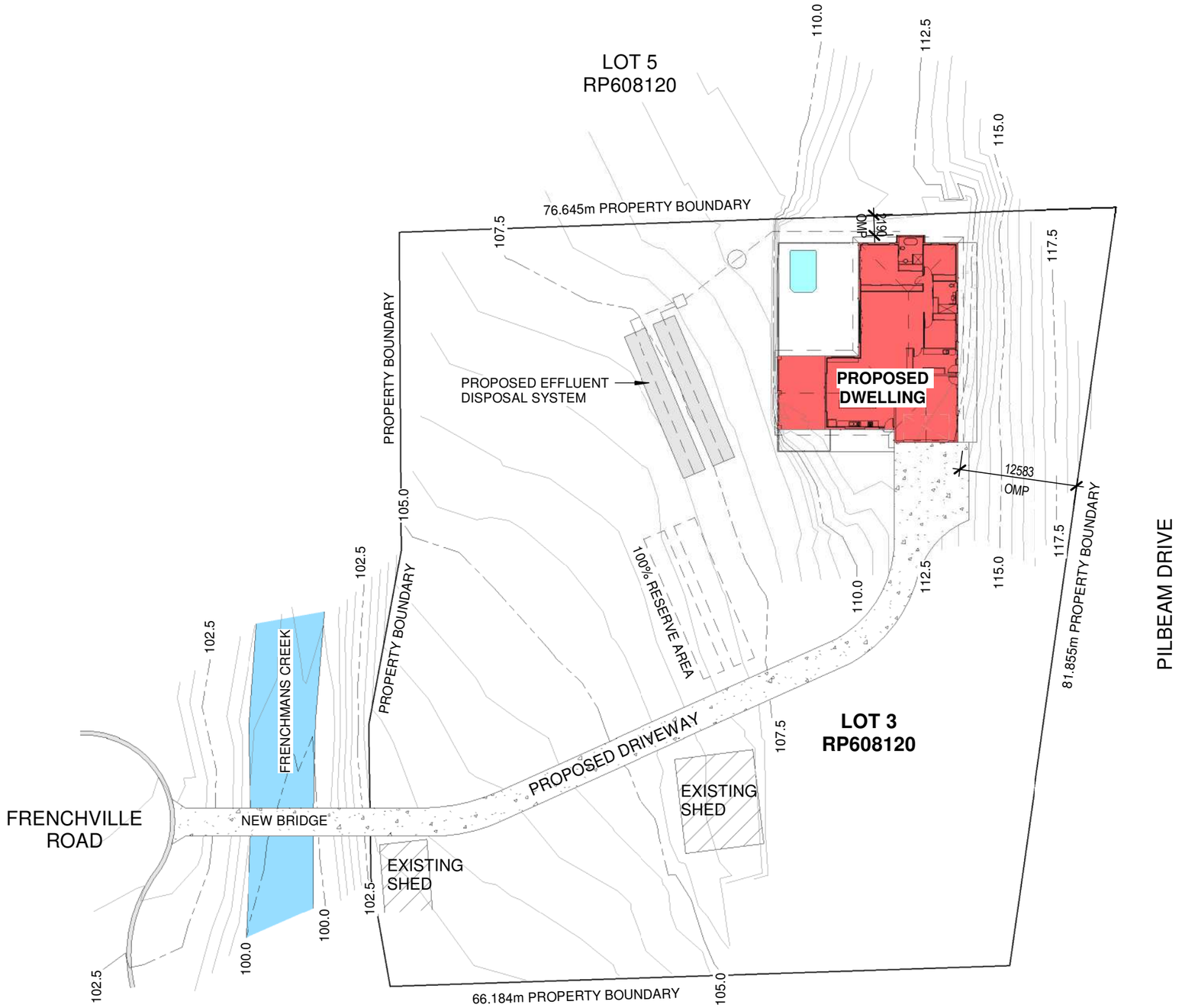
AREAS-

DWELLING
- ENCLOSED AREA = 250m2
- COVERED PATIO = 39m2
- TOTAL = 289m2

SITE = 5549m2
COVERAGE = 5.2%



SITE PLAN
1 : 500

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: **D/173-2024**

Dated: **16 October 2025**

project:
NEW DWELLING
468 FRENCHVILLE ROAD
FRENCHVILLE

client:
PETER O'BRIEN

designtek
Shop 5/10 Denham St
Rockhampton
QLD, 4700
p 0749 222880
building design - documentation
QBCC MEM. NO # 1123040
BDAQ MEM. NO # 0000761

title:
SITE PLAN

scale:	project no:	
As indicated	2306-05	
drawn:	drawing no	rev:
EM	A-01	2

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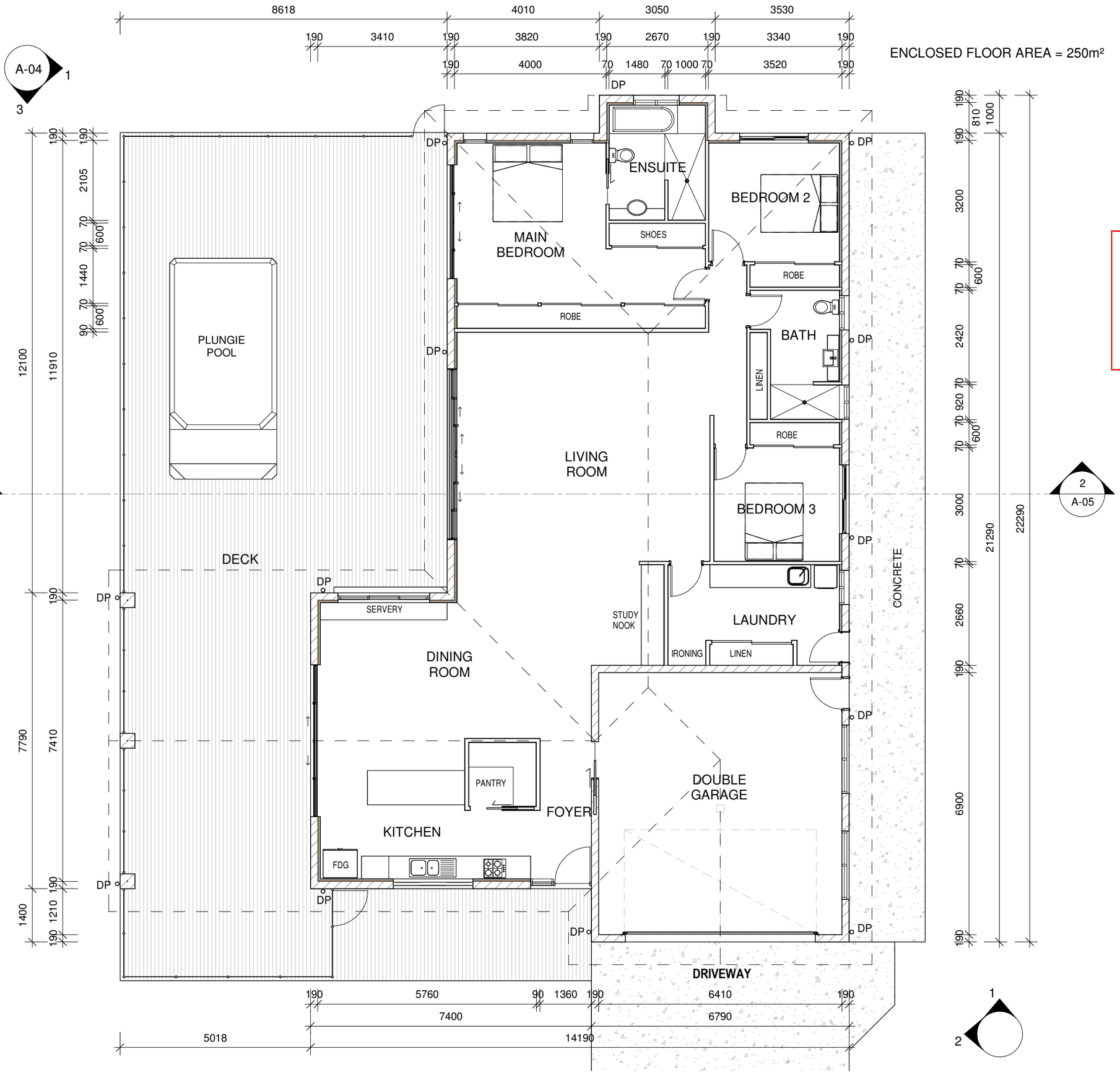
ENCLOSED FLOOR AREA = 250m²

A-04 1 / 3

2 A-05



2 A-05

1 / 2

ROCKHAMPTON REGIONAL COUNCIL

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Development Permit No.: D/173-2024

Dated: 16 October 2025

project:
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468 FRENCHVILLE ROAD
FRENCHVILLE

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designtek
Shop 5/10 Denham St
Rockhampton
QLD, 4700
p 0749 222880
building design - documentation
QBCC MEM. NO # 1123040
BDAQ MEM. NO # 0000761

title:
FLOOR PLAN

scale:	project no:		
1 : 100	2306-05		
drawn:	drawing no	rev:	
EM	A-02		

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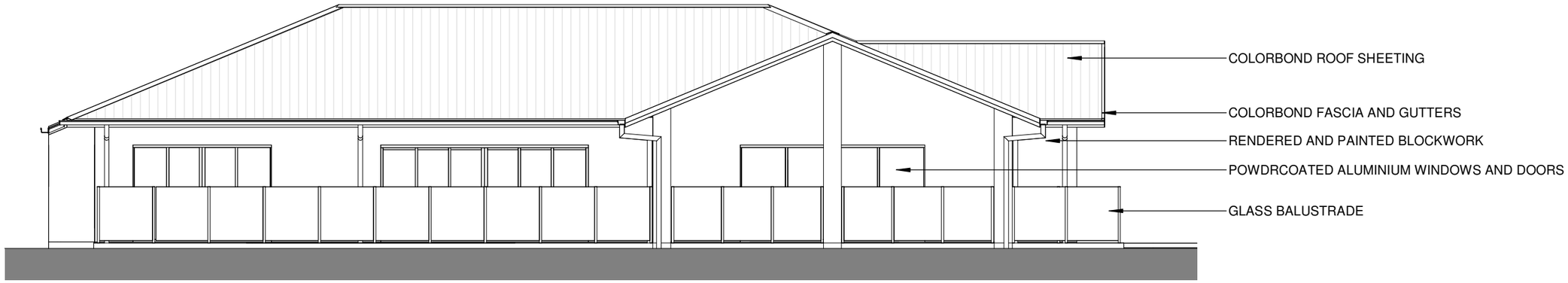
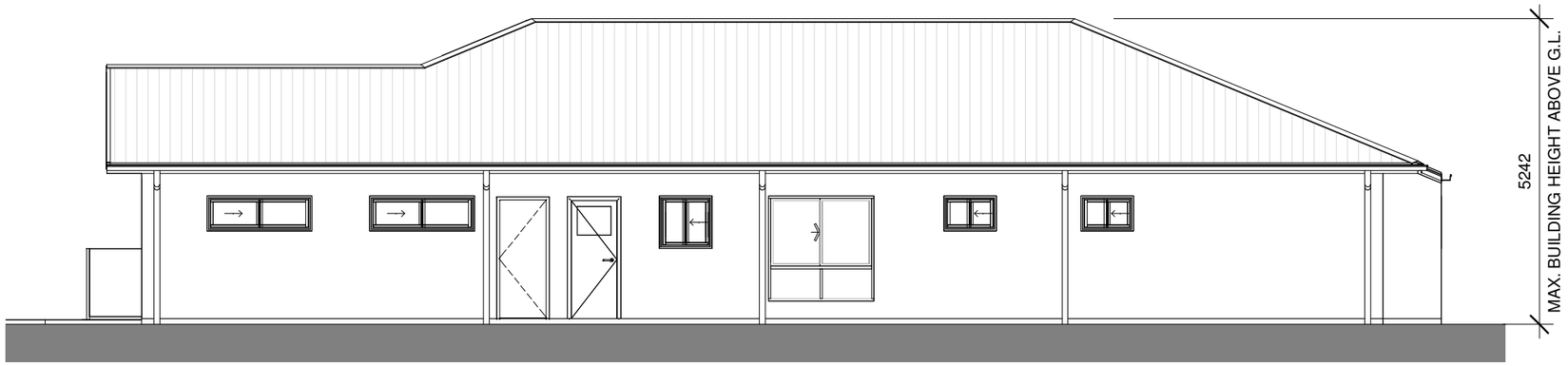


NORTH ELEVATION

1 : 100



SOUTH ELEVATION

1 : 100

EAST ELEVATION

1 : 100

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/173-2024

Dated: 16 October 2025

project:
NEW DWELLING
468 FRENCHVILLE ROAD
FRENCHVILLE

client:
PETER O'BRIEN

designtek
Shop 5/10 Denham St
Rockhampton
QLD, 4700
p 0749 222880
building design - documentation
QBCC MEM. NO # 1123040
BDAQ MEM. NO # 0000761

title:
ELEVATIONS

scale:	project no:	
1 : 100	2306-05	
drawn:	drawing no	rev:
EM	A-04	

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ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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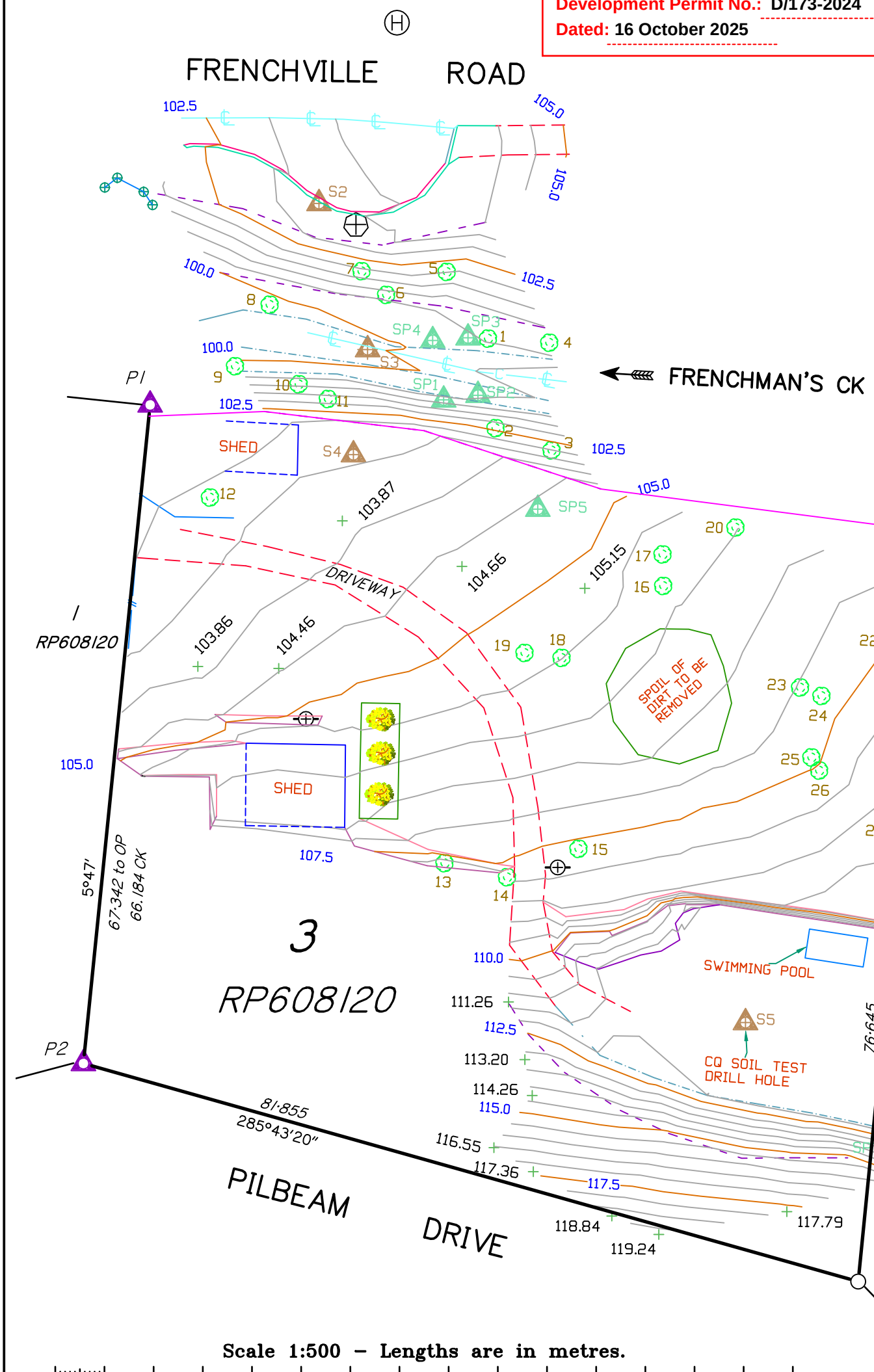
Development Permit No.: D/173-2024

Dated: 16 October 2025



LEGEND

- Major Contour 2.5m interval
- Minor Contour 0.5m interval
- Boundry
- Toe of kerb
- Top of kerb
- Toe of Bank
- Top of Bank
- Bottom of wall
- Top of wall
- Edge of Garden
- Center Line
- Driveway
- Edge of Concrete
- Shed
- Edge of veg
- Fence
- Creek Line
- GI Fence post
- Tap
- Fire hydrant
- Water meter
- OP
- Peter's Iron Rods
- Control Point
- Tree
- Christmas Tree Bush

→ Please see page 2 of 2 for Reference points and tree details

→ Reduced AHD Level derived from PSM121495 RL 80.361

Scale 1:500 – Lengths are in metres.

5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70

0 50mm 100mm 150mm

This plan has been prepared from a combination of field survey and existing records for the purpose of showing the physical features of the land to assist in designing future development, and should not be used for any other purpose.
The title boundaries shown hereon were not verified or marked at the time of survey but were determined by existing title dimensions and occupation (where available), not by field measurement. As such, these dimensions could be out of date and incorrect by modern standards. This plan should not be used for building to boundary, or to prescribe set-backs, without further boundary survey.
Services shown hereon were located where possible by field survey completed on 16-05-25. If not able to be so located, known services have been shown from the record of the relevant authorities or service providers where available and have been noted accordingly on this plan. All services shown from records only will need verification prior to, or during work on site.
Prior to any demolition, excavation or construction on site, the relevant authority should be contacted for:

- Verification of all services plotted from records only; and
- Possible location of any services altered since this survey was completed or any new services installed either on or adjacent to this site.

Before starting any demolition, excavation or construction on this site, the relevant person should make an independant and updated enquiry of 'dial before you dig' and any relevant service providers to ascertain the existance of further services (if any) and the accurate location of those not able to have been surveyed at the time of preparing this plan.
No responsibility can be accepted by GSPC for any damage caused to any underground service or any loss or injury so suffered if enquiry and verification have not been completed in accordance with this note.
This note is an integral part of this plan. Reproduction of this plan or any part of it without this note being included in full will render information shown on such reproduction invalid and not suitable for use.

Plan of

Detail and Level survey over Part of Lot 3 on RP608120

GSPC
(Gracemere Surveying and Planning Consultants Pty Ltd)
ABN: 40 124 780 445
PO Box 379 Gracemere QLD 4702
Rockhampton & Toowoomba
PH: (07) 4922 7033 email: admin@gspc.com.au FAX: (07) 4922 7044

LOCALITY	FRENCHVILLE
LOCAL GOVERNMENT	Rockhampton R.C.
HORIZONTAL DATUM	GDA2020 Zone 56
MERIDIAN	MGA Zone 56
VERTICAL DATUM	AHD
DERIVED vide	PM121495
MAP REF	9051-34234

PLAN SCALE	1:500
AUTOCAD SCALE	1:1000
DATE	04-06-2025
DRAWN	RUPESH
SHEET	1 OF 2
REF.	251373-01

DESIGN NOTES

1. Dead Load……..self weight
2. Live Load……..15.0 (kPa) truck loading (refer AS1170.1)
3. Earthquake Design Parameters (refer AS1170.4)
   Hazard Factor Z..... 0.085
   Probability Factor kp..... 1.0
   Kp.Z..... 0.085
   Probability P..... 1/500
   Site Sub Soil..... Ce
4. Foundation……..... Soil Classification "M"
   100kPA Safe allowable bearing pressure to be confirmed

CONCRETE SLAB SPECIFICATIONS

1. Top steel..... SL82 mesh.
2. Bottom steel..... N24 at 150ctrs pricipal steel - lay first.
3. Bottom steel..... N20 at 350ctrs diribution steel - lay second.
4. Slab..... 320 thick concrete slab.
5. Concrete.....N40 concrete.

CONSTRUCTION NOTES

1. Set out to be confirmed with flood report and RRC planning policies.
2. Finished surface levels to be coordinated with creek cross section and coordinated with flood study report.
3. Confirm Local Authority approvals prior to commencing any site works.
4. Contractor shall provide all temporary bracing and embankment protection to ensure the subject structure's stability during the construction phase.
   In addition, the Contractor shall take all necessary precautions to ensure appropriate erosion barries and erosion fences are installed to the Councils specification.

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

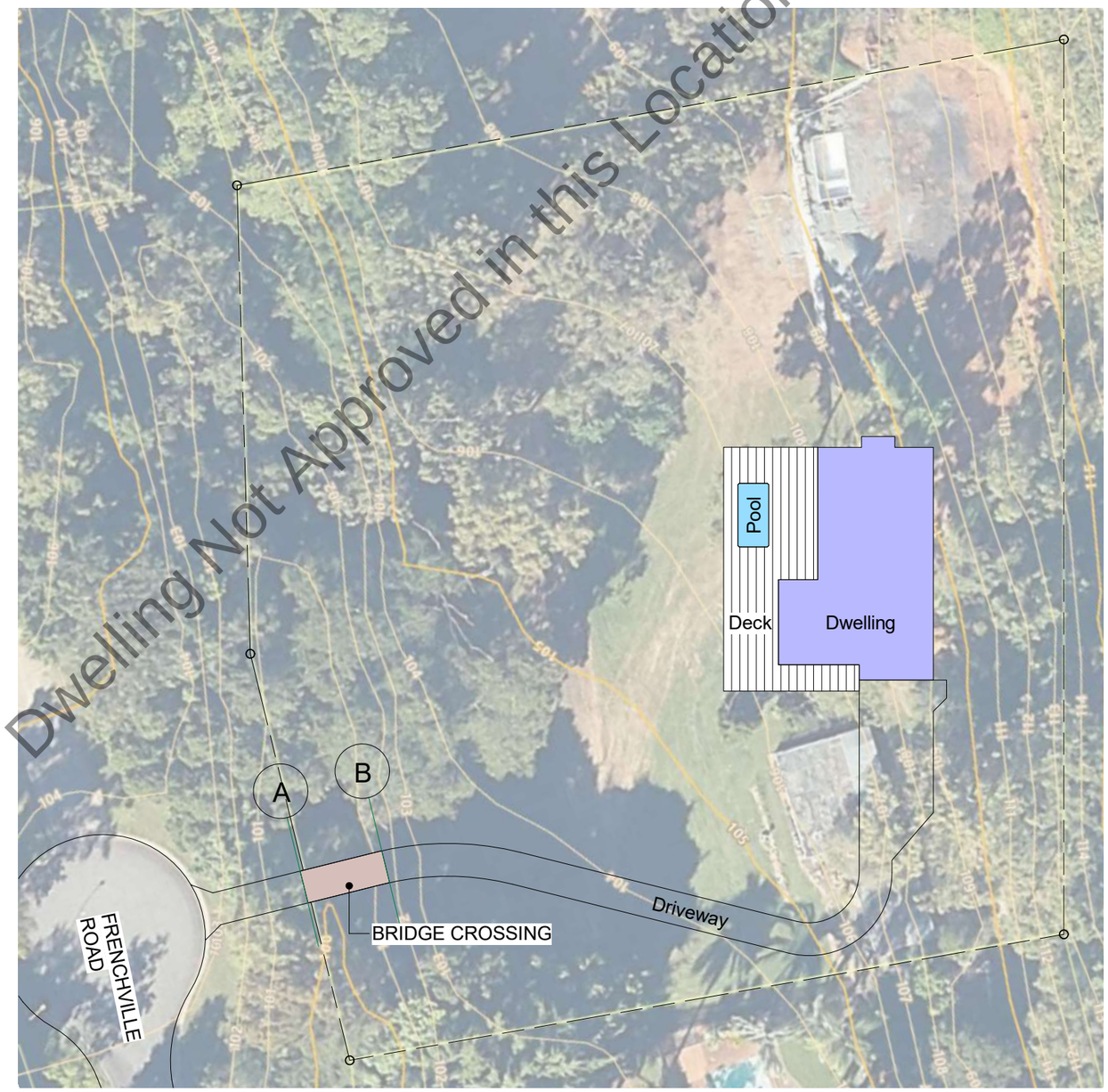
Development Permit No.: **D/173-2024**

Dated: **16 October 2025**

SUSPENDED CONCRETE SLAB NOTES

1. Concrete strength specifications:
   slab..... durability class A2, 40 min. cover, 100 slump **N40**.
2. All works and materials shall comply with AS3600 Concrete Code.
3. For set out, steps, and falls, refer to Associated Consultants.
4. Concrete shall be **thoroughly** vibrated. Vibration system to be approved by engineer prior to pour.
   Concrete shall be **thoroughly** cured for a minimum of 14 days.
5. Concrete test cylinders shall be taken pursuant with AS3600, minimum 2x 7 day tests and 4x 28 day tests.
6. Back propping shall be the responsibility of the main Contractor and shall remain in place until design strength 30MPa has been achieved.
7. Reinforcement to AS1302.

Bar	Lap
N20	600 UNO
N24	750 UNO
Mesh	2 cross wires + 25mm



N

LOCALITY PLAN

1 : 500

Date	Rev	Notes
10.05.2025	A	Council Approval
Approved		
Checked		JMT
Drawn		DMG
Design		JMT

Tapsell Consulting Engineers Pty Ltd

A.B.N. 78 065 154 949
14 Milford Avenue
Frenchville, 4701
Telephone (07) 49 263554

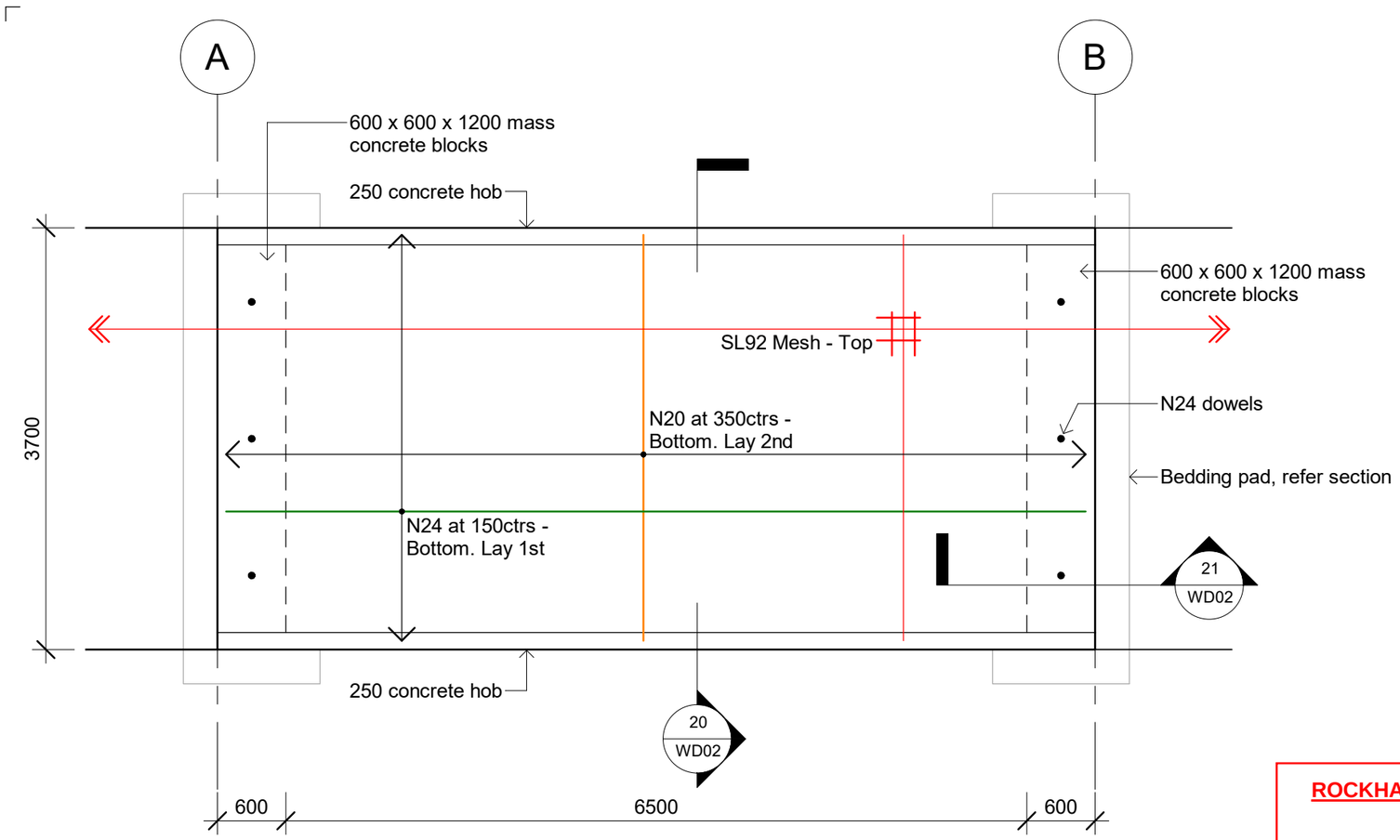
e.mail
john.tapsell@tapsellconsultingengineers.com.au

Project
Access Bridge

for
Peter O'Brien

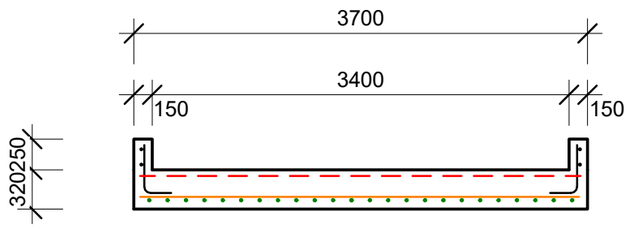
at
468 Frenchville Road
Frenchville, Qld, 4701

Job No.:	0824-98	
Rev A		Sheet 1 of 2



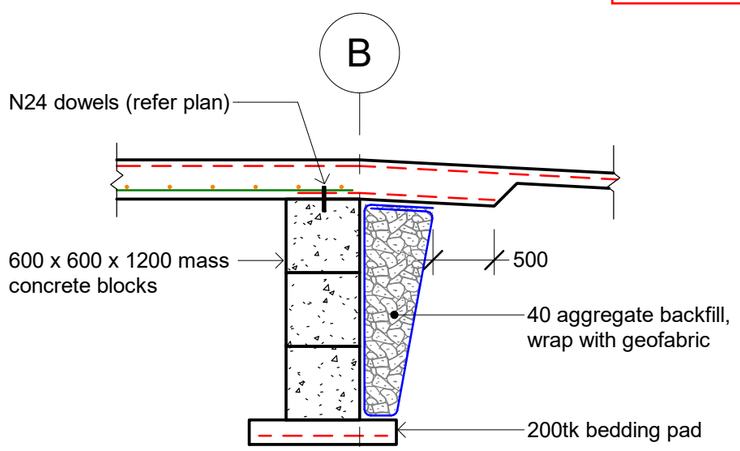
FLOOR PLAN

1 : 50



SECTION 20

1 : 50



SECTION 21

1 : 50

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/173-2024

Dated: 16 October 2025

10.05.2025	A	Council Approval
Date	**Rev**	**Notes**
Approved		
Checked	JMT	
Drawn	DMG	
Design	JMT	

Tapsell Consulting Engineers Pty Ltd

A.B.N. 78 065 154 949

14 Milford Avenue

Frenchville, 4701

Telephone (07) 49 263554

e.mail john.tapsell@tapsellconsultingengineers.com.au

Project
Access Bridge

for
Peter O'Brien

at
468 Frenchville Road
Frenchville, Qld, 4701

Job No.:	0824-98	
Rev A		**Sheet** 2 of 2

30 May 2025

Chief Executive Officer
Rockhampton Regional Council
PO Box 1860
Rockhampton QLD 4700

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: **D/173-2024**
Dated: **16 October 2025**

Dear Sir/Madam,

Flood Hazard Assessment in Support of
Proposed Residential Dwelling at 3A Pilbeam Drive, Frenchville

The subject land is located at 3A Pilbeam Drive and is in an 'Environmental management and conservation' zone. This property is described as 3 RP608120 and has a total area of 5,549m^2. The property is partially developed with a temporary structure and retaining wall.

A new residence (the subject of this application) is proposed to be constructed slab on ground at the rear of the site. The residence will be oriented perpendicular to Frenchville Road.

The allotment was assessed in the Frenchmans and Thozet Creek Catchments Flood Study 2018. The following Flood Hazard Assessment is provided based on the perceived impacts of the proposed development on the flood plain in this area.

A Flood Search undertaken by Rockhampton Regional Council (RRC) identifies the site as **Not Affected** by Riverine Flood and **Affected** by Creek Catchment Flood / Local Storm Event.

Current Natural Surface Levels

Existing ground surface levels of the lot vary between approximately 99.52m and 116.11m AHD as denoted in a flood report provided by council on 22 May 2025.

Proposed adjustments to Natural Surface Levels

Filling works are required to achieve a level pad, which shall be constructed in the rear of the site. Additionally, some minor filling might be required to construct the access driveway between the proposed residence, and a proposed bridge crossing over Frenchman's Creek. The extent of filling is to be kept to a minimum, to facilitate the house construction and access works only.

Relevant Access Route

As the development is for residential purposes, it will not affect any or increase traffic volumes on the access route to and from the property beyond what has been allowed for in the external road planning and design.

Existing Flood Levels

A flood report provided by council on 22 May 2025 indicates a maximum 1% AEP flood elevation of 109.16m AHD and 1% AEP flood water velocity of 6.03m/s for local creek / catchment flooding. Given the nature of flooding and micro-topographical features of the site, including branches of Frenchman's Creek extending through the lot, the depth of flood water across the site is varied. Inundation extents during a 1% storm event are represented in Figure 1 below. Peak flood heights are observed on the east boundary at the location indicated.

Dileigh Pty Ltd, 47 Normanby Street, Yeppoon, QLD 4703
Phone/Fax: (07) 4911 2553 Email: admin@dileigh.com.au
ABN 49 121 309 171

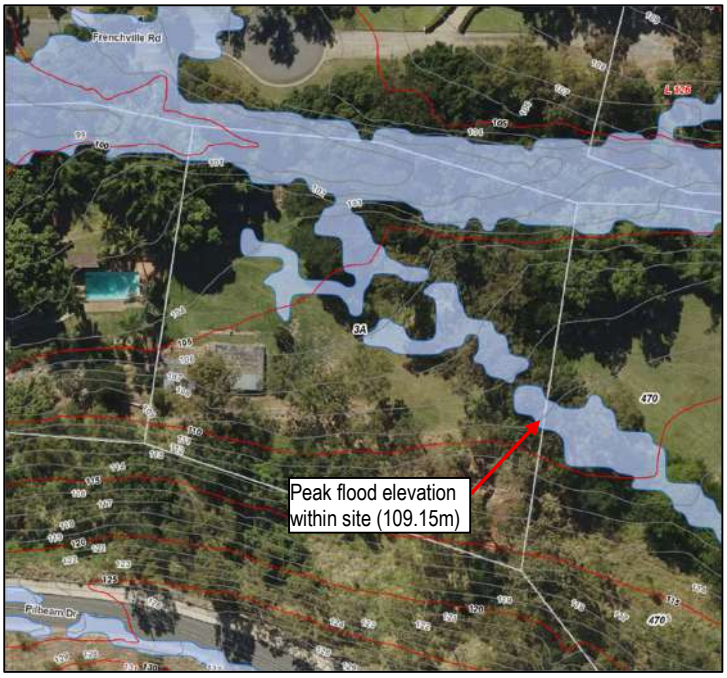


Figure 1: 1% AEP Inundation Extents (RRC RGSIS Map Extract)

Potential Impact of Development on Flood Depth and Velocity

Due to the dwelling construction occurring outside the projected inundation area, it will not result in any loss of storage, measurable impact to flood heights or actionable nuisances to the surrounding properties. Filling works associated with the access driveway occurring within the inundation extents shall be minimal (in the range of $5m^3$ – $10m^3$) and shall result in negligible changes to flood depths. It is proposed to construct a bridge across Frenchman's Creek with flood immunity in a 1% AEP event, ensuring that flood waters within the creek bed are unimpeded.

Flood Hazard Classification

Detailed survey was not available at the time of this assessment, so actual flood depths cannot be verified. However, given a peak velocity of 6.03m/s, a corresponding flood hazard vulnerability classification of H6 was identified as per *Australian Institute for Disaster Resilience Guideline 7-3: Figure 6.* Risks are considered extreme, with flood waters "unsafe for vehicles and people" with "all building types considered vulnerable to failure". The H6 classification is applicable within the indicated inundation extents only. All other areas of the site are subject to a classification of H1 or less, described as "generally safe for vehicles, people and buildings".

Afflux

Due to the minimal obstruction as a result of the proposed bridge structure, afflux will be localized around the columns and not cause any notable disruptions to downstream flows. All other proposed works are to be located outside the inundation extents.

Evacuation Options

The development will not affect any of the current evacuation options available as there will be no effects on the current flood level. The current evacuation strategies will remain unaffected. Additionally, given the nature of flooding, inundation is expected to be short in duration (<1 day) and generally should not require evacuation. Frenchville Road is closed off from the greater Rockhampton township during 1% AEP floods. No alternate evacuation routes are available. However, the site access shall remain trafficable by typical passenger vehicles during peak events and evacuation to higher ground on Frenchville Road is possible, with adequate unaffected areas available to allow access by rescue helicopter, if required. Refer Figure 2 below.

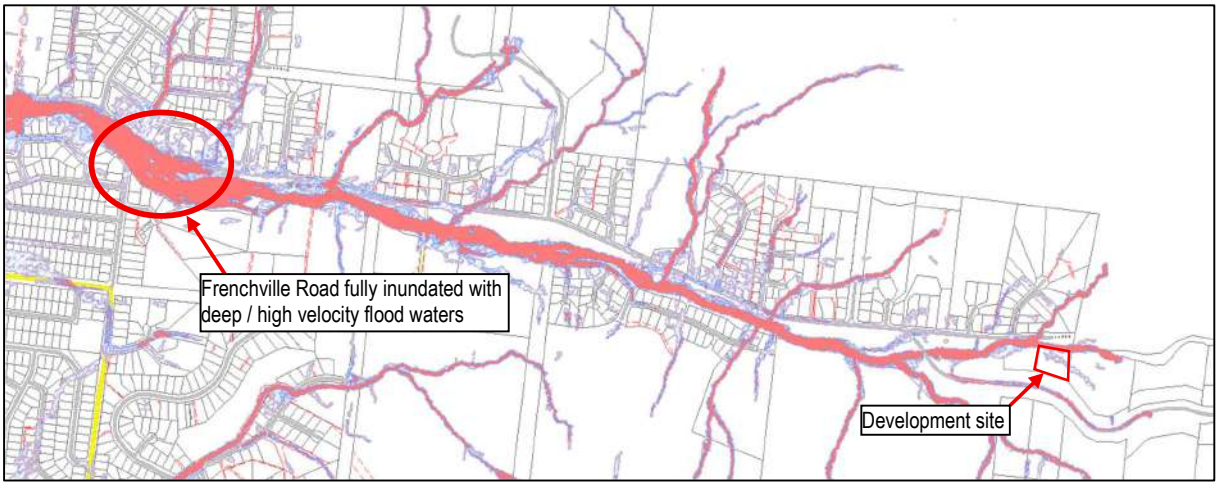


Figure 2: Frenchville Flood Extents (RRC Online Mapping Extract)

Effective Warning Times

The proposed development shall have no impact on effective warning times due to there being no alterations to flood levels or velocities.

Conclusion

The developed site is expected to receive extremely high risk flood waters (H6) during local catchment flooding events. However, the flood waters are isolated within the extents of Frenchman's Creek and minor tributaries, and do not affect the proposed dwelling location.

A bridge crossing with flood immunity up to a 1% AEP flood shall be constructed in order to facilitate safe access to the property and ensure flood waters in Frenchman's Creek are unimpeded.

With existing flow paths maintained there will be no adverse impacts to surrounding properties, evacuation times or a shortening of effective warning times and Council can confidently approve the required operation to enable the construction of the proposed dwelling.

Please do not hesitate to contact the undersigned if you have any further queries.

Regards,

Ashleigh Lucas
Cadet Engineer

Endorsed,

Tony Lau
Senior Engineer / RPEQ

Rockhampton Office
232 Bolsover St, Rockhampton
Gracemere Office
1 Ranger St, Gracemere
Mount Morgan Office
32 Hall St, Mount Morgan

22 May 2025

Your Ref: N/A
Telephone: 07 4936 8099
Email: developmentadvice@rrc.qld.gov.au

P and M O'Brien
3A Pilbeam Drive
FRENCHVILLE QLD 4701

Dear Sir/Madam

FLOOD INFORMATION REQUEST FOR 3A PILBEAM DRIVE, FRENCHVILLE QLD 4701 DESCRIBED AS LOT 3 ON RP608120

Council is in receipt of your application dated 14 May 2025 requesting flood information for 3A Pilbeam Drive, Frenchville, and more properly described as Lot 3 on RP608120.

Please find attached a Flood Search Property Report for your reference. The purpose of this report is to provide flood level information to support the application of Council's planning scheme Flood Hazard overlay code, floodplain planning provisions, and applicable flood planning levels.

Council records show that the abovementioned property parcel is identified as being at risk of flood in a 1% AEP Local Creek flooding event. Annual Exceedance Probability (AEP) is the probability of a flood event of a given magnitude being equalled or exceeded in any one year. A 1% AEP event means there is statistically a 1% (or 1 in 100) probability that an event of that magnitude will occur or be exceeded in any year.

The design flood level information contained within this report provide water surface levels for a range of typical planning and development design standards. The flood planning level for most development in the Flood Hazard overlay area is the Defined Flood Event (DFE). Council has adopted a DFE of 1% AEP as a planning standard for the management of development in Rockhampton Region. As such, for most development types - the floodplain planning provisions of Council's planning scheme apply relative to the 1% AEP defined flood event. Exceptions apply for critical infrastructure. The Defined flood event may change as Council undertakes further flood risk analysis and profiling as part of its long-term floodplain management planning for the catchment.

The flood levels contained within this flood search report have been sourced from Council's adopted flood modelling and flood study at this location and are based on the best available information at the time of completing the study. The flood levels are measured in metres Australian Height Datum (mAHD), where mean sea level is approximately zero (0) mAHD.

Council is committed to providing residents with the most up to date flood risk information. The current flood study for this catchment area has assessed flood risk for a number of flood events. Provided within this flood search report are the results for 1% AEP, 5% AEP and 10% AEP flood events.

Please note: All reasonable steps have been undertaken to ensure the information presented in this report is accurate at the time of generation. Changes to the topography and condition of the local creeks and waterways may have an impact on flooding. Over time, Council may also undertake further technical studies to maintain the understanding of flooding across the city and update the information available.

Should you have any queries regarding this information please contact Council's Development Engineering section using the contact information above.

Yours faithfully

Mohit Paudyal
Senior Development Engineer
Planning and Regulatory Services

Enc Flood Search Property Report and Flood Property Map

Rockhampton Regional Council Flood Search Property Report

Property Address:	3A Pilbeam Drive, Frenchville
Lot Details:	Lot 3 on RP608120
Date of Issue:	22 May 2025

Rockhampton Regional Council

Flood Search Property Report Overview

It is possible for one or more sources of flooding to occur, especially where a property is near a creek or waterway. These flooding sources can include riverine, creek and overland flow flooding which can each behave differently and impact how a building or development is designed. All flood hazard triggers should be considered when designing and planning with flooding in mind.

The Rockhampton Regional Council Flood Search Report is provided to support planning and development, in accordance with the current version of the Rockhampton Region Planning Scheme 2015.

This report summaries flood information for this property to inform and supplement the application of the Council's planning scheme Flood Hazard overlay code, floodplain planning provisions, and the applicable flood planning levels. The contents of this report have been derived from Council's flood studies and flood modelling and should be considered along with all other applicable planning and development requirements. Flood studies and associated modelling assist Council to better understand flooding in the Rockhampton region and implement plans to avoid and mitigate its impacts on the community.

Flood modelling of the Fitzroy River has been progressively refined over a long period of time. The flood modelling addresses riverine impacts on Rockhampton City and surrounding areas, including Alton Downs, Pink Lily, Nine Mile, Fairy Bower, Midgee and Port Curtis. Local Creek and Catchment Flood Studies provide Council with information on flood behaviour of the creeks, and how they are expected to respond during varying intensities and durations of rainfall events.

Understanding your flood risk can help you prepare for flooding at your home or business. The information provided in this report utilises information from the most up to date flood studies available to Council at the date of issue of this report. All reasonable steps have been undertaken to ensure the information presented in this report is accurate at the time of generation. Changes to the topography and condition of the local creeks and waterways may have an impact on flooding. Over time, Council may undertake further technical studies to maintain the understanding of flooding across the city and update the information available.

Copies of Council's current Flood Studies are available on Council's website at www.rrc.qld.gov.au

What is flood modelling?

Flood modelling uses sophisticated computer software to estimate how rainfall of various intensities and duration produce stormwater flows along creek and river catchments.

Flood modelling is used to estimate:

- The inundation extents of the areas that may be flooded;
- The peak depths of flood waters; and
- The hazard related to the depth of water or how quickly the water flows (velocity).

Flood modelling estimates a range of design floods based on a statistical analysis of rainfall information provided by the Bureau of Meteorology. This information is used to establish the likelihood of a rainfall or flood event.

When reading this report, please consider:

- If a property is identified as being at risk of being affected by Fitzroy River and/ or Local Creek Catchment flooding, the highest maximum flood heights should be used to establish minimum building and development levels. For large property parcels - there may be a significant difference between the minimum and maximum flood heights for a particular flood type. In these situations, you may need to seek further advice from Council regarding the flood height that is appropriate for the exact location of the proposed building or development.
- The flood maps included with this report display the flood inundation extent only. All maps generated from the Flood Studies are available on Council's website.
- The flood maps provided depict the flood inundation extents under existing climate and catchment conditions.
- If preparing a new building and/or development application, it is recommended that you confirm all flood related provisions within Council's Planning Scheme relevant to the property.

Property Details

Address:	3A Pilbeam Drive, Frenchville
Lot and plan:	Lot 3 on RP608120

Property Ground Levels:

Property ground levels can be found on the attached property flood report. The ground level data has been sourced from Aerial LiDAR survey, and as such, these levels are approximate.

Should the extent of flooding at a property need to be more accurately predicted, then individual property level information (e.g. surveyed site levels, and building floor levels) could be utilised in conjunction with Council's flood information. Council does not undertake this level of investigation or survey on behalf of property owners.

For your information:
AHD (Australian Height Datum) is the National Mapping Datum used throughout Australia. The level of 0.0m AHD is approximately mean sea level.

Elevation Data Source: The digital elevation model used in the flood modelling is generated on a regional scale and utilises ground level elevations from aerial laser surveys performed in2016. The survey data used to determine the extent and depth of potential inundation is captured and updated periodically and may not reflect inundation of land that has recently been modified, such as a new subdivision that has changed the existing landform.

Flood Information

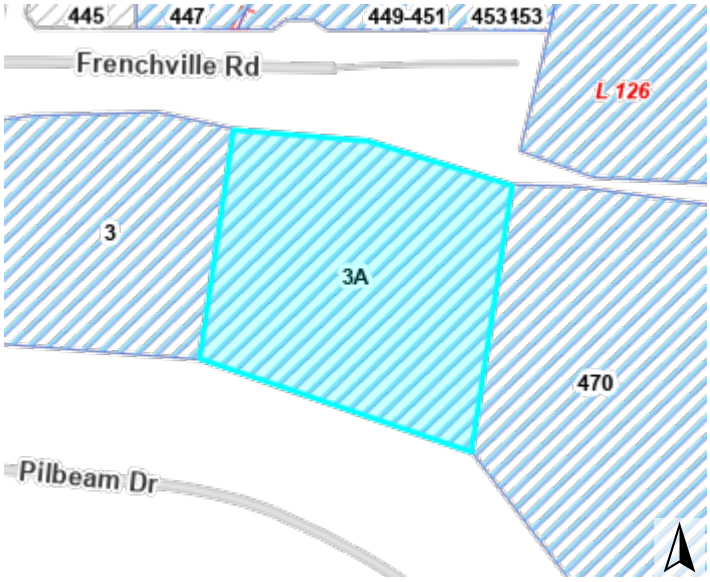
Riverine Flood: Not Affected

Creek Catchment Flood: Affected

The property is identified as being at risk of flooding from Creek Flooding. A property flood report displaying the 1% AEP (Annual Exceedance Probability) flood extent on the property is attached. Planning and development must consider risk to people and property, natural floodplain characteristics, and flood free/low flood hazard access outcomes during a creek flood event.

For your information:
AEP (Annual Exceedance Probability) is the probability of a flood event of a given size occurring or being exceeded in any one year. Information in relation to more or less likely floods and the full flood plain extent can be accessed on Council's website.

Flood Report
RP608120/3 - 3A Pilbeam Drive Frenchville QLD 4701



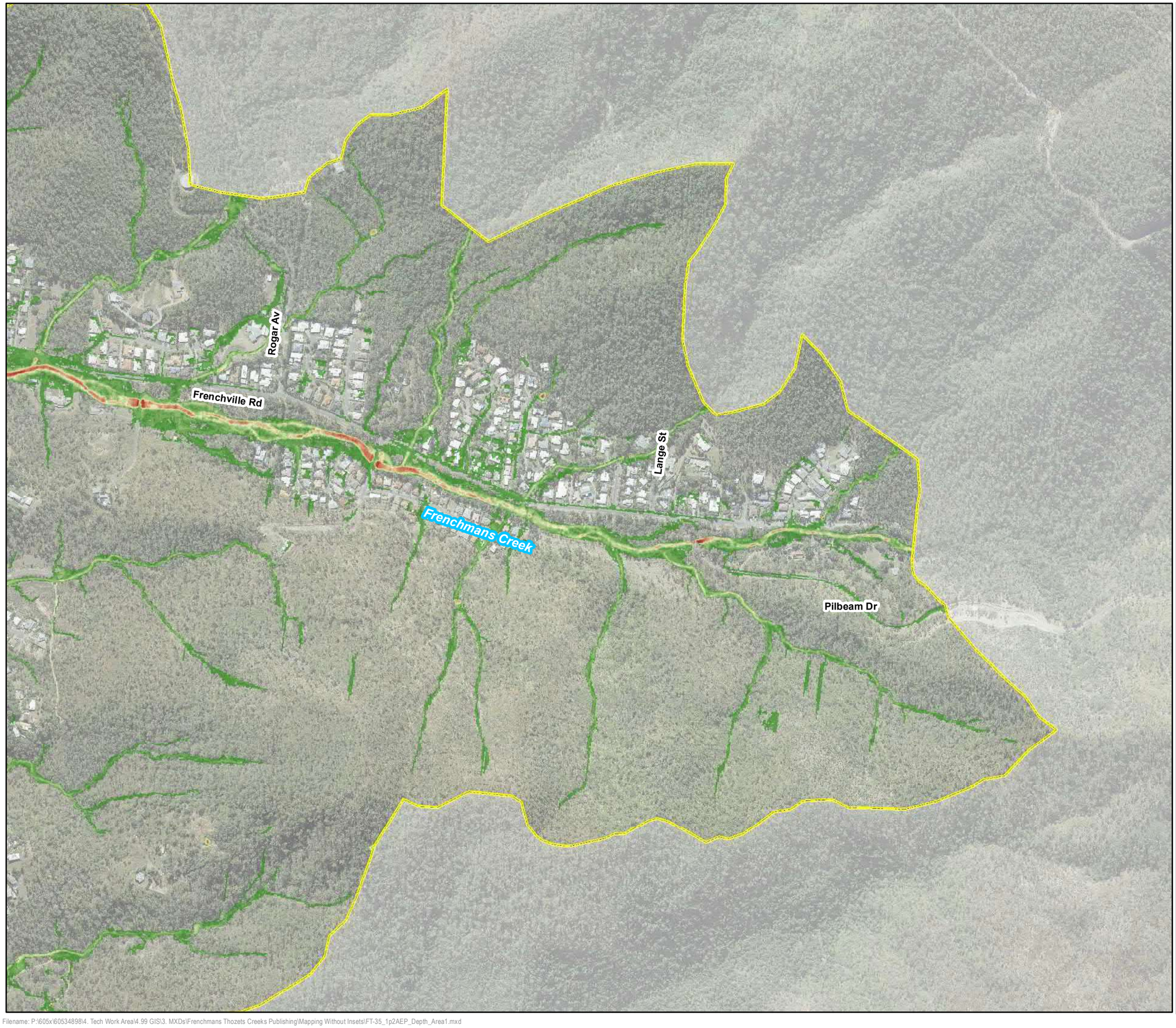
REPORT DATE **22 May 2025**

PROPERTY DETAILS			
Address	3A Pilbeam Drive Frenchville QLD 4701		
Parcel ID	RP608120/3	**Assessment**	314770
Land use	Shed/Garage etc		
Riverine catchment			
Creek Catchment	Frenchmans and Thozet Creek Catchments Flood Study 2018		
Mitigation Area	N/A		
Horizontal Datum	MGA Z56, GDA 2020		
Elevation / WSL	mAHD		
Velocity	m/sec		
Ground elevation (min)	99.52		
Ground Elevation (max)	116.11		

No additional comments for this property.

RIVERINE		
	WATER SURFACE LEVEL	VELOCITY
LEVELS	**MAX**	**MAX**
1% AEP	*N/A*	*N/A*
5% AEP	*N/A*	*N/A*
10% AEP	*N/A*	*N/A*

CREEK \ LOCAL CATCHMENT		
	WATER SURFACE LEVEL	VELOCITY
LEVELS	**MAX**	**MAX**
1% AEP	*109.16*	*6.03*
5% AEP	*103.68*	*5.46*
10% AEP	*103.48*	*4.78*



N

Rockhampton Regional Council

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 100 200 300 400

Metres

1:8,000
(when printed at A3)

AECOM
www.aecom.com

LEGEND

- Highways
- Railway Lines
- Cadastre
- Hydraulic Model Extent

Peak Flood Depth (m)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- 1.2 - 1.5
- 1.5 - 1.8
- 1.8 - 2.1
- 2.1 - 2.4
- 2.4 - 2.7
- 2.7 - 3
- > 3.0

Flood results are based on local catchment events

Data Sources:

DCDB (c) 2016 QLD Government
Imagery (c) 2016 RRC

Results Filtering:

75mm Min. Depth
100m^2 Min. Area

Frenchmans / Thozets Creek Model Baseline Peak Flood Depth Area 1

1% AEP (across multiple storm durations)

PROJECT ID	60534898
CREATED BY	maultbyj
LAST MODIFIED	25/07/2017
VERSION:	1

Map FT-35

Filename: P:\605x\60534898\4. Tech Work Area\4.99 GIS\3. MXDs\Frenchmans Thozets Creeks Publishing\Mapping Without Insets\FT-35_1p2AEP_Depth_Area1.mxd

4 Indexing to flood hazard vulnerability curves

Once the flood hazard has been quantified and the timing aspects of flood hazard understood, the potential of the flood flows to cause damage or danger can be indexed against vulnerability curves linked to meaningful hazard thresholds.

The vulnerability of the community and its assets can be described by using thresholds related to the stability of people as they walk or drive through flood waters, or shelter in a building during a flood. The vulnerability to hazard will also be influenced by whether the primary consideration is, for example, strategic land-use planning, which is aimed at ensuring land use is compatible with the flood risk, or assessing development proposals or emergency management planning, which is aimed at addressing residual flood risks.

4.1 General flood hazard classification

A flood hazard assessment conducted as part of a flood study often provides baseline information for general consideration as part of an initial scoping exercise for a floodplain management study. In such a preliminary assessment of risks or as part of a constraints analysis for strategic land-use planning, a combined set of hazard vulnerability curves such as those presented in Figure 6 can be used as a general classification of flood hazard on a floodplain. Further information on the source of the hazard vulnerability curves presented in Figure 6 is available in Smith et al. (2014).

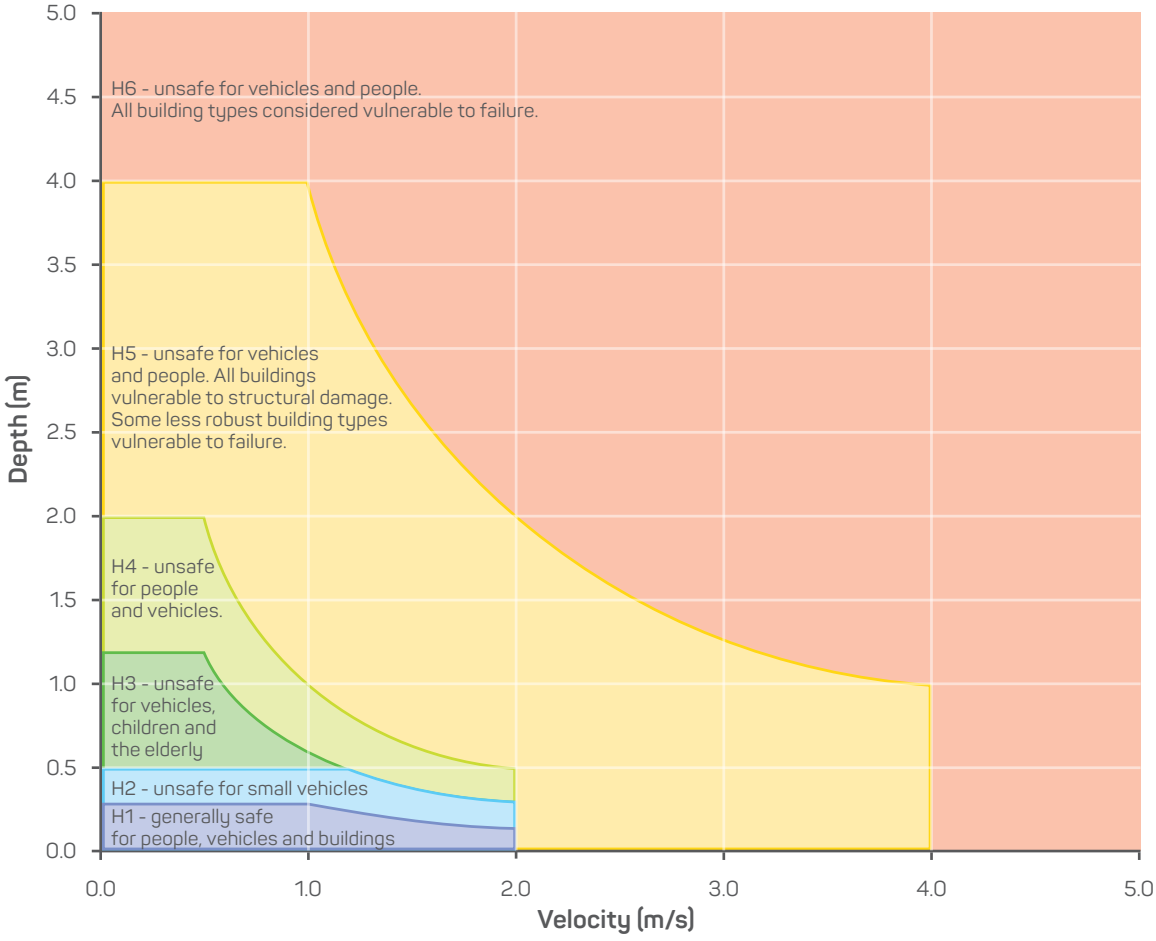


Figure 6: General flood hazard vulnerability curves

The combined flood hazard curves presented in Figure 6 set hazard thresholds that relate to the vulnerability of the community when interacting with floodwaters. The combined curves are divided into hazard classifications that relate to specific vulnerability thresholds as described in Table 1. Table 2 provides the limits for the classifications provided in Table 1.

A flood hazard map classified against these general vulnerability thresholds based on the flood behaviour derived using flow modelling for the example floodplain presented in Figure 3 is shown in Figure 7. Additional examples are provided in the appendix.

Table 1: Combined hazard curves – vulnerability thresholds

Hazard Vulnerability Classification	Description
H1	Generally safe for vehicles, people and buildings.
H2	Unsafe for small vehicles.
H3	Unsafe for vehicles, children and the elderly.
H4	Unsafe for vehicles and people.
H5	Unsafe for vehicles and people. All building types vulnerable to structural damage. Some less robust building types vulnerable to failure.
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure.

Table 2: Combined hazard curves – vulnerability thresholds classification limits

Hazard Vulnerability Classification	Classification limit (D and V in combination) m^2/s	Limiting still water depth (D) m	Limiting velocity (V) m/s
H1	$D^*V \leq 0.3$	0.3	2.0
H2	$D^*V \leq 0.6$	0.5	2.0
H3	$D^*V \leq 0.6$	1.2	2.0
H4	$D^*V \leq 1.0$	2.0	2.0
H5	$D^*V \leq 4.0$	4.0	4.0
H6	$D^*V > 4.0$	-	-

CQ SOIL TESTING

AS2870 Site Classification

SITE ADDRESS: Lot 3 (RP608120)
3 Pilbeam Drive, Frenchville

Prepared for: M O'Brien

Job Number: CQ25076

Issue Date: 4/04/2024

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/173-2024
Dated: 16 October 2025

CQ SOIL TESTING technical excellence

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Client & Document Information

Client:	M O'Brien
Project:	Lot 3 (RP608120)
	3 Pilbeam Drive, Frenchville
Investigation Type:	**Site Classification**
Job Number:	CQ25076
Date of Issue:	4/04/2024

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Document Control

Version	Date	Author	Design Drawings	Reviewer	Reviewer Initials
A	4/04/2024	J Rider	NA	Scott Walton	SWW

QBCC Subsidence Policy

In accordance with the QBCC "Queensland Building and Construction Commission" the contractor must supply the site classifier with the information in Table 1. The contractor, or the contractor representative (CR), may require the site classifier (SC) gather all or part of this information and the SC must satisfy themselves that all of the "relevant" information has been considered.

If all of the information listed below is not supplied by the contractor or the contractor does not wish the SC to recover said information (at cost) the contractor may be in breach of the no fault provisions of the QBCC's Policy for Rectification of Building Work and may be held responsible for subsidence or settlement of a building.

Table 1

Element	Supplied/ Considered	Remarks
Property description and site address	✓	Supplied by CR
Plan and/or survey	✓	Supplied by CR
Contour of the site	✗	Nil Supplied
Location of trees, vegetation etc identified	✓	Considered by SC
Location and identification of potential overland flow	✓	Considered by SC
The footprint of proposed building and platform levels	✓	Supplied by CR
Location of proposed or existing cut and fill	✗	Nil Supplied
Appropriate land searches	✗	Nil Supplied

The following (Table 2) is a summary of the information required under the QBCC relating specifically to the SC. Information supplied in this summary is to be read in conjunction with the entire report attached. All relevant data used to ascertain the classification is documented in the report.

Table 2

Element	Remarks
Total number of excavations	2
Minimum of two excavations in building footprint	✓
Soil samples recovered	Undisturbed
Laboratory test performed	Shrink/Swell
Predicted Surface Movement	NA
Expected movement potential for "P" sites in the absence of uncontrolled fill	41 - 50 mm

1.0 Introduction

The purpose of this report is to classify the subject allotment in accordance with Australian Standard 2870 Residential Slabs and Footings". From this classification a footing system can be recommended by an experienced/qualified engineer (designer) to suit the proposed structure. This design shall provide adequate performance of the footings under the soil conditions determined at the site.

This site investigation has been carried out by an experienced/qualified soils technician and in accordance with *AS 2870.* CQ Soil Testing is licensed with Building Services Australia to "Classify Sites".

This report relates exclusively to the proposed new dwelling at the address stated on page one of this report and has been prepared for the express purpose stated above. This document does not cover any other elements related to construction on the site.

2.0 Site Description

The subject site is a rural residential allotment which fronts a sealed road.

The construction site is sparsely grassed and there is evidence of trees having been recently removed from within the proposed dwelling footprint (see attached photographs). The proposed construction site is essentially level and is considered to have poor drainage. Surface water will drain toward the northwest. Surface water from the adjoining allotments may traverse the site. A site sketch is attached to this report.

There is evidence of fill having been placed onto the proposed construction site.

3.0 Soil Profile

Boreholes carried out at the site (refer attached site sketch for approximate localities) indicate a soil profile of up to **1.2 m of UNCONTROLLED FILL** which is underlain by clayey soil (see detailed logs attached). Tungsten carbide drill bit refusal was not encountered. Laboratory testing was carried out on typical soil sample/s to assess the potential of the underlying soils to exhibit shrink/swell characteristics and any underlying moisture conditions. Details of the laboratory test results are contained in Section 4.

- Groundwater was not encountered during the site investigation.
- Weathered rock was not encountered during the site investigation.

It is possible that the soil profile may vary across the site from those shown in the bore logs which were used for this site classification. CQ Soil Testing are required to be notified if different conditions are encountered during construction. No allowance has been made for any substantial earthworks on the site or importing building platform material. ***The classification provided is based on the borehole, which has the highest characteristic surface movement.***

4.0 SITE CLASSIFICATION

Based on the findings of the site investigation and subsequent laboratory testing, the predicted surface movement for this site in the absence of fill would be 41 – 50 mm which would give a classification of 'H1'. However, due to the presence of uncontrolled fill, it shall be classified as:

CLASS "P"
(Uncontrolled Fill)

in accordance with Australian Standard 2870, Residential Slabs and Footings. Class P sites require that a footing system be carried out/designed by a qualified engineer using engineering principles and considering the recommendations stated in section C4 of the aforementioned standard.

Any fill placed over the existing ground shall be piered through into the existing suitable material. Further note that the placement of reactive material as fill or cutting of the site may change the site's classification.

Where trees exist/ed CQ Soil Testing recommends an experienced arborist be commissioned to quantify the existing size, location, predicted maximum height and type of all relevant trees to aid in the design process. It is the responsibility of the designing engineer to apply the principals of AS2870-2011 Appendix H "Guide to Design of Footings for Trees". The classification herein excludes the effect of trees on the site.

It is noteworthy that soil samples recovered from this site may be tested further to aid in the preparation of a database of Central Queensland soils currently being compiled by CQ Soil Testing. The aim of this database is to further understand the types of soils in the region and their mechanical properties.

If you should have any queries regarding this report, please do not hesitate to contact the undersigned at your convenience.

Yours faithfully

SCOTT WALTON
Laboratory Manager

Site/Soil Characteristics and Classification

A. Classification by characteristic surface movement as per AS2870-2011

Site Classification Symbols	Y's Range Value	Generalised Description (Guide Only)
'S'	0 – 20 mm	Slightly reactive clay sites which may experience only slight ground movement due to moisture changes
'M'	21 – 40 mm	Moderately reactive clay or silt sites which may experience moderate ground movement due to moisture changes
'H1'	41 – 60 mm	Highly reactive clay sites which may experience high ground movement due to moisture changes
'H2'	61 – 75 mm	Highly reactive clay sites which may experience very high ground movement due to moisture changes
'E'	>75 mm	Extremely reactive clay sites which may experience extreme ground movement due to moisture changes
'P'	N/A	Problem sites which generally have soils associated with uncontrolled fill, abnormal moisture conditions (trees), soft or collapsing soils, landslip etc...

B. Laboratory Test Results

Borehole Location	2	**Borehole Location**		**Borehole Location**	
Depth Range of Sample (m)	0.3–0.6	Depth Range of Sample (m)		Depth Range of Sample (m)	
Natural MC %	23	Natural MC %		Natural MC %	
% Passing 75 um Sieve	ND	% Passing 75 um Sieve		% Passing 75 um Sieve	
Liquid Limit %	ND	Liquid Limit %		Liquid Limit %	
Plastic Index %	ND	Plastic Index %		Plastic Index %	
Linear Shrinkage %	ND	Linear Shrinkage %		Linear Shrinkage %	
Shrink Swell Index	3.4	Shrink Swell Index		Shrink Swell Index	
Pocket Penetrometer kPa	ND	Pocket Penetrometer kPa		Pocket Penetrometer kPa	

C. Permeability Test Results AS1547-2012

Test Hole Number	Depth Of Test Hole	Range Tested	Permeability M/Day
NA	500 mm	250 – 500 mm	NA

Soil Logs

BOREHOLE 1		
Depth (m)	**Visual Class'n Symbol**	**Visual Description of Material**
0.0 1.2	CH	**Fill** CLAY, high plasticity, with fine to coarse grained sand & gravel, dark brown/yellowish brown/reddish brown mix, M, S – ST w/depth.
1.2 2.0	CH	**Natural** CLAY, high plasticity, with fine to coarse grained sand, trace fine to coarse grained gravel, yellowish brown, M, ST – VST w/depth.
Borehole terminated at 2.0 m		

MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY
D – Dry	VS – Very Soft	VL – Very Loose
M – Moist	S – Soft	L – Loose
W – Wet	F – Firm	MD – Med Dense
	ST – Stiff	D – Dense
	V/ST – Very Stiff	VD – Very Dense
	H – Hard	

Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997)

DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.

DCP TEST RESULTS		
Depth (mm)	**Blows per 100 mm**	**Indicative kPa**
100	2	70
200	2	70
300	1	35
400	2	70
500	2	70
600	3	100
700	3	100
800	4	120
900	3	100
1000	4	120
1100	3	100
1200	2	70
1300	4	120
1400	4	120
1500	5	160
1600	4	120
1700	5	160
1800	6	180
1900	7	200
2000	8	200
2100		
2200		
2300		
2400		
2500		
2600		
2700		
2800		
2900		
3000		
3100		
3200		
3300		
3400		
3500		
3600		
3700		
3800		
3900		
4000		

Soil Logs

BOREHOLE 2		
Depth (m)	**Visual Class'n Symbol**	**Visual Description of Material**
0.0 1.0	CH	Sandy CLAY, high plasticity, fine to coarse grained, light brown, D, VST.
1.0 2.0	CI	Sandy CLAY, medium plasticity, fine to coarse grained, light brown, D, VST.
Borehole terminated at 2.0 m		

MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY
D – Dry	VS – Very Soft	VL – Very Loose
M – Moist	S – Soft	L – Loose
W – Wet	F – Firm	MD – Med Dense
	ST – Stiff	D – Dense
	V/ST – Very Stiff	VD – Very Dense
	H – Hard	

Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997)

DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.

DCP TEST RESULTS		
Depth (mm)	**Blows per 100 mm**	**Indicative kPa**
100	5	160
200	4	120
300	5	160
400	5	160
500	6	180
600	6	180
700	7	200
800	6	180
900	7	200
1000	8	200
1100	8	200
1200	>15	>300
1300		
1400		
1500		
1600		
1700		
1800		
1900		
2000		
2100		
2200		
2300		
2400		
2500		
2600		
2700		
2800		
2900		
3000		
3100		
3200		
3300		
3400		
3500		
3600		
3700		
3800		
3900		
4000		

Photographs

Image 1 – Proposed construction site

Image 2 – Proposed construction site

Site Plan

- Not to scale
- All measurements are to be used as a guide only

Limitations

1. Recommendations given in this report are based on the information supplied by the client regarding the proposed building construction in conjunction with the findings of the investigation. Any change in construction type, building location or omission in the client supplied information, may require additional testing and/or make the recommendations invalid.

2. The recommendations herein may identify a target soil stratum into which the footings should be founded. The target stratum has been located by the depth in mm of the target stratum's upper horizon boundary below the existing ground surface level at the time of the site investigation. Any cutting or filling works and any surface erosion or deposits subsequent to the site investigation, will alter the measured location of the stratum relative to the surface. Where required, the author should be notified in such cases to confirm the location of the target stratum.

3. The description of the soil given in Section 3.0 of this report is intended as a brief overview of the soil's primary constituents. For a detailed classification of the soil, the reader should refer to the Soil Profile Reports and/or Borehole Reports.

4. Every reasonable effort has been made to locate the test sites so that the borehole profiles are representative of the soil conditions within the area investigated. The client should be made aware however, that exploration is limited by time available and economic restraints. In some cases soil conditions can change dramatically over short distances, therefore, even careful exploration programs may not locate all the variations.

5. If soil conditions different from those shown in this report are encountered or are inferred from other sources, then the author must be notified immediately.

6. This report may not be reproduced except in full, and only then with the permission of the entity trading as CQ Soil Testing. The information and site sketch shall only be used and will only be applicable for the development shown on the client-supplied information provided for this site.

7. All information contained within this report is the intellectual property of the entity trading as CQ Soil Testing. All information contained with can only be used for the express purposes of the commissioned scope of works.

8. Any dimensions, contours, slope directions and magnitudes shown on the site sketch plan shall not be used for any building construction or costing calculations. The purpose of the plan is to show approximate location of field tests only.

9. Any changes made to these recommendations by persons unauthorized by the author will legally be interpreted at that person assuming the responsibility for the long-term performance of the footing system.

10. The recommendations contained in this report have not taken into consideration the long term effects of any previous, current or potential subsurface work by mining companies or potential slope instability problems. At the time of writing this report neither our client (nor his agent) nor the local authority had made the author aware that these problems may be affecting this allotment. If a mining subsidence or slope stability assessment is required for this allotment, the recommendations of a suitably qualified geotechnical engineer should be sought.

11. Removal of trees from a site before an investigation can cause significant swelling of the soil over large areas. The removal of large trees from a construction site during development is rarely picked up during the investigation phase and is generally outside the scope of AS2870. Sites affected by large trees are often classified "P". If, during the footing excavation, it is noticed that there are soils with varying moisture contents or evidence of large trees having been removed CQ Soil Testing should be notified immediately.

12. The following documents are available from the CSIRO and QBCC and shall be read and adhered to in relation to this site:

    - Builder's Guide to Preventing Damage to Dwellings- Part 1 Site Investigation and Preparation http://www.publish.csiro.au/nid/22/pid/3621.htm
    - Builder's Guide to Preventing Damage to Dwellings- Part 2 Sound Construction Methods http://www.publish.csiro.au/nid/22/pid/3661.htm
    - QBCC Subsidence Fact Sheet https://www.qbcc.qld.gov.au/sites/default/files/Homeowner%27s%20Guide%20to%20Subsidence.pdf

CQ SOIL TESTING

AS1547 Wastewater Design

SITE ADDRESS: Lot 3 (RP608120)
3 Pilbeam Drive, Frenchville

Prepared for: M O'Brien

Job Number: CQ26219

Issue Date: 29/08/2024

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/173-2024
Dated: 16 October 2025

Certified System OHS ISO 45001 SAI GLOBAL
Certified System Environment ISO 14001 SAI GLOBAL
Certified System Quality ISO 9001 SAI GLOBAL

SUMMARY OF RECOMMENDATIONS

Treatment
Aerated Water Treatment System (AWTS)
(Capable of producing advanced secondary quality effluent)

Disposal Mechanism
Two (2) Evapotranspiration/Absorption Beds
2.5 metres x 16.4 metres – Total Area 82 sqm

CQ SOIL TESTING technical excellence

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Client & Document Information

Client:	M O'Brien
Project:	Lot 3 (RP608120)
	3 Pilbeam Drive, Frenchville
Investigation Type:	**Wastewater Investigation**
Job Number:	CQ26219
Date of Issue:	29/08/2024

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Document Control

Version	Concept By	Design Drawings	Design Review	Issue Approved By	Date
A	James Rider	P Munro	Scott Walton	Scott Walton	29/08/2024

1. INTRODUCTION

The purpose of this report is to evaluate and define a suitable on-site sewerage treatment and disposal system for household effluents in accordance with Australian Standard 1547 "On-site domestic-wastewater management". The Queensland Plumbing and Wastewater Code has been used for reference purposes during the compiling of this report.

The field investigation was carried out on the 27th August, 2024. This report relates exclusively to the proposed dwelling at the site identified on Page 1 of this report. This document has been prepared for the express purpose stated above. This document does not cover any other elements related to construction on the site.

2. SITE DESCRIPTION AND SUPPLIED INFORMATION

2.1 Allotment and Effluent Disposal Site

- ***The landholder was interviewed. All information included in this report relating to the dwelling size, water source, fixtures etc have been provided by the landholder or the landholders representative.***

- ***The landholder shall read and understand all aspects of this design. CQ Soil Testing may carry out amendments to this design if requested, additional fees shall apply.***

- ***The landholder is to liaise with neighbouring properties regarding the presence of discrete/unregistered bores that may exist/be proposed on adjacent allotments prior to system installation.***

- The site is a rural residential type allotment located on Pilbeam Drive, (a sealed road).
- The slope configuration in relation to surface drainage is linear planar.
- The proposed effluent disposal area falls toward the northwest and is considered be well drained.
- The soil surface condition was dry at the time of testing.
- There was no evidence of cracking of the surface during the investigation.
- There were visible boulders on the surface of the allotment.
- There were rock outcrops evident.
- There was no watercourse, bore, well, or dam evident within 10 m of the proposed disposal area at the time of this investigation.
- The proposed effluent disposal area is exposed to sun and wind.
- The proposed disposal site is an existing grassed area.
- Surface water will drain toward the southwest.
- Surface water drainage from adjoining allotments may traverse this site.
- The weather conditions prior to testing were periods of moist conditions.
- The site is not a known flood area.

2.1 Dwelling and Fixtures

- The dwelling type is single storey - 3 bedrooms.
  (5 equivalent persons – AS 1547:2012 Appendix J)
- The water source is reticulated supply.
  (150 litre/person/day – AS 1547:2012 Appendix H)
- Standard water reducing fixtures ***are to be*** used throughout the dwelling.
- A spa bath ***is not*** proposed to be installed.
- A food waste disposal unit ***is not*** proposed to be installed.

3. SOIL PROFILE

The borelogs carried out at the site (refer attached Site Plan for localities) indicate that the soil profile typically consists of clayey soil. Soil logs are detailed in this report.

Groundwater was not encountered during the field investigation.
Weathered rock was not encountered during the field investigation.

Table 1 - Determination of Soil Category

Soil Category BH1	Soil Texture	Structure	Indicative Permeability	Indicative Drainage Class
5 (00-200 mm)	Light Clay	Moderately Structured	0.06 – 0.12 m/day	Poorly Drained
6 (200-1500mm)	Medium Clay	Moderately Structured	<0.06 m/day	Very Poorly Drained

Table 2 – Permeability test results and conclusions

Test No.	Soil Permeability	Test hole depth	Recommended Design Loading Rate
PT 1	<0.06	500 mm	
Average	**<0.06**		**5 (mm/day)**

Permeability testing aids in the design of an "On-site domestic–wastewater management system". CQ Soil Testing carries out a permeability testing in accordance with Appendix 4.1F of the Australian Standard 1547.

Whilst every effort has been made to ensure that the borelogs carried out at the subject allotment are indicative of the soil profile over the site any discrepancy between the profile detailed in the borelogs and that observed during construction shall be referred to CQ Soil Testing for immediate attention.

4. INVESTIGATION DETAILS

The investigation carried out at the site included machine augured boreholes up to 1500 mm depth and a series of permeability test pits. These test pits are located in the proposed effluent disposal area as shown on the attached design drawings. The Queensland Plumbing and Wastewater Code and AS 1547 suggests that the use of a primary-treated effluent disposal system will be satisfactory provided:

- Sufficient permeable surface soil overlying rock is present over the disposal area, not less than 1.2 metres depth.
- A suitable soil category material (as per AS 1547) and minimum required depth is encountered.
- A minimum set-back distance of 50m is obtained.
- Acceptable permeability rates are obtained.

All the above requirements have not been met, therefore it is concluded that the use of a primary-treated effluent septic system is not acceptable.

5. FINDINGS AND RECOMMENDATIONS

- All work must be carried out by a licensed plumber or drainer.
- All pipework shall be installed in accordance with AS3500.2.2, National Plumbing and Drainage, Part 2.2, Sanitary Plumbing and Drainage.
- The Design Loading Rate of 5 mm/day has been adopted.
- A 100% reserve effluent disposal area can be obtained on this allotment and shall be kept clear of development for possible future expansion.

5.1. Treatment

- The site shall be provided with a ***"Wastewater-Treatment System" capable of producing advanced secondary quality effluent***, or an equivalent system, to Council's approval in lieu of a septic tank.
- A filter is to be installed between the Treatment Plant and the Irrigation System. Regular maintenance of the Filter shall be undertaken, according to manufacturer's recommendations.

5.2. Disposal

- For the purpose of calculating evaporation, the long term average monthly pan evaporation and rainfall figures from the Bureau of Meteorology weather station at Rockhampton have been adopted. Water Balance and design calculations are appended.
- All wastewater shall be disposed of by Evapotranspiration/Absorption.
- The land application facility shall be by evapotranspiration-absorption with a total minimum area of **82 sqm**.
- A diversion mound shall be constructed above/around the disposal area to divert overland water flows.
- Effluent shall be distributed evenly throughout the beds via the use of a distribution chamber or equivalent system.
- The beds shall be 2.5 m in width and 16.4 m in length. Two (2) are required.
- The beds shall be installed level and across the natural contour of the land.
- The finished surface shall shed water.
- Detailed design drawings are attached to this report.
- The disposal area has been calculated on a daily all-waste flow rate of 750 litres/day, (3 bedroom/5 people each using 150 litres per day) and a design load rate of 5 mm/day. This flow rate will accommodate all-waste flows from the proposed dwelling using Standard Water-Reducing Devices, which include using a dual flush 6/3 litre water closet (maximum), shower flow restrictors, aerated faucets and a water conserving washing machine.
- The disposal area should be located in the vicinity of BH1, BH2 & BH3 and as per attached site plan.
- All set-back distances as required by the local authority shall be met.
- Stormwater run-off including roofwater from buildings shall be diverted around and away from the disposal area. Imported fill may be required should there be insufficient soil available for the design of the disposal system.

For Category 5 and 6 type soils the base of the proposed system shall be scarified and conditioned by adding gypsum at a rate of not less than 1kg/1sqm.

5.3. Setback Distances

Table 3 - Setback distances for subsurface land application area for greywater treatment plant or an on-site sewage treatment plant (QLD Plumbing & Wastewater Code Version 1:2019)

Feature	Horizontal separation distance ①		
	Up slope	Down slope	Level
Property boundaries, pedestrian paths, walkways, recreation areas, retaining wall, and footings for buildings and other structures.	2	4	2
Inground swimming pools	6	6	6
Inground potable water *tank* not exposed to primary effluent	6	6	6
Inground potable water *tank* exposed to primary effluent	15	15	15

① Distances are given in metres and are measured from the edge of trench/bed excavation or subsurface irrigation distribution pipework to the nearest point of the feature

Table 4- Setback distances for on-site sewage facilities and greywater use facilities – Protection of surface water and groundwater (QLD Plumbing & Wastewater Code Version 1:2019)

Feature	Separation distance ①		
For onsite – see Table 2.1 in AS 1546.3	**Advanced Secondary**	**Secondary**	**Primary**
For *greywater* – see Table 2.1 in AS 1546.4	**Level 1 and Level 2**	**Level 3**	**Untreated**
Top of bank of permanent water course	10	30	50
Top of bank of intermittent water course			
Top of bank of a lake, bay, or estuary			
Open stormwater drainage channel or drain			
Bore or a dam			
Unsaturated soil depth to a permanent water table (vertically)	0.3	0.6	1.2

① Distances are given in metres and are measured from the edge of the irrigated wetted area to any point of the feature
② Note: Primary effluent typically has a (BOD^5) (Biochemical Oxygen Demand) of between 120 – 240 mg/L and Total Suspended Solids of between 65 – 180 mg/L.

5.4. Vegetation and signage

- Water tolerant vegetation shall be planted to maximize evapotranspiration and shall be carefully chosen. See vegetation specified in AS 1547:2012 "Disposal Systems for Effluent from Domestic Premises (Appendix C)". CQ Soil Testing recommends consultation with local nurseries for selection/density of plantings.
- At least two signs stating "Recycled water – Do Not Drink" are to be erected on boundaries.
- The presence of buried pipes shall:

  (a) Be indicated e.g. using underground marking tape to AS/NZS 2648.1; OR
  (b) Be indicated by signage. Signs shall be prominently displayed with the words:

  "Sewage effluent pipework installed below. DO NOT DIG."

5.5. Greywater

Surface irrigation of greywater directly (without treatment) from the dwelling's washing machine is permissible. CQ Soil Testing recommends the surface irrigation of greywater. The washing machine shall be connected to a flexible hose with the hose distributing greywater to the landholder's garden/lawn. Provide an air admittance valve and suspend drainage (per AS/NZS 3500) to a rigid, fixed position external to building and reduce to a flexible hose fitting (minimum diam. 32 mm). Greywater should be used with care and used responsibly - Avoid:

- *Ponding of water.*
- *Run-off to neighbouring properties.*
- *Causing an odour.*

When using greywater:

- Choose laundry detergents with low phosphorus, sodium and nitrogen content.
- Take care not to keep watering the same spot - it can affect soil and can cause plants to die.
- Be careful when using on native plants and do not use on edible parts of vegetables or fruits.
- Make sure it does not enter swimming pools or flow into neighbouring properties.
- Avoid ponding, bad smells or damage to plants by restricting use or moving the outlet.
- Keep away from children's play areas and the footings of buildings.

6. CERTIFICATION

The local authority may request that an inspection and certification is to be undertaken on the installation of the system when nearing completion. CQ Testing is qualified to undertake this task and issue the appropriate Form 8 **(additional fees apply)**. If certification is required, the installer must:

- Contact CQ Soil Testing prior to "burying" the system to arrange an inspection.
- Must photograph the entire installation process and supply to CQ Soil Testing.
- Supply to CQ Soil Testing a Form 8 signed by the licensed installer.

Yours faithfully

SCOTT WALTON
Laboratory Manager

Soil Logs

BOREHOLE 1		
Depth (m)	**Visual Class'n Symbol**	**Visual Description of Material**
0.0 0.2	CI	Sandy CLAY, medium plasticity, fine to coarse grained, dark brown, M, ST. ***CAT 5 Light Clay – moderately structured***
0.2 1.5	CH	CLAY, high plasticity, with fine to coarse grained sand, brown, D, ST-VST w/depth. ***CAT 6 Medium Clay – moderately structured***

Borehole terminated at 1.5 m

MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY
D – Dry	VS – Very Soft	VL – Very Loose
M – Moist	S – Soft	L – Loose
W – Wet	F – Firm	MD – Med Dense
	ST – Stiff	D – Dense
	V/ST – Very Stiff	VD – Very Dense
	H – Hard	

Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997)

DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.

Soil Logs

BOREHOLE 2

Depth (m)	Visual Class'n Symbol	Visual Description of Material
0.0 0.2	CI	Sandy CLAY, medium plasticity, fine to coarse grained, dark brown, M, ST. ***CAT 5 Light Clay – moderately structured***
0.2 1.2	CH	CLAY, high plasticity, with fine to coarse grained sand, brown, D, ST-VST w/depth. ***CAT 6 Medium Clay – moderately structured***

Tungsten carbide bit refusal on gravel at 1.2 m

MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY
D – Dry	VS – Very Soft	VL – Very Loose
M – Moist	S – Soft	L – Loose
W – Wet	F – Firm	MD – Med Dense
	ST – Stiff	D – Dense
	V/ST – Very Stiff	VD – Very Dense
	H – Hard	

Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997)

DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.

Soil Logs

BOREHOLE 3

Depth (m)	Visual Class'n Symbol	Visual Description of Material
0.0 0.2	CI	Sandy CLAY, medium plasticity, fine to coarse grained, dark brown, M, ST. ***CAT 5 Light Clay – moderately structured***
0.2 1.4	CH	CLAY, high plasticity, with fine to coarse grained sand, brown, D, ST-VST w/depth. ***CAT 6 Medium Clay – moderately structured***

Tungsten carbide bit refusal on gravel at 1.4 m

MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY
D – Dry	VS – Very Soft	VL – Very Loose
M – Moist	S – Soft	L – Loose
W – Wet	F – Firm	MD – Med Dense
	ST – Stiff	D – Dense
	V/ST – Very Stiff	VD – Very Dense
	H – Hard	

Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997)

DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.

Photographs

Image 1 Proposed disposal area

Image 2 Proposed disposal area

APPENDIX 1 - NOTES

1. Recommendations given in this report are based on the information supplied by the client regarding the proposed building construction in conjunction with the findings of the investigation. Any change in construction type, building location or omission in the client supplied information, may require additional testing and/or make the recommendations invalid.
2. Every reasonable effort has been made to locate the test sites so that the borehole profiles are representative of the soil conditions within the area investigated. The client should be made aware however, that exploration is limited by time available and economic restraints. In some cases, soil conditions can change dramatically over short distances, therefore, even careful exploration programs may not locate all the variations.
3. If soil conditions different from those shown in this report are encountered or are inferred from other sources, then the author must be notified immediately.
4. This report may not be reproduced except in full, and only then with the permission of the entity trading as CQ Soil Testing. The information and site sketch shall only be used and will only be applicable for the development shown on the client-supplied information provided for this site.
5. All information contained within this report is the intellectual property of the entity trading as CQ Soil testing. All information contained with can only be used for the express purposes of the commissioned scope of works.
6. Any dimensions, contours, slope directions and magnitudes shown on the site sketch plan shall not be used for any building construction or costing calculations. The purpose of the plan is to show approximate location of field tests only.
7. Any changes made to these recommendations by persons unauthorized by the author will legally be interpreted at that person assuming the responsibility for the long-term performance of the system.
8. The following documents are available from various sources and shall be read and adhered to in relation to this site:

   AS/NZS 1547:2012 - On-site domestic wastewater management
   https://www.standards.org.au/standards-catalogue/sa-snz/waterandwasteservices/ws-013
   AS/NZS 1546.1 - On-site domestic wastewater treatment units - Septic tanks
   http://www.standards.com.au/
   AS/NZS 1546.2 - On-site domestic wastewater treatment units - Waterless composting toilets
   http://www.standards.com.au/
   AS/NZS 1546.3 - On-site domestic wastewater treatment units -Aerated wastewater treatment systems
   http://www.standards.com.au/
   Queensland Plumbing and Wastewater Code
   https://www.hpw.qld.gov.au/__data/assets/pdf_file/0019/3943/queenslandplumbingandwastewatercode_26march2019.pdf
   Standard Sewerage Law
   http://www.legislation.qld.gov.au/LEGISLTN/SLS/1998/98SL099.pdf

Periodically during the course of your trench, ETA bed or irrigation areas life span it will most likely require maintenance such as deep scarification to promote the uptake, and transmission of effluent. This can also be achieved via deeper drilling, rotary hoe or excavator tines.

The Land Application Area designed by CQ Soil Testing is in accordance with the relevant Australian Standards to provide the most economical solution. Generally, this initial installation will be sufficient to successfully handle the load from the dwelling and/or building. Occasionally, however, all of the effluent is not absorbed or transpired due to reasons such as:

- diversion drains are not effective and stormwater enters the Land Application area.
- plants used for the aid of transpiration have not reached maturity resulting in less than optimum transpiration.
- water conservation is not being practiced within the household or building.
- soils can vary significantly over short distances resulting in significant variations in absorption characteristics.

APPENDIX 2 - WASTEWATER TREATMENT SYSTEM "DO'S AND DON'TS"

DO'S

- Do use cleaning and laundry products labeled "septic safe" only.
- Do ensure you have the treatment system serviced regularly as specified by the manufacturer. Your local shire council requires that your system is serviced by an approved service person.
- Do make sure treated water from your system stays on your property, don't allow it to run-off into the street or onto your neighbours property.

DON'TS

- Don't use fine droplet or mist sprays on your irrigation line, the fine spray can be carried a long way by the wind.
- Don't allow surface water to flood the tank system or wastewater disposal area.
- Don't use bleaches, strong disinfectants, or large amounts of natural antibacterial's such as eucalyptus oil. Your treatment system relies on beneficial bacteria to treat the wastewater. Bleaches and other strong disinfectants can kill off these helpful bacteria, seriously reducing the system's effectiveness.
- Don't put cooking fat or oils down the sink.
- Don't wash paint brushes or pour other chemicals in the sink.
- Don't allow the treated water to come in contact with people or animals.
- Don't use the treated water on your vegetable garden.
- Don't pour Napisan or other soakers down the drain, soak clothes in a bucket and empty the bucket out on the grass instead.
- After mopping the floor, don't pour the bucket of water (with Pine O Clean or other disinfectant/cleaner), down the drain. Empty the bucket out on the grass instead.
- Don't use 'Toilet Blue' or toilet deodorizers that hang in the bowl. These add a continual low dose of disinfectant to the system.

Table 3 – Water Balance Calculations

EVAPO-TRANSPIRATION ABSORPTION

SITE DATA			***DESIGN DATA*** (AS1547:2000)			***DESIGN FLOWS*** (AS1547:2000)		
Soil Category:	6		Retension Rate:	0.5		No. Bedrooms:	3	
Soil Texture:	Medium Clay		Evapotranspiration Factor:	0.75		Flow Rate per Person:	150 ltr/day	(A4.2D)
Soil Structure:	Moderate		Design Loading Rate:	5 mm/day	(T4.2A2)	No. of persons:	5	(T4.3A1)
Measured Permeability:	<0.06	m/day	Indicative Permeability:	<0.06 mm/day	(T4.2A2)	Black Water Factor:	1.00	
						Daly Flow Rate (Total):	750.0 ltr/day	

http://www.bom.gov.au/climate/averages/tables/cw_039123_All.shtml

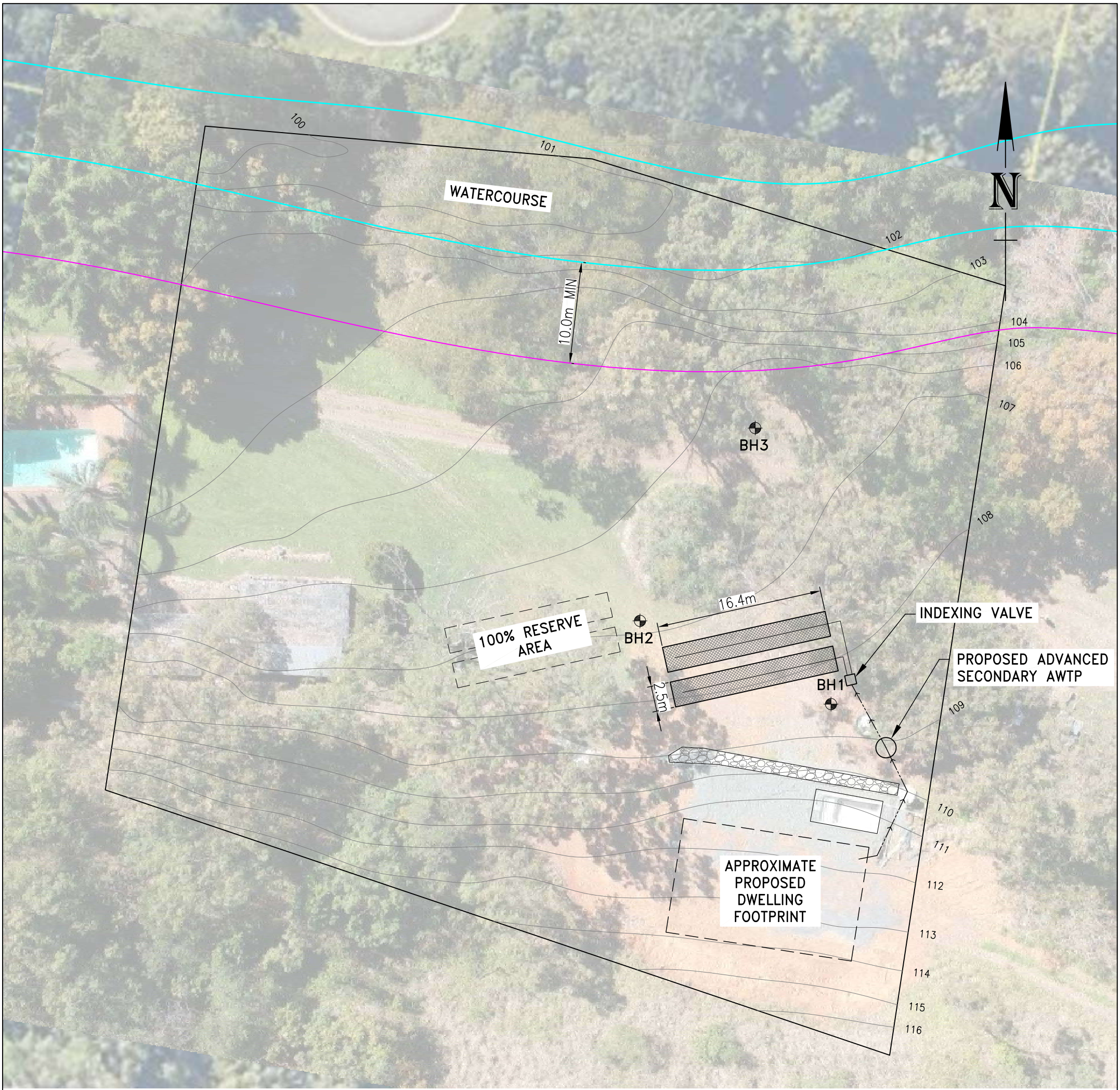
AREA CALCULATION

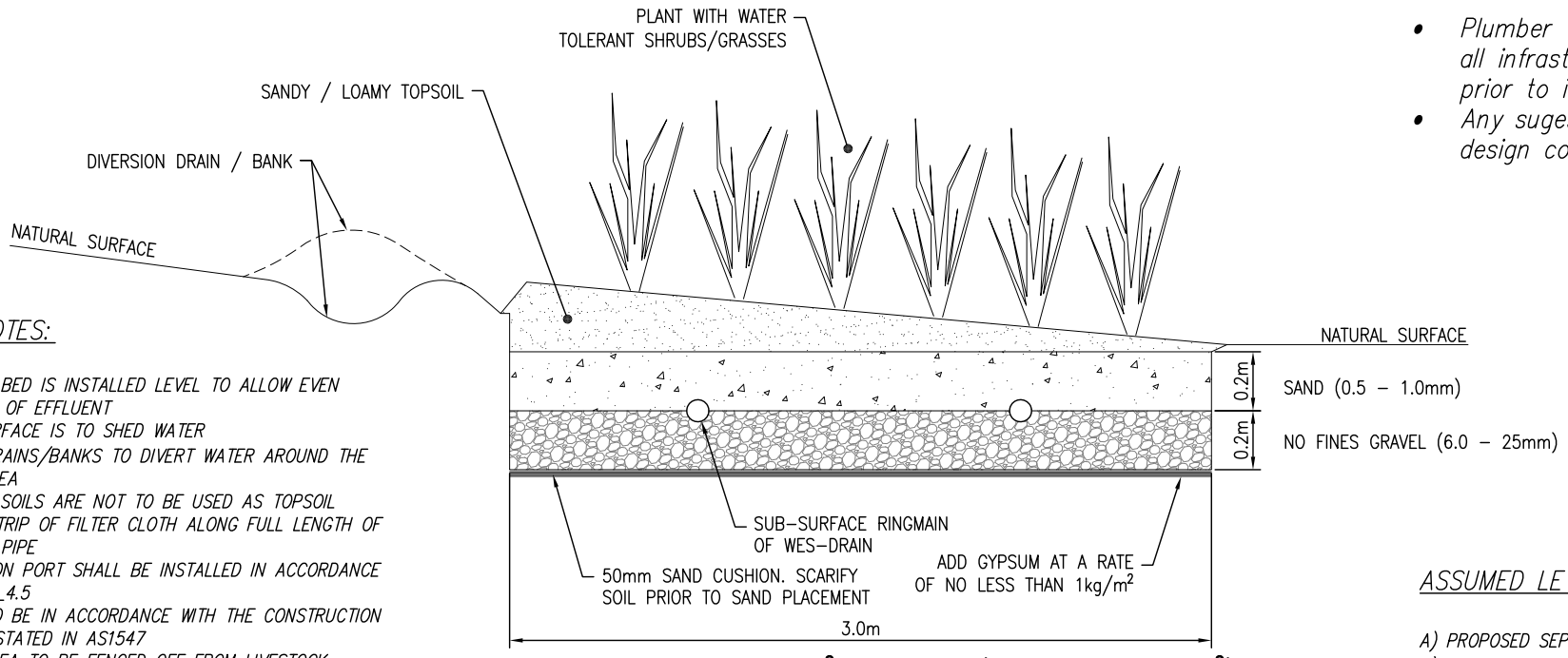
	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Sum	Ave
Days	31	28	31	30	31	30	31	31	30	31	30	31		
Mean rainfall (mm)	129.8	144	104.7	43	45.3	37.8	31.8	27.1	24.5	49.5	66.3	104.3	808.1	67.3
Retained Rainfall (mm)	64.9	72.0	52.4	21.5	22.7	18.9	15.9	13.6	12.3	24.8	33.2	52.2	404.1	33.7
Pan Evaporation	198.4	165.2	167.4	135.0	105.4	90.0	96.1	108.5	129.0	167.4	180.0	195.3	1737.7	144.8
Mean daily evaporation (mm)	7.4	6.7	6.2	5.3	4.1	3.5	3.6	4.4	5.8	6.8	7.6	7.7	69.1	5.8
Evapotranspiration (mm)	229.4	187.6	192.2	159.0	127.1	105.0	111.6	136.4	174.0	210.8	228.0	238.7	2099.8	175.0
DLR per month (mm)	155.0	140.0	155.0	150.0	155.0	150.0	155.0	155.0	150.0	155.0	150.0	155.0	1825.0	152.1
Disposal Rate per month (ltr)	319.5	255.6	294.9	287.5	259.5	236.1	250.7	277.9	311.8	341.1	344.9	341.6	3520.8	293.4
Effluent per month (ltr)	23250.0	21000.0	23250.0	22500.0	23250.0	22500.0	23250.0	23250.0	22500.0	23250.0	22500.0	23250.0	273750.0	22812.5
Area (sq.m)	72.8	82.2	78.9	78.3	89.6	95.3	92.7	83.7	72.2	68.2	65.2	68.1		78.9

STORAGE CHECK

		Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Area (sq.m)	82												
Application Rate (mm)		283.5	256.1	283.5	274.4	283.5	274.4	283.5	283.5	274.4	283.5	274.4	283.5
Disposal Rate (mm)		319.5	255.6	294.9	287.5	259.5	236.1	250.7	277.9	311.8	341.1	344.9	341.6
Excess Effluent (mm)		-36.0	0.5	-11.3	-13.1	24.1	38.3	32.8	5.7	-37.4	-57.5	-70.5	-58.0
Stored Effluent Increase (mm)		-119.9	1.7	-37.7	-43.7	80.3	127.6	109.5	19.0	-124.5	-191.7	-234.9	-193.4
Effluent Depth for month (mm)		0.0	0.0	1.7	0.0	0.0	80.3	207.9	317.4	336.3	211.8	20.1	0.0
Effluent Depth Total (mm)	0	0.0	1.7	0.0	0.0	80.3	207.9	317.4	336.3	211.8	20.1	0.0	0.0

Depth of Gravel	200	mm	Area of ETA Bed	82
Depth of Sand	200	mm		
Depth of Storage Area	400	mm	Bed Dimensions	
			No. of Beds	2
Freeboard	50	mm	Bed Length	16.4 m
Permitted Depth of Effluent	350	mm	Bed Width	2.5 m





TYPICAL SECTION OF 41m² ETA BED (TOTAL AREA 82m²)

- *Plumber to confirm suitability of all infrastructure with landholder prior to installation.*
- *Any sugestions to change the design contact CQ Soil Testing.*

SEWERAGE NOTES:

- *ENSURE THE BED IS INSTALLED LEVEL TO ALLOW EVEN DISTRIBUTION OF EFFLUENT*
- *FINISHED SURFACE IS TO SHED WATER*
- *DIVERSION DRAINS/BANKS TO DIVERT WATER AROUND THE DISPOSAL AREA*
- *CLAY BASED SOILS ARE NOT TO BE USED AS TOPSOIL*
- *0.3m WIDE STRIP OF FILTER CLOTH ALONG FULL LENGTH OF PERFORATED PIPE*
- *AN INSPECTION PORT SHALL BE INSTALLED IN ACCORDANCE WITH AS1547_4.5*
- *ALL WORK TO BE IN ACCORDANCE WITH THE CONSTRUCTION TECHNIQUES STATED IN AS1547*
- *DISPOSAL AREA TO BE FENCED OFF FROM LIVESTOCK*

ASSUMED LEVELS:

A) PROPOSED SEPTIC TANK INVERT ≈ 9.50
B) PROPOSED INVERT OF DISTRIBUTION BOX ≈ 2.80

CQ SOIL TESTING
Servicing all of Central Queensland

QBCC - 15 305 465 ABN - 87 656 845 448

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Website: www.cqsoiltesting.com.au

Project:
LOT 3 PILBEAM DRIVE
FRENCHVILLE, QLD

For:
M O'BRIEN

Title: EFFLUENT DISPOSAL DESIGN

Scale:	1:400 (A3)	*Date:*	AUG '24
Sheet:	1 of 1	*Drawn:*	P.M.
Job No:	CQ26219	*Rev:*	A

Bushfire Hazard Assessment

Bushfire Report

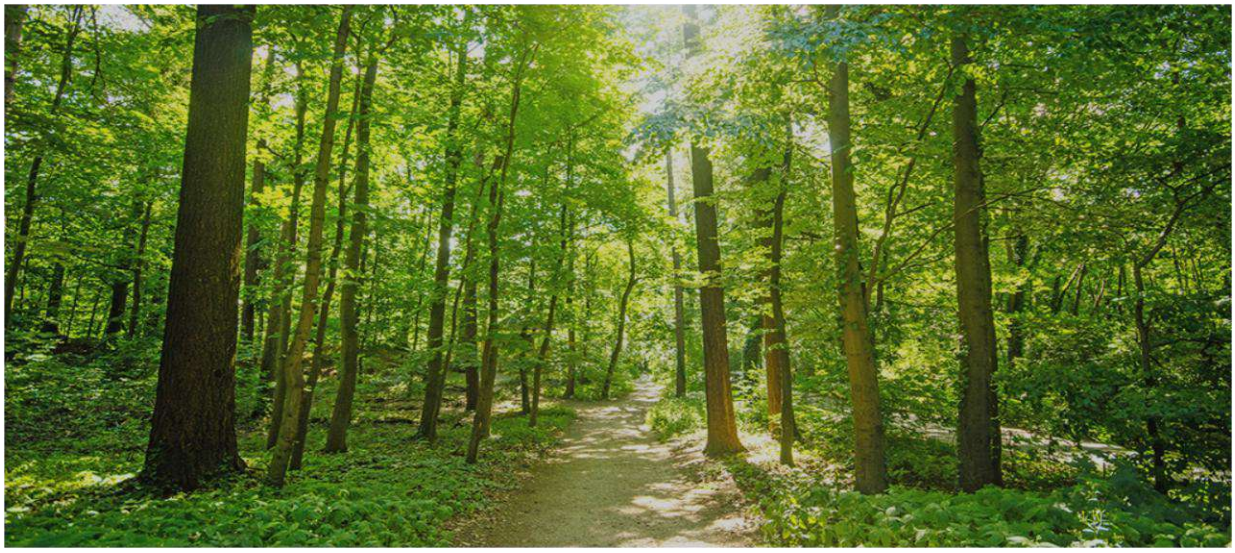
ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/173-2024

Dated: 16 October 2025



Project No:	B5211
Address:	468 Frenchville Road Frenchville QLD 4700
Lot Plan:	Lot 3 RP608120
Local Government Area:	Rockhampton Regional Council
Proposed Development:	Class1a dwelling
BAL Rating:	BAL-29

Max Bushfire Protection Consulting / ABN 81 671 088 887
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Document History				
Version	**Description**	**Date**	**Author**	**Approved by**
1.0	Report - Draft	16/5/2025	HL	HL
2.0	Report - Final	21/5/2025	HL	HL

Report Expiry

Please be aware that the bushfire hazard assessment and BAL rating provided in this report are valid for 12 months from the date of issuance. It is advisable to consult with a qualified professional to confirm the accuracy of the assessment if this report is more than 12 months old. If any discrepancies are identified or if an update is necessary, a new report should be obtained.

Copyright Statement

Disclaimer

This report has been prepared based on information provided by the client and is intended solely for the client's exclusive use for the stated purpose for which it was provided. Any inaccuracies or amendments to the report or development application will require revision. Please note that, despite our best efforts, there is no guarantee that desirable outcomes are achievable during extreme bushfire weather episodes, which may result in unpredictable bushfire behavior and detrimental consequences to life, property, and the environment. Any representation, statement, opinion, or advice expressed or implied in this report is made in good faith.

Max Bushfire Protection Consulting and its employees will not be liable (whether by reason of negligence, lack of care, or otherwise) to any person for any damage or loss whatsoever that may occur in relation to that person taking or not taking action in respect of any representation, statement, or advice referred to in this report. Legislation may impact vegetation clearing activities.

It is strongly recommended that clients contact the relevant agencies to determine if their proposed vegetation clearing activity complies with local, state, and federal laws.

Partitioner Declaration

Name: **Position:**	**Henry (Hongxi) Liang** **Senior Bushfire Consultant**
I hereby certify that I have undertaken the assessment of the above-mentioned site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959:2018 and/or the Bushfire Resilient Communities - Technical Reference Guide published by Queensland Fire and Emergency Services. I hereby declare that I am a suitably qualified bushfire consultant, holding AQF Level 8 qualifications and tertiary degrees below: ▪ Graduate Certificate in Bushfire Protection ▪ Master of Business Administration ▪ Bachelor in Engineering	
Signature:	
Email: service@maxbp.com.au Mobile: 0432898282	**Max Bushfire Protection Consulting** ABN: 81 671 088 887

Table of Contents

Acronyms and Abbreviations

APZ	Asset Protection Zone
AEP	Annual Exceedance Probability
AS 3595:2018	Australian Standard 3959:2018 Construction of Buildings in Bushfire-Prone Areas (This Standard incorporates Amendment No. 1 (June 2019) and Amendment No. 2 (December 2020))
BCA	Building Code of Australia
BPA	Bushfire Prone Area
BMP	Bushfire Management Plan
BVG	Broad Vegetation Group
FDI	Fire Danger Index
FFDI	Forest Fire Danger Index
FWS	Fire Weather Severity
IMS	Interactive Mapping System
LMP	Landscape Management Plan
MCU	Material Change of Use
NCC	National Construction Code
QFES	Queensland Fire and Emergency Services
RH	Relative Humidity
RAL/ROL	Reconfigure A Lot/Reconfiguration of Lot
SPP	State Planning Policy 2017
SPP map input data	Statewide Map of Bushfire Prone Areas Input Data E.G. FFDI (5% AEP), Maximum Landscape and Vegetation Hazard Class
VHC	Vegetation Hazard Class
VMP	Vegetation Management Plan

Executive Summary

Project No:	**B5211**
Type of bushfire assessment:	Site-specific bushfire hazard assessment Bushfire attack level assessment Bushfire management plan
Location:	468 Frenchville Road Frenchville QLD 4700 Lot 3 RP608120
Site area:	5,549 sqm
Local Government Area:	Rockhampton Regional Council
Client(s):	Designtek Pty Ltd
Proposed Development:	Class1a dwelling
Site plan by:	The Client(s)
Asset Protection Zone:	Designed minimum APZ
Bushfire Attack Level:	BAL-29

1. Introduction

1.1 Purpose

Max Bushfire Protection Consulting was engaged by the client(s) to conduct a site-specific bushfire hazard assessment for the proposed development on the subject site.

The objective of this report is to assess the potential bushfire hazard and related risks concerning the proposed development, aligning with several regulatory frameworks such as the Queensland State Government State Planning Policy - Part E (SPP 2017), the Bushfire Resilient Communities Technical Reference Guide (QFES, 2019), the local council planning scheme - bushfire hazard overlay code, and the Australian Standard – Construction in Bushfire Prone Areas (AS 3959:2018). These guidelines delineate the State and Council's concerns regarding bushfire hazard within the context of evaluating development applications.

The development shall be carried out on the lot referred to as the 'Subject Site,' and the dwelling shall be situated within the proposed building location envelope.

1.2 Subject site

- Site Address: 468 Frenchville Road Frenchville QLD 4700
- Lot Plan: Lot 3 RP608120
- Site Area: 5,549 sqm

Figure 1-1: Subject Site

1.3 The proposed development

The proposed development is to construct a Class1a dwelling.

1.4 Bushfire Prone Land

The Council's designation of land as "bushfire prone" carries two primary consequences:

- It mandates the formulation of a Bushfire Management Plan that conforms to the specifications delineated in the Planning Scheme. This includes strict adherence to the Bushfire Overlay Code stipulated within the planning scheme.
- It activates the application of the Building Code of Australia (BCA) and the National Construction Code (NCC), necessitating compliance with their performance objectives pertaining to bushfire mitigation. Furthermore, adherence to AS 3959:2018, which governs the construction of buildings in bushfire-prone regions, is imperative.

1.5 Scope and objectives

The scope and objectives of this assessment are to:

- Identify bushfire-related risk factors linked to the positioning of the development footprint. This includes the probable direction of bushfire attack, hazard ratings associated with existing and proposed vegetation on and around the subject site, and planning separation from potential hazards.
- Recommend suitable protective measures to alleviate the risk posed by the assessed BAL in alignment with the State Planning Policy (SPP 2017), AS 3959:2018, and the Bushfire Hazard Overlay Code of the Council Planning Scheme.
- Prepare a comprehensive site-specific bushfire management plan and conduct an assessment of compliance with the Bushfire Hazard Overlay Code to illustrate how adherence can be attained.

2. Assessment Methodology

2.1 Desktop Assessment and Legislative

A desktop assessment and legislative review was conducted to identify overlay mapping and requirements under the SPP 2017 and Rockhampton Regional Council planning scheme. The review included:

- Planning Act 2016 (Planning Act)
  - Planning Regulation 2017 (Planning Regulation)
  - State Planning Policy (SPP 2017) mapping
  - State Assessment and Referral Agency (SARA) mapping (Department of Infrastructure, Local Government and Planning)
- Rockhampton Regional Council Planning Scheme
  - Bushfire Hazard Overlay Code
  - Planning Scheme interactive mapping
- Queensland FIRE and Emergency Services
  - Catalyst interactive mapping
- Building Act 1975 (Building Act)
- National Construction Code 2022: Building Code of Australia (NCC 2022)
- AS 3959:2018 Construction of Buildings in Bushfire-Prone Areas

2.2 Bushfire Hazard Assessment

A site-specific bushfire hazard assessment aims to identify and understand the bushfire hazards on the site. The site's vegetation and terrain characteristics were surveyed using a complete site examination, aerial photography, accessible databases, and relevant mapping. The site-specific assessment included:

- Recording the structure, composition, and condition of vegetation communities located in the development footprint and all land within 100m of the development footprint, extending to 150m-300m where necessary.
- Assessing site slope and effective slope.
- Determining the aspect of the site.
- Identifying waterway and wetland features within the assessment area.
- Calculating potential fire line intensity and Radiant Heat Flux.

Utilizing the recorded outcomes of the field survey, a Bushfire Hazard Assessment and subsequent BAL review were conducted in accordance with the Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest ‘Natural Hazards, Risk and Resilience – Bushfire’ (QFES 2019), which was prepared by the Queensland Fire and Emergency Services to provide technical guidance for the SPP 2017 guidance material. The method involves a quantitative assessment of the vegetation communities, fuel loads, slope, and other relevant factors.

2.3 Bushfire Attack Level Assessment

The determination of the site-specific Bushfire Attack Level (BAL) for the development footprint and classified vegetation was undertaken in accordance with the Bushfire Resilient Communities – SPP Technical Reference Guide and AS 3959:2018. This includes the identification of the following input values:

- FFDI (5% AEP fire weather event)
- Vegetation hazard class, surface and overall fuel load
- Site slope, effective slope, and whether the effective slope is upslope or downslope of the development
- Distance of the development footprint from classified vegetation

Radiant heat exposure was calculated using the Bushfire Asset Protection Zone calculator provided by the Sustainable Development Unit of Queensland Fire and Emergency Services and/or the AS 3959:2018 Method 2 Calculator.

AS 3959:2018 defines the Bushfire Attack Level as a method for measuring the severity of a building's potential exposure to ember attack, radiant heat, and direct flame contact, using increments of radiant heat expressed in kilowatts per square meter. This method serves as the basis for establishing construction requirements to improve the protection of building elements from bushfire attack. Consequently, the assessment results and accompanying BAL construction requirements only apply to proposed buildings or structures, not the entire development area.

3. Legislative Context

The following key legislation, policies and guidelines are relevant to the preparation of bushfire assessment:

- State Planning Policy (July 2017, QLD)
- National Construction Code 2022
- AS 3959:2018 Construction of Buildings in Bushfire-Prone Areas
- Local Council Planning Scheme
- Planning Act 2016 (Planning Act) and Building Act 1975 (Building Act)

3.1 State Planning Policy (July 2017)

Supporting the Planning Act 2016 (Planning Act) (Qld), the purpose of the SPP is to guide State and Local government in land-use planning and development by defining the Queensland Government's polices about matters of state interest, to which there are 17 state interests arranged under five broad themes:

- liveable communities and housing
- Economic growth
- Environment and heritage
- Safety and resilience to hazards
- Infrastructure

The SPP Interactive Mapping System includes bushfire hazard area (bushfire prone area) mapping based on the methodologies outlined in Leonard et al. (2014). Under the safety and resilience to hazards theme, the state's interest is to ensure that natural hazards are properly considered in all levels of the planning system. This includes the avoidance of natural hazard areas or the mitigation of risks to an acceptable or tolerable level. The SPP is supported by the SPP – State Interest Guideline – Natural Hazards, Risk and Resilience (April 2016), Technical Manual – Evaluation Report: Bushfire Hazards (April 2016), and Technical Manual – A 'Fit for Purpose' Approach in Undertaking Natural Hazard Studies and Risk Assessments (April 2016) by the Department of Infrastructure, Local Government and Planning. These documents identify the outcomes sought by the state and their application when planning development within a bushfire hazard area (bushfire prone area).

3.2 National Construction Code 2022: Building Code of Australia

The National Construction Code 2022: Building Code of Australia (NCC 2022) sets out technical requirements for the design and construction of buildings and other structures in Australia (The Australian Building Codes Board). NCC 2022 defines ten core building classes, along with various subclasses. It mandates that buildings constructed within designated bushfire prone areas must be designed and constructed to minimize the risk of ignition from bushfires.

3.3 AS 3959:2018 Construction of Buildings in Bushfire-Prone Area

Where development is proposed in designated bushfire prone areas, AS 3959:2018 provides construction requirements designed to enhance resistance against bushfire attack. These construction specifications are determined by specific heat flux exposure thresholds and are categorized into six Bushfire Attack Levels (BAL):

Bushfire Attack Level (BAL)	Radiant Heat Exposure (AS3959:2018)	Description of Predicted Bushfire Attack and Levels of exposures
BAL – Low	Insignificant	Minimal attack from radiant heat and flame due to the distance of the building from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements
BAL - 12.5	0 to 12.5kW/m^2	Attack by burning debris is significant with radiant heat (not greater than 12.5kW/m^2). Radiant heat is unlikely to threaten building elements (such as unscreened glass). Specific construction requirements for ember protection and accumulation of debris are warranted.
BAL - 19	12.5 to 19kW/m^2	Attack by burning debris is significant with radiant heat flux (not greater than 19kW/m^2) threatening some building elements (such as screened glass). Specific construction requirements for embers and radiant heat are warranted.
BAL – 29	19 to 29kW/m^2	Attack by burning debris is significant and radiant heat flux (not greater than 29kW/m^2) threatens building integrity. Specific construction requirements for ember and higher levels of radiant heat are warranted. Some flame contact is possible.
BAL – 40	29 to 40kW/m^2	Radiant heat flux and potential flame contact could threaten building integrity.
BAL - FZ	40kW/m^2 plus (Flame Contact)	Significant radiant heat and significantly higher likelihood of flame contact from the fire front will threaten building integrity and result in significant risk to residents.

Table 1: AS3959:2018 Using BAL to determine construction requirements

3.4 Rockhampton Regional Council Planning Scheme

The Bushfire Hazard Overlay, under the Council's Planning Scheme reflects SPP State and Local level interests by identifying designated bushfire prone areas. Where assessable development is proposed on land mapped as containing bushfire hazard areas, a site-specific bushfire hazard assessment prepared in accordance with the planning scheme is required.

4. Bushfire Hazard Assessment

Several factors determine the likelihood and severity of bushfires in a landscape. Key factors include the type of vegetation and the amount of available fuel. Other considerations are topography and land use patterns around potentially hazardous vegetation. Additionally, connectivity between vegetation communities can influence the development and persistence of bushfires.

4.1 Current Bushfire Hazard Mapping

A review of the Bushfire Hazard Overlay Mapping indicates that the site contains bushfire hazard areas, as shown in Figure 4-1.

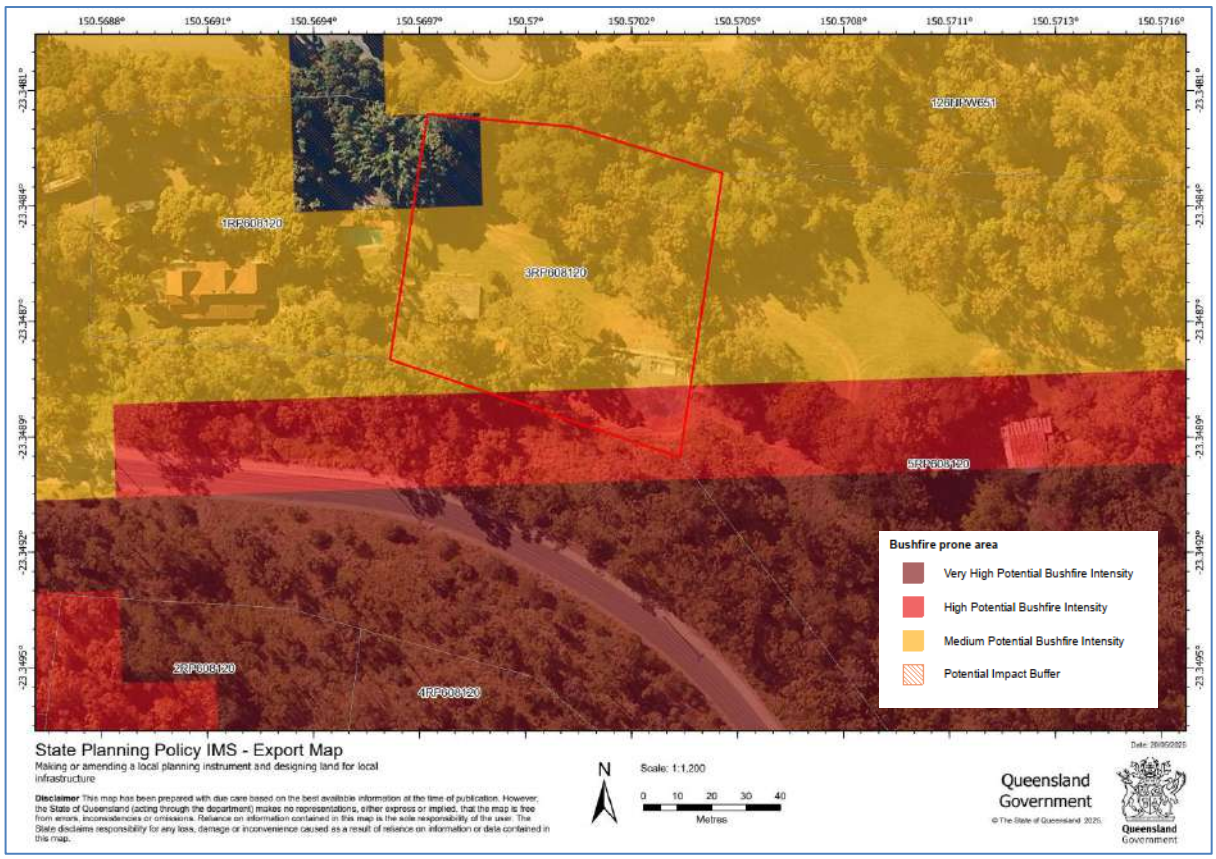


Figure 4-1: Bushfire Hazard Overlay Mapping

4.2 Local FFDI

The fire season in Queensland typically begins in the far north in July, advancing southward by spring and occasionally lasting until February in southern and far south-western regions. These timeframes vary annually due to fuel loads, long-term climate patterns, and short-term weather conditions, differing from other Australian states. In the far north and the northwest, warm, dry winters and springs, with dead grasses and dry fuels, heighten bushfire risks. In the south, the greatest danger follows dry winters and springs, with severe conditions arising when low-pressure

systems bring strong, hot, dry westerly winds to coastal areas. The season ends with the arrival of moist conditions, often influenced by tropical cyclones near the coast.

The Forest Fire Danger Index (FFDI) evaluates the likelihood of fire ignition, its propagation rate, intensity, and the difficulties encountered during suppression, amalgamating factors like air temperature, relative humidity, wind speed, and drought effects. This assessment is accessible through state mappings, revealing an annual exceedance probability FFDI of 69 at a 5% probability level for the subject site. Fire Danger Ratings (FDR) are determined by forecasted weather conditions, particularly the FFDI, offering insight into the level of bushfire threat on a given day. This FFDI corresponds to a high FDR, indicating hot, dry, and windy conditions. Under such circumstances, the ignition and spread of fires may present significant challenges for containment, especially in areas with extensive bushland vegetation.

For grassland, a Fire Danger Index (GFDI) of 100 is applied in the calculation of the specific Bushfire Attack Level (BAL)

4.3 Fire History

Fire history information from QFES reveals that between 2009 and 2023, there were no recorded fires within a 2-kilometer radius of the location. Furthermore, during the site assessment, no recent signs of fire, such as tree charring or significant damage to timber fence posts, were detected. Both the historical fire data and observations of fire scars suggest that it has been a substantial amount of time since the site was last exposed to a large-scale fire event. However, it is important to note that while this information does not guarantee the site will remain free from future fires, the likelihood of such events occurring appears to be decreasing due to the surrounding residential and commercial land development patterns.

4.4 Site-Specific Hazard Assessment

This Site-Specific Bushfire Hazard Assessment draws upon several key references and sources, including:

- Vegetation Hazard Classification and Potential Fire-line Intensity for Queensland, as outlined in "A new methodology for state-wide mapping of bushfire-prone areas in Queensland" by CSIRO, Australia (2014).
- The Bushfire Resilient Communities Technical Reference Guide (QFES, 2019).
- The Bushfire Attack Level (BAL), Building setback requirements, and Construction Standards as specified in the Australian Standard AS3959:2018 Construction of buildings in bushfire-prone areas.
- Bushfire Risk Mitigation Measures aligned with current industry best-practice assessment methodologies and compliance with Council's Planning Scheme.

This assessment will utilize factors such as vegetation composition and extent, slope, and industry-standard fuel load calculations to determine the potential bushfire hazard affecting the proposed development. Furthermore, this Bushfire Management Plan (BMP) will ensure compliance with the Council's Bushfire Overlay Code in relation to the proposed development.

The assessment involved an analysis of the site and its immediate 100 m radius surroundings to determine the typical bushfire risk characteristics. It included the application of Vegetation Hazard Classifications to vegetation located within 100 m of the site. Where necessary, it was expanded to cover an additional area ranging from 150 to 300 m.

According to AS3959:2018, the following vegetation shall be excluded from a BAL assessment, which is considered as low threat vegetation and/or non-vegetation areas:

- Vegetation of any type that is more than 100m from the site.
- Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified vegetation.
- Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified vegetation.
- Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.
- Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.
- Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.

The assessment also takes into account the small and or isolated patches and corridor filtering process of Bushfire Resilient Communities:

- Sub-hectare areas of continuous fuel (i.e. surrounded by either no fuel or non-continuous fuel) those are further than 100 metres from any other continuous fuel greater than two hectares.
- Downgrade the effective fuel load of continuous vegetation patches measuring (a) 1 to 2 hectares (by 66 per cent), and (b) 2-3 hectares patches (by 50 per cent) if the patch is surrounded by either non-continuous fuel or a low-hazard vegetation or land use type, and if the patch is further than 100

metres from any other continuous-fuel vegetation patch greater than two hectares.

- Remove narrow corridors and areas of continuous fuel < 50 m in width that are not sufficiently wide to support a fully developed flame front.
- Small fragments are removed because of the varied quality of the vegetation mapping inputs.

It is noted that the client is actively undertaking vegetation management activities on the site, including the removal of invasive weeds, thinning of overgrown vegetation, and general landscape and property maintenance.

4.4.1 Ground Truthed VHC

The locations of site assessment plots are shown on Figure 4-2. Table 2 presents a summary of observations and the features of site assessment points.

Aspect	Assessment Plot	Mapped VHC	Ground Truthed VHC
North	A	VHC 16.2 Eucalyptus dominated woodland on drainage lines and alluvial plains	VHC 16.2 Eucalyptus dominated woodland on drainage lines and alluvial plains
East	B	VHC 16.2 Eucalyptus dominated woodland on drainage lines and alluvial plains	VHC 40.4 Continuous low grass or tree cover
South	C	VHC 10.2 Spotted gum dominated woodlands	VHC 10.2 Spotted gum dominated woodlands
West	D	VHC 16.2 Eucalyptus dominated woodland on drainage lines and alluvial plains	VHC 40.4 Continuous low grass or tree cover

Table2: Ground truthed VHC

Figure 4-2: Ground truthed VHC and local Bushfire Prone Area map

- **Classified vegetation conditions to North and South**

Land at assessment plot A, a large continuous hazardous vegetation patch VHC 16.2 Eucalyptus dominated woodland on drainage lines and alluvial plains was found approximately 12.5m from the proposed development area to the north, where the designed Asset Protection Zone is applied. This vegetation patch may contain RE 11.3.3 Eucalyptus coolabah woodland on alluvial plains.

Land at assessment plot D, a large continuous hazardous vegetation patch VHC 10.2 Spotted gum dominated woodlands was identified approximately 5.5m from the proposed development area to the north, where the designed Asset Protection Zone is applied. This vegetation patch may contain RE 11.12.3 Eucalyptus crebra, E. tereticornis, Angophora leiocarpa woodland on igneous rocks especially granite.

Trees ranging from 10m to 30m in height, characterized by foliage cover 10% to 30%, are typically dominated by eucalypts. It is lack of the shrubby middle layer and deep surface litter layer. Some areas have grassy ground layer. A diverse array of weeds and invasive plants, including Lantana, are widespread, occurring in conditions ranging from sparse to moderately dense. The predominant tree canopy reaches a height of approximately 20m.

The potential fuel load of the bushfire hazard vegetation patch is determined as following:

Vegetation context	VHC 16.2 with RE 11.3.3	VHC 10.2 with RE 11.12.3
Vegetation structure	Woodland	Woodland
AS3959:2018 Classification of vegetation	Group B Woodland – Woodland 05	Group B Woodland – Woodland 05
Effective slope under the hazardous vegetation	Downslope 9° North	Upslope 25° South
Slope Between Site and hazardous vegetation	Downslope 9° North	Upslope 25° South
Surface fuel load	7.5 t/ha	14.0 t/ha
Near-surface fuel load	3.6 t/ha	3.0 t/ha
Elevated fuel load	0.5 t/ha	1.0 t/ha
Bark fuel load	0 t/ha	0 t/ha
Total fuel load	11.6 t/ha	18 t/ha

Table 3: Potential fuel load

- **Low hazard conditions to East and West**

Ground truthed VHC to the west and the east presents the characters VHC 40.4 Continuous low grass or tree cover. The area comprises managed gardens, residential houses, well-maintained lawns, and paddocks, with trees regularly

trimmed, mowing, slashing, and weed removal conducted to minimize fuel load. As a result, it is classified as managed vegetation with a low bushfire hazard.

- **Vegetation Conditions within the proposed development**

Within the proposed development area and the designed Asset Protection Zone, vegetation conditions will be consistently maintained in a low-fuel state, aligning with the characteristics of VHC 40.4 Continuous low grass or tree cover.

Figure 4-4: Aerial view providing landscape context for the site (Sourced from QLD SPP mapping, captured 05/2025)

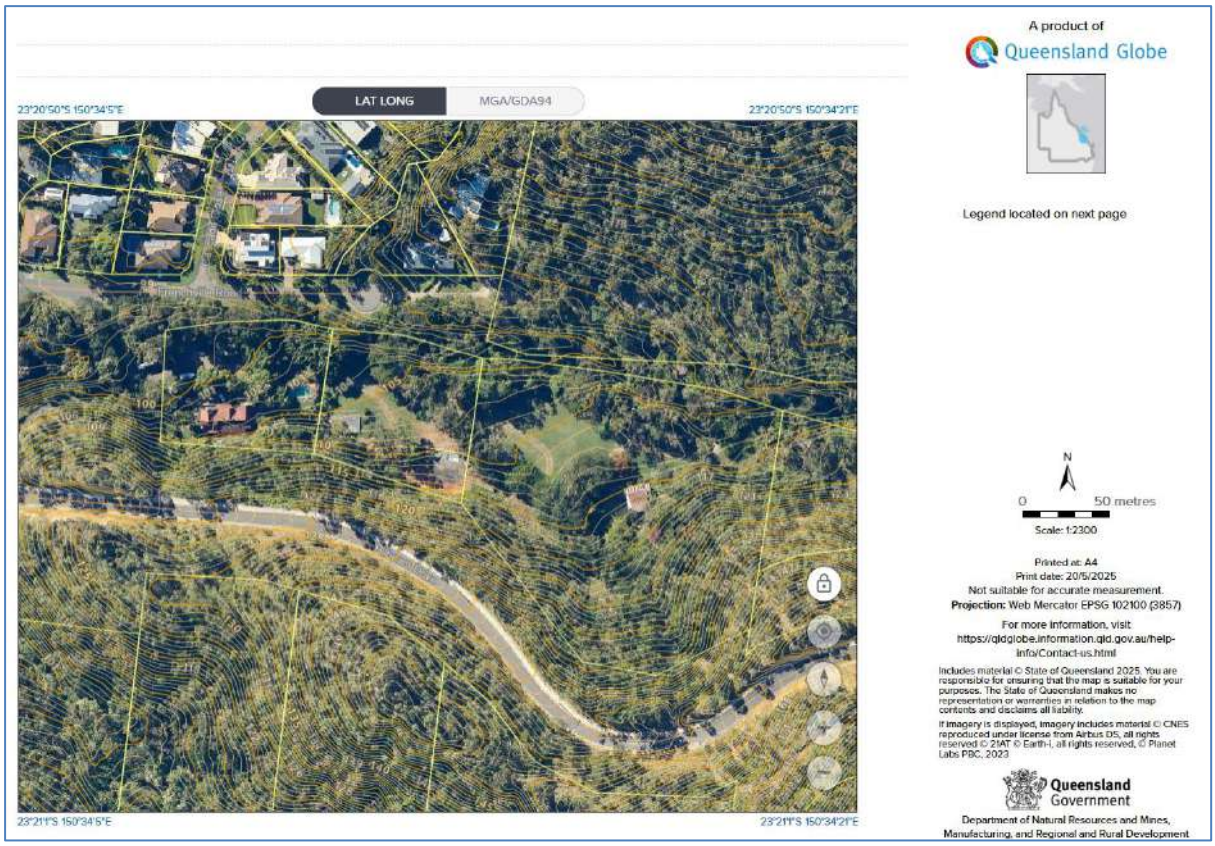


Figure 4-5: 1m interval contour map (Sourced from Queensland Globe mapping, captured 05/2025)

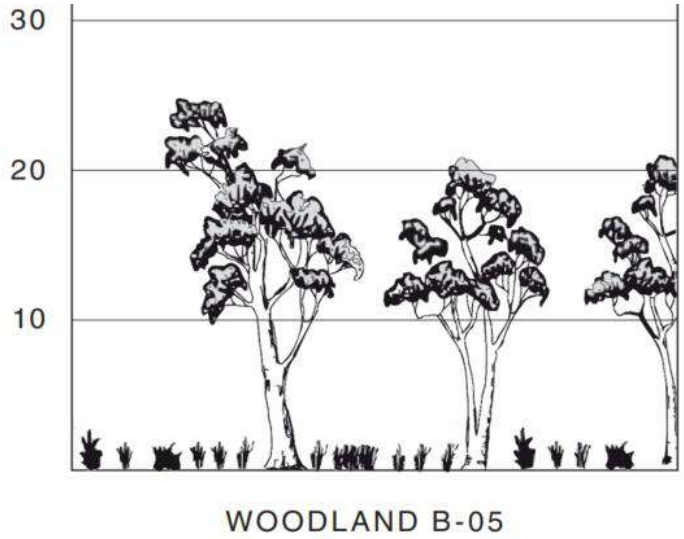


Figure 4-6: AS 3959:2018 Classification of vegetation – Woodland B-05

Regional ecosystem details for 11.3.3

Regional ecosystem	11.3.3
Vegetation Management Act class	Of concern
Wetlands	Not a Wetland
Biodiversity status	Of concern
Subregion	7, 11, 10, 37, 8, 13, (3), (26), (14), (15), (21), (35), (20), (4), (25), (36), (9), (18), (27), (6), (31), (34), (24), (29), (22), (30), (17), (33), (12), (4.4), (19), (16), (32), (10.2), (6.1), (10.4), (6.4), (38), (23)
Estimated extent[1]	Pre-clearing 933000 ha; Remnant 2021 271000 ha
Short description	Eucalyptus coolabah woodland on alluvial plains
Structure code	Woodland
Description	Eucalyptus coolabah woodland to open woodland. A secondary tree or shrub layer may occur, including E. populnea, Melaleuca bracteata, Acacia stenophylla, Alectryon oleifolius, Terminalia oblongata (in the north), Acacia pendula, A. cambagei and Duma florulenta. The ground layer is dominated by a range of grass and forb species depending on season. Occurs on Cainozoic alluvial plains or levees with clay or sometimes texture contrast soils. Not a Wetland. (BVG1M: 16c).
Fire management guidelines	SEASON: n/a. x1: Late wet to early dry season when there is good soil moisture. Implement storm burning when there is sufficient fuel. INTERVAL: n/a. x1: >3 years. INTERVAL_MIN: 4. INTERVAL_MAX: 50. STRATEGY: Manage surrounding country. x1: Undertake small patch burns (<30% annually) in a natural mosaic (as determined by availability of ground fuel) with good soil moisture. ISSUES: This community does not need fire. Flood events drive recruitment of coolabah. Hollow trees are critical habitat. High intensity and extensive fires will degrade vegetation structure and destroy animal habitats. Restrict extent and intensity of fires. x1: Encroachment of woody-stemmed plants (Acacia/Atalaya) through over-grazing and lack of burning may be a problem. Eremophila mitchellii is a facultative resprouter and will recover after fire >1 year interval.

Regional ecosystem details for 11.12.3

Regional ecosystem	11.12.3
Vegetation Management Act class	Least concern
Wetlands	Not a Wetland
Biodiversity status	Of concern
Subregion	12, 22, 2, 14, (18), (27), (6), (31), (21), (12.6), (12.5), (8.3), (11)
Estimated extent[1]	Pre-clearing 158000 ha; Remnant 2021 56000 ha
Short description	Eucalyptus crebra, E. tereticornis, Angophora leiocarpa woodland on igneous rocks especially granite
Structure code	Woodland
Description	Eucalyptus crebra, E. tereticornis +/- Angophora leiocarpa and E. melanophloia woodland. Other tree species that may be present include Corymbia clarksoniana, C. tessellaris, C. erythrophloia, C. citriodora and E. exserta. There is usually a low tree layer with species including Alphitonia excelsa and Petalostigma pubescens. Occurs on hills and lower slopes derived from granitic rocks. Not a Wetland. (BVG1M: 13c).
Fire management guidelines	SEASON: Late wet to early dry season when there is good soil moisture. Early storm season or after good spring rains. INTENSITY: Various. INTERVAL: 6-15 years (shorter intervals north of bioregion: 5 - 10 years). INTERVAL_MIN: 5. INTERVAL_MAX: 15. STRATEGY: Burn less than 30% in any year. Burn under conditions of good soil moisture and when plants are actively growing. All shrubby areas will carry fire after a good season. ISSUES: Management of this fire tolerant vegetation type should be based on maintaining vegetation composition, structural diversity, animal habitats and preventing extensive wildfire. Maintaining a fire mosaic will ensure protection of habitat and mitigate against wildfires. Planned burns have traditionally been carried out in the winter dry season; further research required.

Figure 4-7: Ecological Condition Profile of RE

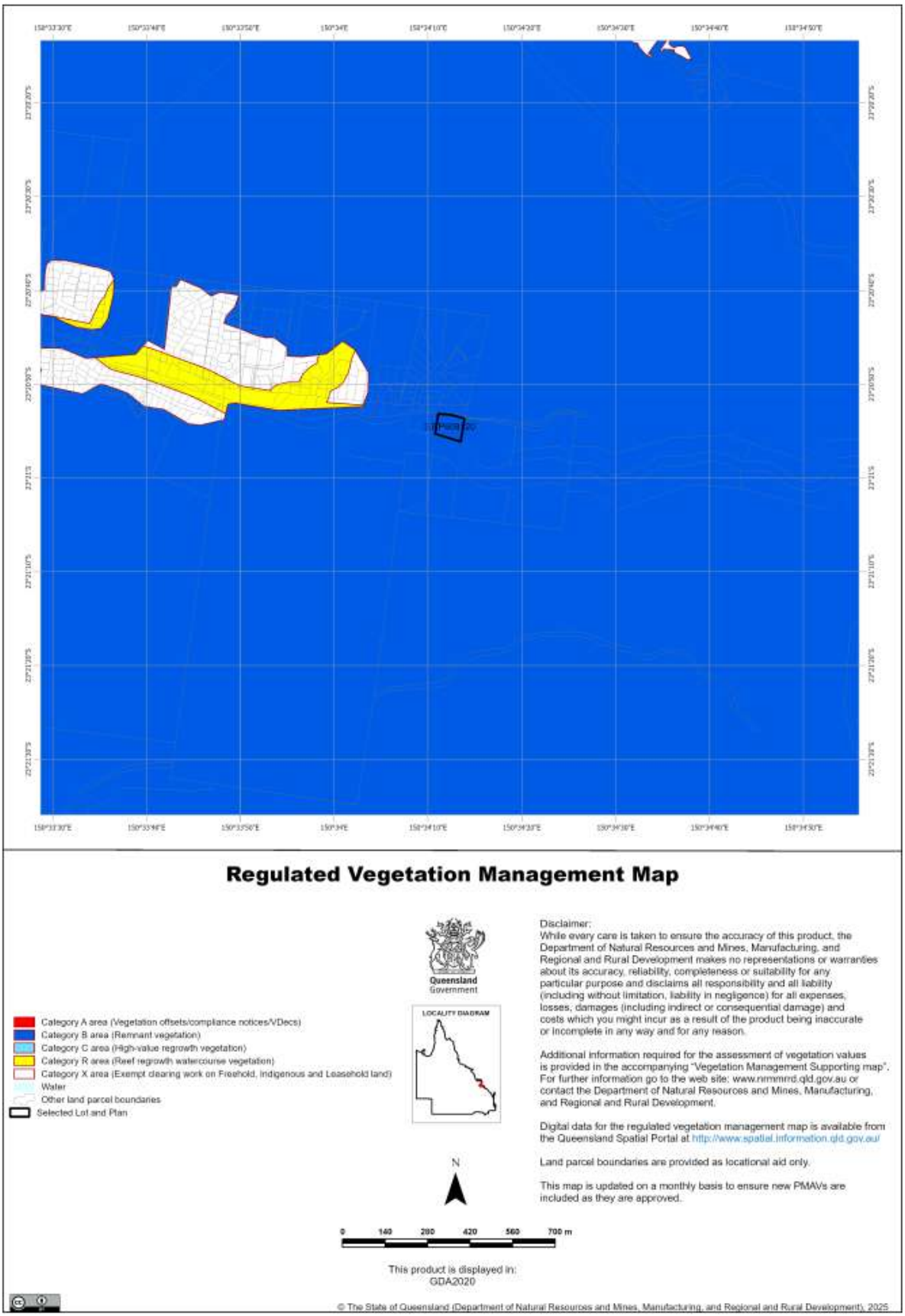


Figure 4-8 Regulated vegetation management map (sourced from Vegetation management report, Department of Resources, 2025)

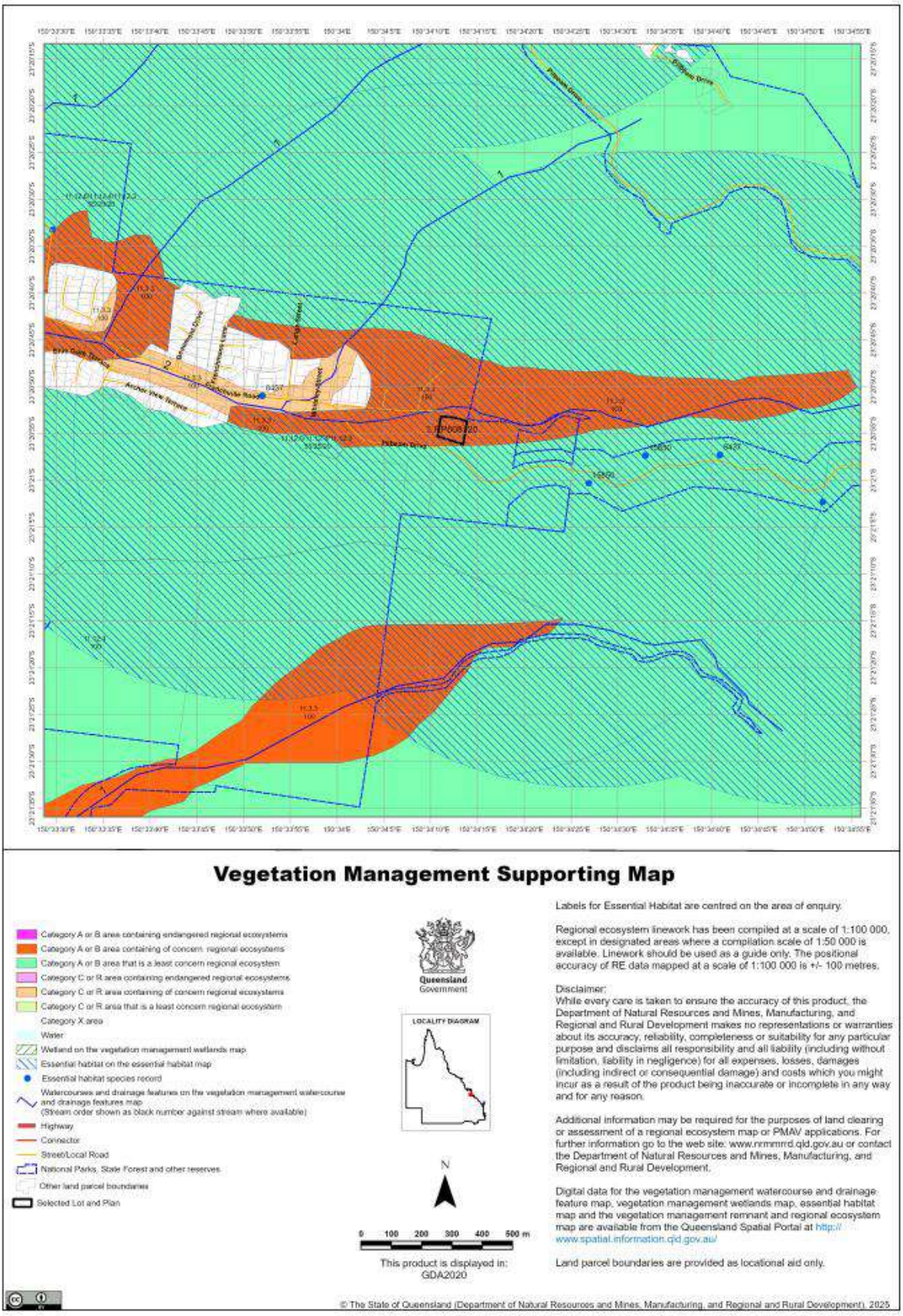


Figure 4-9: Vegetation Management Support Map providing RE context on the site (sourced from Vegetation management report, Department of Resources, 2025)

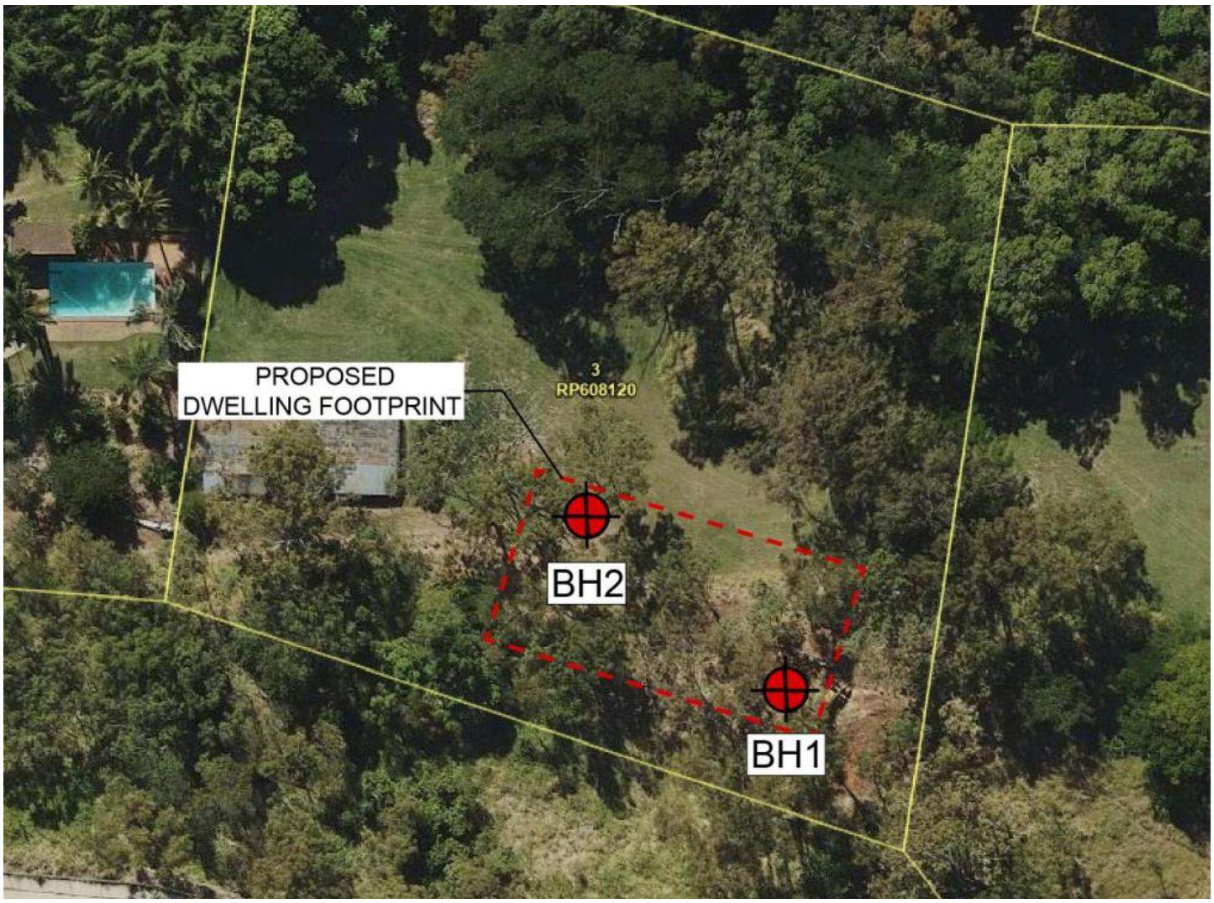


Photo 1: The proposed development area

Photo 2: Bushfire hazard vegetation VHC 10.2 to north

Photo 3: Bushfire hazard vegetation VHC 16.2 to south

4.4.2 Potential Bushfire Intensity Calculations

The Bushfire Resilient Communities Technical Reference Guide (QFES, 2019) defines bushfire hazard classes as follows:

- Very high potential bushfire intensity > 40,000 kW/m.
- High potential bushfire intensity 20,000-40,000 kW/m.
- Medium potential bushfire intensity 4,000-20,000kW/m.
- Grass fire hazard, generally less than 4,000kW/m.
- Potential impact buffer, where land is within 100m of a very high, high and medium potential bushfire intensity area.
- Low hazard, where potential bushfire intensity < 4,000kW/m and more than 100m to very high, high and medium potential bushfire intensity area.

Potential fireline intensity is a function of fire weather severity (Local FFDI), landscape slope and vegetation fuel load based on classified vegetation communities according to the method described by the CSIRO methodology as follow:

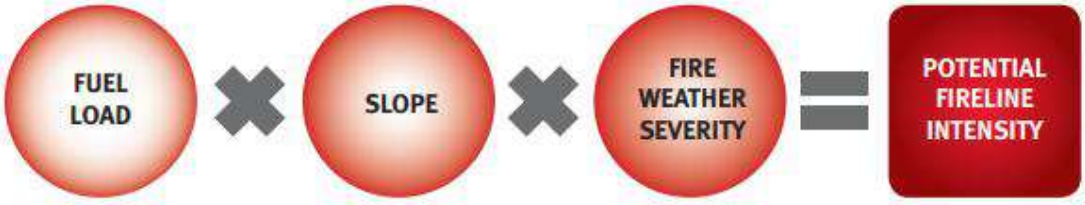


Figure 4-10: Method for calculation of potential fireline intensity (by CSIRO)

The results of the potential bushfire intensity calculations as presented in Table 4.

Local FFDI	Aspect	Ground Truthed VHC	Potential fuel load (t/ha)	Slope (°)	Potential bushfire intensity (kW/m)	Bushfire hazard class
68	North	VHC 16.2	11.6	Downslope 9	10712	Medium potential bushfire intensity
	East	VHC 40.4	5	Upslope 2	932	Potential impact buffer
	South	VHC 10.2	18	Upslope 25	2470	Potential impact buffer
	West	VHC 40.4	5	Downslope 2	1228	Potential impact buffer

Table 4: Potential bushfire intensity calculation

Figure 4-2 presents a local bushfire hazard prone area map, which confirms the potential fireline intensity class of all identified Vegetation Hazard Classes (VHCs) in proximity to the site, taking into account the patch and corridor filtering process as defined by the Bushfire Resilient Communities Technical Reference Guide. This local bushfire prone area map can then replace the SPP map and the Council's Bushfire Hazard Overlay map for the purposes of assessing the application.

4.5 Probable Direction of Bushfire Attack

The anticipated directions of bushfire threat to the proposed development are expected to originate from any direction, primarily in areas classified as having medium, high and very high bushfire hazard levels from the north.

4.6 Building Envelope and Asset Protection Zone

An Asset Protection Zone (APZ) will need to be established and maintained on the subject site to ensure adequate separation from hazardous vegetation. This designed APZ will have minimum 13.5m to the north and 5.5m to the south to separate from unmanaged hazardous vegetation. Within 10m radius of the proposed dwelling as the Inner Protection Area(IPA), with the remaining area designated as the Outer Protection Area (OPA).

Management strategies within the APZ will ensure that vegetation or other structures proposed do not increase the overall potential fuel load. The Bushfire Management Plan will detail these requirements comprehensively.

4.7 Radiant Heat Flux and BAL Construction Requirements

Where considering the application of the designed Asset Protection Zone, the overall Bushfire Attack Level (BAL) for the proposed development has been assessed as being BAL-29.

BAL-29 is primarily concerned with protection from ember attack and radiant heat greater than 19 kW/m² up to and including 29 kW/m².

To meet the construction standards outlined in AS3959:2018, both Section 3 "Construction General" and Section 7 "Construction Requirements for BAL-29" should be adhered to.

To the north:

Bushfire Attack Level calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	69	Rate of spread	1.71 km/h
Vegetation Classification	Woodland	Flame length	12.5 m
Understorey fuel load	11.1 t/ha	Flame angle	71 °
Total fuel load	11.6 t/ha	Panel height	11.82 m
Vegetation height	n/a	Elevation of receiver	3.77 m
Effective slope	9 °	Fire intensity	10,249 kW/m
Site slope	9 °	Transmissivity	0.858
Distance to vegetation	13.5 m	Viewfactor	0.436
Flame width	100 m	Radiant heat flux	28.46 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-29
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,090 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

To the South:

Bushfire Attack Level calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	69	Rate of spread	0.25 km/h
Vegetation Classification	Woodland	Flame length	3.79 m
Understorey fuel load	17 t/ha	Flame angle	47 °
Total fuel load	18 t/ha	Panel height	2.77 m
Vegetation height	n/a	Elevation of receiver	3.95 m
Effective slope	-25 °	Fire intensity	2,332 kW/m
Site slope	-25 °	Transmissivity	0.886
Distance to vegetation	5.5 m	Viewfactor	0.4271
Flame width	100 m	Radiant heat flux	28.79 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-29
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,090 K		

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Figure 4-11: Radiant Heat Flux Modelling and BAL Rating

5. Bushfire Management Plan

This Bushfire Management Plan (BMP) identifies the bushfire protection measures that should be implemented as part of the proposed development to manage and to reduce the risk from bushfire to an acceptable level. It is important to understand the processes that influence bushfire behaviour and the sources of damage that threaten people and property.

5.1 Bushfire Behaviours

Understanding bushfire behavior is crucial when planning development on bushfire-prone land to effectively mitigate the risks associated with bushfires. Three primary elements significantly influence bushfire behavior, as follows:

5.1.1 Topography

The physical characteristics of the landscape significantly influence bushfire behavior. It is well-established that fires tend to spread more rapidly when they move uphill. This is because flames can easily access unburnt fuel ahead of the fire, which is pre-heated by radiant heat, making it more combustible. Studies indicate that for every 10-degree increase in slope, the fire's speed can double. For example, if a fire is moving at a rate of 5 km per hour on flat ground, and it encounters a 10-degree slope, its speed can double to 10 km per hour uphill. As the fire gains momentum, it also increases in intensity, becoming even hotter.

Conversely, when a fire moves downhill, its speed decreases because the flames have less fuel to consume, and radiant heat pre-heats less fuel in front of the fire. For every 10-degree decrease in slope, the fire's speed is halved. It's important to note that fires typically move more slowly as the slope declines.

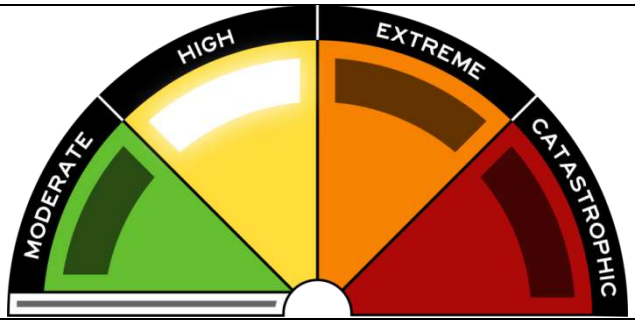
5.1.2 Weather Conditions

Weather conditions are a major factor in the behavior and spread of bushfires. Hot, dry, and windy conditions can make fires more intense and difficult to control, while cooler and more humid conditions can slow their spread. Wind can also influence the direction and speed of the fire, and changes in wind direction can make it more difficult for firefighters to predict the fire's behavior. Weather forecasting is a critical component of bushfire management, as it allows firefighters and other responders to anticipate changes in fire behavior and take action to mitigate the risks. In addition, many communities now use tools like automated alert systems to warn residents of potential fire danger based on weather conditions.

The new Australian Fire Danger Rating System (AFDRS) improves and simplifies the reporting of fire danger. Fire danger ratings describe the potential level of danger should a bushfire starts. It is a valuable information for taking actions to protect people and property. The AFDRS has four levels, each with a distinct title, colour and key message.

5.1.3 Vegetation

The amount and type of fuel available can greatly influence the behavior of a bushfire. Vegetation is the source of fuel of a bushfire. Vegetation that is dry and dead, or that is densely packed, can create more intense and long-lasting fires. In contrast, areas with little fuel or sparse vegetation may not support a fire at all. The arrangement of fuel can also play a role, as fires that encounter a continuous "fuel ladder" from the ground up into the canopy can become more severe. The amount of fuel surrounding a building can directly impact a buildings survival. Vegetation management, landscaping for bushfire and breaking the continuity of vegetation can limit the spread of fire.



Moderate: Plan and Prepare.
Most fires can be controlled

- Stay up to date and be ready to act if there is a fire.

High: Be Ready to Act
Fires can be dangerous

- Decide what you will do if a fire starts.
- There's a heightened risk. Be alert for fires in your area.
- If a fire starts, your life and property may be at risk. The safest option is to avoid bushfire risk areas.

Extreme: Take Action Now to protect your life and property
Fires will spread quickly and be extremely dangerous

- These are dangerous fire conditions.
- Check your bushfire plan and make sure your property is fire ready.
- If a fire starts, take immediate action.
- If you and your property are not prepared to the highest level, go to a safer location well before the fire impacts.
- Reconsider travel through bushfire risk areas.

Catastrophic: For your survival, leave bushfire risk areas
If a fire starts to take hold, lives are likely to be lost

- These are the most dangerous conditions for a fire.
- Your life may depend on the decisions you make, even before there is a fire.
- For your survival, do not be in bushfire risk areas.
- Stay safe by going to a safer location early in the morning or the night before.
- If a fire starts and takes hold, lives and properties are likely to be lost.
- Homes cannot withstand fires in these conditions. You may not be able to leave and help may not be available.

Table 4: Australian Fire Danger Rating

5.2 Potential Bushfire Impacts and Attack Mechanisms

Bushfire attack mechanisms are typically interconnected, rarely occurring in isolation. Both people and property often face a combination of bushfire attack

factors, each operating across different spatial scales. Nevertheless, strategies aimed at mitigating the impacts of direct flame contact, radiant heat exposure, and ember attack can be effectively addressed within the framework of land use planning and development assessments, conducted at manageable scales.

The main sources of direct bushfire attack that give rise to loss of life, and damage to property and infrastructure are as follows:

5.2.1 Direct Flame Contact

Direct flame contact occurs when flames from a bushfire come into direct contact with a building, structure, or individuals. When this happens, the flames can ignite any flammable material present and cause fires to spread rapidly. Direct flame contact can also cause burns and other heat-related injuries to people who are in the path of the flames.

Direct flame contact is a significant concern during a bushfire, especially for buildings and structures that are located in close proximity to the fire. The intensity of the flames and the duration of the exposure can have a significant impact on the severity of the damage.

To reduce the risk of direct flame contact during a bushfire, it's essential to create a defensible space around buildings and structures, clear flammable materials from the area, and use fire-resistant building materials when constructing or renovating buildings. Additionally, it's crucial to follow evacuation orders and stay informed about the fire's behavior and movement to ensure personal safety.

5.2.2 Radiant Heat Exposure

Radiant heat exposure is a significant danger during a bushfire. When a bushfire occurs, the heat generated by the flames causes the air surrounding the fire to heat up, and this heat energy is then radiated out in the form of electromagnetic waves. These waves can travel a considerable distance from the fire and can cause surfaces that are not in direct contact with the flames to heat up.

During a bushfire, radiant heat exposure can be intense, and the effects can be severe. Radiant heat can ignite flammable materials, such as dry vegetation or wooden structures, and cause them to catch fire. It can also cause buildings and structures to overheat, leading to structural damage or collapse. Additionally, people who are too close to the flames can suffer from heat stress, dehydration, and serious burns.

The risk of radiant heat exposure during a bushfire can be mitigated by creating a defensible space around buildings and structures, clearing flammable materials from the area, and using fire-resistant building materials when constructing or renovating buildings. It's also important to follow evacuation orders and stay informed about the fire's behavior and movement to ensure personal safety.

5.2.3 Ember Attack

Ember attack, often referred to as spot fires, represents a prominent hazard during bushfires. This phenomenon occurs when burning embers, also known as firebrands or spot fires, are carried by the wind and land in different locations, potentially igniting new fires.

In the midst of a bushfire, the combination of hot air and flames generates updrafts capable of lifting burning embers over considerable distances. These embers can alight on rooftops, in gutters, or on flammable materials near buildings and structures, leading to ignition and the potential initiation of new fires.

Ember attack poses a unique danger because it can manifest hours or even days after the primary fire front has passed, and it has the capacity to ignite fires in areas previously unaffected by the bushfire. Consequently, it is imperative to prepare for ember attack through measures such as establishing a defensible space around buildings and structures, removing flammable materials from the vicinity, and sealing gaps and openings in buildings to prevent ember ingress.

5.2.4 Wind and Smoke Attack

Strong winds can cause a bushfire to spread more rapidly and can also increase the likelihood of ember attack, as burning embers can be carried by the wind over long distances. Wind can also push flames and radiant heat towards buildings and structures, increasing the risk of direct flame contact and radiant heat exposure.

Smoke from a bushfire can also pose a danger to people's health, particularly for those with respiratory problems. Smoke can contain particulate matter, carbon monoxide, and other harmful pollutants that can irritate the lungs and worsen respiratory conditions. In addition to health effects, smoke can reduce visibility, making it more difficult for firefighters to contain the fire and for people to evacuate safely.

5.2.5 Convection and Conduction

Both convection and conduction can play a significant role in the spread and intensity of a bushfire. To reduce the risk of a bushfire spreading through convection and conduction, it's important to create a defensible space around buildings and structures, clear flammable materials from the area, and use fire-resistant building materials when constructing or renovating buildings. It's also crucial to follow evacuation orders and stay informed about the fire's behavior and movement to ensure personal safety.

5.3 Bushfire Protection Measures

This section identifies the bushfire protection measures that will be implemented as part of the proposed development to comply with the requirements of both the State

and local council's Bushfire Prone Area code and to minimise the impact of potential bushfires on people and property.

The proposed measures are prepared in according with Queensland State Government State Planning Policy - Part E (SPP 2017), the Bushfire Resilient Communities Technical Reference Guide (QFES, 2019), the local council's Bushfire Overlay Code, and the Australian Standard (AS 3959:2018) for Construction of buildings in bushfire-prone areas.

The legislation mentioned above aims to protect individuals and buildings from bushfires by ensuring that new developments meet specific Performance Outcomes that are appropriate for the identified bushfire hazard. These Performance Outcomes are typically achieved by properly separating the development from the bushfire hazard, providing adequate access for firefighting vehicles, and constructing buildings to the appropriate standards. Additionally, the legislation includes other relevant factors that are deemed necessary for ensuring the safety of individuals and buildings during a bushfire emergency.

5.3.1 Asset Protection Zone (APZ)

An Asset Protection Zone (APZ) is the most important bushfire protection measure. An APZ is a designed area surrounding a building or structure that has been well managed to reduce the risk of a bushfire impacting the building or structure. An APZ provides:

- A buffer zone between a bushfire hazard and an asset
- An area of reduced bushfire fuel that allows suppression of fire
- An area from which backburning may be conducted
- An area which allows emergency services access and provides a relatively safe area for firefighters and homeowners to defend their property.

A correctly designed and regularly maintained APZ will reduce the risk of:

- Direct flame contact on the asset
- Damage to the build asset from intense radiant heat
- Ember attack on the asset

An APZ are typically designed and created by removing vegetation and other combustible materials from around the building or structure, reducing the fuel available for a bushfire. The width of the APZ and the level of vegetation removal required depend on a number of site-specific factors, including the slope of the land, the hazardous vegetation type, and the intensity of the bushfire hazard. The property owner is responsible for creating and maintaining regularly the designed APZ.

(1) Creating APZ by reducing bushfire fuel

The intensity of bush fires can be greatly reduced where there is little to no available fuel for burning. To effectively manage bushfire fuels, there are several approaches to reduce, remove, or change the condition of the fuel.

- Raking or manual removal of fine fuels
- Mowing or grazing of grass
- Removal or pruning of trees, shrubs and understorey
- Slashing and trittering

It is important to note that reducing fuel does not always require removal of all vegetation, which would cause environmental damage. Trees and plans also provide protection against bushfires by mitigating the impact of strong winds, intense heat and flying embers (by filtering embers) and changing wind patterns. Some ground cover vegetation is also needed to prevent soil erosion.

(2) Ongoing management for APZ

The creation of an Asset Protection Zone (APZ) establishes a controlled fuel-managed area that serves to reduce the potential impact of direct flame contact and radiant heat on property development, effectively acting as a defensible space. It is crucial to emphasize that the management of vegetation and landscaping within the APZ is of paramount importance and should maintain a minimal fuel load.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bushfires, and maintenance of the APZ should be regularly undertaken, especially in advance of the bushfire season. The requirements are set out as follows.

(i) Inner Protection Area

The Inner Protection Area is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the proposed development and act as an important space. Vegetation within this area should be kept below 1cm in height and be discontinuous.

In practical terms the Inner Protection Area is typically the curtilage around the building, consisting of a mown lawn and well-maintained gardens.

When establishing and maintaining the inner protection zone, the following requirements apply:

- General
  - A minimum 1m wide area, suitable for pedestrian traffic, must be provided around the immediate curtilage of the building
  - Planting is limited in the immediate vicinity of the building
  - All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period
  - Planting does not provide a continuous canopy to the building
  - Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building
  - Plants greater than 10 cm in height must not be placed within 3m of a window or glass feature of the building

- Low flammability vegetation species are used

- Trees
  - Tree canopy cover should be less than 15% at maturity
  - Trees at maturity should not touch or overhang the building
  - Lower limbs should be removed up to a height of 2m above the ground
  - Tree canopies should be separated by 2 to 5m
  - Preference should be given to smooth barked and evergreen trees
- Shrubs
  - Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided
  - Shrubs should not be located under trees
  - Shrubs should not form more than 10% ground cover
  - Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation
- Grass
  - Grass should be kept mown regularly (as a guide grass, should be kept to no more than 100mm in height)
  - Leaves and vegetation debris should be removed regularly

(ii) Outer Protection Area

The Outer Protection Area is located between the Inner Protection Area and unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns, reducing the level of direct flame, radiant heat and ember attack on the inner protection zone.

- Trees
  - Tree canopy cover should be less than 30% at maturity
  - Tree canopies should be separated by 2 to 5m
- Shrubs
  - Shrubs should not form a continuous canopy, and
  - Shrubs should not form more than 20% ground cover
- Grass
  - Grass should be kept mown regularly to height of less than 100mm
  - Leaves and other debris should be removed regularly.

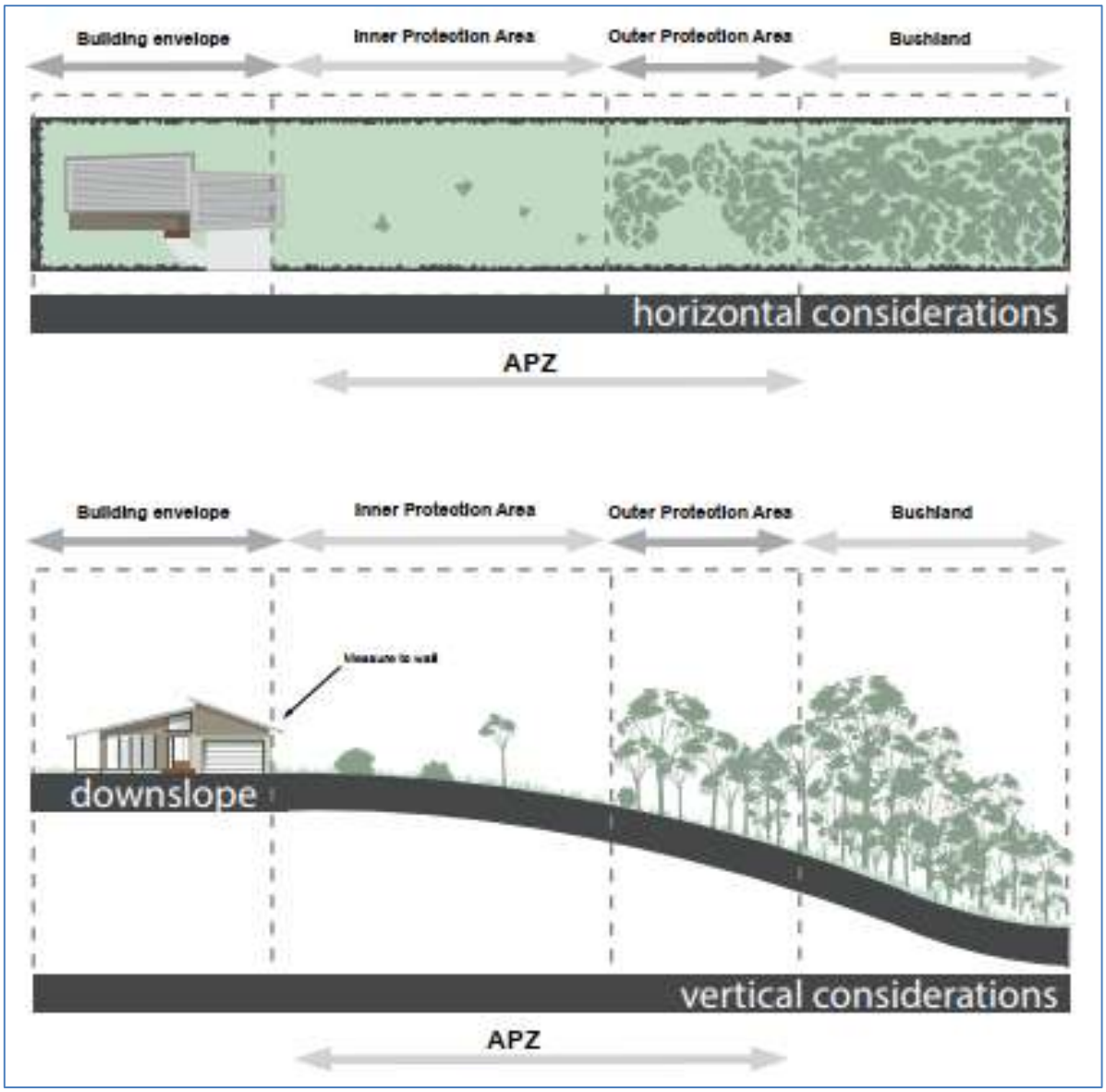


Figure 5-1: Inner protection area and Outer protection area

5.3.2 Building Construction, Siting and Design

The appropriate design and construction of buildings enhance their survivability from bushfires. Construction measures should not be applied as a stand-alone mitigation solution but should form part of a suite of measures. This should also include APZ, appropriate access, water supply and landscaping. Building design needs to ensure adequate protection of vulnerable building elements. Construction standards are outlined in AS 3959:2018 and the NASH Standard to provide various levels of protection for different building elements.

The outcome of the BAL assessment is BAL-29 in according with AS 3959:2018 and the Bushfire Resilient Communities.

It should be noted the Building Code of Australia only requires Classes 1, 2 and 3 and certain Class 9 buildings and Class 10a building associated with those buildings to comply with the bushfire provisions of the NCC 2022.

5.3.3 Assess and Evacuation Arrangement

Developments in bushfire prone areas should be serviced by safe access/exit points for both site personnel and emergency services personnel in the event of an emergency. The local council's Bushfire Hazard Overlay Code prescribes appropriate access for fire management an evacuation to be provided as below:

- Do not exceed an average gradient of 12.5%
- Have a minimum width of 4m and 6m of vegetation clearing, can be up to 10m.
- Have a minimum of 4.8m vertical clearance
- Accommodate turning areas for fire-fighting appliances in accordance with Qld Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines
- Passing bays for firefighting appliances are 20m long by 3m wide, with a minimum trafficable width of 7m at the passing bay
- Reversing bays for firefighting appliances are 6m wide and 8.5m deep to any gates, meeting above turning requirements
- Passing bays or turning intervals located every 200m with a maximum grade of 5%
- Compacted driveway to ensure all weather surfaces

The proposed development will provide with vehicular access that enables safe evacuation for occupants and easy access by firefighting appliances. Consequently, the proposed development is in compliance with the Council Bushfire Hazard Overlay.

5.3.4 Water Supply

It is noted that AS 3959:2018 – Construction of buildings in bushfire-prone areas does not include requirements for water supply for firefighting purposes, nor is water supply a factor in determining a building's Bushfire Attack Level (BAL) rating. Accordingly, the building certifier should not impose conditions on the building approval relating to water supply for firefighting purposes, unless such conditions are required under a development permit issued by the local council or are specified in the applicable local planning scheme.

An adequate supply of water is essential for firefighting purposes and suitable water supply arrangements shall be provided. The proposed development should provide an appropriate water supply to support effective emergency services response includes reticulated water and/or appropriate static water supply.

The reticulated hydrant system shall be designed and constructed in accordance with ‘QLD Fire and Emergency Services’ Fire Hydrant and Vehicle Access Guidelines.

Where reticulated water is unavailable, an appropriate static water supply should consist of a dedicated water tank specifically for firefighting purposes, with suitable access for firefighting appliances. It is recommended that the tank be located within 10m of the building. To ensure durability and compliance with safety standards, it is strongly recommended that the tank be constructed underground or from non-combustible materials, such as steel or concrete.

The tank must include a take-off connection providing a minimum of 10,000 litres of static water exclusively for firefighting access. The site must permit clear access for a medium rigid fire appliance (15 tonnes) to within 6 metres of the tank.

Tanks and associated pumps must be protected from bushfire impact in accordance with AS 2304:2011 – Water storage tanks for fire protection systems. Where the site is serviced by a rural fire brigade, the tank shall be fitted with brigade-compatible fittings, including a 50-millimetre ball valve and a male camlock coupling. If the tank is underground, a minimum 200-millimetre access hole must be provided to allow suction line access. Directional signage must clearly indicate the tank’s location at the street frontage.

5.3.5 Landscaping Management Plan

The type, location and ongoing maintenance of landscaping are considered a necessary bushfire protection measure. Landscaping management for bushfire is the process of designing, constructing, and maintaining a landscape in a way that reduces the risk of bushfire. The management strategies typically involve creating fire breaks, reducing fuel loads, and selecting vegetation that is less flammable.

Appendix A provides a list of less flammable plants.

The landscaping management shall be carried out as the requirements set out for Asset Protection Zone in Section 5.3.1.

5.3.6 Reducing Fuel load and Weed Management

Removing excess ground fuels and combustible material is a crucial aspect of effective fire prevention and management. This process involves the careful clearance of various flammable materials, including long dry grass, accumulated dead leaves, and fallen branches. By systematically reducing these fuel sources, the risk of fire ignition and spread is significantly mitigated. Regular maintenance of such clearance efforts is essential to ensure ongoing fire safety and resilience within the environment.

Unmanaged invasive pest plants can swiftly amplify fuel loads, comprising fast-growing introduced grasses, dense woody weeds, and invasive climbing vines. These factors collectively escalate fuel loads, fostering a "laddering" effect,

intensifying fire spread and allowing it to transition from ground to canopy. Effective weed management markedly diminishes bushfire risk to the site and surrounding properties.

5.4 Biodiversity Overlay

Bushfire risk is defined in the Natural Hazards, Risk and Resilience - Bushfire State Planning Policy – State Interest Guidance Material (December 2019) and is categorized as Acceptable or Tolerable risk. It is noted that exemptions under Schedule 6, Part 3, Section 20A(a)(i) of the Planning Regulation 2017 allow for the clearing of vegetation for essential management, specifically for “establishing or maintaining a necessary firebreak to protect infrastructure, if the maximum width of the firebreak is equal to 1.5 times the height of the tallest vegetation next to the infrastructure or 20 meters, whichever is wider.”

The Bushfire Management Plan has been designed to have minimal impact on the Biodiversity Overlay Area. This includes the implementation of asset protection zones and measures aimed at reducing vegetation clearing. The majority of the proposed Asset Protection Zone utilizes existing cleared and landscaped areas, thereby minimizing further disturbance. In the Outer Protection Area of the designed Asset Protection Zone, a small portion may intersect with an area mapped under the Biodiversity MSES Overlay. Within this zone, fuel load reduction activities will be carefully targeted, focusing exclusively on the management of invasive weeds, overgrown ground cover, and understorey vegetation. Importantly, these measures will not require the removal of mature native trees, ensuring the preservation of significant ecological values.

6. Conclusion

The following recommendations are provided in relation to the requirements of Council's Bushfire Hazard Overlay Code.

- An asset protection zone has been designed and shall be established and managed.
- Construction of building to meet BAL-29 construction requirements of AS 3959:2018.
- Provision of water and service to be in accordance with the requirements.
- The location of the proposed dwelling maximizes the use of existing cleared and open space while minimizing the clearing of native vegetation and its impact on the environment.

In conclusion, the proposed development has been designed and managed to ensure that the exposure of people and property to unacceptable bushfire hazard risks has not increased. The development will mitigate bushfire risk through appropriate siting, design, and management measures. It provides suitable access and evacuation routes for both private and emergency service vehicles, in line with the nature of the development and the level of bushfire risk. An adequate water supply for firefighting purposes will be provided, and no hazardous goods will be stored on-site. Overall, the development meets all necessary requirements to minimize the risk of bushfires to people, property, public health, and the environment.

This assessment assumes that vegetation on the site will be maintained according to the client's outlined plans. Should the proposed development require the removal of site vegetation to meet specific BAL requirements set by either the developer or the client, it is the client's responsibility to comply with relevant regulations regarding native vegetation clearing.

Although emergency management arrangements are not a mandatory measure for the proposed development, it is recommended that residents in bushfire prone areas prepare a bushfire survival plan.

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8. Appendix

Appendix A Low Flammability Plant Species List

Appendix B Site Plan

Appendix C Summary of AS3959-2018 Construction Requirements for Bushfire Attack Level

Appendix A Low Flammability Plant Species List

This list is intended as a general guide. It is essential to conduct independent research to identify fire-resistant species specific to the region of the subject site, as suitability varies across Queensland. Notably, all plants, whether native or exotic, will combust when exposed to extreme heat or flame; therefore, additional precautions may be required.

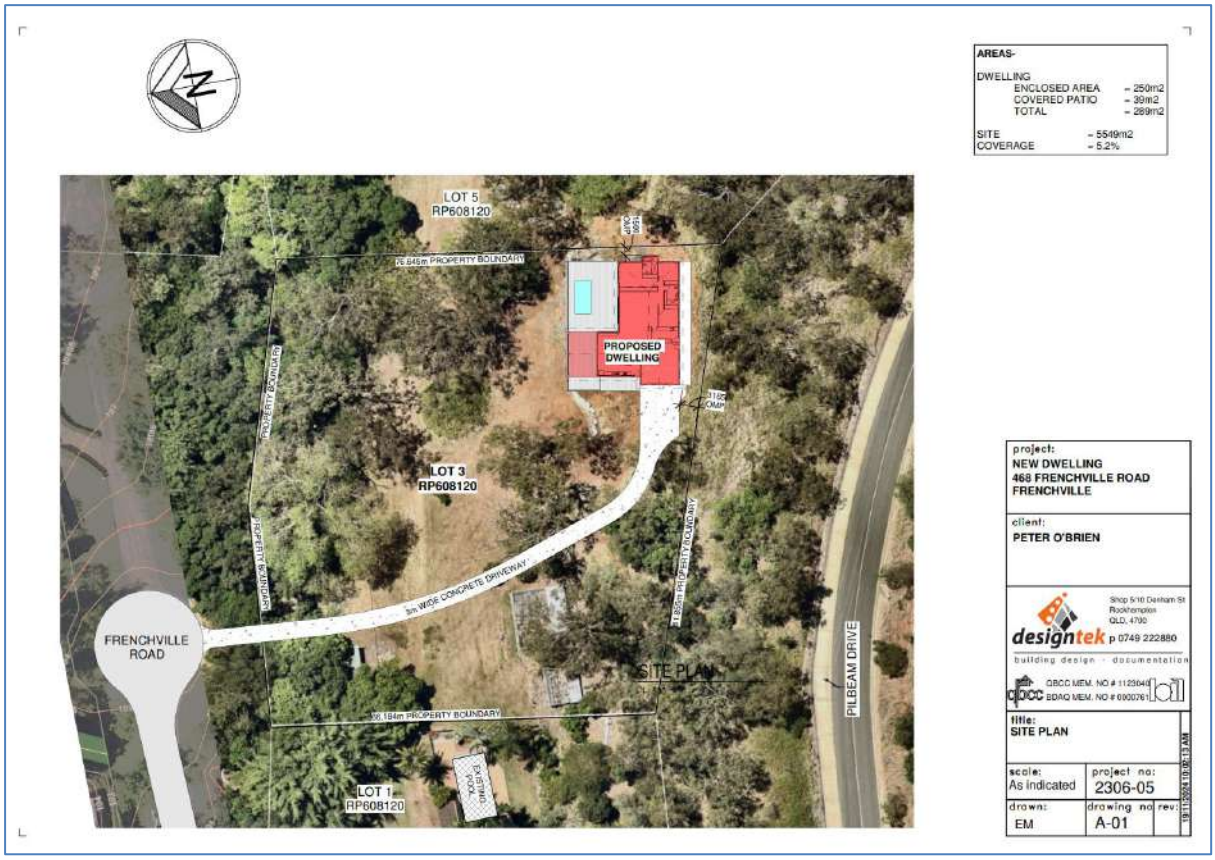
Ground covers and creeping plants
• Casuarina glauca prostrate, commonly known as grey she oak or marsh she oak
• Anigozanthos, commonly known as kangaroo paw
• Carpobrotus glaucescens, commonly known as pigface
• Hardenbergia violacea, commonly known as sarsparilla or purple coral pea
• Liriope muscari, commonly known as lilyturf
• Lomandra longifolia, commonly known as spiny-headed mat-rush
• Lomandra hystrix, commonly known as mat-rush
• Varieties of Brachyscome
• Varieties of Dampiera
• Dianella caerulea, commonly known as blue berry lily
• Varieties of Dianella prunina
• Dianella revoluta, commonly known as blue berry lily or spreading flax lily
• Dichondra repens, commonly known as kidney weed
• Einadia nutans, commonly known as climbing saltbush
• Hardenbergia violacea, commonly known as false sarsaparilla, purple coral pea, happy wanderer, native lilac or waraburra
• Scaevola aemula, commonly known as fairy fan flower
• Scaevola humilis, commonly known as sandplain fan flower
• Varieties of Cotyledon
• Myoporum insulare, commonly known as boobialla, native juniper or blueberry tree
• Eremophila glabra, commonly known as kalbarri carpet
• Eremophila debilis, commonly known as winter apple
• Elaeocarpus eumundi, commonly known as eumundi quandong
• Elaeocarpus prima donna, commonly known as blueberry ash
• Kennedia rubicunda, commonly known as Dusky coral pea or red kennedy pea
• Rhododendron hybrid, commonly known as azalea
• Varieties of Arctotis
• Varieties of Photinia
• Westringia fruticosa, commonly known as native rosemary

Shrubs
• All varieties of Aloe
• Correa reflexa, commonly known as nativefuchsia
• Varieties of Acacia
• Nerium oleander, commonly known as oleander
• Varieties of Atriplex, commonly known as saltbushes
• Varieties of Escallonia
• Varieties of Maireana, commonly known as cottonbush
• Varieties of Eremophila, commonly known as emu bushes or fuchsia bushes
• Varieties of Grevillea
• Melaleuca nodosa, commonly known as prickly leaf paperbark
• Varieties of Syzygium
• Varieties of Photinia
• Varieties of Rhagodia
• Rhaphiolepis indica, commonly known as india hawthorn
• Strelitziacae hutch
• Strelitzia banks
• Srelizia nicolai
• Sambucus australasica, commonly known as yellow elderberry or native elderberry
• Varieties of Coprosma
• Varieties of Plectranthus
• Senna artemisioides, commonly known as silver cassia

Deciduous trees
• Brachychiton acerifolius, commonly known as the flame kurrajong
• Ulmus parvifolia, commonly known as chinese elm
• Morus alba, commonly known as the mullberry tree
• Eriobotrya japonica, commonly known as loquot
• Gleditsia triacanthos, commonly known as honey locust
• Trees from the genus Prunus, including ornamental cherries, plums and peaches
• Trees from the genus Malus, including apples and crab apples

Evergreen trees
• Grevillea robusta, commonly known as silky oak
• Melia azedarach, commonly known as cape lilac, white cedar, persian lilac or chinaberry
• Lophostemon confertus, commonly known as brush box, queensland box, brisbane box or pink box
• Tristaniopsis laurina, commonly known as water gum, kanooka or kanuka
• Rapanea variabilis, commonly known as muttonwood
• Varieties of Acacia
• Varieties of Acmena
• Varieties of Magnolia
• Cupaniopsis anacardioides, commonly known as tuckeroo or beach tamarind
• Elaeocarpus reticulatus, commonly known as blueberry ash
• Alectryon subcinereus, commonly known as native quince
• Callicoma serratifolia, commonly known as black wattle
• Canthium coprosmoides, commonly known as supple jack or sweet susie
• Cassine australis, commonly known as red olive berry or red olive plum
• Croton insularis, commonly known as Queensland cascarilla, native cascarilla bark or silver croton
• Cuttsia viburnea, commonly known as native elderberry
• Varieties of Citrus
• Denhamia celastroides, commonly known as denhamia or orange boxwood
• Diospyros australis, commonly known as black plum or yellow persimmon
• Eupomatia laurina, commonly known as bolwarra, grey beech or native guava
• Glochidion ferdinandi, commonly known as the cheese tree or buttonwood
• Guioa semiglauca, commonly known as guioa or wild quince
• Hodgkinsonia ovatiflora, commonly known as golden ash
• Hymenosporum flavum, commonly known as native frangipani or Queensland frangipani
• Petalostigma triloculare, commonly known as quinine berry, forest quinine or bitter bark
• Podocarpus elatus, commonly known as she pine
• Rhodosphaera rhodanthema, commonly known as yellow cedar, tulip satinwood or deep yellow wood
• Sarcopteryx stipata, commonly known as corduroy
• Scolopia braunii, commonly known as scolopia or brown birch
• Stenocarpus sinuatus, commonly known as white silky oak, tulip flower, white beefwood Or wheel of flower tree
• Streblus brunonianus, commonly known as the whalebone tree, axehandle wood or white handlewood
• Symplocos stawellii, commonly known as white hazelwood
• Symplocos thwaitesii, commonly known as buff hazelwood
• Varieties of Ficus (fig trees)

Appendix B Site Plan



Appendix C: Summary of AS3959-2018 BAL 29 construction requirements

Note: this is a summary of some portions of the standard - the building designer, builder and subcontractors should refer to AS3959-2018 in full prior to construction.

- **Subfloor supports**

The Standard does not provide construction requirements for sub-floor supports where the sub-floor is enclosed in accordance with wall that conforms to the requirements for walls listed below or is enclosed with corrosion resistant steel, bronze or aluminium mesh with a maximum aperture of 2 mm.

Where the subfloor space is unenclosed, the support posts, columns, stumps, piers and poles are to be of non-combustible material or bushfire resisting timber.

- **Floors**

The Standard does not provide construction requirements for concrete slabs on the ground.

Unenclosed subfloor space

The standard does not provide construction requirements for bearers, joists and floors if the unde4rside element is greater than 400mm above finished ground level

- **External walls**

The exposed components of external walls shall be as follows:

(a) made of non-combustible materials (e.g. full masonry, brick veneer etc.) with a minimum thickness of 90 mm, or

(b) timber logs with a density of 680 kg/m3 and a minimum nominal thickness of 90mm; or

(c) cladding that is fixed externally to a timber or metal frame and is:

(i) non-combustible; or

(ii) fibre cement a minimum of 6mm thick; or

(iii) bushfire-resisting timber.

- **Joints**

All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-jointed.

Vents and weepholes

Vents and weepholes in external walls are to be screened with corrosion-resistant steel, bronze or aluminium mesh with a maximum aperture of 2 mm.

External glazed elements, assemblies and doors

- **Screens for windows and doors**

Where fitted, screens for windows and doors shall have mesh or perforated sheet made of corrosion-resistant steel, bronze or aluminium with a maximum aperture of 2 mm, with framing made from metal or bushfire resisting timber.

- **Windows**

Frame material for windows are to be made from bushfire-resisting timber, metal or metal-reinforced uPVC.

Glazing is to be toughened glass with a minimum thickness of 5 mm.

The openable portions of windows shall be screened with a mesh with a max aperture of 2 mm made of corrosion resistant steel, bronze or aluminium.

- **Doors - side hung external doors, panel fold & sliding doors**

Doors- shall be completely protected externally by a screen with a mesh with a max aperture of 2mm made of corrosion resistant steel, bronze or aluminium, OR

Door panel material shall be:

(a) non-combustible; or

(b) solid timber, laminated timber or reconstituted timber, having a minimum thickness of 35 mm for the first 400 mm above the threshold; or

(c) fully framed glazed door panels with framing made from metal, bushfire resisting timber or uPVC.

Door frames shall be made from metal bushfire resisting timber, metal or metal reinforced uPVC.

Where doors incorporate glazing, the glazing shall be toughened glass with a minimum thickness of 6mm.

Doors shall be tight fitting to the door frame and to an abutting door, if applicable.

Weather strips, draught excluders or draught seals shall be installed.

There is no requirement to screen the openable part of a door at this level.

- **Garage doors**

Vehicle access doors shall be made from:

(i) non-combustible material; or

(ii) bushfire-resisting timber; or

(iii) fibre-cement sheet, a minimum of 6 mm in thickness; or

(iv) a combination of any of items (i), (ii) or (iii) above.

All vehicle access doors to be protected with suitable weather strips, draught excluders, draught seals or brushes.

- **Roofs**

The following apply to all types of roofs and roofing systems:

(a) roof tiles, roof sheets and roof covering accessories shall be non-combustible,

(b) the roof/wall and roof/roof junction shall be sealed, or otherwise protected to prevent openings greater than 2mm,

(c) roof ventilation openings, such as gable and roof vents, shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a max aperture of 2mm made of corrosion resistant steel, bronze or aluminium.

(d) A pipe or conduit that penetrates the roof covering shall be non-combustible

Tiled roofs shall be fully sarked with the sarking covering the entire roof area including ridges and hips and extend into gutters and fascias.

Sheet roofs shall:

(a) be fully sarked with sarking, except that foil backed insulation blankets may be installed over battens; OR

(b) have any gaps sealed at the fascia, or wall line, hips and ridges by:

(i) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium, or

(ii) mineral wool, or

(iii) other non-combustible material, or

(iv) -a combination of any of the above.

- **Roof penetrations**

The following apply to roof penetrations:

(a) roof penetrations, including roof lights, roof ventilators, roof-mounted evaporative cooling units, aerials, vent pipes and supports for solar collectors, shall be sealed. Sealing material is to be non-combustible.

(b) openings in vented roof lights, roof ventilators or vent pipes shall be fitted with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.

(c) all overhead glazing shall be Grade A safety glass complying with AS 1288.

(d) flashing elements shall be non-combustible.

- **Eaves linings, fascias and gables**

The following apply to eaves linings, fascias and gables:

(a) gables shall comply with requirements for walls.

(b) fascias and bargeboards shall be made from bushfire-resisting timber or metal.

(c) eave linings shall be fibre-cement sheet with a minimum thickness of 4.5mm or bushfire resisting timber.

(d) eave penetrations shall be protected as for roof penetrations.

(e) eaves ventilation openings are to be fitted with ember guards and be made of corrosion resistant steel, bronze or aluminium.

(f) joints in eave linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds.

- **Gutters and downpipes**

The Standard does not provide material requirements for gutters and downpipes, with the exception of box gutters.

Box gutters are to be non-combustible and flashed at the roof junction with non-combustible material.

If installed, gutter and valley leaf guards are to be non-combustible.

- **Verandahs, decks, steps, ramps and landings**

Decking may be spaced. There is no requirement to enclose the subfloor spaces of verandas, decks, steps, ramps or landings.

Decking, stair treads, trafficable surfaces of ramps and landings, balustrades and handrails are to be made from:

(a) of non-combustible material; or

(b) of bushfire-resisting timber; or

(c) a combination of items (a) and (b) above.

Verandah posts shall be made from non-combustible material or bushfire-resisting timber.

- **Water and gas supply pipes**

Above ground, exposed water and gas supply pipes shall be metal. The metal pipe shall extend a minimum of 400mm within the building and 100mm below the ground.

APPENDIX F

BUSHFIRE-RESISTING TIMBER

(Normative)

F1 GENERAL

Bushfire-resisting timber is timber that is in solid, laminated or reconstituted form and has been tested and is deemed to be acceptable to withstand exposure up to a BAL—29 condition.

Timber may be 'bushfire-resisting' by means of one or more of—

(a) the inherent properties of the material itself;

(b) being impregnated with fire-retardant chemicals; or

(c) the application of fire-retardant coatings or substrates.

F2 TESTING

The following applies:

(a) To satisfy the requirements for bushfire-resisting timber, timber shall be tested in accordance with AS/NZS 3837 and shall meet the following criteria:

(i) The maximum heat release rate shall be not greater than 100 kW/m^2.

(ii) The average heat release rate for 10 minutes following ignition shall be not greater than 60 kW/m^2 when the material is exposed to an irradiance level of 25 kW/m^2.

(b) Where the timber has been altered by chemicals, the test samples shall be subjected to the regime of accelerated weathering described in Paragraph F3 except that where the timber is protected from the weather, as described in the AS 1684 series (for example, cladding protected by a veranda), accelerated weathering of the test samples is not required before being tested to AS/NZS 3837.

External timbers are deemed to be protected if they are covered by a roof projection (or similar) at 30 degrees or greater to the vertical and they are well detailed and maintained (painted or stained and kept well ventilated).

NOTE: The purpose of testing is to assess timber performance rather than to simulate a bushfire. The irradiance set for the test is not to be considered to be correlated to the BAL.

F3 ACCELERATED WEATHERING

Where accelerated weathering is required before testing to AS/NZS 3837, external fire-retardant-coated substrates shall be subjected to the ASTM D2898 Method B weathering regime, with the water flow rate modified to be the same as that within ASTM D2898 Method A.

NOTE: Accelerated weathering does not account for mechanical wear and tear within trafficable areas and care should be exercised when using coating materials.

F4 BUSHFIRE-RESISTING SPECIES

The species listed in Table F1 have been tested and have met the requirements of Paragraph F2.

TABLE F1

BUSHFIRE-RESISTANT SPECIES

Standard trade name	Botanical name
Ash, silvertop	*Eucalyptus sieberi*
Blackbutt	*Eucalyptus pilularis*
Gum, red, river	*Eucalyptus camaldulensis*
Gum, spotted	*Corymbia maculata*
Ironbark, red	*Eucalyptus sideroxylon*
Kwila (Merbau)	*Intsia bijuga*
Turpentine	*Syncarpia glomulifera*

Attachment 4

- Ecological Assessment Report prepared by T1 Ecology.

Ecological Assessment Report

Lot 3 RP608120

Prepared for DesignTek

8 June 2025 – Revision 0

Contents

1. Introduction and Overview

Background

DesignTek are currently in the process of obtaining a Development Approval for a Material Change of Use application for Lot 3 RP608120 situated at 3A Pilbeam Drive, Frenchville. The application is for a single dwelling residential development.

The DA application has been lodged with Rockhampton Regional Council and DesignTek have been issued with an Information Request. One of the requested items included in the Information Request is to provide an Ecological Assessment Report specifically addressing Matters of State Environmental Significance (MSES) which are mapped as occurring on the lot. DesignTek have engaged T1 Ecology as a suitably qualified person to conduct an Ecological Assessment of the lot, specifically to address any MSES which may be present.

Purpose of this Report

The purpose of this report is to provide the results of the desktop and field Ecological Assessment of Lot 3 RP608120. The results of this report are intended to support the Development Application and subsequent Information Request from Rockhampton Regional Council.

Limitations of this Report

This report relates only to what is contained within the boundaries of Lot 3 RP608120. Assessment of the neighbouring lots and the adjacent Mt Archer National Park is not included in this report. This report does not constitute a full Protected Plants Flora Survey under the *Nature Conservation Act 1992*.

The findings of this report are to inform Rockhampton Regional Council of the presence/absence of any Matters of State Environmental Significance on Lot 3 RP608120 only. This report does not consider Matters of National Environmental Significance under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1994*.

2. Project Description

The proposed development is located on Lot 3 RP608120 in Frenchville which is a suburb of Rockhampton in Central Queensland. The subject lot is partially cleared land from historical development and residential dwellings which have since been demolished.

The current development proposes to construct a new dwelling in the existing cleared location with a 3m wide concrete driveway entering the lot from Frenchville Road to the north (refer Figure 1).

Figure 1: Proposed development plan (source: DesignTek)

3. Legislative Context

Matters of State Environmental Significance

All planning approvals in Queensland are to be assessed in accordance with the Queensland State Planning Policy (SPP). The SPP includes a biodiversity State interest that states:

> *"The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset."*

Matters of State Environmental Significance are defined in the SPP to include the following:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992*;
- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004*;
- Areas within declared fish habitat areas that are management A areas or management B areas under the *Fisheries Regulation 2008*;
- Threatened wildlife under the Nature Conservation Act 1992 and special least concern animals under the *Nature Conservation (Wildlife) Regulation 2006*;
- Regulated vegetation under the *Vegetation Management Act 1999* that is:
    - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
    - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
    - Category R areas on the regulated vegetation management map;
    - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
    - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;
- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;
- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Referable Wetlands under the *Environmental Protection Regulation 2008*;
- Wetlands and watercourses in high ecological value waters defined in the *Environmental Protection (Water) Policy 2009*, schedule 2;
- Legally secured offset areas

Rockhampton Regional Council is currently assessing the development application for Lot 3 RP608120 and has requested further information regarding MSES, specifically 'Matters of State Environmental Significance – Wildlife Habitat'. As outlined above, this relates to threatened wildlife under the *Nature Conservation Act 1992* (which includes flora and fauna) and special least concern fauna.

4. Methodology

Desktop Assessment

Background research and database searches were undertaken to provide an understanding of the potential values which could occur on the subject lot. A range of publicly available databases and mapping programs were interrogated to inform the desktop assessment, including:

- Department of Environment, Tourism, Science and Innovation (DETSI) Matters of State Environmental Significance mapping and report
- DETSI WildNet database search
- DETSI Regional Ecosystem mapping
- Atlas of Living Australia (ALA)
- DETSI Protected Plants High Risk Trigger mapping
- DETSI Essential Habitat mapping
- Aerial Imagery

Field Assessment

A field assessment was conducted by experienced ecologist, Vanessa Boettcher, on 6th June 2025. The field inspection included a flora survey of the lot, Regional Ecosystem verification, habitat assessment and targeted survey for potentially occurring conservation significant flora. The survey did not include all areas within 100m radius of the proposed development as this was not in the scope for this assessment. Therefore, the survey is not to be used as a Protected Plants Flora Survey.

The timing of the survey was predominantly determined by project timeframes however was considered appropriate for the detection of the targeted flora due to the distinctive growth habit of the target species allowing identification year round.

5. Desktop Assessment

Database Searches

A search of the Queensland Government WildNet platform was undertaken for the subject lot and a 1km buffer for any conservation significant fauna and flora which may potentially occur at the site. The results of the WildNet search are in Appendix A and are outlined in Table 1 below.

Table 1: Conservation significant species potentially occurring on site.

Kingdom	Scientific Name	Common Name	NC Act Status
Animal	*Denisonia maculata*	Ornamental Snake	Vulnerable
Plant	*Graptophyllum excelsum*	-	Near Threatened
Plant	*Cycas ophiolitica*	Marlborough Blue	Vulnerable
Plant	*Cordyline murchisoniae*	-	Special Least Concern
Plant	*Drynaria sparsisora*	-	Special Least Concern
Plant	*Microsorum punctatum*	-	Special Least Concern
Plant	*Pyrrosia confluens*	-	Special Least Concern
Plant	*Macrozamia miquelii*	-	Special Least Concern

The purpose of this ecological assessment is to determine the presence of Matters of State Environmental Significance. As such, Near Threatened and Special Least Concern plants are not included in potential MSES species. Therefore, potentially occurring MSES species include *Denisonia maculata* (Ornamental Snake) and *Cycas ophiolitica* (Marlborough Blue).

Regulated Vegetation and Regional Ecosystem Mapping

The Regulated Vegetation mapping and Regional Ecosystem mapping are provided in Appendix A. The subject lot is currently mapped as Regulated Vegetation containing remnant Regional Ecosystem 11.3.3 which is described in Table 2 below.

Table 2: Regional Ecosystem description

RE code	VM Act RE Status	RE Description
11.3.3	Of Concern	*Eucalyptus coolabah* woodland to open woodland. A secondary tree or shrub layer may occur, including E. *populnea, Melaleuca bracteata, Acacia stenophylla, Alectryon oleifolius, Terminalia oblongata* (in the north), *Acacia pendula, A. cambagei* and *Duma florulenta*. The ground layer is dominated by a range of grass and forb species depending on season. Occurs on Cainozoic alluvial plains or levees with clay or sometimes texture contrast soils.

A review of the aerial imagery for the site shows that a significant portion of the lot has been cleared previously and is non-remnant vegetation. Vegetation which is retained on the lot is analogous to Eucalypt woodland and riparian vegetation fringing the watercourse traversing the northern boundary of the lot.

MSES Mapping

An MSES report and mapping was obtained for the site and is provided in Appendix B. The report includes a summary table of all MSES mapped as occurring on the lot and is summarised below. Items that are mapped on the lot are highlighted in bold text.

Table 3: MSES matters mapped on Lot 3 RP608120

MSES	Measurement of MSES on the lot	Percentage of lot impacted by MSES
1a Protected Areas – estates	0 ha	0.0%
1b Protected Areas – nature refuges	0 ha	0.0%
1c Protected Areas – special wildlife reserves	0 ha	0.0%
2 State Marine Parks – highly protected zones	0 ha	0.0%
3 Fish habitat areas (A and B areas)	0 ha	0.0%
4 Strategic Environmental Areas	0 ha	0.0%
5 High Ecological Significance wetlands on the Map of QLD Wetland Environmental Values	0 ha	0.0%
6a High Ecological Value wetlands	0 ha	0.0%
6b High Ecological Value waterways	0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	**0.59 ha**	**100%**
7b Special least concern animals	0 ha	0.0%
7c i Koala habitat area – core (SEQ)	0 ha	0.0%
7c ii Koala habitat area – locally refined SEQ	0 ha	0.0%

MSES	Measurement of MSES on the lot	Percentage of lot impacted by MSES
7d Sea turtle nesting areas	0 km	Not applicable
8a Regulated Vegetation - Endangered or Of Concern in Category B (remnant)	**0.59 ha**	**100%**
8b Regulated Vegetation – Endangered or Of Concern in Category C (regrowth)	0 ha	0.0%
8d Regulated Vegetation – Essential habitat	**0.59 ha**	**100%**
8e Regulated Vegetation – intersecting a watercourse	0 km	Not applicable
8f Regulated Vegetation – within 100 of a Vegetation Management Wetland	0 ha	0.0%
9a Legally secured offset areas – offset register area	0 ha	0.0%
9b Legally secured offset areas – vegetation offsets through a Property Map of Assessable Vegetation	0 ha	0.0%

From the above summary, it is proposed by the MSES mapping that the property contains Threatened (endangered or vulnerable) wildlife, Regulated Vegetation - Of Concern remnant vegetation, and Regulated Vegetation- Essential Habitat.

The Vegetation Management Property Report for Lot 3 RP608120 identifies that the mapped Essential Habitat relates only to *Cycas ophiolitica* and *Graptophyllum exclesum*. No Essential Habitat is mapped for *Denisonia maculata* (Ornamental Snake).

Additionally, the MSES report includes the outcomes of Threatened (endangered and vulnerable) wildlife habitat suitability models for the subject lot. THE MSES report states that there is no habitat suitability present for Ornamental Snake on Lot 3 RP608120.

The subject lot is freehold land and is zoned as urban in the land use mapping for Rockhampton Regional Council. Schedule 19 of the *Planning Regulation 2014* outlines when clearing native vegetation is exempt from requiring assessment. Schedule 19, Part 2, Item 2 (g) states that clearing native vegetation is exempt when clearing –

(g) that is the following vegetation, if the clearing is for urban purposes in an urban area –
- (i) regulated regrowth vegetation;
- (ii) an of concern regional ecosystem in a category B area;
- (iii) a least concern regional ecosystem in a category B area

The proposed development is for an urban purpose in an urban area and is located in an Of Concern regional ecosystem and as such is exempt from requiring a clearing permit or assessment under the *Vegetation Management Act 1999* (VM Act). Consequently, the MSES categories of Regulated Vegetation – Of Concern Remnant Vegetation and Regulated Vegetation – Essential Habitat are not triggered for this development assessment.

As such, the only MSES relevant to the current development application is Threatened (endangered or vulnerable) wildlife – *Cycas ophiolitica*.

6. Field Assessment

Site overview

The field inspection found that the majority of Lot 3 RP608120 was cleared and the only remnant vegetation on the lot was restricted to the creek on the northern boundary. Remnant vegetation also occurs on the other side of the southern boundary on the steep slope between the lot and the road (Pilbeam Drive). Vegetation retained on the lot was limited to isolated mature trees and planted gardens (refer Figure 2).

Figure 2: Photo of Lot 3 RP608120 taken from eastern boundary looking west across the lot.

Regional Ecosystems

The Regional Ecosystem (RE) mapping was observed during the field inspection to be incorrect. The extent of remnant vegetation is less than what is mapped and the RE of the remnant vegetation is also incorrect.

The current mapping states that the site is remnant RE 11.3.3 as described in Table 1 above. As can be seen in Figure 2 above, the lot has been cleared and is non-remnant vegetation except for the creek line. Additionally, the remnant vegetation along the creek did not contain species analogous RE 11.3.3. The RE present was more closely aligned with Least Concern RE 11.3.25 as the dominant native canopy species were *Eucalyptus tereticornis*, *Casuarina cunninghamiana* and *Corymbia tesselaris* and large *Meleleuca* spp were observed downstream

of the lot. No *Eucalyptus coolabah* was observed which is the dominant species of the mapped RE 11.3.3. RE 11.3.25 is described in Table 4 below.

Table 4: RE description

RE code	VM Act RE Status	RE Description
11.3.25	Least Concern	*Eucalyptus tereticornis* or *E. camaldulensis* woodland to open forest fringing drainage lines. Other tree species, including *Casuarina cunninghamiana*, E. coolabah, *Melaleuca bracteata*, *Melaleuca viminalis*, *Livistona spp*. (in north), *Melaleuca spp*. and *Angophora floribunda*, may occur.

This does not change any of the assessment triggers or impact the development. Should the landowner choose to correct the mapping, this can be achieved through applying for a Property Map of Assessable Vegetation.

Flora survey

A flora survey was conducted throughout the whole lot including the creek, the cleared lot and the steep slope over the southern boundary. The flora survey recorded all observed species and particularly targeted habitats for threatened species which may occur. There were no threatened species observed within the boundary of Lot 3 RP608120. Five (5) *Cycas ophioliitca* were observed in the road reserve on the northern side of the lot. These will not be impacted by the proposed development.

Figure 3: Locations of Cycas ophiolitica

Habitat Assessment

A habitat assessment was undertaken specifically for the potentially occurring Ornamental Snake (*Denisonia maculata*).

Preferred habitat for Ornamental Snakes is woodlands and open forests associated with moist areas and particularly where giglai development occurs (depressions and mounds in clay soils). It has also been recorded from lake margins and wetlands. The species feeds almost exclusively on frogs (DCCEEW, 2025).

The habitat present on Lot 3 RP608120 does not meet the requirements for this species as the creek is highly ephemeral resulting in a lack of consistent prey and there is no cracking clay soils with gilgai development.

The field-based habitat assessment for this species is consistent with the MSES report habitat modelling for Ornamental Snakes, which stated no suitable habitat was present.

7. Conclusion

A desktop and field assessment has been conducted for Lot 3 RP608120 on behalf of DesignTek. The aim of the assessment was to determine the presence of any mapped Matters of State Environmental Significance (MSES). Mapped MSES on the lot included Threatened (endangered or vulnerable) Wildlife Habitat and Regulated Vegetation – Of Concern Vegetation and Regulated Vegetation – Essential Habitat. Regulated Vegetation of any type is not triggered for this assessment. Potential Threatened (endangered or vulnberable) Wildlife occurring on the lot were *Cycas ophiolitica* (Marlborough Blue) and *Denisonia maculata* (Ornamental Snake).

The field inspection found that there were no *Cycas ophiolitica* located on the lot and there is no suitable habitat present for *Denisonia maculata*. Therefore, the lot does not contain any Matters of State Environmental Significance.

8. References

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2025). Species Profile and Threats Database, *Denisonia maculata – Ornamental Snake*. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1193

Appendix A

Database searches and reports

WildNet search results for all species recorded within 1km of Lot 3 RP608120

WN Taxon ID	Kingdom	Class	Family	Scientific name	Common name	NCA status
1396	Animalia	Aves	Acanthizidae	Gerygone olivacea	white-throated gerygone	C
1732	Animalia	Aves	Accipitridae	Aquila audax	wedge-tailed eagle	C
1721	Animalia	Aves	Accipitridae	Aviceda subcristata	Pacific baza	C
1707	Animalia	Aves	Accipitridae	Haliastur sphenurus	whistling kite	C
1767	Animalia	Aves	Alcedinidae	Dacelo novaeguineae	laughing kookaburra	C
1760	Animalia	Aves	Alcedinidae	Todiramphus macleayii	forest kingfisher	C
1654	Animalia	Aves	Artamidae	Cracticus nigrogularis	pied butcherbird	C
1644	Animalia	Aves	Artamidae	Gymnorhina tibicen	Australian magpie	C
1645	Animalia	Aves	Artamidae	Strepera graculina	pied currawong	C
1956	Animalia	Aves	Burhinidae	Burhinus grallarius	bush stone-curlew	C
1191	Animalia	Aves	Cacatuidae	Cacatua galerita	sulphur-crested cockatoo	C
1196	Animalia	Aves	Cacatuidae	Calyptorhynchus banksii	red-tailed black-cockatoo	C
1639	Animalia	Aves	Campephagidae	Edolisoma tenuirostre	common cicadabird	C
1640	Animalia	Aves	Campephagidae	Lalage leucomela	varied triller	C
1810	Animalia	Aves	Columbidae	Geopelia humeralis	bar-shouldered dove	C
18323	Animalia	Aves	Columbidae	Geopelia placida	peaceful dove	C
1771	Animalia	Aves	Columbidae	Ptilinopus regina	rose-crowned fruit-dove	C
1774	Animalia	Aves	Columbidae	Spilopelia chinensis	spotted dove	
1609	Animalia	Aves	Corvidae	Corvus orru	Torresian crow	C
1754	Animalia	Aves	Cuculidae	Cacomantis flabelliformis	fan-tailed cuckoo	C
1751	Animalia	Aves	Cuculidae	Centropus phasianinus	pheasant coucal	C
1738	Animalia	Aves	Cuculidae	Eudynamys orientalis	eastern koel	C
1611	Animalia	Aves	Dicaeidae	Dicaeum hirundinaceum	mistletoebird	C
1694	Animalia	Aves	Megapodiidae	Alectura lathami	Australian brush-turkey	C

1539	Animalia	Aves	Meliphagidae	Entomyzon cyanotis	blue-faced honeyeater	C
1500	Animalia	Aves	Meliphagidae	Manorina melanocephala	noisy miner	C
1504	Animalia	Aves	Meliphagidae	Meliphaga lewinii	Lewin's honeyeater	C
1507	Animalia	Aves	Meliphagidae	Melithreptus albogularis	white-throated honeyeater	C
1488	Animalia	Aves	Meliphagidae	Myzomela obscura	dusky honeyeater	C
1489	Animalia	Aves	Meliphagidae	Myzomela sanguinolenta	scarlet honeyeater	C
1493	Animalia	Aves	Meliphagidae	Philemon citreogularis	little friarbird	C
1764	Animalia	Aves	Meropidae	Merops ornatus	rainbow bee-eater	C
1594	Animalia	Aves	Monarchidae	Carterornis leucotis	white-eared monarch	C
1589	Animalia	Aves	Monarchidae	Grallina cyanoleuca	magpie-lark	C
1586	Animalia	Aves	Monarchidae	Myiagra rubecula	leaden flycatcher	C
1597	Animalia	Aves	Monarchidae	Symposiachrus trivirgatus	spectacled monarch	C
1442	Animalia	Aves	Oriolidae	Oriolus sagittatus	olive-backed oriole	C
1444	Animalia	Aves	Oriolidae	Sphecotheres vieilloti	Australasian figbird	C
1450	Animalia	Aves	Pachycephalidae	Colluricincla megarhyncha	little shrike-thrush	C
1436	Animalia	Aves	Pachycephalidae	Pachycephala pectoralis	golden whistler	C
1437	Animalia	Aves	Pachycephalidae	Pachycephala rufiventris	rufous whistler	C
1389	Animalia	Aves	Pardalotidae	Pardalotus punctatus	spotted pardalote	C
1392	Animalia	Aves	Pardalotidae	Pardalotus striatus	striated pardalote	C
1955	Animalia	Aves	Podargidae	Podargus strigoides	tawny frogmouth	C
1182	Animalia	Aves	Psittaculidae	Aprosmictus erythropterus	red-winged parrot	C
1136	Animalia	Aves	Psittaculidae	Platycercus adscitus	pale-headed rosella	C
1124	Animalia	Aves	Psittaculidae	Trichoglossus chlorolepidotus	scaly-breasted lorikeet	C
1125	Animalia	Aves	Psittaculidae	Trichoglossus moluccanus	rainbow lorikeet	C
1575	Animalia	Aves	Rhipiduridae	Rhipidura albiscapa	grey fantail	C
1576	Animalia	Aves	Rhipiduridae	Rhipidura leucophrys	willie wagtail	C
1276	Animalia	Aves	Zosteropidae	Zosterops lateralis	silvereye	C
522	Animalia	Reptilia	Colubridae	Boiga irregularis	brown tree snake	C
378	Animalia	Reptilia	Diplodactylidae	Oedura tryoni	southern spotted velvet gecko	C

483	Animalia	Reptilia	Elapidae	Denisonia maculata	ornamental snake	V
413	Animalia	Reptilia	Gekkonidae	Heteronotia binoei	Bynoe's gecko	C
221	Animalia	Reptilia	Scincidae	Bellatorias frerei	major skink	C
302	Animalia	Reptilia	Scincidae	Carlia schmeltzii	robust rainbow-skink	C
188	Animalia	Reptilia	Scincidae	Concinnia martini	dark bar-sided skink	C
260	Animalia	Reptilia	Scincidae	Cryptoblepharus virgatus sensu lato		
150	Animalia	Reptilia	Scincidae	Lygisaurus foliorum	tree-base litter-skink	C
317	Animalia	Reptilia	Scincidae	Praeteropus brevicollis	short-necked worm-skink	C
15850	Plantae	Equisetopsida	Acanthaceae	Graptophyllum excelsum		NT
17981	Plantae	Equisetopsida	Amaranthaceae	Amaranthus viridis	green amaranth	
17173	Plantae	Equisetopsida	Anacardiaceae	Euroschinus falcatus		C
16424	Plantae	Equisetopsida	Anacardiaceae	Pleiogynium timorense	Burdekin plum	C
41406	Plantae	Equisetopsida	Annonaceae	Huberantha nitidissima		C
9484	Plantae	Equisetopsida	Apocynaceae	Alstonia constricta	bitterbark	C
35894	Plantae	Equisetopsida	Apocynaceae	Cynanchum viminale subsp. brunonianum		C
11185	Plantae	Equisetopsida	Apocynaceae	Rauvolfia tetraphylla		
12389	Plantae	Equisetopsida	Araceae	Gymnostachys anceps	settler's flax	C
35061	Plantae	Equisetopsida	Asteraceae	Apowollastonia spilanthoides		C
16570	Plantae	Equisetopsida	Bignoniaceae	Pandorea pandorana	wonga vine	C
17730	Plantae	Equisetopsida	Capparaceae	Capparis ornans		C
16028	Plantae	Equisetopsida	Combretaceae	Terminalia porphyrocarpa		C
8437	Plantae	Equisetopsida	Cycadaceae	Cycas ophiolitica	Marlborough blue	E
17078	Plantae	Equisetopsida	Cyperaceae	Gahnia aspera		C
17438	Plantae	Equisetopsida	Dioscoreaceae	Dioscorea transversa	native yam	C
17443	Plantae	Equisetopsida	Ebenaceae	Diospyros geminata	scaly ebony	C
18050	Plantae	Equisetopsida	Euphorbiaceae	Alchornea ilicifolia	native holly	C
13956	Plantae	Equisetopsida	Euphorbiaceae	Croton acronychioides	thick-leaved croton	C
17160	Plantae	Equisetopsida	Euphorbiaceae	Euphorbia cyathophora	dwarf poinsettia	
16753	Plantae	Equisetopsida	Euphorbiaceae	Macaranga tanarius	macaranga	C

16715	Plantae	Equisetopsida	Euphorbiaceae	Mallotus philippensis	red kamala	C
11313	Plantae	Equisetopsida	Euphorbiaceae	Manihot esculenta		
15350	Plantae	Equisetopsida	Hemerocallidaceae	Geitonoplesium cymosum	scrambling lily	C
17628	Plantae	Equisetopsida	Lamiaceae	Clerodendrum floribundum		C
41023	Plantae	Equisetopsida	Lamiaceae	Coleus graveolens		C
15211	Plantae	Equisetopsida	Lamiaceae	Ocimum basilicum		
17570	Plantae	Equisetopsida	Lauraceae	Cryptocarya bidwillii	yellow laurel	C
16758	Plantae	Equisetopsida	Lauraceae	Litsea fawcettiana		C
16761	Plantae	Equisetopsida	Lauraceae	Litsea reticulata		C
11794	Plantae	Equisetopsida	Lauraceae	Neolitsea brassii		C
11708	Plantae	Equisetopsida	Laxmanniaceae	Cordyline murchisoniae		SL
16776	Plantae	Equisetopsida	Laxmanniaceae	Lomandra longifolia		C
15744	Plantae	Equisetopsida	Leguminosae	Acacia fasciculifera	scaly bark	C
26438	Plantae	Equisetopsida	Leguminosae	Crotalaria medicaginea var. neglecta		C
41983	Plantae	Equisetopsida	Leguminosae	Heliodendron thozetianum		C
7462	Plantae	Equisetopsida	Loganiaceae	Strychnos psilosperma	strychnine tree	C
17144	Plantae	Equisetopsida	Moraceae	Ficus opposita		C
17155	Plantae	Equisetopsida	Moraceae	Ficus virens		C
30309	Plantae	Equisetopsida	Myrsinaceae	Myrsine variabilis		C
27383	Plantae	Equisetopsida	Myrtaceae	Gossia bidwillii		C
17638	Plantae	Equisetopsida	Oleaceae	Chionanthus ramiflorus	northern olive	C
9461	Plantae	Equisetopsida	Oleaceae	Jasminum simplicifolium		C
12708	Plantae	Equisetopsida	Orchidaceae	Sarcochilus australis	butterfly orchid	
16532	Plantae	Equisetopsida	Passifloraceae	Passiflora suberosa	corky passion flower	
16302	Plantae	Equisetopsida	Petiveriaceae	Rivina humilis		
17810	Plantae	Equisetopsida	Phyllanthaceae	Bridelia leichhardtii		C
17355	Plantae	Equisetopsida	Polypodiaceae	Drynaria sparsisora		SL
16626	Plantae	Equisetopsida	Polypodiaceae	Microsorum punctatum		SL
6668	Plantae	Equisetopsida	Polypodiaceae	Pyrrosia confluens		SL
9557	Plantae	Equisetopsida	Putranjivaceae	Drypetes deplanchei	grey boxwood	C

9659	Plantae	Equisetopsida	Rhamnaceae	Alphitonia excelsa	soap tree	C
18045	Plantae	Equisetopsida	Rubiaceae	Aidia racemosa		C
2399	Plantae	Equisetopsida	Rubiaceae	Psydrax odorata		C
16300	Plantae	Equisetopsida	Rubiaceae	Richardia brasiliensis	white eye	
21837	Plantae	Equisetopsida	Rutaceae	Murraya paniculata 'Exotica'		
17930	Plantae	Equisetopsida	Sapindaceae	Arytera divaricata	coogera	C
13712	Plantae	Equisetopsida	Sapindaceae	Atalaya calcicola		C
17548	Plantae	Equisetopsida	Sapindaceae	Cupaniopsis anacardioides	tuckeroo	C
13638	Plantae	Equisetopsida	Sapindaceae	Cupaniopsis wadsworthii		C
17339	Plantae	Equisetopsida	Sapindaceae	Elattostachys xylocarpa	white tamarind	C
16968	Plantae	Equisetopsida	Sapindaceae	Harpullia hillii		C
16969	Plantae	Equisetopsida	Sapindaceae	Harpullia pendula		C
15881	Plantae	Equisetopsida	Smilacaceae	Smilax australis	barbed-wire vine	C
16120	Plantae	Equisetopsida	Solanaceae	Solanum seaforthianum	Brazilian nightshade	
14635	Plantae	Equisetopsida	Urticaceae	Dendrocnide photiniphylla	shiny-leaved stinging tree	C
14619	Plantae	Equisetopsida	Verbenaceae	Duranta erecta	duranta	
19905	Plantae	Equisetopsida	Verbenaceae	Lantana camara	lantana	
42148	Plantae	Equisetopsida	Vitaceae	Apocissus oblonga		C
17660	Plantae	Equisetopsida	Vitaceae	Cayratia acris	hairy grape	C
17651	Plantae	Equisetopsida	Vitaceae	Cissus repens		C
14151	Plantae	Equisetopsida	Vitaceae	Tetrastigma nitens	shining grape	C
16707	Plantae	Equisetopsida	Zamiaceae	Macrozamia miquelii		SL

Vegetation management report

For Lot: 3 Plan: RP608120
22/04/2025

nrmmrrd.qld.gov.au

Queensland Government

This publication has been compiled by Operations Support, Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

Recent changes

Updated mapping

Updated vegetation mapping was released on 22 November 2023 and includes the most recent Queensland Herbarium scientific updates to the Regulated Vegetation Management Map, regional ecosystems, essential habitat, wetland and high-value regrowth mapping.

The Department of the Environment, Tourism, Science and Innovation have also updated their koala protection mapping to align with the Queensland Herbarium scientific updates.

The latest version (v10) of the Protected Plants Flora Survey Trigger Map (trigger map) was released on 6 September 2023.

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:
Property details - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s) and catchment(s);

Vegetation management framework - an explanation of the application of the framework and contact details for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development who administer the framework;

Vegetation management framework details for the specified Lot on Plan including:

- the vegetation management categories on the property;
- the vegetation management regional ecosystems on the property;
- vegetation management watercourses or drainage features on the property;
- vegetation management wetlands on the property;
- vegetation management essential habitat on the property;
- whether any area management plans are associated with the property;
- whether the property is coastal or non-coastal; and
- whether the property is mapped as Agricultural Land Class A or B;

Protected plant framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework, including:

- high risk areas on the protected plant flora survey trigger map for the property;

Koala protection framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework; and

Koala protection framework details for the specified Lot on Plan including:

- the koala district the property is located in;
- koala priority areas on the property;
- core and locally refined koala habitat areas on the property;
- whether the lot is located in an identified koala broad-hectare area; and
- koala habitat regional ecosystems on the property for core koala habitat areas.

This information will assist you to determine your options for managing vegetation under:
- the vegetation management framework, which may include:

- exempt clearing work;
- accepted development vegetation clearing code;
- an area management plan;
- a development approval;

- the protected plant framework, which may include:

- the need to undertake a flora survey;
- exempt clearing;
- a protected plant clearing permit;

- the koala protection framework, which may include:

- exempted development;
- a development approval;
- the need to undertake clearing sequentially and in the presence of a koala spotter.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 8 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

Table of Contents

1. Property details

1.1 Tenure and title area

All of the lot, plan, tenure and title area information associated with property Lot: 3 Plan: RP608120 are listed in Table 1.

Table 1: Lot, plan, tenure and title area information for the property

Lot	Plan	Tenure	Property title area (sq metres)
3	RP608120	Freehold	5,549

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

Does the property Lot: 3 Plan: RP608120 have a freehold tenure and is in the Wet Tropics of Queensland World Heritage Area?

No, this property is not located in the Wet Tropics of Queensland World Heritage Area.

1.2 Property location

Table 2 provides a summary of the locations for property Lot: 3 Plan: RP608120, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Rockhampton Regional	Fitzroy	Brigalow Belt	Marlborough Plains

2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development)

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2023, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem identified in the Vegetation Management Regional Ecosystem Description Database (VM REDD) as having a grassland structure; and
- a mangrove.

2.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development or obtain an approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 4.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval under the vegetation management framework. For all other land tenures, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/exemptions/.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development prior to clearing in any of these areas.

2.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/codes/

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at
https://vegetation-apps.dnrm.qld.gov.au

2.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

On 8 March 2020, AMPs ended for fodder harvesting, managing thickened vegetation and managing encroachment. New notifications cannot be made for these AMPs. You will need to consider options for fodder harvesting, managing thickened vegetation or encroachment under a relevant accepted development vegetation clearing code or apply for a development approval.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an Area Management Plan applies to your property for which you can make a new notification, it will be listed in Section 3.6 of this report. Before clearing under one of these AMPs, you must first notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development and then follow the conditions and requirements listed in the AMP.

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/area-management-plans

2.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development

2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development

For further information on the vegetation management framework:

Phone 135VEG (135 834)

Email vegetation@resources.qld.gov.au

Visit https://www.resources.qld.gov.au/?contact=vegetation to submit an online enquiry.

3. Vegetation management framework for Lot: 3 Plan: RP608120

3.1 Vegetation categories

The vegetation categories on your property are shown on the regulated vegetation management map in section 4.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property

Vegetation category	Area (ha)
Category B	0.59

Table 4: Description of vegetation categories

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact the Department to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

There is no Property Map of Assessable Vegetation (PMAV) present on this property.

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 4.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
11.3.3	Of concern	B	0.59	Eucalyptus coolabah woodland on alluvial plains	Sparse

Please note:
1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.
2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work;
- accepted development vegetation clearing codes;
- performance outcomes in State Code 16 of the State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 4.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat

Under the VMA, essential habitat for protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA) as critically endangered, endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 4.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
8437	Cycas ophiolitica	Marlborough blue	E	woodland to open forest of Eucalyptus spp. and/or Corymbia spp.; tree species frequently present include Eucalyptus crebra, Corymbia intermedia, E. fibrosa, E. tereticornis, Lophostemon suaveolens, C. citriodora, C. dallachiana and C. erythrophloia; other species often present include C. xanthope, E. acmenoides, E. drepanophylla, E. melanophloia, E. exserta, E. platyphylla, C. clarksoniana and C. tessellaris	0 to 700 m	well drained, shallow, often stony or gravelly, sandy loam to clay in texture and derived from various substrates	alluvial flat, creek bank, gully, gentle to steep stony hill slope, hill crest
15850	Graptophyllum excelsum		NT	vine thicket or forest; semi-deciduous vine thicket; semi-evergreen vine thicket; complex notophyll vine forest	0 to 800 m	shallow to skeletal soil or clay loam or gravelly loam dervied from various substrates	rocky outcrops along drainage line on hill slope, rocky ridge, hill slope, bluff, coastal dune

Label	Regional Ecosystem (mandatory unless otherwise specified)
8437	8.11.3, 8.12.22, 11.3.4, 11.3.38, 11.5.9, 11.11.1, 11.11.3, 11.11.4, 11.11.7, 11.11.15, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.6
15850	3.11.20, 3.11.21, 7.12.16, 7.12.38, 7.12.65, 8.2.2, 8.12.3, 9.11.8, 9.12.8, 9.12.22, 9.12.34, 11.5.15, 11.11.5, 11.11.18, 11.12.4, 12.11.12, 12.11.10

3.6 Area Management Plan(s)

Nil

3.7 Coastal or non-coastal

For the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP), this property is regarded as*

Coastal

*See also Map 4.3

3.8 Agricultural Land Class A or B

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

No Class A

No Class B

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See Map 4.4 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 3 Plan: RP608120.

4. Vegetation management framework maps

Vegetation management maps included in this report may also be requested individually at:
https://www.qld.gov.au/environment/land/management/vegetation/maps/map-request

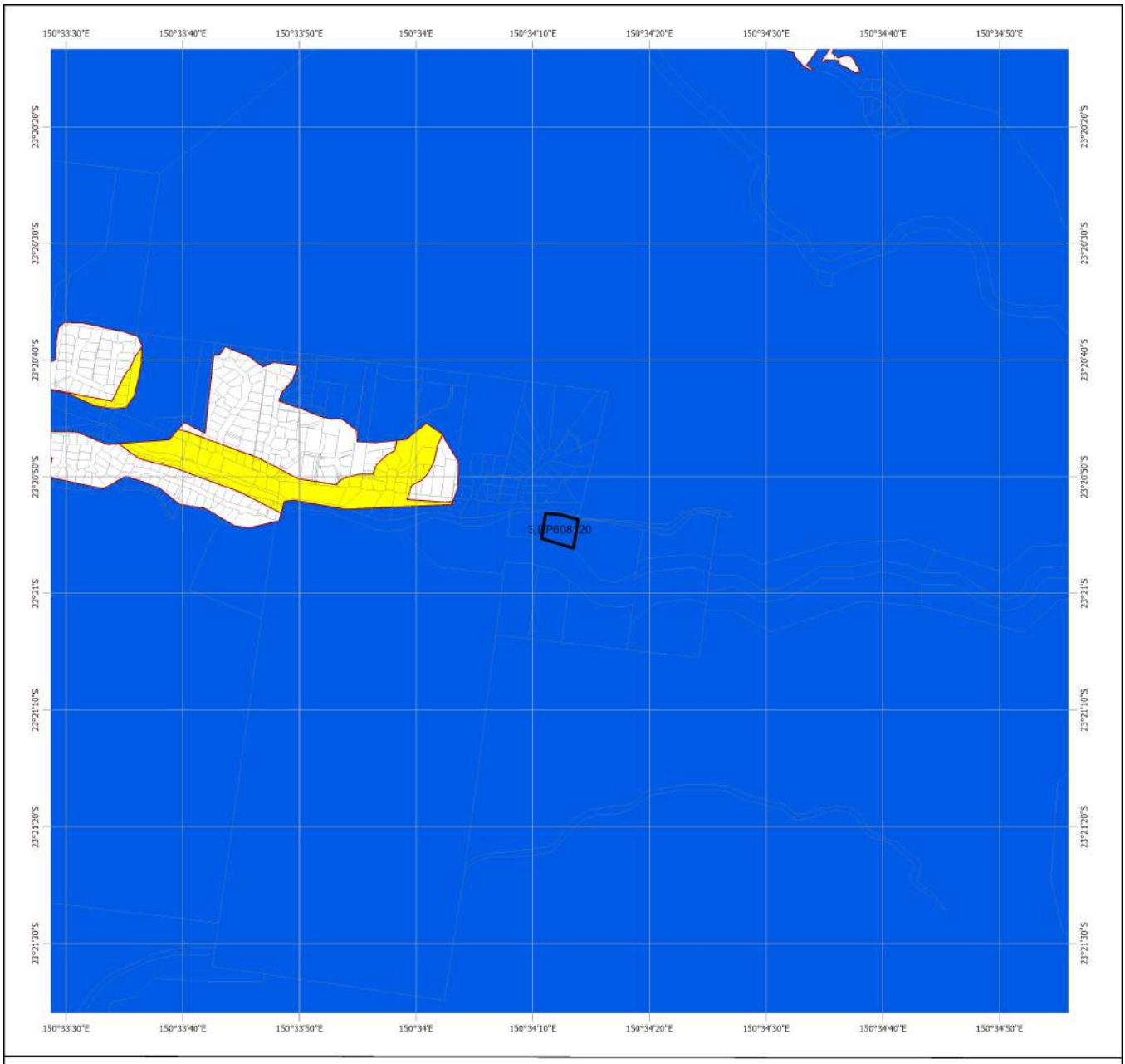
Regulated vegetation management map
The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map
The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

Coastal/non-coastal map
The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP).

Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture
The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

4.1 Regulated vegetation management map

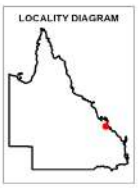


Regulated Vegetation Management Map

Queensland Government

Category A area (Vegetation offsets/compliance notices/VDecs)
Category B area (Remnant vegetation)
Category C area (High-value regrowth vegetation)
Category R area (Reef regrowth watercourse vegetation)
Category X area (Exempt clearing work on Freehold, Indigenous and Leasehold land)
Water
Other land parcel boundaries
Selected Lot and Plan

LOCALITY DIAGRAM



N

0 140 280 420 560 700 m

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GDA2020

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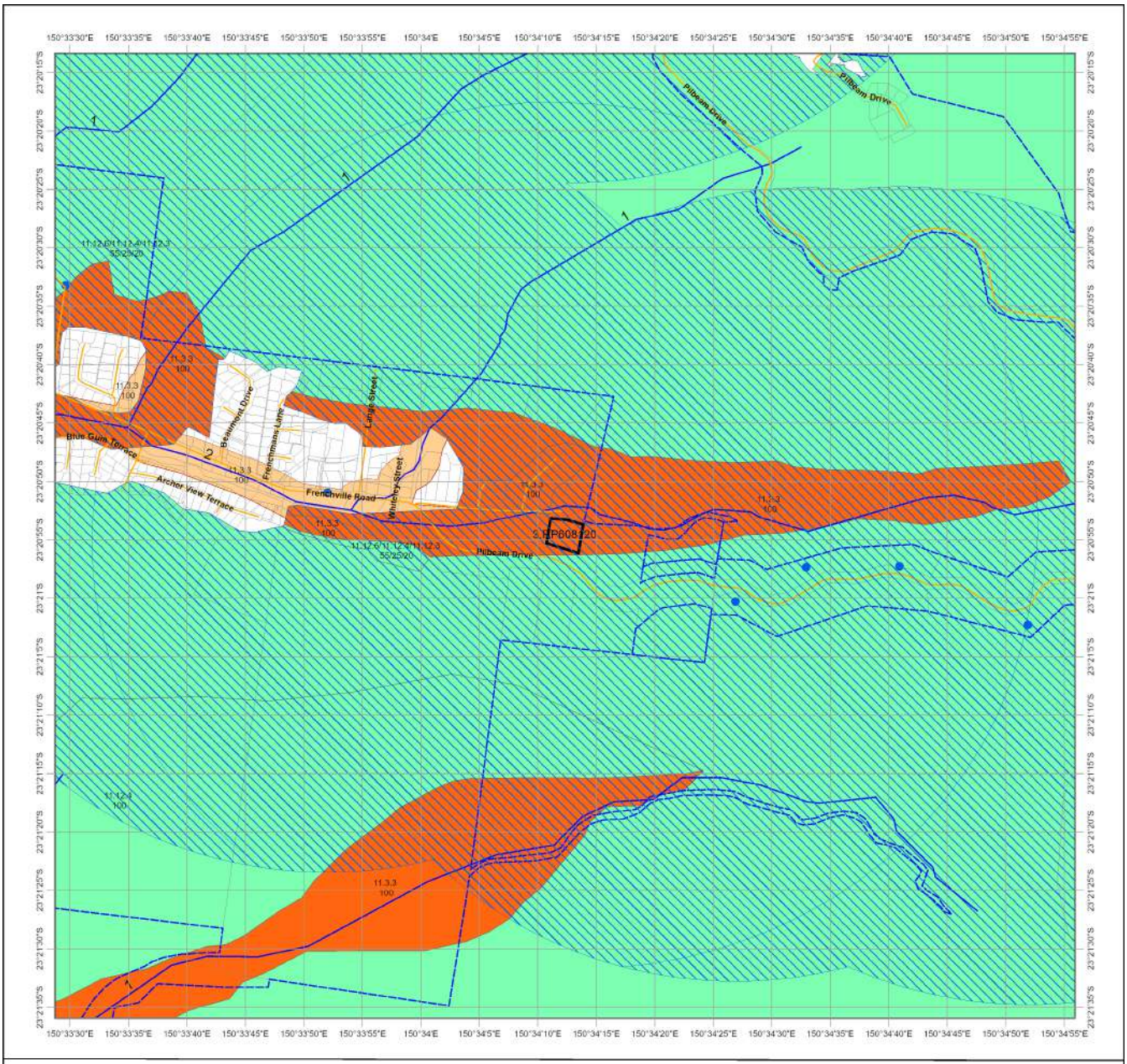
Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.spatial.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.

4.2 Vegetation management supporting map



Vegetation Management Supporting Map

- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category C or R area containing endangered regional ecosystems
- Category C or R area containing of concern regional ecosystems
- Category C or R area that is a least concern regional ecosystem
- Category X area
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourses and drainage features on the vegetation management watercourse and drainage features map (Stream order shown as black number against stream where available)
- Highway
- Connector
- Street/Local Road
- National Parks, State Forest and other reserves
- Other land parcel boundaries
- Selected Lot and Plan

Queensland Government

LOCALITY DIAGRAM

N

0 100 200 300 400 500 m

This product is displayed in: GDA2020

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

Disclaimer:
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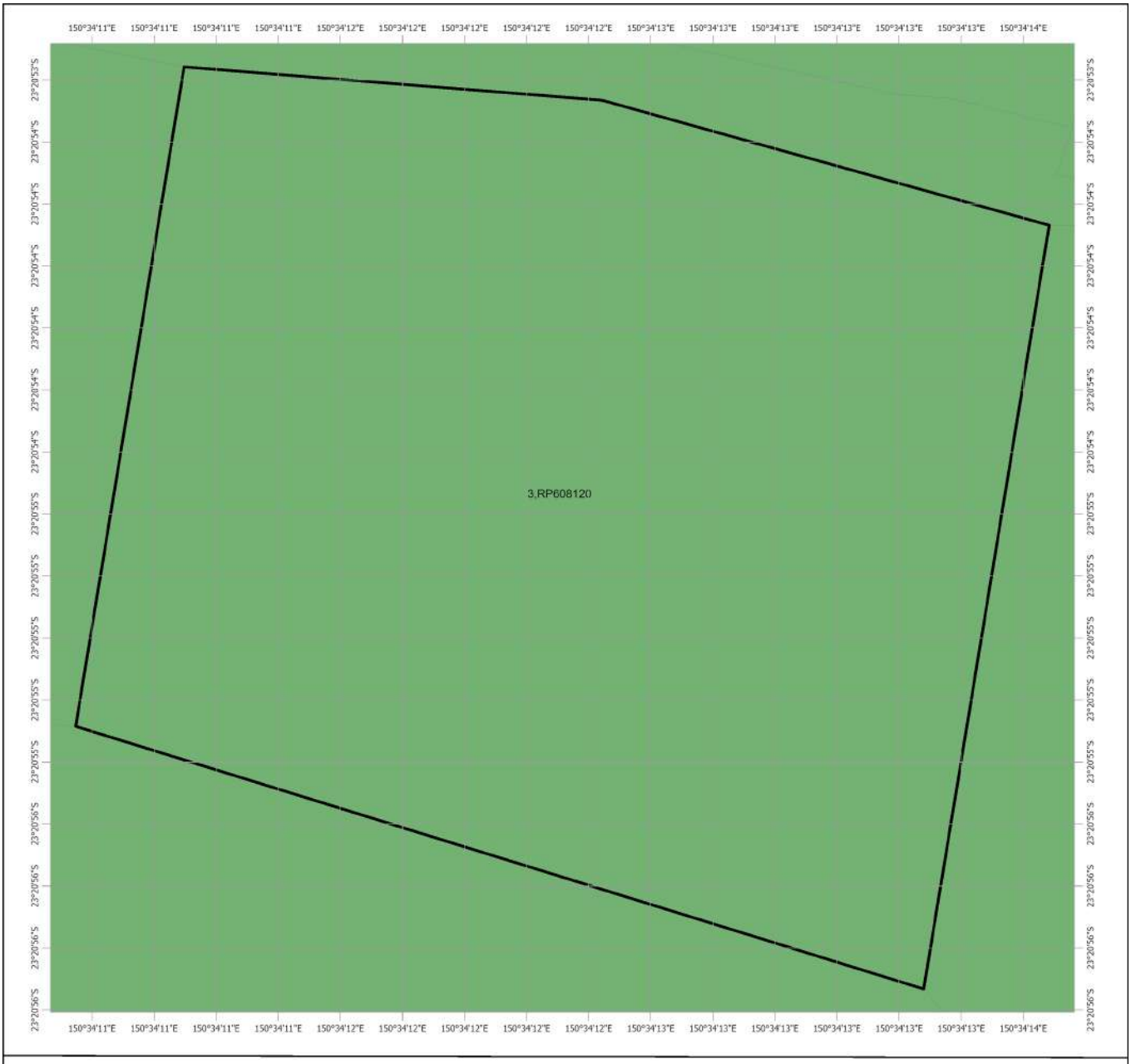
Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at http://www.spatial.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

4.3 Coastal/non-coastal map



Coastal/Non Coastal Map

Coastal
Non Coastal
Other land parcel boundaries
Selected Lot and Plan

LOCALITY DIAGRAM

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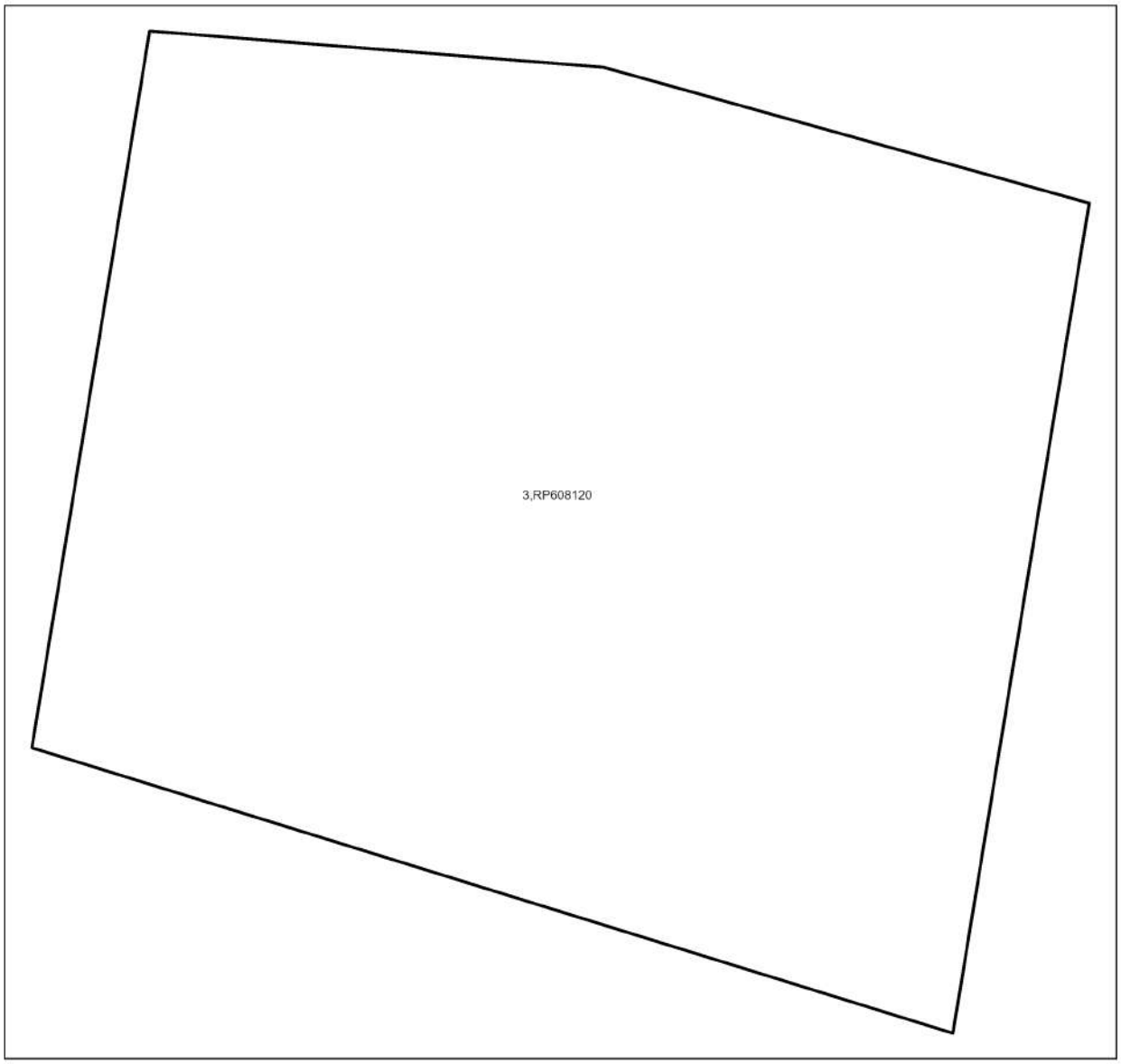
Land parcel boundaries shown are provided as a locational aid only.

N

0 5.6 11.2 16.8 22.4 28 m

This product is displayed in:
GDA2020

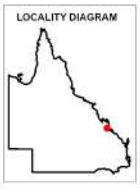
4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture



Agricultural Land Class A or B
as per State Planning Policy: State Interest for Agriculture

Towns
Rivers and creeks
Freeways / motorways; Highways
Secondary roads; Streets
Agricultural land class A or B
A
B
Not class A or B
Selected Lot and Plan

LOCALITY DIAGRAM



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Whilst every care is taken to ensure the accuracy of these details all data custodians and/or the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses damages (including indirect or consequential damage) and costs to which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.

5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA). The NCA regulates the clearing of protected plants 'in the wild' (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') that are listed as critically endangered, endangered, vulnerable or near threatened under the Act.

Please note that the protected plant clearing framework applies irrespective of the classification of the vegetation under the *Vegetation Management Act 1999* and any approval or exemptions given under another Act, for example, the *Vegetation Management Act 1999* or *Planning Regulation 2017*.

5.1 Clearing in high risk areas on the flora survey trigger map

The flora survey trigger map identifies high-risk areas for threatened and near threatened plants. These are areas where threatened or near threatened plants are known to exist or are likely to exist based on the habitat present. The flora survey trigger map for this property is provided in section 5.5.

If you are proposing to clear an area shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken by a suitably qualified person in accordance with the Flora survey guidelines. The main objective of a flora survey is to locate any threatened or near threatened plants that may be present in the clearing impact area.

If the flora survey identifies that threatened or near threatened plants are not present within the clearing impact area or clearing within 100m of Endangered, Vulnerable, Near-Threatened (EVNT) plants can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of the Environment, Tourism, Science and Innovation, with a copy of the flora survey report, at least one week prior to clearing.

If the flora survey identifies that threatened or near threatened plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the clearing permit application form.

5.2 Clearing outside high risk areas on the flora survey trigger map

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that threatened or near threatened plantsare present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

5.3 Exemptions

Many activities are 'exempt' under the protected plant clearing framework, which means that clearing of native plants that are in the wild can be undertaken for these activities with no need for a flora survey or a protected plant clearing permit. The Information sheet - General exemptions for the take of protected plants provides some of these exemptions.

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) under the *Vegetation Management Act 1999* (i.e. listed in Schedule 21 of the Planning Regulations 2017) while some are different.

5.4 Contact information for DETSI

For further information on the protected plants framework:
Phone 1300 130 372 (and select option four)
Email palm@des.qld.gov.au
Visit https://www.qld.gov.au/environment/plants-animals/plants/protected-plants

5.5 Protected plants flora survey trigger map

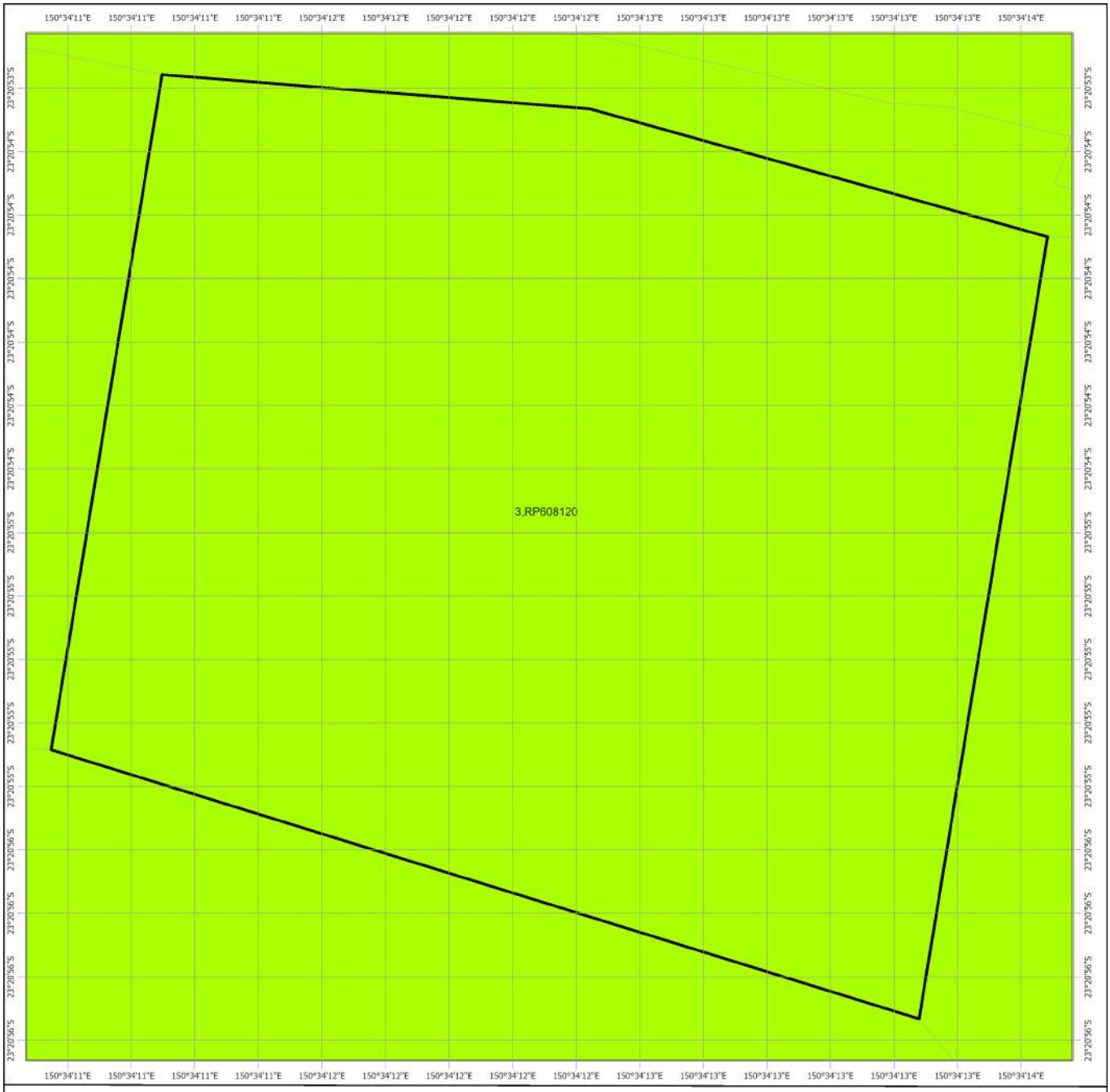
This map included may also be requested individually at: https://apps.des.qld.gov.au/map-request/flora-survey-trigger/.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information

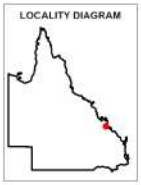
Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of the Environment, Tourism, Science and Innovation does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of the Environment, Tourism, Science and Innovation webpage on the clearing of protected plants for more information.



Protected Plants Flora Survey Trigger Map

High risk area
Other land parcel boundaries
Freeways / motorways / highways
Secondary roads / streets
Selected Lot and Plan

LOCALITY DIAGRAM



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This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of the Environment, Tourism, Science and Innovation at palm@des.qld.gov.au

Disclaimer: While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

6. Koala protection framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

The koala (*Phascolarctos cinereus*) is listed in Queensland as endangered by the Queensland Government under *Nature Conservation Act 1992* and by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Queensland Government's koala protection framework is comprised of the *Nature Conservation Act 1992*, the Nature Conservation (Animals) Regulation 2020, the Nature Conservation (Koala) Conservation Plan 2017, the *Planning Act 2016* and the Planning Regulation 2017.

6.1 Koala mapping

6.1.1 Koala districts

The parts of Queensland where koalas are known to occur has been divided into three koala districts - koala district A, koala district B and koala district C. Each koala district is made up of areas with comparable koala populations (e.g. density, extent and significance of threatening processes affecting the population) which require similar management regimes.

Section 7.1 identifies which koala district your property is located in.

6.1.2 Koala habitat areas

Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water). In order to protect this important koala habitat, clearing controls have been introduced into the Planning Regulation 2017 for development in koala habitat areas.

Please note that koala habitat areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

There are two different categories of koala habitat area (core koala habitat area and locally refined koala habitat), which have been determined using two different methodologies. These methodologies are described in the document Spatial modelling in South East Queensland.

Section 7.2 shows any koala habitat area that exists on your property.

Under the Nature Conservation (Koala) Conservation Plan 2017, an owner of land (or a person acting on the owner's behalf with written consent) can request to make, amend or revoke a koala habitat area determination if they believe, on reasonable grounds, that the existing determination for all or part of their property is incorrect.

More information on requests to make, amend or revoke a koala habitat area determination can be found in the document Guideline - Requests to make, amend or revoke a koala habitat area determination.

The koala habitat area map will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

Changes to the koala habitat area map which occur between annual updates because of a request to make, amend or revoke a koala habitat area determination can be viewed on the register of approved requests to make, amend or revoke a koala habitat area available at: https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps. The register includes the lot on plan for the change, the date the decision was made and the map issued to the landholder that shows areas determined to be koala habitat areas.

6.1.3 Koala priority areas

Koala priority areas are large, connected areas that have been determined to have the highest likelihood of achieving conservation outcomes for koalas based on the combination of habitat suitability, biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water) and a koala conservation cost benefit analysis.

Conservation efforts will be prioritised in these areas to ensure the conservation of viable koala populations in the wild including a focus on management (e.g. habitat protection, habitat restoration and threat mitigation) and monitoring. This includes a prohibition on clearing in koala habitat areas that are in koala priority areas under the Planning Regulation 2017 (subject to some exemptions).

Please note that koala priority areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

Section 7.2 identifies if your property is in a koala priority area.

6.1.4 Identified koala broad-hectare areas

There are seven identified koala broad-hectare areas in SEQ. These are areas of koala habitat that are located in areas committed to meet development targets in the SEQ Regional Plan to accommodate SEQ's growing population including bring-forward Greenfield sites under the Queensland Housing Affordability Strategy and declared master planned areas under the repealed *Sustainable Planning Act 2009* and the repealed *Integrated Planning Act 1997*.

Specific assessment benchmarks apply to development applications for development proposed in identified koala broad-hectare areas to ensure koala conservation measures are incorporated into the proposed development.

Section 7.2 identifies if your property is in an identified koala broad-hectare area.

6.2 Koala habitat planning controls

On 7 February 2020, the Queensland Government introduced new planning controls to the Planning Regulation 2017 to strengthen the protection of koala habitat in South East Queensland (i.e. koala district A).

More information on these planning controls can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

As a high-level summary, the koala habitat planning controls make:

- development that involves interfering with koala habitat (defined below) in an area that is both a koala priority area and a koala habitat area, prohibited development (i.e. development for which a development application cannot be made);
- development that involves interfering with koala habitat (defined below) in an area that is a koala habitat area but is not a koala priority area, assessable development (i.e. development for which development approval is required); and
- development that is for extractive industries where the development involves interfering with koala habitat (defined below) in an area that is both a koala habitat area and a key resource area, assessable development (i.e. development for which development approval is required).

Interfering with koala habitat means:

1. Removing, cutting down, ringbarking, pushing over, poisoning or destroying in anyway, including by burning, flooding or draining native vegetation in a koala habitat area; but
2. Does not include destroying standing vegetation stock or lopping a tree.

However, these planning controls do not apply if the development is exempted development as defined in Schedule 24 of the Planning Regulation 2017. More information on exempted development can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

There are also assessment benchmarks that apply to development applications for:

- building works, operational works, material change of use or reconfiguration of a lot where:

  - the local government planning scheme makes the development assessable;
  - the premises includes an area that is both a koala priority area and a koala habitat area; and
  - the development does not involve interfering with koala habitat (defined above); and

- development in identified koala broad-hectare areas.

The Guideline - Assessment Benchmarks in relation to Koala Habitat in South East Queensland assessment benchmarks outlines these assessment benchmarks, the intent of these assessment benchmarks and advice on how proposed development may meet these assessment benchmarks.

6.3 Koala Conservation Plan clearing requirements

Section 10 and 11 of the Nature Conservation (Koala) Conservation Plan 2017 prescribes requirements that must be met when clearing koala habitat in koala district A and koala district B.

These clearing requirements are independent to the koala habitat planning controls introduced into the Planning Regulation 2017, which means they must be complied with irrespective of any approvals or exemptions offered under other legislation.

Unlike the clearing controls prescribed in the Planning Regulation 2017 that are to protect koala habitat, the clearing requirements prescribed in the Nature Conservation (Koala) Conservation Plan 2017 are in place to prevent the injury or death of koalas when koala habitat is being cleared.

6.4 Contact information for DETSI

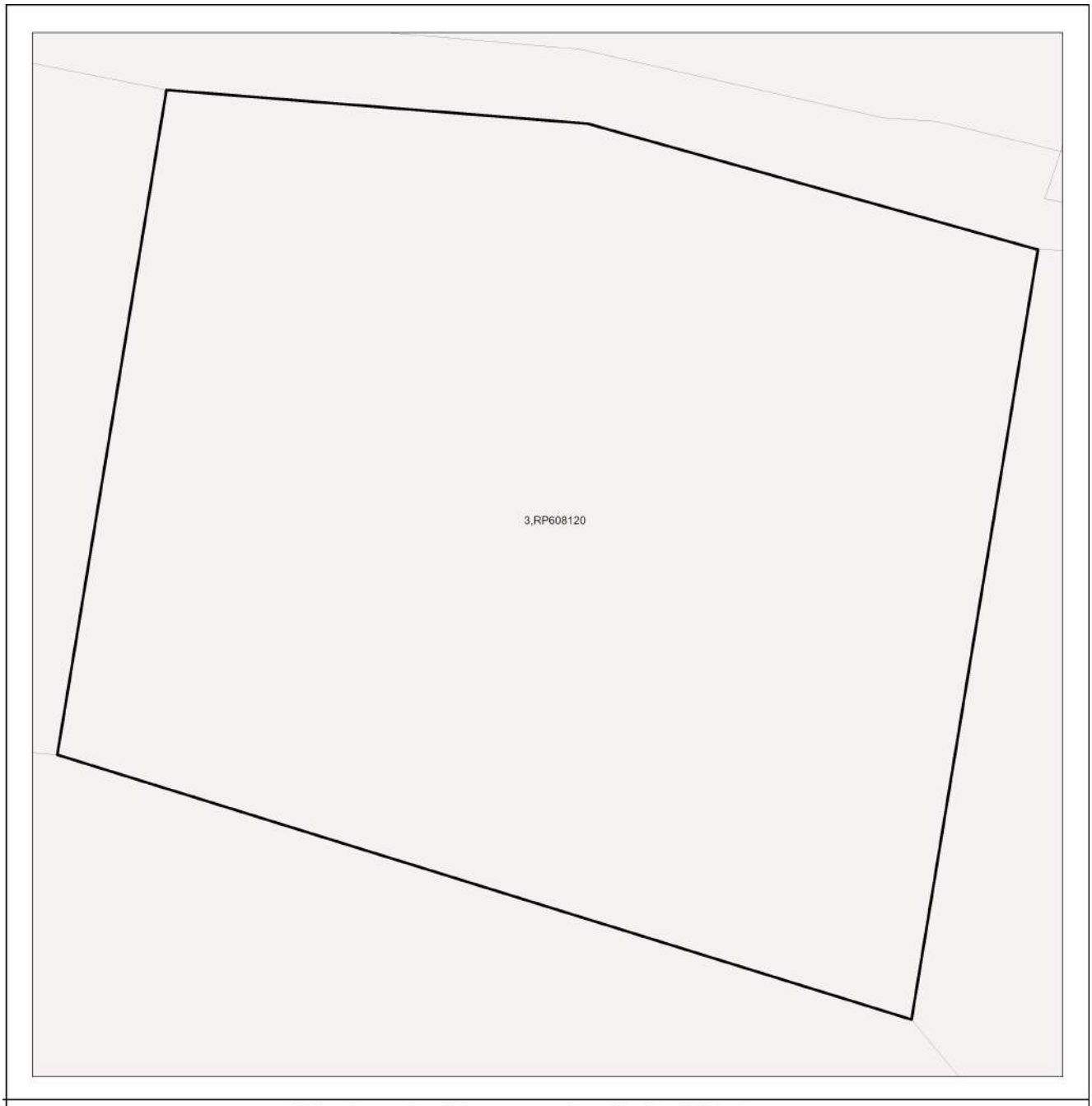
For further information on the koala protection framework:
Phone 13 QGOV (13 74 68)
Email koala.assessment@detsi.qld.gov.au
Visit https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping

7. Koala protection framework details for Lot: 3 Plan: RP608120

7.1 Koala districts

Koala District C

7.2 Koala priority area, koala habitat area and identified koala broad-hectare map

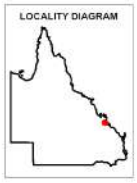


Koala priority area, koala habitat area and identified koala broad-hectare area map

- Koala habitat area (core)
- Koala habitat area (locally refined)
- Koala priority area
- Identified koala broad-hectare area
- Cadastral Boundaries
- Towns
- Major rivers/creeks
- Highway
- Connector
- Street/Local Road
- Queensland
- Selected Lot and Plan

The koala habitat mapping within South East Queensland uses regional ecosystem linework compiled at a scale varying from 1:25,000 to 1:100,000. Linework should be used as a guide only. The positional accuracy of regional ecosystem data mapped at a scale of 1:100,000 is +/- 100 metres.

LOCALITY DIAGRAM



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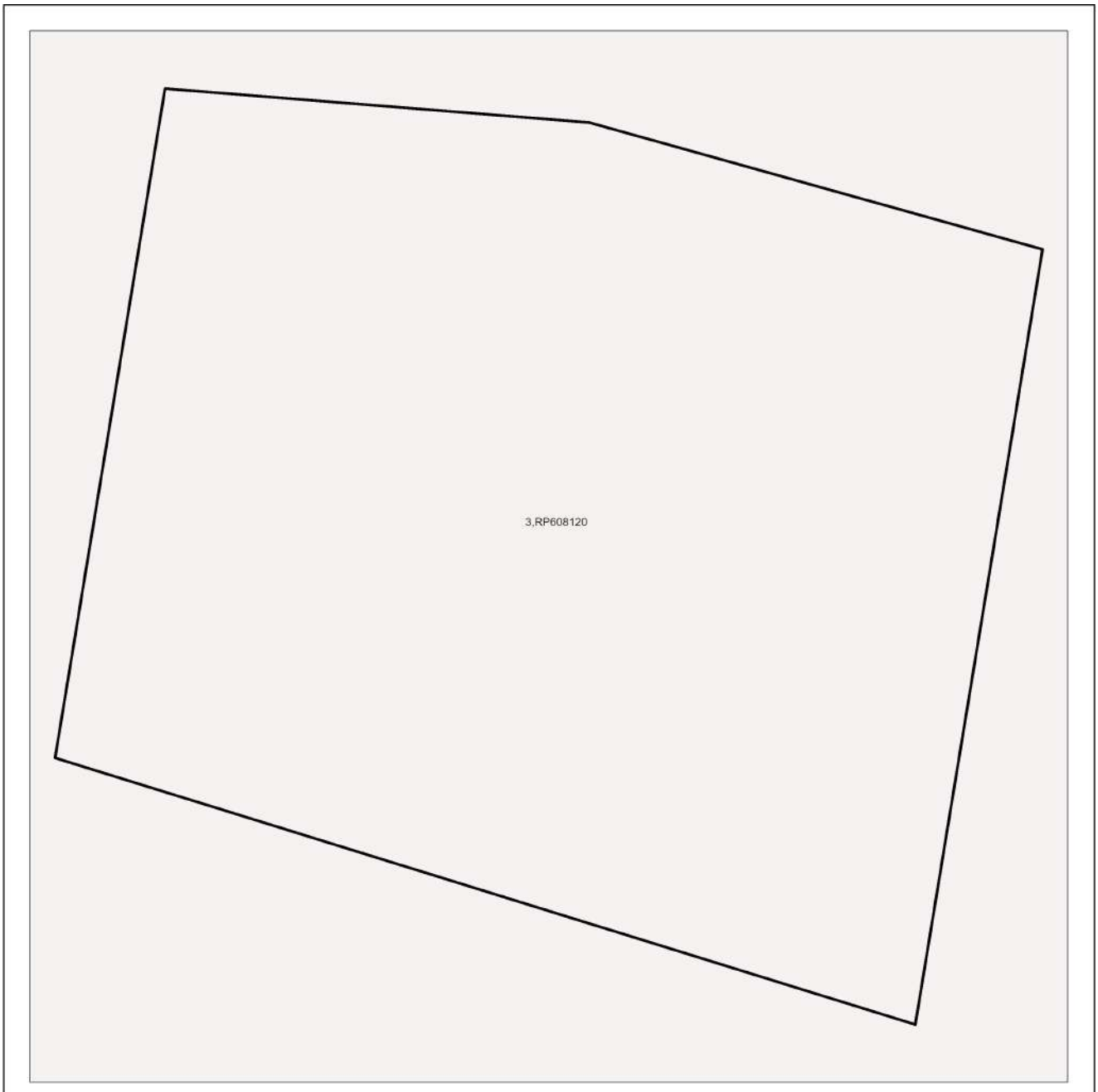
The koala conservation plan maps will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

In order to ensure that the most recent map for an area of interest can be accessed, prior to the annual update, a register of changes made to koala habitat areas as a result of the map amendment process will be available at: https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping/. The register will include lot on plan for the change, the date the decision was made and the map issued to the landholder which shows areas determined to be koala habitat areas.

7.3 Koala habitat regional ecosystems for core koala habitat areas



Koala habitat regional ecosystems for core koala habitat areas

Koala habitat area (core)
Towns
Highway
Connector
Street/Local Road
Major rivers/creeks
Queensland
Selected Lot and Plan

LOCALITY DIAGRAM

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8. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
Interference with overland flow	*Water Act 2000*	Department of Local Government, Water and Volunteers	Ph: 13 QGOV (13 74 68) www.dlgwv.qld.gov.au
Earthworks, significant disturbance	*Soil Conservation Act 1986*	Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development	Ph: 13 QGOV (13 74 68) www.nrmmrrd.qld.gov.au
Fire Permits	*Fire and Emergency Services Act 1990*	Queensland Fire Department	Ph: 13 QGOV (13 74 68) www.fire.qld.gov.au
Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Queensland Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism	Ph: 13 QGOV (13 74 68) www.tatsipca.qld.gov.au
Mining and environmentally relevant activities Infrastructure development (coastal) Heritage issues	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) www.detsi.qld.gov.au
Protected plants and protected areas	*Nature Conservation Act 1992* *Planning Act 2016*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 1300 130 372 (option 4) palm@detsi.qld.gov.au www.detsi.qld.gov.au
Koala mapping and regulations	*Nature Conservation Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) Koala.assessment@detsi.qld.gov.au
Interference with fish passage in a watercourse, mangroves Forestry activities	*Fisheries Act 1994* *Forestry Act 1959*	Queensland Department of Primary Industries	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of Climate Change, Energy, the Environment and Water (Australian Government)	Ph: 1800 803 772 www.dcceew.gov.au
Development and planning processes	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Queensland Department of State Development, Infrastructure and Planning	Ph: 13 QGOV (13 74 68) www.planning.qld.gov.au
Coordinated projects	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Office of the Coordinator-General	Ph: 13 QGOV (13 74 68) www.statedevelopment.qld.gov.au/coordinator-general
Wet Tropics World Heritage Area	*Wet Tropics World Heritage Protection and Management Act 1993*	Queensland Wet Tropics Management Authority	Ph: (07) 4241 0500 www.wettropics.gov.au
Requirements on State controlled road	*Transport Infrastructure Act 1994*	Queensland Department of Transport and Main Roads	Ph: 13 QGOV (13 74 68) https://www.tmr.qld.gov.au
Local government requirements	*Local Government Act 2009* *Planning Act 2016*	Your relevant local government office	Local Government Contact Directory

Appendix B

MSES Report

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest

Lot: 3 Plan: RP608120

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and a field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

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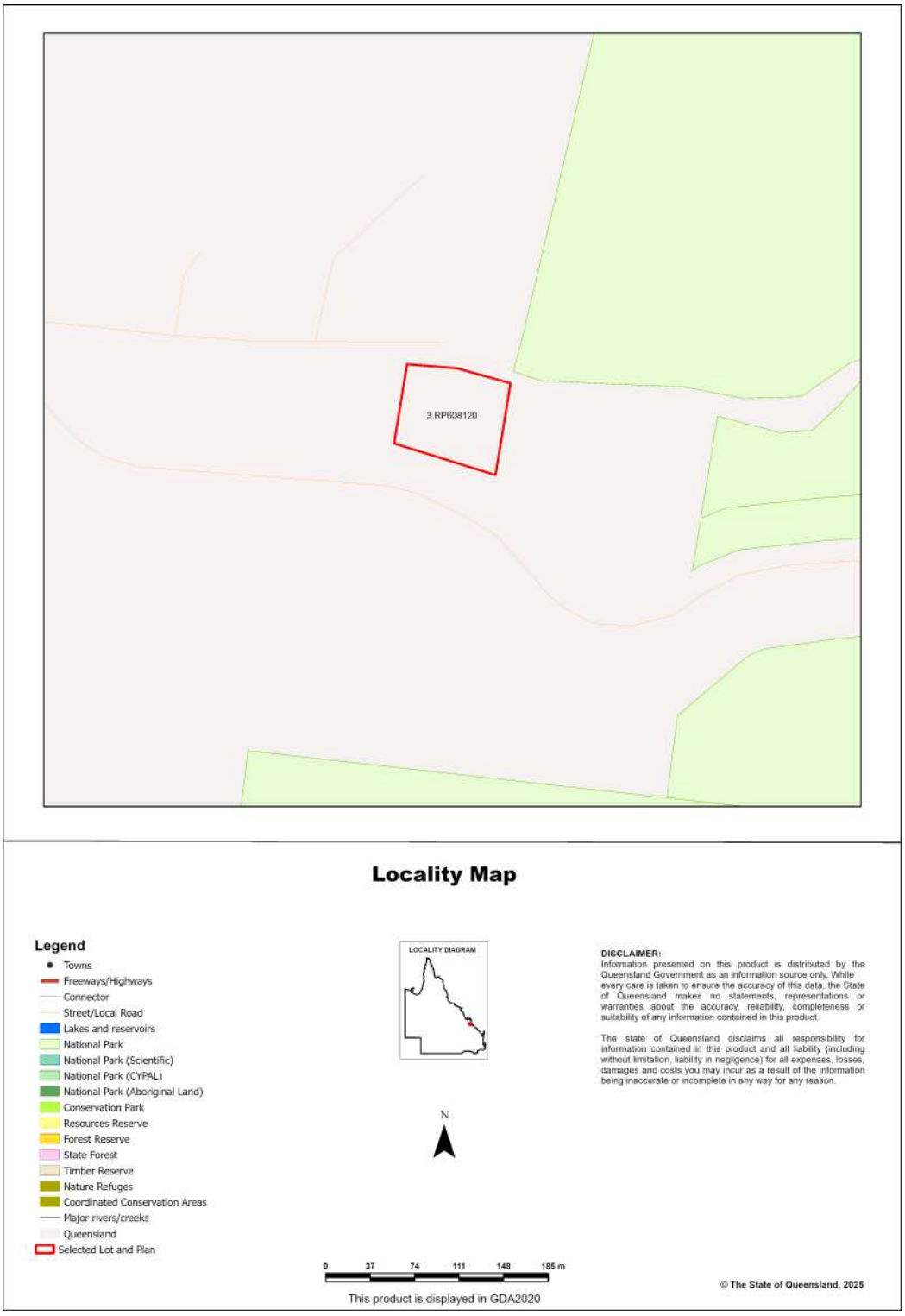
Table of Contents

Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI: Lot: 3 Plan: RP608120, with area 0.59 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Rockhampton Regional	Fitzroy	Brigalow Belt	Marlborough Plains



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992;*

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the Marine Parks Act 2004 ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- *Threatened wildlife under the Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

  - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
  - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
  - Category R areas on the regulated vegetation management map;
  - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
  - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Queensland Wetland Environmental Values under the Environment Protection Regulation 2019;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;
- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0 ha	0.0%
1b Protected Areas- nature refuges	0 ha	0.0%
1c Protected Areas- special wildlife reserves	0 ha	0.0%
2 State Marine Parks- highly protected zones	0 ha	0.0%
3 Fish habitat areas (A and B areas)	0 ha	0.0%
4 Strategic Environmental Areas (SEA)	0 ha	0.0%
5 High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values	0 ha	0.0%
6a High Ecological Value (HEV) wetlands	0 ha	
6b High Ecological Value (HEV) waterways	0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	0.59 ha	100.0%
7b Special least concern animals	0 ha	0.0%
7c i Koala habitat area - core (SEQ)	0 ha	0.0%
7c ii Koala habitat area - locally refined (SEQ)	0 ha	0.0%
7d Sea turtle nesting areas	0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0.59 ha	100.0%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0 ha	0.0%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0 ha	0.0%
8d Regulated Vegetation - Essential habitat	0.59 ha	100.0%
8e Regulated Vegetation - intersecting a watercourse	0 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0 ha	0.0%
9a Legally secured offset areas- offset register areas	0 ha	0.0%
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0 ha	0.0%

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(No results)

1b. Protected Areas - nature refuges

(No results)

1c. Protected Areas - special wildlife reserves

(No results)

2. State Marine Parks - highly protected zones

(No results)

3. Fish habitat areas (A and B areas)

(No results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(No results)

5. High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values

(no results)

6a. Wetlands in High Ecological Value (HEV) waters

(no results)

6b. Waterways in High Ecological Value (HEV) waters

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Values are present

7b. Special least concern animals

Not applicable

7c i. Koala habitat area - core (SEQ)

Not applicable

7c ii. Koala habitat area - locally refined (SEQ)

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
Boronia keysii	Keys boronia	V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	None
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Euastacus bindal	Mount Elliot crayfish	CR	None
Euastacus binzayedi		CR	None
Euastacus eungella		E	None
Euastacus hystricosus		E	None
Euastacus jagara	Jagara hairy crayfish	CR	None
Euastacus maidae		CR	None
Euastacus monteithorum		E	None
Euastacus robertsi		E	None
Taudactylus pleione	Kroombit tinkerfrog	E	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Macadamia integrifolia		V	None
Melaleuca irbyana	swamp tea-tree	E	None
Macadamia ternifolia		V	None
Macadamia tetraphylla	bopple nut	V	None
Petrogale penicillata	brush-tailed rock-wallaby	V	None
Petrogale coenensis	Cape York rock-wallaby	E	None
Petrogale purpureicollis	purple-necked rock-wallaby	V	None
Petrogale sharmani	Sharmans rock-wallaby	V	None
Petrogale xanthopus celeris	yellow-footed rock-wallaby (Qld subspecies)	V	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Phascolarctos cinereus	Koala - outside SEQ*	E	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Xeromys myoides	Water Mouse	V	None

*For koala model, this includes areas outside SEQ. Check 7c SEQ koala habitat for presence/absence.

Threatened (endangered or vulnerable) wildlife species records

Scientific name	Common name	NCA status	EPBC status	Migratory status
Cycas ophiolitica	Marlborough blue	E	E	None

Special least concern animal species records

(No results)

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

Migratory status (M) - China and Australia Migratory Bird Agreement (C), Japan and Australia Migratory Bird Agreement (J), Republic of Korea and Australia Migratory Bird Agreement (R), Bonn Migratory Convention (B), Eastern Flyway (E)

To request a species list for an area, or search for a species profile, access Wildlife Online at:

https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals** and **Map 3b - MSES - Species - Koala habitat area (SEQ)** and **Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)** for an overview of the relevant MSES.

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

https://environment.ehp.qld.gov.au/regional-ecosystems/

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Regional ecosystem	Vegetation management polygon	Vegetation management status
11.3.3	O-dom	rem_oc

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Not applicable

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Not applicable

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

Not applicable

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland
Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

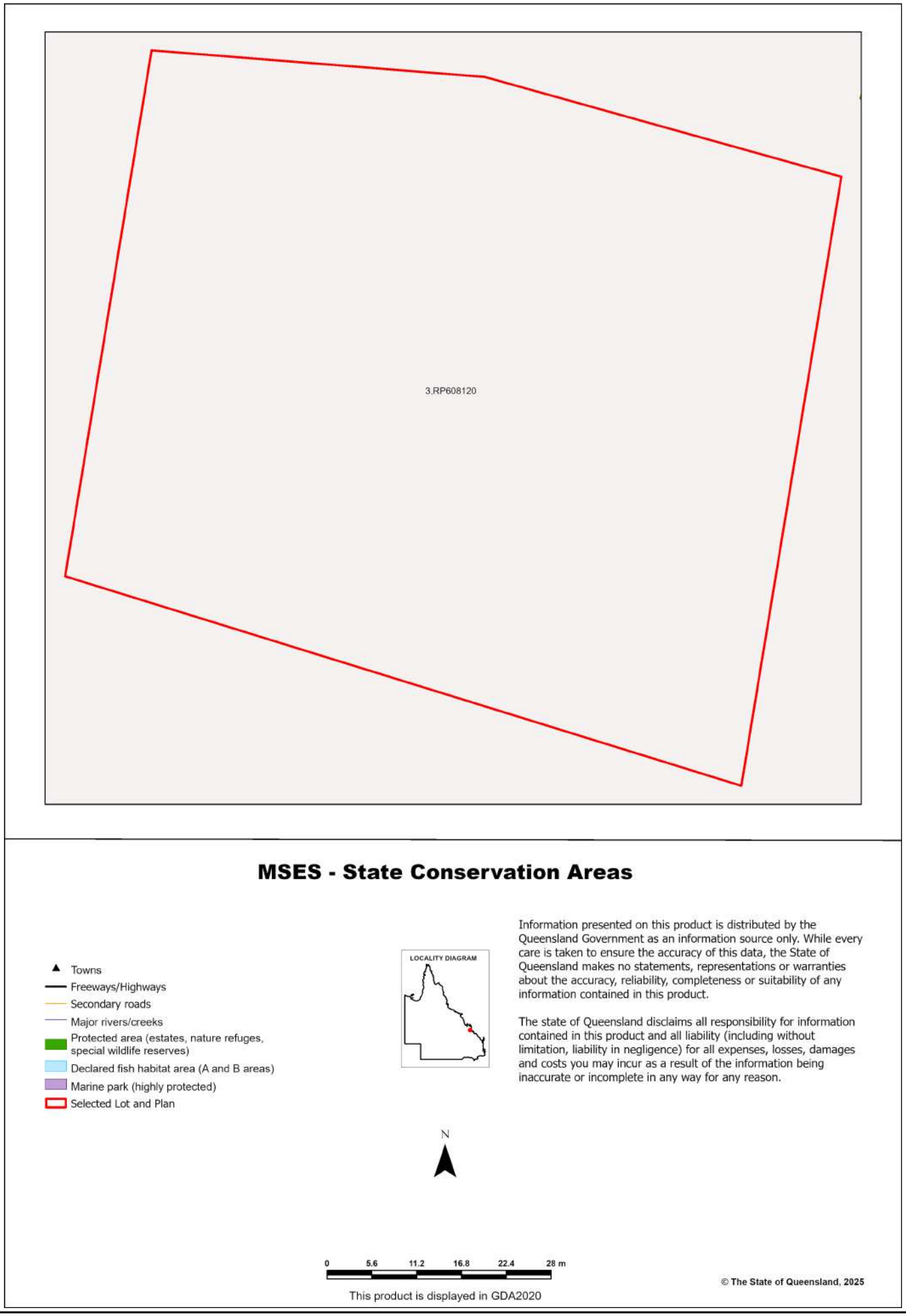
MSES - Offsets

9a. Legally secured offset areas - offset register areas
(No results)

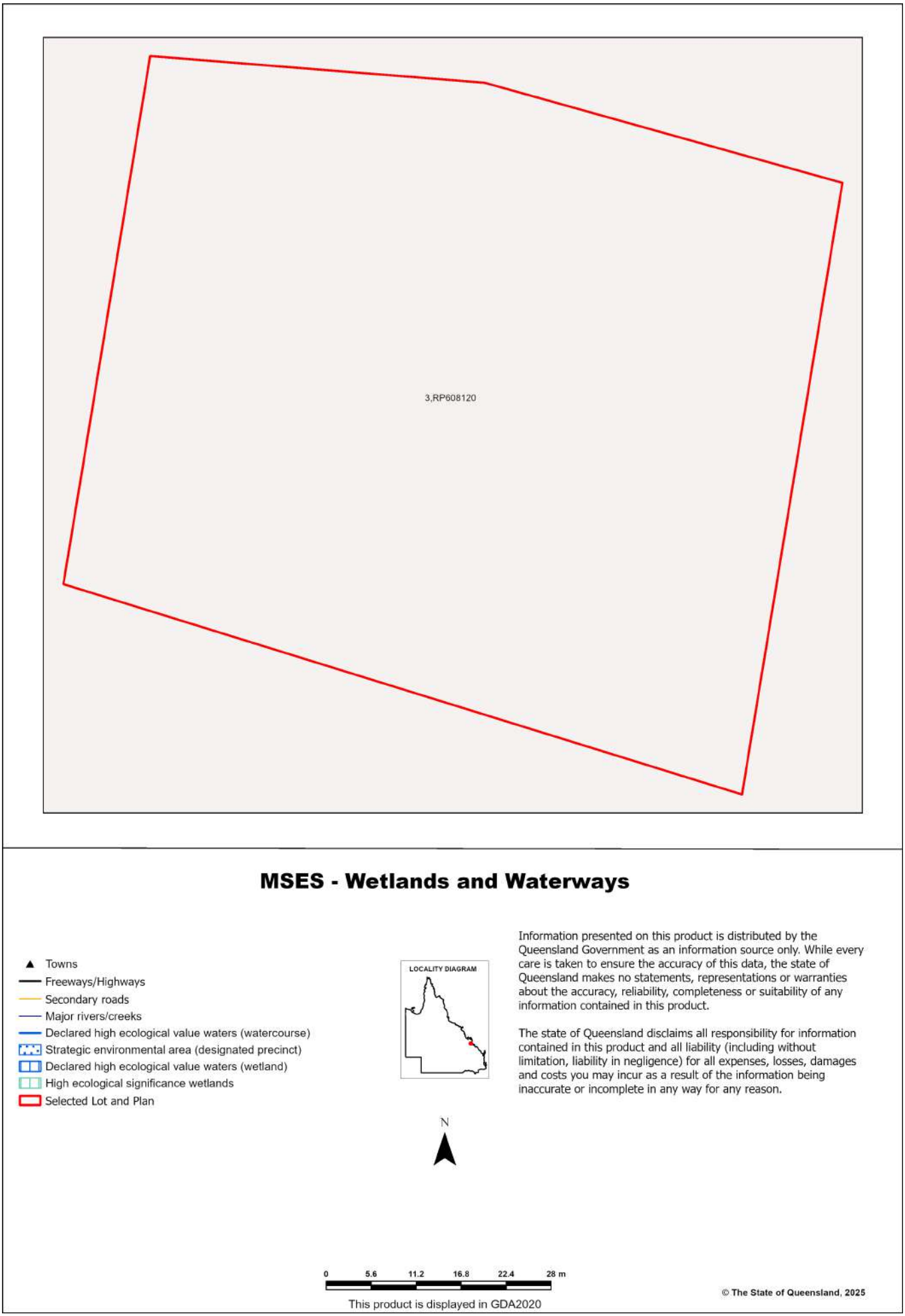
9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation
(No results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

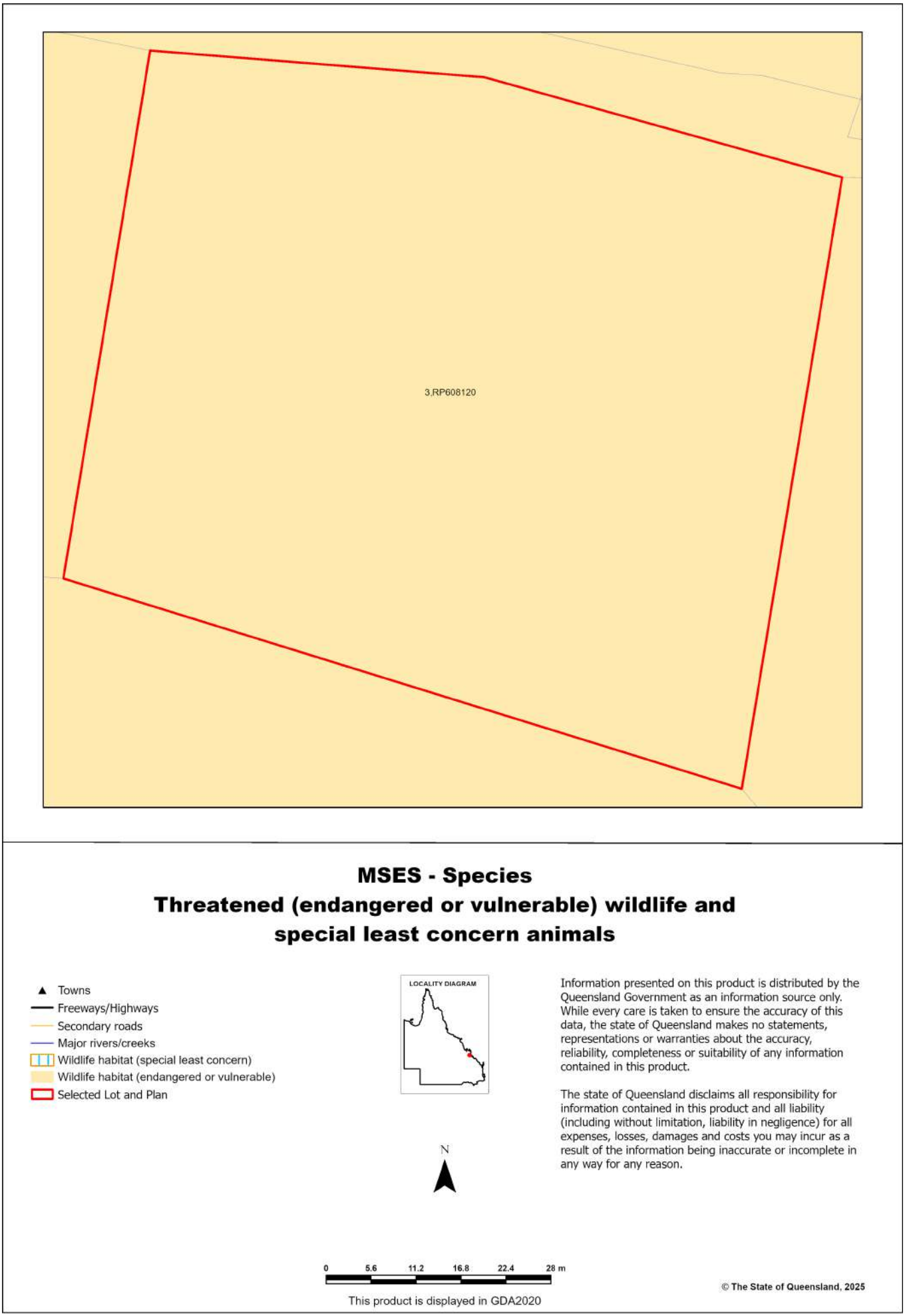
Map 1 - MSES - State Conservation Areas



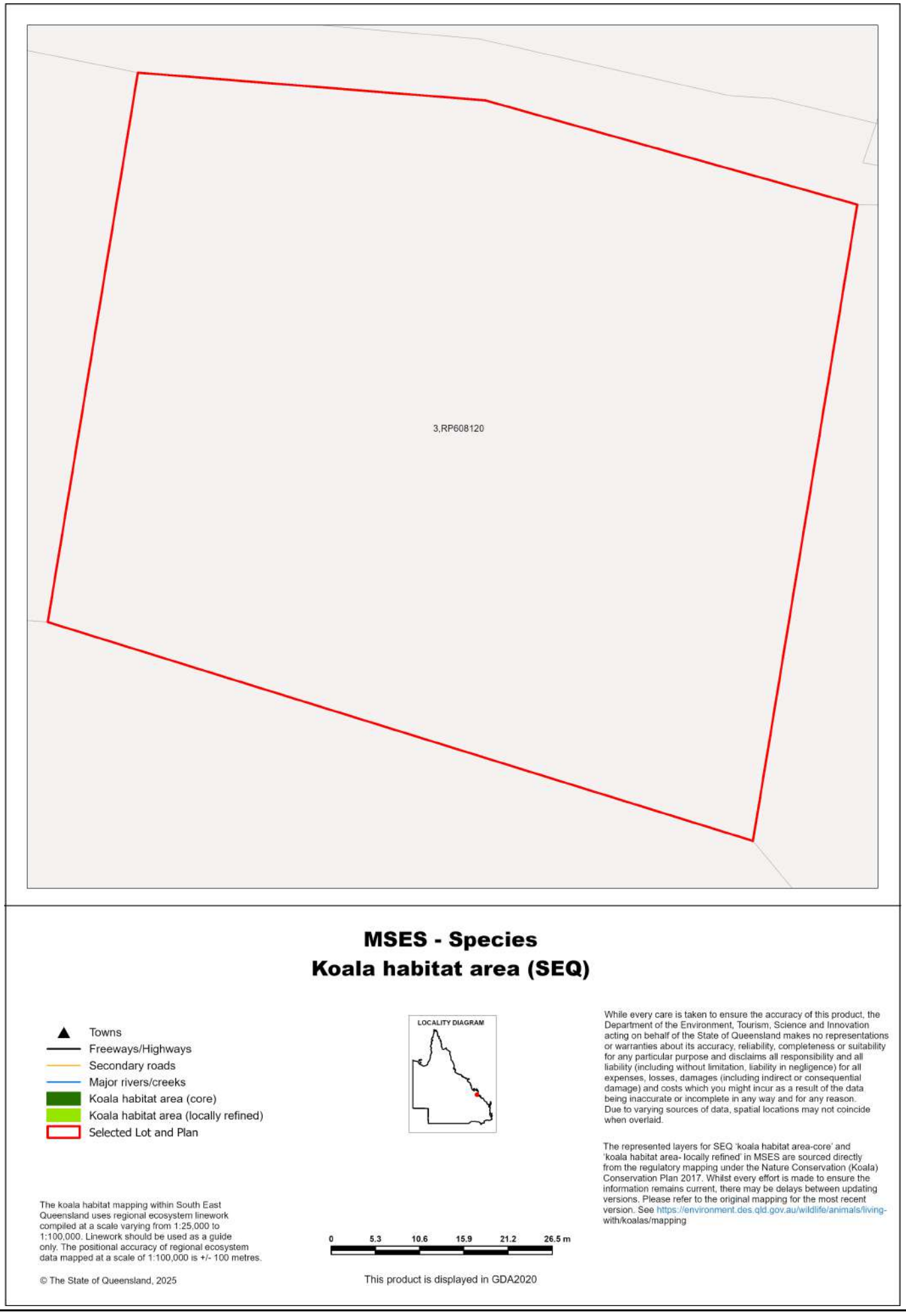
Map 2 - MSES - Wetlands and Waterways



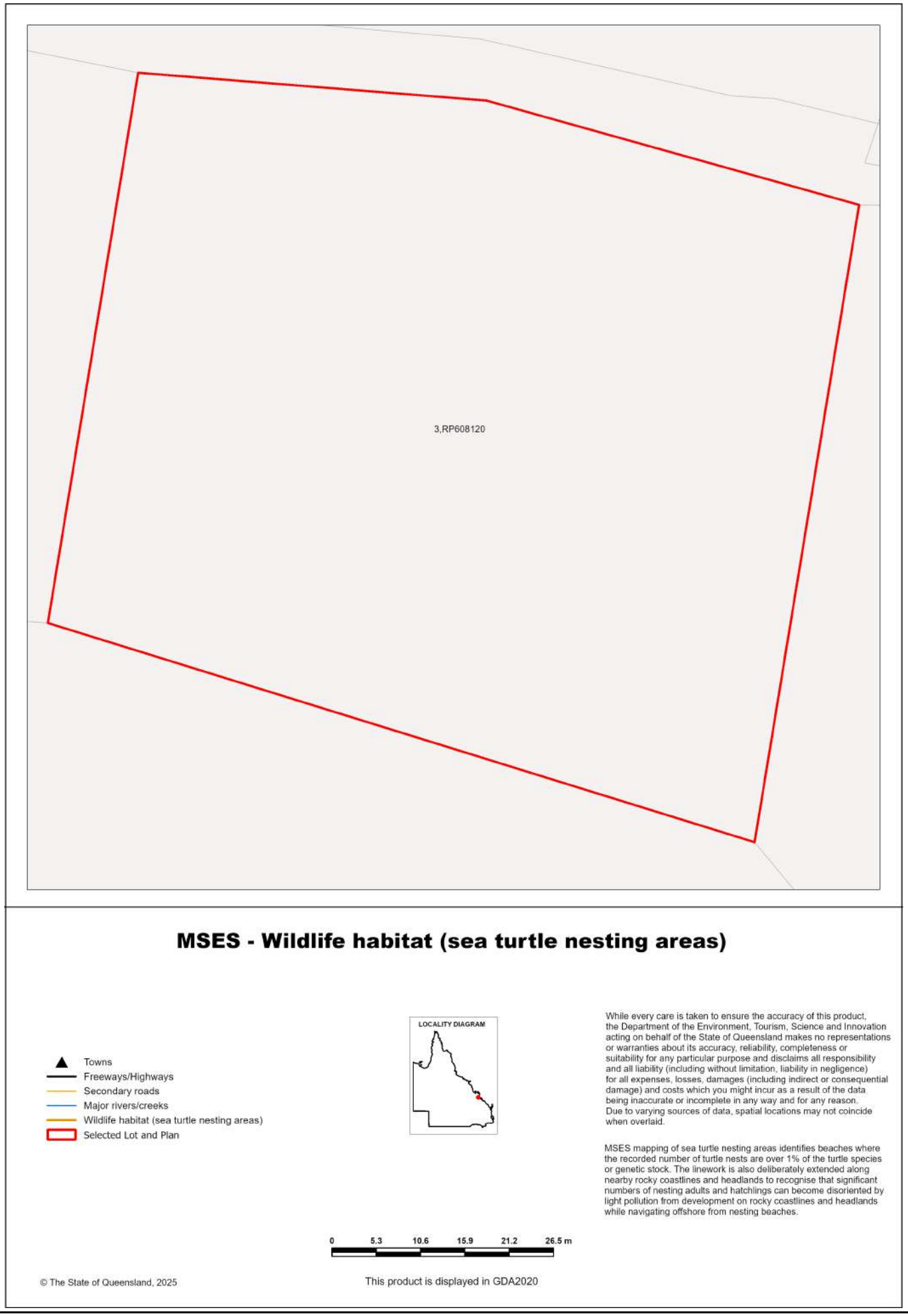
Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



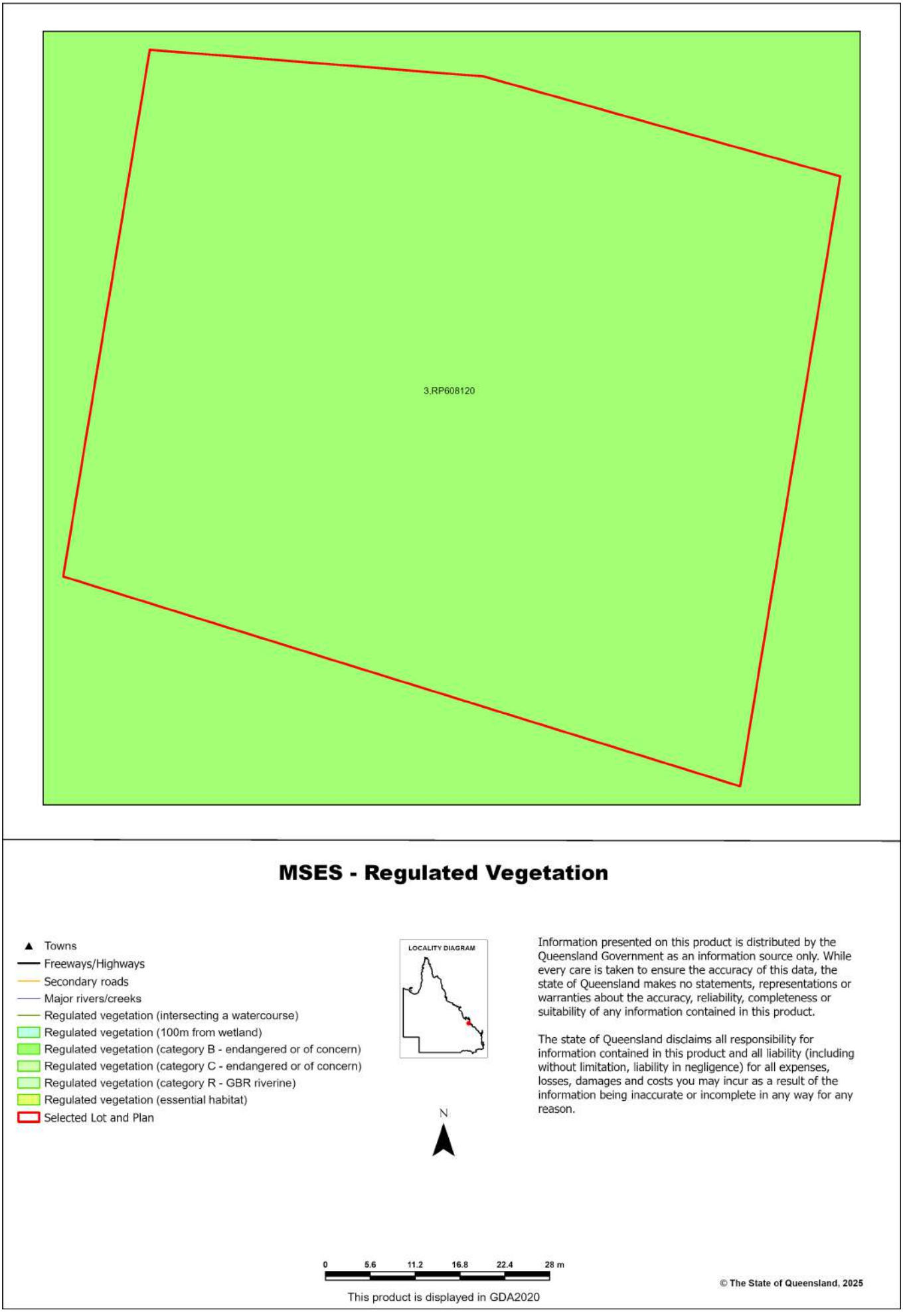
Map 3b - MSES - Species - Koala habitat area (SEQ)



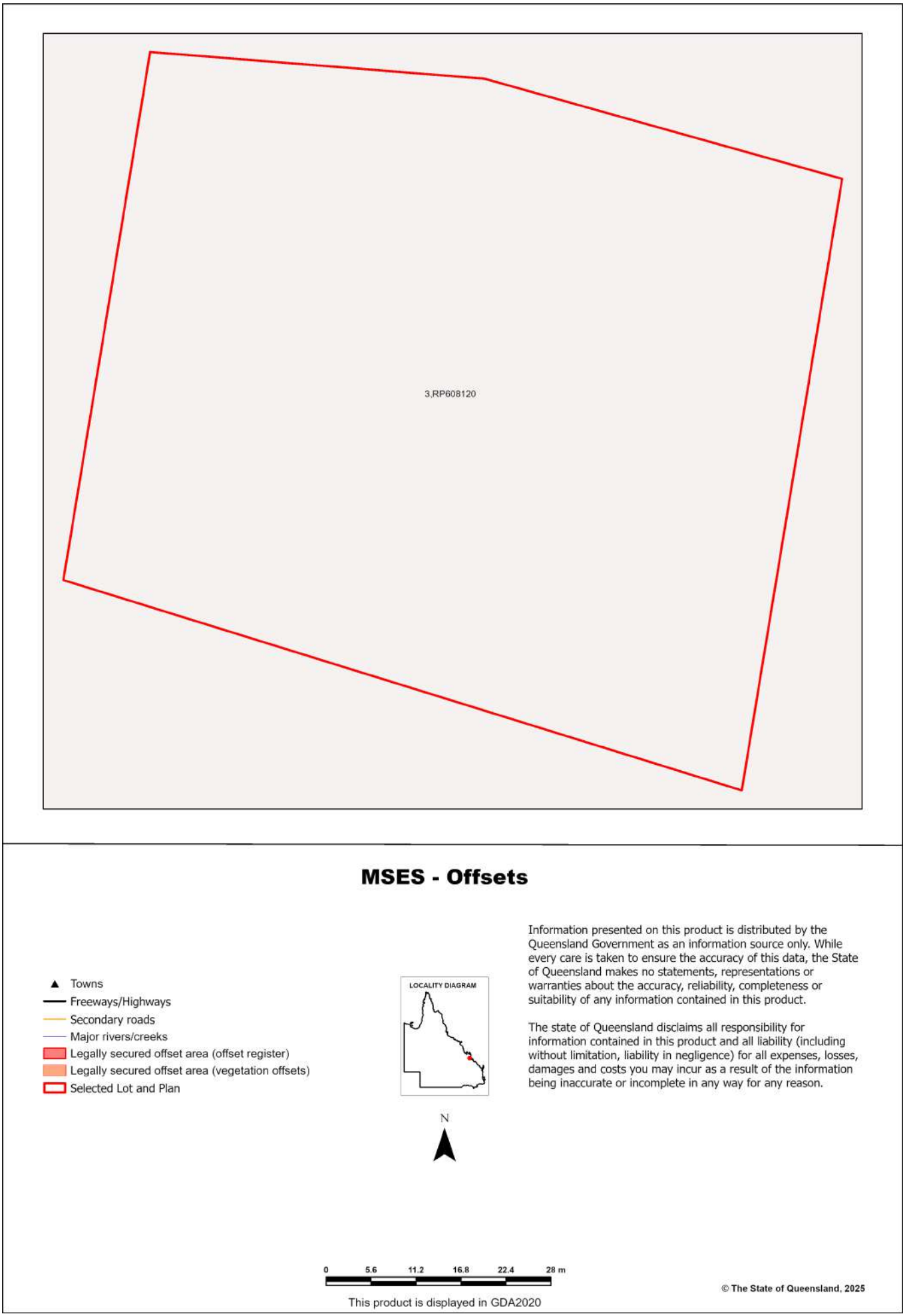
Map 3c - MSES - Species - Wildlife habitat (sea turtle nesting areas)



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). Its primary purpose is to support implementation of the SPP biodiversity policy.

MSES mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

MSES mapping does not determine whether state or local development assessment is required. For state assessment triggers refer to the Development Assessment Mapping System (DAMS). For local assessment triggers, refer to the relevant local planning scheme.

The Queensland Government's "Method for mapping - matters of state environmental significance can be downloaded from:

http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html .

Appendix 2 - Source Data

The datasets listed below are available on request from:

http://qldspatial.information.qld.gov.au/catalogue/custom/index.page

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	**current QSpatial data (http://qspatial.information.qld.gov.au)**
Protected Areas-Estates, Nature Refuges, Special Wildlife Reserves	- Protected areas of Queensland - Nature Refuges - Queensland - Special Wildlife Reserves- Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Queensland Wetland Environmental Values
Wetlands in HEV waters	HEV waters: - EPP Water intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 5) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000)
Wildlife habitat (threatened and special least concern)	-WildNet database species records - habitat suitability models (various) - SEQ koala habitat areas under the Koala Conservation Plan 2019
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map
VMA Essential Habitat	Vegetation management - essential habitat map
VMA Wetlands	Vegetation management wetlands map
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DETSI
Regulated Vegetation Map	Vegetation management - regulated vegetation management map

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DETSI	- Department of the Environment, Tourism, Science and Innovation
EP Act	- Environmental Protection Act 1994
EPP	- Environmental Protection Policy
GDA2020	- Geocentric Datum of Australia 2020
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- Nature Conservation Act 1992
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- Vegetation Management Act 1999

17 October 2025

Project No: B5211

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ROCKHAMPTON REGIONAL COUNCIL
ADDITIONAL PLANS APPROVED
5 January 2026
DATE
These plans are approved and now incorporated into the approved suite of plans subject to the current conditions of approval associated with
Development Permit No.: D/173-2024
Dated: 18 October 2025

Bushfire Technical Advice

Dear Keith,

RE: Water Supply for fire fighting purposes

Application number:	D/173-2024
Local Government Area:	Rockhampton Regional Council
Development Approval	Development Permit for a Material Change of Use for a Dwelling House
Site Address:	3A Pilbeam Drive Frenchville
Lot Plan:	Lot 3 on RP608120

I have reviewed the conditions of the Decision Notice (Application Number D/173-2024) for the above-mentioned site. In addition, I have checked the applicable Rockhampton Region Planning Scheme 2015 (Version 5) and the State Planning Policy (SPP, July 2023 version) with respect to bushfire protection and water-supply requirements.

1. Condition 6.6 of Decision Noice

Condition 6.6 of the Decision Notice sets out the requirement for an on-site water supply for fire-fighting purposes.

Conditions 6.6 of Decision Notice presents:

6.6	A water tank must be provided within ten (10) metres of the building or structure and may be located underground or above ground. The water tank must have:	
	6.6.1	a take-off connection from the building to the tank which is at a level that provides on-site water storage of not less than 20,000 litres;
	6.6.2	a hardstand area allowing heavy rigid fire appliance access within six (6) metres of a tank;
	6.6.3	above ground tanks must be constructed from non-combustible materials, such as steel or concrete; and
	6.6.4	fire brigade tank fittings consisting of:
		6.6.4.1 for above ground tanks - fifty (50) millimetre ball valve and male camlock coupling; and
		6.6.4.2 for above ground water pipe fittings that are metal; or
		6.6.4.3 for underground tanks, an access hole of 200-millimetre diameter (minimum) to allow access for suction lines.

Figure 1: Condition 6.6 on Decision Notice (Approval)

The Condition 6.6 reflects Acceptable Outcome AO2.1.2 of Table 8.2.4.3.1 under Section 8.2.4 – Bushfire Hazard Overlay Code of the Rockhampton Region Planning Scheme 2015 (Version 5).

AO2.1.2 includes a Note stating:

> *"Where water tanks are required, swimming pools, creeks and dams should not be used as a substitute for a dedicated static supply as these sources of water are not reliable during drought conditions."*

This note is advisory (non-binding) and is intended to discourage reliance on natural or temporary water bodies where reliability cannot be guaranteed. It does not explicitly prohibit the use of a swimming pool if its reliability, accessibility, and maintenance can be demonstrated to meet the same intent as AO2.1.2.

2. Purpose of the Provision

The intent of AO2.1.2 and PO2 of bushfire hazard overlay code is to ensure that a reliable, accessible, and drought-resilient water supply is available for fire-fighting purposes.

Where a permanent, managed, and reticulated swimming pool can achieve these outcomes, it may be reasonably accepted as a compliant firefighting water source.

3. Proposed Arrangement for the Site

3.1 Existing Public Fire Hydrant Connection

The development will be connected to the reticulated water supply network. A public fire hydrant is located on Frenchville Road (–23.347877, 150.569981), approximately 26 metres from the northern boundary and about 91 metres from the proposed dwelling, which is considered to be within the effective service range.

3.2 Reliability of Water Supply

The concrete swimming pool permanently retains over 40,000 L of water, exceeding the minimum 10,000–20,000 L requirement in Table 8.2.4.3.3. The pool is connected to the reticulated town water supply with an automatic top-up valve system, ensuring constant water level and drought resilience.

3.3 Accessibility for Fire Fighting

The proposed pool is within 10 m of the dwelling and less than 6 m from a hardstand area accessible to firefighting vehicles.

A 50 mm BSP male camlock fitting and metal suction line will be installed at the pool edge, clearly signposted "STATIC WATER SUPPLY."

The layout and fittings will comply with QFES Fire Hydrant and Vehicle Access Guidelines.

3.4 Operational Reliability

The system supports gravity-fed or portable pump operation during power outages. Pool inspection and service should be conducted regularly. to ensure compliance and functionality.

4. Performance-Based Assessment

The proposed pool arrangement satisfies Performance Outcome PO2:

Development provides adequate and accessible water supply for firefighting purposes which is safely located and freely accessible for firefighting.

By providing a permanent, reticulated, and accessible water source, the swimming pool achieves an equivalent or better outcome compared to a water tank.

5. Consistency with the State Planning Policy

The State Planning Policy (SPP, July 2023) establishes state-level natural hazard provisions, including Natural Hazards, Risk and Resilience – Bushfire Hazard. The SPP requires that development in bushfire hazard areas be supported by reliable and accessible water supplies for firefighting, but it does not prescribe or limit the type of water source to be used.

There is no clause in the SPP that prohibits or excludes swimming pools from being accepted as static water supplies.

Instead, the SPP focuses on ensuring that the performance outcome—adequate firefighting water supply and access—is achieved.

Therefore, provided the swimming pool is:

- permanently filled and connected to the reticulated system,
- safely located and accessible to firefighting appliances, and
- fitted with compliant camlock outlets,
- it remains consistent with the intent and objectives of the SPP.

6. Recommended Condition 6.6 Amendment

It is recommended that the conditions 6.6 shall include the provisions of a swimming pool to be used for onsite water supply for fire fighting purposes.

Condition 6.6 amended recommendation as follows:

The development shall provide an on-site water supply for fire-fighting purposes.

6.6.1 A water tank must be provided within ten (10) metres of the building or structure and may be located underground or above ground. The water tank must have:

6.6.1.1 a take-off connection from the building to the tank which is at a level that provides on-site water storage of not less than 20,000 litres;

6.6.1.2 a hardstand area allowing heavy rigid fire appliance access within six (6) metres of a tank;

6.6.1.3 above ground tanks must be constructed from non-combustible materials, such as steel or concrete; and

6.6.1.4 fire brigade tank fittings consisting of:

6.6.1.4.1 for above ground tanks - fifty (50) millimetre ball valve and male camlock coupling; and

6.6.1.4.2 for above ground water pipe fittings that are metal; or

6.6.1.4.3 for underground tanks, an access hole of 200-millimetre diameter (minimum) to allow access for suction lines.

Or

6.6.2 The development must connect to reticulated water, and

6.6.2.1 A swimming pool must be provided within ten (10) metres of the building or structure and may be located underground or above ground. The pool must have:

6.6.2.2 a take-off connection for the pool which is at a level that provides on-site water storage of not less than 40,000 litres at any time;

6.6.2.3 a hardstand area allowing heavy rigid fire appliance access within six (6) metres of the pool.

6.6.2.3 above ground tanks must be constructed from non-combustible materials, such as steel or concrete; and

6.6.2.4 fire brigade fittings consisting of:

6.6.2.4.1 for above ground pool - fifty (50) millimetre ball valve and male camlock coupling; and

6.6.2.4.2 for above ground water pipe fittings that are metal; or

6.6.2.4.3 for underground pool, an access hole of 200-millimetre diameter (minimum) to allow access for suction lines.

7. Conclusion

The Rockhampton Region Planning Scheme 2015 (Version 5) and the State Planning Policy (July 2023) require that developments in bushfire-prone areas provide a reliable and accessible water supply for fire-fighting purposes. Neither instrument prohibits the use of a swimming pool as a static water supply, provided that reliability, accessibility and maintenance can be demonstrated.

The proposed swimming pool will be permanently filled, connected to the reticulated water network and equipped with compliant fire-fighting fittings, thereby achieving an equivalent—or superior—level of performance to a conventional static water tank.

It is therefore respectfully recommended that Condition 6.2.2 be amended to allow the use of a swimming pool as an acceptable on-site fire-fighting water supply, consistent with the intent of Performance Outcome PO2 of the Bushfire Hazard Overlay Code and the objectives of the State Planning Policy.

If you have any queries regarding this Bushfire Technical Advice, please do not hesitate to contact us.

Yours faithfully,

Henry (Hongxi) Liang

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Senior Bushfire Consultant
Max Bushfire Protection Consulting

Mobile: 0432 89 82 82
Email: service@maxbp.com.au

Appendix A: Bushfire hazard overlay code - Water supply for fire fighting purposes
Appendix B: Fire hydrant on Frenchville Road (−23.347877, 150.569981)
Appendix C: Approved building plan

References

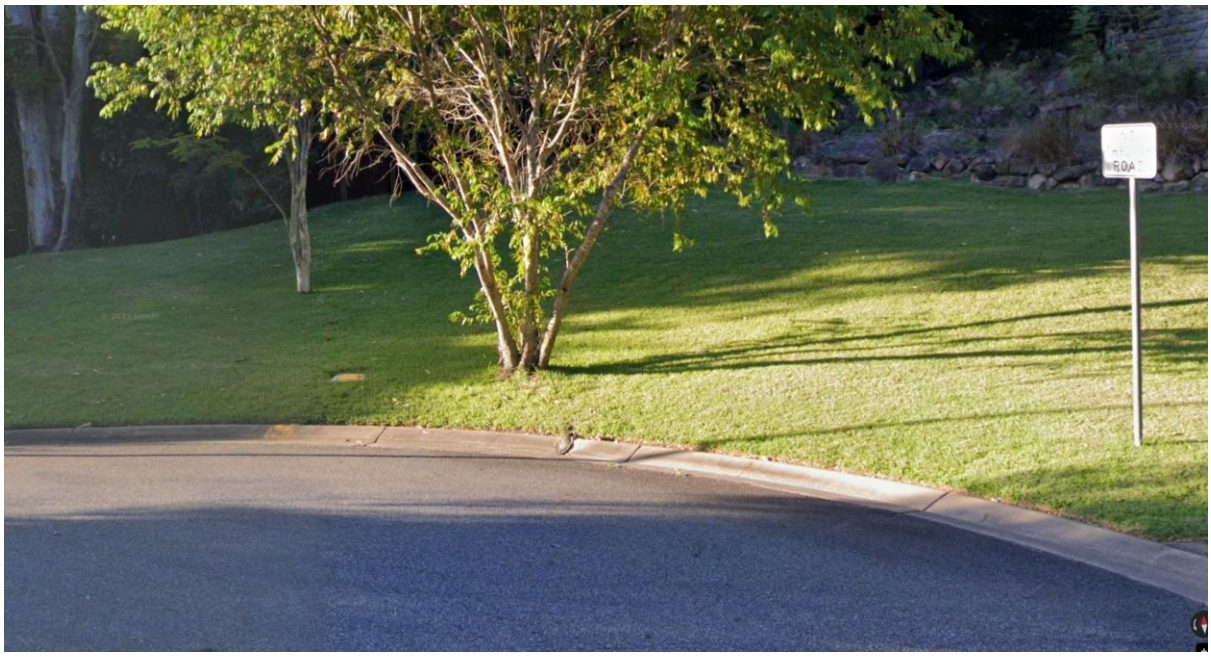
- Bushfire Resilient Communities – Technical Reference Guide for the State Planning Policy State Interest ' Natural Hazards, Risk and Resilience – Bushfire'. (Oct 2019)
- Rockhampton Region Planning Scheme 2015 (Version 5)
- State Planning Policy (July 2023)
- Standards Australia (2018). AS 3959:2018 – Construction of Buildings in Bushfire-Prone Areas (Incorporating Amendment 1 – 2020).

Appendix A: Bushfire hazard overlay code - Water supply for fire fighting purposes

Water supply for fire fighting purposes	
PO2 Development provides adequate and accessible water supply for fire fighting purposes which is safely located and freely accessible for fire fighting.	**AO2.1** AO2.1.1 In a reticulated water supply area fire hydrants in: a. residential areas are above ground single outlet fire hydrants and provided at not less than eighty (80) metre intervals and at each street intersection; and Editor's note—To remove any doubt, these intervals also apply to common access ways within a common private title b. commercial and industrial areas are above or below ground fire hydrants and provided at not less than ninety (90) metre intervals and at each street intersection. Above ground fire hydrants are to be fitted with dual valve outlets in these areas. Editor's note—Fire hydrants are designed and installed in accordance with Australian Standard 2419.1 Fire hydrant installations — system design, installation and commissioning, unless specified by the relevant water entity.

	OR AO2.1.2 Where a reticulated water supply is not available or the development is not within eighty (80) metres of a hydrant, a water tank is provided within ten (10) metres of the building or structure, and the water tank has: c. a take-off connection from the building to the tank which is at a level that provides on-site water storage of not less than the water requirement outlined in Table 8.2.4.3.3; d. a hardstand area allowing heavy rigid fire appliance access within six (6) metres of a tank; and e. fire brigade tank fittings consisting of: i. for above ground tanks, A. fifty (50) millimetre ball valve and male camlock coupling; and B. above ground water pipe fittings that are metal; or ii. for underground tanks, an access hole of 200 millimetre diameter (minimum) to allow access for suction lines. Note—Plastic tanks are not recommended; however, if they are fully submerged with above ground access points they are acceptable. Note—Where water tanks are required, swimming pools, creeks and dams should not be used as a substitute for a dedicated static supply as these sources of water are not reliable during drought conditions.

Appendix B: Fire hydrant on Frenchville Road (−23.347877, 150.569981)



Appendix C: Approved building plan