

Exhibited

This planning application is open for
public comment until
05 October 2026

Reference no	PLN-26-0069
Site	16 BOND STREET ROSS
Proposed Development	Single Dwelling
Zone	8.0 General Residential
Use class	Residential

Written representations may be made during this time to the General Manager;
mailed to PO Box 156, Longford, Tasmania 7301,
delivered to Council offices or
a pdf letter emailed to planning@nmc.tas.gov.au

(no special form required)



Exhibited

PLANNING APPLICATION

FOR BUILDINGS, WORKS AND CHANGE OF USE

(E.g. Residential houses, sheds, carports, retaining walls, visitor accommodation, commercial development, signage etc.)

Office Use Only:

The Proposal

Description of proposal: New dwelling

Driveway construction material: gravel

The Land

Site address: 16 Bond St, Ross

Title reference: C/T: 149454/1

Existing buildings on site: vacant

Existing use of site: vacant

**Applicant justification of any variation/discretion to the
Tasmanian Planning Scheme – Northern Midlands**

FILE NUMBER Y.20628 GRANTEE WHOLE OF LOT 16 (0A-2R-16P) GTD TO EDWARD SIGGINS	CONVERSION PLAN LOCATION TOWN OF ROSS (SEC K) CONVERTED FROM GL7686 NOT TO SCALE LENGTHS IN METRES	Registered Number P149454 APPROVED 21 AUG 2018 <i>Alice Kawa</i> Recorder of Titles
ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN		DRAWN NC

Rosene Cox

16 Bond Street
Flood Hazard Report

July 2026

30.7.2026

Document History and Status

Rev	Date	Reviewed By	Approved By	Revision Details
A	07/07/2026	Nik Byrne	Nik Byrne	Client Submission

Distribution of copies:

Rev	Quantity	Issued To
A	1	Rosene Cox

File Name:

2436 - Rosene Cox - 16 Bond Street - Flood Hazard Report

Author:

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Client:

Rosene Cox

Project:

16 Bond Street

Subject:

Flood Hazard Report

Document

Report

Document Version

A

Job No.

2436

30.7.2026

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1. Overview

Rosene Cox Building Design & Drafting acting on behalf of the property owner are developing plans for the construction of a new dwelling at 16 Bond Street in Ross, Tasmania. Ross is within the Northern Midlands Council (Council) municipality. The proposal is for a small single bedroom dwelling, with a small deck. The site is affected by flooding of the Macquarie River and Downs Creek. The development will need to comply with the requirements of C12 Flood-Prone Areas Hazard Code of the Tasmanian Planning Scheme.

1.1 Site Location & Development

16 Bond Street is located as shown Figure 1-1 and is currently a vacant block of land.

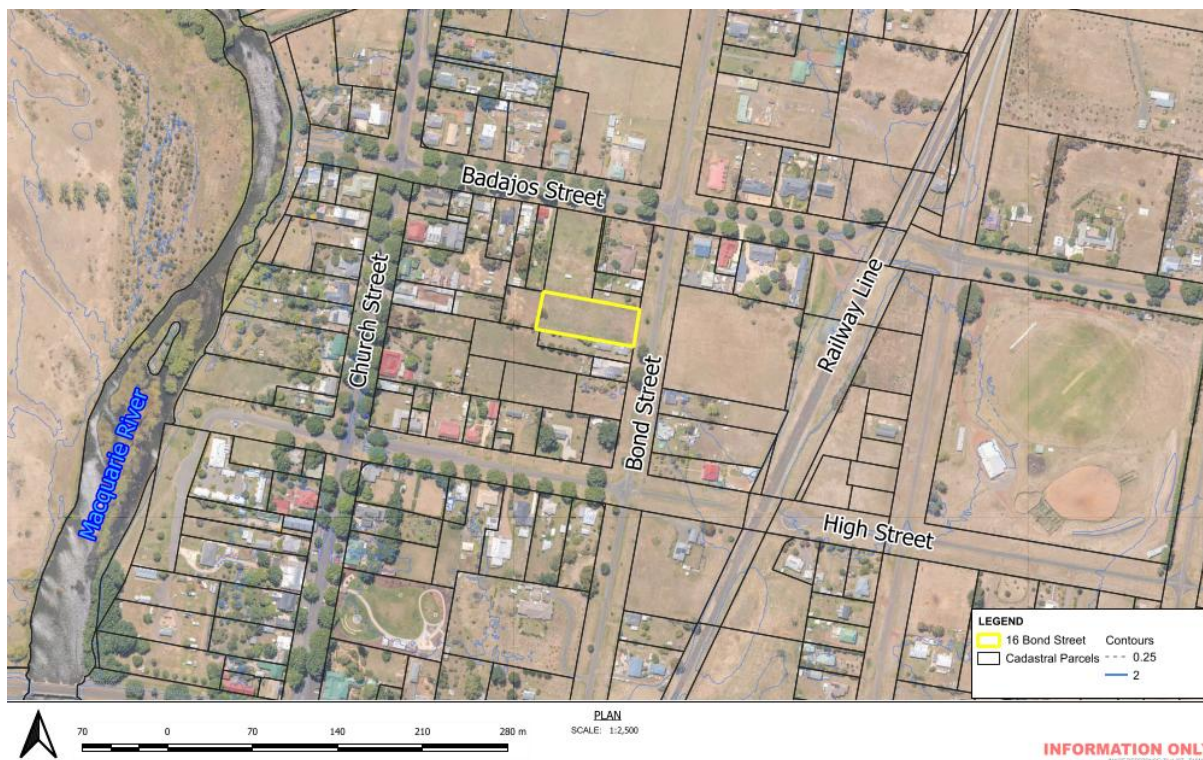


Figure 1-1: Site Overview

The proposed dwelling is located centrally within the site and has a floor area of approximately 32m², the development drawings are included in Appendix A.

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2. Flooding

2.1 Development Impact

During large flood events, the site is shown to be flooded by modelling carried out by the Tasmanian State Emergency Service (SES). In the 1% Annual Exceedance Probability (AEP) event, the Macquarie River floods across a large portion of Ross including 16 Bond Street. The design event and its impact upon the development is shown below.

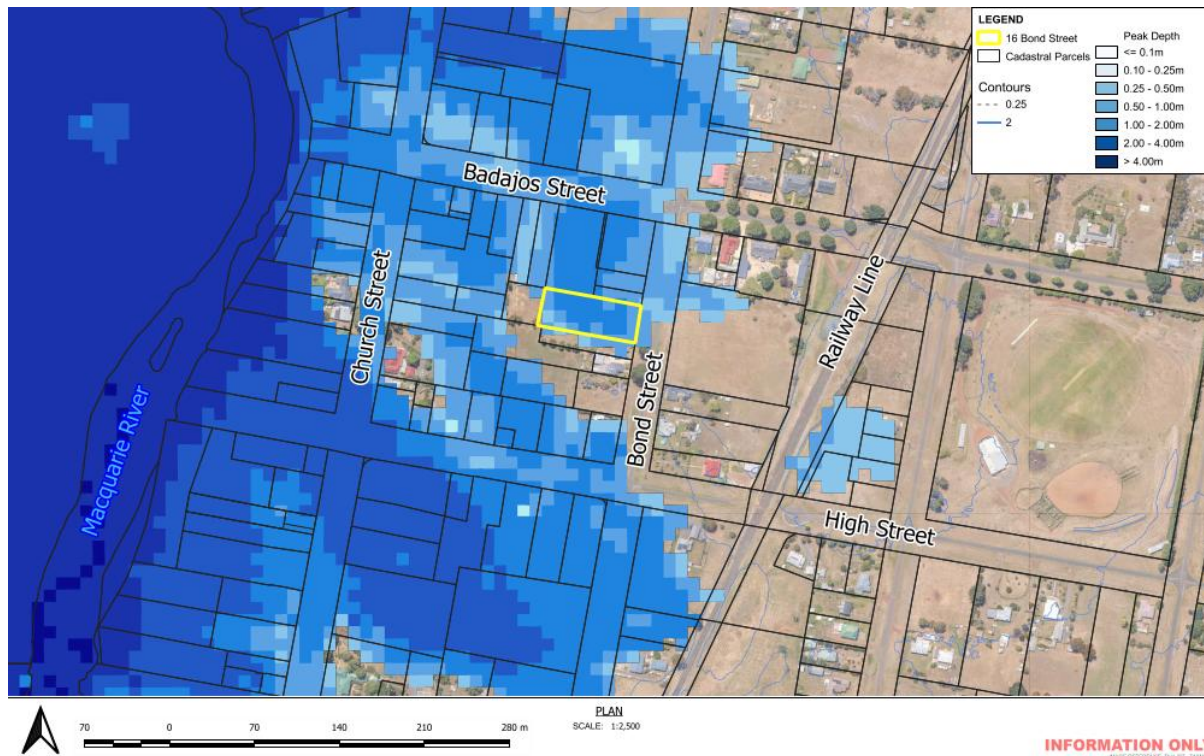


Figure 2-1: Site inundation - 1% AEP Climate Change

As shown in Figure 2-1, nearly the entire block is underwater during the critical event. These floodwaters are shown in the mapping to flow into the development site from the north where they overtop Badajos Street. The peak water level on site during this event is 181.05m AHD. This water level is reasonably consistent across all of the flooded areas of Ross indicating a downstream controlled scenario. A review of the Macquarie River downstream of Ross found that likely the constraint is the Midlands Highway with the water level where the flooding overtops the Highway recorded as 180.5m AHD. This point is approximately 1.6km away as the crow flies, giving a hydraulic gradient of 0.03%, indicating an extremely flat floodplain where downstream controls dominate the water levels. What this means is that water is backing into the site from a large flood plain, therefore developing this site will displace water into the surrounding area but will not change the overall flood behaviour in the region.

To estimate the impact this development will have on the flood level a conservative assessment of the flood plain volume will be used. The total floor area of the development is 32m² and the peak depth of the water on the site in the 1% AEP event is 500mm. Assuming this depth across the whole footprint of the proposed building and no ability for water to flow in the underfloor area, the development will displace 16m³ of water as a high estimate. In the immediate vicinity of the development, between the crown of Badajos Street and the edge of the inundation extent is approximately 1,500m² as shown in Figure 2-2.

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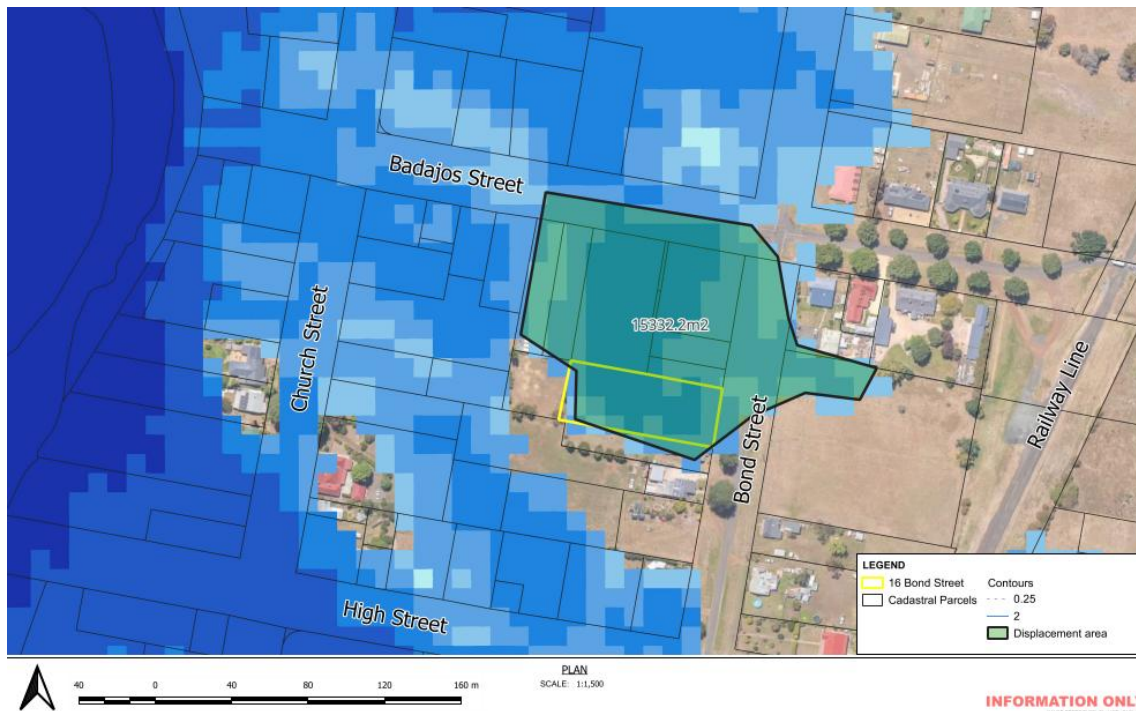


Figure 2-2: Displacement of Development

Spreading the displaced water across this area will result in a theoretical increase in water level of 10-12mm. In reality the impact is even less as the assumptions on displacement volume and area are conservative, and therefore the development will have no measurable impact upon the flood levels

2.2 Development Hazard

Flooding at the site reaches a maximum hazard level of H3, as shown in Figure 2-3, with definitions on rating severity shown in Figure 2-4.

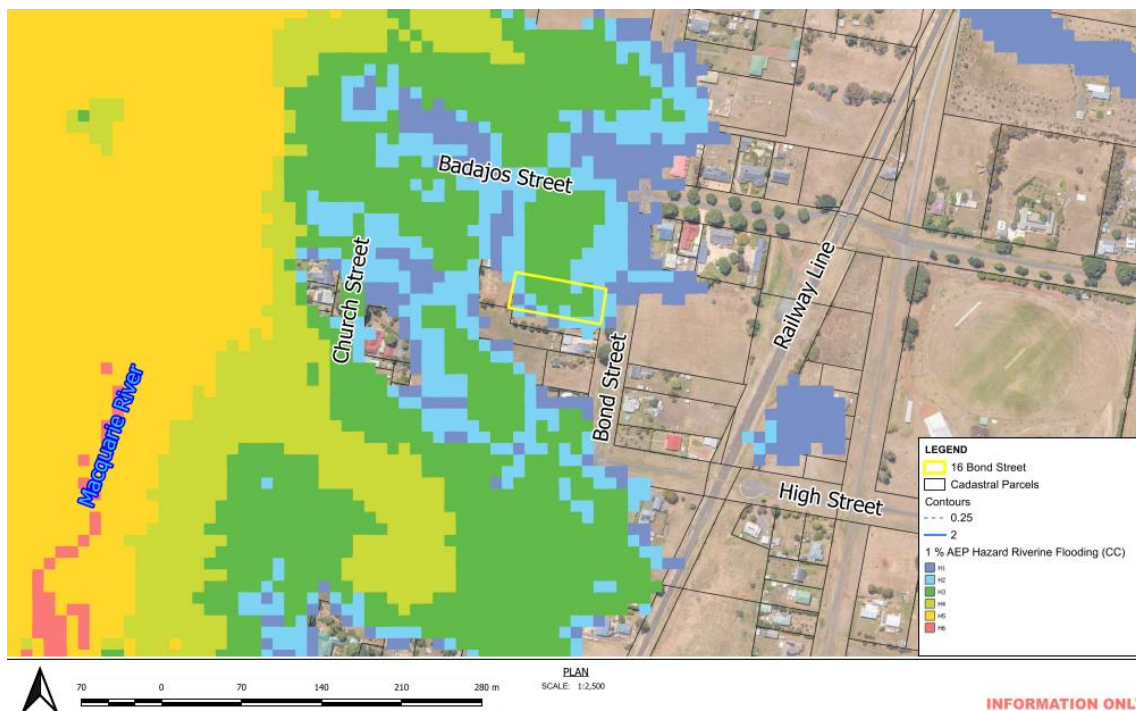


Figure 2-3: 1% AEP Flood Hazard

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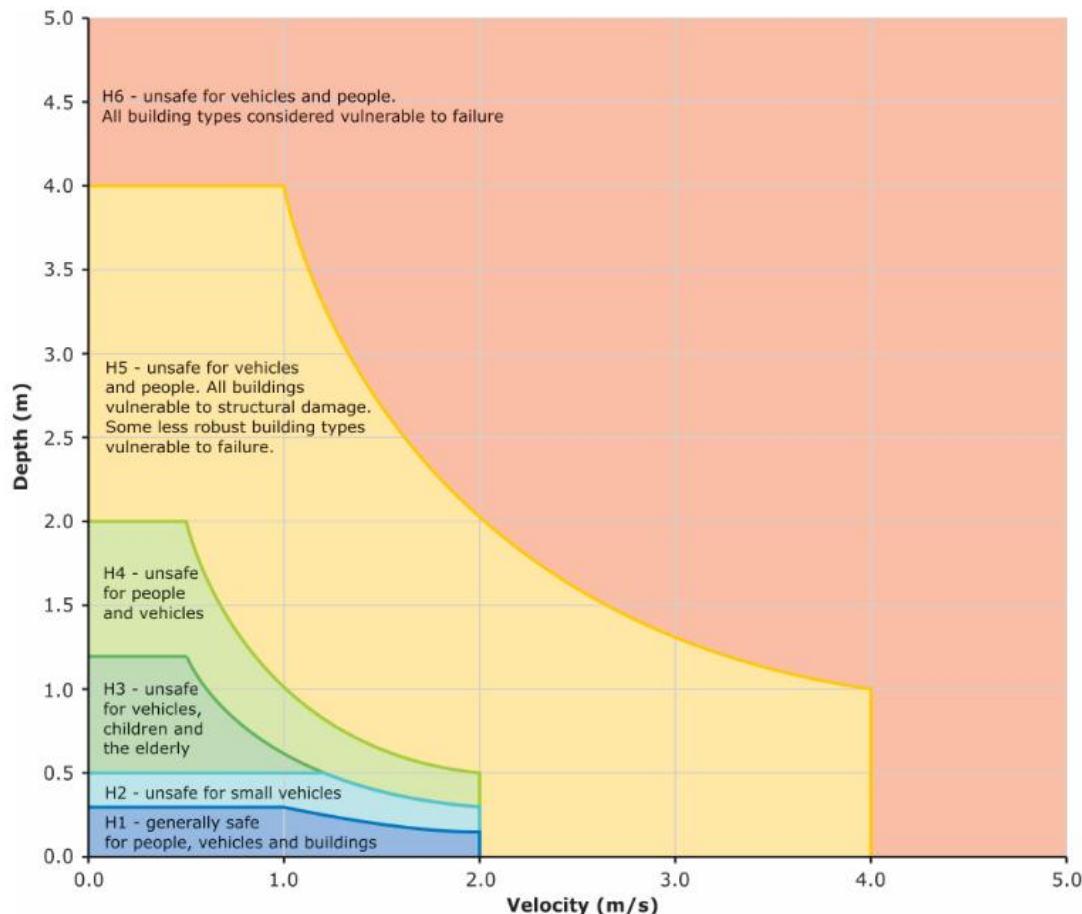


Figure 2-4: Combined Flood Hazard Curves (Smith et al., 2014)

The SES velocity maps were reviewed and maximum velocities across most of the area are between 0 m/s and 0.25 m/s. The key driver then for the H3 rating on the site is water levels exceeding 0.5m, pushing the hazard rating from H2 to H3. This represents water that is dangerous for the infirm and children where drowning can occur but should be safe for most able-bodied people. Positioning floor heights above this level will eliminate over floor flooding in the 1% AEP event, protecting belongings and safeguarding the property, allowing for safe refuge in the event of being trapped on the property during a flood.

2.3 Development Floor Level

To maintain a tolerable risk from flooding the floor height of the development shall be a minimum of 300mm (freeboard) above the mapped flood height. The 1% AEP flood height on the property is 181.05m AHD so the minimum floor level shall be 181.35m AHD.

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3. Validation

To confirm that the SES flood mapping is appropriate for determining flood levels at the site, several validation methods have been undertaken which will ensure the results are suitable for this development.

3.1.1 Hydrology and Hydraulics Review

To estimate the flow rate in the Macquarie River near Ross, a Regional Flood Frequency Estimate (RFFE) has been carried out. The catchment area of 1,450km² is shown in Figure 3-1.

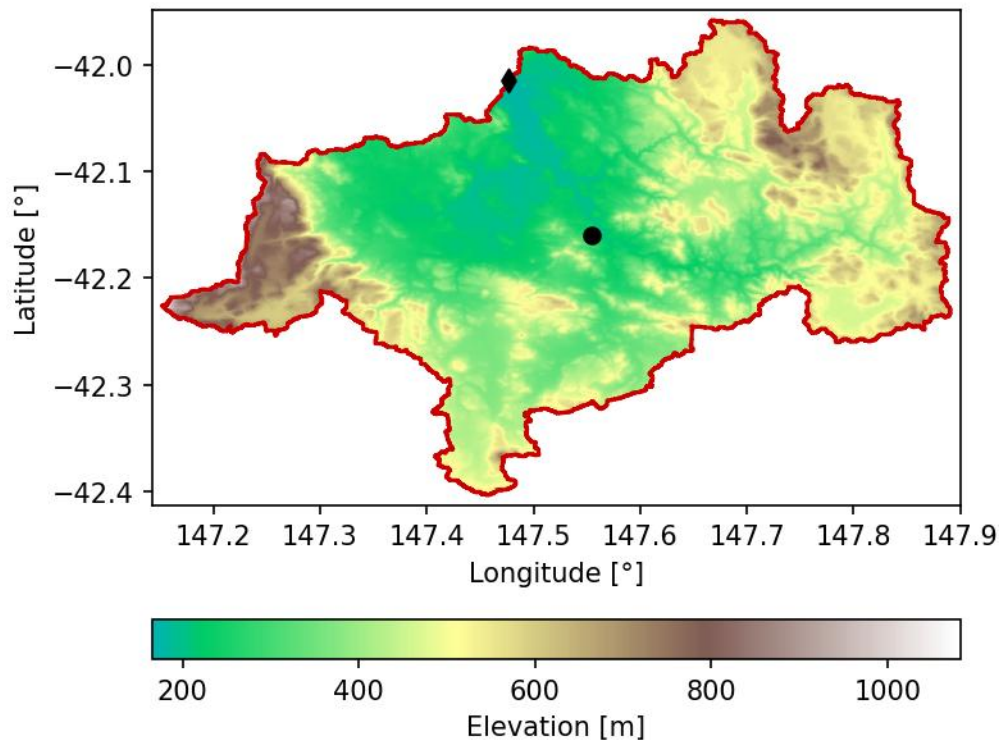


Figure 3-1: Macquarie River Catchment

This tool uses regional gauge data to generate a likely spread of flow rates for flood events in the catchment. The locations of the 15 gauges that have been used are shown Figure 3-2 below.

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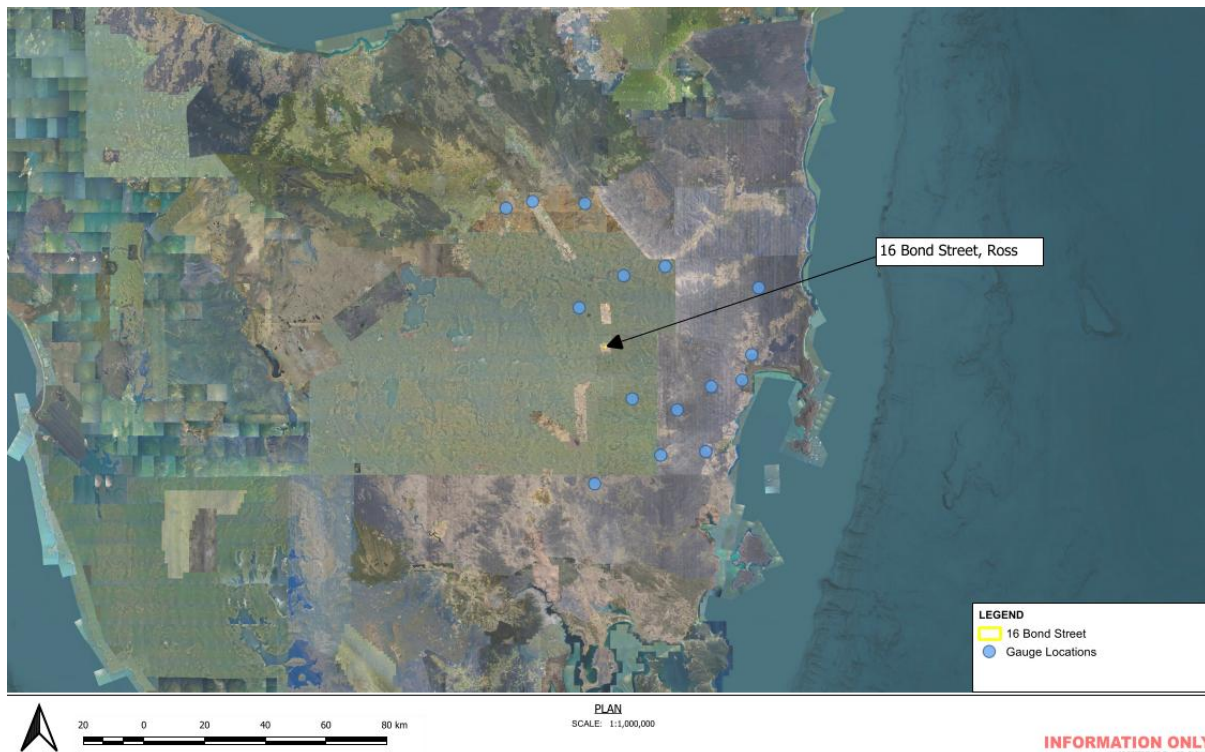


Figure 3-2: RFFE Gauge Locations

Results from the assessment are shown in Table 3-1, with the expected 1% AEP flow rate $\sim 430 \text{ m}^3/\text{s}$ and the lower and upper confidence limits $71.9 \text{ m}^3/\text{s}$ and $2,038.38 \text{ m}^3/\text{s}$ respectively.

Table 3-1: RFFE Results

AEP (%)	Expected Value (m^3/s)	Lower Confidence (m^3/s)	Upper Confidence (m^3/s)
50	65.35	19.01	241.54
20	144.40	43.69	471.08
10	207.42	55.63	709.13
5	272.69	63.37	1,005.42
2	361.38	68.72	1,526.15
1	429.56	71.90	2,038.83

Sensitivity testing was then carried out to determine a resulting water level under those flow conditions. The Manning's equation was used to estimate the open channel flow conditions of the critical section of the Macquarie River. The cross section used for the assessment is at the Midlands Highway, just North of Ross and shown in Figure 3-3.

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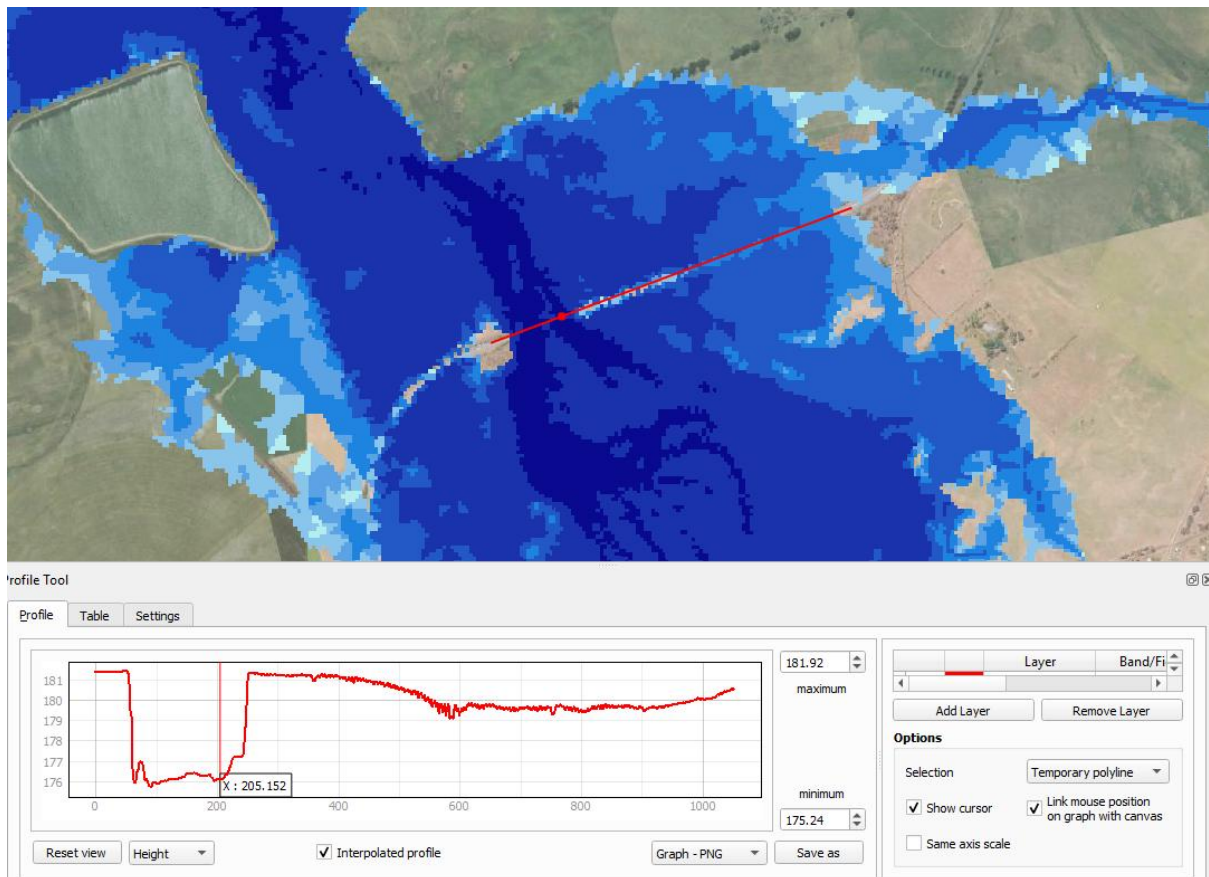


Figure 3-3: Flow Cross Section

There are two main flow paths that shall be reviewed separately, the first through the bridge and the second at the low point of the Midlands Highway to the east where there is a broad overtopping.

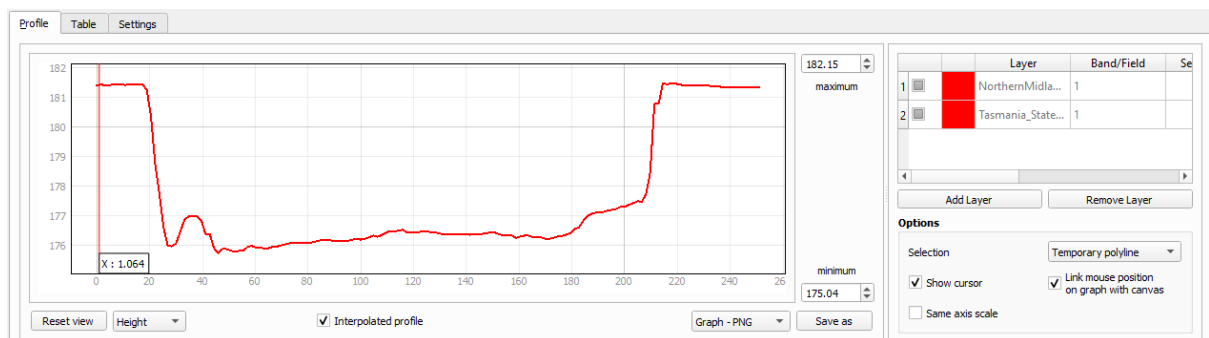


Figure 3-4: Bridge Opening

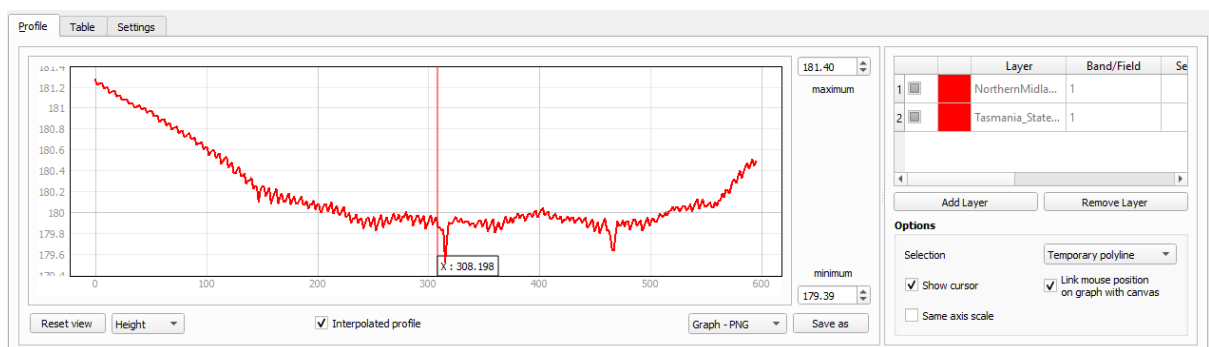


Figure 3-5: Highway Overtopping Point

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Using the Manning's equation flow rates were estimated based upon the water levels shown in the SES flood mapping.

Table 3-2: Mannings Equation Results

Parameter	Unit	Bridge Opening	Overtopping	Comments
Batter Slope	%	95	5	
Base Width	m	182	400	
Water Depth	m	4.5	0.6	Estimated from Mapping
Manning's Roughness	-	0.045	0.015	Estimated from aerial
Channel Gradient	%	0.1	0.1	From LiDAR
Results				
Velocity	m/s	1.86	1.47	
Flow	m ³ /s	1,563.40	363.68	~1,900 m ³ /s combined

The results show a flow rate close to the upper confidence limit estimated by the RFFE. The RFFE does not consider climate change, so will be lower than the SES mapping as a starting point, however the scale of the difference means it is likely there are other factors at play. Sensitivity to channel gradient and Manning's roughness were reviewed but would be outside of realistic values if adjusted to meet the RFFE flow rates. The water level through the bridge alone would need to be only 2m deep on average to see the same flow as the RFFE. While the results don't converge on an answer, it does give a degree of confidence that the mapped water levels are at the high end of the scale, being closer to the upper confidence limit of the RFFE results.

Other things that may be affecting the results are tailwater conditions, the Manning's equation considers free flow and will overestimate flow rates where there are downstream hydraulic constraints. The impacts of this can be reviewed by a reduction in channel gradient. A sensitivity was carried out and a channel gradient of 0.01% (1 in 10,000) would yield results approximate to those of the SES mapping.

3.1.2 Stream Gauge Data Review

Data from two stream gauges on the Macquarie River was collected and the highest readings recorded were assessed against the SES mapping. Gauge zero levels were estimated from the LiDAR or adopted from the Tamar Esk Calibration Report (WMAWater, 2023).

Table 3-3: Gauge Information

	Highest Water Level Recorded (m)	Gauge Zero Level (m AHD)	Water Level (m AHD)	SES Mapping 1% AEP Water Level	Difference
Macquarie River 1.25km Upstream of Elizabeth River	4.873	164.5	169.373	174.07	+4.697

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Macquarie River at Trefusis	4.894	216.375	221.269	222.76	+1.491
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In both cases the flood levels in the SES mapping are above the highest recordings at the relevant gauge locations. The gauge at Trefusis has been in continuous operation since 1979. The maximum was recorded in 1986. The gauge upstream of the Elizabeth River has been in operation since 2004 with the maximum record from August of 2011.

The 1% AEP mapped flood level is above the maximum ever recorded on the gauges. At the gauge upstream of the Elizabeth River junction, it is nearly double the maximum recorded value. This is likely due to coincident flooding considered by the SES mapping project. When flooding of the Elizabeth River and Macquarie Rivers occurs at the same time resulting flood levels will be significantly higher than those from a single river. Relying on these results for determining the flood heights at the development site will give an appropriate solution, safeguarding the property against flood damage and unnecessary risk.

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4. Discussion

The available evidence indicates that the SES flood mapping provides an appropriate basis for assessing flood risk at the proposed development. Although simplified hydraulic calculations based on Manning's equation suggest that the mapped water levels correspond to flows towards the upper end of the RFFE confidence range, this difference is considered reasonable given the complex hydraulic behaviour of the floodplain. The simplified calculations assume uniform free-flow conditions and do not account for downstream tailwater effects, coincident flooding from the Macquarie River and other tributaries, bridge losses, floodplain storage or other hydraulic controls that are represented within the regional flood model.

Raising the finished floor level to a minimum of 181.35 m AHD (including 300 mm freeboard) will eliminate over-floor flooding during the mapped 1% AEP event while maintaining consistency with the intent of the Tasmanian Planning Scheme. Although floodwaters may continue to surround the dwelling during extreme events, the proposed development will achieve a tolerable level of flood risk without adversely affecting surrounding land or public infrastructure.

Floor levels should not be the only protection against flooding. The broad scale of the mapped flooding and the potential for entrapment by flood waters means that the owner should consider the preparing a flood evacuation plan for their personal use. This plan could consider:

- Evacuation Routes
- Local Emergency Shelters
- High Ground
- Flood Warnings

Having a plan in place for what to do in the event of emergency will go a long way towards reducing the risks as far as practical. Floods greater than the modelled event can still occur so knowing when to evacuate and where to go will assist in remaining safe in all conditions.

4.1 Limitations

This report has been prepared considering the information available to IPD at the time of writing. The report and its findings should only be used for this development scale and purpose and are relevant to this property alone. If changes are made to the scope and scale of development of this property, the report and its conclusions may no longer be valid.

The report relies upon the Tasmanian SES Flood Mapping, these maps have been produced on a regional scale and therefore may miss small scale features (fences, buildings, earthworks etc) that will impact the local flood behaviour. Consequently, flood behaviour in the immediate vicinity of the dwellings may vary from that shown in the mapping.

The assessment focussed on the buildings and floor heights, during the 1% AEP flood, access to the site will be cut off when Bond Street and Badajos Street are flooded. This will prevent access to the township in some events, but safe retreat will remain possible to high ground.

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5. Planning Scheme Assessment

The Tasmanian Planning Scheme outlines the controls required for new buildings to be developed within a known flood prone area.

Table 5-1: C12.6.1 Buildings and works within a flood-prone hazard area - Planning Controls

That: a) Buildings and works within a flood-prone hazard area can achieve and maintain a tolerable risk from flood; and b) Buildings and works do not increase the risk from flood to adjacent land and public infrastructure.	
Acceptable Solutions	Performance Criteria
A1 No Acceptable Solution.	P1.1 Buildings and works within a flood-prone hazard area must achieve and maintain a tolerable risk from a flood, having regard to: (a) The type, form, scale and intended duration of the development; (b) Whether any increase in the level of risk from flood requires any specific hazard reduction or protection measures; (c) Any advice from a State authority, regulated entity or a council; and (d) The advice contained in a flood hazard report. P1.2 A flood hazard report also demonstrates that the building and works: (a) Do not cause or contribute to flood on the site, on adjacent land or public infrastructure; and (b) Can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures.

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Responses:

P1.1 a) Hazard ratings around the site have been considered with respect to the residential nature of the development with H3 hazard classifications being the recorded on the site. Enforcing floor levels to be above this at 181.35m AHD, will remove over floor flooding and protect the property. The area surrounding the site is higher, allowing for safe retreat in events exceeding the 1% AEP flood.

P1.1 b) Development of this site will not result in an increase in risk when minimum floor levels are enforced.

P1.1 c) The author is not aware of any advice specific to this site. There is a regional flood model which shows impacts to this site which has been relied upon.

P1.1 d) The author is not aware of/has not been provided with another Flood Hazard Report for this site, the flood information relied upon is general in nature but has been checked against some alternative methods to ensure its suitability for the site.

P1.2 a) While there will be some small-scale changes to flood behaviour in the immediate proximity of the proposed development, these changes will only have minor impacts to flood behaviour (+12mm water level at the high end) on neighbouring properties nor lead to an increase in risk to this site.

P1.2 b) The flood information relied upon has been reviewed and found to suitably represent flood risks for this site. Major flow paths and general levels have been considered, and it is expected that for the lifespan of the dwelling the mapped flood risks will not be exceeded by a 1% AEP event.

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6. Conclusion

In summary, to ensure a tolerable risk level from the 1% AEP flood, when developing the site minimum floor levels shall be 181.35m AHD which includes 300mm of freeboard. The small scale and nature of the development will limit its impacts upon neighbouring properties and cause only very minor increases in water level when the site is fully flooded.

We would be happy to discuss any aspect of the above. If you require any further information or clarification on any of the above details, please don't hesitate to contact me on Mob: 0491 050 826 or Email: hwaterston@ipdconsulting.com.au

Kind Regards,
IPD Consulting Pty Ltd



Hamish Waterston

Senior Civil Engineer, BE (Hons)

30.7.2026

References

Geoscience Australia & Engineers Australia 2019, *Australian Rainfall and Runoff: a guide to flood estimation*, Version 4.2, Commonwealth of Australia (Geoscience Australia), Barton, ACT, viewed 7 July 2026

Regional Flood Frequency Estimation Model (2021) *Regional Flood Frequency Analysis* [online]. Available at: <https://rffe-2021.wmawater.com.au/> (Accessed: 6 July 2026).

Bureau of Meteorology (2026) *Geofabric: Australian Hydrological Geospatial Fabric* [online]. Available at: <https://www.bom.gov.au/water/geofabric/> (Accessed: 6 July 2026).

Smith, G.P., Davey, E.K. and Cox, R.J. (2014), Flood Hazard UNSW Australia Water Research Laboratory Technical Report 2014/07 30 September 2014.

Tasmania State Emergency Service. (2026) *Tasmanian flood mapping project reports*. Available at: <https://www.ses.tas.gov.au/floodmaps/tasmanian-flood-mapping-project-reports/> (Accessed: 6 July 2026).

WMAWater, (2023), *Tasmanian Strategic Flood Map Tamar-Esk Study Area Model Calibration Report (December 2023)*, Tasmanian Flood Mapping Project

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Ref: 2436

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Appendix A

Development Drawings

30.7.2026

Sally Martin
16 Bond Street, Ross
New Dwelling

A01 Cover
A02 Site Plan
A03 Floor Plan
A04 Elevations

Project details:

Land Title Reference Number: 149454-1

Zone: Open Space, General Residential
Code Overlays: Local heritage precinct,
Airport obstacle limitation area, Priority
vegetation area.

Design Wind Speed:	N2
Climate Zone:	7
Soil Classification:	Assumed M
BAL Level:	?
Alpine Area:	N/A
Corrosion Environment:	N/A
Other Hazards:	
(Flooding, Landslip, Dispersive Soils, Sand Dunes, Mine Subsidence, Landfill)	N/A

Area:	
Land:	2428m ²
Existing Floor Area:	N/A
New Rooved Area:	32m ²

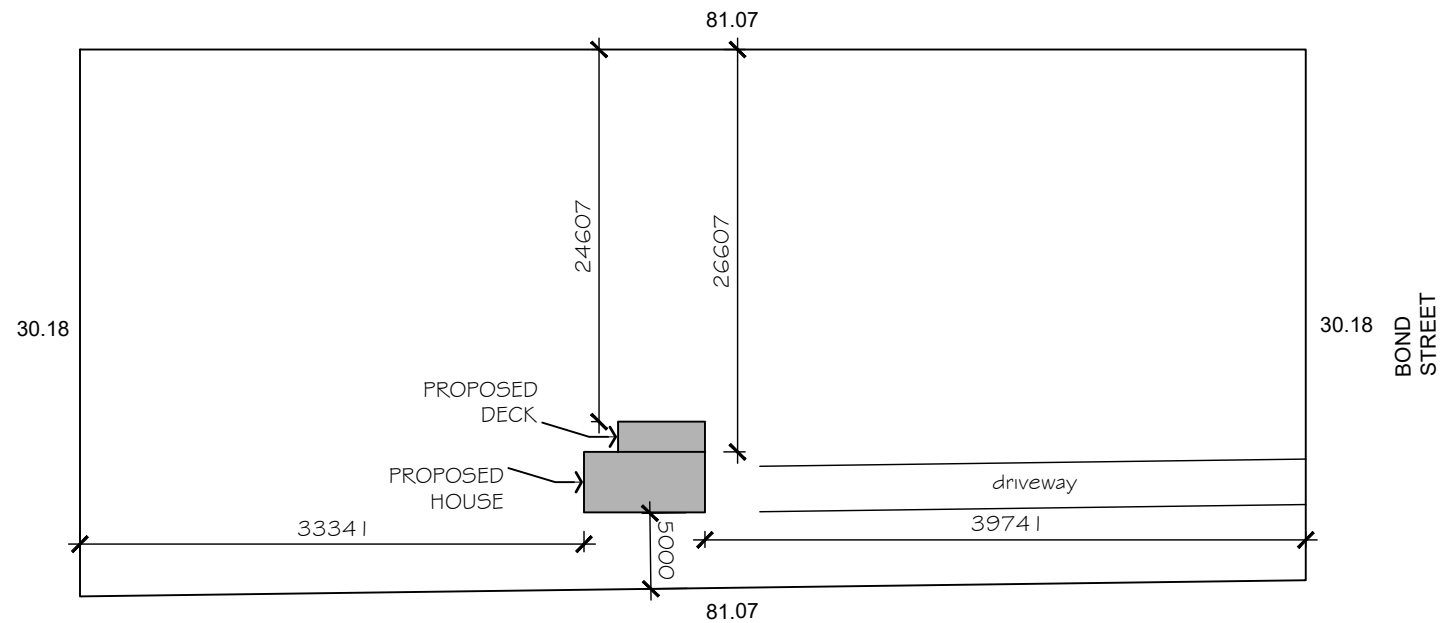
Works to be in accordance with
2022 HP and Volume 2.
Refer to AS1684.2 for connection details

Project Number: 2526-23
Date: 14/04/2026

Works to be in accordance with
2022 HP and Volume 2.
Refer to AS1684.2 for connection details

- GENERAL NOTES:
1. Check all dimensions, boundaries, easements and service locations on site
 2. All work shall comply with the current Tasmanian Building Regulations and relevant current Australian Standards, particularly AS2870 (residential slabs and footings) AS3700 (unified masonry code) AS3600 (concrete structures)

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SITE PLAN
Scale 1:500

Sally Martin
16 Bond Street, Ross
New Dwelling

Project Number: 2526-23

Date: 14/04/2026

Project Status: DA

Designed/Drawn: RC


SITE PLAN
Scale: as noted at A3

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of 4

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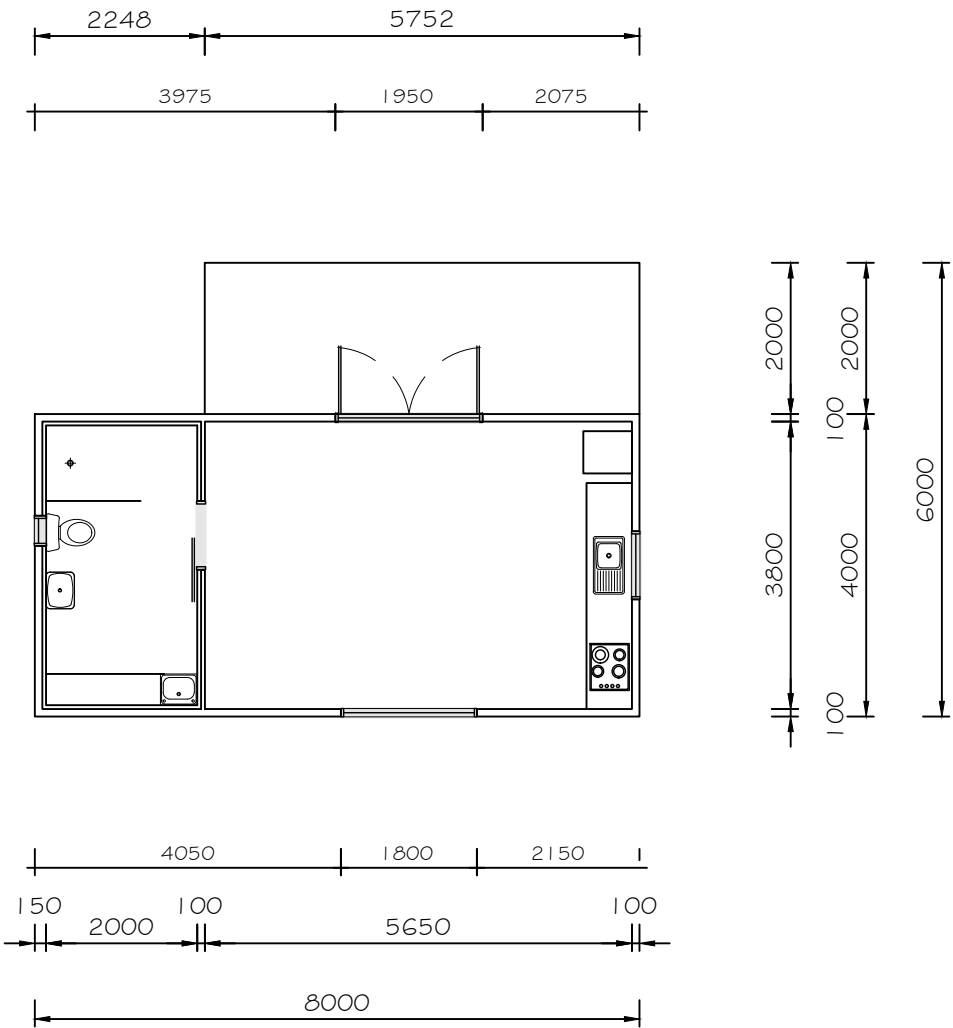
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FLOOR PLAN
SCALE 1:100

Sally Martin
16 Bond Street, Ross
New Dwelling

Project Number: 2526-23

Date: 14/04/2026

Project Status: DA

Designed/Drawn: RC

FLOOR PLAN
Scale: as noted at A3

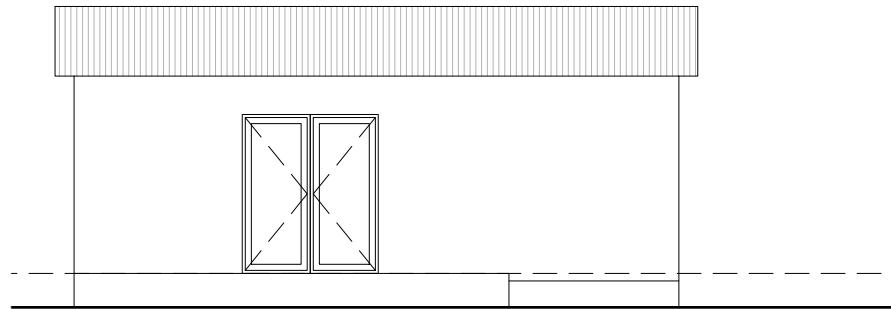
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Wynyard TAS 7325 TCC No. CC5197 G

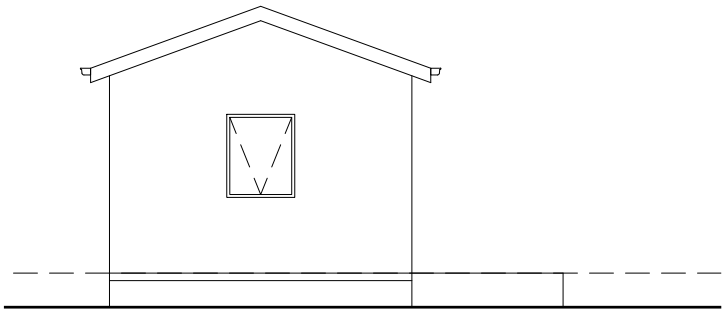
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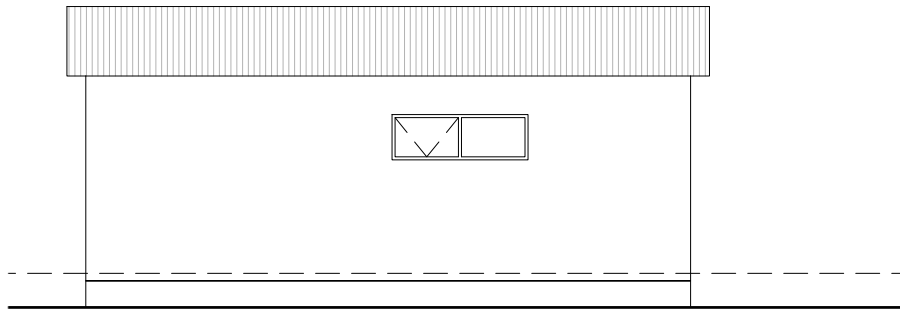
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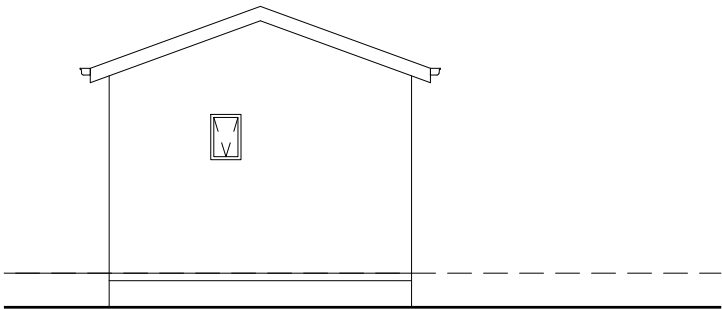
NORTHERN ELEVATION
Scale 1:100



EASTERN ELEVATION
Scale 1:100



SOUTHERN ELEVATION
Scale 1:100



WESTERN ELEVATION
Scale 1:100

Sally Martin
16 Bond Street, Ross
New Dwelling

- A01 Cover
- A02 Site Plan
- A03 Floor Plan
- A04 Elevations

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BAL Level:	?
Alpine Area:	N/A
Corrosion Environment:	N/A
Other Hazards:	
(Flooding, Landslip, Dispersive Soils, Sand Dunes, Mine Subsidence, Landfill)	N/A

Area:	
Land:	2428m²
Existing Floor Area:	N/A
New Rooved Area:	32m²

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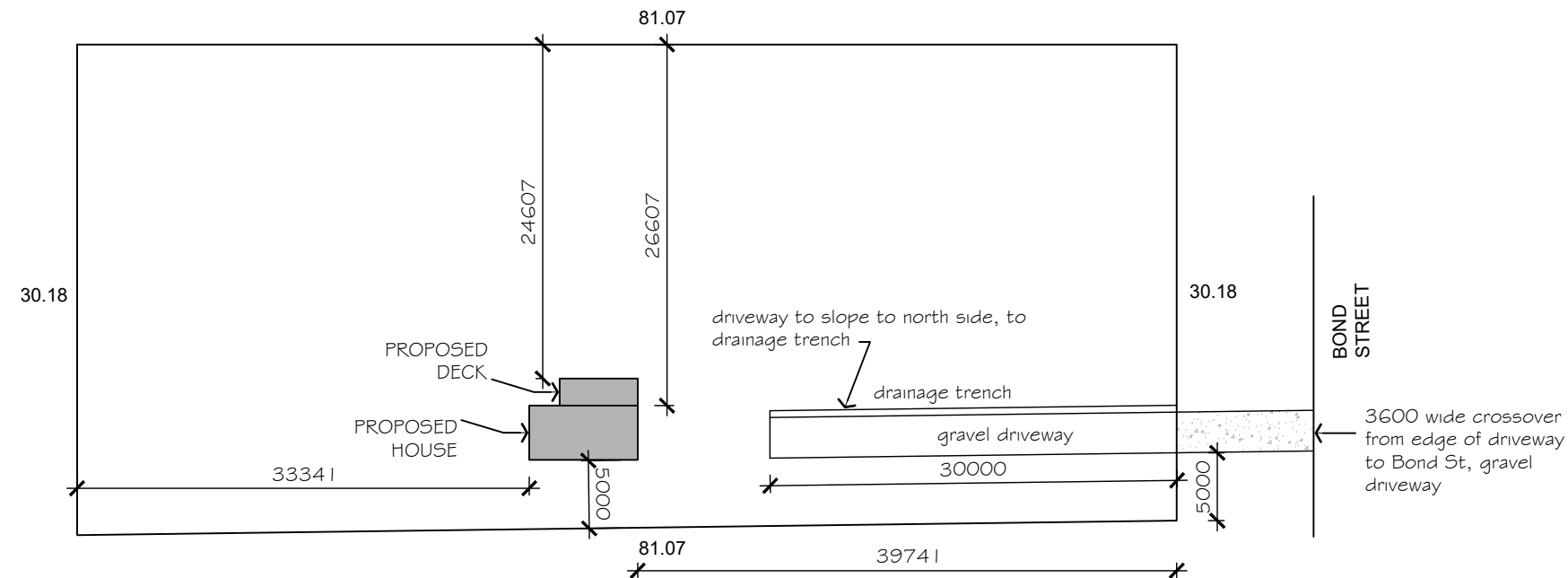
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SITE PLAN

Scale 1:500

Sally Martin
16 Bond Street, Ross
New Dwelling

Project Number: 2526-23

Date: 14/04/2026

Project Status: DA

Designed/Drawn: **RC**

SITE PLAN

Scale: as noted at A3

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of 4

Rosene Cox

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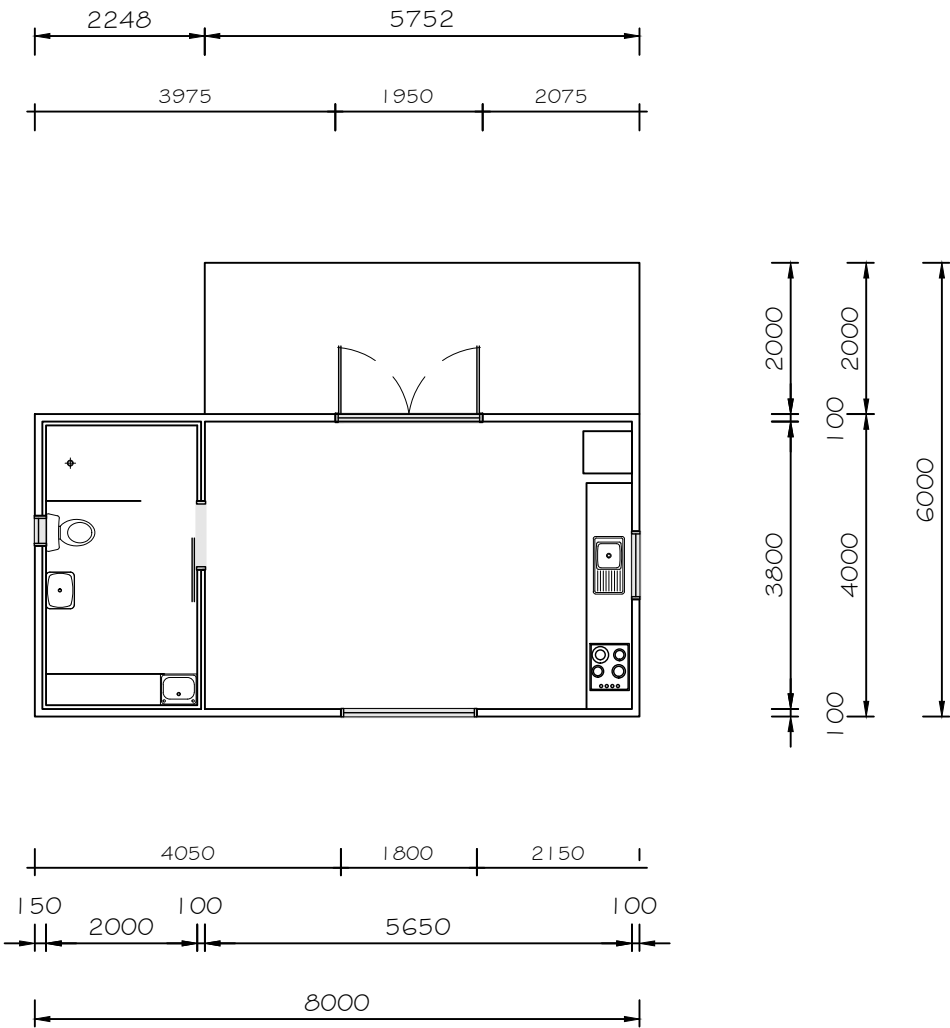
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FLOOR PLAN
SCALE 1:100

Sally Martin
16 Bond Street, Ross
New Dwelling

Project Number: 2526-23

Date: 14/04/2026

Project Status: DA

Designed/Drawn: RC

FLOOR PLAN

Scale: as noted at A3

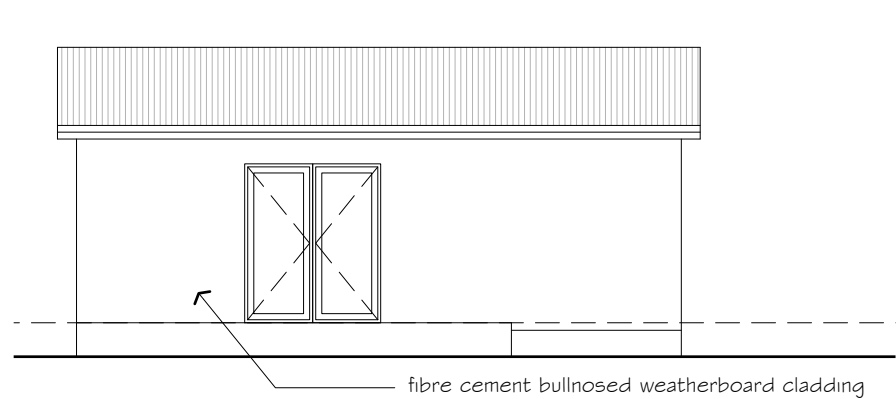
Page
A03
of 4

Rosene Cox
BUILDING DESIGN & DRAFTING
e.rosene.cox@gmail.com
12 Jackson St
Wynyard TAS 7325
Mob. 0418 171 074
ABN 84 634 774 986
TCC No. CC5197 G

Works to be in accordance with
2022 HP and Volume 2.
Refer to AS1684.2 for connection details

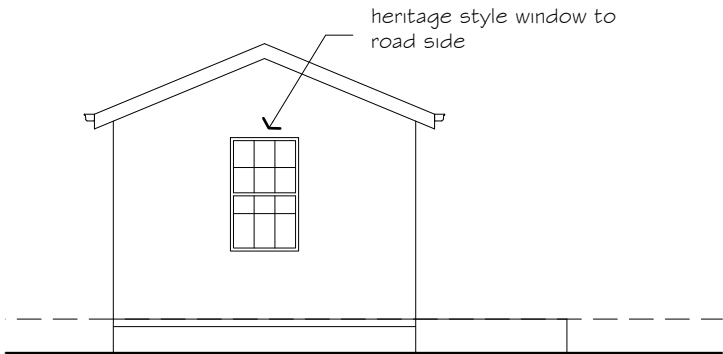
Received Exhibited

14.09.2026



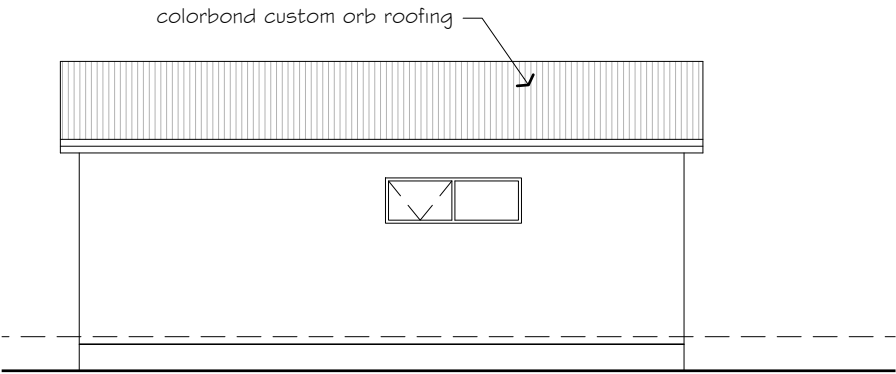
NORTHERN ELEVATION

Scale 1:100



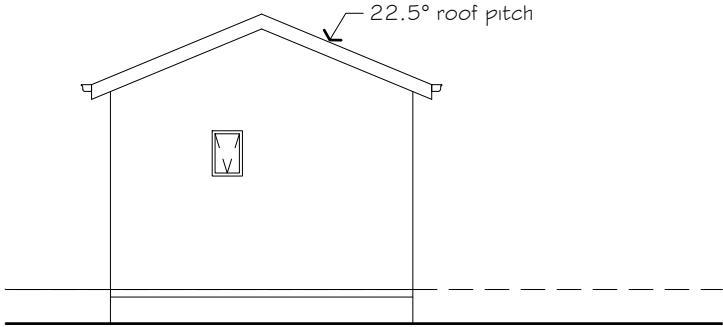
EASTERN ELEVATION

Scale 1:100



SOUTHERN ELEVATION

Scale 1:100



WESTERN ELEVATION

Scale 1:100