GENERAL LEGEND	
APPROX BOUNDARY LINE	
PROPOSED LOT 1 (5031.8m²)	
PROPOSED LOT 2 (4351.4m²)	
EXISTING SEPTIC SYSTEM	

GENERAL NOTE:
ALL BOUNDARIES, LOCATIONS AND DIMENSIONS ARE APPROXIMATES

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/43-2023

Dated: 15 March 2024

E:\Users\ColinStrydom\Documents\PROJECTS E DRIVE\GG-BGG - B.rvt

12/12/2023 10:05:42 AM

1 SITE PLAN
1 : 500 @ A3

drawing title:
SITE PLAN

drawing no: SK-002

project:
PROPOSED SUBDIVISION

A3 DRAWINGNOTED SCALES RELATE TO A3 DRAWINGS

location:
9 BALLARD ST, LAKES CREEK, QLD , 4701

client:
--

REVISIONS

REVISIO N	DESCRIPTION	DATE
B	PRELIMINARY	23/03/2023
C	PRELIMINARY	31/03/2023
D	PRELIMINARY	12/12/2023

PRELIMINARY SKETCH PLANS:
If the drawings are labelled and issued 'preliminary', below, they are not suitable for Building Application, tender or construction purposes!
The intent of preliminary sketch plans are only for presenting the concept for the specific project to the client as nominated in the title sheet.

design+architecture accept no responsibility for the accurary, completeness of electronically transferred documents.

NEVER SCALE OF DRAWINGS, IF IN DOUBT, ASK!

GIDEON TOWN PLANNING
gg@gideontownplanning.com.au
DRAWINGS BY
DESIGN+ARCHITECTURE
designaa.com.au

ISSUED FOR
PRELIMINARY

project no: GG - B

scale As indicated

date DEC 23

drawn AUTHOR

rev D

GENERAL LEGEND	
APPROX BOUNDARY LINE	
PROPOSED LOT 1	
PROPOSED LOT 2	
EXISTING SEPTIC SYSTEM	

GENERAL NOTE:
ALL BOUNDARIES, LOCATIONS AND DIMENSIONS ARE APPROXIMATES

1 LOCATION PLAN
1 : 1500 @ A3

GENERAL NOTE:

- THESE DRAWINGS ARE PART OF A TOWN PLANNING APPROVAL APPLICATION AND SHOULD NOT BE USED FOR ANY OTHER REASON
- THESE DRAWINGS ARE APPROXIMATE AND HIGHLY CONCEPTUAL
- TRAFFIC/STORMWATER/OPERATIONAL WORKS: AS PER CIVIL ENGINEER DOCUMENTS AND DRAWINGS IF REQUIRED
- CURRENT LOCATIONS AND BOUNDARY LINE ARE APPROXIMATE, RELEVANT SURVEY TO BE CONDUCTED BEFORE ANY DOCUMENTATION OR CONSTRUCTION
- REFER TO TOWNPLANNING APPLICATION AND OPERATIONAL WORKS DOCUMENTATION WHEN VIEWING THESE PLANS
- THESE DRAWINGS ARE CONCEPTUAL AND DO NOT REFLECT BUILDING APPROVAL, PLUMBING APPROVAL, QFRS APPROVAL OR DISABILITY REQUIREMENTS. CLIENT TO CONFIRM AND GET APPROVAL FROM RELEVANT AUTHORITIES
- IF THE SITE OR PROJECT ARE TRIGGERED OR LOCATED IN BUSHFIRE AREA, THEN THE BUILDINGS TO COMPLY WITH BUSHFIRE REQUIREMENTS OR AS PER COUNCIL REQUIREMENTS

ROCKHAMPTON REGIONAL COUNCIL

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Dated: 15 March 2024

E:\Users\ColinStrydom\Documents\PROJECTS E DRIVE\GG-BGG - B.rvt

12/12/2023 10:05:38 AM

drawing title:
LOCATION PLAN

drawing no: SK-001

project:
PROPOSED SUBDIVISION

A3 DRAWING NOTED SCALES RELATE TO A3 DRAWINGS

location:
9 BALLARD ST, LAKES CREEK, QLD , 4701

client:
--

REVISIONS

REVISIO N	DESCRIPTION	DATE
B	PRELIMINARY	23/03/2023
C	PRELIMINARY	31/03/2023
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gg@gideontownplanning.com.au
DRAWINGS BY
DESIGN+ARCHITECTURE
designaa.com.au

ISSUED FOR
PRELIMINARY

project no: GG - B

scale As indicated

date DEC 23

drawn AUTHOR

rev D

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/43-2023

Dated: 15 March 2024

Project Number 23076
Date 30 November 2023

Janes and Stewart Structural+Civil CONSULTANTS
Janes and Stewart Structures Pty Ltd
120 William Street, PO Box 1072
Rockhampton 4700
07 4922 1948
janes.and.stewart@jsstructures.com.au

Letter Information Request Response Technical Memorandum – 23076LETIRRTM01

Gideon Town Planning
PO Box 450
Rockhampton Qld 4700

Attention: Luke Saunders
planner@gideontownplanning.com.au

Dear Luke,

Information Request Response Technical Memorandum
Two Lot Subdivision (D/43-2023)
9 Ballard Street, Lakes Creek

Further to the Information request received from Rockhampton Regional Council for the Development Application D/43-2023 associated with the Reconfiguration of a Lot (one lot into two) – situated at 9 Ballard Stret, Lakes Creek, we hereby provide this Technical Memorandum to address the Civil Engineering portion of the Information Request.

Item 1.1 Provide and overland flow path assessment report for the subject land. Prepared and certified by a Registered Professional Engineer of Queensland, that as a minimum includes:

1.1.1 Identification of Catchment of these flow paths;
1.1.2 An Assessment of the peak discharge of a one percent (1%) Annual Exceedance Probability defined storm event;
1.1.3 Identification of all areas of the subject land to be provided at dedications / easement in favour of Council for the purpose of conveyance of the one percent (1%) Annual Exceedance Probability defined storm event. These dedications / easement areas must be detailed on a suitable scaled and adequately dimensioned conceptual layout plan; and
1.1.4 Details of calculations, assumption and data filed (where applicable).

PO6 of the Stormwater Management Code of the Rockhampton Regional Planning Scheme 2015 (V2.2) requires all overland flow paths are maintained under tenure arrangement that facilitate efficient infrastructure and enhance environmental sustainability.

Response:

The existing site topography generally falls from the east, north-east towards the south-west Ballard Street frontage where the average surface grades are approximately 5%. There is an existing gully that meanders roughly through the centre of the lot, which discharges to the Ballard Street road reserve at the base of a rise in the road which is approximately 2.0m high. There is currently no stormwater infrastructure in the vicinity of the gully discharge location onto Ballard Street, where the runoff from the gully crosses the Ballard Street road reserve before ultimately connecting to another overland flow path forming part of a larger creek system. There is an existing 1200mm diameter pipe culvert structure under Ballard Street approximately 70m north taking runoff from the larger creek.

Upstream of the site, the existing gully continues towards the north-east with longitudinal grades varying from approximately 5% at the rear of the site to near 1 in 2 (50%) at the top of the catchment where this part of the contributing catchment is considered to be vegetated bushland. The existing catchment extent and approximate gully lines can be seen on the civil engineering drawing 23076-SK01 attached to this letter (Attachment 1).

Using a combination of aerial imagery and LiDAR data, the contributing stormwater catchment has been determined in order to calculate the 1% Average Exceedance Probability (AEP) design storm runoff at the discharge location of the existing gully at Ballard Street. This peak 1% AEP runoff will also be used to size a stormwater channel to cater for the runoff as part of the proposed subdivision development.

Given the majority of the contributing catchment is medium density bushland (determined from aerial imagery), a fraction impervious value of 0% was adopted for the runoff calculations. Any typical sized new dwellings situated on the allotments as part of the subdivision are not expected to significantly change the fraction impervious value due to the overall size of the existing contributing catchment. Due to the vastly varying grades along the catchment length, the Equal Area Slope Method has been used to calculate the Critical Time of Concentration for the catchment as per the methods within the Queensland Urban Drainage Manual 2017 (QUDM).

Rainfall intensities were obtained from the Bureau of Meteorology for the site. Using the Rational Method for calculating runoff, a peak 1% AEP runoff was determined. The following table shows a summary of the adopted characteristics for the contributing catchment and the peak 1% AEP runoff calculated. A copy of the full calculation can be seen in Attachment 2.

Table 1 Catchment Data and Runoff

Description	Value	Unit
Catchment Name	1	
Catchment Area	1.89	ha
Fraction Impervious	0	%
Critical Time of Concentration	21	minutes
Coefficient of Discharge (C10)	0.59	
1% AEP Runoff Intensity	196	mm/h
1% AEP Runoff	0.729	m^3/s

Manning's equation for open channel flow as specified in QUDM 2017 has been used to calculate the required channel size with appropriate freeboard to cater for the 1% peak runoff from the catchment. A trapezoidal channel profile was chosen with the view to achieve a similar outlet velocity to that of the existing gully given the discharge location is the road reserve of Ballard Street. The existing gully has an expected velocity of around 1.4m/s based on the calculated 1% AEP runoff.

The following table shows the properties of the initial trapezoidal channel sizing:

Table 2 Initial Trapezoidal Channel Sizing

Description	Value	Unit
Total Width	5.0	m
Side Slopes	25.0 (1 in 4)	%
Total Channel Depth	0.5	m
Base Width	1.0m	m
Manning's Roughness 'n' - Side	0.045	
Manning's Roughness 'n' - Base	0.045	
Longitudinal Grade	5.0	%
Approximate 1% AEP water depth within channel	0.245m	m
Freeboard to top of channel	0.255	m
Channel outlet velocity	1.47	m/s

Based on the above summary, a 5.0m wide easement is recommended to cover the extent of the trapezoidal channel. A preliminary layout of the proposed channel has been shown on civil engineering drawing 23076-SK02, with the drainage channel being located within an easement in Lot 2. It is expected that any proposed dwellings planned for either of the new lots will be elevated above the channel to allow positive fall away from the buildings and further increase the freeboard from the 1% AEP water level within the channel to the finished floor level of new buildings.

As determined, the proposed trapezoidal channel outlet velocity is only slightly greater than the outlet velocity from the existing gully, therefore minimising increased risk of scour at the channel outlet. Some rock protection is currently in place at the gully outlet on Ballard Street. We suggest this rock protection should remain in place with the proposed trapezoidal channel, with final channel and outlet details to be refined as part of further detailed design stages of the project.

Janes and Stewart Structural+Civil CONSULTANTS

Item. 1.2 *Provide an engineering assessment to demonstrate that any future development on proposed lot 2, complies with the Capricorn Municipal Development Guidelines requirements for Driveways, particularly regarding sight distance in accordance with Austroads recommendations.*

In accordance with PO1 of the Access, Parking and Transport Code, access driveways are located to avoid conflicts and designed to operate efficiently and safely.

Response:

An analysis of the sight distance conditions has been undertaken, in order to nominate a safe location for the proposed driveway for lot 2, which is generally located on the high side of the sharp crest in Ballard Street. For the northern approach (proposed lots on the left) an Approach Sight Distance requirement was adopted, with an eye height of 1.1m from the vehicle and an object height of 0m being adopted as stated in Austroads. For the southern approach (new lots on the right side) a safe intersection sight distance requirement has been adopted with a 1.1m driver eye height, and an object height of 1.1m.

A design speed of 60km/h has been adopted given the semi-rural nature of the area, and the lack of speed signage at surrounding intersections. However, it is expected the actual speed of traffic is less than this given the restrictive vertical geometry of Ballard Street, with numerous crests and sags with less than ideal vertical curve lengths.

Using an approximated road centreline for Ballard Street based on LiDAR data, the sight distance requirements were overlaid (Northern and Southern approaches) to determine a suitable location for the new Lot 2 driveway. This location has been determined to be within 25m and 30m from the lot 2 southern boundary.

Civil engineering drawing 23076-SK03 (included in Attachment 3) shows a section of the northern and southern approaches with sightlines and object heights, as well as dimensions to locate the driveway. It is our recommendation that the centreline for the proposed Lot 2 driveway be located 27.5m north of the Lot 2 southern boundary. An indicative layout of the proposed rural driveway has been shown. This indicative driveway layout is subject to change in further detailed design stages of the project.

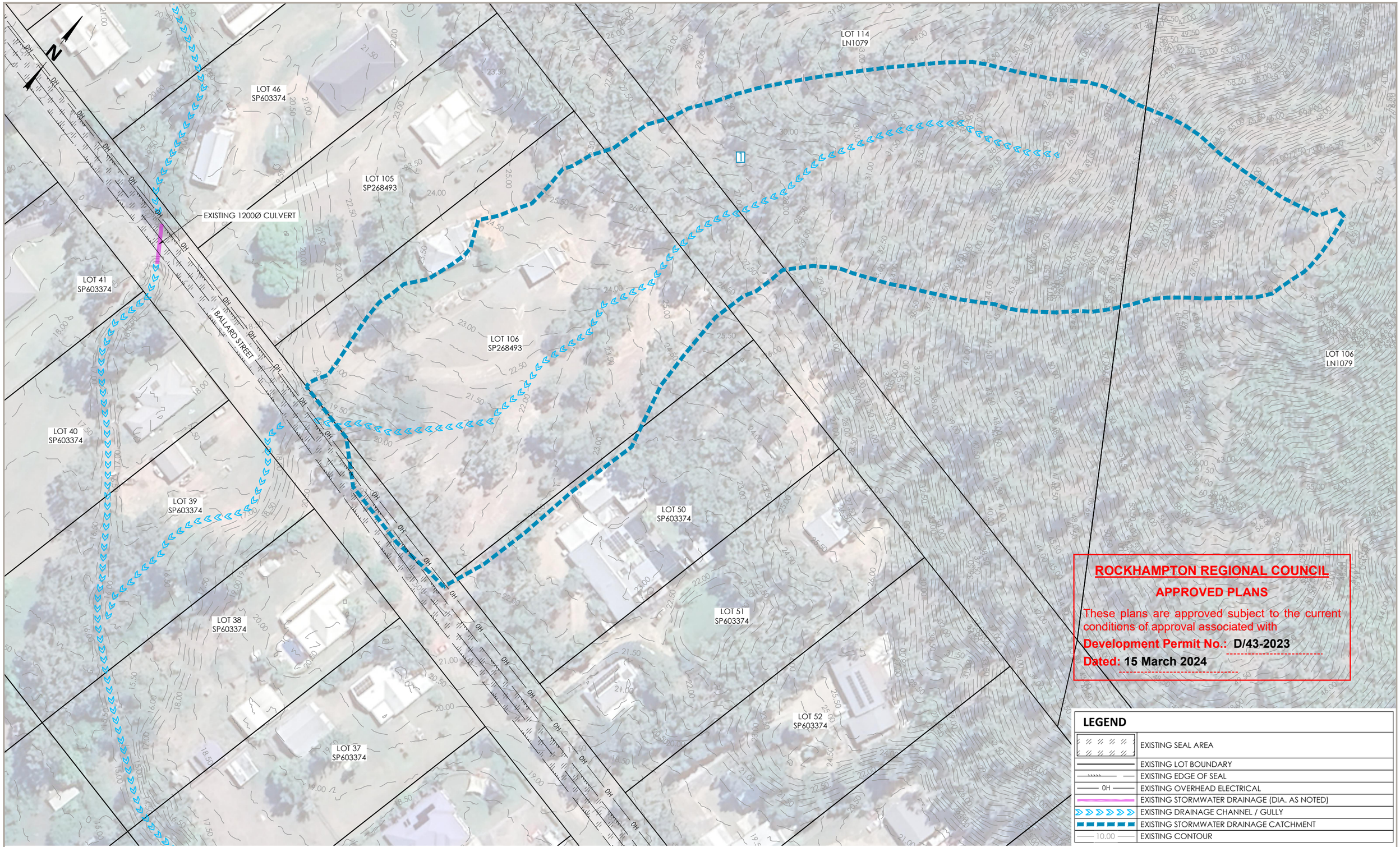
We trust the above and enclosed provides the necessary civil engineering information to address the Council information request for the two lot subdivision proposed at 9 Ballard Street, Lakes Creek. If you should have any further questions at all, please do not hesitate to contact our office and speak with the undersigned.

Yours sincerely

Matthew Dennis
Senior Civil Engineer
for and on behalf of Janes and Stewart Structures Pty Ltd

Attachments

1. Civil Stormwater Engineering Drawings 23076-SK01 [1], 23076-SK02 [1]
2. Stormwater Calculations
3. Civil Sight Distance Drawing 23076-SK03 [1]



ROCKHAMPTON REGIONAL COUNCIL

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Dated: 15 March 2024

LEGEND

	EXISTING SEAL AREA
	EXISTING LOT BOUNDARY
	EXISTING EDGE OF SEAL
OH	EXISTING OVERHEAD ELECTRICAL
	EXISTING STORMWATER DRAINAGE (DIA. AS NOTED)
	EXISTING DRAINAGE CHANNEL / GULLY
	EXISTING STORMWATER DRAINAGE CATCHMENT
10.00	EXISTING CONTOUR

9 BALLARD STREET SUB DIVISION

0 5.0 20.0m 1:1,000

Janes and Stewart Structures Pty Ltd
120 William Street | Po Box 1072
Rockhampton 4700
07 4922 1948
janes.and.stewart@jsstructures.com.au
ABN 30 620 233 025

JS² Janes and Stewart Structural+Civil CONSULTANTS

Project Number	SK01[1]
	23076
Date	30/11/2023
	EXISTING SITE AND CATCHMENT PLAN

LOT 40
SP603374

LOT 39
SP603374

LOT 38
SP603374

LOT 37
SP603374

LOT 105
SP268493

PROPOSED
LOT 1

PROPOSED
LOT 2

LOT 50
SP603374

BALLARD STREET

PROPOSED CHANNEL TO OUTLET AT BALLARD STREET ROAD RESERVE AT THE SAME LOCATION AS THE EXISTING SCENARIO

PROPOSED 2.5m WIDE DRAINAGE CHANNEL INSIDE 5.0m WIDE EASEMENT

PROPOSED NEW PROPERTY BOUNDARY

PROPOSED 5.0m WIDE DRAINAGE CHANNEL INSIDE 5.0m WIDE EASEMENT REFER DETAIL BELOW

PROPOSED CHANNEL PROFILE TO CONNECT AND ALLOW FOR EXISTING UPSTREAM CHANNEL AT PROPERTY BOUNDARY

ROCKHAMPTON REGIONAL COUNCIL

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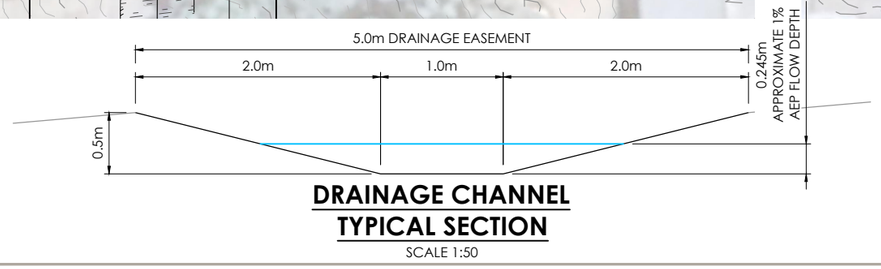
Dated: 15 March 2024



DRAINAGE CHANNEL
TYPICAL SECTION
SCALE 1:50

LEGEND

	EXISTING SEAL AREA
	EXISTING LOT BOUNDARY
	EXISTING EDGE OF SEAL
0H	EXISTING OVERHEAD ELECTRICAL
	EXISTING DRAINAGE CHANNEL / GULLY
	PROPOSED TOE OF BATTER
	PROPOSED TOP OF BATTER
	PROPOSED LOT BOUNDARY
	PROPOSED DRAINAGE CHANNEL
10.00	EXISTING CONTOUR

9 BALLARD STREET SUB DIVISION

0 2.5 10.0m
1:500

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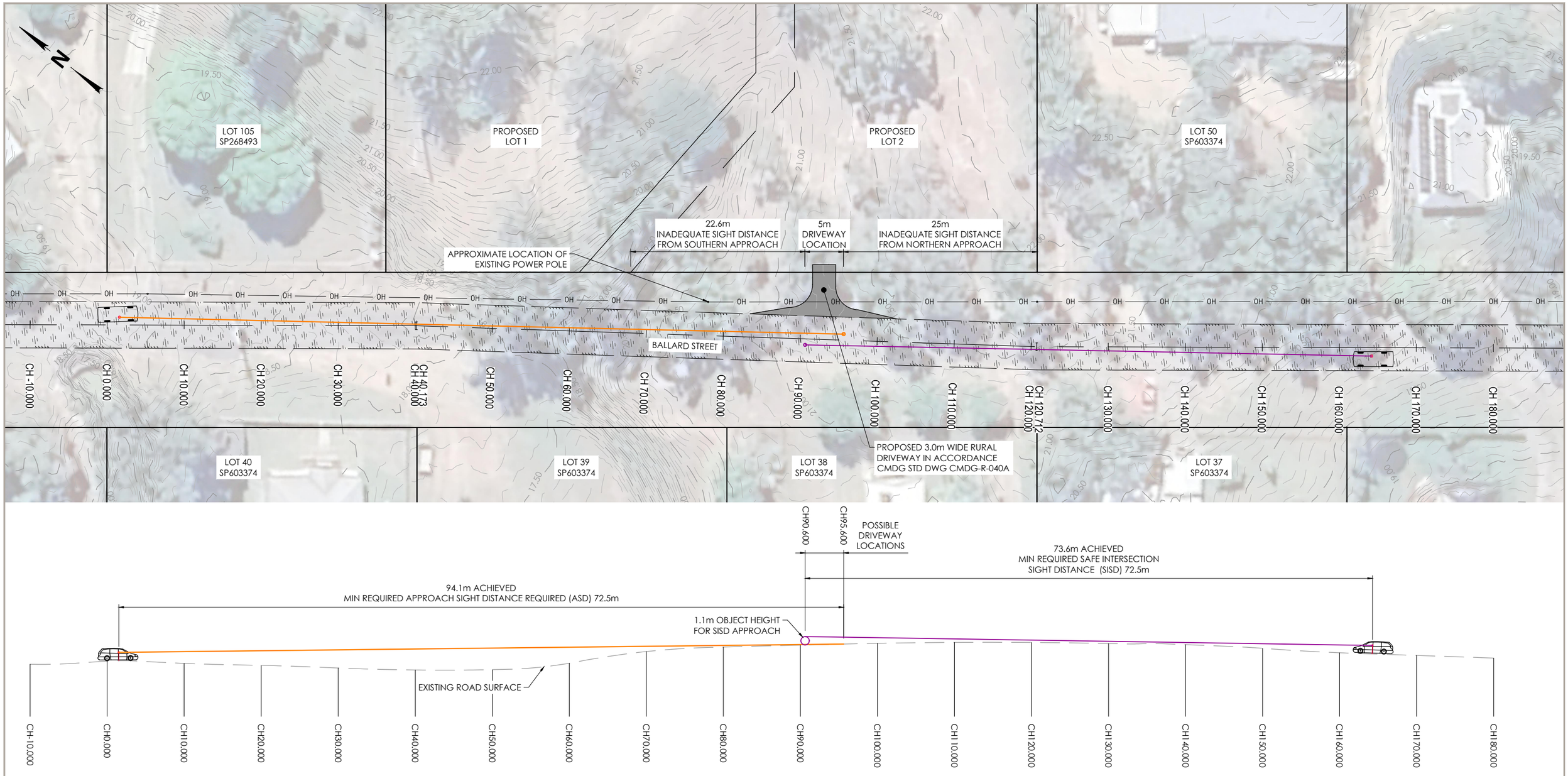
Rockhampton 4700
07 4922 1948
janes.and.stewart@jsstructures.com.au
ABN 30 620 233 025

JS² Janes and Stewart Structural+Civil CONSULTANTS

Project Number
SK02[1]

23076
Date
30/11/2023

PROPOSED STORMWATER CHANNEL PLAN



BALLARD STREET SIGHT DISTANCE
CHECK PROPOSED LOT 2 DRIVEWAY

EXISTING ROAD GRADING HAS BEEN DETERMINED BY USE OF LIDAR INFORMATION. SIGHT DISTANCES AND DRIVEWAY LOCATION TO BE CONDIRMED DURING DETAILED DESIGN
SCALE 1:500

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LEGEND	
	EXISTING SEAL AREA
	EXISTING LOT BOUNDARY
	EXISTING EDGE OF SEAL
0H	EXISTING OVERHEAD ELECTRICAL
	PROPOSED LOT BOUNDARY
	PROPOSED EASEMENT
10.00	EXISTING CONTOUR

9 BALLARD STREET SUB DIVISION

0 2.5 10.0m 1:500

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Rockhampton 4700
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janes.and.stewart@jsstructures.com.au
ABN 30 620 233 025

Janes and Stewart
Structural+Civil
CONSULTANTS

Project Number
SK03[1]
23076
Date
30/11/2023

LOT 2 DRIVEWAY SIGHT DISTANCE PLAN