

CIVIL ENGINEERING
ASSESSMENT REPORT

19 River Road, Bundamba

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HCE ENGINEERS

REPORT CONTROL SHEET

HCE Ref No:	25376
Site:	19 River Road, Bundamba
Report Title:	Civil Engineering Assessment Report
Prepared For:	AR Developments Pty Ltd

Rev No	Date	Written by	Reviewed by	Authorised by	Signed
A	09/10/26	MB	GH	MB	RPEQ 31731 Matthew Burmeister 2026.10.09 11:19:55+10'00'

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AR Developments Pty Ltd	9/10/2026	✓							
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Introduction

An approval for Reconfiguring a Lot and Operational Works (earthworks, clearing vegetation) (Council Ref: 8605/2025/CA) was recently issued by Ipswich City Council to subdivide 19 River Road to create one residential (Lot 4) and one commercial master lot (Lot 2), suitable for further development.

This report has been prepared to support the development application for a Material Change of Use, over the proposed residential master lot (Lot 2) by Economic Development Queensland. The proposed development is for the construction of residential townhouses, consisting of 212 units, over 5 stages.

This report provides commentary of civil engineering and utility servicing matters and addresses compliance of the proposed development with the Land Activation Program (Tranhe 2) Provision Priority Development Area draft Provisional Land Use Plan (PLUP), and as appropriate relevant sections of the Ipswich City Plan 2025 as guidance material.



Image : Aerial View of Site (image from Nearmap.com)

Flooding

With reference to Section 4.1.4.1 - Flood Assessment of the draft PLUP, the proposed development is not located within a mapped flood area and is not subject to flooding. Accordingly, there is no identifiable flood risk to life, property, critical infrastructure or the environment associated with the development.

As the site is unaffected by flooding, flood immunity measures, flood-resilient building design, evacuation planning and flood management infrastructure are not required to achieve an acceptable level of risk. The proposed development will not alter flood storage, flood conveyance, flood levels or flood behaviour and therefore will not result in adverse flood impacts on surrounding properties or infrastructure.

In alignment with the draft PLUP's use of Council's Planning Scheme Code as guidance material, an assessment against Council's Planning Scheme is outline as follows.

The site is burdened by the Very Low Flood & Overland Flow Risk overlay under the Ipswich City Plan 2025. Refer to image below:

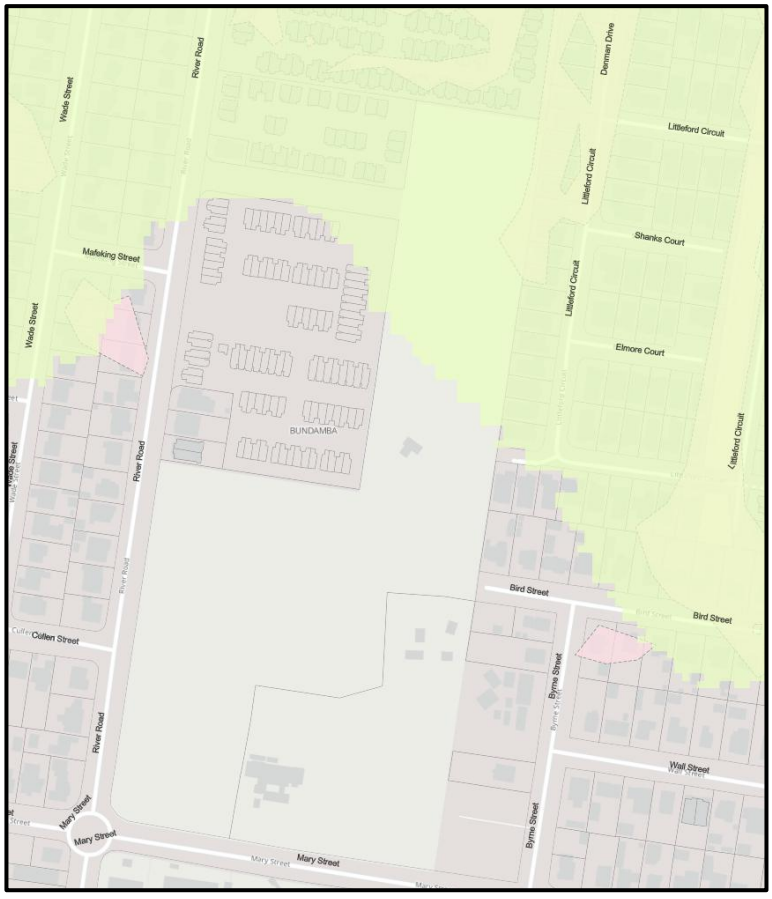


Image : OV12 Flood Risk and Overland Flow(From Ipswich City Plan 2025)

The proposed use is compatible with the flood risk as outlined in Councils Flood Risk and Overland Flow Overlay Code. The site has not been historically subject to river flooding.

Overlay flow mapping indicates some potential areas of inundation in the north-eastern corner of the development site. On review of topography, it is evident that this overland flow emanates

from runoff from the development site. The proposed development will control site runoff and lawfully discharge to existing stormwater infrastructure. Runoff will not discharge over the eastern boundary where the overland flow path is mapped and hence there is no need to retain this area on the site for the passage of overland flow.

Earthworks and Retaining

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

- avoidance of stepping in slabs of unit packs.
- access driveway grading that prevents vehicle scraping and provides flood immunity.
- stormwater management to achieve lawful discharge.
- minimisation of retaining walls.

The net outcome is an earthworks design that generates an excess of approximately 21,500 m^3.

Earthworks proposed are in accordance with the performance outcomes as outlined in the Earthworks Code.

It is noted that some small areas of the site are mapped under Councils Difficult Topography and Landslide Overlay Code.

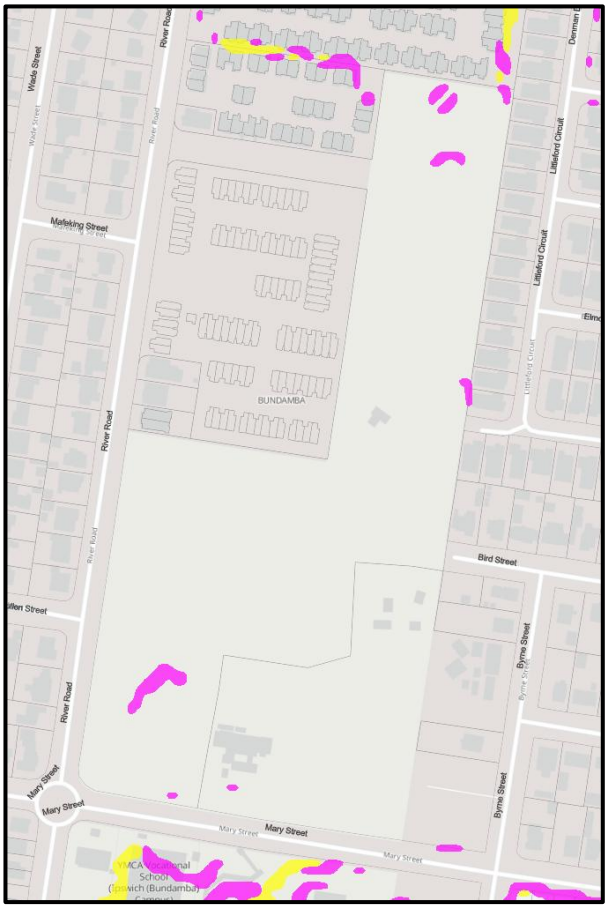


Image : OV11 Difficult Topography and Landslide(From Ipswich City Plan 2025)

From review of the site detailed survey the areas mapped are locations where the natural landform has been deformed, with placement of earth in stockpiles. These features will be removed as part of the earthworks proposed as part of preceding subdivision (Council application reference: 8605/2025/CA).

Erosion Hazard Assessment

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

Roadworks and Access

External roadworks have been approved by Council as part of Council reference: 8605/2025/CA. These works include:

- formalisation of kerb and channel and footpath on River Road,

- a new roundabout at the intersection of River Road and Cullen Drive, with construction of a private road as the fourth leg to the roundabout,

- a new cul-de-sac at the terminus of Bird Street.

No additional roadworks are proposed in conjunction with the subject application.

Access to the development is primarily proposed from the new private road. Six units will access directly from River Road and four units will access directly from the new cul-de-sac at the end of Bird Street.

Stormwater Drainage

With reference to Section 4.15.2 - Infrastructure of the draft PLUP. The proposed development will discharge stormwater to a lawful point of discharge, protect receiving environments by implementing water quality treatment devices, avoid worsening of flooding or cause any drainage impacts on surrounding land and infrastructure.

Site runoff will discharge from the site in three discrete locations.

Stormwater will be discharged to River Road, Bird Street and to stormwater infrastructure to the north. For discharge to River Road and Bird Street, no mitigation of peak stormwater flow is required to meet the Performance Outcomes of Councils General Works and Infrastructure Code.

The majority of site runoff will be captured and conveyed to discharge to the existing stormwater infrastructure in the north-eastern corner of the subject site. This runoff is to be mitigated such that peak discharge does not exceed that currently discharged in this direction. A total of 6 detention tanks with a combined volume of 1690m^3 is proposed to suit the staging of the proposed development.

Compliance with the Water Quality Objectives outlined SC6.2 General Works and Infrastructure Planning Scheme Policy, Part 3 - Stormwater Quantity, Quality and Floodplain Management are proposed to be achieved by installation of a proprietary treatment device.

Stormwater drainage within the site can be designed in accordance with the requirements of the Queensland Urban Drainage Manual and Councils SC6.2 General Works and Infrastructure Planning Scheme Policy.

Proposed stormwater drainage layout is shown on the accompanying concept design drawings and is detailed in the Stormwater Management Plan prepared by HCE Engineers.

Sewerage

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



Image : Existing sewerage infrastructure.

There is an existing sewerage property connection provided to the development site of adequate size to service the development. Accordingly, no sewerage works are proposed.

Water Reticulation

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

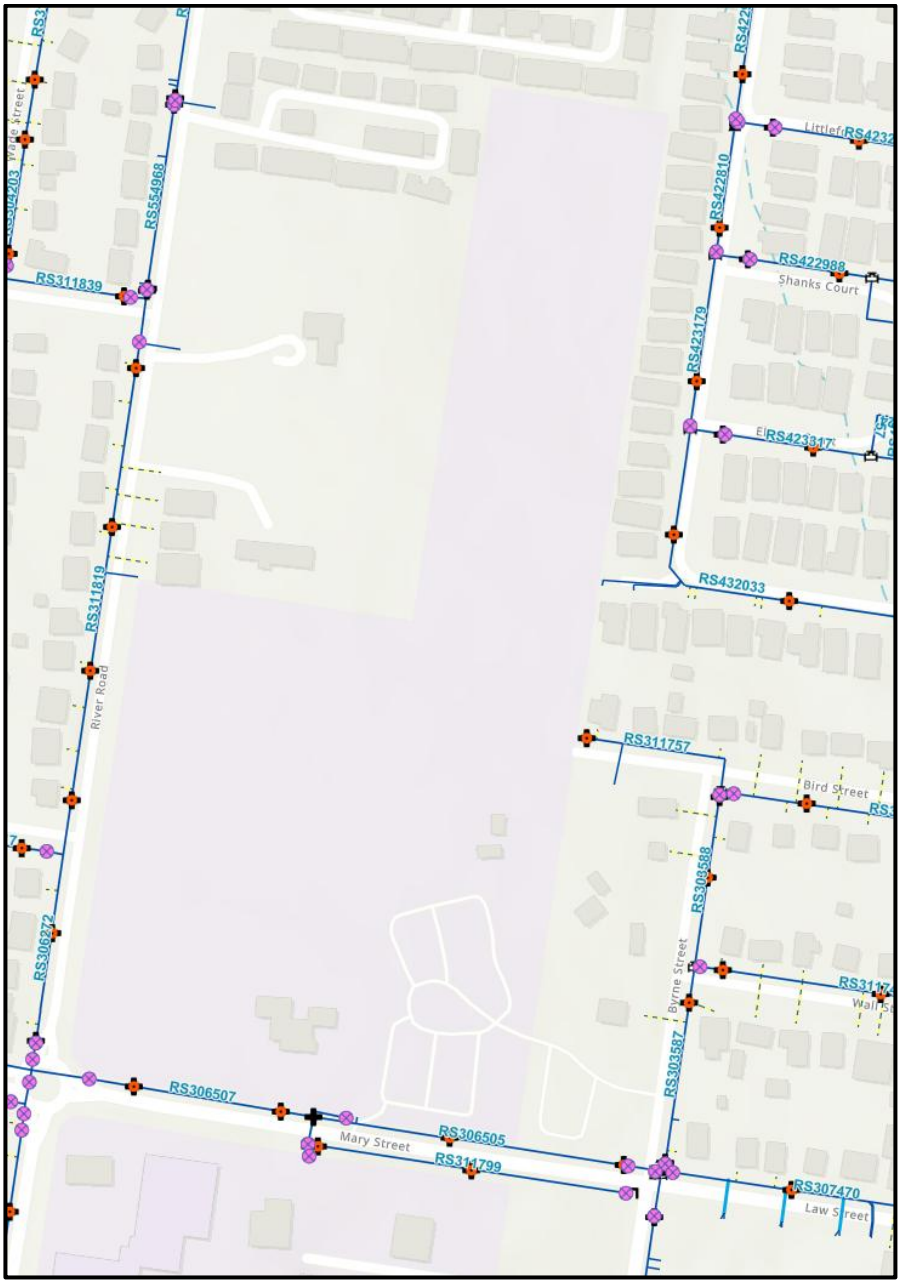


Image : Existing water reticulation infrastructure.

An existing 225mm CI water main is located within River Road and provides a suitable connection location for the new water service to the subject site.

Proposed water reticulation is shown on the accompanying concept design drawings.

Conclusions

The proposed development has been assessed against the draft PLUP, and as guidance material, relevant sections of the Ipswich City Plan 2025.

Compliance with the draft PLUP and relevant Performance Outcomes of the Earthworks Code and General Works and Infrastructure 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

212 UNIT SITE DEVELOPMENT

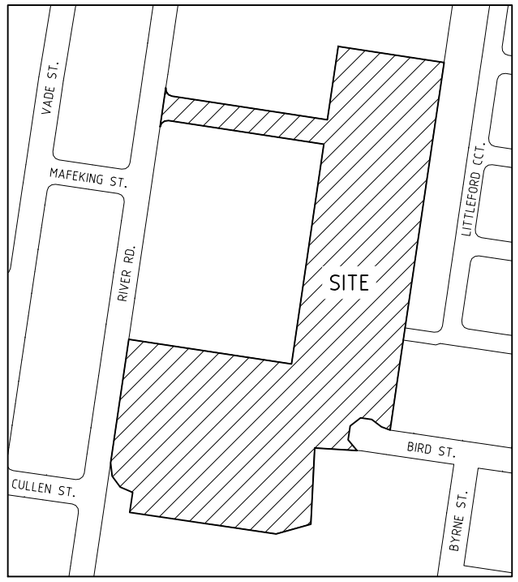
LOT 1 ON SP 354857

19 RIVER ROAD

BUNDAMBA, QLD 4304

DRAWING INDEX	
DRAWING No.	DESCRIPTION
25376-SK01	LOCALITY PLAN, DRAWING INDEX AND GENERAL NOTES
25376-SK02	CONCEPT LAYOUT PLAN AND TYPICAL SECTIONS
25376-SK03	CONCEPT SERVICES PLAN SHEET 1 OF 2
25376-SK04	CONCEPT SERVICES PLAN SHEET 2 OF 2
25376-SK05	CONCEPT BULK EARTHWORKS PLAN SHEET 1 OF 2
25376-SK06	CONCEPT BULK EARTHWORKS PLAN SHEET 2 OF 2
25376-SK07	CONCEPT EARTHWORKS SECTIONS SHEET 1 OF 3
25376-SK08	CONCEPT EARTHWORKS SECTIONS SHEET 2 OF 3
25376-SK09	CONCEPT EARTHWORKS SECTIONS SHEET 3 OF 3
25376-SK10	CONCEPT STORMWATER CATCHMENT PLAN
25376-SK11	CONCEPT STORMWATER QUALITY CATCHMENT PLAN

HCE STANDARD DRAWING INDEX	
DRAWING No.	DESCRIPTION
HCE-RW01	STANDARD CONCRETE SLEEPER RETAINING WALL DETAILS SHEET 1
HCE-RW02	STANDARD CONCRETE SLEEPER RETAINING WALL DETAILS SHEET 2



LOCALITY PLAN
SCALE 1:2500

SCALE 1:2500 (A1) 0 50 100 150m
(SCALE BEFORE REDUCTION)

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PROJECT	TITLE	CLIENT
19 RIVER ROAD BUNDAMBA QLD 4304 LOT 1 ON SP 354857	LOCALITY PLAN, DRAWING INDEX AND GENERAL NOTES	AR DEVELOPMENTS

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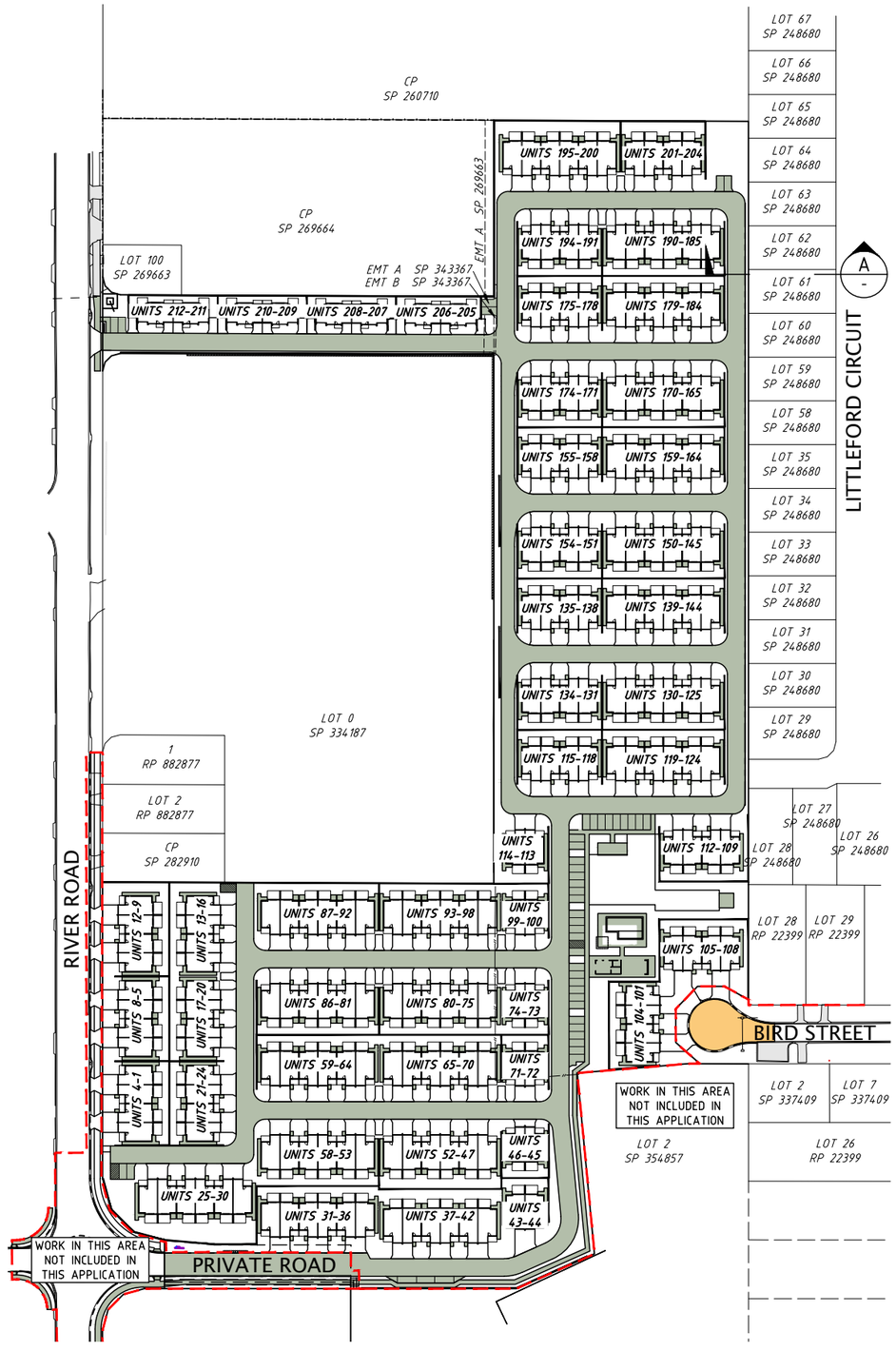
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Drawing No.	Rev.
25376-SK01	A

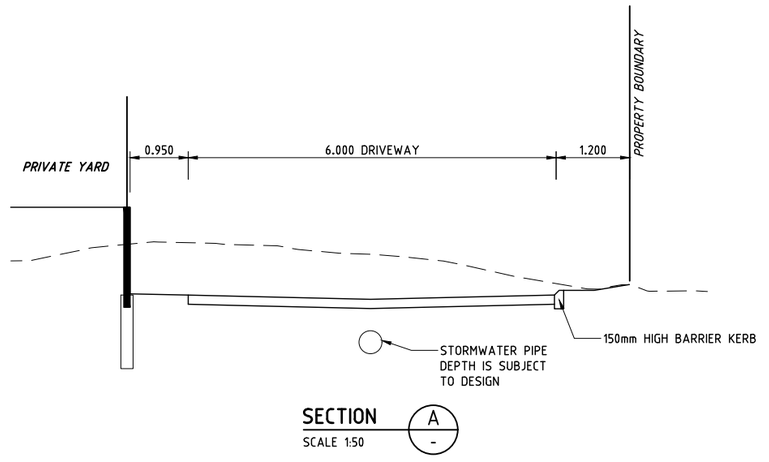


LEGEND

- EXISTING KERB AND CHANNEL
- PROPOSED KERB AND CHANNEL
- EXISTING CONCRETE
- PROPOSED CONCRETE
- ?? EASEMENT
- PROPOSED PAVEMENT
- EXTERNAL WORKS BOUNDARY

PLAN

SCALE 1:1000



SECTION A-A

SCALE 1:50

SCALE 1:1000 (A1)

0 20 40 60m

(SCALE BEFORE REDUCTION)

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PROJECT	TITLE	CLIENT
19 RIVER ROAD BUNDAMBA QLD 4304 LOT 1 SP 354857	CONCEPT LAYOUT PLAN AND TYPICAL SECTIONS	AR DEVELOPMENTS

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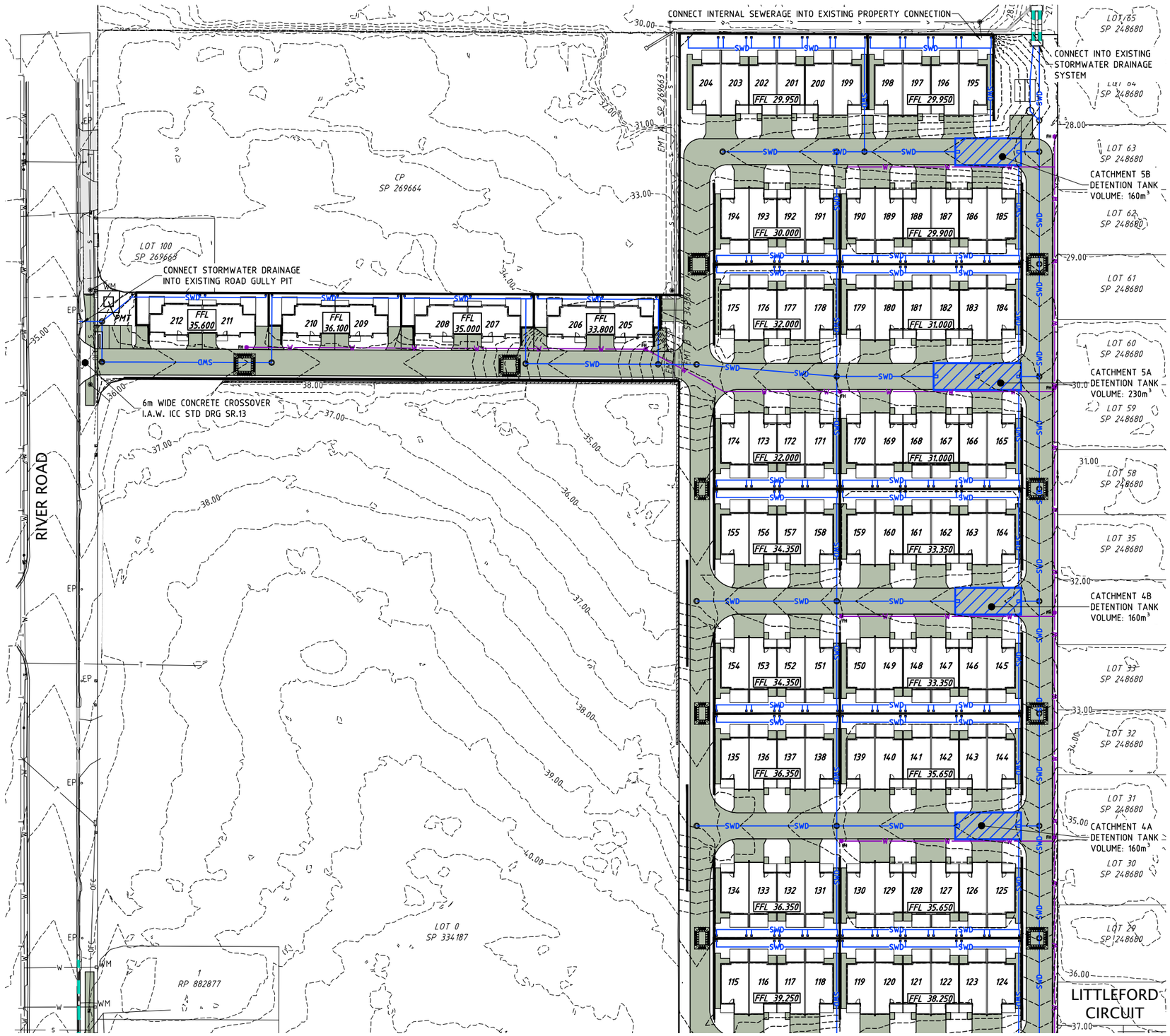
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Scale AS SHOWN

Drawing No. 25376-SK02

Rev. B



FOR CONTINUATION REFER TO DRAWING 25376-SK04

PLAN

SCALE 1:500

LEGEND

- EXISTING SURFACE CONTOURS (0.50m INTERVAL)
- FINISHED SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING STORMWATER DRAINAGE
- PROPOSED STORMWATER DRAINAGE (NOT PART OF THIS APPLICATION)
- PROPOSED STORMWATER DRAINAGE
- UNDERGROUND STORMWATER DETENTION TANK
- EXISTING SEWERAGE
- PROPOSED SEWERAGE
- EXISTING WATER RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING UNDERGROUND ELECTRICAL
- PROPOSED ELECTRICAL
- EXISTING TELECOMMUNICATIONS
- EXISTING KERB AND CHANNEL
- PROPOSED KERB AND CHANNEL
- EXISTING RETAINING WALL
- PROPOSED RETAINING WALL
- EXISTING CONCRETE
- PROPOSED CONCRETE
- EXISTING WATER METER
- PROPOSED WATER METER
- PROPOSED FIRE HYDRANT

DETENTION TANK VOLUMES

NAME	TANK VOLUME (m³)
2	280
3	700
4A	160
4B	160
5A	230
5B	160
TOTAL	1690

THIS DESIGN HAS BEEN PREPARED BASED ON SERVICE AUTHORITY AS CONSTRUCTED INFORMATION. NO POT HOLING HAS BEEN UNDERTAKEN TO VERIFY EXISTING SERVICE LOCATIONS AND DEPTHS. IT IS THE CONTRACTORS RESPONSIBILITY TO UNDERTAKE POT HOLING TO VERIFY THE DESIGN.

SCALE 1:500 (A1) 0 10 20 30m (SCALE BEFORE REDUCTION)

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PROJECT	TITLE	CLIENT
19 RIVER ROAD BUNDAMBA QLD 4304 LOT 1 SP 354857	CONCEPT SERVICES PLAN SHEET 1 OF 2	AR DEVELOPMENTS

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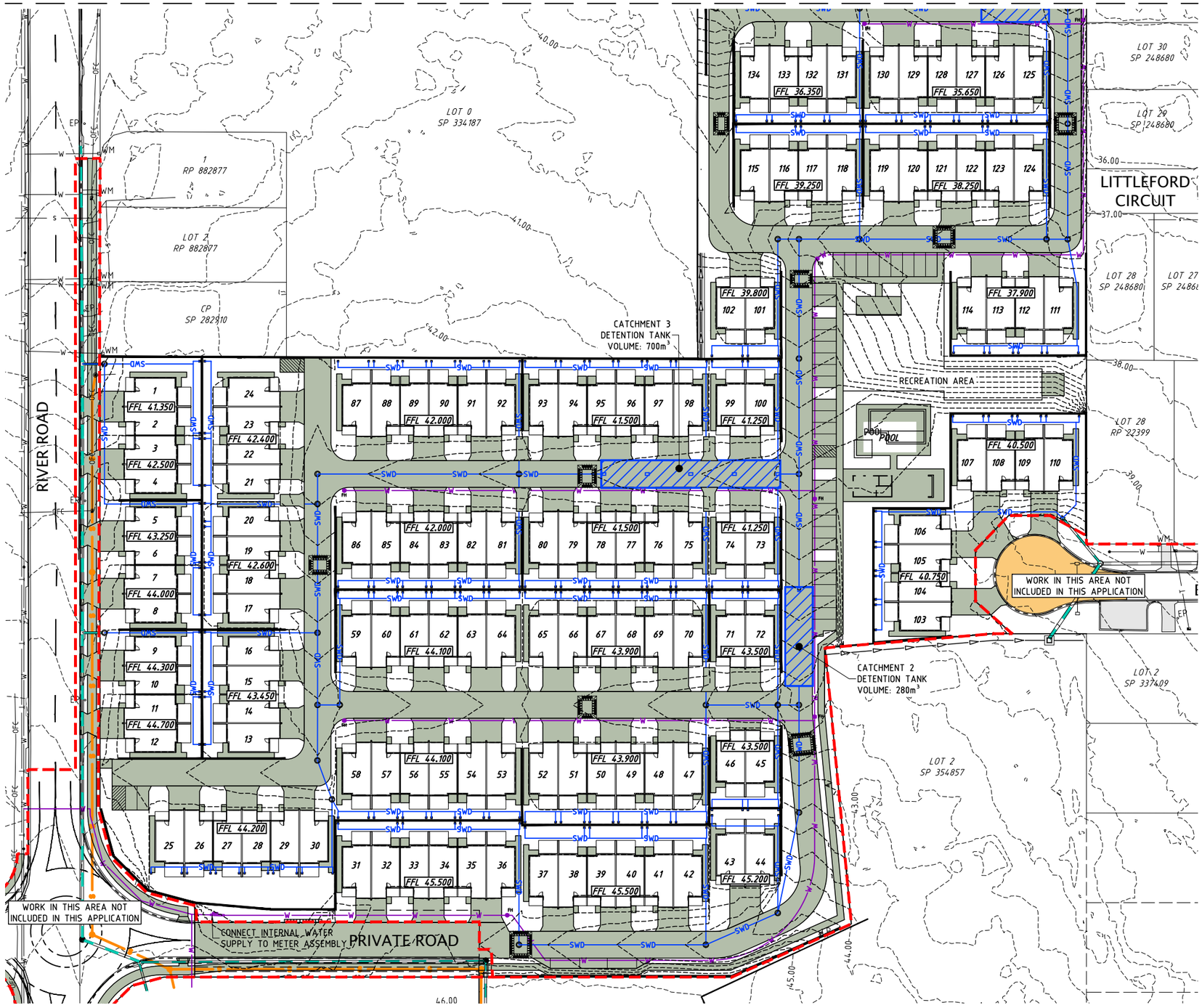
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Rev. B

FOR CONTINUATION REFER TO DRAWING 25376-SK03



LEGEND

- EXISTING SURFACE CONTOURS (0.50m INTERVAL)
- FINISHED SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING STORMWATER DRAINAGE
- PROPOSED STORMWATER DRAINAGE (NOT PART OF THIS APPLICATION)
- PROPOSED STORMWATER DRAINAGE
- UNDERGROUND STORMWATER DETENTION TANK
- EXISTING SEWERAGE
- PROPOSED SEWERAGE
- EXISTING WATER RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING UNDERGROUND ELECTRICAL
- PROPOSED ELECTRICAL
- EXISTING TELECOMMUNICATIONS
- EXISTING FIBRE OPTIC CABLE
- EXISTING KERB AND CHANNEL
- PROPOSED KERB AND CHANNEL
- EXISTING RETAINING WALL
- PROPOSED RETAINING WALL
- PROPOSED PAVEMENT
- EXISTING CONCRETE
- PROPOSED CONCRETE
- EXISTING WATER METER
- PROPOSED WATER METER
- PROPOSED FIRE HYDRANT
- EXTERNAL WORKS BOUNDARY

PLAN

SCALE 1:500

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19 RIVER ROAD BUNDAMBA QLD 4304 LOT 1 SP 354857	CONCEPT SERVICES PLAN SHEET 2 OF 2	AR DEVELOPMENTS

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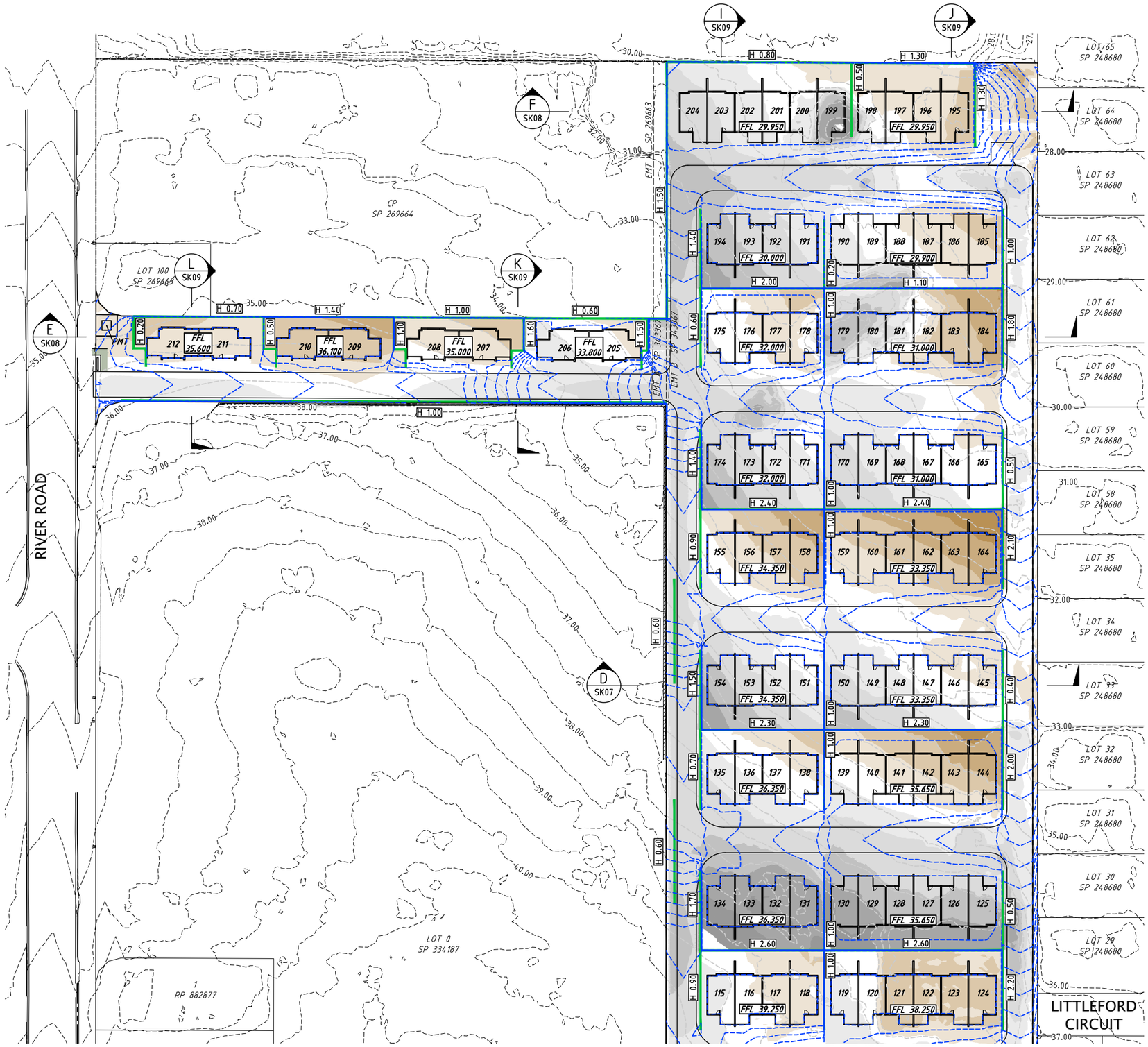
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PLAN

SCALE 1:500

LEGEND

- EXISTING SURFACE CONTOURS (0.50m INTERVAL)
- FINISHED SURFACE CONTOURS (0.25m INTERVAL)
- SWD — EXISTING STORMWATER DRAINAGE
- S — EXISTING SEWERAGE
- W — EXISTING WATER RETICULATION
- E — EXISTING UNDERGROUND ELECTRICAL
- OH — EXISTING OVERHEAD ELECTRICAL
- T — EXISTING TELECOMMUNICATIONS
- EXISTING KERB AND CHANNEL
- PROPOSED KERB AND CHANNEL
- EXISTING RETAINING WALL
- PROPOSED RETAINING WALL
- H 1.00 MAXIMUM RETAINING WALL HEIGHT

CUT FILL LEGEND

-3.00m TO -2.50m	
-2.50m TO -2.00m	
-2.00m TO -1.50m	
-1.50m TO -1.00m	
-1.00m TO -0.50m	
-0.50m TO 0.00m	
0.00m TO 0.50m	
0.50m TO 1.00m	
1.00m TO 1.50m	
1.50m TO 2.00m	
2.00m TO 2.50m	
2.50m TO 3.00m	

EARTHWORKS VOLUMES

TOTAL CUT	-31,500m³
TOTAL FILL	6,500m³
BALANCE	-25,000m³

SCALE 1:500 (A1) 0 10 20 30m (SCALE BEFORE REDUCTION)

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19 RIVER ROAD BUNDAMBA QLD 4304 LOT 1 SP 354857	CONCEPT BULK EARTHWORKS PLAN SHEET 1 OF 2	AR DEVELOPMENTS

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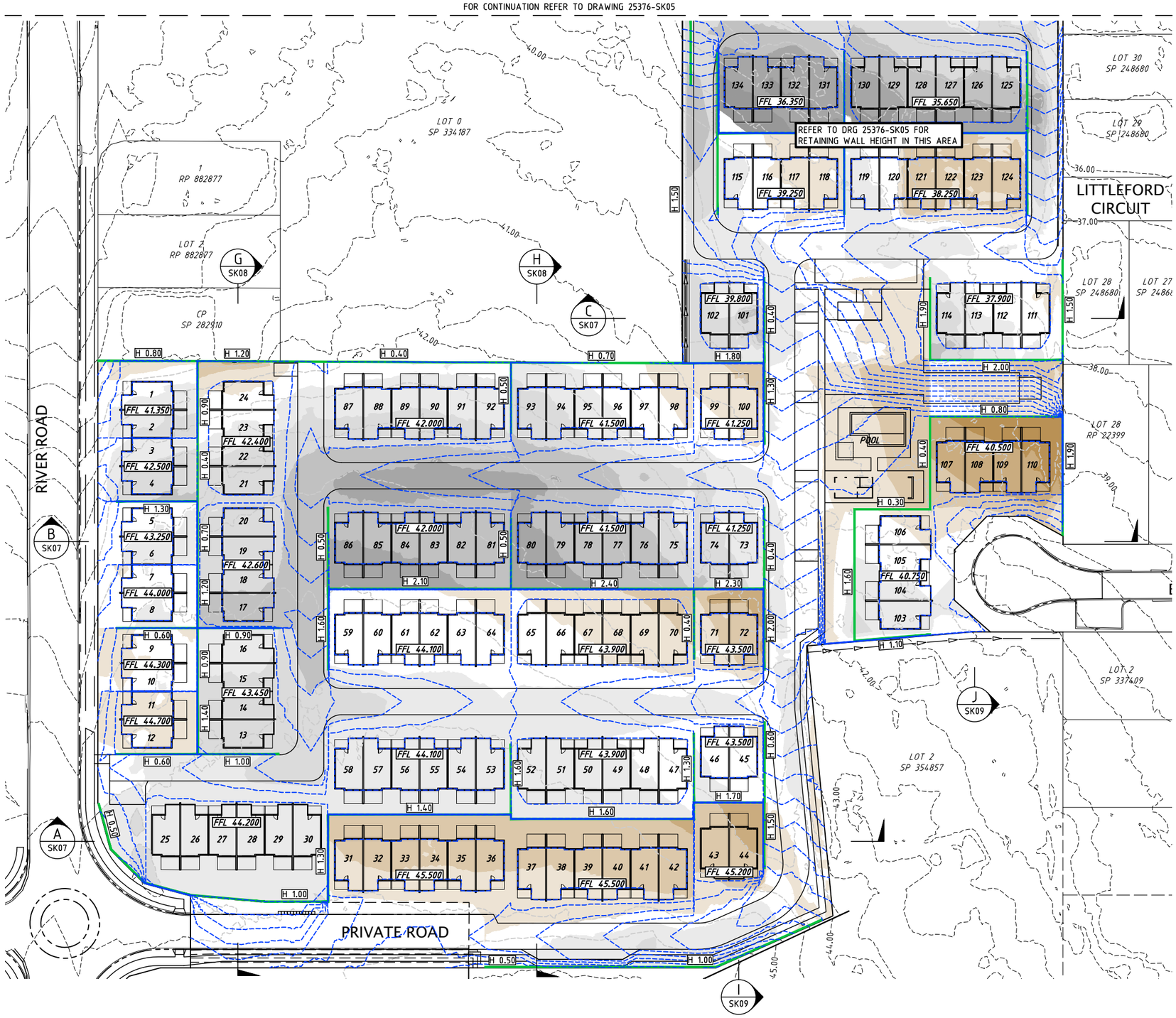
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LEGEND

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- EXISTING SEWERAGE
- EXISTING WATER RETICULATION
- EXISTING UNDERGROUND ELECTRICAL
- EXISTING OVERHEAD ELECTRICAL
- EXISTING TELECOMMUNICATIONS
- EXISTING KERB AND CHANNEL
- PROPOSED KERB AND CHANNEL
- EXISTING RETAINING WALL
- PROPOSED RETAINING WALL
- H 1.00 MAXIMUM RETAINING WALL HEIGHT
- EXISTING CONCRETE
- WM EXISTING WATER METER

CUT FILL LEGEND

-3.00m TO -2.50m	
-2.50m TO -2.00m	
-2.00m TO -1.50m	
-1.50m TO -1.00m	
-1.00m TO -0.50m	
-0.50m TO 0.00m	
0.00m TO 0.50m	
0.50m TO 1.00m	
1.00m TO 1.50m	
1.50m TO 2.00m	
2.00m TO 2.50m	
2.50m TO 3.00m	

PLAN

SCALE 1:500

SCALE 1:500 (A1) 0 10 20 30m

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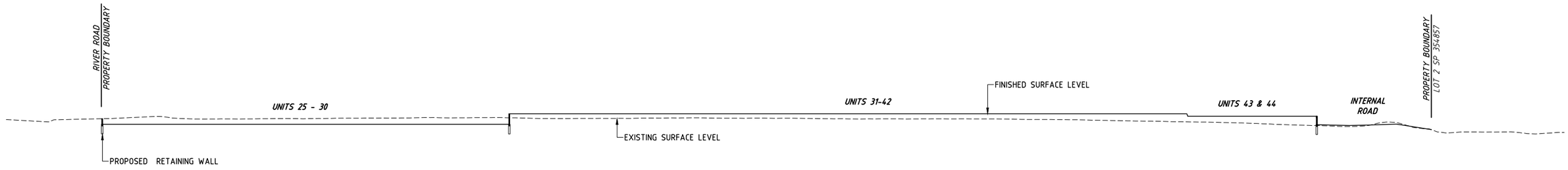
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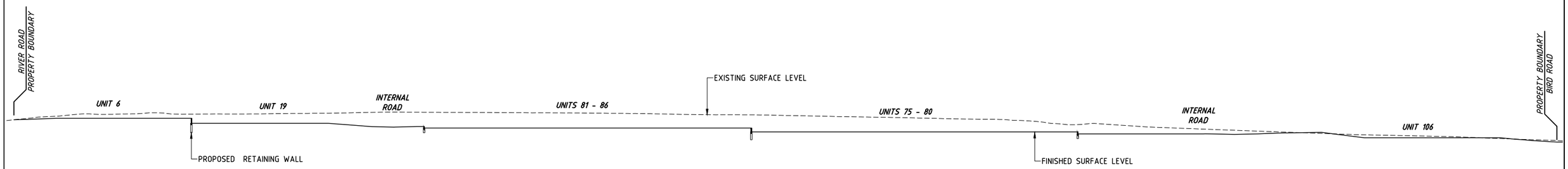
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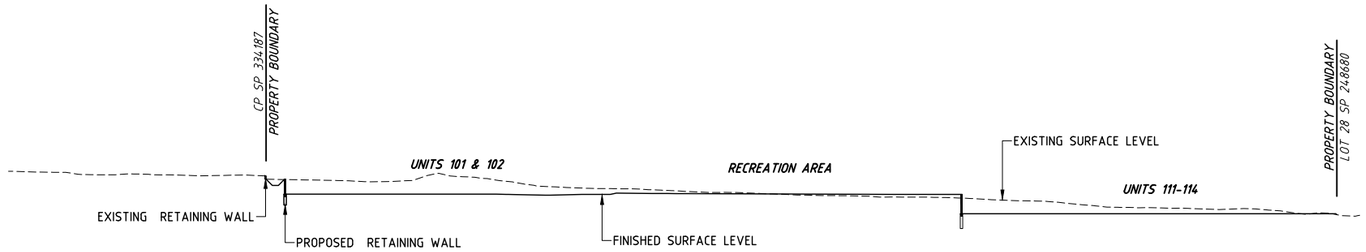
Drawing No.	Rev.
25376-SK06	B



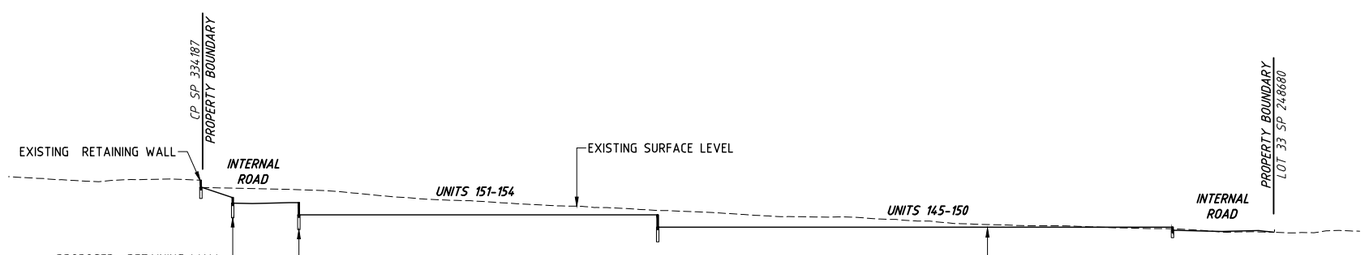
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SECTION B — SCALE 1:250 — SK06



SECTION C — SCALE 1:250 — SK06



SECTION D — SCALE 1:250 — SK05

SCALE 1:250 (A1) 0 5 10 15m
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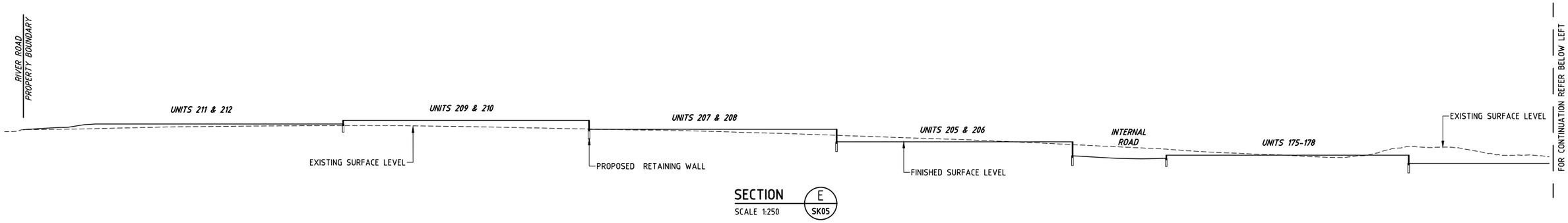
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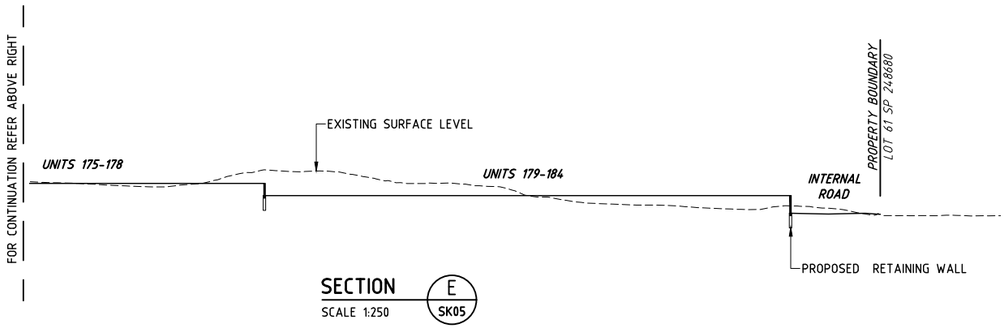
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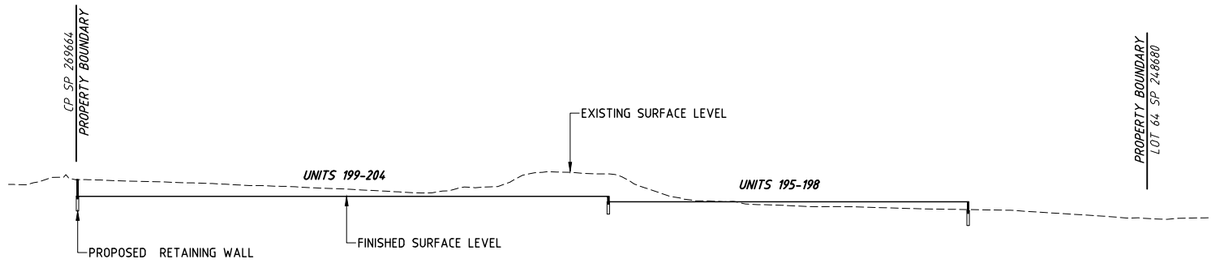
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Drawing No.		Rev.
25376-SK07		A



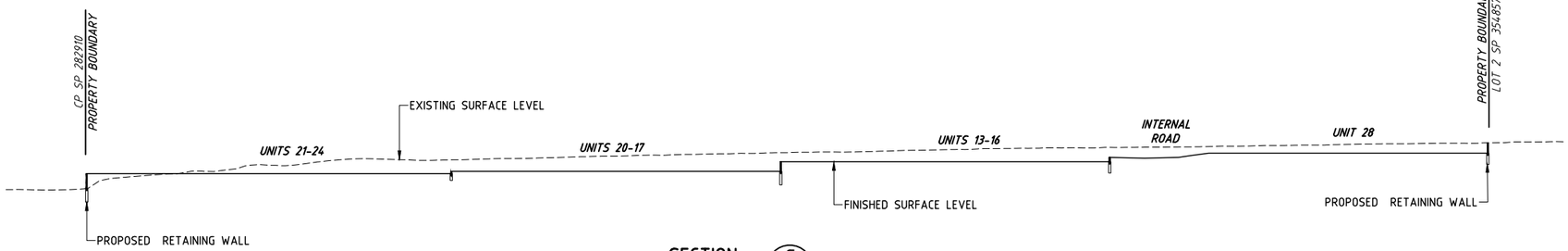
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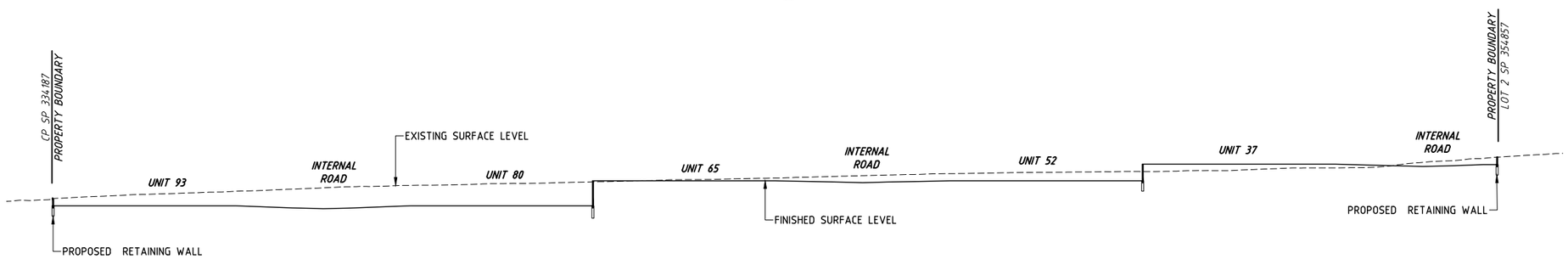
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SECTION F
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SECTION G
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SK06



SECTION H
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SK06

SCALE 1:250 (A1)
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(SCALE BEFORE REDUCTION)

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COMPASS ASSURANCE SERVICES ISO 9001

PROJECT	TITLE	CLIENT
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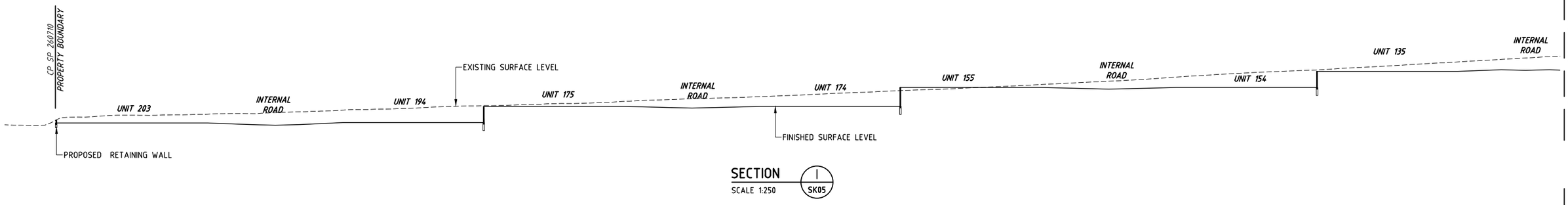
REVISION	AMENDMENT	DATE
A	REPORT ISSUE	21/07/26

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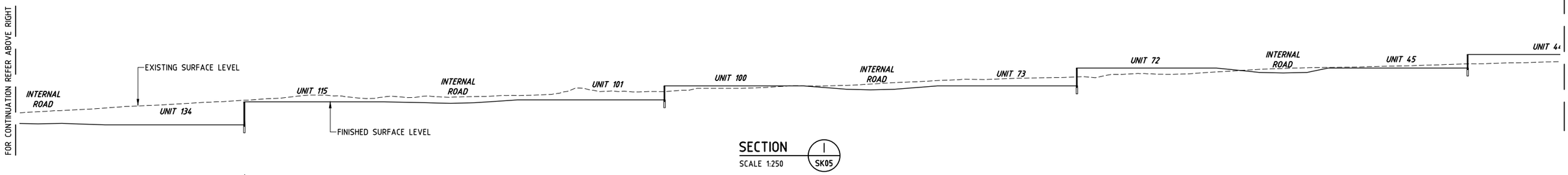
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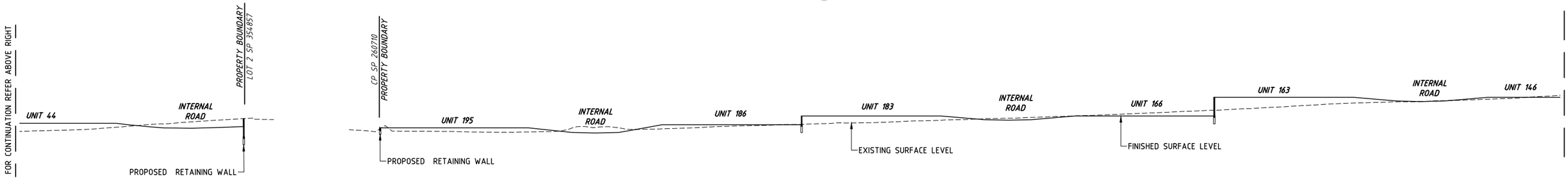
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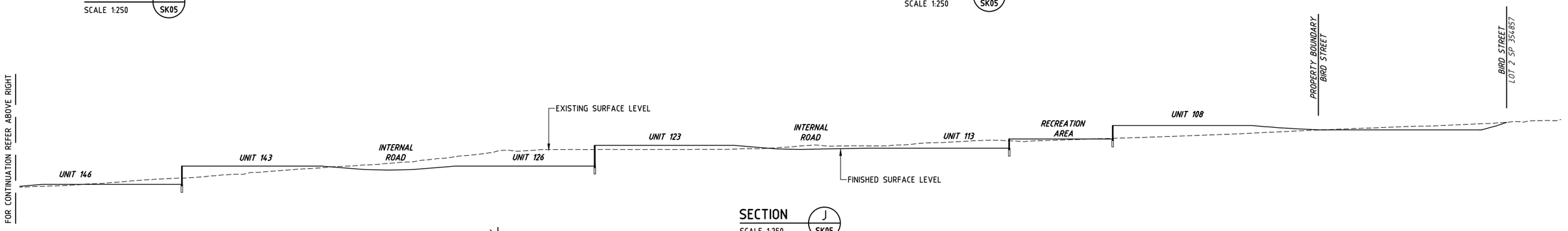


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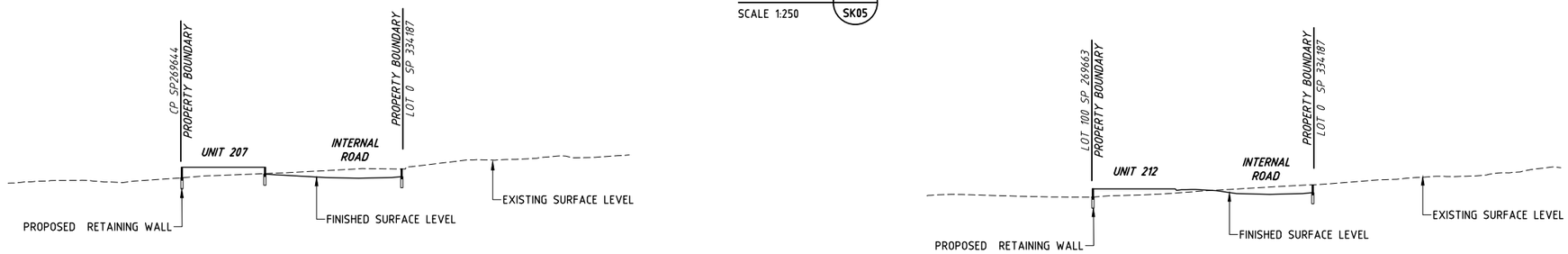


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SECTION J
SCALE 1:250 SK05



SECTION J
SCALE 1:250 SK05



SECTION K
SCALE 1:250 SK05

SECTION L
SCALE 1:250 SK05

SCALE 1:250 (A1) 0 5 10 15m
(SCALE BEFORE REDUCTION)

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PROJECT	TITLE	CLIENT
19 RIVER ROAD BUNDAMBA QLD 4304 LOT 1 SP 354857	CONCEPT EARTHWORKS SECTIONS SHEET 3 OF 3	AR DEVELOPMENTS

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REVISION	AMENDMENT	DATE
A	REPORT ISSUE	21/07/26

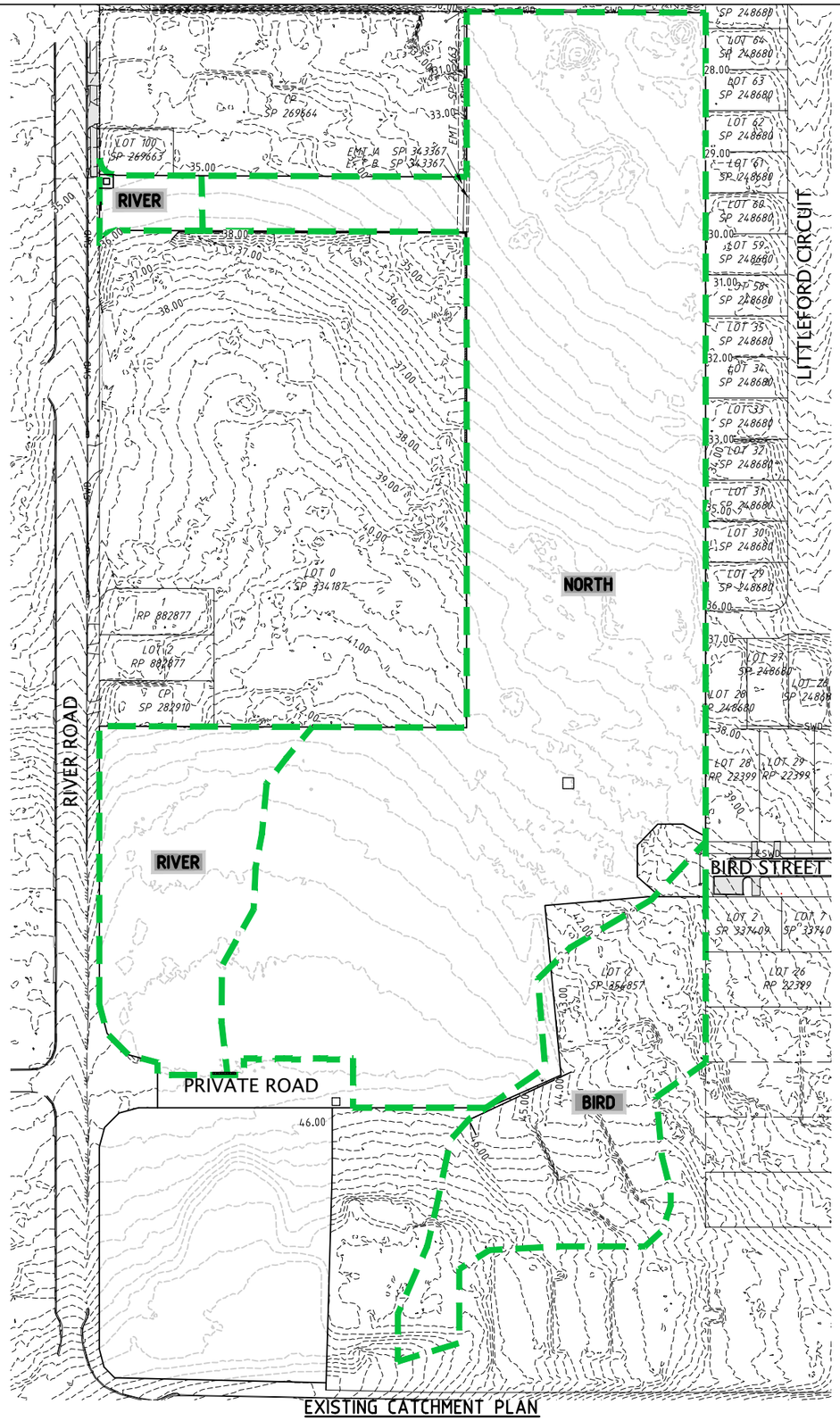
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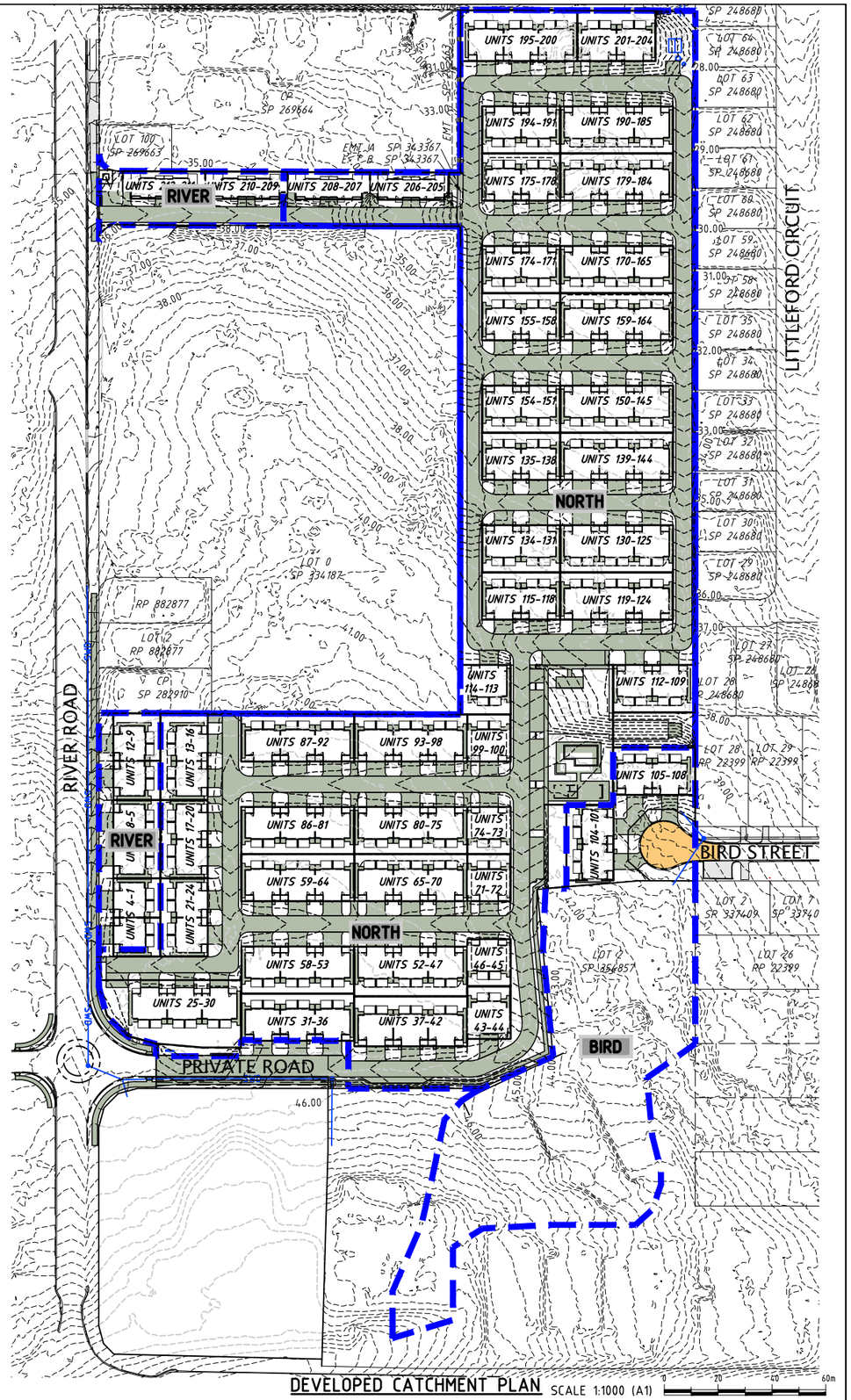
Approval No. ----
Scale AS SHOWN
Drawing No. 25376-SK09
Rev. A

LEGEND

- ---10.0--- EXISTING SURFACE CONTOURS (0.25m INTERVAL)
- ---10.0--- FINISHED SURFACE CONTOURS (0.25m INTERVAL)
- —SWD— EXISTING STORMWATER DRAINAGE
- —SWD— PROPOSED STORMWATER DRAINAGE
- EXISTING KERB AND CHANNEL
- PROPOSED KERB AND CHANNEL
- PROPOSED PAVEMENT
- EXISTING CONCRETE
- PROPOSED CONCRETE
- EXISTING CATCHMENT BOUNDARY
- DEVELOPED CATCHMENT BOUNDARY
- NORTH CATCHMENT LABEL



EXISTING CATCHMENT PLAN
SCALE 1:1000



DEVELOPED CATCHMENT PLAN SCALE 1:1000 (A1)
SCALE 1:1000
0 20 40 60m
(SCALE BEFORE REDUCTION)

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COMPASS ASSURANCE SERVICES ISO 9001

PROJECT	TITLE	CLIENT
19 RIVER ROAD BUNDAMBA QLD 4304 LOT 1 SP 354857	CONCEPT STORMWATER CATCHMENT PLAN	AR DEVELOPMENTS

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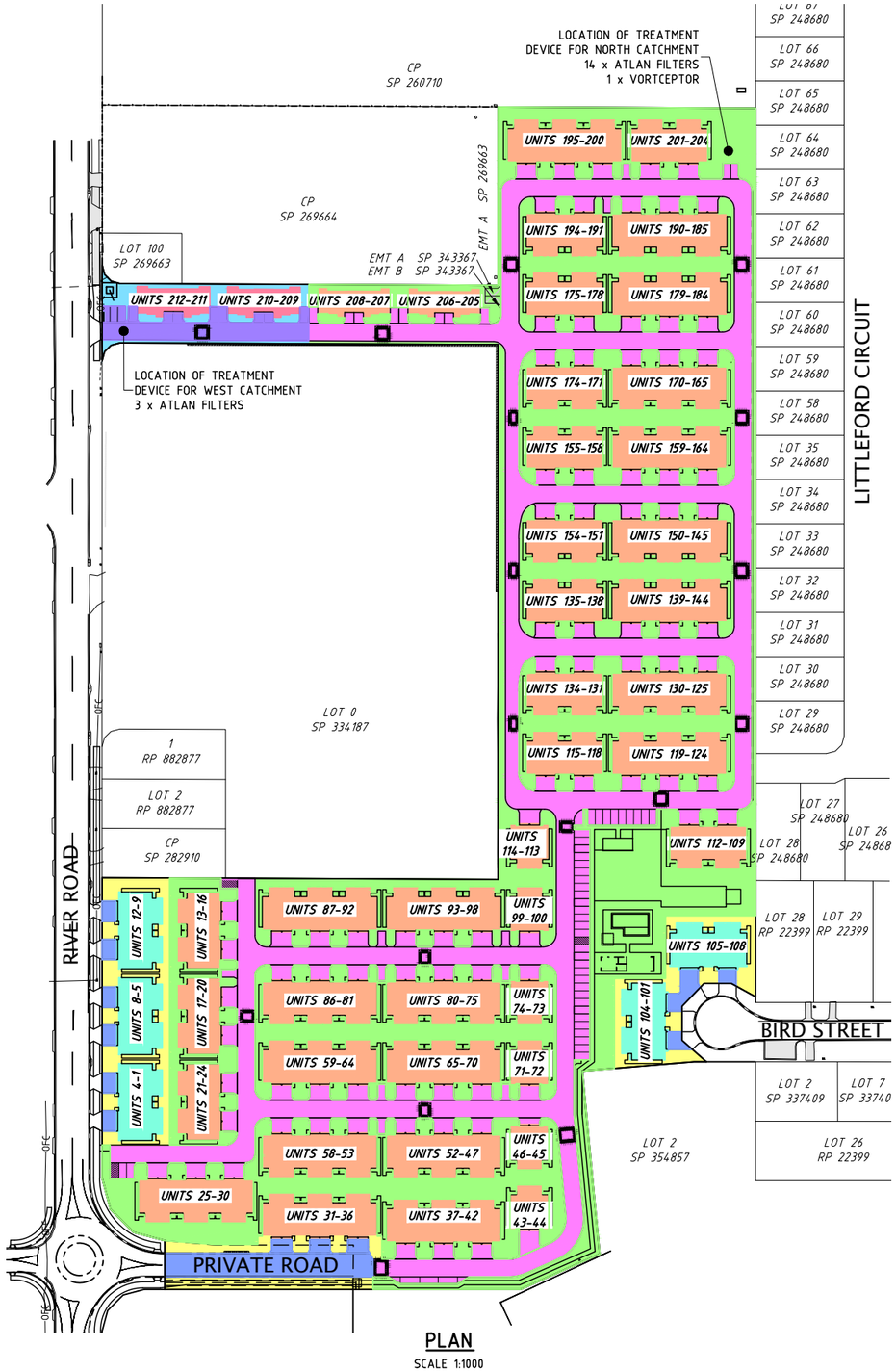
REVISION	AMENDMENT	DATE
A	REPORT ISSUE	21/07/26
B	REPORT ISSUE	07/10/26

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Drawing No.	Rev.
25376-SK10	B



PLAN
SCALE 1:1000

LEGEND

- STORMWATER QUANTITY CATCHMENT BOUNDARY
- EXISTING KERB AND CHANNEL
- PROPOSED KERB AND CHANNEL
- NORTH ROOF AREA
- NORTH GROUND AREA
- NORTH ROAD AREA
- WEST ROOF AREA
- WEST GROUND AREA
- WEST ROAD AREA
- NON-TREATED ROOF AREA
- NON-TREATED GROUND AREA
- NON-TREATED ROAD AREA

STORMWATER QUALITY NORTH CATCHMENT		
NAME	AREA (ha)	IMPERVIOUS %
ROOF AREA	1.765	100
GROUND AREA	1.391	20
ROAD AREA	1.238	100

STORMWATER QUALITY WEST CATCHMENT		
NAME	AREA (ha)	IMPERVIOUS %
ROOF AREA	0.043	100
GROUND AREA	0.043	20
ROAD AREA	0.057	100

STORMWATER QUALITY NON-TREATED CATCHMENT		
NAME	AREA (ha)	IMPERVIOUS %
ROOF AREA	0.187	100
GROUND AREA	0.184	20
ROAD AREA	0.100	100

SCALE 1:1000 (A1) 0 20 40 60m
(SCALE BEFORE REDUCTION)

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PROJECT	TITLE	CLIENT
19 RIVER ROAD BUNDAMBA QLD 4304 LOT 1 SP 354857	CONCEPT STORMWATER QUALITY CATCHMENT PLAN	AR DEVELOPMENTS

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REVISION	AMENDMENT	DATE
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Rev. B

Appendix A – Earthworks Code

9.4.3 Earthworks Code

9.4.3.1 Application

(1) This code applies to accepted development subject to requirements and assessable development for which the Earthworks Code is identified in the Category of Development and Assessment Benchmarks and Required Outcomes column in Table 5.7.2 - Categories of Development and Level of Assessment — Operational Works.

(2) When using this code, reference should be made to Part 5.2 Reading the Tables and Part 5.3 Categories of Development and Assessment to determine the requirements for assessment of particular development.

9.4.3.2 Purpose and Overall Outcomes

(1) The purpose of the Earthworks Code is to ensure that earthworks:

a. result in finished works that are designed and constructed to an appropriate standard;
b. do not adversely impact existing or planned future infrastructure;
c. are confined to the site and do not materially impact other properties;
d. do not unreasonably impact visual amenity; and
e. protect and preserve the natural environment beyond the site.

(2) The purpose of this code will be achieved through the following overall outcomes:

a. earthworks are carried out to provide a change in level of the site from an existing ground (substrate) that:
    i. is suitable for filling, by using only solid clean fill;
    ii. if filled, is stable and provides a modified surface suitable for its intended purposes; and
    iii. does not impact adjoining property, unless consent from the owner of that property is sought and obtained;
b. works ensure the protection of existing and future planned infrastructure;
c. stormwater flows resulting from the work do not increase or concentrate from the pre-development flows;
d. existing natural flow paths are considered in the design of earthworks;
e. water leaving the site does not cause erosion or allow sediments to leave the site;
f. earthworks do not have an adverse impact on a floodplain and its management;

g. the use of retaining walls and batters is minimised, and where retaining walls or batters are used, the resulting impact on adjoining properties, streets and surrounding areas is minimised; and
h. disruption to surrounding premises and the environment are minimised, and air and acoustic amenity is maintained during construction.

9.4.3.3 Specific Benchmarks for Assessment

Table 9.4.3.3.1 — Benchmarks for Accepted Development Subject to Requirements

Benchmarks for Accepted Development Subject to Requirements		Comments
Minor Earthworks	**RO1.1** Do not exceed any of the following: a. 1000m^2 in area or 20m^3 in volume; b. average depth of 500mm or a maximum depth of 800mm; c. batters with a slope greater than 1 in 8; d. a retaining wall height of 1m at any point; and / or e. a continuous retaining wall length of 20m. **RO2.1** Are not located or undertaken: a. across property boundaries; b. do not interfere with, concentrate or redirect the natural flow of stormwater; c. in a natural gully or overland flow path or below the adopted flood level; d. within a public utilities easement; e. within 3m of a boundary with an adjoining property; f. within 3m of or on top of local government or public utility infrastructure; and / or g. within a road reserve, or drainage reserve (other than for government purposes)	
	RO3.1 Are not located in a 'high' or 'extreme' risk mapped area on the Flood Risk and Overland Flow Overlay.	

Table 9.4.3.3.2 — Benchmarks for Assessable Development

1 General Provisions		Comments
PO1.1 Earthworks are designed and constructed in accordance with relevant standards.	**AO1.1** Development for earthworks is designed and constructed in accordance with the standards in the SC6.2 General Works and Infrastructure Planning Scheme Policy.	The Acceptable Outcome can be and is proposed to be met, as identified on the accompanying drawings
PO1.2 The development and maintenance of earthworks ensures the preservation of health and safety, and maintains the integrity of adjacent premises, infrastructure and the natural environment. Note: A construction works management plan addressing the requirements of Part 5 — Standards for the Provisions of Earthworks of the General Works and Infrastructure Planning Scheme Policy (SC6.2) will assist in addressing this performance outcome.	**AO1.2** No accepted outcome provided.	The Performance Outcome can be and is proposed to be met, as identified on the accompanying drawings
PO1.3 Hours of construction are limited to minimise adverse impacts during earthworks.	**AO1.3** Earthworks only occurs between 6:30am and 6:30pm Monday to Saturday, excluding public holidays, unless varied by a development approval.	The Acceptable Outcome can be and is proposed to be met, as identified on the accompanying drawings
PO1.4 All earthworks and retaining structures, and all activity related to the development of earthworks are contained within the site.	**AO1.4** No accepted outcome provided.	The Performance Outcome can be and is proposed to be met, as identified on the accompanying drawings
PO1.5 Earthworks are designed to minimise adverse	**AO1.5** No accepted outcome provided.	The Performance Outcome can be and is

impacts in natural hazard areas, avoid waterway corridors and wetlands and ensure the preservation of biodiversity. Note: Where earthworks are intended adjacent to these areas, an analysis in the form of a plan identifying the location of the hazard, waterway or biodiversity area will assist in addressing this performance outcome. Where earthworks are planned within these areas, the relevant overlay code will apply.		proposed to be met, as identified on the accompanying drawings
2 **Geotechnical**		
PO2.1 Where earthworks are proposed, the existing ground (substrate) is stable and suitable for fill.	**AO2.1** The site: a. does not have compressible soils (e.g. soft clays) or reactive soils (soils with high elasticity or that are prone to cracking, shrinking and expansion, including but not limited to black soils) underneath the site; or b. where the site is underlain by compressible or reactive soils, a site specific geotechnical assessment is provided demonstrating the proposed treatment of compressible soils so they are able to provide sufficient support for future structures. Note: A geotechnical assessment report addressing the requirements of Part 5 — Standards for the Provisions of Earthworks of the General Works and Infrastructure Policy, prepared in the last five years and certified by an RPEQ* qualified engineer experienced in civil works, is the preferred method for addressing this performance outcome. * Engineer registered by the Board of Professional Engineers Queensland.	The Performance Outcome can be and is proposed to be met. A suitable geotechnical report can be prepared and submitted to Council as part of the Detailed Design phase.

PO2.2 Appropriate material is used for fill, and is sufficiently compacted to support future development.	**AO2.2** Only clean, geotechnically suitable fill is used, and it is compacted and shaped in accordance with the standards outlined in Part 5 — Standards for the Provisions of Earthworks of the General Works and Infrastructure Planning Scheme Policy. Note: Section 5.1.2 Materials for Filling of the General Works and Infrastructure Policy outlines the requirements for suitable fill and its uses.	The Performance Outcome can be met.
PO2.3 Fill is free from contaminants.	**AO2.3** Fill consists of soil, rock or other material excavated from the natural ground and is free from construction or other waste, chemical or liquid waste contamination, and weeds and their seeds. Note: Appendix 2 — Declared Plants of SC6.7 Landscape Works Planning Scheme Policy provides further information and references for weed species.	The Acceptable Outcome can be met.
PO2.4 Topsoil that is stockpiled for reuse at the site is contained within the site, and removed vegetation is disposed of.	**AO2.4** Topsoil and spoil: a. is stockpiled in accordance with an approved erosion and sediment control plan; and b. removed vegetation is either removed, transported off site or mulched for reuse on site, but is not burned off. Note: Details of the requirements for an Erosion and Sediment Control Plan are outlined in Part 5 — Standards for the Provision of Earthworks of the General Works and Infrastructure Planning Scheme Policy.	The Performance Outcome can be met.
PO2.5 Temporary or permanent retention structures used in association with earthworks are designed and constructed to be fit for purpose, and where	**AO2.5** No accepted outcome provided.	The Performance Outcome can be met.

applied outside the boundary of the property are supported by consent from the affected landowner.		
3 **Stormwater and Water Sensitive Urban Design**		
PO3.1 Development does not cause adverse stormwater drainage or water quality impacts on or off the site, meeting the required stormwater quality and quantity objectives including protecting the quality of surface waters, ground waters and the existing natural flow of waterways. Note: Requirements for stormwater quality and quantity are outlined in SC6.2 General Works and Infrastructure Planning Scheme Policy (Part 2 — Standard for Design of Stormwater Drainage Works, Part 3 — Stormwater Quantity, Quality and Floodplain Management and Part 8 — Standards for Construction of Stormwater Drainage Works)	**AO3.1** No accepted outcome provided.	The Performance Outcome can be met.
PO3.2 During construction, development ensures that erosion is minimised and that sediments do not leave the site.	**AO3.2** An assessment of the potential for erosion during construction is undertaken in accordance with the requirements of the General Works and Infrastructure Planning Scheme Policy to identify the potential for increased suspended solids, turbidity and sedimentation during construction, and the results of this assessment are used to inform an Erosion and Sediment Control Plan ensuring that stormwater quality is maintained at acceptable levels during construction. Note: The Erosion and Sediment Control Plan should address the requirements of Part 5 — Standards for Provision of Earthworks (5.1.6 Erosion and Sedimentation Control) and forms part of a Stormwater Management Plan required in Part	The Performance Outcome can be and is proposed to be met. Suitable documentation can be prepared and submitted to Council as part of the Detailed Design phase.

	3 — Stormwater Quantity, Quality and Floodplain Management (3.5.3 Design).	
PO3.3 At all times, there is no ponding at the site.	**AO3.3** No accepted outcome provided.	The Performance Outcome can be met.
PO3.4 During earthworks, and maintained after the completion of earthworks, stormwater leaves the site at a lawful point of discharge. Note: Discharge to the road reserve provides a lawful point of discharge. Where discharge to the road reserve is not possible, a lawful point of discharge may also include discharge to land reserved for stormwater purposes or via a stormwater easement, or by direct input into the stormwater management system (see requirements of Part 2 — Standards for Design of Stormwater Drainage Works, Part 3 — Stormwater Quantity, Quality and Floodplain Management and Part 8 - Standards for Construction of Stormwater Drainage Works of SC6.2 General Works and Infrastructure Planning Scheme Policy. Note: For large scale development or development adjacent to waterways or wetlands, it may be preferable to reduce discharge to negligible levels by including detention or retention in the stormwater design, and by the re-use of water on site for irrigation or other purposes (see requirements of the Part 4 Stormwater and water sensitive design of SC6.2 General Works and Infrastructure Planning Scheme Policy).	**AO3.4** No accepted outcome provided.	The Performance Outcome can be met.
PO3.5 Earthworks do not have an adverse effect on floodplain management, and are designed to: a. minimise the impact of flooding; b. consider residual flood risks beyond the defined flood event; c. ensure access is maintained during flood events; d. resist damage from flood waters;	**AO3.5** No accepted outcome provided.	The Performance Outcome can be met.

e. provide effective management of upstream floodwater inputs and downstream floodwater dispersal; and f. retain full functionality during a flood event. Note: Where within or adjacent to a floodplain, earthworks are designed and constructed in accordance with the requirements of SC6.3 Flooding and Overland Flow Planning Scheme Policy.		
4 **Retaining Walls and Batters**		
PO4.1 Permanent or temporary retaining walls and batters are designed and constructed using proven methods, materials and technology. Note: See Part 5.1.8 — Standards for the Provision of Earthworks (5.1.8 Batters and Earth Retaining Structures) in SC6.2 General Works and Infrastructure Planning Scheme Policy for additional requirements for the placing and construction of retaining walls.	**AO4.1** No accepted outcome provided.	The Performance Outcome can be met.
PO4.2 Retaining walls and batters are visually attractive and do not impose a negative visual impact upon neighbouring properties, the street or public spaces, and the impact of retaining walls and batters is softened by terracing and landscaping.	**AO4.2** Development provides retaining walls and batters which are designed and constructed using proven methods, materials and technology. Where residential and commercial: a. unless designed as integral to an overall building design, the maximum height for a single vertical retaining wall is: i. 1m for the front boundary; ii. 1.5m for the side boundary with a minimum 1m setback to the building; and iii. 2.5m for the rear boundary with a minimum 3m setback to the	The Performance Outcome can be met.

	building. b. for the side boundary, where a vertical separation (total height) of greater than 1.5m is required, retaining walls are staggered with a minimum horizontal separation of 1m between the staggered walls to allow for an intermediate landscaped area with a minimum 1m setback from the lower retaining wall to the building; c. the bottom tier of a staggered retaining wall is a maximum of 1m in height, to facilitate the use of the intermediate landscaped area; d. to reduce the impact of overshadowing in residential applications, the combined retaining wall height and fencing (maximum vertical separation) is no greater than 3.3m with a single retaining wall or 4.3m with a tiered retaining wall for the side boundary, and 4.3m for the rear boundary; e. all retaining walls must be designed for a minimum design life of 60 years; and f. vegetated batters have a maximum gradient of 1:3 and are appropriately stabilised. Turf batters have a maximum gradient of 1:6. Where industrial: a. unless designed as integral to an overall building design, the maximum height for a single vertical retaining wall is: i. 2m for the front boundary, where above and fronting a road;	

	b. where a vertical separation (total height) of greater than 2m is required on the front, road facing boundary, retaining walls are staggered with a minimum horizontal separation of 1m between the staggered walls to allow for an intermediate landscaped area; c. all retaining walls must be designed for a minimum design life of 60 years; and d. vegetated batters have a maximum gradient of 1:3 and are appropriately stabilised. Turf batters have a maximum gradient of 1:6.	
PO4.3 Fencing along the top of retaining walls is minimised to reduce visual and security impacts on surrounding properties and public spaces.	**AO4.3.1** Where a boundary fence is provided adjacent to or at the top of the retaining wall, the maximum height of the fence is 1.8m to reduce the bulk of the entire structure. **AO4.3.2** Where between a building and a public space (i.e. street, open space or pathway) and along front boundaries, retaining walls are no more than 1m in height, and where public space is below the building or lot, the maximum height of a fence is a maximum of 1.2m to provide for passive surveillance of the public space.	The Performance Outcome can be met.
PO4.4 Retaining walls (with a vertical clearance of greater than 1m) are constructed wholly within the property boundary for ease of access and maintenance.	**AO4.4** Retaining walls do not encroach onto adjoining properties, and where adjoining — a. residential uses, parks, open space or road reserve are a minimum distance of 300mm from the property boundary; and	The Acceptable Outcome can be met.

	b. industrial or business activities, are wholly within the property boundary.	
5 **Infrastructure and Easements**		
PO5.1 Where in potential conflict with services, within a public utilities easement or other easement in favour of Council, or within 1.5m of existing local government infrastructure works earthworks do not: a. damage the infrastructure; b. impede access to the infrastructure for maintenance purposes; or c. prejudice the functioning of the easement for its intended purpose.	**AO5.1** Earthworks are designed and constructed in accordance with: a. the requirements of SC6.2 General Works and Infrastructure Planning Scheme Policy; b. the Queensland Development Code MP1.4 — Building over on or near relevant infrastructure; and c. the standard design specifications of the relevant service authority.	The Acceptable Outcome can be met.
PO5.2 Where future infrastructure has been planned and identified, works are designed and implemented to adequately respond to and accommodate the future infrastructure.	**AO5.2** No accepted outcome provided.	The Performance Outcome can be met.
6 **Maintaining Amenity**		
PO6.1 Road infrastructure is not adversely affected by haulage, and the impact of haulage activity is minimised along transport routes and at neighbouring properties.	**AO6.1** All transport routes are approved: a. for State controlled roads, by the Department of Transport and Main Roads; b. for all other roads, by Council; and c. hours of haulage are between 6:30am to 6:30pm Monday to Saturday excepting public holidays, or as otherwise varied in a	The Acceptable Outcome can be met.

	development approval.	
PO6.2 Development involving filling or excavation does not cause ground-borne vibration beyond the boundary of the site.	**AO6.2** No accepted outcome provided.	The Performance Outcome can be met.
PO6.3 The spread of dust to adjacent properties and public places is minimised.	**AO6.3** Dust emissions resulting from works, including vehicles entering and exiting the site, do not extend beyond the site.	The Performance Outcome can be met.
PO6.4 Noise emissions are minimised. Note: Where there is an expectation that noise levels may be excessive, or where sensitive uses may be affected by the level of noise expected during the proposed earthworks, a noise impact assessment prepared in accordance with the requirements of SC6.9 Noise Impact Assessment Planning Scheme Policy is the preferred method of addressing this Performance Outcome.	**AO6.4** Works are carried out during approved hours.	The Performance Outcome can be met.
7 **Landscaping**		
PO7.1 Upon completion of earthworks, surface landscape treatments are used to stabilise soils and prevent erosion.	**AO7.1** Upon completion of the works, the site is planted with approved establishment species to stabilise topsoils and reduce erosion and sedimentation to acceptable levels. Note: See Part 3 — Stormwater Quantity, Quality and Floodplain Management in SC6.2 General Works and Infrastructure Planning Scheme Policy for acceptable levels for sedimentation.	The Acceptable Outcome can be met.
8 **Existing Vegetation**		

PO8.1 Where it is possible to preserve existing vegetation such as mature native trees to contribute to future landscaping works, the required existing vegetation is protected during earthworks.	**AO8.1** Earthworks are not carried out within the tree protection zone (TPZ) of trees retained for use in future landscaping works. Note: Where work is proposed within a tree protection zone, an arborist report with recommendations for the protection and preservation of the tree during and after excavation may satisfy the requirements of this outcome. Note: this provision does not apply to significant vegetation mapped within areas identified in the Biodiversity overlay. Where vegetation is within these areas, the Biodiversity Overlay Code applies.	The Performance Outcome can be met.
9 **Dams**		
PO9.1 The construction or filling of a dam does not adversely affect natural physical processes or ecosystems and creates a safe and stable dam wall surface.	**AO9.1** The dam is constructed in a rural zone and: a. the land has a slope of less than 25% (1:4); b. all earthworks for the dam are set back a minimum of 50m from the property boundary; and c. the size of the lot on which the dam is located is greater than 5 hectares. Note: Dams and levees may be assessable development under the *Water Supply (Safety and Reliability) Act 2008*. Where more than two people may be at risk from the failure of the dam, the dam is considered a referable dam. For information on referable dams contact damsafety@rdmw.qld.gov.au. Note: Construction works for dams must be in accordance with Part 5 — Standards for the Provision of Earthworks of the SC6.2 General Works and Infrastructure Planning Scheme Policy. Also see the Queensland Government, Small Dam Safety 2020 document.	Not Applicable

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Appendix B – General Works and Infrastructure Code

9.4.2 General Works and Infrastructure Code

9.4.2.1 Application

(1) This code applies to accepted development subject to requirements and assessable development for which the General Works and Infrastructure Code is identified in the Category of Development and Assessment Benchmarks and Required Outcomes column in Table 5.7.2 - Categories of Development and Level of Assessment — Operational Works.

(2) This code also applies to any development that includes the provision of infrastructure, including Material Change of Use and Reconfiguring a Lot development.

(3) When using this code, reference should be made to Part 5.2 Reading the Tables and Part 5.3 Categories of Development and Assessment to determine the requirements for assessment of particular development.

9.4.2.2 Purpose and Overall Outcomes

(1) The purpose of the General Works and Infrastructure Code is to ensure that:

a. all works, including operational work relating to development requiring an approval, result in finished works that are designed and constructed to an appropriate standard;
b. development protects existing infrastructure and future planned infrastructure;
c. suitable cost-effective infrastructure is provided to service the development and continues to provide a high level of service over an appropriate design life; and
d. amenity is preserved during construction and once the use has commenced, and community and personal health and safety, surrounding premises and the environment are all protected from any adverse consequences that could result from development.

(2) The purpose of this code will be achieved through the following overall outcomes:

a. works and infrastructure are designed and constructed to an appropriate standard, do not adversely impact on existing or future public utilities or infrastructure, are cost effective, provide a high level of service over an appropriate design life,

and maintain the expected level of amenity during and after construction;
b. infrastructure that 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;
c. movement networks are designed and constructed to be functional, resilient and safe;
d. development is provided with a safe and reliable transport network for all modes that has a minimal whole-of-life cost;
e. vehicular crossings provide safe access from the edge of the road carriageway to the property boundary;
f. vehicular crossings are located and constructed to avoid adverse impacts on existing street trees, utilities and infrastructure;
g. stormwater management systems maintain and enhance natural catchment hydrological processes;
h. the efficiency and integrity of the existing stormwater infrastructure network is maintained or enhanced;
i. development achieves acceptable levels of stormwater run-off quality;
j. outdoor lighting provides effective illumination whilst minimising the adverse impacts of spill lighting on adjoining uses;
k. development promotes a safe environment and reduces any potential for crime;
l. public utilities and services are provided to standards acceptable to Council and to meet the requirements of the relevant infrastructure provider;
m. the community and the environment are not unreasonably disrupted or impacted by works, construction or demolition activities; and
n. building plant, services and storage areas are designed and located to avoid nuisance to adjoining premises and to avoid an unattractive appearance when viewed from the street.

9.4.2.3 Specific Benchmarks for Assessment

Table 9.4.2.3.1 — Benchmarks for Accepted Development Subject to Requirements

Benchmarks for Accepted Development Subject to Requirements		Comments
1 Driveways and Vehicular Crossings	**RO1.1** Vehicular crossings are designed and constructed in accordance with relevant Council standard drawings. Note: Part 7, Division 3 of the General Works and Infrastructure Planning Scheme Policy provides references to standard drawings for vehicular crossings. **RO1.2**	

	The maximum number of vehicular crossings per site is: a. for a dwelling house, 1 crossing, or 2 crossings where the road frontage at the property boundary is greater than 40m; b. for a dual occupancy or multiple dwelling, 1 crossing, or 2 crossings where the road frontage at the property boundary is greater than 20m; and c. for a non-residential use, 2 crossings.	
	RO1.3 Vehicular crossings are located to achieve a separation of: a. 3m from other vehicular crossings; b. 1.5m from a side property boundary in a residential development of 2 dwellings or less; and c. 2m from a side property boundary for all other development.	
	RO1.4 The construction of the driveway or vehicular crossing does not cause damage to existing trees located within the verge.	
	RO1.5 Corner lots are accessed from the lower order street (secondary frontage), and as far as is possible from the intersection.	

Table 9.4.2.3.2 — Benchmarks for Assessable Development

1 **General**		**Comments**
PO1.1 Works are designed and constructed in accordance with the relevant standards.	**AO1.1** Works are designed and constructed in accordance with the standards and requirements outlined in the General Works and Infrastructure Planning Scheme Policy.	The Acceptable Outcome can be and is proposed to be met, as identified on the accompanying drawings
PO1.2	**AO1.2**	The Performance Outcome can be achieved through compliance with appropriate approval

Development provides the necessary infrastructure to service the development. Note: The delivery of any part of a network identified in the approved plans as being for trunk infrastructure is determined by Part 6 Local Government Infrastructure Plan.	No accepted outcome provided.	conditions
PO1.3 Development preserves amenity and health and safety, and the integrity of surrounding premises. Note: A construction works management plan outlining the management of the site during construction is the preferred method for addressing this performance outcome.	**AO1.3** No accepted outcome provided.	The Performance Outcome can be achieved through compliance with appropriate approval conditions
PO1.4 Hours of construction are limited to minimise adverse impacts to surrounding premises during construction.	**AO1.4** Construction only occurs between 6:30am and 6:30pm Monday to Saturday excluding public holidays, unless varied by a development approval.	The Acceptable Outcome can be met.
2 **Roadworks — Construction and Maintenance**		
PO2.1 Roads are provided with the characteristics required by their determined road type in the road hierarchy, and in accordance with the design and construction standards outlined in SC6.2 General Works and Infrastructure Planning Scheme Policy, and in all cases: a. roads are designed and constructed to be fit for purpose to provide access, servicing of development and to deliver a low-maintenance asset with a minimal whole of life cost; b. design and construction achieves a minimum design life of 20 years;	**AO2.1** No accepted outcome provided.	None proposed.

c. pavements are durable, ensure safe passage, and provide adequate stormwater discharge, all-weather access and reasonable travel comfort; d. the road edge is designed and constructed to delineate the carriageway and to provide for people with disabilities; e. verges provide safe access for pedestrians and vehicles onto properties, and sufficient area for public utility services in accordance with the General Works and Infrastructure Planning Scheme Policy; and f. laneways and pathways are designed to be functional and safe and achieve good connectivity with the surrounding road network. Note: Road, laneway and pathway design standards are provided in Part 1 — Standard for Design of Roadworks and Part 7 — Standards for Construction of Roadworks of the General Works and Infrastructure Planning Scheme Policy SC6.2.		
3 **Roadworks — Associated Structures**		
PO3.1 Structures associated with the provision of roads, pathways and laneways are provided using proven methods and in accordance with the relevant standards.	**AO3.1** Structures associated with the provision of roads, pathways and laneways are provided in accordance with the relevant standards outlined in the General Works and Infrastructure Planning Scheme Policy. Note: Sections within the General Works and Infrastructure Planning Scheme outlining requirements for associated structures include: Signs and Road Markings (1.1.13), Road Edge Guide Posts and Safety Barriers (1.1.14), Bus Stops (1.1.15), and Gullies and Access Chambers (2.1.2)	None Proposed

4 **Roadworks — Street Design**		
PO4.1 Streets are provided in accordance with their determined road type in the road hierarchy and in accordance with the appropriate design and construction standards, and ensure: a. safe and secure travel for pedestrians, bicycles, rideables and vehicles; b. access to properties for all transport modes; c. accessibility for people with special ambulatory needs; d. sufficient area for the provision of all utilities; e. desirable aesthetics and amenity, and the opportunity for growth; and f. the practical amelioration of noise and other pollution.	**AO4.1** Streets are designed and constructed in accordance with the standards and requirements outlined in the General Works and Infrastructure Planning Scheme Policy. Note: Part 1 — Standards for Design of Roadworks and Part 7 — Standards for Construction of Roadworks of the General Works and Infrastructure Planning Scheme Policy include specific provisions for street design and construction.	None Propsoed
5 **Driveways and Vehicular Crossings**		
PO5.1 Driveways and vehicular crossings are designed and constructed in accordance with proven methods and the relevant standards.	**AO5.1** Driveways and vehicular crossings are designed and constructed in accordance with the standards and requirements outlined in the General Works and Infrastructure Planning Scheme Policy. Note: Part 7 — Standards for Construction of Roadworks, Division 3 Urban Roadworks and Access, 7.3.1 Vehicular Crossings of the General Works and Infrastructure Planning Scheme Policy provides references to standard drawings for vehicular crossings.	The Acceptable Outcome can be and is proposed to be met, as identified on the accompanying drawings
PO5.2	**AO5.2**	

The location of vehicular crossings provides maximum visibility and does not compromise the safety, capacity and effective operation of streets.	No accepted outcome provided.	The Performance Outcome can be met.
PO5.3 The location of vehicular crossings considers the value of street trees in the urban landscape and maintains trees within the road reserve wherever possible.	**AO5.3** The construction of the driveway or vehicular crossing does not cause damage to existing trees located within the verge.	The Acceptable Outcome can be and is proposed to be met, as identified on the accompanying drawings
PO5.4 Driveways and private roads allow for safe evacuation and access for fire trucks and other emergency vehicles.	**AO5.4** Driveways and private roads are designed in accordance with the requirements of Queensland Fire and Emergency Services *'Fire Hydrant and Vehicle Access Guidelines for residential, commercial and industrial lots 2019*' to provide safe evacuation and access for fire trucks.	The Acceptable Outcome can be and is proposed to be met, as identified on the accompanying drawings
PO5.5 Where refuse collection is required, driveways and private roads are designed to provide access and manoeuvring so that refuse vehicles can enter and exit the site in a forward gear.	**AO5.5** No accepted outcome provided.	The Performance Outcome can be met.
6 **Stormwater and Water Sensitive Urban Design — General**		
PO6.1 Development does not cause adverse stormwater drainage, water quality or water quantity impacts on or off the site, meeting the required stormwater quality and quantity objectives including protecting the quality of surface waters, ground waters and the existing natural flow of waterways.	**AO6.1** Stormwater quantity is managed in accordance with the minimum standards outlined in: a. Part 2 — Standards for Design of Stormwater Drainage Works; b. Part 3 — Stormwater Quantity, Quality and Floodplain Management; and c. Part 8 — Standards for Construction of	The Acceptable Outcome can be and is proposed to be met.

	Stormwater Drainage Works of the General works and infrastructure planning scheme policy.	
PO6.2 The impacts of construction and operational activities on stormwater quantity and quality are minimised both on and off the site. Note: A Stormwater quantity and quality management plan prepared in accordance with the requirements of Part 3 Stormwater Quality, Quantity and Floodplain Management of the General Works and Infrastructure Planning Scheme Policy is the preferred method for addressing this performance outcome.	**AO6.2** No accepted outcome provided.	The Performance Outcome can be met.
7 **Stormwater and Water Sensitive Urban Design — Stormwater Infrastructure Design**		
PO7.1 Stormwater infrastructure is designed and constructed to meet peak flow requirements using proven methods and in accordance with the relevant standards including the Queensland Urban Drainage Manual (QUDM). Note: Stormwater infrastructure is designed and constructed in accordance with the standards and requirements outlined in Part 2 — Standards for Design of Stormwater Drainage Works, Part 3 — Stormwater Quantity, Quality and Floodplain Management and Part 8 — Standards for Construction of Stormwater Drainage Works of the General Works and Infrastructure Planning Scheme Policy.	**AO7.1** No accepted outcome provided.	The Performance Outcome can be met.
PO7.2 Development provides the necessary stormwater infrastructure to service the development and integrates that infrastructure with the existing stormwater management network.	**AO7.2** No accepted outcome provided.	The Performance Outcome can be met.

PO7.3 Stormwater infrastructure has sufficient capacity to manage all designed-for run-off and peak flows and: a. large areas of impervious material are minimised; b. opportunities for capture and reuse are maximised; c. sufficient area is provided within the site to accommodate an effective stormwater management system; and d. the design of the stormwater infrastructure manages all upstream water inputs (including surface water) and fully considers and minimises the downstream implications of the development.	**AO7.3** No accepted outcome provided.	The Performance Outcome can be met.
PO7.4 a. All development discharges to a lawful point of discharge in accordance with the Queensland Urban Drainage Manual. b. Where the lawful point of discharge is to a park, the receiving waterway shall be designed, 'naturalised' and constructed within an existing channel or waterway. Any works undertaken within the park ensure that the park function is not degraded and the written permission of the asset owner is obtained and submitted in support of the proposed discharge. c. A lawful point of discharge is established for infill (brown field) development where the site slopes away from the road reserve, and no inter-allotment drainage system	**AO7.4** No accepted outcome provided.	The Performance Outcome can be met.

exists. If the drainage system passes through a private property, consent must be provided by the owners, with approval of the design and permission for the establishment of a drainage easement. Note: Discharge to the road reserve provides a lawful point of discharge. Where discharge to the road reserve is not possible, a lawful point of discharge may also include discharge to reserve land or to a stormwater easement, or by direct input into the stormwater management system (see the criteria for lawful point of discharge in the *Queensland Urban Drainage Manual (Part 3.9.1 Lawful point of discharge test).* Note: For large scale development or development adjacent to waterways or wetlands, it may be preferable to reduce discharge to negligible levels by including detention or retention in the stormwater design, and by the re-use of water on site for irrigation or other purposes (see requirements of the Part 4 — Stormwater and water sensitive design of the General Works and Infrastructure Planning Scheme Policy).		
PO7.5 Stormwater infrastructure does not have an adverse effect on floodplain management, and is designed to: a. minimise the impact of flooding within and external to the site; b. ensure access to the site is maintained as much as is practically possible during flood events; c. resist damage from flood waters; d. provide effective management of upstream floodwater inputs and downstream floodwater dispersal, and e. maintain its designed functionality during a flood event. Note: Where within or adjacent to a floodplain, stormwater infrastructure is designed and constructed in accordance with	**AO7.5** No accepted outcome provided.	The Performance Outcome can be met.

the requirements of the SC6.2 General Works and Infrastructure Planning Scheme Policy.		
PO7.6 Alterations to the established patterns of the overland flow of water are avoided to: a. reduce runoff, peak flows, intensity and velocity; and b. minimise ponding and its corresponding risks to health and safety.	**AO7.6** No accepted outcome provided.	The Performance Outcome can be met.
PO7.7 Stormwater infrastructure is generally designed and constructed to minimise risks to health and safety, preserve the integrity of buildings and structures, be safely accessible and efficiently maintained and to integrate with the existing stormwater infrastructure.	**AO7.7** No accepted outcome provided.	The Performance Outcome can be met.
8 **Stormwater and Water Sensitive Urban Design — Water Quality**		
PO8.1 The quality of surface waters and ground waters, and the existing natural flow of waterways, is protected.	**AO8.1** Water quality is managed in accordance with the standards outlined in Part 2 — Standards for Design of Stormwater Drainage Works, Part 3 — Stormwater Quantity, Quality and Floodplain Management and Part 8 — Standards for Construction of Stormwater Drainage Works of the General works and infrastructure planning scheme policy. Note: The Waterway Corridors and Wetlands Overlay Code provides further guidance on the protection of natural waterways, and applies to development in areas where Waterway Corridors and Wetlands are mapped (in the Waterway Corridors and Wetlands Overlay mapping).	The Performance Outcome can be met.

PO8.2 During construction, erosion is minimised and sediments do not leave the site.	**AO8.2** An assessment of the potential for erosion during construction is undertaken in accordance with the requirements of the General Works and Infrastructure Planning Scheme Policy in order to identify the potential for increased suspended solids, turbidity and sedimentation during construction, and the results of this assessment are used to inform an erosion and sediment control plan, ensuring that stormwater quality is maintained at acceptable levels during construction. Note: The Erosion and Sediment Control Plan addresses the requirements of Part 5 — Standards for Provision of Earthworks (5.1.6 Erosion and Sedimentation Control) and forms part of a Stormwater Management Plan required in Part 3 — Stormwater Quantity, Quality and Floodplain Management (3.5.3 Design).	The Performance Outcome can be met.
PO8.3 Stormwater management systems are designed and constructed in accordance with water sensitive urban design principles - a. using natural channel design; b. harvesting water where possible for use in landscaping (or other uses); c. protecting the existing natural features and ecological processes; and d. protecting the existing hydrologic behaviour of related catchments. Note: The design of the stormwater management system should align with the goals of the *Natural Resources Management Plan 2009 — 2031 (Healthy land and water).* Note: Part 2 — Standards for Design of Stormwater Drainage Works, Part 3 — Stormwater Quality Management and Part 8	**AO8.3** No accepted outcome provided.	The Performance Outcome can be met.

— Standards for Construction of Stormwater Drainage Works of the General Works and Infrastructure provide information that assists with meeting these requirements.		
9 **Lighting**		
PO9.1 Public lighting is designed and constructed in accordance with proven methods and the relevant standards.	**AO9.1** Public lighting is designed and constructed in accordance with the standards outlined in Part 1 — Standards for Design of Roadworks, Part 4 — Standards for Design and Construction of Parks and Streetscapes and Part 6 — General Construction Issues Procedures and Standards of the General works and infrastructure planning scheme policy.	The Performance Outcome can be met.
PO9.2 Lighting provision does not result in adverse amenity outcomes for sensitive uses or fauna and is generally designed to prevent light spillage outside the boundaries of the site.	**AO9.2** No accepted outcome provided.	The Performance Outcome can be met.
PO9.3 Installation of lighting minimises earthworks, and avoids crossing waterways, corridors and wetlands, and where crossing is unavoidable, tunnel-boring techniques are used to minimise disturbance to the environment and any disturbed areas are fully reinstated after lighting works are completed.	**AO9.3** No accepted outcome provided.	The Performance Outcome can be met.
PO9.4 Lighting design facilitates casual surveillance and promotes safety and security in public places. Note: Lighting design should meet the principles of *Crime*	**AO9.4** No accepted outcome provided.	The Performance Outcome can be met.

Prevention Through Environmental Design (CPTED).		
10 **Utilities**		
PO10.1 Development provides the necessary utilities to service the development in accordance with the requirements of the relevant regulatory authority and distributor.	**AO10.1** No accepted outcome provided.	The Performance Outcome can be met.
PO10.2 A water supply is provided: a. to the standards of the relevant authority where reticulated water is available; and b. in accordance with proven methods and relevant standards outside the reticulated water service area. Note: Water supply must meet the requirements of Queensland Fire and Emergency Services for water supply. Note: Where in a designated bushfire prone area and a reticulated water supply is not available, additional requirements for the supply of water for firefighting are outlined in the Bushfire Risk Areas Overlay Code.	**AO10.2** A water supply is provided: a. as reticulated water, meeting the standards of the relevant authority and fully operational before the commencement of any use; or b. where not in a reticulated water service area, as tank water, meeting the requirements of the Queensland Plumbing and Wastewater Code and Part 8 Utilities of the General Works and Infrastructure Planning Scheme Policy; and c. a sufficient provision of water is made for firefighting purposes in addition to the requirements for normal use.	The Acceptable Outcome can be met.
PO10.3 In 'common private title' arrangements, and in other circumstances where private roads are used as the primary access, fire hydrants are identified appropriately and are accessible to fire trucks in accordance with the *Queensland Fire and Emergency Services publication Fire Hydrant and Vehicle Access Guidelines for Residential,*	**AO10.3** No accepted outcome provided.	The Performance Outcome can be met.

Commercial and Industrial Lots (March 2019).		
PO10.4 Sewerage is provided: a. to the standards of the relevant authority where a sewerage service is available, and b. in accordance with proven methods and relevant standards outside the reticulated sewerage service area.	**AO10.4.1** A sewerage supply is provided: a. as reticulated sewerage, meeting the standards of the relevant authority and fully operational before the commencement of any use; and b. where not in a reticulated sewerage service area, as an on-site treatment system meeting the requirements of the *Queensland Plumbing and Wastewater Code* and Part 8 of the General Works and Infrastructure Planning Scheme Policy. **AO10.4.2** Disposal of trade waste into the reticulated sewerage system meets the requirements of the *Environmental Protection Act 1994.*	The Acceptable Outcome can be met.
PO10.5 An electricity supply is provided, meeting the standards of the relevant authority, and is fully operational before the commencement of any use, and where a reticulated gas service is supplied, it meets the standards of the relevant authority.	**AO10.5** No accepted outcome provided.	The Performance Outcome can be met.
PO10.6 A telecommunications service is provided meeting the standards of the relevant authority.	**AO10.6** No accepted outcome provided.	The Performance Outcome can be met.
11 **Construction**		
PO11.1 Adverse impacts from noise and dust are fully	**AO11.1** No accepted outcome provided.	The Performance Outcome can be met.

contained, or at minimum, reduced to acceptable levels during demolition and construction (including dust from vehicles entering and leaving the site). Note: Where it is expected that noise during construction will have significant impact, a noise impact assessment addressing the requirements of the SC6.9 Noise Impact Assessment is the preferred method for addressing the noise impact requirements of this performance outcome.		
PO11.2 Development involving filling or excavation does not cause ground-borne vibration beyond the boundary of the site.	**AO11.2** No accepted outcome provided.	The Performance Outcome can be met.
PO11.3 Works ensure the protection of existing utilities infrastructure.	**AO11.3** Works are designed and constructed in accordance with the requirements of the General works and infrastructure planning scheme policy, the *Queensland Development Code* MP1.4 — building over on or near relevant infrastructure, and the standard design specifications of the relevant service authority.	The Performance Outcome can be met.
PO11.4 Where future infrastructure has been planned and identified by the relevant authority, works are implemented to adequately accommodate this future infrastructure.	**AO11.4** No accepted outcome provided.	The Performance Outcome can be met.
PO11.5 Acceptance of assets is undertaken in accordance with Part 9 — Compliance with Standards for Reconfigurations and Site Development Works and Part 10 — Maintenance of the General Works and Infrastructure Planning Scheme Policy.	**AO11.5** No accepted outcome provided.	The Performance Outcome can be met.

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