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CIVIL ENGINEERING ASSESSMENT REPORT

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A007096730

295 Rochedale Road, Rochedale



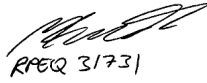
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PO Box 7214, Redland Bay Qld 4165

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REPORT CONTROL SHEET

HCE Ref No:	26193
Site:	295 Rochedale Road, Rochedale
Report Title:	Civil Engineering Assessment Report
Prepared For:	GR Development & Construction Pty Ltd

Rev No	Date	Written by	Reviewed by	Authorised by	Signed
0	19 August 2026	AD	MB	MB	 Matthew Burmeister 2026.08.19 13:58:25+10'00'

DISTRIBUTION									
Destination	Date Sent	Revision Number							
		0	1	2	3	4	5	6	7
GR Developments & Construction Pty Ltd	19/08/2026	✓							
Therefor Group Ltd	19/08/2026	✓							

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Introduction

This report has been prepared to support the development application for a Reconfiguration of a Lot to create 56 residential lots and drainage reserve lot at 295 Rochedale Road, Rochedale.

It is proposed to carry out the residential subdivision over two stages. Lots 1-32 & 900 to be delivered in Stage 1 and Lots 33-56 to be delivered in Stage 2. Relevantly to this report all civil engineering infrastructure will be delivered in Stage 1.

All existing improvements are to be demolished, and the lots are to be presented as vacant land, free of any significant vegetation.

A general description of proposed works and items of note is contained within the body of this report. Tabular responses to each of the performance criteria within the Filling and Excavation Code, Infrastructure Design Code and Stormwater Code are included as appendices.



Image : Aerial View of Site (Nearmap.com)

Flooding

A Brisbane City Council FloodWise Property Report has been generated and indicates that the site is not contained within Brisbane River, Creek /Waterway or Overland Flow Flood Planning Areas.

A review of local topography has also been undertaken, and it is confirmed there are no localised overland flow paths to be considered.

It is concluded that the risk of flooding is very low and assessment against the Flood Overlay Code is not required.

Refer appendices for the BCC FloodWise Property Report.

Earthworks and Retaining

A concept earthworks design is depicted on the accompanying engineering drawings. Factors influencing the design are:

- the desire to provide flat, ready to build on, residential allotments.
- stormwater management to achieve lawful discharge.
- minimisation of retaining walls.

The net outcome is an earthworks design that generates an excess of approximately 21,250m³.

The site has direct connection to a major road. As such it is not expected that the haulage of earth off site will have any significant impact on local residents.

The existing site falls at an approximate grade of 3% towards the western and northwestern properties.

Proposed earthworks of the development site are influenced by the stormwater runoff being directed from lots to the proposed roads. Retaining walls fronting external boundaries are limited to a maximum height of 1.0m in fill, and 2.1m in cut. Internal retaining walls are proposed to have a maximum height of 1.60m.

Compliance with A01 and A02.1 cannot be reasonably achieved due to the slope of the existing ground and the required discharge of lot runoff to roads. However, compliance with P01 and P02 can be achieved as public visual impacts are not affected as walls are internally facing and screened by future housing.

Erosion Hazard Assessment

An Erosion Hazard Assessment (EHA) has been completed based on the information currently available. The assessment indicates that the site is considered 'medium' risk. Refer appendices for the completed Erosion Hazard Assessment.

Appropriate erosion and sediment control measures can be prepared and implemented on site during construction activities.

Roadworks and Access

A 5.5m wide road within a 12m wide verge is proposed as access into the development and is to be constructed to the frontage of the future road being developed under application number A006972019 to the west of the subject site. A 7.5m wide road within a 16m wide verge is proposed to connect from the 5.5m road as access to all lots within the development.

Refuse Collection

Kerbside collection of individual bins is proposed. No impediments are identified.

Stormwater Drainage

There is no existing stormwater infrastructure in the vicinity of the development site. Site runoff currently is being conveyed as non-concentrated sheet flow towards the northwestern and western properties. Flows in the existing case ultimately discharge to the Bulimba Creek.

Site runoff is to be managed by the infrastructure shown on the accompanying engineering drawings and in compliance with the Infrastructure Design PSP.

Site runoff is to be discharged to the provided 750mm diameter property connection by the future development being constructed under application number A006972019. This is deemed to be a lawful discharge of runoff as the infrastructure will have sufficient capacity for the developed peak discharge rates under all storm events.

Stormwater quality improvement will be achieved through a 250m² bioretention basin located in Lot 900.

Sewerage

There is no existing sewerage infrastructure in the vicinity of the development site.

A concept sewerage design is depicted on the accompanying engineering drawings.

The future development, being constructed under application number A006972019, has proposed to construct sewerage infrastructure to the frontage of the western boundary of the subject site.

It is proposed to extend from this future sewerage infrastructure through the verges of the proposed roads of the subject site to service each lot individually.

Proposed sewerage construction is shown on the accompanying engineering drawings. These works comply with the Gravity Sewerage Code of Australia SEQ Service Providers Edition Version 2.1 (September 2021).

Water Reticulation

Existing water reticulation infrastructure in the vicinity of the development site is shown in the image below taken from Urban Utilities GIS.

There is currently an existing 315mm diameter water main running parallel to the eastern property boundary within the verge of Rochedale Road. A 150mm diameter water main currently runs within the opposite verge of Rochdale Road as well.

A concept design for water servicing is depicted on the accompanying engineering drawings.

The future development, being constructed under application number A006972019, has proposed to construct water infrastructure to the frontage of the western boundary of the subject site.

It is proposed to extend from this future water infrastructure through the verges of the proposed roads of the subject site to service each lot individually.

The development proposes to construct new fire hydrants to provide firefighting coverage to all lots in accordance with the requirements of the Water Supply Code SEQ Edition, *Clause 8.8.8*.

These works comply with the Water Supply Code of Australia SEQ Service Providers Edition Version 1.4 (March 2024).

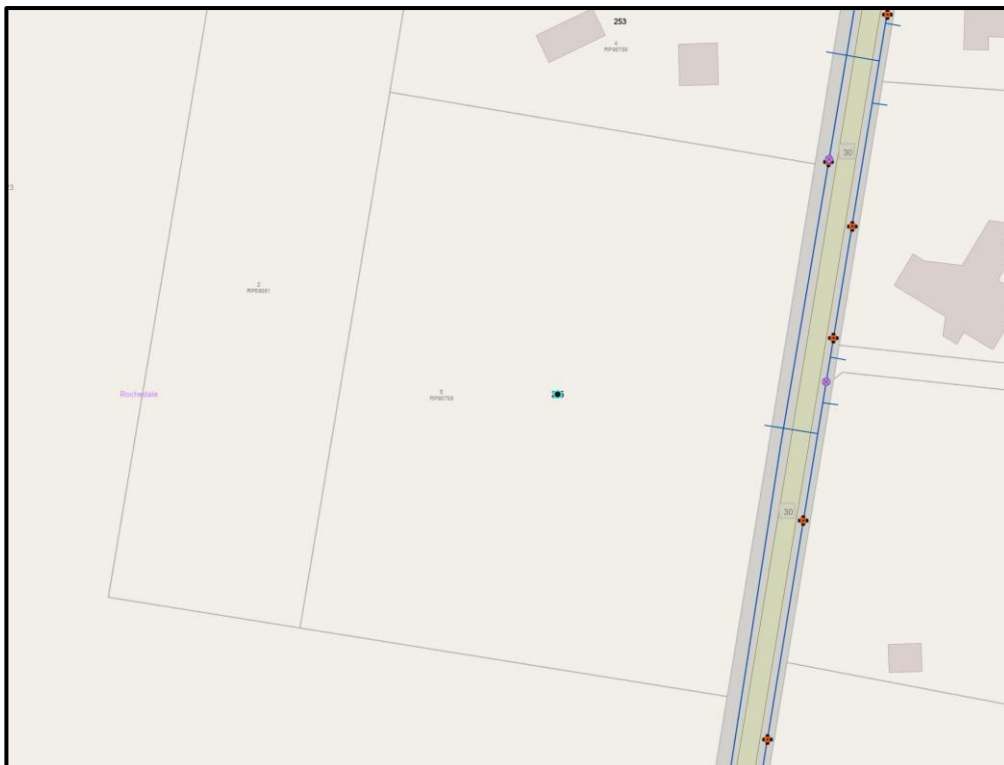


Image : Existing water reticulation infrastructure.

Conclusions

The proposed development has been assessed against the Brisbane City Council's City Plan.

Compliance with the Performance Outcomes of the Filling and Excavation Code, Infrastructure Design Code and Stormwater Code has been achieved.

Reasonable and relevant conditions can be applied to the development approval to achieve compliant and adequate servicing of the development.

Engineering Drawings

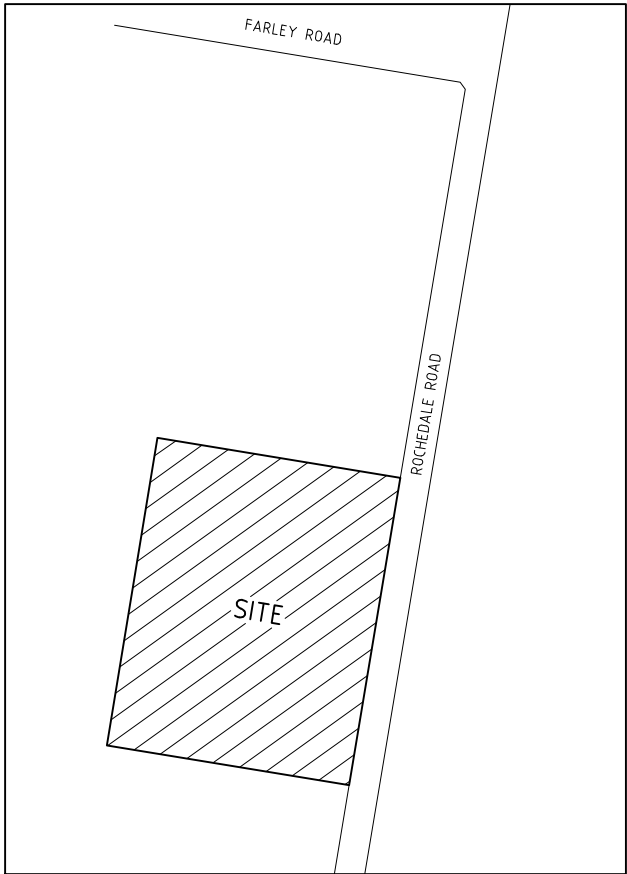
1 INTO 56 LOT RESIDENTIAL SUBDIVISION

LOT 5 ON RP 95759

295 ROCHEDALE ROAD

ROCHEDALE, QLD 4123

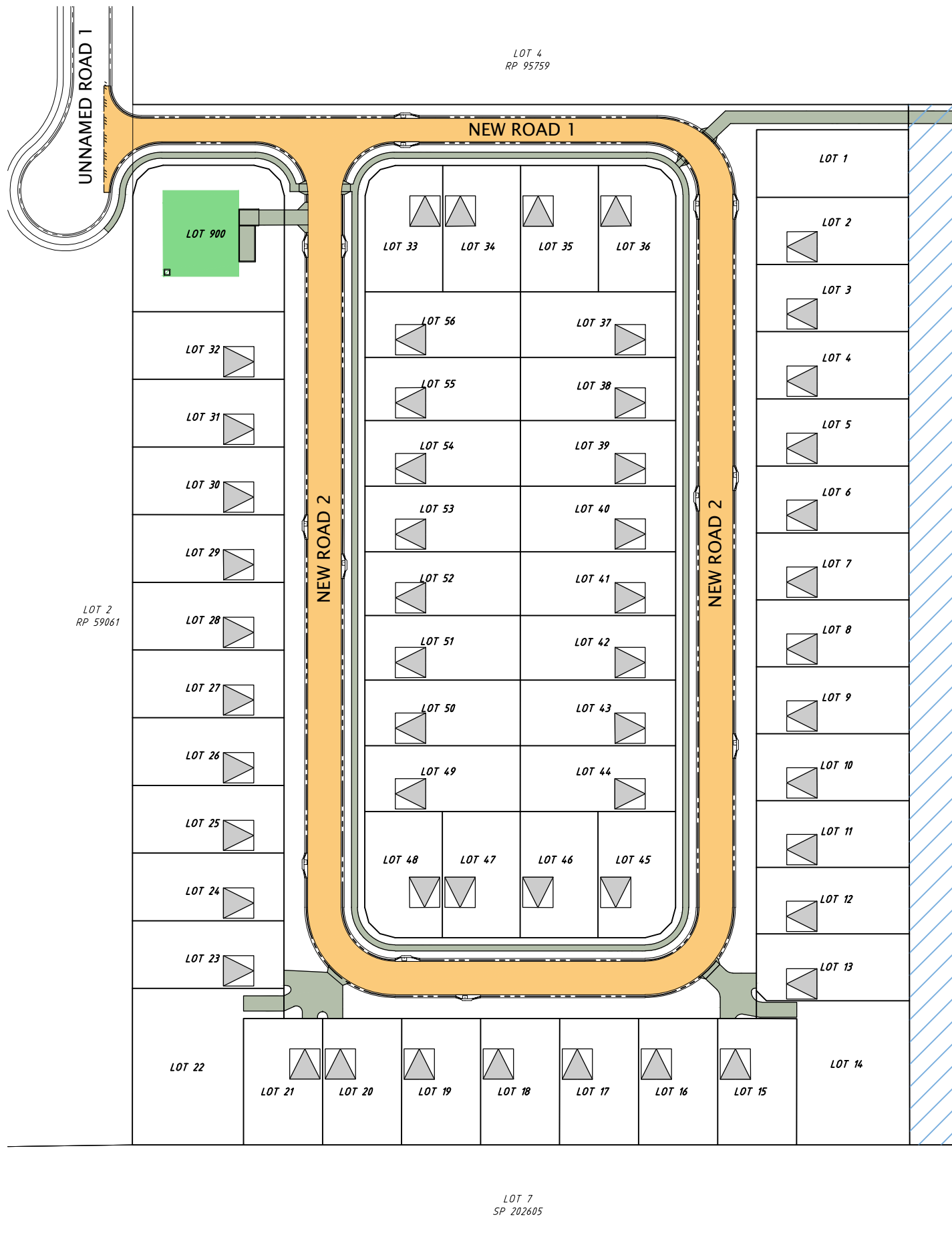
DRAWING INDEX	
DRAWING No.	DESCRIPTION
26193-SK10	LOCALITY PLAN AND DRAWING INDEX
26193-SK11	CONCEPT GENERAL ARRANGEMENT PLAN
26193-SK12	CONCEPT CIVIL SERVICES PLAN - SHEET 1 OF 2
26193-SK13	CONCEPT CIVIL SERVICES PLAN - SHEET 2 OF 2
26193-SK14	CONCEPT EARTHWORKS PLAN - SHEET 1 OF 2
26193-SK15	CONCEPT EARTHWORKS PLAN - SHEET 2 OF 2
26193-SK16	CONCEPT EARTHWORKS SECTIONS - SHEET 1 OF 2
26193-SK17	CONCEPT EARTHWORKS SECTIONS - SHEET 2 OF 2
26193-SK18	CONCEPT BIO-RETENTION BASIN LAYOUT PLAN AND DETAILS
26193-SK19	CONCEPT BIO-RETENTION BASIN SECTIONS



LOCALITY PLAN
SCALE 1:2500

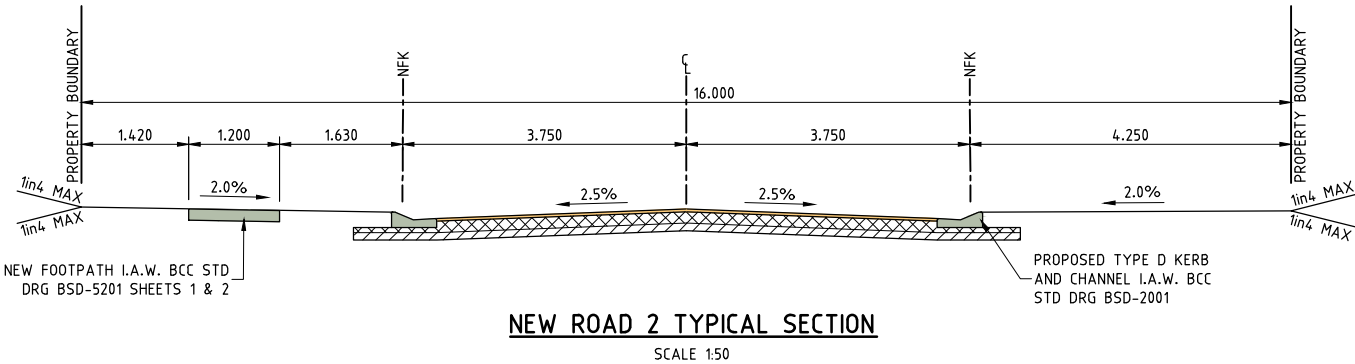
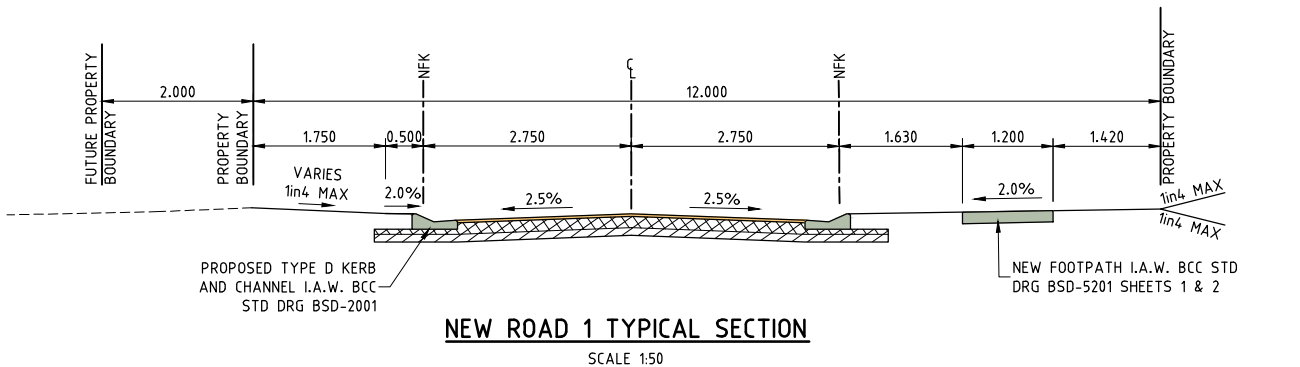


		HCE Engineers Pty Ltd ABN 42 664 382 610 mail@hce-engineers.com.au 07 3829 1399		PROJECT 295 ROCHEDALE ROAD ROCHEDALE QLD 4123 LOT 5 RP 95759	TITLE LOCALITY PLAN AND DRAWING INDEX	CLIENT GR DEVELOPMENT & CONSTRUCTION PTY LTD	CERTIFICATION	REVISION	AMENDMENT	DATE	DO NOT SCALE. CONFIRM ALL DIMENSIONS ON SITE. Copyright © Designed MB Drawn EL Date 15/07/26 Approval No. ----- Scale AS SHOWN Drawing No. 26193-SK10 Rev. A
								A	REPORT ISSUE	24/07/26	



PLAN

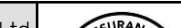
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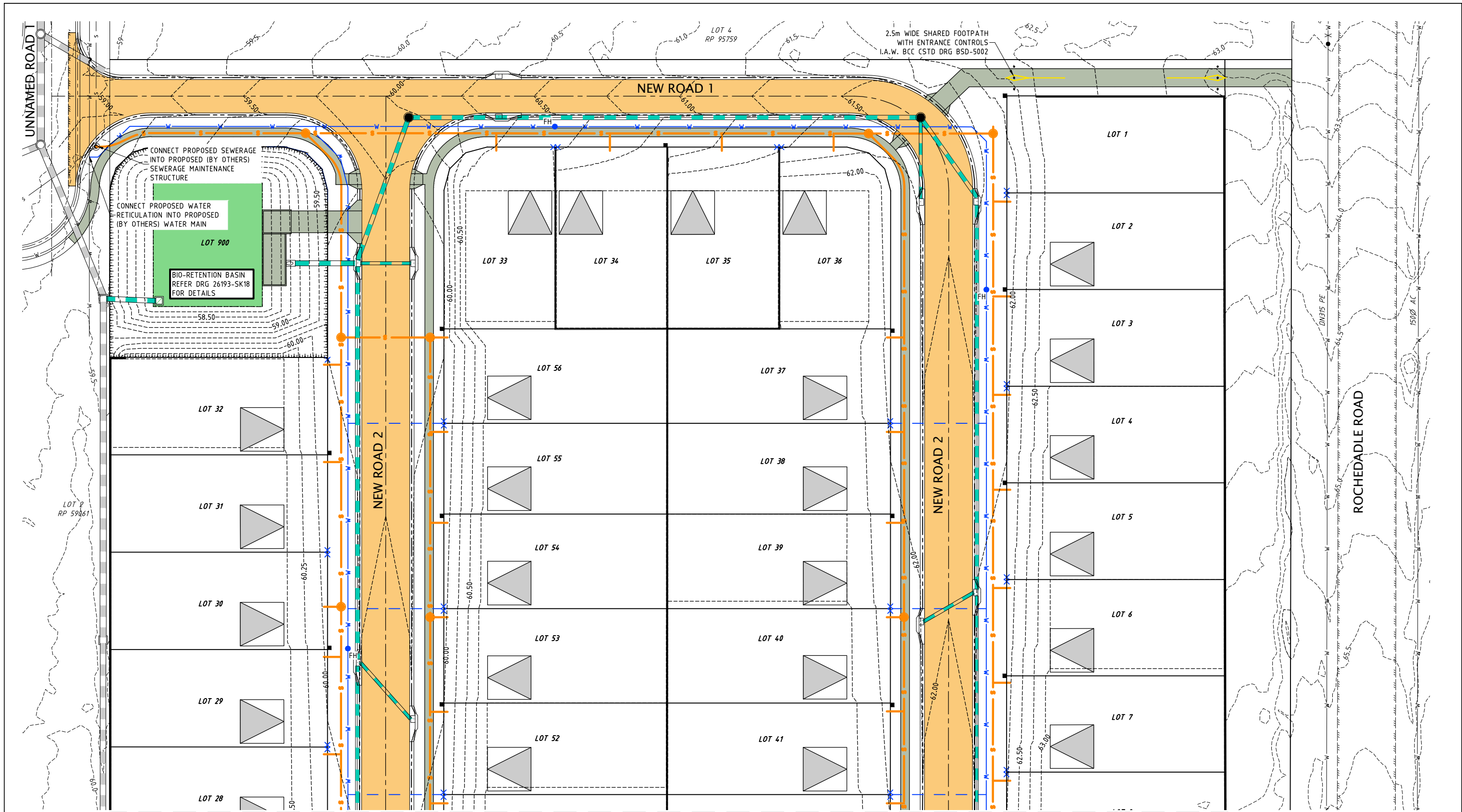


LEGEND

- PROPOSED KERB AND CHANNEL
- PROPOSED PAVEMENT
- PROPOSED CONCRETE
- BIORETENTION AREA
- ROAD WIDENING
- POTENTIAL FUTURE ACCESS LOCATION



		HCE Engineers Pty Ltd ABN 42 664 382 610 mail@hce-engineers.com.au 07 3829 1399		PROJECT	TITLE	CLIENT	NOT FOR CONSTRUCTION. CONCEPT ONLY.	REVISION	AMENDMENT	DATE	DO NOT SCALE. CONFIRM ALL DIMENSIONS ON SITE.			Copyright ©		
				295 ROCHEDALE ROAD ROCHEDALE QLD 4123 LOT 5 RP 95759	CONCEPT GENERAL ARRANGEMENT PLAN	GR DEVELOPMENT & CONSTRUCTION PTY LTD		A	REPORT ISSUE	24/07/26	Designed	MB	Drawn	EL	Date	15/07/26
												Approval No.			Scale	AS SHOWN
												Drawing No.	26193-SK11		Rev.	A



LEGEND

- 10.0--- EXISTING SURFACE CONTOURS (0.25m INTERVAL)
- 10.0--- FINISHED SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING EDGE OF BITUMEN
- ===== EXISTING KERB AND CHANNEL
- ===== PROPOSED KERB AND CHANNEL
- ===== PROPOSED RETAINING WALL
- ===== PROPOSED (BY OTHERS) STORMWATER DRAINAGE
- ===== PROPOSED (BY OTHERS) SEWERAGE
- ===== PROPOSED (BY OTHERS) WATER RETICULATION
- ===== EXISTING UNDERGROUND ELECTRICAL
- ===== EXISTING TELECOMMUNICATIONS

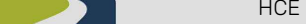
- ✕ PROPOSED WATER METER
- FH PROPOSED FIRE HYDRANT
- PROPOSED ELECTRICAL PILLAR
- ===== PROPOSED PAVEMENT
- ===== PROPOSED CONCRETE
- ===== BIORETENTION AREA
- ▽ POTENTIAL FUTURE ACCESS LOCATION

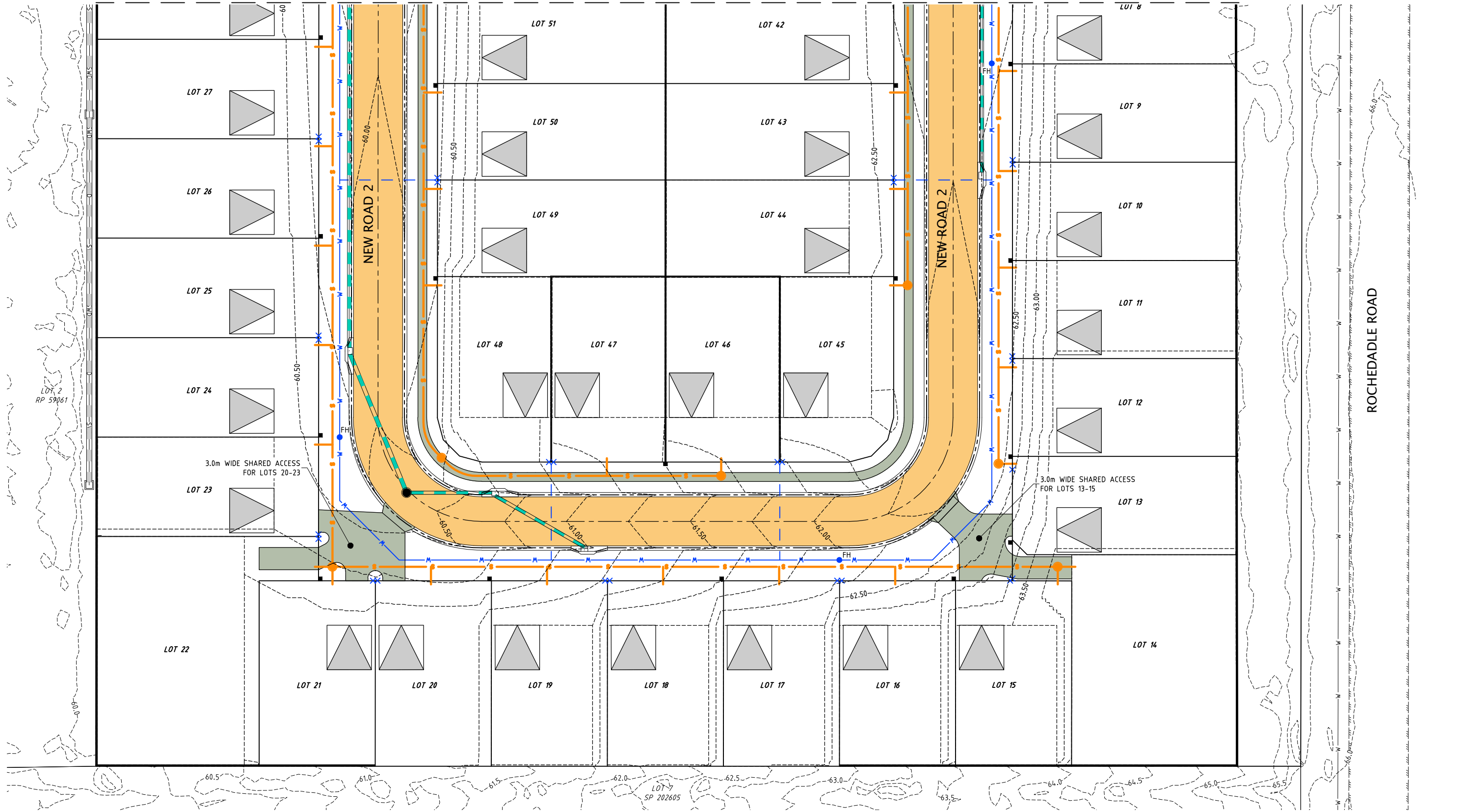
FOR CONTINUATION REFER TO DRAWING 26193-SK13

PLAN

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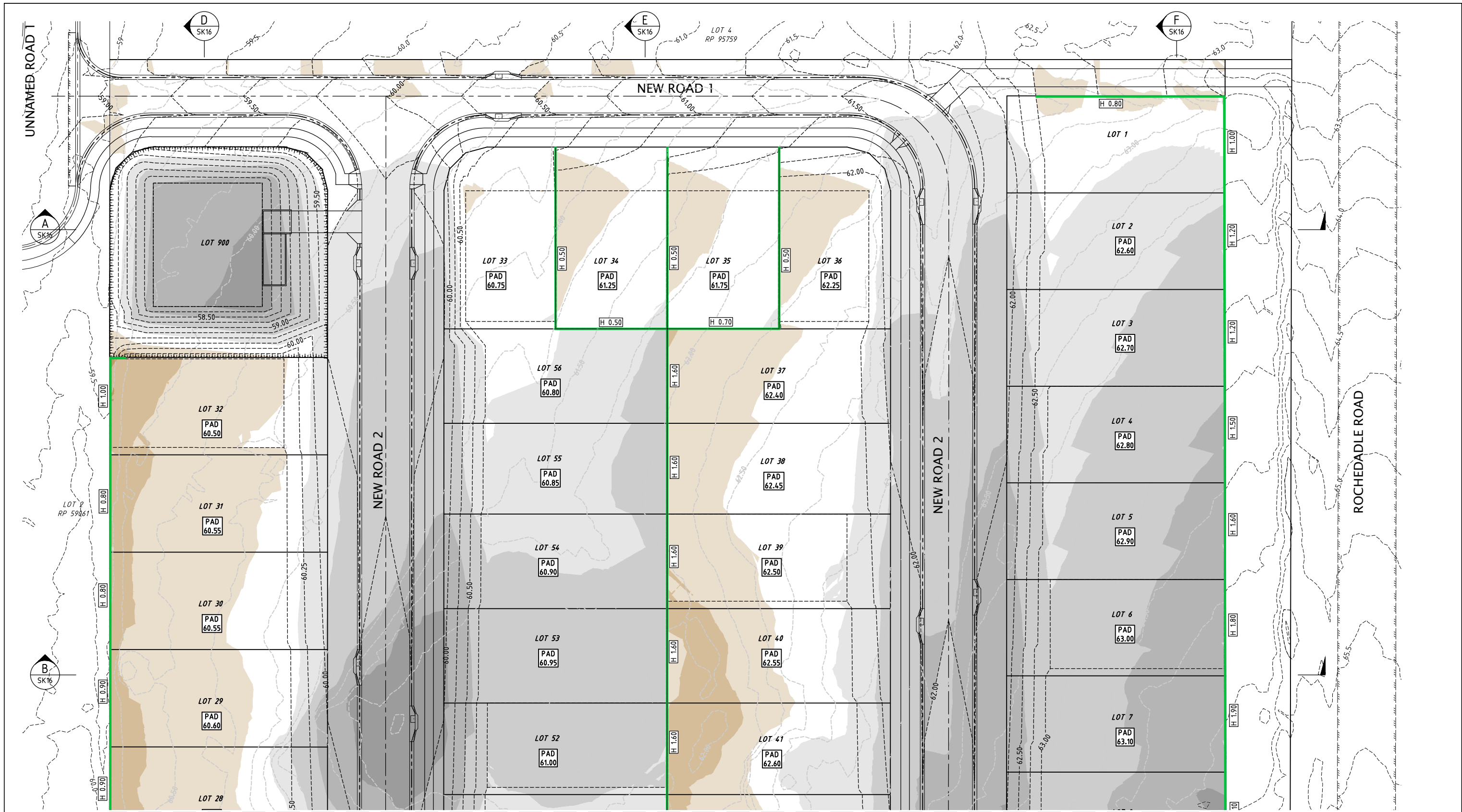
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- LEGEND**
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 - 10.0--- FINISHED SURFACE CONTOURS (0.25m INTERVAL)
 - EXISTING EDGE OF BITUMEN
 - === EXISTING KERB AND CHANNEL
 - === PROPOSED KERB AND CHANNEL
 - PROPOSED RETAINING WALL
 - PROPOSED (BY OTHERS) STORMWATER DRAINAGE
 - PROPOSED STORMWATER DRAINAGE
 - PROPOSED (BY OTHERS) SEWERAGE
 - PROPOSED SEWERAGE
 - PROPOSED (BY OTHERS) WATER RETICULATION
 - PROPOSED WATER RETICULATION
 - EXISTING UNDERGROUND ELECTRICAL
 - EXISTING TELECOMMUNICATIONS
 - ✕ PROPOSED WATER METER
 - PROPOSED FIRE HYDRANT
 - PROPOSED ELECTRICAL PILLAR
 - PROPOSED PAVEMENT
 - PROPOSED CONCRETE
 - BIORETENTION AREA
 - ▽ POTENTIAL FUTURE ACCESS LOCATION

SCALE 1:250 (A1)
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								Drawing No.	26193-SK13						

26193-SK13



FOR CONTINUATION REFER TO DRAWING 26193-SK15

PLAN
SCALE 1:250

LEGEND

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- 10.0--- FINISHED SURFACE CONTOURS (0.25m INTERVAL)
- === EXISTING KERB AND CHANNEL
- PROPOSED KERB AND CHANNEL
- PROPOSED RETAINING WALL
- [H 1.00] MAXIMUM RETAINING WALL HEIGHT

CUT/FILL DEPTHS

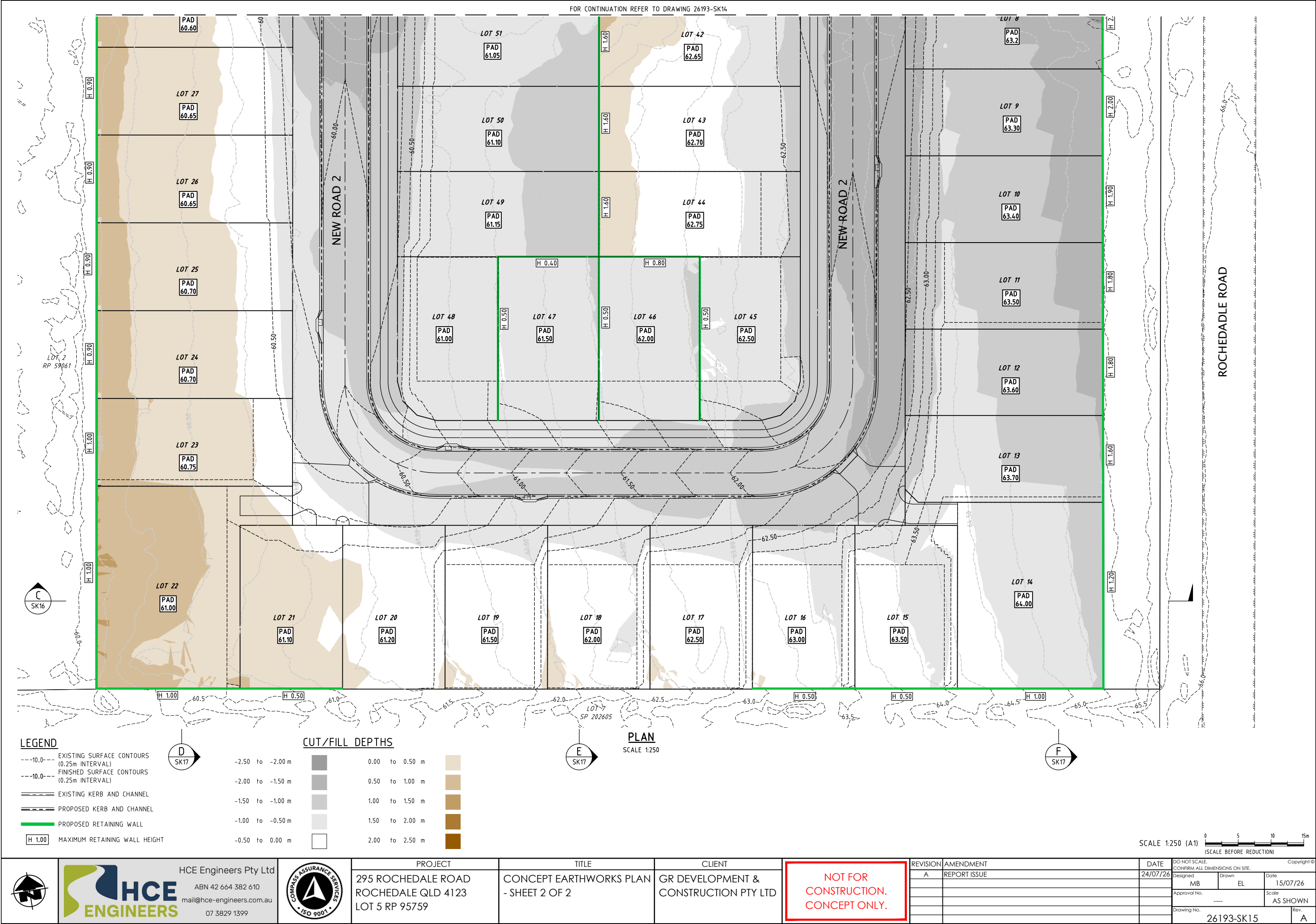
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-1.50 to -1.00 m	1.00 to 1.50 m
-1.00 to -0.50 m	1.50 to 2.00 m
-0.50 to 0.00 m	2.00 to 2.50 m

PRELIMINARY
EARTHWORKS VOLUMES

TOTAL CUT	2300m ³
TOTAL FILL	1750m ³
BALANCE	-21250m ³

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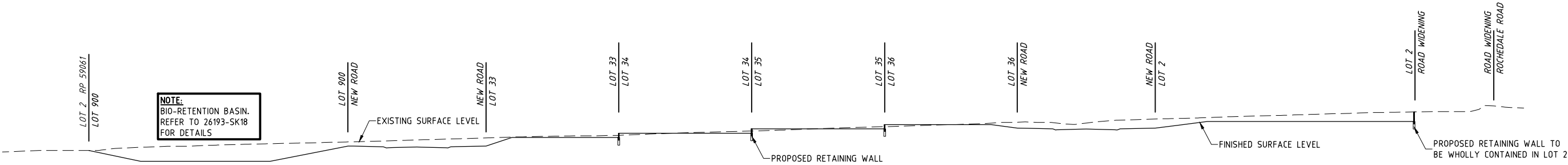
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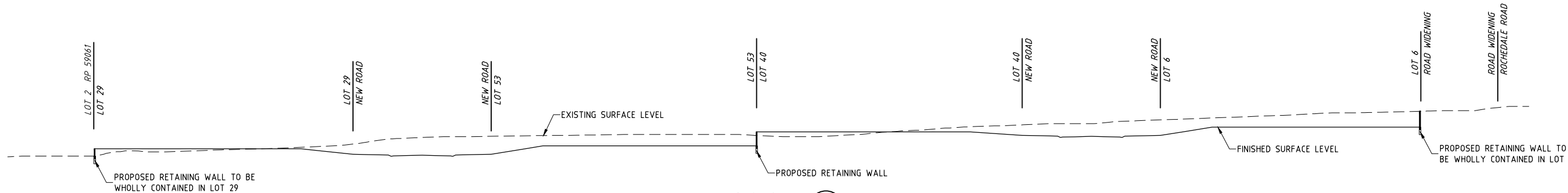
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----- EXISTING SURFACE LEVEL

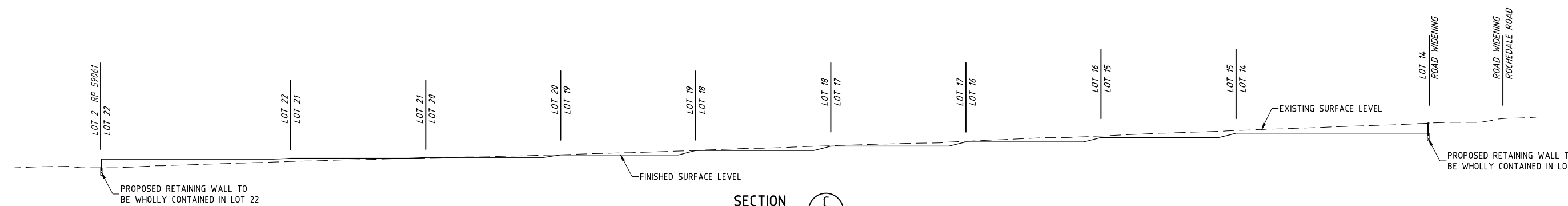
———— FINISHED SURFACE LEVEL



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SK14



SECTION B
SCALE 1:250
SK14



SECTION C
SCALE 1:250
SK15





HCE Engineers Pty Ltd

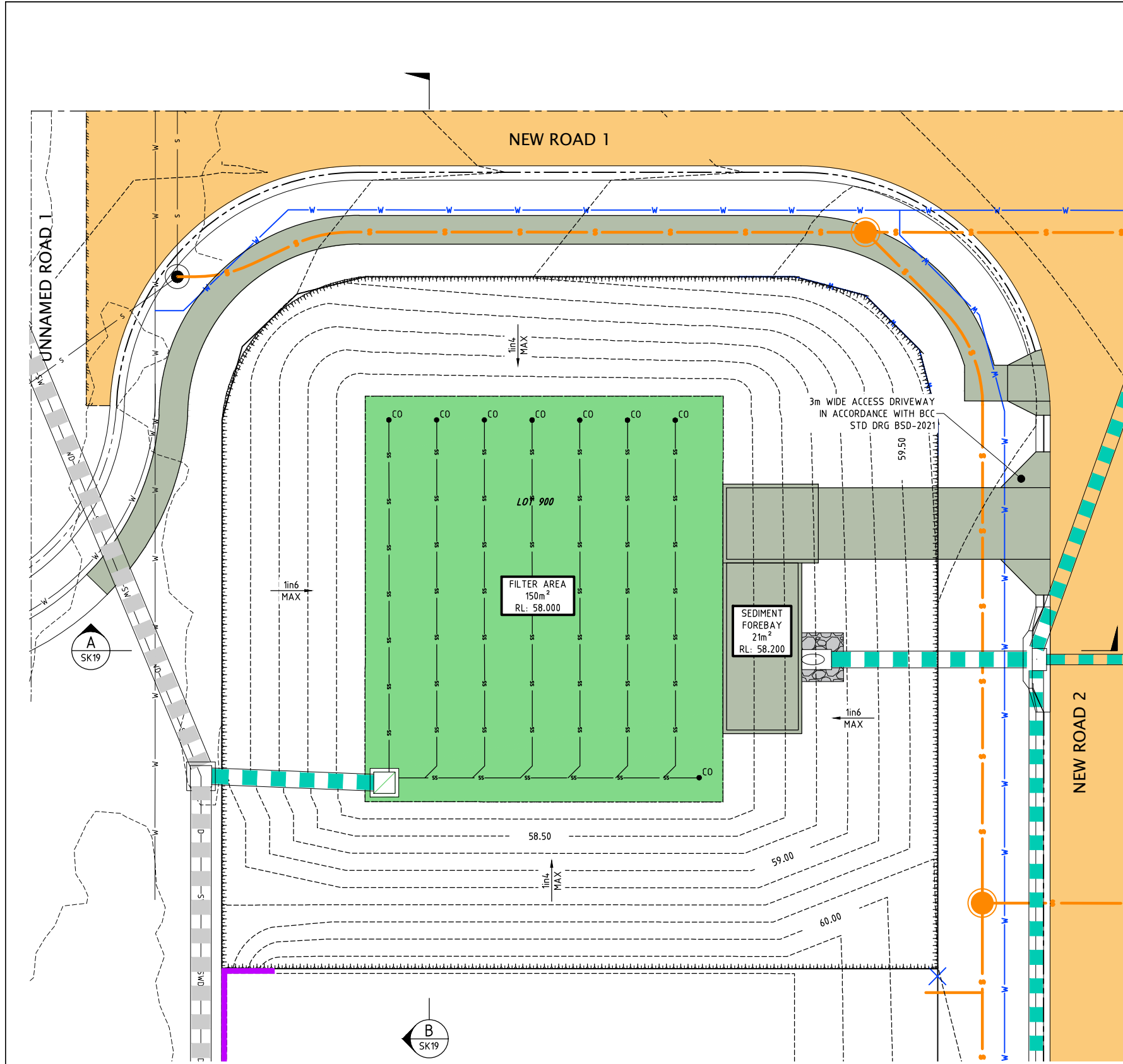
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mail@hce-engineers.com.au

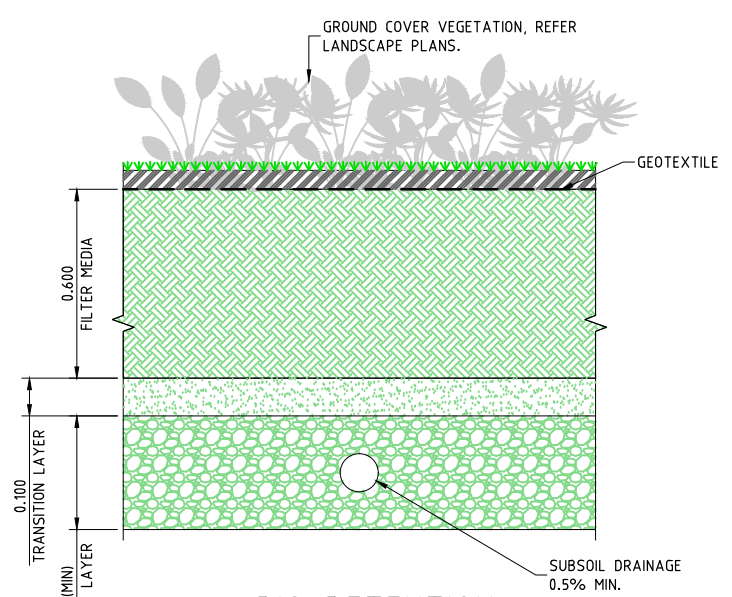
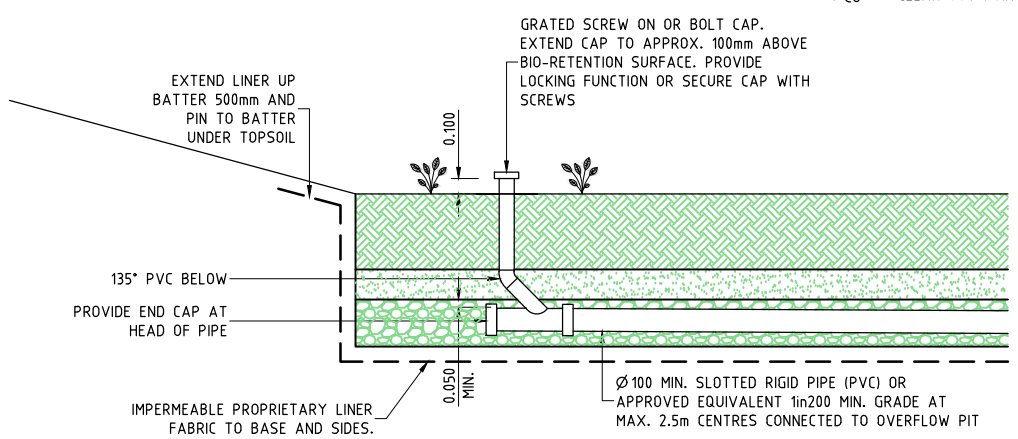
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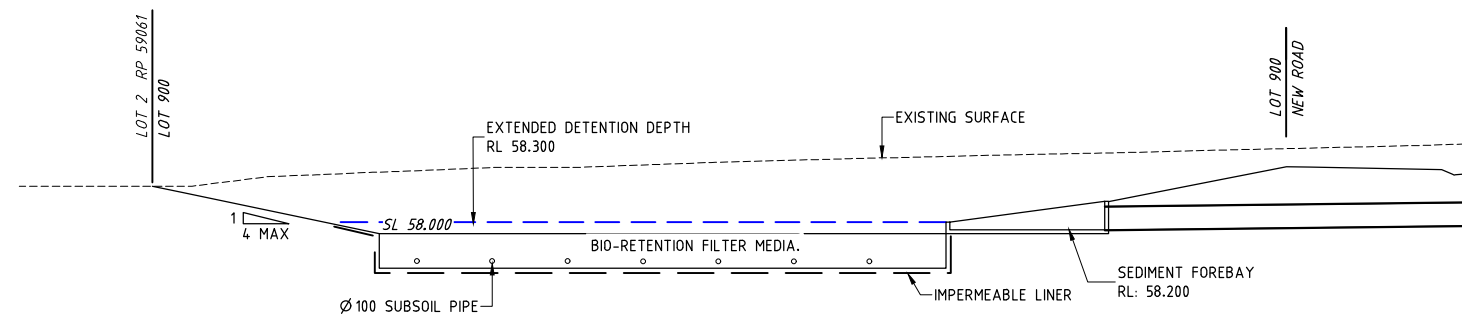
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295 ROCHEDALE ROAD ROCHEDALE QLD 4123 LOT 5 RP 95759	CONCEPT EARTHWORKS SECTIONS - SHEET 1 OF 2	GR DEVELOPMENT & CONSTRUCTION PTY LTD	A	REPORT ISSUE	24/07/26	Designed	MB	Date
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						Approval No.	----	Scale
						Drawing No.	26193-SK16	AS SHOWN
						Rev.	A	



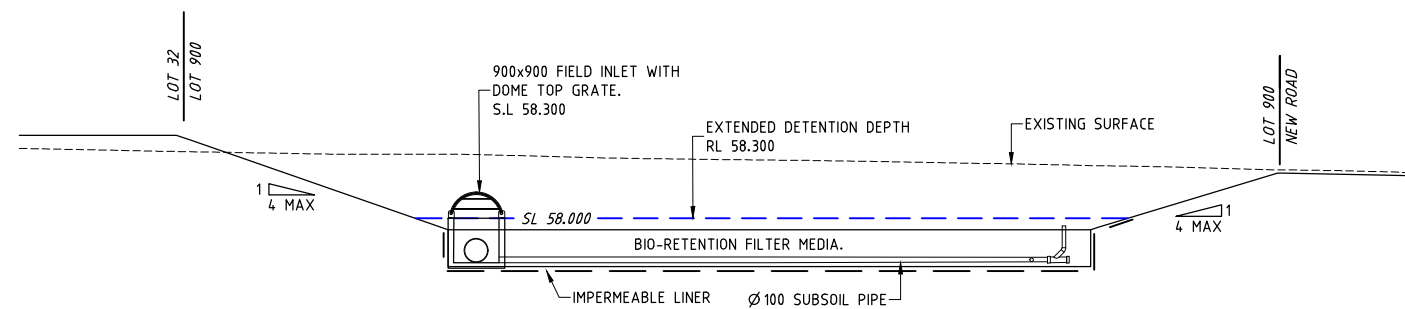
PLAN
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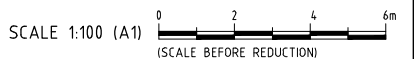
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SECTION A
SCALE 1:100



SECTION B
SCALE 1:100





HCE Engineers Pty Ltd

ABN 42 664 382 610

mail@hce-engineers.com.au

07 3829 1399



PROJECT

295 ROCHEDALE ROAD
ROCHEDALE QLD 4123
LOT 5 RP 95759

TITLE

CONCEPT BIO-RETENTION
BASIN SECTIONS

CLIENT

GR DEVELOPMENT &
CONSTRUCTION PTY LTD

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CONSTRUCTION.
CONCEPT ONLY.

REVISION	AMENDMENT	DATE
A	REPORT ISSUE	24/07/26

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Drawing No. 26193-SK19		Rev. A	

Appendix A – Erosion and Hazard Assessment Form



Erosion Hazard Assessment

Brisbane City Council (BCC), *Erosion Hazard Assessment* form must be read in conjunction with the *Erosion Hazard Assessment- Supporting Technical Notes* (June 2014 or later version) for explanatory terms and Certification information.

What is an Erosion Hazard Assessment?

Soil erosion and sediment from urban development, particularly during construction activities, is a significant source of sediment pollution in Brisbane's waterways. The Erosion Hazard Assessment determines whether the risk of soil erosion and sediment pollution to the environment is 'low', 'medium' or 'high'.

When is the EHA required?

An Erosion Hazard Assessment form must be completed and lodged with BCC for any Development Application (ie MCU or ROL) that will result in soil disturbance OR Operational Works or Compliance Assessment Application for 'Filling' or Excavation.

Failure to submit this form during lodgement of an application may result in assessment delays or refusal of the application.

Privacy Statement

The personal information collected on this form will be used by Brisbane City Council for the purposes of fulfilling your request and undertaking associated Council functions and services. Your personal information will not be disclosed to any third party without your consent, unless this is required or permitted by law.

Assessment Details

1 Please turn over and complete the erosion hazard assessment.

2 Based on the erosion hazard assessment overleaf, is the side:

☐ A 'low' risk site

Best practice erosion and sediment control (ESC) must be implemented but no erosion and sediment control plans need to be submitted with the development application. Factsheets outlining best practice ESC can be found at <https://waterbydesign.com.au/download/erosion-sediment-control-for-small-construction-sites>

☒ A 'medium' risk site

If the development is approved, the applicant will need to engage a Registered Professional Engineer (RPEQ) or Certified Professional in Erosion and Sediment Control (CPESC) to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy.

☐ A 'high' risk site

If the development is approved, the applicant will need to engage a RPEQ and CPESC to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy. The plans and program will need to be certified by a CPESC.

3 Site Information and Certification

Application number (if known)

Site address

295 Rochedale Road

Rochedale

Postcode 4123

I certify that:

- ☒ I have made all relevant enquiries and am satisfied no matters of significance have been withheld from the assessment manager.
- ☒ I am a person with suitable qualifications and/or experience in erosion and sediment control.
- ☒ The Erosion Hazard Assessment was completed in accordance with the Erosion Hazard Assessment Supporting Technical Notes and the BCC Infrastructure Design Planning Scheme Policy.
- ☒ The Erosion Hazard Assessment accurately reflects the site's overall risk of soil erosion and sediment pollution to the environment.
- ☒ I acknowledge and accept that the BCC, as assessment manager, relies, in good faith, on this certification as part of its development assessment process and the provision of false or misleading information to the BCC constitutes an offence for which BCC may take punitive steps/ action against me/ enforcement action against me.

Certified by (Print name)

Ariela Dioses

Certifier's signature

Date

17 / 07 / 2026

Assessment Table

Table 1: Low Risk Test

		Yes	No
1.1	is the area of land disturbance > 1000 m2?	☒	☐
1.2	does any land disturbance occur in a BCC mapped waterway corridor?	☐	☒
1.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 5%?	☒	☐
1.4	does any land disturbance occur below 5 m AHD?	☐	☒
1.5	does development involve endorsement of a staging plan?	☐	☒
1.6	is there an upstream catchment passing through the site > 1 hectare?	☐	☒

If you answered '**No**' to **ALL** of these questions, then the site is **low risk** with respect to erosion and sediment control.
(Do not continue to Table 2)

If you answered '**Yes**' to **ANY** of these questions, then proceed to **Table 2**

Table 2: Medium Risk Test

		Yes	No
2.1	is the area of land disturbance > 1 hectare?	☒	☐

If '**No**' then the site is **medium risk** with respect to erosion and sediment control.
(Do not continue to Table 3)

If '**Yes**' then proceed to **Table 3**

Table 3: High Risk Test

		Yes	No
3.1	is there an upstream catchment passing through the site > 1 hectare?	☐	☒
3.2	does any land disturbance occurs in a BCC mapped waterway corridor?	☐	☒
3.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 15%?	☐	☒

If you answered '**No**' to **ALL** of these questions, then the site is also **medium risk** with respect to erosion and sediment control.

If you answered '**Yes**' to **ANY** of these questions, then the site is **high risk** with respect to erosion and sediment control.

Appendix B – Stormwater Code

9.4.9 Stormwater code

9.4.9.1 Application

1. This code applies to assessing a material change of use, reconfiguring a lot or operational work if:
 - a. assessable development where this code is identified as a prescribed secondary code in the assessment benchmarks column of a table of assessment for a material change of use (section 5.5), reconfiguring a lot (section 5.6) operational work (section 5.8) or an overlay (section 5.10); or
 - b. impact assessable development, to the extent relevant.
2. When using this code, reference should be made to section 1.5 and section 5.3.3.

Note—The following purpose, overall outcomes, performance outcomes and acceptable outcomes comprise the assessment benchmarks of this code.

Note—Where this code includes performance outcomes or acceptable outcomes that relate to infrastructure design and construction works, guidance is provided in the Infrastructure design planning scheme policy.

9.4.9.2 Purpose

1. The purpose of the Stormwater code is to assess the suitability of the stormwater aspects of development.
2. The purpose of the code will be achieved through the following overall outcomes:
 - a. Development achieves acceptable levels of stormwater run-off quality and quantity by applying water sensitive urban design principles as part of an integrated stormwater management framework.
 - b. Development protects public health and safety and protects against damage or nuisance caused by stormwater flows.
 - c. Development has a stormwater management system which maintains, recreates or minimises impact to natural catchment hydrological processes.
 - d. Development ensures that the environmental values of the city's waterways are protected or enhanced.
 - e. Development minimises run-off, including peak flows.
 - f. Development maintains or enhances the efficiency and integrity of the stormwater infrastructure network.
 - g. Development minimises the whole of life cycle cost of stormwater infrastructure.

9.4.9.3 Performance outcomes and acceptable outcomes

Table 9.4.9.3.A—Performance outcomes and acceptable outcomes

Performance outcomes	Acceptable outcomes	Comments
Section A—If for a material change of use, reconfiguring a lot, operational work or building work		

Note—Compliance with the performance outcomes and acceptable outcomes in this section should be demonstrated by the submission of a site-based stormwater management plan for high risk development only.		
PO1 Development provides a stormwater management system which achieves the integrated management of stormwater to: a. minimise flooding; b. protect environmental values of receiving waters; c. maximise the use of water sensitive urban design; d. minimise safety risk to all persons; e. maximise the use of natural waterway corridors and natural channel design principles. Editor's note—The stormwater management system to be developed to address PO1 is not intended to require management of stormwater quality.	AO1 Development provides a stormwater management system designed in compliance with the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO2 Development ensures that the stormwater management system and site work does not adversely impact flooding or drainage characteristics of premises which are up slope, down slope or adjacent to the site.	AO2.1 Development does not result in an increase in flood level or flood hazard on up slope, down slope or adjacent premises. AO2.2 Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO3 Development ensures that the stormwater management system does not direct stormwater run-off through existing or proposed lots and property where it is likely to adversely affect the safety of, or cause nuisance to properties.	AO3.1 Development ensures that the location of the stormwater drainage system is contained within a road reserve, drainage reserve, public pathway, park or waterway corridor. AO3.2 Development provides a stormwater management system which is designed in compliance with the	The Acceptable Outcome can be and is proposed to be met.

	standards in the Infrastructure design planning scheme policy.	
	AO3.3 Development obtains a lawful point of discharge in compliance with the standards in the Infrastructure design planning scheme policy.	
	AO3.4 Where on private land, all underground stormwater infrastructure is secured by a drainage easement.	
PO4 Development provides a stormwater management system which has sufficient capacity to safely convey run-off taking into account increased run-off from impervious surfaces and flooding in local catchments.	AO4.1 Development provides a stormwater conveyance system which is designed to safely convey flows in compliance with the standards in the Infrastructure design planning scheme policy. AO4.2 Development provides sufficient area to convey run-off which will comply with the standards in the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO5 Development designs stormwater channels, creek modification works, bridges, culverts and major drains to protect and enhance the value of the waterway corridor or drainage path for fauna movement.	AO5 Development ensures the design of stormwater channels, creek modifications or other infrastructure, permits terrestrial and aquatic fauna movement.	Not applicable to this development.
PO6 Development ensures that location and design of stormwater detention and water quality treatment: a. minimises risk to people and property; b. provides for safe access and maintenance; c. minimises ecological impacts to creeks and waterways.	AO6.1 Development locates stormwater detention and water quality treatment: a. outside of a waterway corridor; b. offline to any catchment not contained within the development. AO6.2	The Acceptable Outcome can be and is proposed to be met.

	Development providing for stormwater detention and water quality treatment devices are designed in compliance with the standards in the Infrastructure design planning scheme policy.	
PO7 Development is designed, including any car parking areas and channel works to: a. reduce property damage; b. provide safe access to the site during the defined flood event.	AO7.1 Development (including any ancillary structures and car parking areas) is located above minimum flood immunity levels in Table 9.4.9.3.B, Table 9.4.9.3.C, Table 9.4.9.3.D, Table 9.4.9.3.E and Table 9.4.9.3.F. Note—Compliance with this acceptable outcome can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels (as part of a site-based stormwater management plan). AO7.2 Development including the road network provides a stormwater management system that provides safe pedestrian and vehicle access in accordance with the standards in the Infrastructure design planning scheme policy.	Not applicable to this development.
PO8 Development designs stormwater channels, creek modification works and the drainage network to protect and enhance the environmental values of the waterway corridor or drainage path.	AO8.1 Development ensures natural waterway corridors and drainage paths are retained. AO8.2 Development provides the required hydraulic conveyance of the drainage channel and floodway, while maximising its potential to maximise environmental benefits and minimise scour. Editor's note—Guidance on natural channel design principles can be found in the Council's publication Natural channel design guidelines. AO8.3 Development provides stormwater outlets into waterways, creeks, wetlands and overland flow paths with energy dissipation to minimise scour in compliance	Not applicable to this development.

	with the standards in the Infrastructure design planning scheme policy.	
	AO8.4 Development ensures that the design of modifications to the existing design of new stormwater channels, creeks and major drains is in compliance with the standards in the Infrastructure design planning scheme policy.	
PO9 Development is designed to manage run-off and peak flows by minimising large areas of impervious material and maximising opportunities for capture and re-use.	AO9 No acceptable outcome is prescribed.	The Performance Outcome can be and is proposed to be met.
PO10 Development ensures that there is sufficient site area to accommodate an effective stormwater management system. Note—Compliance with the performance outcome should be demonstrated by the submission of a site-based stormwater management plan for high-risk development only.	AO10 No acceptable outcome is prescribed.	The Performance Outcome can be and is proposed to be met.
PO11 Development provides for the orderly development of stormwater infrastructure within a catchment, having regard to the: a. existing capacity of stormwater infrastructure within and external to the site, and any planned stormwater infrastructure upgrades; b. safe management of stormwater discharge from existing and future up-slope development; c. implication for adjacent and down-slope development.	AO11.1 Development with up-slope external catchment areas provides a drainage connection sized for ultimate catchment conditions that is directed to a lawful point of discharge. AO11.2 Development ensures that existing stormwater infrastructure that is undersized is upgraded in compliance with the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO12 Development provides stormwater infrastructure which:	AO12.1 The stormwater management system is designed in compliance with the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.

a. remains fit for purpose for the life of the development and maintains full functionality in the design flood event; b. can be safely accessed and maintained cost effectively; c. ensures no structural damage to existing stormwater infrastructure.	AO12.2 Development provides a clear area with a minimum of 2m radius from the centre of an existing manhole cover and with a minimum height clearance of 2.5m.	
PO13 Development ensures that all reasonable and practicable measures are taken to manage the impacts of erosion, turbidity and sedimentation, both within and external to the development site from construction activities, including vegetation clearing, earthworks, civil construction, installation of services, rehabilitation, revegetation and landscaping to protect: a. the environmental values and water quality objectives of waters; b. waterway hydrology; c. the maintenance and serviceability of stormwater infrastructure. Note—The Infrastructure design planning scheme policy outlines the appropriate measures to be taken into account to achieve the performance outcome.	AO13 No acceptable outcome is prescribed.	The Performance Outcome can be and is proposed to be met.
PO14 Development ensures that: a. unnecessary disturbance to soil, waterways or drainage channels is avoided; b. all soil surfaces remain effectively stabilised against erosion in the short and long term.	AO14 No acceptable outcome is prescribed.	The Performance Outcome can be and is proposed to be met.
PO15 Development does not increase: a. the concentration of total suspended solids or other contaminants in stormwater flows during site construction;	AO15 No acceptable outcome is prescribed.	The Performance Outcome can be and is proposed to be met.

b. run-off which causes erosion either on site or off site.		
Section B—Additional performance outcomes and acceptable outcomes which apply to high-risk development, being one or more of the following: a. a material change of use for an urban purpose which involves greater than 2,500m² of land that: i. will result in an impervious area greater than 25% of the net developable area; or ii. will result in 6 or more dwellings. b. reconfiguring a lot for an urban purpose that involves greater than 2,500m² of land and will result in 6 or more lots; c. operational work for an urban purpose which involves disturbing greater than 2,500m² of land.		
PO16 Development ensures that the entry and transport of contaminants into stormwater is avoided or minimised to protect receiving water environmental values. Note—Prescribed water contaminants are defined in the <i>Environmental Protection Act 1994</i> . Note—Compliance with the performance outcome should be demonstrated by the submission of a site-based stormwater management plan for high-risk development only.	AO16 Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO17 Development ensures that: a. the discharge of wastewater to a waterway or external to the site is avoided; or b. if the discharge cannot practicably be avoided, the development minimises wastewater discharge through re-use, recycling, recovery and treatment. Note—The preparation of a wastewater management plan can assist in demonstrating achievement of this performance outcome. Editor's note—This code does not deal with sewerage which is the subject of the Wastewater code.	AO17 No acceptable outcome is prescribed.	The Performance Outcome can be and is proposed to be met.
Section C—Additional performance outcomes and acceptable outcomes for assessable development for a material change of use or reconfiguring a lot		

PO18 Development protects stormwater infrastructure to ensure the following are not compromised: a. the long term infrastructure for the stormwater network in the Long term infrastructure plans; b. the existing and planned infrastructure for the stormwater network in the Local government infrastructure plan; c. the provision of long term, existing and planned infrastructure for the stormwater network which: i. is required to service the development or an existing and future urban development in the planning scheme area; or ii. is in the interests of rational development or the efficient and orderly planning of the general area in which the site is situated. Editor's note—A condition which requires a proposed development to keep permanent improvements and structures associated with the approved development clear of the area of long term infrastructure, may be imposed.	AO18 Development protects stormwater infrastructure in compliance with the following: a. for long term infrastructure for the stormwater network, the Long term infrastructure plans; b. for existing and planned infrastructure for the stormwater network, the Local government infrastructure plan; c. the standards for stormwater drainage in the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO19 Development provides for the payment of extra trunk infrastructure costs for the following: a. for development completely or partly outside the priority infrastructure area in the Local government infrastructure plan; b. for development completely inside the priority infrastructure area in the Local government infrastructure plan involving: i. trunk infrastructure that is to be provided earlier than planned in the Local government infrastructure plan; ii. long term infrastructure for the stormwater network which is made	AO19 No acceptable outcome is prescribed.	Not applicable for this development.

necessary by development that is not assumed future urban development; iii. other infrastructure for the stormwater network associated with development that is not assumed future urban development which is made necessary by the development. Editor's note—The payment of extra trunk infrastructure costs for development completely inside the priority infrastructure area in the Local government infrastructure plan is to be worked out in accordance with the Charges Resolution. Editor's note—See section 130 Imposing Development conditions (Conditions for extra trunk infrastructure costs) of the <i>Planning Act 2016</i>.		
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Table 9.4.9.3.B—Categories of flood planning levels

Flooding type ⁽¹⁾	Minimum design floor or pavement levels (m AHD) ⁽²⁾ (refer to Table 9.4.9.3.C for assignment of these categories)				
	Category A	Category B	Category C	Category D	Category E
Waterway ^(A) or open channel	1% AEP flood level + 500mm	1% AEP flood level + 300mm	1% AEP flood level	1% AEP flood level	5% AEP flood level
Overland flow flooding ^(B)	2% AEP flood level +500mm	2% AEP flood level +300mm	2% AEP flood level	2% AEP flood level	5% AEP flood level

Notes—

⁽¹⁾ Where the site is subject to more than one type of flooding that is overland flow flooding, creek or waterway flooding or river flooding, the minimum flood immunity level is the highest level determined from these sources.

⁽²⁾ Where flood levels are not available from Council's Floodwise Property Report such as overland flow flooding, the applicant will need to engage a suitably qualified Registered Professional Engineer Queensland with expertise in undertaking flood studies to estimate the relevant flood level.

Note ^(A) A waterway, including any indicated on the planning scheme maps, is defined as any element of a river, creek, stream, gully or drainage channel, including the bed and banks, typically with a catchment area greater than 30ha.

Note ^(B) Overland flow flooding usually occurs when the capacity of the underground piped drainage system is exceeded and/or when the overland flow path is blocked. Localised overland flow paths generally traverse along roadways, and in the older established areas, through private properties within existing low points and gullies. A localised overland flow path is not characterised by well-defined bed and banks and the contributing catchment is generally less than 30ha.

Note—A flood event with an AEP of 1% is the equivalent of a 100 year ARI flood event.

Note—A flood event with an AEP of 2% is the equivalent of a 50 year ARI flood event.

Note—A flood event with an AEP of 5% is the equivalent of a 20 year ARI flood event.

Note—The flood immunity level in some older inner-city areas is often controlled by local ponding.

Table 9.4.9.3.C—Flood planning level categories for development types

BCA building classification ⁽¹⁾	Development types and design levels, assigned design floor or pavement levels	Category Refer to Table 8.2.11.3.L
Class 1—4	Habitable room	Category A
	Non-habitable room including patio and courtyard	Category B
	Non-habitable part of a Class 2 or Class 3 building excluding the essential services ⁽²⁾ control room	Category B
	Parking located in the building undercroft of a multiple dwelling	Category C
	Carport ⁽⁴⁾ , unroofed car park; vehicular manoeuvring area	Category D
	Essential electrical services ⁽²⁾ of a Class 2 or Class 3 building only	Category A ⁽⁶⁾
	Basement parking entry ⁽³⁾	Category C + 300mm
Class 5, Class 6, or Class 8	Building floor level	Category C
	Garage or car park located in the building undercroft ⁽³⁾	Category C
	Carport ⁽⁴⁾ or unroofed car park	Category D
	Vehicular access and manoeuvring areas	Category D

	Basement parking entry ⁽³⁾	Category C
	Essential electrical services ⁽²⁾	Class 8 — Category C ⁽⁶⁾ Class 5 & 6 — Category A ⁽⁶⁾
Class 7a	Refer to the relevant building class specified in this table	
Class 7b	Building floor level	Category C
	Vehicular access and manoeuvring area	Category D
	Essential electrical services ⁽²⁾	Category C
Class 9	Building floor level	Category A
	Building floor level for habitable rooms in Class 9a or 9c where for a residential care facility	0.2% AEP flood
	Garage or car park located in the building undercroft ⁽³⁾	Category C
	Carport ⁽⁴⁾ or unroofed car park	Category D
	Vehicular access and manoeuvring areas	Category D
	Essential electrical services ⁽²⁾	Category A
Class 10a	Car parking facility	Refer to the relevant building class specified in this table
	Shed ⁽⁵⁾ or the like	Category D
Class 10b	Swimming pool	Category E
	Associated mechanical and electrical pool equipment	Category C
	Other structures	Flood immunity standard does not apply

Notes—

⁽¹⁾ Refer to the Building Code of Australia for definitions of building classifications.

⁽²⁾ Essential services include any room used for fire control panel, telephone PABX, sensitive substation equipment including transformers, low voltage switch gear, high-voltage switch gear, battery chargers, protection control and communication equipment, low voltage cables, high-voltage cables and lift controls.

- (3) Basement car parks must be suitably waterproofed and all air vents, air-conditioning ducts, pedestrian access and entry and exit ramps at the car park entrance have flood immunity in accordance with this table.
- (4) A shelter for a motor vehicle, which has a roof and one or more open sides, and which can be built against the side of a building.
- (5) A slight or rough structure built for shelter and storage; or a large strongly built structure, often open at the sides or end.
- (6) Where essential services are proposed in a basement below the specified flood planning level, the flood immunity of all air vents, air-conditioning ducts, pedestrian access, lift shafts and entry/exit ramps at the basement entrance and any other openings into that basement must conform to Category A for Residential development, and the relevant basement entry level of all other uses. This will require a waterproof basement design to prevent floodwaters entering the basement to ensure flood immunity.
- Note—A flood event with an AEP of 2% is the equivalent of a 50 year ARI flood event.
- Note—A flood event with an AEP of 0.2% is the equivalent of a 500 year ARI flood event.
- Note—Where a building has a combination of uses that includes a component of class 2, 3 or 9, the essential services for that building shall comply with the requirements of the building class with the greatest flood immunity requirement.
- Note—Use classes for residential development also include basement storage.

Table 9.4.9.3.D—Flood planning levels for a new road

Flooding type ⁽¹⁾	Minimum design levels at the crown of the road (m AHD) ⁽²⁾	
	Residential development	Industrial or commercial development
Waterway ^(A) or open channel	1% AEP flood level	2% AEP flood level
Overland flow flooding ^(B)	2% AEP flood level	2% AEP flood level

Notes—

(1) Where the site is subject to more than 1 type of flooding, the minimum flood planning level is the highest level determined from these sources. It should be noted that the flooding planning level in some older areas is often controlled by local ponding.

(2) Where flood levels are not available from Council's Floodwise Property Report, such as overland flow flooding, the applicant will need to engage a suitably qualified Registered Professional Engineer Queensland with expertise in undertaking flood studies to estimate the relevant flood level.

Note ^(A) A waterway including any indicated on the planning scheme maps is defined as any element of a river, creek, stream, gully or drainage channel, including the bed and banks typically with a catchment area greater than 30ha.

Note ^(B) Overland flow flooding usually occurs when the capacity of the underground piped drainage system is exceeded and/or when the overland flow path is blocked. Localised overland flow paths generally traverse along roadways, and in the older established areas, through private properties within existing low points and gullies. A localised overland flow path is not characterised by well-defined bed and banks and the contributing catchment is generally less than 30ha.

Note—A flood event with an AEP of 1% is the equivalent of a 100 year ARI flood event.

Note—A flood event with an AEP of 2% is the equivalent of a 50 year ARI flood event.

Note—A flood event with an AEP of 5% is the equivalent of a 20 year ARI flood event.

Table 9.4.9.3.E—Flood planning levels for essential community infrastructure

Type of essential community infrastructure	Minimum design levels
Emergency services	0.2% AEP flood
Emergency services, where for an emergency shelter	0.5% AEP flood
Emergency services, where for police facilities	0.5% AEP flood
Hospital and health care service, where associated with a hospital	0.2% AEP flood
Community facility where involving storage of valuable records or items of historic or cultural significance (e.g. galleries and libraries)	0.5% AEP flood
State-controlled roads Major or minor electricity infrastructure not otherwise listed in this table Utility installation where for rail transport services Air service Telecommunications facility	No specific recommended level but development proponents should ensure that the infrastructure is optimally located and designed to achieve suitable levels of service, having regard to the processes and policies of the administering government agency.
Power stations (as defined in the <i>Electricity Act 1994</i>) or renewable energy facility.	0.2% AEP flood
Major electricity infrastructure where a major switch yard	0.2% AEP flood
Substations	0.5% AEP flood
Utility installation where for a sewage treatment plant	DFE
Utility installation where for a water treatment plant	0.5% AEP flood

Note—A flood event with an AEP of 0.2% is the equivalent of a 500 year ARI flood event.

Note—A flood event with an AEP of 0.5% is the equivalent of a 200 year ARI flood event.

Table 9.4.9.3.F—Flood planning levels for reconfiguring a lot

Flooding type ⁽¹⁾	Minimum lot levels (m AHD) ⁽²⁾
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	Residential	Other than residential
Waterway ^(A) or open channel	1% AEP flood level + 300mm	1% AEP flood level
Overland flow flooding ^(B)	1% AEP flood level + 300mm	2% AEP flood level

Notes—

⁽¹⁾ Where the site is subject to more than one type of flooding, the minimum flood immunity level is the highest level determined from these sources.

⁽²⁾ Where flood levels are not available from Council's Floodwise Property Report such as overland flow flooding, the applicant will need to engage a suitably qualified Registered Professional Engineer Queensland with expertise in undertaking flood studies to estimate the relevant flood level.

Note ^(A) A waterway including any indicated on the planning scheme maps is defined as any element of a river, creek, stream, gully or drainage channel, including the bed and banks typically with a catchment area greater than 30ha.

Note ^(B) Overland flow flooding usually occurs when the capacity of the underground piped drainage system is exceeded or when the overland flow path is blocked. Localised overland flow paths generally traverse along roadways, and in the older established areas, through private properties within existing low points and gullies. A localised overland flow path is not characterised by well-defined bed and banks and the contributing catchment is generally less than 30ha.

Note—A flood event with an AEP of 1% is the equivalent of a 100 year ARI flood event.

Note—A flood event with an AEP of 2% is the equivalent of a 50 year ARI flood event.

Appendix C – Infrastructure Design Code

9.4.4 Infrastructure design code

9.4.4.1 Application

1. This code applies to assessing a material change of use, reconfiguring a lot or building work if:
 - a. assessable development where this code is identified as a prescribed secondary code in the assessment benchmarks column of a table of assessment for a material change of use (section 5.5), reconfiguring a lot (section 5.6), operational work (section 5.8), or an overlay (section 5.10); or
 - b. impact assessable development, to the extent relevant.
2. When using this code, reference should be made to section 1.5 and section 5.3.3.

Note—The following purpose, overall outcomes, performance outcomes and acceptable outcomes comprise the assessment benchmarks of this code.

Note—Where this code includes performance outcomes or acceptable outcomes that relate to:

- ecological assessment, koala habitat or development design, guidance is provided in the Biodiversity areas planning scheme policy;
- infrastructure design and construction works, guidance is provided in the Infrastructure design planning scheme policy;
- noise and dust impacts during construction and/or demolition, guidance is provided in the Management plans planning scheme policy;
- noise impact assessment, guidance is provided in the Noise impact assessment planning scheme policy;
- refuse and recycling, guidance is provided in the Refuse planning scheme policy;
- parking or servicing management during construction, guidance is provided in the Transport, access, parking and servicing planning scheme policy.

9.4.4.2 Purpose

1. The purpose of the Infrastructure design code is to assess the suitability of infrastructure for development.
2. The purpose of the code will be achieved through the following overall outcomes:
 - a. Development is provided with a safe, connected and efficient transport network for all modes that has a minimal whole-of-life cost.
 - b. Development provides for public utilities and services to the standards acceptable to the Council and the reasonable expectations of service providers.
 - c. Development involving infrastructure which is intended to become a Council asset is safe, aesthetically pleasing, functional, fit for purpose, durable, minimises environmental impacts and has minimal whole-of-life cost.
 - d. Development provides for a public space to be safe and inviting, allowing high levels of pedestrian activity.
 - e. Development ensures that the community and environment are not unreasonably disrupted or impacted by construction or demolition for the development.
 - f. Development involving infrastructure is designed with consideration of, and to integrate with, other related and interfacing infrastructure components.
 - g. Development accessed by common private title is provided with appropriate fire hydrant infrastructure and has unimpeded access for refuse vehicles and for emergency service vehicles to protect people, property and the environment.
 - h. Development ensures major electricity infrastructure and bulk water supply infrastructure identified on the State Planning Policy Interactive Mapping System is not compromised.

- i. Development for major electricity infrastructure and bulk water supply infrastructure identified on the State Planning Policy Interactive Mapping System avoids or otherwise minimises adverse impacts on surrounding land uses.

9.4.4.3 Performance outcomes and acceptable outcomes

Table 9.4.4.3.A—Performance outcomes and acceptable outcomes

Performance outcomes	Acceptable outcomes	Comments
PO1 Development provides roads, pavement, edging and landscaping which: a. are designed and constructed in accordance with the road hierarchy; b. provide for safe travel for pedestrians, cyclists and vehicles; c. provide access to properties for all modes; d. provide utilities; e. provide high levels of aesthetics and amenity, improved liveability and future growth; f. provide for the amelioration of noise and other pollution; g. provide a high-quality streetscape; h. provide a low-maintenance asset with a minimal whole-of-life cost. Note—This can be demonstrated in an engineering report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.	AO1 Development provides roads and associated pavement, edging and landscaping which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO2 Development provides road pavement surfaces which: a. are well designed and constructed; b. durable enough to carry the wheel loads of the intended types and numbers of travelling and parked vehicles;	AO2 Development provides road pavement surfaces which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.

c. ensures the safe passage of vehicles, pedestrians and cyclists, the discharge of stormwater run-off and the preservation of all-weather access; d. allows for reasonable travel comfort.		
PO3 Development provides a pavement edge which is designed and constructed to: a. control vehicle movements by delineating the carriageway for all users; b. provide for people with disabilities by allowing safe passage of wheelchairs and other mobility aids.	AO3 Development provides pavement edges which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO4 Development provides verges which are designed and constructed to: a. provide safe access for pedestrians clear of obstructions and access areas for vehicles onto properties; b. provide a sufficient area for public utility services; c. be maintainable by the Council.	AO4 Development provides verges which are designed and constructed in compliance with the road corridor design and streetscape locality advice standards in the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO5 Development provides a lane or laneway identified on the Streetscape hierarchy overlay map or in a neighbourhood plan which: a. allows equitable access for all modes; b. is safe and secure; c. has 24-hour access; d. is a low-speed shared zone environment; e. has a high-quality streetscape.	AO5 Development provides a lane or laneway identified on the Streetscape hierarchy overlay map or in a neighbourhood plan which is embellished in compliance with the streetscape locality advice standards in the Infrastructure design planning scheme policy.	Not applicable to this development.
PO6	AO6	Not applicable to this development.

Development of an existing premises provides at the frontage to the site, if not already provided, the following infrastructure to an appropriate urban standard: a. an effective, high-quality paved roadway; b. an effective, high-quality roadway kerb and channel; c. safe, high-quality vehicle crossings over channels and verges; d. safe, accessible, high-quality verges compatible and integrated with the surrounding environment; e. safe vehicle access to the site that enables ingress and egress in a forward gear; f. provision of and required alterations to public utilities; g. effective drainage; h. appropriate conduits to facilitate the provision of required street-lighting systems and traffic signals.	Development of an existing premises provides at the frontage of the site, if not already existing, the following infrastructure to the standard that would have applied if the development involved new premises as stated in the road corridor design standards in the Infrastructure design planning scheme policy: a. concrete kerb and channel; b. forming and grading to verges; c. crossings over channels and verges; d. a constructed bikeway; e. a constructed verge or reconstruction of any damaged verge; f. construction of the carriageway; g. payment of costs for required alterations to public utility mains, services or installations; h. construction of and required alterations to public utility mains, services or installations; i. drainage works; j. installation of electrical conduits.	
PO7 Development provides both cycle and walking routes which: a. are located, designed and constructed to their network classification (where applicable); b. provide safe and attractive travel routes for pedestrians and cyclists for commuter and recreational purposes; c. provide safe and comfortable access to properties for pedestrians and cyclists; d. incorporate water sensitive urban design into stormwater drainage; e. provide for utilities; f. provide for a high level of aesthetics and amenity, improved liveability and future growth;	AO7 Development provides cycle and walking routes which are located, designed and constructed in compliance with the road corridor design and off-road pathway design standards in the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.

g. are a low-maintenance asset with a minimal whole-of-life cost; h. minimise the clearing of significant native vegetation. Note—This can be demonstrated in an engineering report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.		
PO8 Development provides refuse and recycling collection, separation and storage facilities that are located and managed so that adverse impacts on building occupants, neighbouring properties and the public realm are minimised.	AO8.1 Development provides refuse and recycling collection and storage facilities in accordance with the Refuse planning scheme policy. AO8.2 Development ensures that refuse and recycling collection and storage location and design do not have any adverse impact including odour, noise or visual impacts on the amenity of land uses within or adjoining the development. Note—Refer to the Refuse planning scheme policy for further guidance.	The Acceptable Outcome can be and is proposed to be met.
PO9 Development ensures that: a. land used for an urban purpose is serviced adequately with regard to water supply and waste disposal; b. the water supply meets the stated standard of service for the intended use and fire-fighting purposes.	AO9.1 Development ensures that the reticulated water and sewerage distribution system for all services is in place before the first use is commenced. AO9.2 Development provides the lot with reticulated water supply and sewerage to a standard acceptable to the distributor—retailer.	The Acceptable Outcome can be and is proposed to be met.
PO10 Development provides public utilities and street lighting which are the best current or alternative technology and facilitate accessibility, easy maintenance, minimal whole-of-life costs, and minimal adverse environmental impacts.	AO10.1 Development provides public utilities and street lighting which are located and aligned to: a. avoid significant native vegetation and areas identified within the Biodiversity areas overlay map; b. minimise earthworks;	The Acceptable Outcome can be and is proposed to be met.

	c. avoid crossing waterways, waterway corridors and wetlands or if a crossing is unavoidable, tunnel-boring techniques are used to minimise disturbance, and a disturbed area is reinstated and restored on completion of the work. Note—Guidance on the restoration of habitat is included in the Biodiversity areas planning scheme policy. AO10.2 Development provides compatible public utility services and street-lighting services which are co-located in common trenching for underground services. AO10.3 Development provides public utilities and street lighting which are designed and constructed in compliance with the public utilities standards in the Infrastructure design planning scheme policy.	
PO11 Development ensures that land used for urban purposes is serviced adequately with telecommunications and energy supply.	AO11 Development provides land with the following services to the standards of the approved supplier: a. electricity; b. telecommunications services; c. gas service where practicable.	The Acceptable Outcome can be and is proposed to be met.
PO12 Development ensures that major public projects promote the provision of affordable, high-bandwidth telecommunications services throughout the city.	AO12 Development provides conduits which are provided in all major Council and government works projects to enable the future provision of fibre optic cabling, if: a. the additional expense is unlikely to be prohibitive; or b. further major work is unlikely or disruption would be a major concern, such as where there is a limited capacity road; or	The Acceptable Outcome can be and is proposed to be met.

	c. there is a clear gap in the telecommunications network; or d. there is a clear gap in the bandwidth available to the area. Editor's note—An accurate, digital 'as built' three-dimensional location plan is to be supplied for all infrastructure provided in a road.	
PO13 Development provides public art identified in a neighbourhood plan or park concept plan which: a. is provided commensurate with the status and scale of the proposed development; b. is sited and designed: i. as an integrated part of the project design; ii. as conceptually relevant to the context of the location; iii. to reflect and respond to the cultural values of the community; iv. to promote local character in a planned and informed manner.	AO13 Development provides public art identified in a neighbourhood plan or park concept plan which is sited and designed in compliance with the public art standards in the Infrastructure design planning scheme policy.	Not applicable to this development.
PO14 Development provides signage of buildings and spaces which promote legibility to help users find their way.	AO14 Development provides public signage: a. at public transport interchanges and stops, key destinations, public spaces, pedestrian linkages and at entries to centre developments; b. which details the location of the key destinations, public spaces and pedestrian linkages in the vicinity, the services available within the development and where they are located. Editor's note—Signage is to be in accordance with Local Law Number 1 (Control of Advertisements Local Law).	The Acceptable Outcome can be and is proposed to be met.
PO15	AO15	Not applicable to this development.

Development that provides community facilities which form part of the development is functional, safe, low maintenance, and fit for purpose.	Development that provides community facilities which form part of the development is designed in compliance with the community facilities standards in the Infrastructure design planning scheme policy.	
PO16 Development provides public toilets which: a. are required as part of a community facility or park; b. are located, designed and constructed to be: i. safe; ii. durable; iii. resistant to vandalism; iv. able to service expected demand; v. fit for purpose.	AO16 Development that provides public toilets is designed and constructed in compliance with the public toilets standards in the Infrastructure design planning scheme policy.	Not applicable to this development.
PO17 Development provides bridges, tunnels, elevated structures and water access structures that are designed and constructed using proven methods, materials and technology to provide for: a. safe movement of intended users; b. an attractive appearance appropriate to the general surroundings and any adjacent structures; c. functionality and easy maintenance; d. minimal whole-of-life cost; e. longevity; f. current and future services. Note—All bridges and elevated and associated elements must be designed and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.	AO17 Development that provides bridges, tunnels, elevated structures and water access structures is designed and constructed in compliance with the standards in the Infrastructure design planning scheme policy.	Not applicable to this development.
PO18	AO18	Not applicable to this development.

Development provides culverts which are designed and constructed using proven methods, materials and technology to provide for: a. safety; b. an attractive appearance appropriate to the general surroundings; c. functionality and easy maintenance; d. minimal whole-of-life cost; e. longevity; f. future widening; g. current and future services; h. minimal adverse impacts, such as increase in water levels or flow velocities, and significant change of flood patterns. Note—All culverts and associated elements are to be designed and certified by a Registered Professional Engineer Queensland in accordance with the applicable design standards.	Development that provides culverts is designed and constructed in compliance with the structures standards in the Infrastructure design planning scheme policy.	
PO19 Development provides batters, retaining walls, and seawalls and river walls which are designed and constructed using proven methods, materials and technology to provide for: a. safety; b. an attractive appearance appropriate to the surrounding area; c. easy maintenance; d. minimal whole-of-life cost; e. longevity; f. minimal water seepage. Note—All retaining walls and associated elements are to be designed and certified by a Registered Professional Engineer Queensland in accordance with the applicable design standards.	AO19 Development that provides batters, retaining walls, seawalls and river walls is designed and constructed in compliance with the structures standards in the Infrastructure design planning scheme policy.	The Performance Outcome can be and is proposed to be met.
If for development with a gross floor area greater than 1,000m²		

PO20 Development ensures that construction is managed so that use of public spaces and movement on pedestrian, cyclist and other traffic routes is not unreasonably disrupted and existing landscaping is adequately protected from short- and long-term impacts. Note—The preparation of a construction management plan can assist in demonstrating achievement of this performance outcome. Note—The Transport, access, parking and servicing planning scheme policy provides advice on the management of vehicle parking and deliveries during construction.	AO20 Development ensures that during construction: a. the ongoing use of adjoining and surrounding parks and public spaces, such as malls and outdoor dining, is not compromised; b. adjoining and surrounding landscaping is protected from damage; c. safe, legible, efficient and sufficient pedestrian, cyclist and vehicular accessibility and connectivity to the wider network are maintained.	The Acceptable Outcome can be and is proposed to be met.
PO21 Development ensures that construction and demolition activities are guided by measures that prevent or minimise adverse impacts including sleep disturbance at a sensitive use, due to noise and dust, including dust from construction vehicles entering and leaving the site. Note—A noise and dust impact management plan prepared in accordance with the Management plans planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO21.1 Development ensures that demolition and construction: a. only occur between 6:30am and 6:30pm Monday to Saturday, excluding public holidays; b. do not occur over periods greater than 6 months. AO21.2 Development including construction and demolition does not release dust emissions beyond the boundary of the site.	The Acceptable Outcome can be and is proposed to be met.
	AO21.3 Development construction and demolition does not involve asbestos-containing materials.	
PO22 Development ensures that: a. construction and demolition do not result in damage to surrounding property as a result of vibration; b. vibration levels achieve the vibration criteria in Table 9.4.4.3.B, Table 9.4.4.3.C, Table 9.4.4.3.D and Table 9.4.4.3.E. Note—A vibration impact assessment report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO22 Development ensures that the nature and scale of construction and demolition do not generate noticeable levels of vibration.	The Acceptable Outcome can be and is proposed to be met.

If for a material change of use or reconfiguring a lot in an urban area (as defined in the Regulation) involving premises that is, or will be, accessed by common private title, where involving buildings, either attached or detached, that are not covered by other legislation mandating fire hydrants			
PO23 Development ensures that fire hydrants are: a. installed and located to enable fire services to access water safely, effectively and efficiently; b. suitably identified so that fire services can locate them at all hours.	AO23.1 Above or below ground fire hydrants are provided on residential, commercial and industrial streets and private roads, at not more than 90m intervals, and at each street intersection. Note—On residential streets, above ground fire hydrants may be single outlet. On commercial and industrial streets above ground fire hydrants should have dual valved outlets. AO23.2 Fire hydrants are identified by: a. raised reflectorised pavement markers (RRPM) on sealed roads; b. marker posts at the fence line where on an unsealed road, as road (HR) or path (HP) hydrants.	The Acceptable Outcome can be and is proposed to be met.	
PO24 Development ensures road widths and construction within the development, are adequate for refuse vehicles and for fire emergency vehicles to gain access to a safe working area close to buildings and near water supplies whether or not on-street parking spaces are occupied.	AO24 Internal private roads have a minimum roadway clearance between obstructions of 3.5m wide and 4.8m high in addition to any width required for on-street parking.	The Acceptable Outcome can be and is proposed to be met.	
Development for major electricity infrastructure and bulk water supply infrastructure identified on the State Planning Policy Interactive Mapping System where not in the Utility services zone precinct of the Special purpose zone			
PO25 Development avoids or otherwise minimises adverse impacts on surrounding land uses through the use of buffers and setbacks and the appropriate design and location of plant and operational areas within the site.	AO25 No acceptable outcome is prescribed.	The Performance Outcome can be and is proposed to be met.	

Development potentially impacting on major electricity infrastructure and bulk water supply infrastructure identified on the State Planning Policy Interactive Mapping System where the infrastructure is not in the Utility services zone precinct of the Special purpose zone		
PO26 Development is sited and designed to: a. avoid safety risks to people or property; b. minimise noise and visual impacts to people and property; c. ensure the physical integrity and operation, maintenance and expansion of the infrastructure is not compromised.	AO26 No acceptable outcome is prescribed.	The Performance Outcome can be and is proposed to be met.

Table 9.4.4.3.B—Recommended intermittent vibration levels for cosmetic damage

Type of building		Peak particle velocity (mm/s)		
Reinforced or framed structures; industrial and heavy commercial buildings		50mm/s at 4Hz and above		
Unreinforced or light-framed structures; residential or light commercial type buildings	Below 4Hz		4Hz to 15Hz	15Hz and above
	0.6mm/s		15mm/s at 4Hz increasing to 20mm/s at 15Hz	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above

Table 9.4.4.3.C—Recommended blasting vibration levels for human comfort

Type of building	Type of blasting operations	Peak component particle velocity (mm/s)
Residences, educational establishments and places of worship	Operation blasting longer than 12 months or more than 20 blasts	5mm/s for 95% blasts per year 10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Residences, educational establishments and places of worship	Operation blasting longer than 12 months or more than 20 blasts	10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Industry or commercial premises	All blasting	25mm/s maximum unless agreement is reached with the occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that do not adversely affect the equipment operation.

Table 9.4.4.3.D—Recommended levels for continuous and impulsive vibration acceleration (m/s²) 1—80Hz for human comfort

Location	Assessment period ⁽¹⁾	Preferred values ⁽³⁾		Maximum values ⁽³⁾	
Continuous vibration		z-axis	x and y axes	z-axis	x and y axes
Critical areas ⁽²⁾	Day or night	0.005 m/s ²	0.0036 m/s ²	0.01 m/s ²	0.0072 m/s ²
Residences	Day	0.01 m/s ²	0.0071 m/s ²	0.02 m/s ²	0.014 m/s ²
-	Night	0.007 m/s ²	0.005 m/s ²	0.014 m/s ²	0.01 m/s ²
Offices, educational establishments and places of worship	Day or night	0.02 m/s ²	0.014 m/s ²	0.04 m/s ²	0.028 m/s ²

Workshops	Day or night	0.04 m/s ²	0.029 m/s ²	0.08 m/s ²	0.058 m/s ²
Impulsive vibration					
Critical areas	Day or night	0.005 m/s ²	0.0036 m/s ²	0.01 m/s ²	0.0072 m/s ²
Residences	Day	0.3 m/s ²	0.21 m/s ²	0.6 m/s ²	0.42 m/s ²
-	Night	0.1 m/s ²	0.071 m/s ²	0.2 m/s ²	0.14 m/s ²
Offices, educational establishments and places of worship	Day or night	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²
Workshops	Day or night	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²

Note—

(1) Day is 7am to 10pm and night is 10pm to 7am.

(2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

(3) Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the Noise impact assessment planning scheme policy.

Table 9.4.4.3.E—Recommended vibration dose values for intermittent vibration (m/s^{1.75}) for human comfort

Location	Daytime ⁽¹⁾		Night time ⁽¹⁾	
	Preferred value	Maximum value	Preferred value ⁽³⁾	Maximum value ⁽³⁾
Critical areas ⁽²⁾	0.1 m/s ^{1.75}	0.2 m/s ^{1.75}	0.1 m/s ^{1.75}	0.2 m/s ^{1.75}
Residences	0.2 m/s ^{1.75}	0.4 m/s ^{1.75}	0.13 m/s ^{1.75}	0.26 m/s ^{1.75}
Offices, educational establishments and places of worship	0.4 m/s ^{1.75}	0.8 m/s ^{1.75}	0.4 m/s ^{1.75}	0.8 m/s ^{1.75}
Workshops	0.8 m/s ^{1.75}	1.6 m/s ^{1.75}	0.8 m/s ^{1.75}	1.6 m/s ^{1.75}

Note—

⁽¹⁾ Day is 7am to 10pm and night is 10pm to 7am.

⁽²⁾ Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

⁽³⁾ Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the Noise impact assessment planning scheme policy.

Appendix D – Filling and Excavation Code

9.4.3 Filling and excavation code

9.4.3.1 Application

1. This code applies to assessing:
 - a. accepted development subject to compliance with identified requirements, where acceptable outcomes of this code are identified requirements in a table of assessment for an overlay (section 5.10); or
 - b. operational work for filling or excavation which is assessable development if this code is an applicable code identified in the assessment benchmarks column of a table of assessment for operational work (section 5.8) or an overlay (section 5.10); or
 - c. a material change of use or reconfiguring a lot if:
 - i. assessable development where this code is identified as a prescribed secondary code in the assessment benchmarks column of a table of assessment for material change of use (section 5.5) or reconfiguring a lot (section 5.6); or
 - ii. impact assessable development, to the extent relevant.

Note—The following purpose, overall outcomes, performance outcomes and acceptable outcomes comprise the assessment benchmarks of this code.

Note—This code does not apply to building work as defined in the Act.

Note—A development application involving a rock anchor within an adjoining site is submitted with proof of consent from an adjoining land and building owner.

Editor's note—Guidance on managing the spread of invasive species in filling or excavation activities is provided in Minimising Pest Spread Advisory Guidelines prepared for the Petroleum industry.

Editor's note—Where filling or excavation is conducted on land previously occupied by a notifiable activity or on land listed on the Environmental Management Register or the Contaminated Land Register, the relevant Queensland Government department should be contacted for advice and guidelines.

2. When using this code, reference should be made to section 1.5 and section 5.3.3.

Note—Where this code includes performance outcomes or acceptable outcomes that relate to:

- air quality assessment, guidance is provided in the Air quality planning scheme policy;
- ecological assessment, koala habitat or development design, guidance is provided in the Biodiversity areas planning scheme policy;
- retaining wall construction, guidance is provided in the Infrastructure design planning scheme policy;
- landscape design, guidance is provided in the Landscape design planning scheme policy;
- noise and dust impacts during construction and/or demolition, guidance is provided in the Management plans planning scheme policy;
- noise impact assessment, guidance is provided in the Noise impact assessment planning scheme policy;
- the selection of planting species, guidance is provided in the Planting species planning scheme policy;
- significant vegetation, guidance is provided in the Vegetation planning scheme policy.

Editor's note—For a proposal to be accepted development, subject to compliance with identified requirements, it must meet all the identified acceptable outcomes of this code and any other applicable code. Where it does not meet all identified acceptable outcomes, the proposal becomes assessable development and a development application is required. Where a development application is triggered, only the specific acceptable outcome that the proposal fails to meet needs to be assessed against the corresponding acceptable outcome or performance outcome and relevant overall outcomes. Other identified acceptable outcomes that are met are not assessed as part of the development application.

9.4.3.2 Purpose

1. The purpose of the Filling and excavation code is to assess the suitability of development for filling or excavation.
2. The purpose of the code will be achieved through the following overall outcomes:
 - a. filling or excavation does not adversely affect the visual character and amenity of the site or the surrounding area and provides access for maintenance to any structure as a result of filling or excavation.
 - b. filling or excavation does not adversely impact significant vegetation, water quality or drainage of upstream, downstream and adjoining land.
 - c. filling or excavation effectively manages the impacts associated with the activity.
 - d. filling or excavation and any retaining structure is designed and constructed to be fit for purpose and to protect services and utilities.

9.4.3.3 Performance outcomes and acceptable outcomes

Table 9.4.3.3.A—Performance outcomes and acceptable outcomes

Performance outcomes	Acceptable outcomes	Comments
PO1 Development for filling or excavation minimises visual impacts from retaining walls and earthworks.	AO1 Development ensures that the total height of any cut and fill, whether or not retained, does not exceed: a. 2.5m in a zone in the Industry zones category; b. 1m in all other zones, or if adjoining a sensitive zone.	The Performance Outcome can be and is proposed to be met.
PO2 Development of a retaining wall proposed as a result of filling or excavation: a. is designed and constructed to be fit for purpose; b. does not impact adversely on significant vegetation; c. is capable of easy maintenance.	AO2.1 Development of a retaining structure, including footings, surface drainage and subsoil drainage: a. is wholly contained within the site; b. if the total height to be retained is greater than 1m, then: i. the retaining wall at the property boundary is no greater than 1m above the ground level;	The Performance Outcome can be and is proposed to be met.

Editor's note—A retaining wall also needs to comply with the Building Regulation and embankment gradients will need to comply with the Building Regulation. Note—Guidance on the protection of native vegetation is included in the Biodiversity areas planning scheme policy.	ii. all further terracing from the 1m high boundary retaining wall is 1 vertical unit:1 horizontal unit; iii. the distance between each successive retaining wall (back of lower wall to face of higher wall) is no less than 1m horizontally to incorporate planting areas. AO2.2 Development of a retaining wall over 1m in height protects significant vegetation on the site and on adjoining land and is designed and constructed in accordance with the structures standards in the Infrastructure design planning scheme policy and certified by a Registered Professional Engineer Queensland. AO2.3 Development provides a retaining wall finish that presents to adjoining land that is maintenance free if the setback is less than 750mm from the boundary. AO2.4 Development for filling only uses clean fill that does not include any construction rubble, debris, weed seed or viable parts of plant species listed as an undesirable plant species in the Planting species planning scheme policy.	
PO3 Development ensures that a rock anchor is designed and constructed to be fit for purpose.	AO3 Development ensures that a rock anchor: a. is constructed in accordance with the standards in the Infrastructure design planning scheme policy;	The Acceptable Outcome can be and is proposed to be met.

	b. where it extends beyond the property boundary, is supported by a letter of consent from the adjoining land and building owners.	
PO4 Development protects all services and public utilities.	AO4 Development protects services and public utilities and ensures that any alteration or relocation of services or public utilities meets the standard design specifications of the responsible service authorities.	The Acceptable Outcome can be and is proposed to be met.
PO5 Development provides surface and sub-surface drainage to prevent water seepage, concentration of run-off or ponding of stormwater on adjacent land.	AO5 Development ensures all flows and subsoil drainage are directed to a lawful point of discharge of a surface water diversion drain, including to the top or toe of a retaining wall in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	The Acceptable Outcome can be and is proposed to be met.
PO6 Development ensures that the design and construction of all open drainage works is undertaken in accordance with natural channel design principles, being the development of a stormwater conveyance system for major flows, by using a vegetated open channel or drain that approximates the features and functions of a natural waterway to enhance or improve riparian values of those stormwater conveyance systems. Editor's note—Guidance on natural channel design principles can be found in the Council's publication Natural channel design guidelines.	AO6 Filling or excavation does not involve the construction of open drainage.	The Acceptable Outcome can be and is proposed to be met.
PO7 Development for filling or excavation: a. does not degrade water quality or adversely affect environmental values in receiving waters; b. ensures site sediment and erosion control standards are best practice.	AO7.1 Development for filling or excavation provides water quality treatment that complies with the stormwater drainage section of the Infrastructure design planning scheme policy. AO7.2	The Acceptable Outcome can be and is proposed to be met.

	Development provides erosion and sediment control standards that are in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	
PO8 Development for filling or excavation is conducted such that adverse impacts at a sensitive use due to noise and dust are prevented or minimised. Note—A noise and dust impact management plan prepared in accordance with the Management plans planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO8.1 Development ensures that no dust emissions extend beyond the boundary of the site, including dust from construction vehicles entering and leaving the site. AO8.2 Development for filling or excavation activity only occurs between the hours of 6:30am and 6:30pm Monday to Saturday, excluding public holidays.	The Acceptable Outcome can be and is proposed to be met.
PO9 Development ensures that vibration generated by the filling or excavation operation does not exceed the vibration criteria in Table 9.4.3.3.B, Table 9.4.3.3.C, Table 9.4.3.3.D and Table 9.4.3.3.E. Note—A noise management report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO9 Development involving filling or excavation does not cause a ground-borne vibration beyond the boundary of the site.	The Acceptable Outcome can be and is proposed to be met.
PO10 Development ensures that heavy trucks hauling material to and from the site do not affect the amenity of established areas and limits environmental nuisance impact on adjacent land.	AO10 Development ensures that heavy trucks hauling material to and from the site: a. occur for a maximum of 3 weeks; b. use a major road to access the site; c. only use a minor road for the shortest-most-direct route that has the least amount of environmental nuisance if there is no major road alternative.	The Acceptable Outcome can be and is proposed to be met.
PO11 Development for filling or excavation protects the environment and community health and wellbeing from	AO11 Development does not involve:	The Acceptable Outcome can be and is proposed to be met.

exposure to contaminated land and contaminated material.	a. excavation on land previously occupied by a notifiable activity or on land listed on the Environmental Management Register or the Contaminated Land Register; b. filling with material containing a contaminant.	
PO12 Development provides for: a. landscaping for water conservation purposes; b. water sensitive urban design measures which are employed within the landscape design to maximise stormwater use; c. drainage and stormwater measures to reduce any adverse impacts on the landscape; d. stormwater harvesting to be maximised and any adverse impacts of stormwater minimised; e. reticulated irrigation to all artificial growing environments. Note—The Landscape design planning scheme policy provides guidance on information to be provided to demonstrate compliance with the performance outcome and acceptable outcomes.	AO12.1 Development provides drainage for artificial growing environments which is connected to the stormwater drain. AO12.2 Development ensures that the maximum site stormwater harvest capacity is utilised to meet the irrigation demand of the development before alternative irrigation sources are utilised and is in compliance with the standards in the Landscape design planning scheme policy. AO12.3 Development provides areas of pavement, turf, landscaping and mulched garden beds which are drained. Note—This may be achieved through the provision and/or treatment of swales, spoon drains, field gullies, sub-surface drainage and stormwater connections. AO12.4 Development provides a reticulated irrigation system to all landscaping areas in accordance with the Landscape design planning scheme policy.	Not applicable to this development.
PO13 Development ensures cutting and filling for the development of canals or artificial waterways avoids adverse impacts on coastal resources and processes.	AO13 Development does not involve the creation of canals or artificial waterways.	Not applicable to this developemnt

Table 9.4.3.3.B— Recommended intermittent vibration levels for cosmetic damage

Type of building	Peak particle velocity (mm/s)		
Reinforced or framed structures; industrial and heavy commercial buildings	50mm/s at 4Hz and above		
Unreinforced or light-framed structures; residential or light-commercial type buildings	Below 4Hz	4Hz to 15Hz	15Hz and above
	0.6mm/s	15mm/s at 4Hz increasing to 20mm/s at 15Hz	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above

Table 9.4.3.3.C— Recommended blasting vibration levels for human comfort

Type of building	Type of blasting operations	Peak component particle velocity (mm/s)
Residences, educational establishments and places of worship	Operation blasting longer than 12 months or more than 20 blasts	5mm/s for 95% blasts per year 10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Residences, educational establishments and places of worship	Operations lasting for less than 12 months or less than 20 blasts	10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Industry or commercial premises	All blasting	25 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that do not adversely affect the equipment operation.

Table 9.4.3.3.D— Recommended levels for continuous and impulsive vibration acceleration (m/s²) 1—80Hz for human comfort

Location	Assessment period ⁽¹⁾	Preferred values ⁽³⁾		Maximum values ⁽³⁾	
		z-axis	x and y axes	z-axis	x and y axes
Continuous vibration					
Critical areas ⁽²⁾	Day or night	0.005 m/s ²	0.0036 m/s ²	0.01 m/s ²	0.0072 m/s ²
Residences	Day	0.01 m/s ²	0.0071 m/s ²	0.02 m/s ²	0.014 m/s ²
-	Night	0.007 m/s ²	0.005 m/s ²	0.014 m/s ²	0.01 m/s ²
Offices, educational establishments and places of worship	Day or night	0.02 m/s ²	0.014 m/s ²	0.04 m/s ²	0.028 m/s ²
Workshops	Day or night	0.04 m/s ²	0.029 m/s ²	0.08 m/s ²	0.058 m/s ²
Impulsive vibration					
Critical areas	Day or night	0.005 m/s ²	0.0036 m/s ²	0.01 m/s ²	0.0072 m/s ²
Residences	Day	0.3 m/s ²	0.21 m/s ²	0.6 m/s ²	0.42 m/s ²
-	Night	0.1 m/s ²	0.071 m/s ²	0.2 m/s ²	0.14 m/s ²
Offices, educational establishments and places of worship	Day or night	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²
Workshops	Day or night	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²

Note—

(1) Day is 7am to 10pm and night is 10pm to 7am.

(2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

(3) Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the Noise impact assessment planning scheme policy.

Table 9.4.3.3.E— Recommended vibration dose values for intermittent vibration ($\text{m/s}^{1.75}$) for human comfort

Location	Daytime ⁽¹⁾		Night time ⁽¹⁾	
	Preferred value	Maximum value	Preferred value ⁽³⁾	Maximum value ⁽³⁾
Critical areas ⁽²⁾	0.1 $\text{m/s}^{1.75}$	0.2 $\text{m/s}^{1.75}$	0.1 $\text{m/s}^{1.75}$	0.2 $\text{m/s}^{1.75}$
Residences	0.2 $\text{m/s}^{1.75}$	0.4 $\text{m/s}^{1.75}$	0.13 $\text{m/s}^{1.75}$	0.26 $\text{m/s}^{1.75}$
Offices, educational establishments and places of worship	0.4 $\text{m/s}^{1.75}$	0.8 $\text{m/s}^{1.75}$	0.4 $\text{m/s}^{1.75}$	0.8 $\text{m/s}^{1.75}$
Workshops	0.8 $\text{m/s}^{1.75}$	1.6 $\text{m/s}^{1.75}$	0.8 $\text{m/s}^{1.75}$	1.6 $\text{m/s}^{1.75}$

Note—

⁽¹⁾ Day is 7am to 10pm and night is 10pm to 7am.

⁽²⁾ Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

⁽³⁾ Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the Noise impact assessment planning scheme policy.

Appendix E – Brisbane City Council FloodWise Report

FloodWise Property Report

295 ROCHEDALE RD, ROCHEDALE 4123
Lot 5 on RP95759



Dedicated to a better Brisbane

THE PURPOSE OF THIS REPORT IS FOR BUILDING AND DEVELOPMENT

Brisbane City Council's FloodWise Property Report provides technical flood planning information including estimated flood levels, habitable floor level requirements and more. This report uses the adopted flood planning information in **Brisbane City Plan 2014**, that guides how land in Brisbane is used and developed for the future. Find out more about [planning and building](#). To understand how to be resilient and prepare for floods, visit Council's [Be Prepared](#) webpage. Find more information about [how to read a FloodWise Property Report](#).

This property has no flood levels

Brisbane City Council has not assigned flood level information for this property however it may be affected by one or more flood or property development flags. Please refer to the Flood Planning and Development Information below for details. The property may have 0.2% AEP flood level which will appear on the Flood Planning Information table if applicable. For professional advice or detailed assessment of a property contact a Registered Professional Engineer of Queensland.

Visit the [Be Prepared](#) page to find more information on how to prepare your home or business for potential flooding.

 **Combined** 1% AEP for river, creek and storm tide flood extent (if applicable) from the adopted Brisbane City Plan 2014. Read more about [Brisbane City Plan 2014](#).



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Are you resilient and ready for flood?

- Sign up to the Brisbane Severe Weather Alert at brisbane.qld.gov.au/beprepared
- Visit bom.gov.au for the latest weather updates.
- Have an evacuation plan, emergency kit and important phone numbers ready.
- Observe where water flows from and to during heavy rain.
- Consider how flood-resilient building techniques will have you home faster and with less damage.

Life threatening emergencies
000 Police/fire/ambulance
(mobiles **000** and **112**)

State Emergency Service (SES) **132 500**
Energex **13 19 62**
Brisbane City Council **3403 8888**

Technical Summary

This section of the FloodWise Property Report contains more detailed flood information for this property so **surveyors, builders, certifiers, architects, and engineers can plan and build** in accordance with Council's planning scheme.

Find more information about [planning and building](#) in Brisbane or talk to a Development Services Planning Information Officer via Council's Contact Centre on (07) 3403 8888.

Flood Planning and Development Information

This section of the FloodWise Property Report contains information about Council's planning scheme overlays. Overlays identify areas within the planning scheme that reflect distinct themes that may include constrained land and/or areas sensitive to the effects of development.

Flood overlay code

The Flood overlay code of Council's planning scheme uses the following information to provide guidelines when developing properties. The table below summarises the flood planning areas (FPAs) that apply to this property. Development guidelines for the FPAs are explained in [Council's planning scheme](#).

Flood planning areas (FPA)		
River	Creek / waterway	Overland flow
		Not Applicable

To find more information about Council's flood planning areas (FPAs) for Brisbane River and Creek/waterway flooding to guide future building and development in flood prone areas, please review [Council's Flood Planning Provisions](#).

Coastal hazard overlay code

The Coastal hazard overlay code of Council's planning scheme uses the following information to provide guidelines when conducting new developments. The table below summarises the coastal hazard categories that apply to this property. Development guidelines for the following Coastal hazard overlay sub-categories are explained in Council's [planning scheme](#).

Coastal hazard overlay sub-categories
There are currently no Coastal hazard overlay sub-categories that apply to this property.

Note: Where land is identified within one for more flood planning areas on the Flood overlay or is identified within one of the Storm tide inundation area sub-categories on the Coastal hazard overlay, the assessment criteria that provides the highest level of protection from any source of flooding applies.

Property development flags

Large allotment - This property is either a Large Allotment of over 1000 square metres or is located within a Large Allotment. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across the site.

For more information or advice, please consult a Registered Professional Engineer of Queensland (RPEQ).

Useful Flood Information Definitions

Australian Height Datum (AHD) - The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.

Annual Exceedance Probability (AEP) - The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.

- **0.2% AEP** - A flood event of this size is considered rare but may still occur. A flood of size or larger has a 1 in 500 chance or a 0.2% probability of occurring in any year.
- **1% AEP** - A flood of this size or larger has a 1 in 100 chance or a 1% probability of occurring in any year.
- **2% AEP** - A flood of this size or larger has a 1 in 50 chance or a 2% probability of occurring in any year.
- **5% AEP** - A flood of this size or larger has a 1 in 20 chance or a 5% probability of occurring in any year.
- **20% AEP** - A flood of this size or larger has a 1 in 5 chance or a 20% probability of occurring in any year.

Data quality

- **Data Quality Code A** - Level data based on recent surveyor report or approved as-constructed drawings.
- **Data Quality Code B** - Level data based on ground-based mobile survey or similar.
- **Data Quality Code C** - Level data derived from Airborne Laser Scanning or LiDAR information.

Defined Flood Level (DFL) - The DFL is used for commercial and industrial development. The Defined flood level (DFL) for Brisbane River flooding is a level of 3.7m AHD at the Brisbane City Gauge based on a flow of 6,800 m/s. DFL is only applicable for non-residential uses affected by Brisbane River flooding.

Flood planning area (FPA) - Council has developed five Flood planning areas (FPAs) as part of Brisbane City Plan 2014 Flood overlay mapping for Brisbane River, Creek/waterway flooding and Overland flow to guide future building and development in flood prone areas. Storm tide flooding is mapped separately. The FPAs are designed to recognise the flood hazard for different flooding types. Flood hazard is a combination of frequency of flooding, the flood depth, and the speed at which the water is travelling. [Find more information here.](#)

Maximum and minimum ground level - Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

Minimum habitable floor level (dwelling house) - The minimum level in metres AHD at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family, and rumpus rooms) must be constructed as required by the Brisbane City Plan 2014.

Indicative existing floor level - The approximate level in metres AHD of the lowest habitable floor in the existing building (excluding apartments). The data is sourced from a range of sources with varying accuracy levels.

Property - A property will contain 1 or more lots. The multiple lot warning is shown if you have selected a property that contains multiple lots.

Residential flood level (RFL) - This flood level for the Brisbane River equates to the 1% annual exceedance probability (AEP) flood level.

To learn more, visit [Brisbane City Council's Flood Information Hub](#)

Brisbane City Council's Online Flood Tools

Council provides several online flood tools:

- to guide planning and development
- to help residents and businesses understand their flood risk and prepare for flooding.

Council's online flood tools for planning and development purposes include:

- **FloodWise Property Report**
- **Flood Overlay Code**

For more information on Council's planning scheme and online flood tools for planning and development:

- phone (07) 3403 8888 and ask to talk to a Development Services Planning Information Officer

- visit brisbane.qld.gov.au/planning-building

Council's Planning Scheme - The Brisbane City Plan 2014 (planning scheme) has been prepared in accordance with the Sustainable Planning Act as a framework for managing development in a way that advances the purpose of the Act. In seeking to achieve this purpose, the planning scheme sets out the Council's intention for future development in the planning scheme area, over the next 20 years.

Disclaimer

1. Defined flood levels and residential flood levels, minimum habitable floor levels and indicative existing floor levels are determined from the best available information to Council at the date of issue. These levels, for a particular property, may change if more detailed information becomes available or changes are made in the method of calculating levels.
2. Council makes no warranty or representation regarding the accuracy or completeness of a FloodWise Property Report. Council disdaims any responsibility or liability in relation to the use or reliance by any person on a FloodWise Property Report.



Planning to build or renovate?

For information, guidelines, tools and resources to help you track, plan or apply for your development visit brisbane.qld.gov.au/planning-building

You can also find the Brisbane City Plan 2014 and Neighbourhood Plans as well as other information and training videos to help, with your building and development plans.