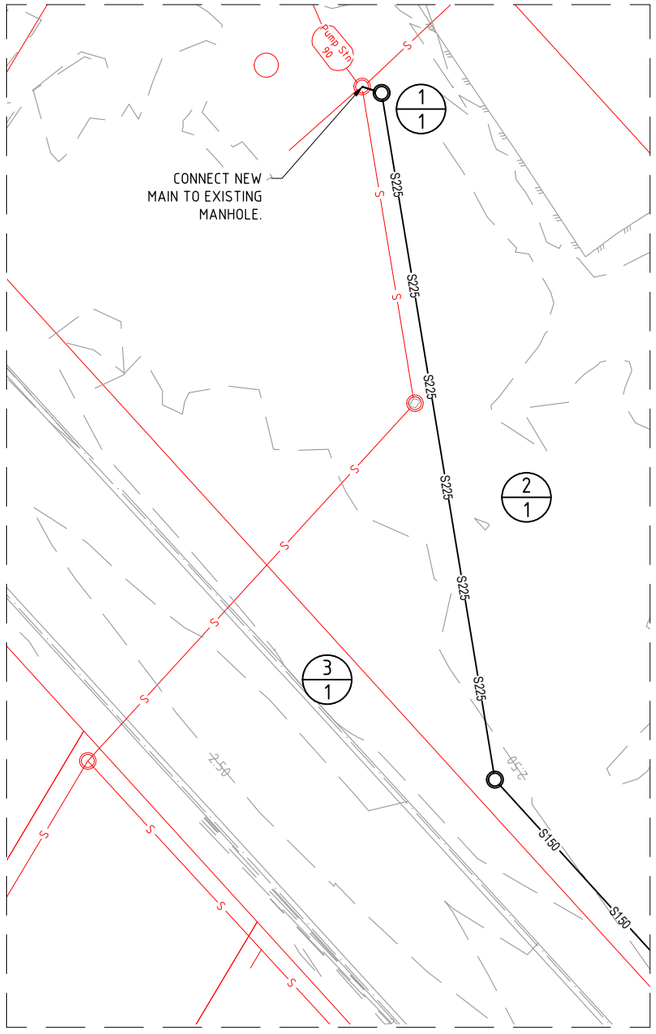
No. 53 of 72 DRAWINGS

Job No. FC-22-014-3A

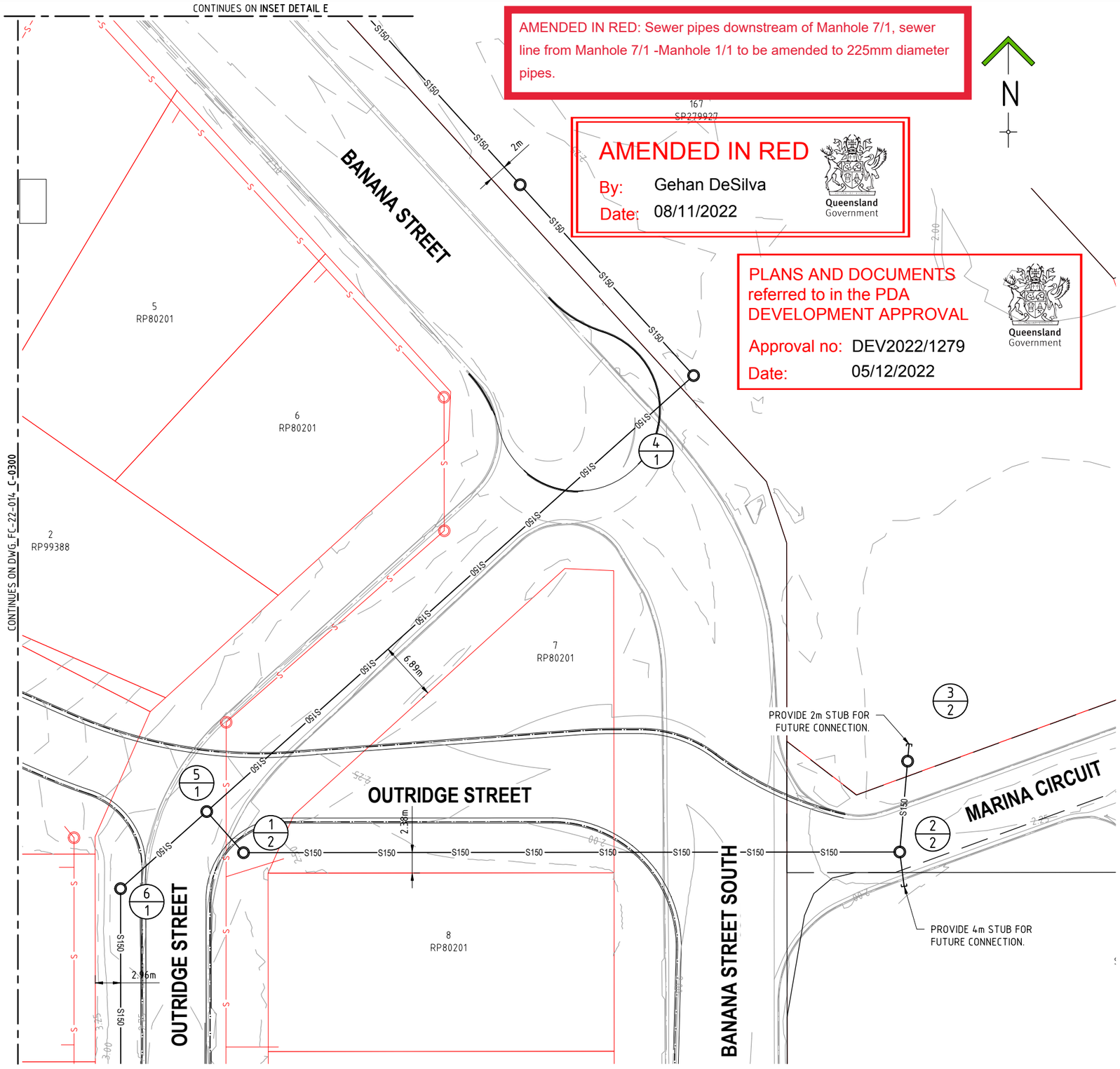
DWG No. C-1305

0 1 2 3 4 5

PLOT DATE:- 6 October 2022 10:22 AM



INSET DETAIL E



AMENDED IN RED: Sewer pipes downstream of Manhole 7/1, sewer line from Manhole 7/1 -Manhole 1/1 to be amended to 225mm diameter pipes.

AMENDED IN RED
By: Gehan DeSilva
Date: 08/11/2022
Queensland Government

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL
Approval no: DEV2022/1279
Date: 05/12/2022
Queensland Government

	REVISIONS	ISSUE DATE
5		
4		
3		
2		
1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:
0 5 10 15
SCALE 1:500 (m)
DO NOT SCALE FROM PLAN

FOR APPROVAL
APPROVED:
RPEQ: 26951
APPROVED DATE: 06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **SEWER RETICULATION LAYOUT PLAN - SHEET 2** A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

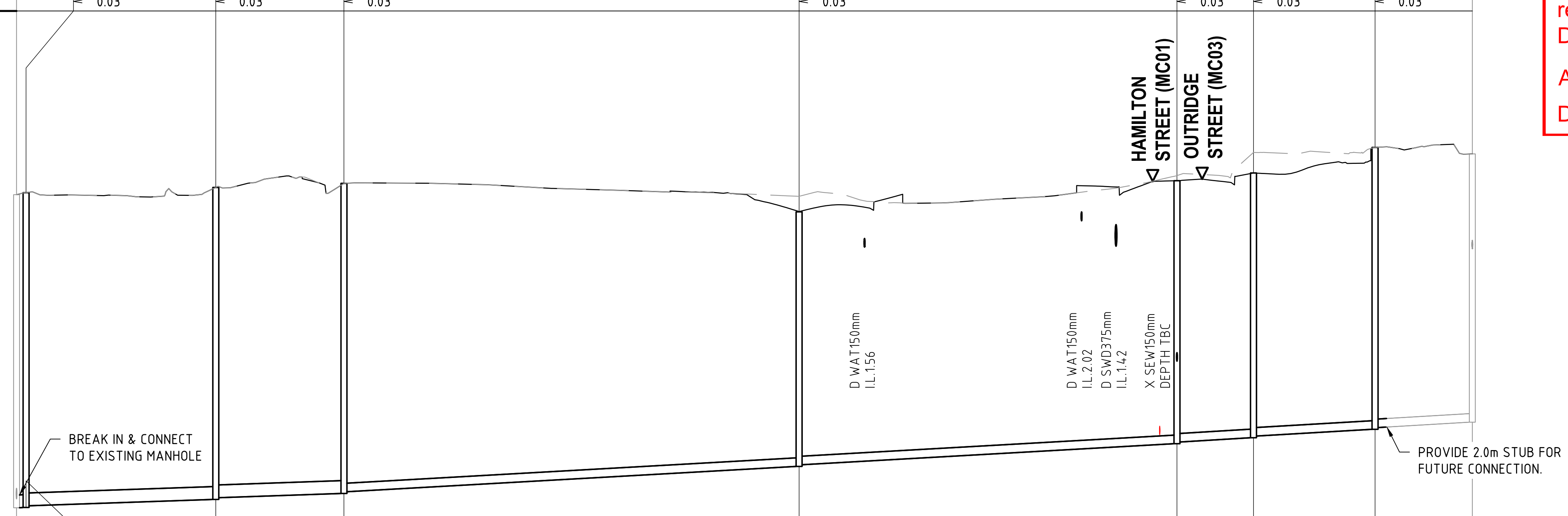
No. 56 of 72 DRAWINGS
Job No. FC-22-014-3A
DWG No. C-1402
0 1 2 3 4 5

AMENDED IN RED: Sewer pipes downstream of Manhole 7/1, sewer line from Manhole 7/1 -Manhole 1/1 to be amended to 225mm diameter pipes.

AMENDED IN RED
By: Gehan DeSilva
Date: 08/11/2022
Queensland Government

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL
Approval no: DEV2022/1279
Date: 05/12/2022
Queensland Government

	2/X2	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1
JUNCTION NAME		1050ø MANHOLE PE	1050ø MANHOLE PE	1050ø MANHOLE PE	1050ø MANHOLE PE	1050ø MANHOLE PE	1050ø MANHOLE PE	1050ø MANHOLE PE	1050ø MANHOLE
ANGLE DFLECTION		62°	57°	-90°	91°	LINE 2 -90°	-48°		
HOUSE CONNECTION TYPE									
DOWNSTREAM DISTANCE									
LID TYPE		B D.I.	B D.I.	D D.I.	D D.I.	D D.I.	B D.I.	B D.I.	
DROP TYPE		0.03	0.03	0.03	0.03	0.03	0.03	0.03	



	2/X2–1/1	1/1–2/1	2/1–3/1	3/1–4/1	4/1–5/1	5/1–6/1	6/1–7/1	7/1–8/1
PIPE SIZE (mm)	225	225	225	150	150	150	150	150
PIPE CLASS	PP SN8	PP SN8	PP SN8	PP SN8	PP SN8	PP SN8	PP SN8	PP SN8
PIPE GRADE (%)	0.333%	0.333%	0.333%	0.556%	0.556%	0.556%	0.556%	0.556%
PIPE SLOPE (1 in x)	300.297	300.299	300.302	179.856	179.857	179.860	179.857	179.851
CHAINAGE (length)	1.674	33.326	22.512	79.952	66.372	13.439	21.357	17.087

DATUM R.L. -6.000

	2/X2	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1
DEPTH TO INVERT	5.344 / 5.498	5.528 / 5.498	5.478 / 5.448	5.445 / 5.415	4.471 / 4.441	4.619 / 4.589	4.649 / 4.619	4.950 / 4.920	4.711 / 4.681
INVERT LEVEL	-3.020 / -3.174	-3.169 / -3.139	-3.028 / -2.998	-2.923 / -2.893	-2.448 / -2.418	-2.049 / -2.019	-1.944 / -1.914	-1.796 / -1.766	-1.671 / -1.641
EXISTING SURFACE LEVEL	2.324	2.359	2.451	2.522	2.295	2.659	3.065	3.154	3.040
DESIGN SURFACE LEVEL	2.324	2.359	2.451	2.522	2.023	2.569	2.705	3.154	3.040
CHAINAGE	0.000	1.674	35.000	57.512	137.464	203.836	217.276	238.633	255.719

LINE 1

	REVISIONS	ISSUE DATE
5		
4		
3		
2		
1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:
HORIZONTAL SCALE 1:1000 (m) 0 10 20 30
VERTICAL SCALE 1:100 (m) 0 1 2 3
DO NOT SCALE FROM PLAN

FOR APPROVAL
APPROVED:
RPEQ: 26951
APPROVED DATE: 06/10/22

Engineering Solutions Qld Pty Ltd
REDLAND INVESTMENT CORPORATION

TITLE: **SEWER LONGITUDINAL SECTIONS - SHEET 1** A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 57 of 72 DRAWINGS
Job No. FC-22-014-3A
DWG No. C-1403
0 1 2 3 4 5

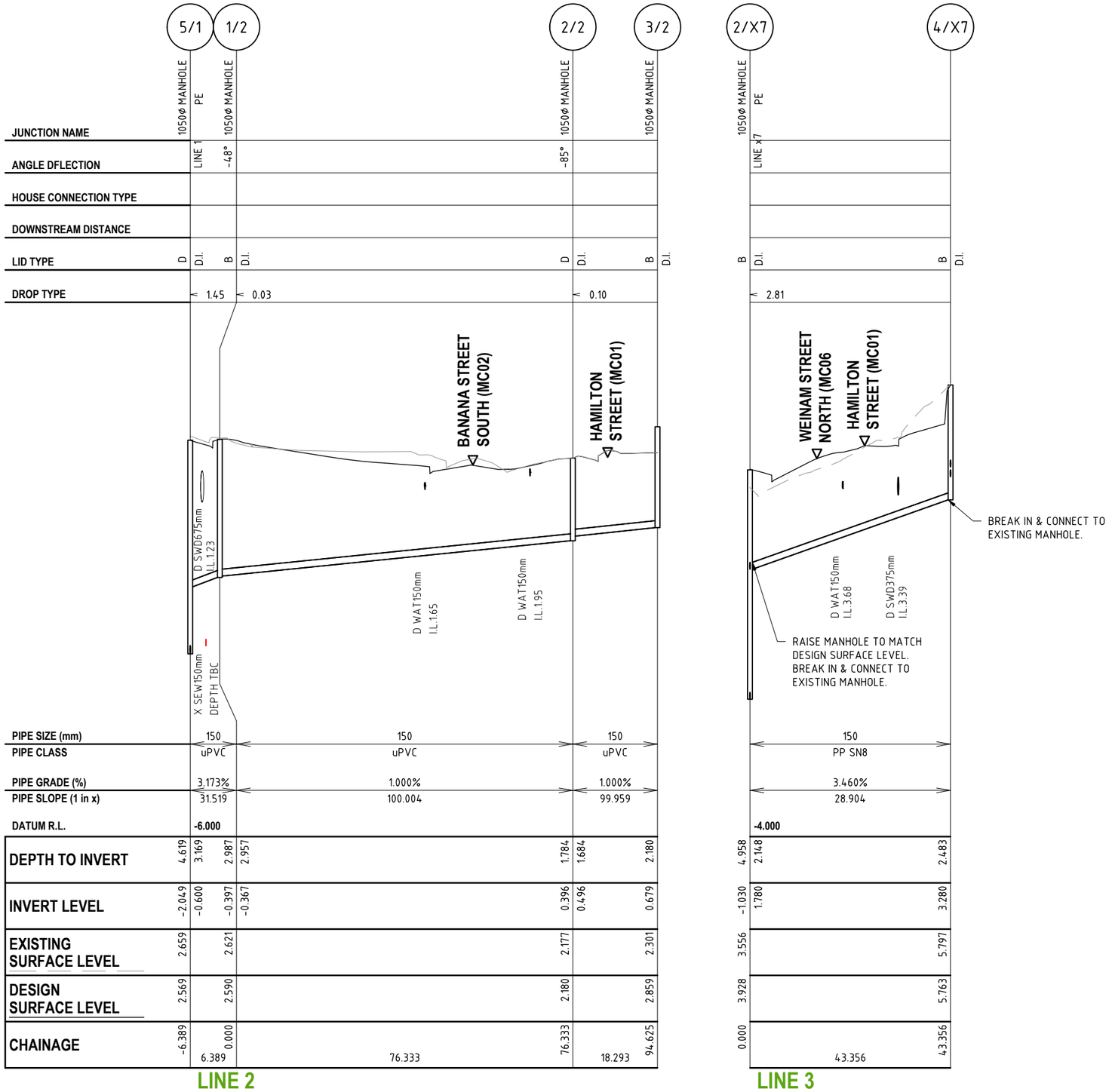
PLOT DATE :- 6 October 2022 10:22 AM

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL

Approval no: DEV2022/1279

Date: 05/12/2022

Queensland Government



PIPE SIZE (mm)			150			150			150			150	
PIPE CLASS			uPVC			uPVC			uPVC			PP SN8	
PIPE GRADE (%)			3.173%			1.000%			1.000%			3.460%	
PIPE SLOPE (1 in x)			31.519			100.004			99.959			28.904	
DATUM R.L.			-6.000									-4.000	
DEPTH TO INVERT	4.619	3.169		2.957			1.784	1.684		2.180	4.958	2.148	2.483
INVERT LEVEL	-2.049	-0.600	-0.397	-0.367			0.396	0.496		0.679	-1.030	1.780	3.280
EXISTING SURFACE LEVEL	2.659		2.621				2.177			2.301	3.556		5.797
DESIGN SURFACE LEVEL	2.569		2.590				2.180			2.859	3.928		5.763
CHAINAGE	-6.389	0.000					76.333			94.625	0.000		43.356
		6.389				76.333			18.293			43.356	

LINE 2

LINE 3

	REVISIONS	ISSUE DATE
5		
4		
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2		
1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE:

HORIZONTAL SCALE 1:1000 (m)

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VERTICAL SCALE 1:100 (m)

DO NOT SCALE FROM PLAN

FOR APPROVAL

APPROVED:

RPEQ: 26951

APPROVED DATE: 06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **SEWER LONGITUDINAL SECTIONS - SHEET 2** A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 58 of 72 DRAWINGS

Job No. FC-22-014-3A

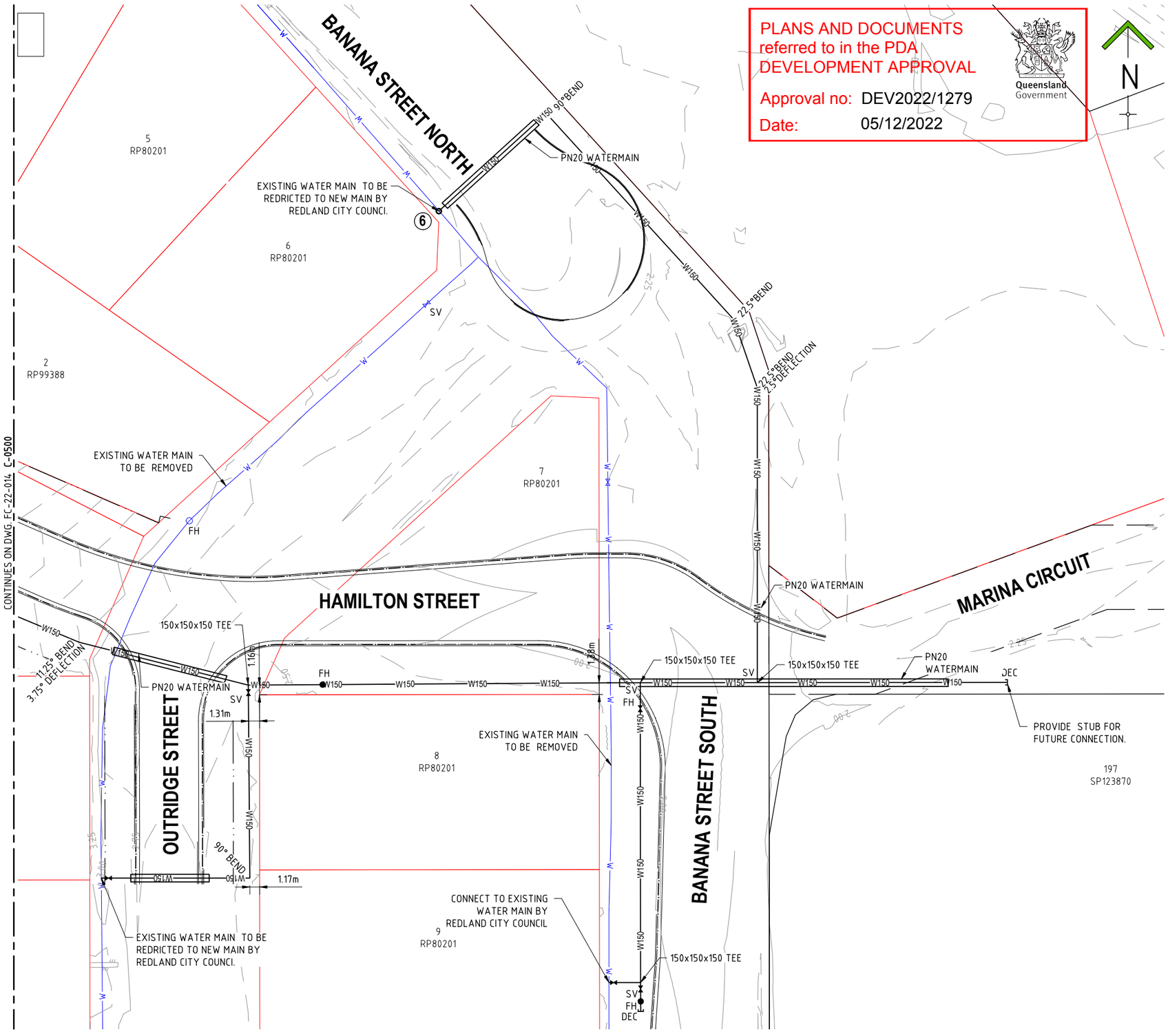
DWG No. C-1404

0 1 2 3 4 5

PLOT DATE :- 6 October 2022 10:23 AM

WATER RETICULATION LIVE WORKS TABLE

No.	DESCRIPTION	DIA.	LOCATION
1	REDLAND WATER TO EXCAVATED TO NEW WATERMAIN PREVIOUSLY CONSTRUCTED BY CONTRACTOR AND REMOVED DEAD END CAP AND THEN CONNECTED TO EXISTING 150ø WATERMAIN, INCLUDING INSTALLATION OF REQUIRED FITTINGS. REDLAND WATER TO BACKFILLED WATERMAIN INCLUDING TEMPORARY SURFACE RESTORATION.	150	ROAD RESERVE HAMILTON STREET ADJACENT LOT 1 ON 169111
2	REDLAND WATER TO EXCAVATED TO NEW WATERMAIN PREVIOUSLY CONSTRUCTED BY CONTRACTOR AND REMOVED DEAD END CAP AND THEN CONNECTED TO EXISTING 150ø WATERMAIN, INCLUDING INSTALLATION OF REQUIRED FITTINGS. REDLAND WATER TO BACKFILLED WATERMAIN INCLUDING TEMPORARY SURFACE RESTORATION.	150	ROAD RESERVE WEINAM STREET ADJACENT LOT 1 ON 169111
3	REDLAND WATER TO EXCAVATED TO NEW WATERMAIN PREVIOUSLY CONSTRUCTED BY CONTRACTOR AND REMOVED DEAD END CAP AND THEN CONNECTED TO EXISTING 150ø WATERMAIN, INCLUDING INSTALLATION OF REQUIRED FITTINGS. REDLAND WATER TO BACKFILLED WATERMAIN INCLUDING TEMPORARY SURFACE RESTORATION.	150	ROAD RESERVE WEINAM STREET NORTH ADJACENT LOT 2 ON RP80201
4	REDLAND WATER TO EXCAVATED TO NEW WATERMAIN PREVIOUSLY CONSTRUCTED BY CONTRACTOR AND REMOVED DEAD END CAP AND THEN CONNECTED TO EXISTING 150ø WATERMAIN, INCLUDING INSTALLATION OF REQUIRED FITTINGS. REDLAND WATER TO BACKFILLED WATERMAIN INCLUDING TEMPORARY SURFACE RESTORATION.	150	ROAD RESERVE HAMILTON STREET SOUTH ADJACENT LOT 8 ON RP107394
5	REDLAND WATER TO EXCAVATED TO NEW WATERMAIN PREVIOUSLY CONSTRUCTED BY CONTRACTOR AND REMOVED DEAD END CAP AND THEN CONNECTED TO EXISTING 150ø WATERMAIN, INCLUDING INSTALLATION OF REQUIRED FITTINGS. REDLAND WATER TO BACKFILLED WATERMAIN INCLUDING TEMPORARY SURFACE RESTORATION.	150	ROAD RESERVE OUTRIDGE STREET ADJACENT LOT 26 ON RP80201
6	REDLAND WATER TO EXCAVATED TO NEW WATERMAIN PREVIOUSLY CONSTRUCTED BY CONTRACTOR AND REMOVED DEAD END CAP AND THEN CONNECTED TO EXISTING 150ø WATERMAIN, INCLUDING INSTALLATION OF REQUIRED FITTINGS. REDLAND WATER TO BACKFILLED WATERMAIN INCLUDING TEMPORARY SURFACE RESTORATION.	150	ROAD RESERVE BANANA STREET NORTH ADJACENT LOT 6 ON RP80201
7	REDLAND WATER TO EXCAVATED TO NEW WATERMAIN PREVIOUSLY CONSTRUCTED BY CONTRACTOR AND REMOVED DEAD END CAP AND THEN CONNECTED TO EXISTING 150ø WATERMAIN, INCLUDING INSTALLATION OF REQUIRED FITTINGS. REDLAND WATER TO BACKFILLED WATERMAIN INCLUDING TEMPORARY SURFACE RESTORATION.	150	ROAD RESERVE BANANA STREET SOUTH ADJACENT LOT 9 ON RP80201



	REVISIONS	ISSUE DATE
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1	RFI RESPONSE	06/10/2022
0	ISSUE FOR APPROVAL	8/8/2022

SCALE: 0 5 10 15 SCALE 1:500 (m)

DO NOT SCALE FROM PLAN

FOR APPROVAL

APPROVED:

RPEQ: 26951

APPROVED DATE: 06/10/22

Engineering Solutions Qld

REDLAND INVESTMENT CORPORATION

TITLE: **WATER RETICULATION LAYOUT PLAN - SHEET 2** A3

PROJECT:
WEINAM CREEK PRIORITY DEVELOPMENT AREA STAGE 3A
WEINAM CREEK REDLAND BAY
FOR REDLAND INVESTMENT CORPORATION

No. 60 of 72 DRAWINGS

Job No. FC-22-014-3A

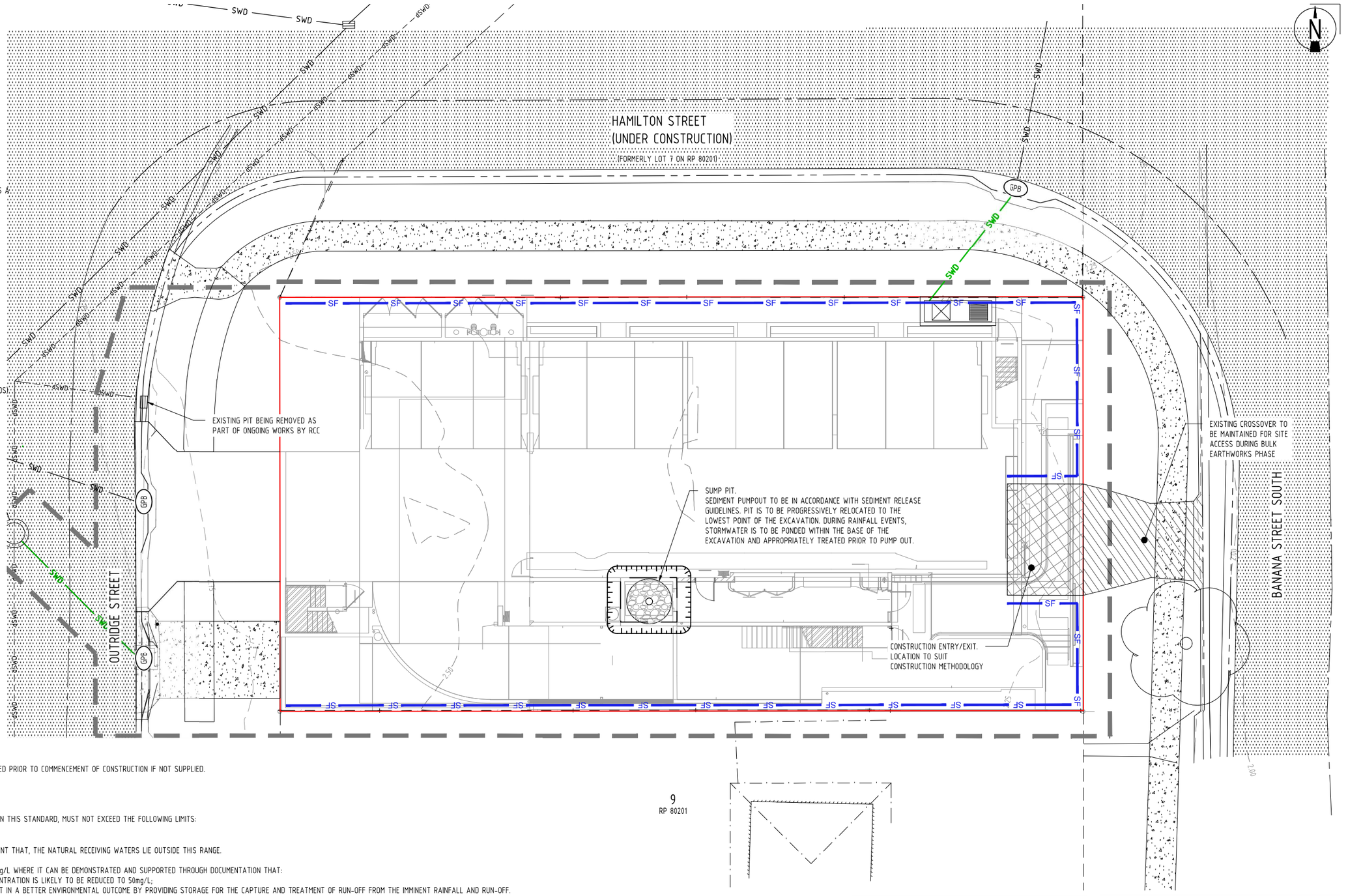
DWG No. C-1501

0 1 2 3 4 5

Appendix D
ADG Preliminary Plans

LEGEND

- SITE BOUNDARY
- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING SURFACE CONTOURS
- EARTHWORKS CONTOURS
- EXISTING NOMINAL KERB LINE
- PROPOSED NOMINAL KERB LINE
- PROPOSED BATTER
- PROPOSED STORMWATER DRAINAGE
- EXISTING STORMWATER DRAINAGE (RECORDS)
- STORMWATER DRAINAGE (UNDER CONSTRUCTION AS A PART OF WEINAM CREEK PDA WORKS)
- EXISTING SEWER (RECORDS)
- EXISTING SEWER (SURVEY)
- SEWER (UNDER CONSTRUCTION AS A PART OF WEINAM CREEK PDA WORKS)
- EXISTING WATER (RECORDS)
- EXISTING WATER (SURVEY)
- WATER MAIN (UNDER CONSTRUCTION AS A PART OF WEINAM CREEK PDA WORKS)
- EXISTING UNDERGROUND ELECTRICITY (RECORDS)
- EXISTING OVERHEAD ELECTRICITY
- EXISTING GAS
- EXISTING GAS (RECORDS)
- EXISTING TELECOMMUNICATIONS OVERHEAD (RECORDS)
- EXISTING TELECOMMUNICATIONS (RECORDS)
- FIELD INLET SEDIMENT BARRIER
- GULLY PIT SEDIMENT BARRIER
- PROPOSED SUMP PIT
- SEDIMENT FENCE (INDICATIVE LOCATION)
- CHECK DAM
- PROPOSED SWALE (TURFED)
- 1.0m WIDE TURF STRIP BEHIND KERB
- LIMIT OF WORKS
- CONSTRUCTION ENTRY/EXIT SHAKEDOWN AREA



GENERAL NOTE:

1. FOR GENERAL NOTES REFER DRG No. C01, WHICH IS TO BE REQUESTED AND VIEWED PRIOR TO COMMENCEMENT OF CONSTRUCTION IF NOT SUPPLIED.

SEDIMENT RELEASE GUIDELINES:

1. ALL RELEASES OF STORMWATER CAPTURED ONSITE, UNLESS OTHERWISE NOTED IN THIS STANDARD, MUST NOT EXCEED THE FOLLOWING LIMITS:
   a. 50mg/L OF TOTAL SUSPENDED SOLIDS (TSS) AS A MAXIMUM CONCENTRATION;
   b. TURBIDITY (NTU) VALUE LESS THAN 10% ABOVE BACKGROUND;
   c. pH VALUE MUST BE IN THE RANGE 6.5 TO 8.5 EXCEPT WHERE, AND TO THE EXTENT THAT, THE NATURAL RECEIVING WATERS LIE OUTSIDE THIS RANGE.

2. THE CONCENTRATION OF TSS RELEASED BY DEWATERING MAY ONLY EXCEED 50mg/L WHERE IT CAN BE DEMONSTRATED AND SUPPORTED THROUGH DOCUMENTATION THAT:
   a. FURTHER SIGNIFICANT RAINFALL IS FORECAST TO OCCUR BEFORE THE TSS CONCENTRATION IS LIKELY TO BE REDUCED TO 50mg/L;
   b. RELEASING A HIGHER CONCENTRATION OF TOTAL SUSPENDED SOLIDS WILL RESULT IN A BETTER ENVIRONMENTAL OUTCOME BY PROVIDING STORAGE FOR THE CAPTURE AND TREATMENT OF RUN-OFF FROM THE IMMINENT RAINFALL AND RUN-OFF.
   c. ALL REASONABLE AND PRACTICABLE STEPS HAVE BEEN TAKEN TO TREAT THE WATER WITHIN BEST-PRACTICE TIME FRAMES;
   d. FLOCCULENT HAS BEEN APPROPRIATELY APPLIED AND THE CONCENTRATION OF TSS IN THE CAPTURED WATER HAS ALREADY SIGNIFICANTLY DECREASED.

3. FOR ALL OTHER STORMWATER RELEASES, FLOWS AND DISCHARGES FROM THE SITE, THE RELEASE LIMIT PRESCRIBED IN (1a) ABOVE MUST NOT BE EXCEEDED UNLESS THE DEVELOPMENT IS IN FULL COMPLIANCE WITH THIS STANDARD.

NOTE: IT IS RECOMMENDED THAT A SITE-SPECIFIC RELATIONSHIP BETWEEN TURBIDITY AND SUSPENDED SOLIDS IS DETERMINED FOR EACH SEDIMENT BASIN. ONCE A CORRELATION BETWEEN SUSPENDED SOLIDS AND TURBIDITY HAS BEEN ESTABLISHED FOR A SEDIMENT BASIN, TESTING STORMWATER FOR COMPLIANCE WITH RELEASE LIMITS, PRIOR TO RELEASE, CAN BE DONE ON SITE WITH A TURBIDITY TUBE OR CALIBRATED TURBIDITY METER. THIS HAS THE ADVANTAGE OF PROVIDING IMMEDIATE ASSESSMENT TO JUSTIFY A RELEASE RATHER THAN WAITING FOR LABORATORY RESULTS TO CONFIRM CONCENTRATION LEVELS AND COMPLIANCE. NOTE THAT POST-RELEASE TSS VALIDATION IS APPROPRIATE TO DEMONSTRATE THAT THE NTU/TSS CORRELATION IS BEING MAINTAINED.

NOTE: BACKGROUND REFERS TO RECEIVING WATER QUALITY IMMEDIATELY UPSTREAM OF THE SITE LOCATION RELEASE POINT AT THE TIME OF RELEASE. WHERE THERE IS NO IMMEDIATE UPSTREAM RECEIVING WATER AT THE LOCATION AND TIME OF RELEASE, THEN THE TURBIDITY RELEASE LIMIT (NTU) WILL BE EQUAL TO THE RELEASE LIMIT FOR 50mg/L TOTAL SUSPENDED SOLIDS (TSS) BASED UPON THE ONSITE CORRELATION BETWEEN TSS AND NTU.

NOTES

1. FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS REFER DRG No. C11
2. ALL DISTURBED SURFACES TO BE LANDSCAPED IN ACCORDANCE WITH LANDSCAPE CONSULTANTS DRAWINGS.
3. CONTRACTOR TO PROVIDE PUMP-OUT LOCATION AT LOWER BASE EXCAVATION. CONTRACTOR TO FLOCK WATER TO SATISFY COUNCIL GUIDELINES TO PUMP-OUT WATER.
4. CONCRETE WASHOUT TO NOT BE UNDERTAKEN ON SITE, OR TO BE UNDERTAKEN ON A DESIGNATED LOCATION. CONTRACTOR TO ESTABLISH CONCRETE WASHOUT AS PER IECA GUIDELINES.

EROSION AND SEDIMENT CONTROL:

CONTRACTOR TO ALLOW FOR PROVISION OF ALL REQUIRED EROSION AND SEDIMENT CONTROL DEVICES IN ACCORDANCE WITH IECA AND REDLAND CITY COUNCIL POLICIES AND GUIDELINES. SEDIMENT AND EROSION CONTROL. DESIGN SHOWN IS CONCEPTUAL AND IS A GUIDE ONLY. DESIGN (INCLUDING CPESC CERTIFICATION), MAINTENANCE AND IMPLEMENTATION OF SEDIMENT AND EROSION CONTROL PLAN COMPLIANT WITH THE ABOVE.

NOTE

WEINAM CREEK PDA STAGE 3A WORKS PRESENTLY UNDERWAY AROUND THE SITE. THESE WORKS LABLED AS "UNDER CONSTRUCTION" AND ARE SHOWN BASED ON EDQ APPROVED DRAWINGS.

ISSUED FOR
APPROVAL

Rev	Date	Description	By	Chk
A	21.07.23	ISSUED FOR APPROVAL	DG	MRB
01	10.07.23	PRELIMINARY - ISSUED FOR INFORMATION	RBF	MRB

RPEQ CERTIFICATION
PROJECT NUMBER: 26164
PROJECT NAME: 57 BANANA STREET
DATE: 21.07.23
CERTIFIED BY: MICHAEL LEPELAAR
RPEQ NUMBER: 11171
SIGNATURE:

0 1 2 3 4 5m
SCALE 1:100
AT ORIGINAL SIZE (A1)

ADG
T:1300 657 402 E: info@adgce.com W: www.adgce.com
Quality Assurance ISO 9001:2015 | Work Health Safety ISO 45001:2018
Environmental Management ISO 14001:2015
fortezza GROUP

Client	FORTEZZA GROUP
Project Name	BELLA BAIA 57 BANANA STREET REDLAND BAY, QLD 4165
Discipline	CIVIL
Designed By	MRB
Checked By	DS
Approved By	ML
Project No.	26164
Drawn By	DG
Scale at A1	1:100
Status	APPROVAL
Title	EROSION AND SEDIMENT CONTROL LAYOUT PLAN
Drawing No.	C10
Revision	A

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm

PLOT DATE: 7/21/2023 4:07 PM FILENAME: J:\26000\26164\CVL\DWG\DPW\26164_C10_EROSION AND SEDIMENT CONTROL LAYOUT PLAN.DWG

NOTES:

SEDIMENT CONTROL

1. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE IN ACCORDANCE WITH INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) AUSTRALIA GUIDELINES AND THE SPECIFICATIONS.
2. EROSION AND SEDIMENT CONTROL DETAILS SHOWN ARE MINIMUM REQUIREMENTS. IT IS THE CONTRACTORS RESPONSIBILITY TO INSTALL ADDITIONAL CONTROL MEASURES AS DEEMED NECESSARY THROUGHOUT CONSTRUCTION.
3. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL SEDIMENT CONTROL DEVICES IN A FUNCTIONAL ORDER AND REPLACE ALL BLOCKED SEDIMENT DEVICES AS REQUIRED UNTIL SUCCESSFUL OFF MAINTENANCE OF WORKS.
4. CONSTRUCTION OF ALL SEDIMENT MANAGEMENT DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT. 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.
5. ALL SEDIMENT MANAGEMENT MEASURES ARE TO REMAIN IN PLACE UNTIL INSTRUCTION IS RECEIVED IN WRITING FROM THE SUPERINTENDENT TO REMOVE ALL OR PART OF THE SILT CONTROL APPLICATIONS.
6. THE BULK EARTHWORKS AND SEDIMENT CONTROL LAYOUT PLAN SHALL BE READ IN CONJUNCTION WITH THE APPROVED DRAWINGS.
7. PRIOR TO COMMENCEMENT OF CONSTRUCTION APPROVAL IS TO BE OBTAINED FROM THE SUPERINTENDENT FOR THE LOCATION OF THE SITE ACCESS POINT AND WASH DOWN AREA WHICH ARE TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
8. IF EROSION AND SEDIMENT CONTROL DEVICES HAVE BEEN FOUND TO BE DIFFERENT OR FAILED IN SERVICE, CORRECTIVE ACTION IS TO BE UNDERTAKEN IMMEDIATELY WHICH MAY INCLUDE AMENDMENTS' ADDITIONS TO THE ORIGINAL APPROVED EROSION CONTROL PLANS. SUCH AMENDMENTS ARE TO BE APPROVED BY SUPERINTENDENT, IF DEEMED NECESSARY AND RELEVANT.

OVERALL

9.
   a. TEMPORARY DRAINAGE CONTROL FLOW SHOULD BE DIVERTED AROUND THE WORK SITE WHERE POSSIBLE.
   b. ALL DRAINAGE, EROSION AND SEDIMENT CONTROLS TO BE INSTALLED AND BE OPERATIONAL BEFORE COMMENCING UP-SLOPE EARTHWORKS.
   c. 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.

SEDIMENT FENCE

10. FOR SEDIMENT FENCE STANDARD DETAIL AND SPECIFICATION REFER TO INTERNATIONAL EROSION CONTROL ASSOCIATION AUSTRALASIA (IECA) BEST PRACTICES STANDARD DRAWINGS SF-01 AND SF-02 SEDIMENT FENCE.

TEMPORARY CONSTRUCTION ENTRY/EXIT

11. FOR CONSTRUCTION ENTRY / EXIT STANDARD DETAIL AND SPECIFICATION REFER TO INTERNATIONAL EROSION CONTROL ASSOCIATION AUSTRALASIA (IECA) BEST PRACTICES STANDARD DRAWINGS EXIT-01 AND EXIT-02 CONSTRUCTION EXIT - ROCK PAD (CONSTRUCTION SITES ONLY), EXIT-03 - ROCK PADS FOR BUILDING SITES AND EXIT-04 AND EXIT-05 CONSTRUCTION EXIT - VIBRATION GRID.

KERB INLET

12. FOR KERB INLET STANDARD DETAIL AND SPECIFICATION REFER TO INTERNATIONAL EROSION CONTROL ASSOCIATION AUSTRALASIA (IECA) BEST PRACTICES STANDARD DRAWING ESC-03 KERB INLET SEDIMENT TRAPS.

CHECK DAMS

13. FOR CHECK DAM STANDARD DETAIL AND SPECIFICATION REFER TO INTERNATIONAL EROSION CONTROL ASSOCIATION AUSTRALASIA (IECA) BEST PRACTICES STANDARD DRAWING RCD-01 CHECK DAMS.

REVEGETATION

14. FOR REVEGETATION STANDARD SPECIFICATION REFER TO INTERNATIONAL EROSION CONTROL ASSOCIATION AUSTRALASIA (IECA) BEST PRACTICES STANDARD DRAWING R-01 REVEGETATION GENERAL.

FIELD INLET

15. FOR FIELD INLET STANDARD DETAIL AND SPECIFICATION REFER TO INTERNATIONAL EROSION CONTROL ASSOCIATION AUSTRALASIA (IECA) BEST PRACTICES STANDARD DRAWING ESC-02 GRATED STORMWATER (FIELD) INLET SEDIMENT TRAP.

NOTE
1. FOR EROSION AND SEDIMENT CONTROL LAYOUT PLAN REFER DRG No. C10
2. CONTRACTOR TO PROVIDE FINAL ESC DESIGN TO SUIT PROPOSED CONSTRUCTION METHODOLOGY

OPERATION AND MAINTENANCE

16. IN ACCORDANCE WITH RCC ESC GUIDELINES, ALL ESC MEASURES SHALL BE INSPECTED:
   - AT LEAST DAILY (WHEN WORK IS OCCURRING ON SITE) OR WEEKLY (WHEN WORK IS NOT OCCURRING ON SITE)
   - WITHIN 24 HOURS OF EXPECTED RAIN; AND
   - WITHIN 18 HOURS OF A RAINFALL EVENT (I.E. AN EVENT OF SUFFICIENT INTENSITY AND DURATION TO MOBILISE SEDIMENT ON SITE).
17. IN ACCORDANCE WITH RCC ESC GUIDELINES, MAINTENANCE OF ESC MEASURES SHALL OCCUR IN ACCORDANCE WITH THE FOLLOWING TABLE:

MAINTENANCE SCHEDULE

ESC MEASURE	MAINTENANCE TRIGGER	TIMEFRAME FOR COMPLETION OF MAINTENANCE
SEDIMENT BASINS	WHEN SETTLED SEDIMENT EXCEEDS THE VOLUME OF THE SEDIMENT STORAGE ZONE (SEE COUNCIL'S SEDIMENT BASIN DESIGN GUIDELINES)	WITHIN 7 DAYS OF THE INSPECTION
OTHER ESC MEASURES	THE CAPACITY OF ESC MEASURES FALLS BELOW 75%	BY THE END OF THE DAY

GENERAL

18. CIVIL CONTRACTOR IS TO PROVIDE AN UPDATED PROGRAM OF ESC MAINTENANCE AND CONTROL OF ALL STAGES OF WORK FOR APPROVAL BY THE SUPERINTENDENT.

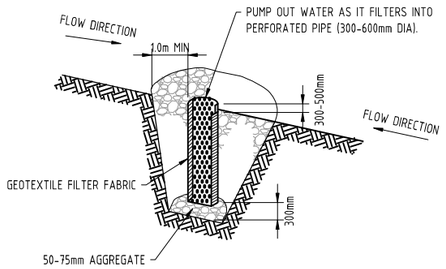
PUMP-OUT NOTES:

COLLECTED STORMWATER IS TREATED WITH AN APPROPRIATE FLOCCULATING AGENT PRIOR TO PUMP OUT BY LICENSED CONTRACTOR AFTER EVERY RAIN EVENT. SEDIMENT TO BE CLEANED OUT ON REGULAR BASIS.

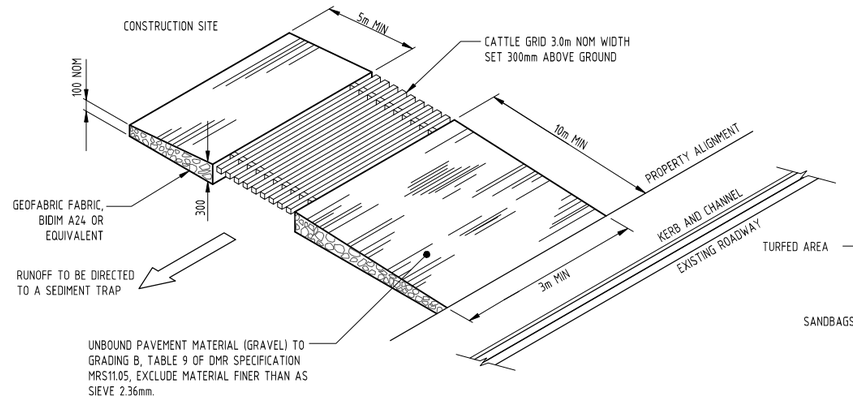
IECA STANDARD DRAWINGS REGISTER

DRAWING NUMBER	DRAWING DESCRIPTION
EXIT-01	CONSTRUCTION EXIT - ROCK PAD
EXIT-02	CONSTRUCTION EXIT - ROCK PAD
EXIT-03	ROCK PADS FOR BUILDING SITES
CD-01	CATCH DRAINS
CD-02	CATCH DRAINS (EARTH LINED)
RCD-01	CHECK DAMS
FF-01	FILTER FENCE
SF-01	SEDIMENT FENCE
SF-02	SEDIMENT FENCE
ESC-02	GRATED STORMWATER (FIELD) INLET SEDIMENT TRAP
ESC-03	KERB INLET SEDIMENT TRAPS
R-01	REVEGETATION - GENERAL
SP-01	SUMP PITS
LOG-01	GEO LOGS (COIR LOGS)

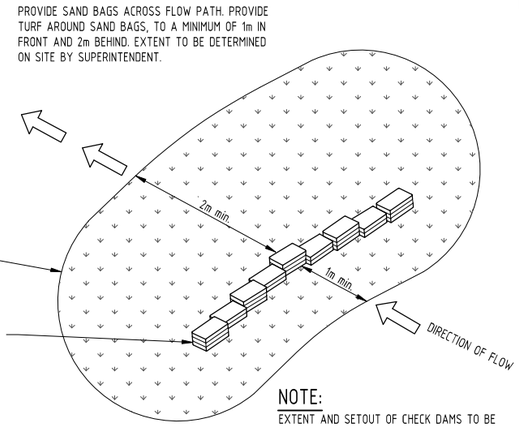
*DRAWINGS TO BE READ IN CONJUNCTION WITH INTERNATIONAL EROSION CONTROL ASSOCIATION AUSTRALASIA (IECA) BEST PRACTICES STANDARD DRAWINGS AND SPECIFICATIONS.



SUMP PIT
NTS

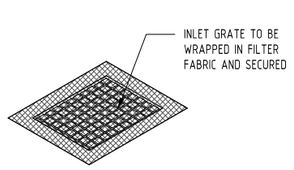


TEMPORARY CONSTRUCTION ENTRY/EXIT
NTS



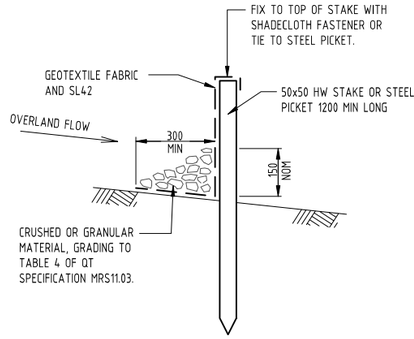
NOTE:
EXTENT AND SETOUT OF CHECK DAMS TO BE PROPOSED ON SITE BY CONTRACTOR TO THE SATISFACTION OF THE SUPERINTENDENT

SAND BAG CHECK DAM
NTS



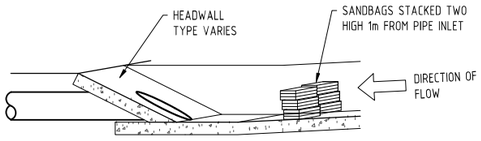
FIELD INLET SEDIMENT BARRIER
NTS

GULLY PIT SEDIMENT BARRIER
NTS

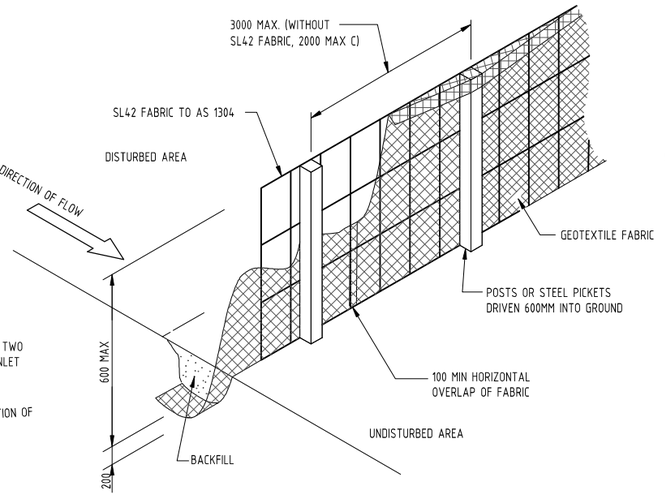


SEDIMENT FENCE - ALTERNATIVE 1
NTS

SEDIMENT FENCE - ALTERNATIVE 2
NTS



HEADWALL INLET SEDIMENT PROTECTION
NTS



SEDIMENT FENCE DETAIL
NTS

ISSUED FOR
APPROVAL

Rev	Date	Description	By	Chk
A	21.07.23	ISSUED FOR APPROVAL	DG	MRB
01	10.07.23	PRELIMINARY - ISSUED FOR INFORMATION	RBF	MRB

RPEQ CERTIFICATION
PROJECT NUMBER: 26164
PROJECT NAME: 57 BANANA STREET
DATE: 21.07.23
CERTIFIED BY: MICHAEL LEPELAAR
RPEQ NUMBER: 11171
SIGNATURE:

T:1300 657 402 E: info@adgce.com W: www.adgce.com
Quality Assurance ISO 9001:2015 | Work Health Safety ISO 45001:2018
Environmental Management ISO 14001:2015

fortezza GROUP

Client: FORTEZZA GROUP	Discipline: CIVIL		Status: APPROVAL
Project Name: BELLA BAIA, 57 BANANA STREET, REDLAND BAY, QLD, 4165	Designed By: MRB	Checked By: DS	Aporoved By: ML
	Project No.: 26164	Drawn By: DG	Scale at A1: 1:50

Do not scale drawings. If in doubt, ask!

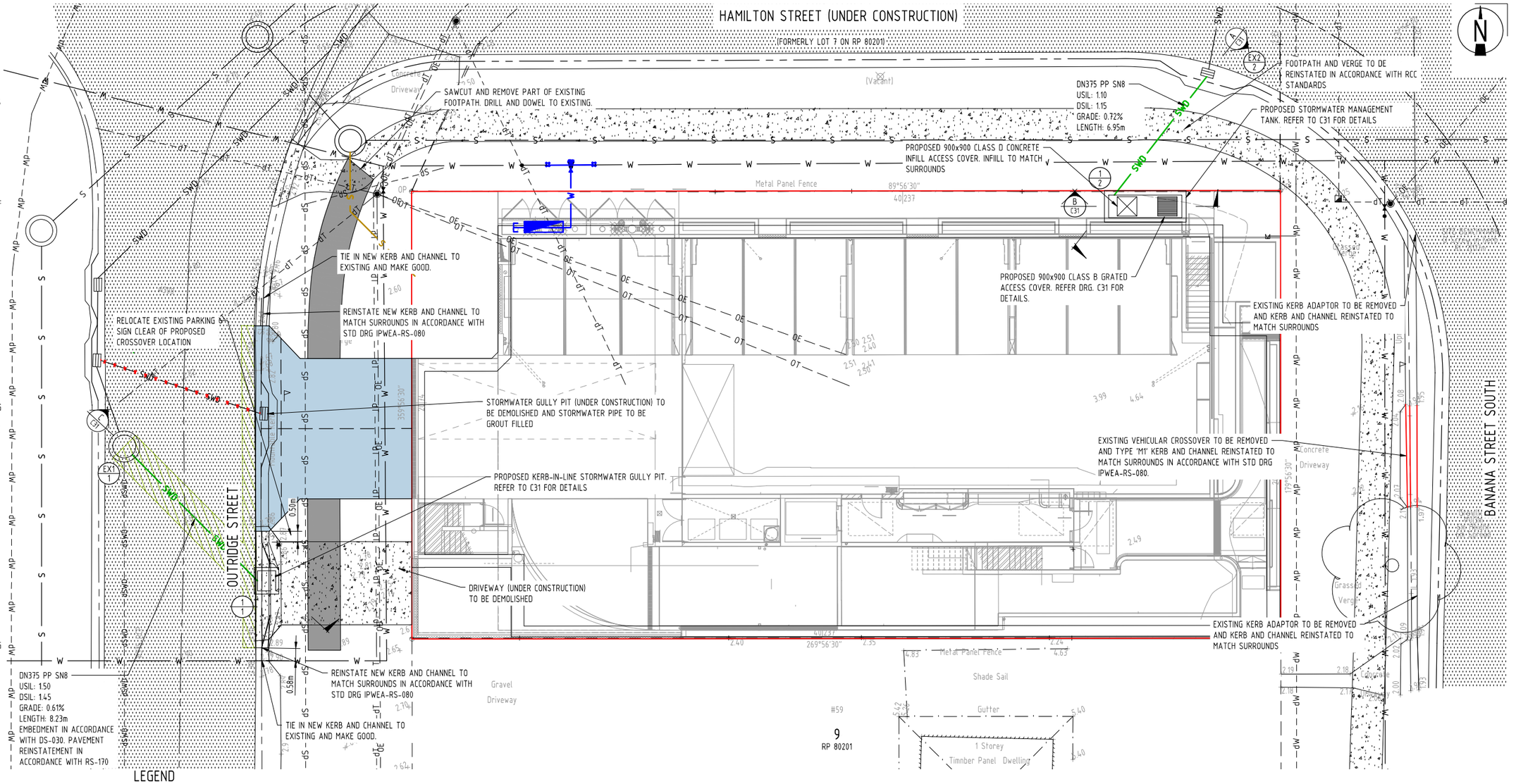
Title: EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
Drawing No.: C11
Revision: A

PLOT DATE: 7/21/2023 4:07 PM FILENAME: J:\26000\26164\CIVIL\DWG\OPW\26164_C11_EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.DWG

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm

ROADWORKS AND DRAINAGE NOTES

1. FOR GENERAL NOTES REFER DRG No. C01, WHICH IS TO BE REQUESTED AND VIEWED PRIOR TO COMMENCEMENT OF CONSTRUCTION IF NOT SUPPLIED.
2. REFER HYDRAULIC DRAWINGS FOR BASEMENT, ROOF AND UPPER LEVEL TERRACES DRAINAGE.
3. ALL ROADWORKS AND DRAINAGE (EXTERNAL TO SITE BOUNDARIES AND/OR COUNCIL OWNED DRAINAGE PIPES INTERNAL TO THE SITE BOUNDARIES) CONSTRUCTION AND TESTING TO BE IN ACCORDANCE WITH REDLAND CITY COUNCIL DEVELOPMENT GUIDELINES, DRAWINGS AND SPECIFICATIONS.
4. ALL DRAINAGE CONSTRUCTION (PRIVATELY OWNED DRAINAGE LINES INTERNAL TO THE SITE BOUNDARIES) CONSTRUCTED AND TESTED TO BE IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
5. ALL STORMWATER DRAINAGE PIPES EXTERNAL TO SITE SHALL BE: a) 300 DIA AND GREATER POLYPROPYLENE CLASS SN8. RUBBER RING JOINTED
6. ALL STORMWATER PIPES ARE TO BE MANUFACTURED TO RELEVANT AUSTRALIAN STANDARDS INCLUDING BUT NOT LIMITED TO AS4058 AND AS1992.
7. STORMWATER DRAINAGE AND STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ONLY. CONTRACTOR TO CONSIDER CONSTRUCTION LOADINGS AND ENSURE NO EXCESSIVE LOADS ARE PLACED ON STORMWATER DRAINAGE OR STRUCTURES.
8. ALL PRECAST END STRUCTURES TO BE CONSTRUCTED WITH REINFORCED CONCRETE END WALL.
9. CONTRACTOR TO CONFIRM LOCATION AND LEVEL OF EXISTING STORMWATER DRAINAGE WHERE CONNECTING ON TO EXISTING.
10. CONTRACTOR TO NOTIFY THE SUPERINTENDENT OF ANY UNSUITABLE FOUNDING MATERIAL WITHIN DRAINAGE TRENCH OR STORMWATER STRUCTURES AND AWAIT DIRECTION PRIOR TO LAYING OF PIPES.
11. TRENCH BACKFILL UNDER PAVEMENT TO BE COMPACTED TO 100% STANDARD DRY DENSITY (AS1289 5.1.1) IN LAYERS NOT EXCEEDING 150mm OF CBR 15 MATERIAL OR APPROVED EQUIVALENT. TRENCH BACKFILL IN ROADS TO BE MINIMUM CBR15 MATERIAL UP TO ROAD SUBGRADE LEVEL.
12. ALL STORMWATER GRATES/LIDS WITHIN TRAFFICABLE AREAS TO BE CLASS "D" IN ACCORDANCE WITH AS3996.
13. ALL GRATES AND LIDS SHALL SIT FLAT WITH ITS SURROUND AND NOT BE LOOSE OR MOVE UNDER WHEEL LOADS.
14. ALL STORMWATER STRUCTURES TO BE CONSTRUCTED IN ACCORDANCE WITH PROJECT SPECIFICATION, AND LOCAL AUTHORITY GUIDELINES AND SPECIFICATIONS. WHERE STRUCTURES EXCEED MAXIMUM DEPTH AS IDENTIFIED WITHIN STANDARD DRAWINGS THE CONTRACTOR WILL ENSURE AN ADEQUATE STRUCTURAL DESIGN IS UNDERTAKEN FOR THE SUBJECT STRUCTURE TO BE CONSTRUCTED TO.
15. CONTRACTOR TO ENSURE ALL MANHOLE STRUCTURES COMPLY WITH THE MAXIMUM DEPTH SPECIFIED IN THE PROJECT SPECIFICATION OR LOCAL AUTHORITY FROM FINISHED SURFACE LEVEL TO UNDERSIDE OF ROOF SLAB. ANY NON CONFORMANCE IS TO BE RECTIFIED AT THE CONTRACTORS EXPENSE.
16. ALL FOOTPATHS TO BE CONSTRUCTED IN ACCORDANCE WITH ARCHITECTURAL/LANDSCAPING DRAWINGS AND RELEVANT AUTHORITY STANDARD DRAWINGS AND SPECIFICATIONS (INCLUDING MINIMUM SL72 MESH PLACED CENTRALLY, MINIMUM 50mm COVER). FOOTPATHS TO BE CONSTRUCTED WITH MAXIMUM 2% CROSSFALL. SHOULD CONSTRUCTED FOOTPATHS EXCEED 2.5% CROSSFALL, THE CONTRACTOR WILL BE REQUIRED TO RECTIFY BY REMOVING AND REPLACING AT THEIR COST.
17. WHERE A STORMWATER DRAINAGE TRENCH HAS BEEN CONSTRUCTED LONGITUDINALLY IN THE ROAD, THEN THE FINAL PAVEMENT SURFACE REPAIR WIDTH IS TO MATCH THE EXISTING LANE WIDTH AND TERMINATE 50mm CLEAR OF THE ROAD CENTERLINE OR LANE LINE LINEMARKING TO ALLOW FOR THE BITUMEN EMULSION JOINT SEAL. REINSTATEMENT OF SURFACE ADJACENT TO THE KERB OR ROAD PAVEMENT EDGE TO EXTEND FULLY TO THE KERB LINE OR EDGE OF PAVEMENT.
18. THE CONTRACTOR IS TO CONFIRM THE LOCATION OF SERVICE CONDUITS WITH THE SUPERINTENDENT PRIOR TO LAYING STORMWATER DRAINAGE. ALL TRENCH EXCAVATION AND CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT 2011.
19. REMOVE ANY REDUNDANT DRAINAGE OUTLETS FROM THE KERB AND CHANNEL INCLUDING ANY ASSOCIATED PIPEWORK ACROSS THE FOOTWAY AND REINSTATE THE KERB AND CHANNEL AND THE FOOTWAY AREA IN ACCORDANCE WITH COUNCIL GUIDELINES.
20. ALL STORMWATER PITS TO BE LINEMARKED "FLOWS TO CREEK".
21. CONTRACTOR TO UNDERTAKE ROADWORKS TESTING IN ACCORDANCE WITH RCC GUIDELINES, DRAWINGS AND SPECIFICATIONS.
22. CONTRACTOR TO UNDERTAKE AND PROVIDE CCTV OF ALL STORMWATER LINES AT ON MAINTENANCE AND OFF MAINTENANCE. SHOULD THE CCTV IDENTIFY DAMAGE OR CRACKING WITHIN THE STORMWATER PIPES, THE CONTRACTOR WILL RECTIFY THE DAMAGE WITHIN THE PIPES BY MEANS DIRECTED BY THE SUPERINTENDENT WHICH MAY INCLUDE BUT NOT BE LIMITED TO PIPE RELINING OR PIPE REPLACEMENT.



LEGEND

- 12.0 — FINISHED SURFACE CONTOURS
- SITE BOUNDARY
- EXISTING PROPERTY BOUNDARY
- EXISTING NOMINAL KERB LINE
- EXISTING EDGE OF BITUMEN
- EXISTING ROAD CENTERLINE
- EXISTING EDGE OF BUILDING
- EXISTING EDGE OF BUILDING EAVE
- dSWD — EXISTING STORMWATER DRAINAGE (RECORDS)
- dS — EXISTING SEWER (RECORDS)
- dW — EXISTING WATER (RECORDS)
- dE — EXISTING UNDERGROUND ELECTRICITY (RECORDS)
- OE — EXISTING OVERHEAD ELECTRICITY
- OT — EXISTING TELECOMMUNICATIONS OVERHEAD (RECORDS)
- SERVICE TO BE REMOVED
- dT — EXISTING TELECOMMUNICATIONS (RECORDS)
- EXISTING BATTER
- EXISTING FENCE
- LIMIT OF WORKS
- SWD — STORMWATER DRAINAGE (UNDER CONSTRUCTION)
- SWD — PROPOSED STORMWATER DRAINAGE
- RWD — PROPOSED ROOFWATER DRAINAGE
- S — SEWER (UNDER CONSTRUCTION)
- S — PROPOSED SEWER CONNECTION
- W — WATER MAIN (UNDER CONSTRUCTION)
- W — PROPOSED WATER MAIN
- B1 — PROPOSED TYPE 'B1' KERB AND CHANNEL IN ACCORDANCE WITH STD DRG IPWEA-RS-080
- M1 — PROPOSED TYPE 'M1' CONCRETE INVERT IN ACCORDANCE WITH STD DRG IPWEA-RS-080
- EXISTING ROAD
- PROPOSED 1.5m WIDE FOOTPATH IN ACCORDANCE WITH RCC STD DRGS. R-RCC-4 & R-RCC-5
- PROPOSED DRIVEWAY CROSSOVER. LEVELS/GRADES IN ACCORDANCE WITH TYPE 'PLAN - WIDE FOOTPATHS' FROM RCC STD DRG. R-RCC-2. LAYOUT IN ACCORDANCE WITH TYPE 'GENERAL WIDE' FROM IPWEA STD DRG RS-051
- PROPOSED SHORING SYSTEM REFER SPECIALIST DRAWINGS FOR DETAILS
- PROPOSED BATTER
- PROPOSED EASEMENTS
- 1/1 — DRAINAGE STRUCTURE LABEL
- PROPOSED STREET NAME SIGN
- EXISTING ROAD
- PROPOSED 1.5m WIDE FOOTPATH IN ACCORDANCE WITH RCC STD DRGS. R-RCC-4 & R-RCC-5
- PROPOSED ROAD PAVEMENT
- PROPOSED DRIVEWAY HARDSTAND
- PROPOSED TYPE 'PLAN - WIDE FOOTPATHS' DRIVEWAY CROSSOVER IN ACCORDANCE WITH RCC STD DRG. R-RCC-2.
- PROPOSED SLEEPER RETAINING WALL
- PROPOSED BATTER
- PROPOSED EASEMENTS
- 40.000 — ROADWORKS CHAINAGE
- SW CH40.000 — SWALE CHAINAGE
- PROPOSED ROAD PAVEMENT REINSTATEMENT

NOTE

WEINAM CREEK PDA STAGE 3A WORKS PRESENTLY UNDERWAY AROUND THE SITE. THESE WORKS LABLED AS "UNDER CONSTRUCTION" AND ARE SHOWN BASED ON EDQ APPROVED DRAWINGS.

ISSUED FOR
APPROVAL

Rev	Date	Description	By	Chk
A	21.07.23	ISSUED FOR APPROVAL	DG	MRB
01	10.07.23	PRELIMINARY - ISSUED FOR INFORMATION	RBF	MRB

RPEQ CERTIFICATION
PROJECT NUMBER: 26164
PROJECT NAME: 57 BANANA STREET
DATE: 21.07.23
CERTIFIED BY: MICHAEL LEPELAAR
RPEQ NUMBER: 11171
SIGNATURE:

0 1 2 3 4 5m
SCALE 1:100
AT ORIGINAL SIZE (A1)

ADG
T: 1300 657 402 E: info@adgce.com W: www.adgce.com
Quality Assurance ISO 9001:2015 | Work Health Safety ISO 45001:2018 Environmental Management ISO 14001:2015
fortezza GROUP

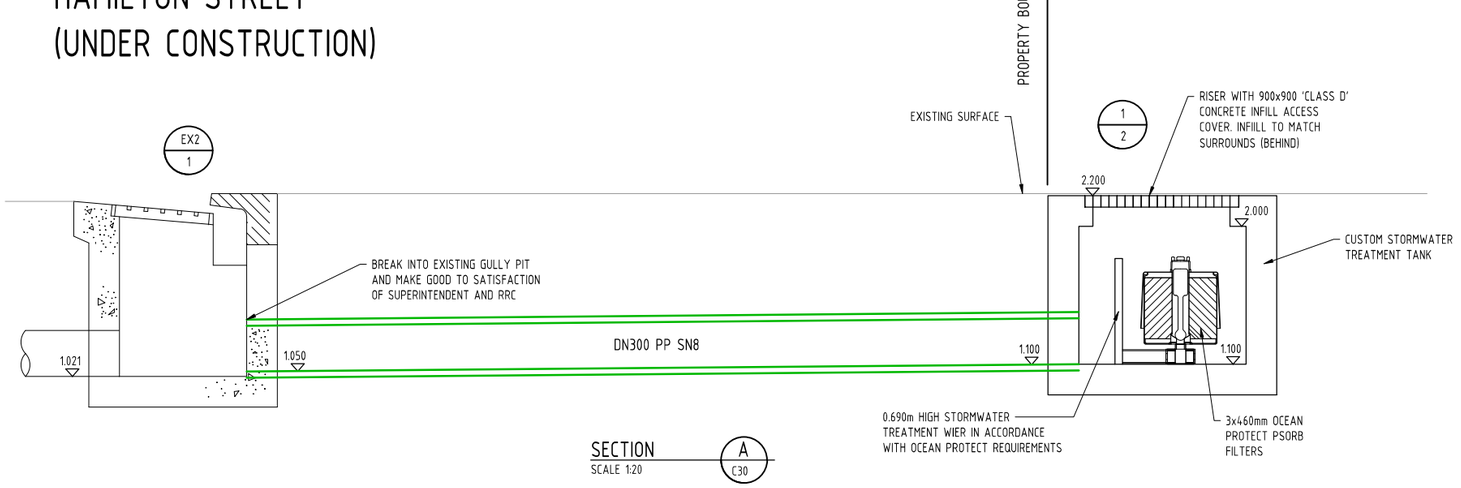
Client	FORTEZZA GROUP
Project Name	BELLA BAIA 57 BANANA STREET REDLAND BAY, QLD 4165
Discipline	CIVIL
Status	APPROVAL
Designed By	MRB
Checked By	DS
Approved By	ML
Project No.	26164
Drawn By	DG
Scale at A1	1:100

Title: ROADWORK AND DRAINAGE LAYOUT PLAN
Drawing No.: C30
Revision: A

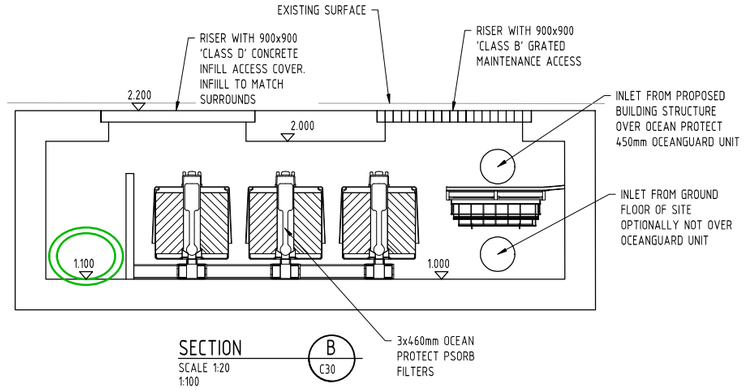
PLOT DATE: 7/21/2023 4:07 PM FILENAME: J:\26000\26164\CIVIL\DWG\DPW\26164_C30_ROADWORK AND DRAINAGE LAYOUT PLAN.DWG

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm

HAMILTON STREET
(UNDER CONSTRUCTION)

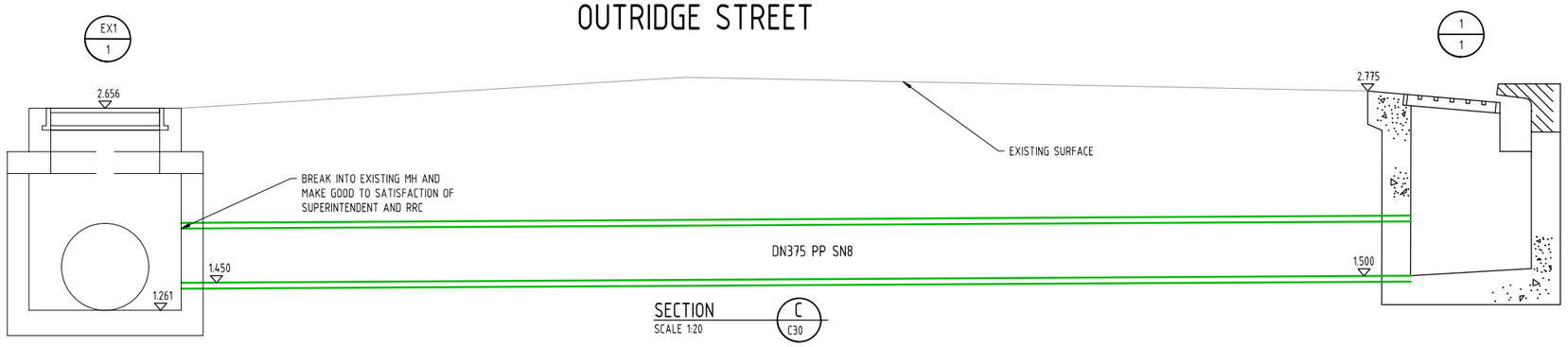


SECTION A
SCALE 1:20
C30

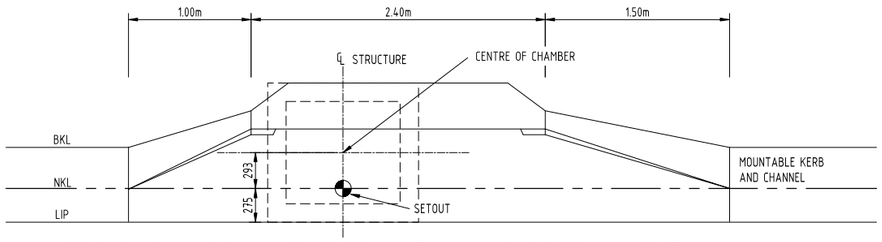


SECTION B
SCALE 1:20
1:100
C30

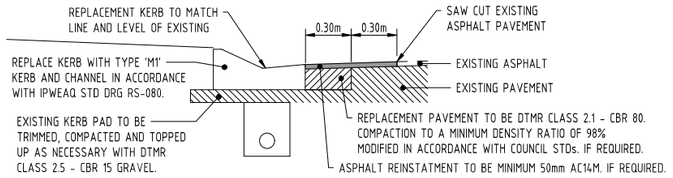
OUTRIDGE STREET



SECTION C
SCALE 1:20
C30



STD IPWEA GULLY PIT 1/1 SETOUT DETAILS (LIL - ON-GRADE PIT - M1 KERB)
SCALE 1:25 @ A1
NOTE: DIMENSIONS IN MILLIMETRES



TYPICAL KERB REPLACEMENT DETAIL
SCALE 1:20

ISSUED FOR
APPROVAL

Rev	Date	Description	By	Chk
A	21.07.23	ISSUED FOR APPROVAL	DG	MRB
01	10.07.23	PRELIMINARY - ISSUED FOR INFORMATION	RBF	MRB

RPEQ CERTIFICATION
PROJECT NUMBER: 26164
PROJECT NAME: 57 BANANA STREET
DATE: 21.07.23
CERTIFIED BY: MICHAEL LEPELAAR
RPEQ NUMBER: 11171
SIGNATURE: .....

0 2 4 6 8 10m
SCALE 1:200
AT ORIGINAL SIZE (A1)

T: 1300 657 402 E: info@adgce.com W: www.adgce.com
Quality Assurance ISO 9001:2015 | Work Health Safety ISO 45001:2018
Environmental Management ISO 14001:2015

Client: FORTEZZA GROUP
Project Name: BELLA BAIA, 57 BANANA STREET, REDLAND BAY, QLD, 4165
Discipline: CIVIL
Status: APPROVAL
Designed By: MRB
Checked By: DS
Approved By: ML
Project No.: 26164
Drawn By: DG
Scale at A1: 1:100

Title: ROADWORK AND DRAINAGE NOTES AND DETAILS
Drawing No.: C31
Revision: A

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm

PLOT DATE: 7/21/2023 4:07 PM FILENAME: J:\26000\26164\CIVIL\DWG\OPW\26164_C31_ROADWORK AND DRAINAGE NOTES AND DETAILS.DWG

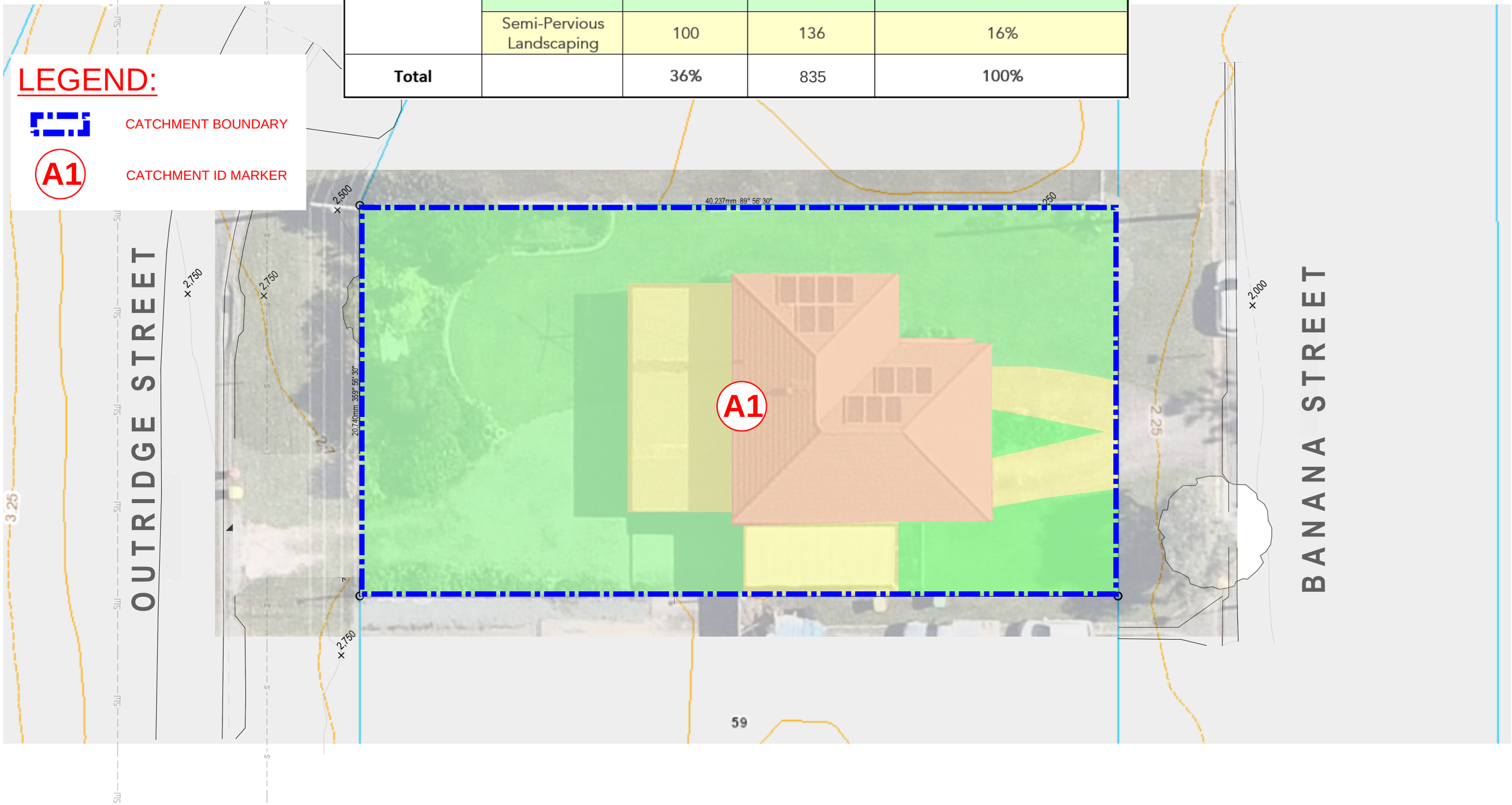
Catchment ID	Land Type	% Impervious	Area (m^2)	Percentage of Total Site Area
A1	Roof	100	166	20%
	Landscaping	0	534	64%
	Semi-Pervious Landscaping	100	136	16%
Total		**36%**	835	**100%**

N

LEGEND:

CATCHMENT BOUNDARY

A1 CATCHMENT ID MARKER



Rev	Date	Description
01	04.08.22	ISSUED FOR INFORMATION

ADG fortezza GROUP

Client: FORTEZZA GROUP

Project Name: BELLA BAIA
57 BANANA STREET, REDLAND BAY

Discipline: CIVIL

Status: INFORMATION

Designed By: MK | Checked By: MB | Approved By: KS

Project No.: 26164 | Drawn By: MK | Scale: NTS (at A3)

Title: PRE-DEVELOPMENT CATCHMENT PLAN

Drawing No.: SK01

Revision: 01

Catchment ID	Land Type	Area (m^2)	Percentage of Total Site Area
B1 (Directed into Stormsack upstream of Stormfilters)	Roof	35	4%
	Pool	27	3%
	Landscaping	199	24%
	Hardstand	345	41%
B2 (Discharges directly into Stormfilters)	Landscaping	143	17%
	Hardstand	47	6%
	Driveway	40	5%
Total		835	100%

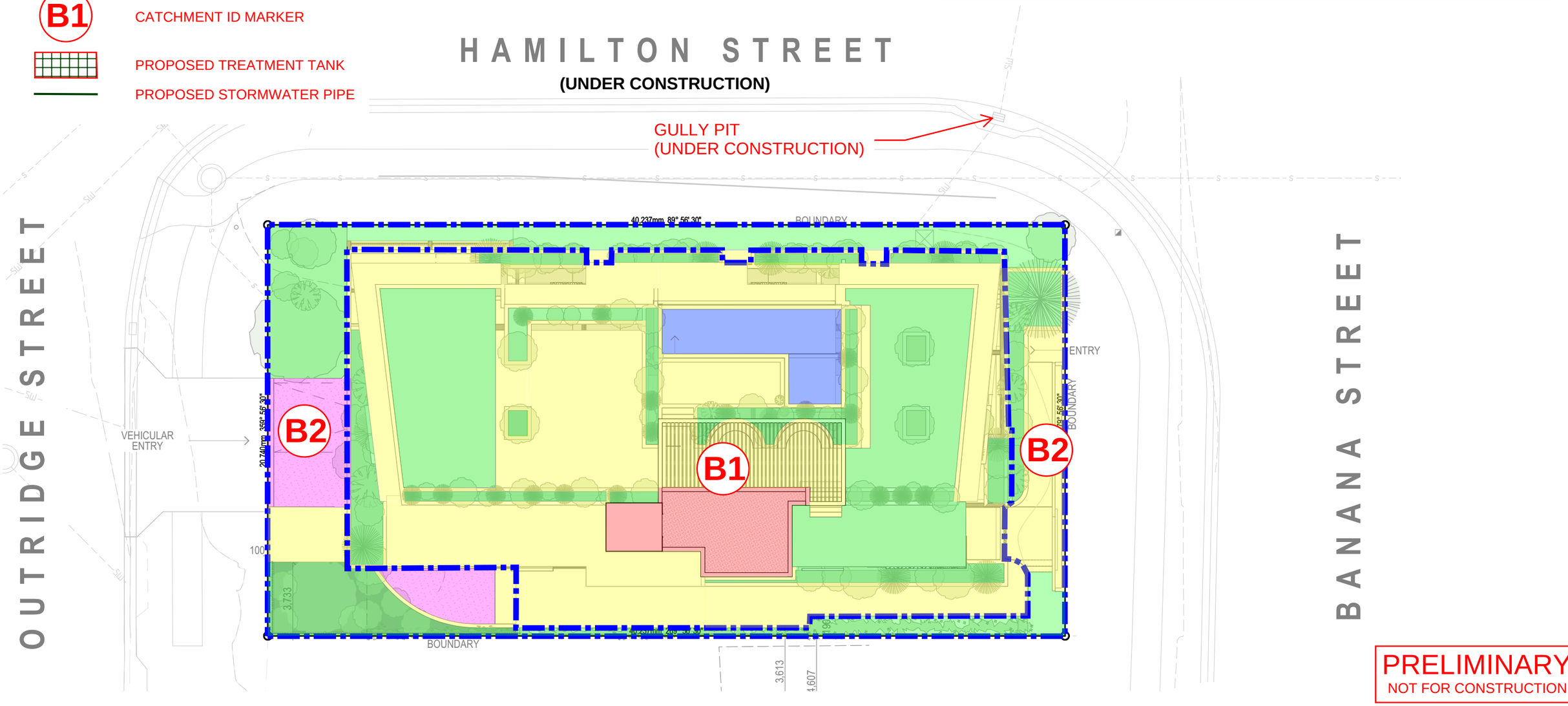
LEGEND:

CATCHMENT BOUNDARY

B1 CATCHMENT ID MARKER

PROPOSED TREATMENT TANK

PROPOSED STORMWATER PIPE



PRELIMINARY
NOT FOR CONSTRUCTION

Rev	Date	Description
03	04.08.23	ISSUED FOR INFORMATION - UPDATED ARCH PLANS
02	07.07.23	ISSUED FOR INFORMATION
01	04.08.22	ISSUED FOR INFORMATION

ADG fortezza GROUP

Client: FORTEZZA GROUP

Project Name: BELLA BAIA
57 BANANA STREET, REDLAND BAY

Discipline: CIVIL

Status: PRELIMINARY

Designed By: MK | Checked By: KS | Approved By: KS

Project No.: 26164 | Drawn By: MK | Scale: NTS (at A3)

Title: POST-DEVELOPMENT CATCHMENT PLAN

Drawing No.: SK02 | Revision: 03

Appendix E
MUSIC Model Data

MUSIC Model Information

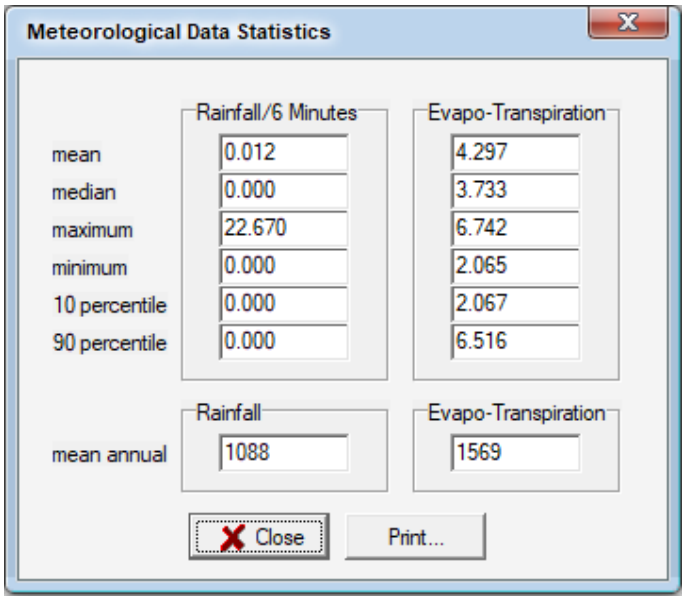
Introduction:

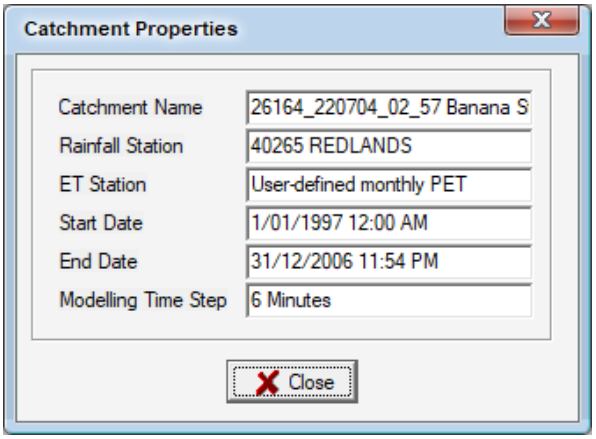
The quality of stormwater runoff and the impact of the proposed stormwater quality improvement measures were analyzed using MUSIC Version 6.3.0 according to the *MUSIC Modeling Guidelines, Water by Design.* The source nodes in the model are split into various types and a summary of the area breakdown is presented below:

Meteorological Data:

The MUSIC model was carried out using the following parameters:

- Modeling period should be 10-years with a time step of 6 minutes
- The nearest available 6-minute time step rainfall series to the subject site is the 40265 Redlands station, with a mean annual rainfall of 1,088 mm, and data from: 1/1/1997 to 31/12/2006.





The mean annual evaporation was 1,569 mm.

Source Nodes, Fractions Impervious:

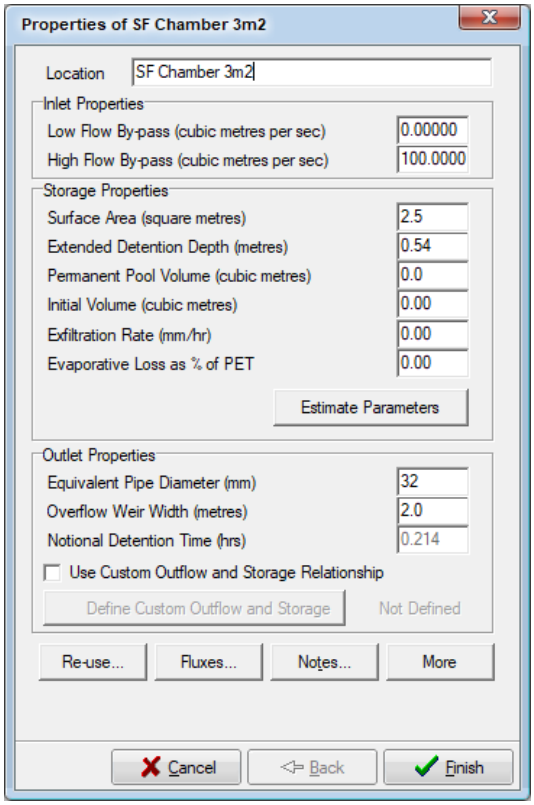
The areas of the source nodes were estimated as per SK02 in **Appendix D**.

Source Nodes - Pollutant Exports:

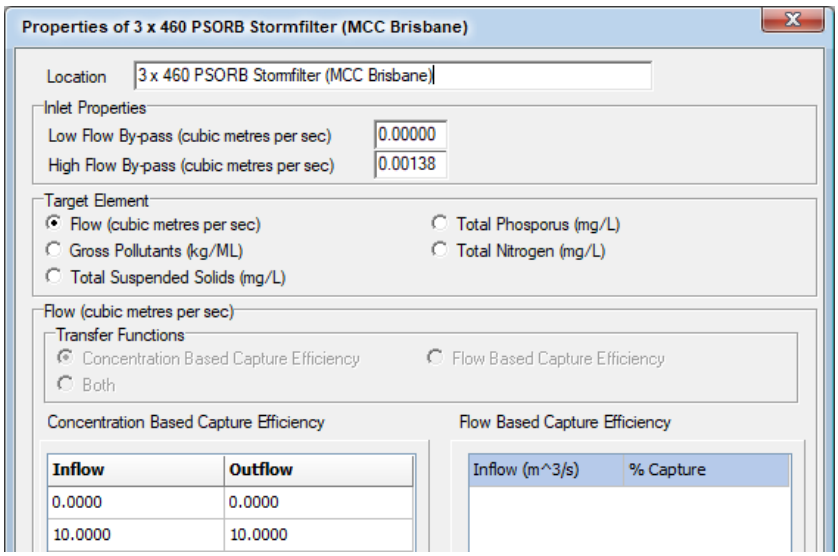
Rainfall runoff and pollutant export parameters were assigned per **Tables 3.7** and **3.8** of the Water by Design MUSIC Modeling Guidelines.

The rainfall runoff and pollutant export parameters for an urban residential development were adopted.

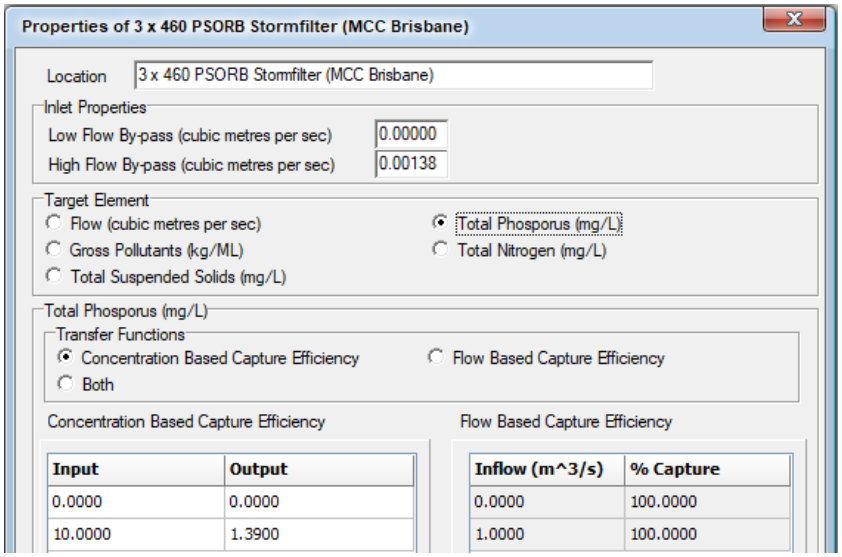
Modelled Filter Chamber Attributes:

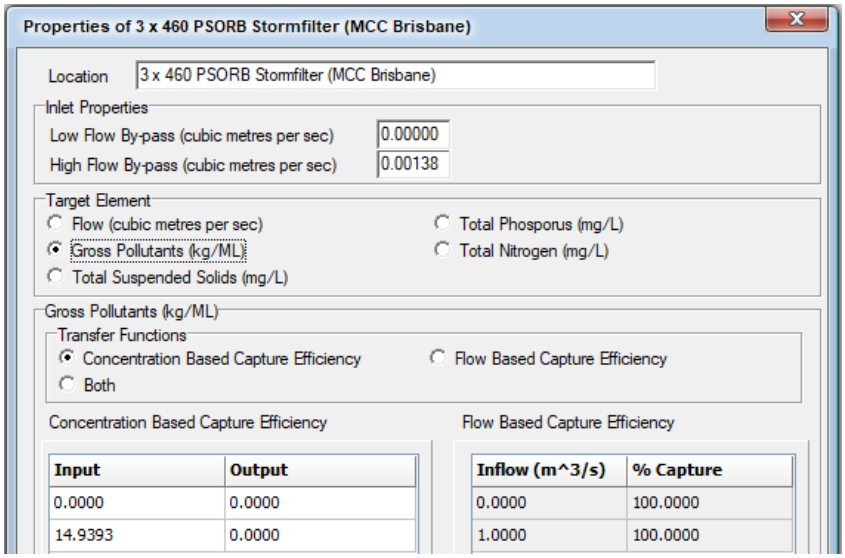


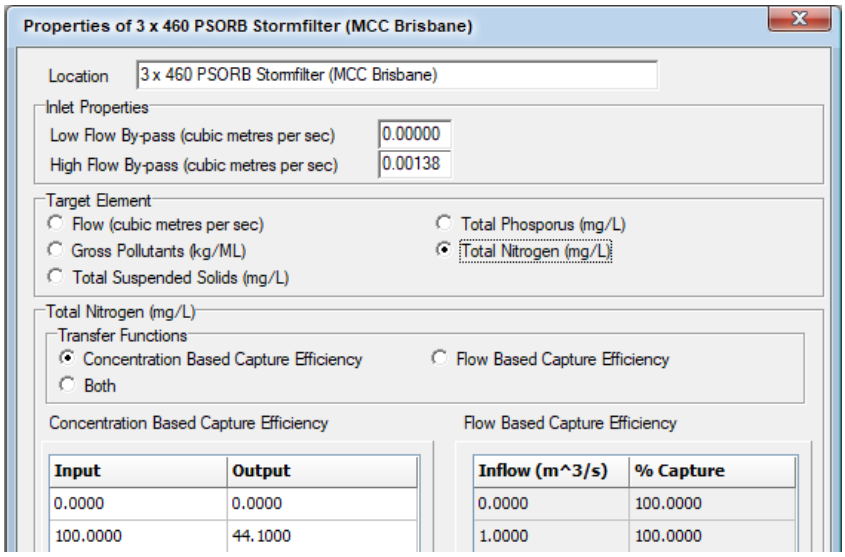
Modelled Psorb Stormfilter Attributes:



Modelled Psorb Stormfilter Attributes (continued 1):







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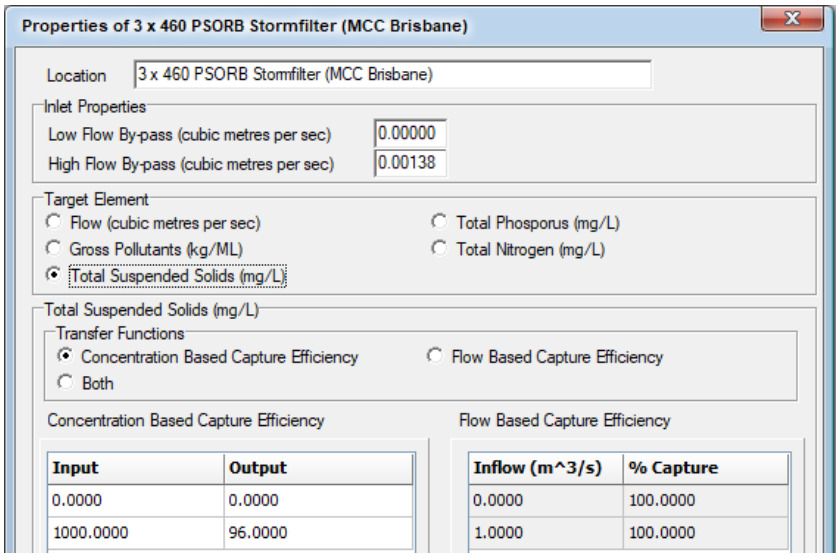

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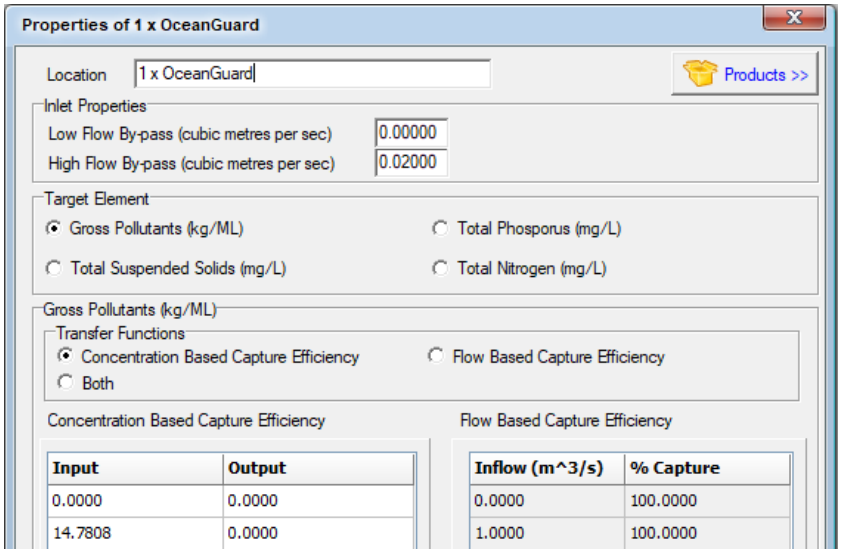
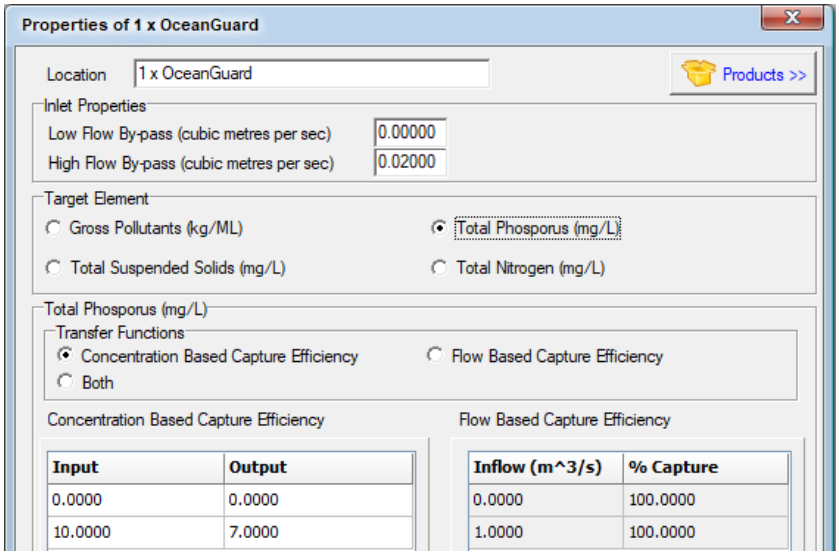
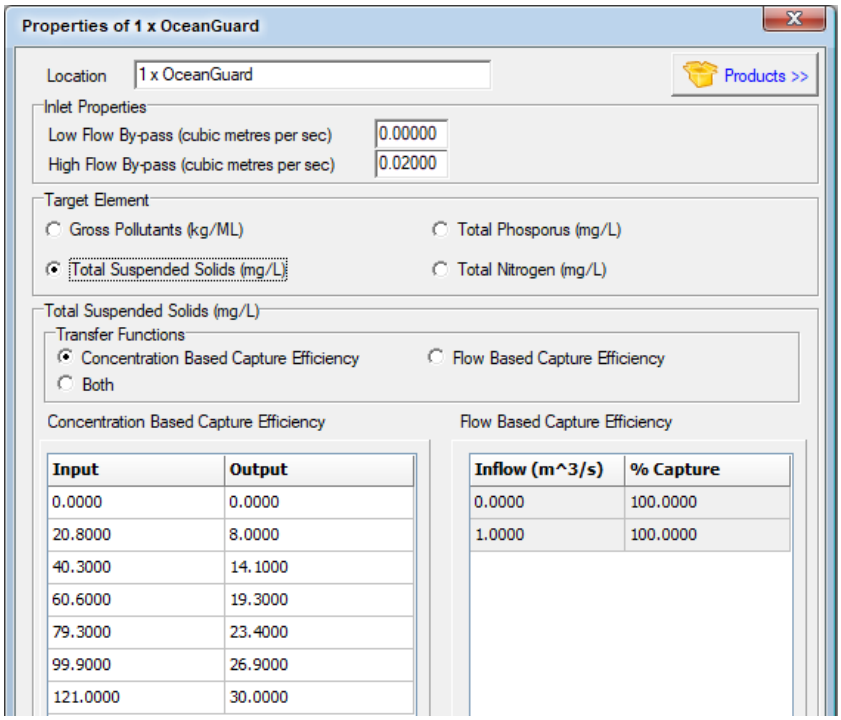
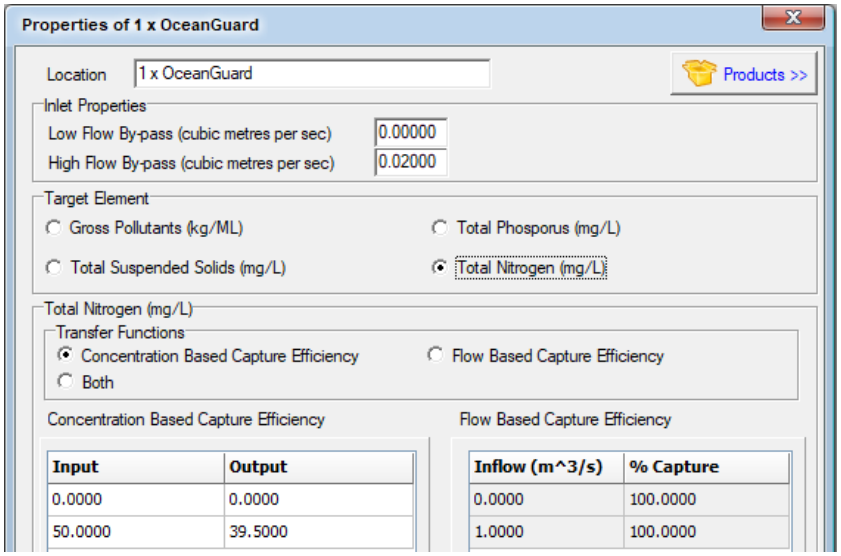


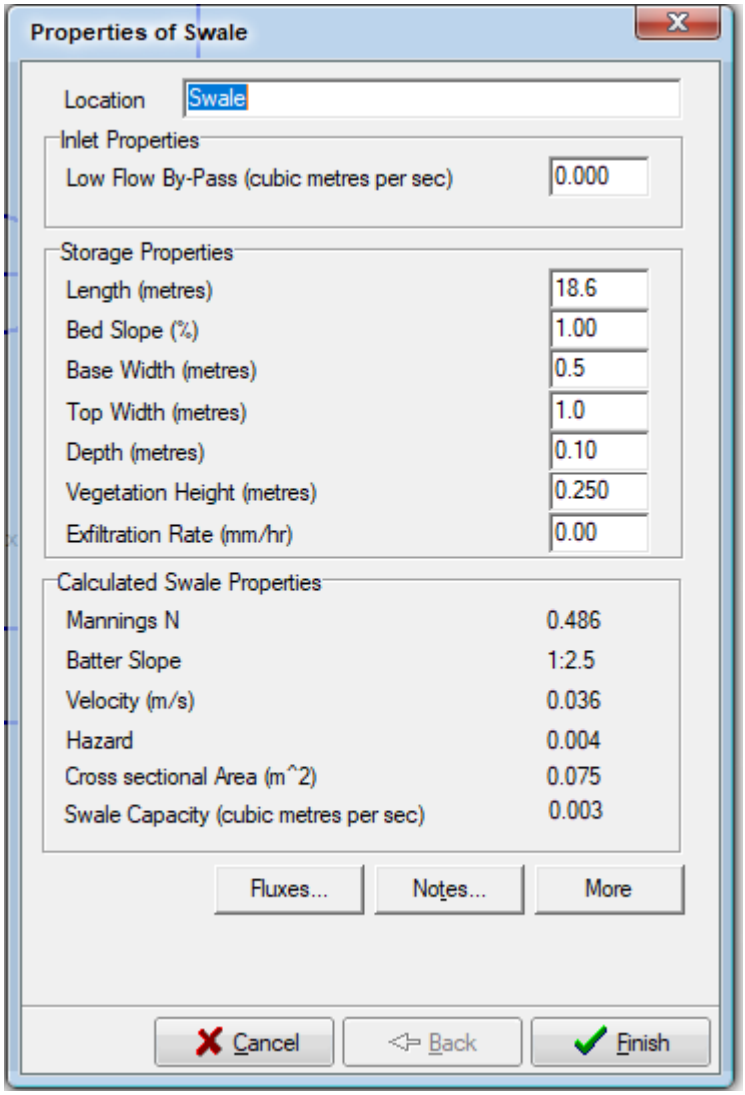


Modelled Oceanguard Attributes (continued):





Modelled Grass-Lined Swale Attributes:



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