

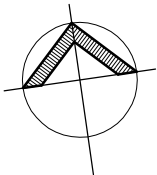
No.	Date	Amendment
A	03.12.24	For Building Approval
4	02.12.24	For Engineers Check
3	20.11.24	For Engineers Check
2	19.11.24	For Bushfire Report
1	31.10.24	For Energy Report
P4	04.09.24	Preliminary Issue
P3	28.08.24	Preliminary Issue
P2	22.08.24	Preliminary Issue
P1	05.07.24	Preliminary Issue

SITE PLAN NOTES:

- Earthworks to comply with AS3798 and AS2870.1.
- Figured dimensions shall be taken in preference to those scaled from the drawing. Builder to verify all dimensions on site prior to construction.
- Finished surface lines shown on elevations and platform layout shall be confirmed on site prior to commencement of building work.
- Structure designed for Wind Gust Speed : C3 (W60C)
- All construction shall be in accordance with the requirements of the Building Code of Australia, the Building Act 1975 and the Local Authorities' requirements.
- Timber members to be sized and fixed in accordance with C3 of the Qld. Timber Framing Manual.
- Builder to provide a fall around the house of :
1 in 20 for the first 1.0m around house
1 in 80 for the next 1.0m around house
- Connect all new downpipes as shown and fall pipes to kerb and channel or intra allotment drainage system. Stormwater drainage design is indicative only. Plumber to verify on site the suitability of the design and adjust accordingly to suit conditions. All plumbing work to comply with relevant plumbing codes and standards.
- Install a sleeve joint where wall downpipes meet ground stormwater lines to allow for movement.
- Confirm location of any underground services prior to commencement of building work.
- Check position of current mains water connection and provide connecting link to dwelling to the requirements of the Local Authority and current Water & Sewerage Supply Act. Good pressure to be achieved in supply line to building.
- Extent of principal Builder and relevant Subcontractors to be within the confines of the property boundaries and portion of the footpath immediately adjoining front property alignment. Seek neighbours consent if access or additional construction is required outside the confines of the subject property.

PROPERTY DETAILS

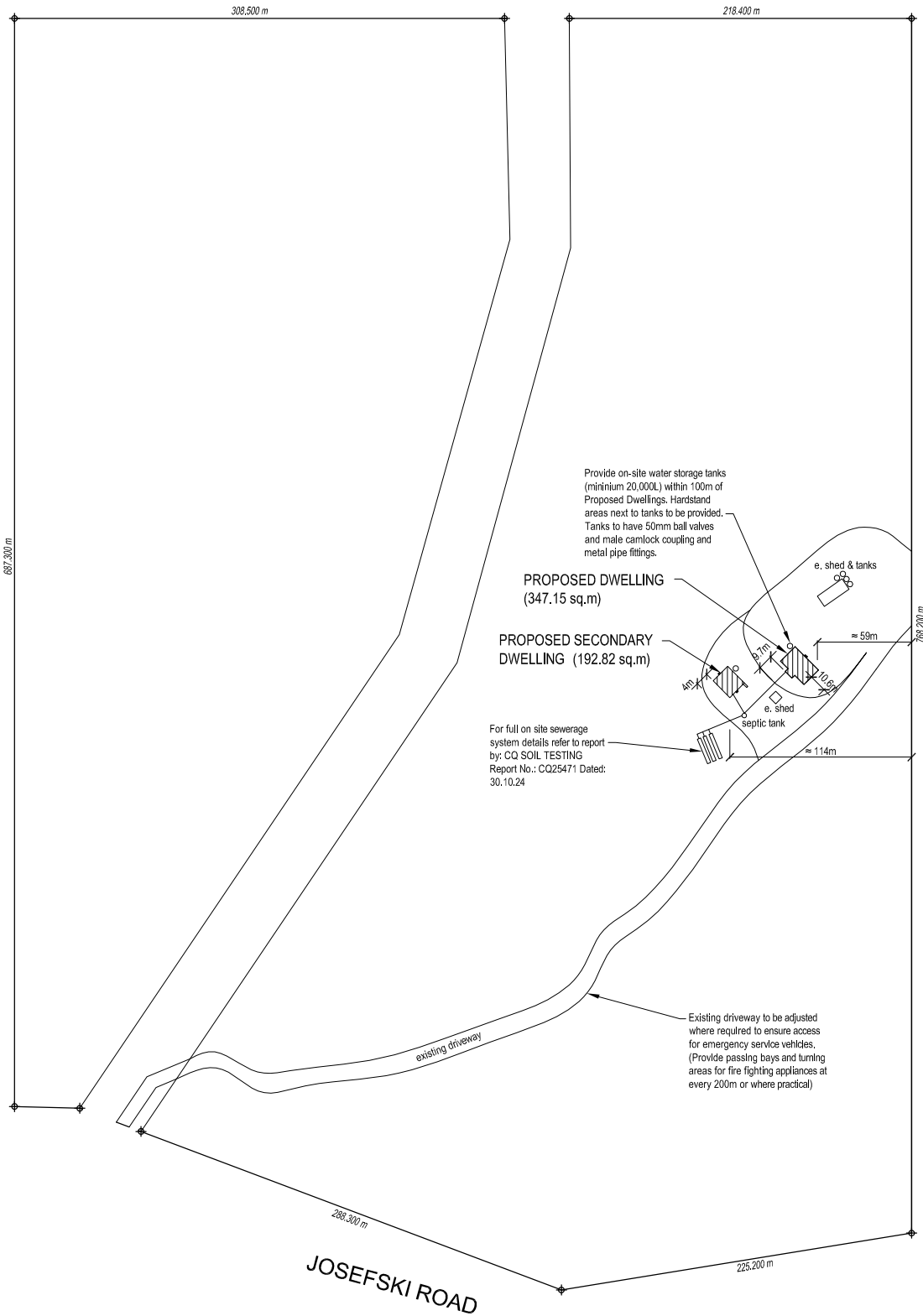
LOT 1 ON RP801290
AREA: 80ha



ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/85-2025
Dated: 18 September 2025



SITE PLAN (NOT TO SCALE)

SITE PLAN



07 4927 7464 0407 599 727
t.trent@skdrafting.com.au
Shop 2/149 Canning Street Rockhampton Qld 4700
T E Mayall Pty Ltd QBCC Lic No 15396881

PROPOSED DWELLINGS
AT 137 JOSEFSKI ROAD,
STANWELL.
FOR A. GREEN

Scale	AS SHOWN ON A1	Date	JULY '24	Issue	A
Drawn	TEM	Sheet		Drawing No.	
Checked			1/11	24 - 049	
Approved					

FLOOR PLAN NOTES:

- Figured dimensions shall taken in preference to those scaled from the drawing.
- Builder to verify all dimensions on site prior to commencement of building work.
- Finished surface lines shown on elevations and platform layout shall be confirmed on site prior to commencement of building work.
- Structure designed for Wind Gust Speed : C3 (W60C)
- Construction to be in accordance with the Building Code of Australia, Qld Home Building Manual and all other relevant SAA Codes and Standards.
- Builder to ensure adequate surface drainage and that no low spots capable of ponding are created during construction.
- Where applicable, WC doors that swing inwards to be fitted with demountable hinges. Gaps to be provide at the top to allow door to be lifted off when in the closed position.
- Termite protection to be installed in accordance with AS3660.1-2000. A certificate is to be supplied to the Building Approval Authority as evidence of treatment where necessary.

LEGEND:

- s.a. Indicates hard-wired self contained smoke alarm complying with AS 3786
- 900 Indicates minimum size ceiling fan required for room.
- mb Indicates Meter box.
- ba bath tub
c.s. cavity sliding door
cup'd cupboard
dp down pipe
dr dryer
dw dishwasher
fr fridge
hb hand basin
hws hot water system
linen linen cupboard
o/h overhang
pan pantry
robe wardrobe
sgd sliding glass door
shr shower
sk sink
st stove
tub washing tubs
wc water closet
wm washing machine

SUSTAINABILITY NOTES:

To comply with part MP4.1 of the Queensland Development Code provide the following

- ENERGY EFFICIENCY**
Verification indicating achievement of not less than the 5 star rating by approved assessor.
- ENERGY EFFICIENCY FIXTURES**
Must have energy efficiency lighting for minimum of 80% of total fixed internal lighting.
Air-conditioners to have EER to at least 2.5.
- WATER CONSERVATION**
All shower roses to have minimum 3 star Water Efficiency Labelling and Standards rating.
All toilets to have dual flush and minimum 4 star Water Efficiency Labelling and Standards rating.
Cistern sizes to be compatible with toilet bowl size to allow for proper functioning.
All tapware to Laundry Tubs, Kitchen Sinks and Basins to have minimum 3 star Water Efficiency Labelling and Standards rating.

AREAS SCHEDULE:

Ground Floor	
Dwelling Floor Area:	140.65 sq. m
Ground Floor	
Deck Floor Area:	144.74 sq. m
Upper Floor	
Dwelling Floor Area:	61.76 sq. m
TOTAL:	347.15 sq. m

Due to finished floor height an access ramp exceeding the maximum 9m length, slope of the block and distance to carparking areas and exemption to Clause 1.1 of ABCB Livable Housing Design is required.

FRAMING SCHEDULE 90mm WALL

BTM PLATE	90 x 45 MGP12
TOP PLATE	90 x 45 MGP12
NOGGING	90 x 35 MGP12 : 1 No. ROW
STUDS	90 x 35 MGP12 @ 450 CRS.
JAMB STUDS	REFER TO TABLE BELOW
ROOF TRUSSES	PREFAB. ROOF TRUSSES @ 900 MAX. CRS. FIXED TO MANUFACTURER'S SPECIFICATIONS
ROOF BATTENS	TOPSPAN 40 ROOF BATTENS @ 900 MAX. CRS. FIXED AS PER MANUFACTURER'S SPECIFICATIONS

FRAMING SCHEDULE 70mm WALL

BTM PLATE	70 x 45 MGP12
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NOGGING	70 x 35 MGP12 : 1 No. ROW
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ROOF BATTENS	TOPSPAN 40 ROOF BATTENS @ 900 MAX. CRS. FIXED AS PER MANUFACTURER'S SPECIFICATIONS

STUD SCHEDULE:

Common stud spacing (mm)	900	1200	1500	1800	2100	2400	2700	3000	3300	3600	4800	5400
450	1	2	2	2	2	3	3	3	4	4	4	4

MEMBER SCHEDULE:

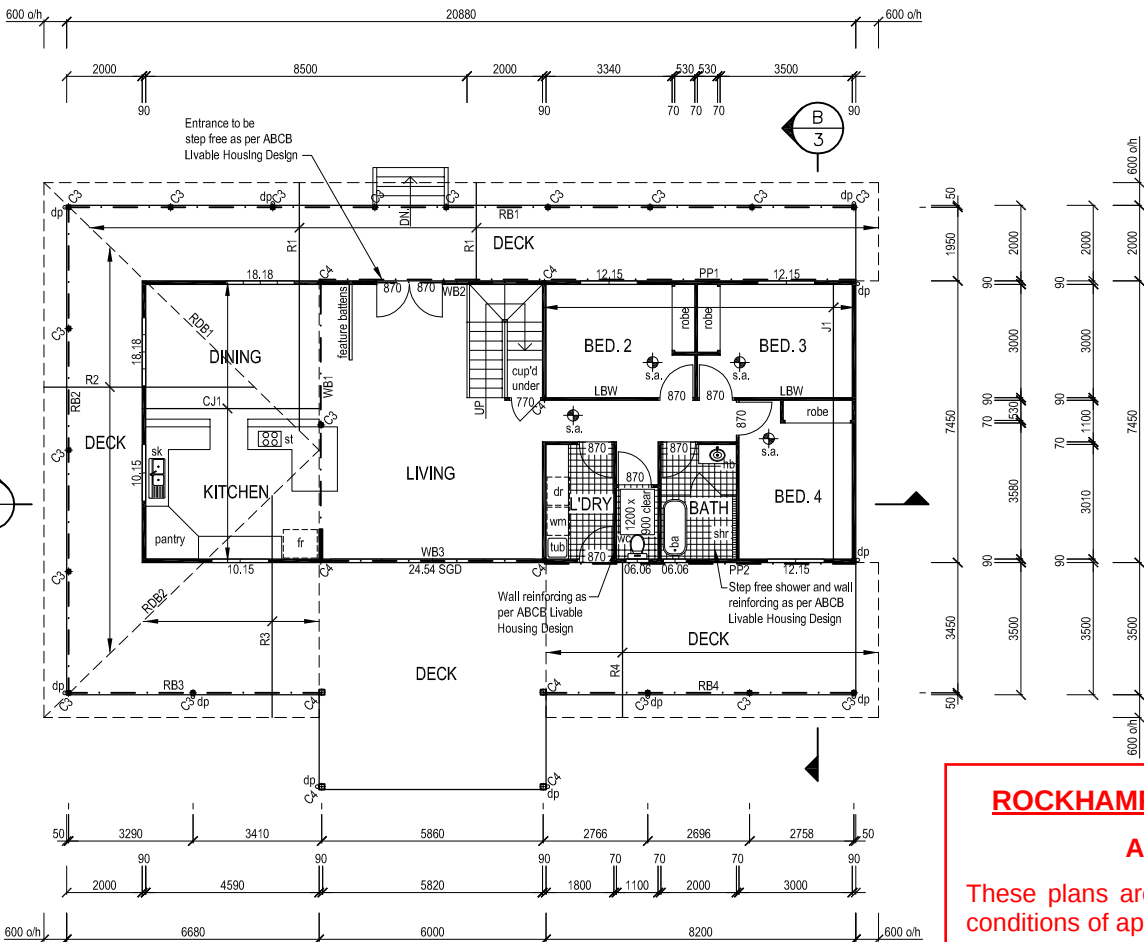
C3	100 x 100 HW (F14) POST
C4	140 x 140 HW (F14) POST
C5	75 x 75 x 4.0 GALV. SHS POST
RB1	200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB2	200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB3	200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB4	200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB5	200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB6	200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB7	200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
WB1	300 x 63 'HYSPAN' L.V.L. WALL BEAM
WB2	250 PFC WALL BEAM
WB3	250 PFC WALL BEAM
J1	200 x 45 'HYSPAN' L.V.L. JOISTS @ 450 MAX. CRS.
CJ1	200 x 45 'HYSPAN' L.V.L. CEILING JOISTS @ 900 MAX. CRS.
PP1	200 x 45 'HYSPAN' L.V.L. POLE PLATE
PP2	200 x 45 'HYSPAN' L.V.L. POLE PLATE
HR1	300 x 63 'HYSPAN' L.V.L. HIP RAFTER
HR2	300 x 63 'HYSPAN' L.V.L. HIP RAFTER
R1	150 x 45 'HYSPAN' L.V.L. RAFTERS @ 900 MAX. CRS.
R2	150 x 45 'HYSPAN' L.V.L. RAFTERS @ 900 MAX. CRS.
R3	150 x 45 'HYSPAN' L.V.L. RAFTERS @ 900 MAX. CRS.
R4	150 x 45 'HYSPAN' L.V.L. RAFTERS @ 900 MAX. CRS.
T1	PREFAB SEAS. SCISSOR TRUSSES @ 900 MAX. CRS. FIXED TO MANUFACTURERS' SPECIFICATIONS
T2	PREFAB SEAS. TRUSSES @ 900 MAX. CRS. FIXED TO MANUFACTURERS' SPECIFICATIONS
LBW	LOAD BEARING WALL

LINTEL SCHEDULE:

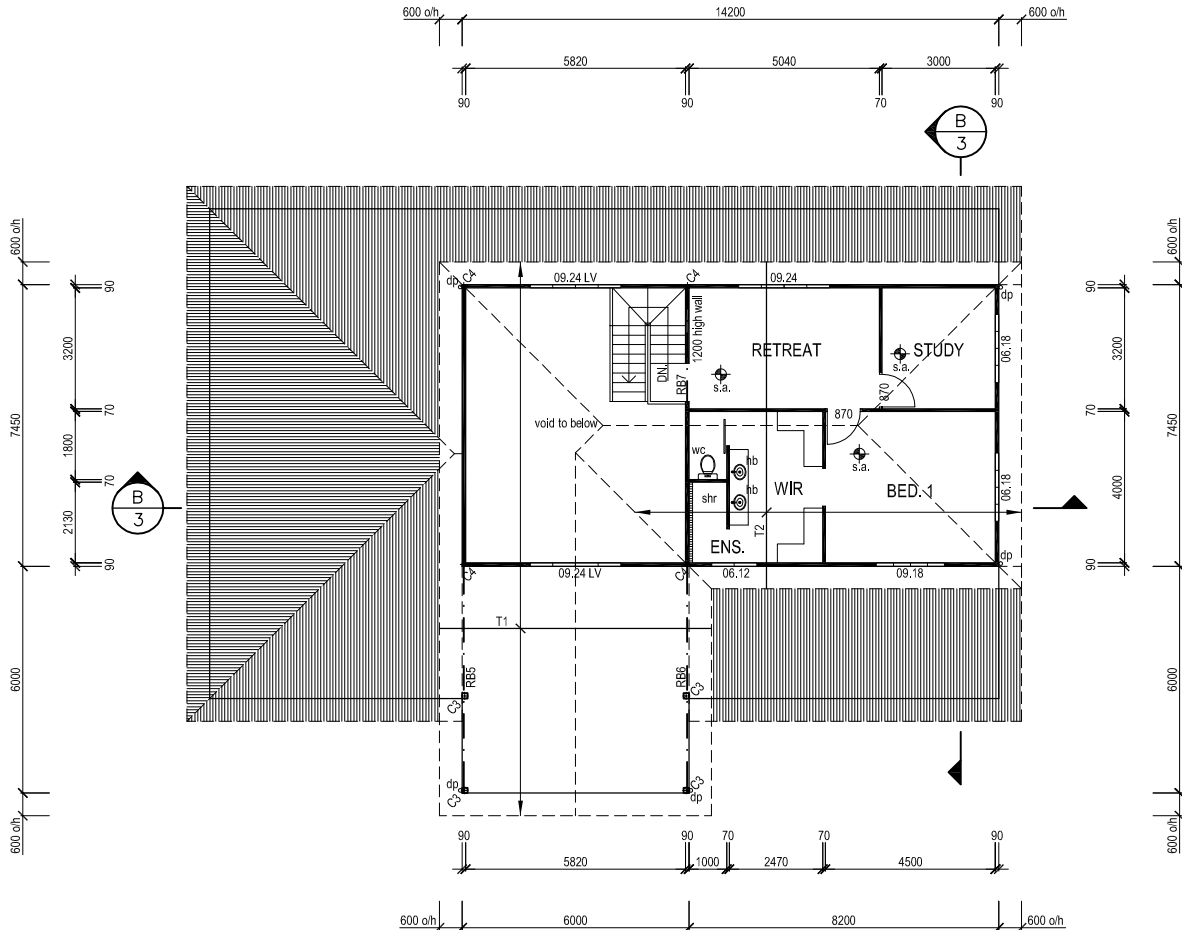
OPENING	SIZE
600	130 x 45 'HYSPAN' L.V.L. LINTEL BEAM
900	130 x 45 'HYSPAN' L.V.L. LINTEL BEAM
1200	200 x 45 'HYSPAN' L.V.L. LINTEL BEAM
1500	200 x 45 'HYSPAN' L.V.L. LINTEL BEAM
1800	200 x 45 'HYSPAN' L.V.L. LINTEL BEAM
2400	240 x 45 'HYSPAN' L.V.L. LINTEL BEAM

ENERGY EFFICIENCY REQUIREMENTS:

Roof Colour - Light
Roof Insulation - Air-Cell Insulbreak
Ceiling Insulation - No additional required
External Wall Colour - Light
External Wall Insulation - R-20 GF batts
Floor Insulation - No additional required
Ventilation - Fans as shown on plans
Downlights - Sealed LED
Glazing - Aluminium framed single clear
Concessions - 1 star for Outdoor Living Area with Ceiling Fan

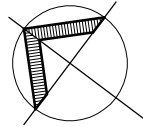


PROPOSED GROUND FLOOR LAYOUT PLAN (1:100)



PROPOSED UPPER FLOOR LAYOUT PLAN (1:100)

No.	Date	Amendment
B	23.05.25	Notes Added
A	03.12.24	For Building Approval
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ROCKHAMPTON REGIONAL COUNCIL

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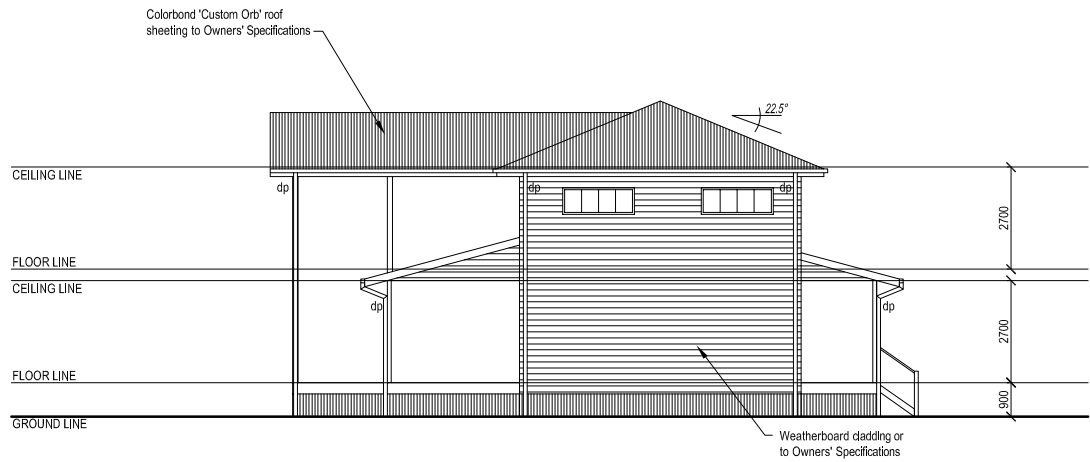
PROPOSED
GROUND &
UPPER FLOOR
LAYOUT PLANS



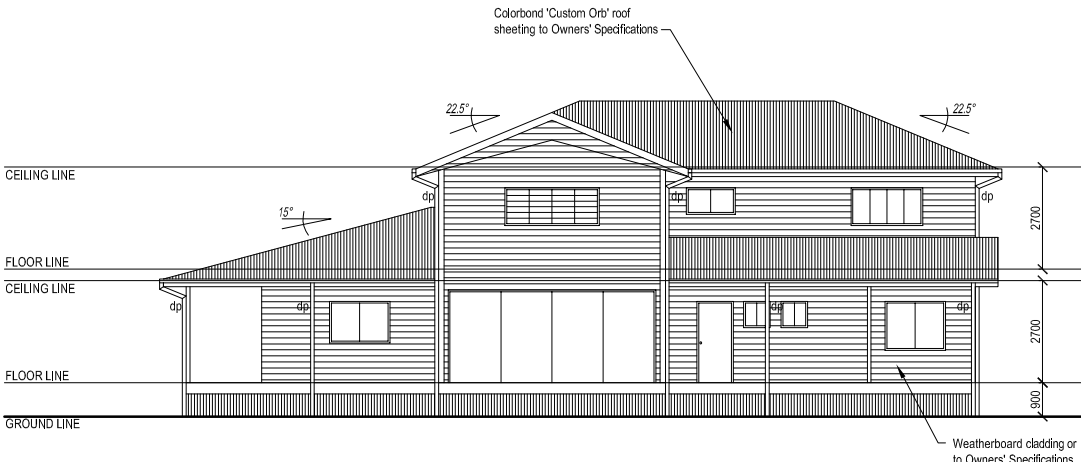
07 4927 7464 0407 599 727
t.trent@skdrafting.com.au
Shop 2/149 Canning Street
Rockhampton Qld 4700
T E Mayall Pty Ltd QBCC Lic No 15396881

PROPOSED DWELLINGS
AT 137 JOSEFSKI ROAD,
STANWELL.
FOR A. GREEN

Scale	AS SHOWN ON A1	Date	JULY '24	Issue	B
Drawn	TEM	Sheet		Drawing No.	
Checked			2/11		24 - 049
Approved					

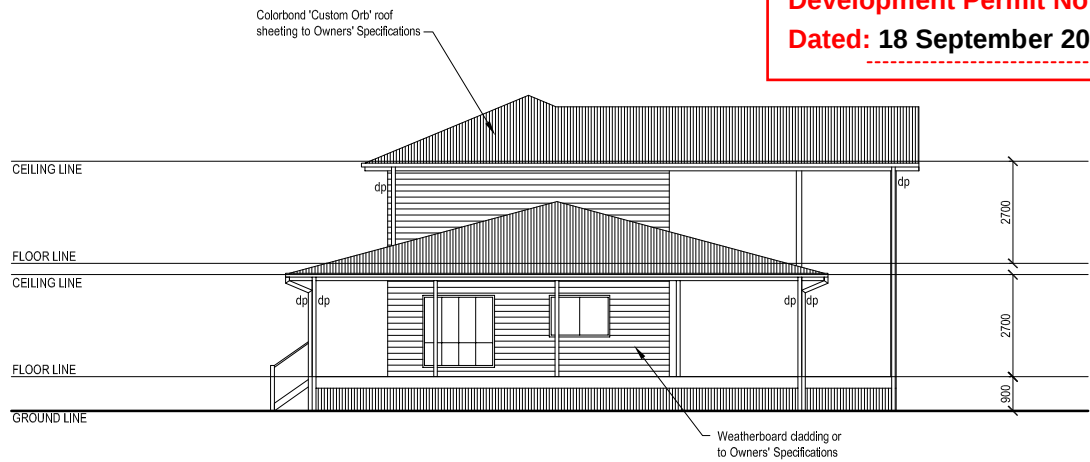


SOUTH-EAST ELEVATION (1:100)

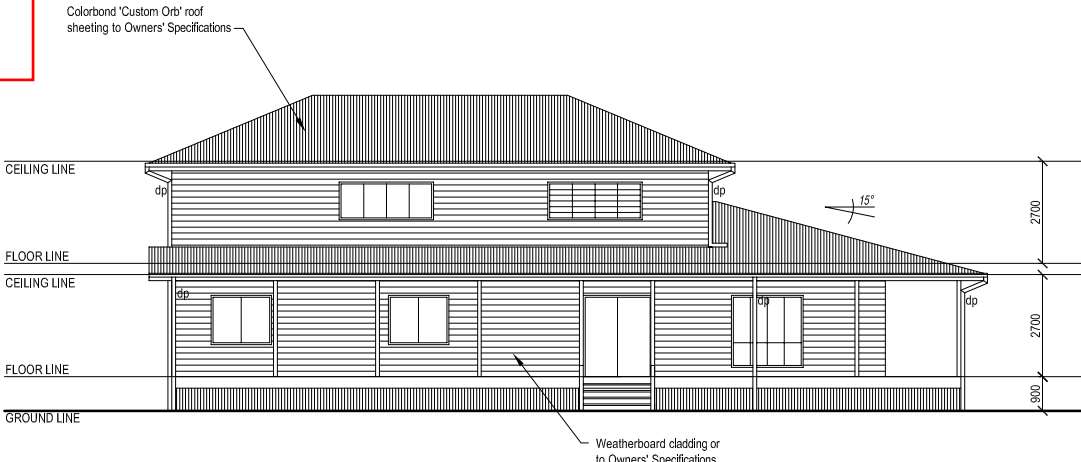


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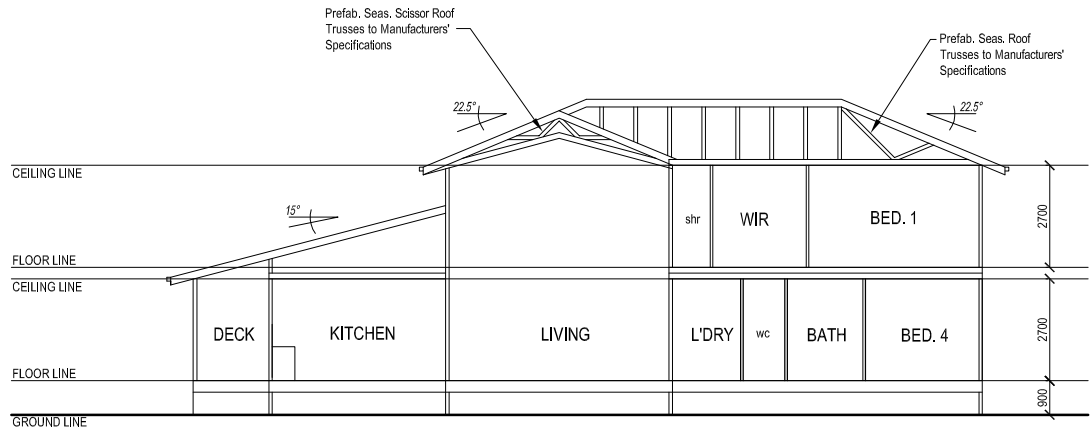
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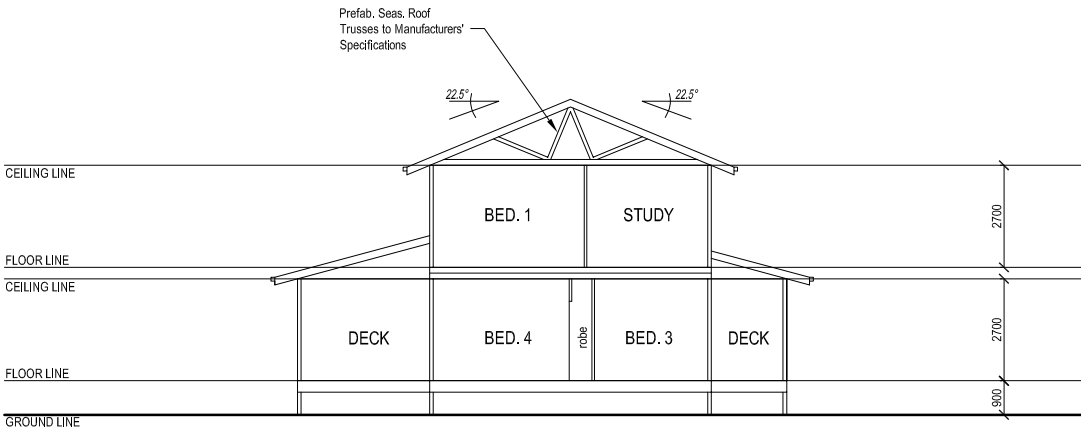
NORTH-WEST ELEVATION (1:100)



NORTH-EAST ELEVATION (1:100)



SECTION A-A (1:100)



SECTION B-B (1:100)

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P3	28.08.24	Preliminary Issue
P2	22.08.24	Preliminary Issue
P1	05.07.24	Preliminary Issue

ELEVATIONS & SECTIONS



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T E Mayall Pty Ltd QBCC Lic No 15396881
skdrafting.com.au

PROPOSED DWELLINGS
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STANWELL.
FOR A. GREEN

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LEGEND:

- ⬇ s.a. Indicates hard-wired self contained smoke alarm complying with AS 3786
- ⬇ 900 Indicates minimum size ceiling fan required for room.
- mb Indicates Meter box.
- ba bath tub
c.s. cavity sliding door
cup'd cupboard
dp down pipe
dr dryer
fr dishwasher
hb hand basin
hws hot water system
linen linen cupboard
o/h overhang
pan pantry
robe wardrobe
sgd sliding glass door
shr shower
sk sink
st stove
tub washing tubs
wc water closet
wm washing machine

SUSTAINABILITY NOTES:

To comply with part MP4.1 of the Queensland Development Code provide the following

- ENERGY EFFICIENCY**
Verification indicating achievement of not less than the 5 star rating by approved assessor.
- ENERGY EFFICIENCY FIXTURES**
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Air-conditioners to have EER to at least 2.9.
- WATER CONSERVATION**
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All toilets to have dual flush and minimum 4 star Water Efficiency Labelling and Standards rating.
Cistern sizes to be compatible with toilet bowl size to allow for proper functioning.
All tapware to Laundry Tubs, Kitchen Sinks and Basins to have minimum 3 star Water Efficiency Labelling and Standards rating.

FRAMING SCHEDULE 90mm WALL

- BTM PLATE 90 x 45 MGP12
TOP PLATE 90 x 45 MGP12
NOGGING 90 x 35 MGP12 : 1 No. ROW
STUDS 90 x 35 MGP12 @ 450 CRS.
JAMB STUDS REFER TO TABLE BELOW
ROOF TRUSSES PREFAB. ROOF TRUSSES @ 900 MAX. CRS. FIXED TO MANUFACTURER'S SPECIFICATIONS
ROOF BATTENS TOPSPAN 40 ROOF BATTENS @ 900 MAX. CRS. FIXED AS PER MANUFACTURER'S SPECIFICATIONS

FRAMING SCHEDULE 70mm WALL

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STUD SCHEDULE:

Common stud spacing (mm)	Number of common studs at sides of openings for width openings (mm)
450	1 2 2 2 2 3 3 3 4 4 4 4

MEMBER SCHEDULE:

- C3 100 x 100 HW (F14) POSTS
RB8 200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB9 200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB10 200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB11 200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
RB12 200 x 45 'HYSPAN' L.V.L. ROOF BEAM (CONT.)
T3 PREFAB. SEAS. ROOF TRUSSES @ 900 MAX. CRS. FIXED TO MANUFACTURERS' SPECIFICATIONS

LINTEL SCHEDULE:

- OPENING SIZE
600 130 x 45 'HYSPAN' L.V.L. LINTEL BEAM
900 130 x 45 'HYSPAN' L.V.L. LINTEL BEAM
1200 200 x 45 'HYSPAN' L.V.L. LINTEL BEAM
1500 200 x 45 'HYSPAN' L.V.L. LINTEL BEAM
1800 200 x 45 'HYSPAN' L.V.L. LINTEL BEAM
3000 240 x 45 'HYSPAN' L.V.L. LINTEL BEAM

ENERGY EFFICIENCY REQUIREMENTS:

- Roof Colour - Light
Roof Insulation - Air-Cell Insulbreak
Ceiling Insulation - R2.5 GF batts
External Wall Colour - Light
External Wall Insulation - R2.0 GF batts
Floor Insulation - No additional required
Ventilation - Fans as shown on plans
Downlights - Sealed LED
Glazing - Aluminium framed single clear
Concessions - 1 star for Outdoor Living Area with Ceiling Fan

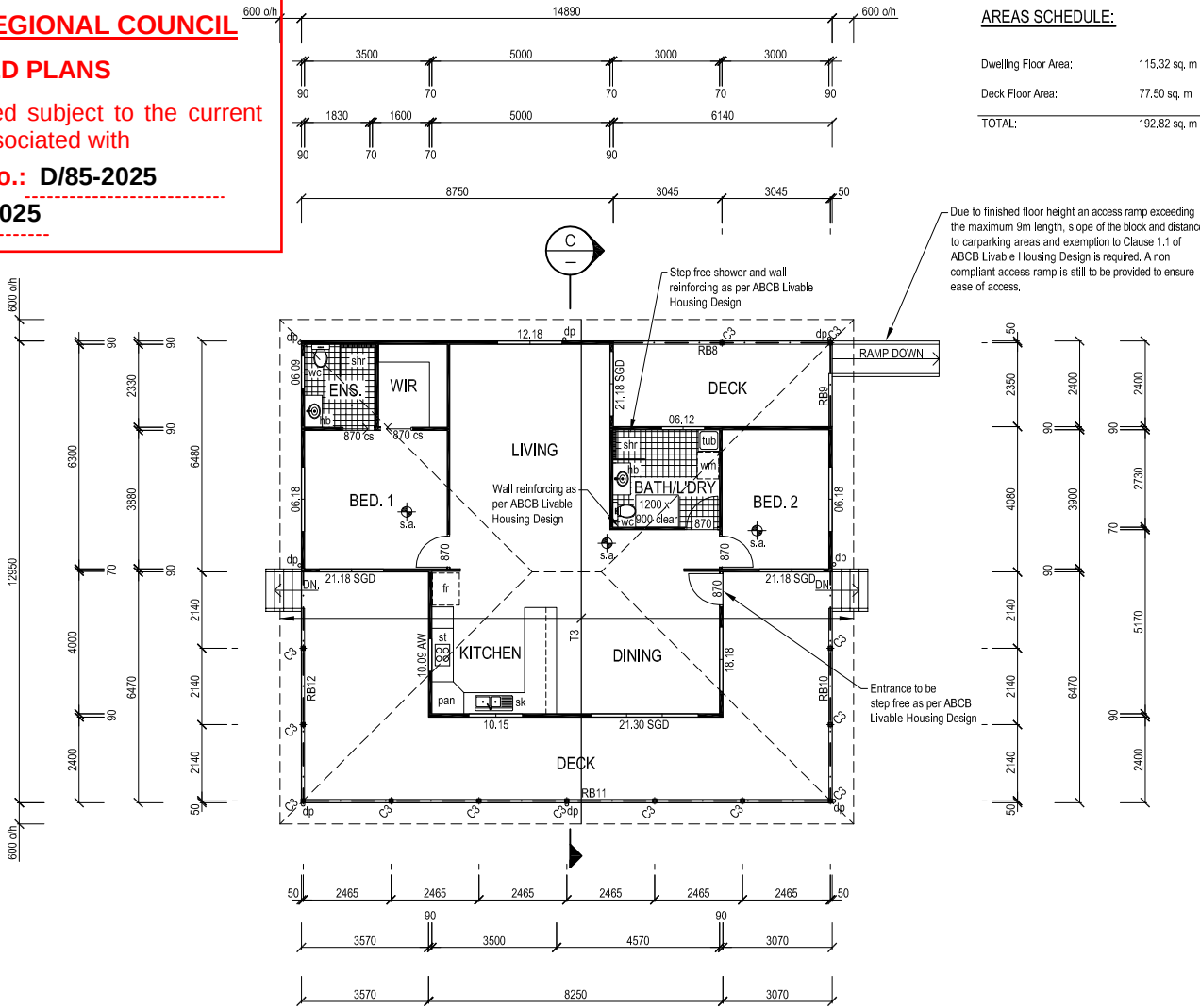
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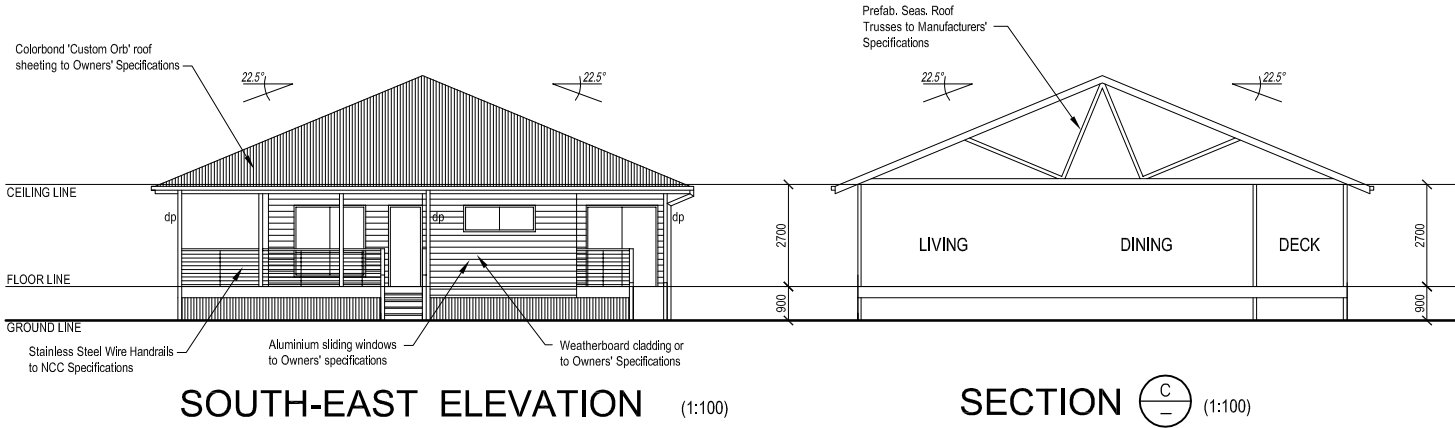
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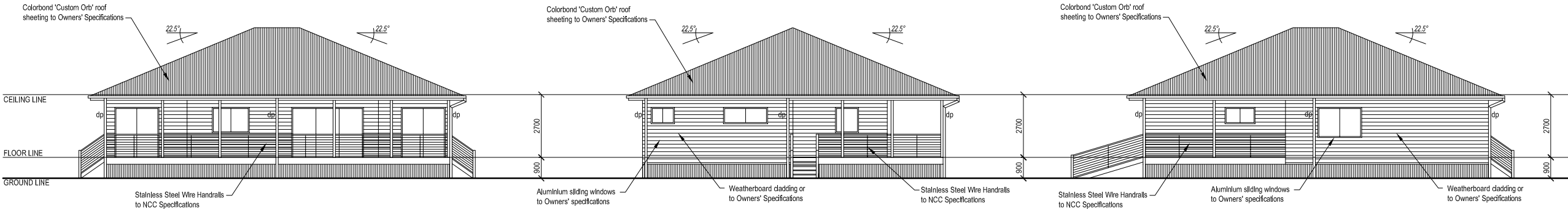
AREAS SCHEDULE:

Dwelling Floor Area: 115.32 sq. m
Deck Floor Area: 77.50 sq. m
TOTAL: 192.82 sq. m

PROPOSED SECONDARY DWELLING FLOOR LAYOUT PLAN (1:100)

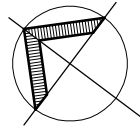


SOUTH-EAST ELEVATION (1:100) SECTION (1:100)



SOUTH-WEST ELEVATION (1:100) NORTH-WEST ELEVATION (1:100) NORTH-EAST ELEVATION (1:100)

No.	Date	Amendment
B	23.05.25	Notes Added
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PROPOSED SECONDARY DWELLING FLOOR LAYOUT PLAN, ELEVATIONS & SECTION



PROPOSED DWELLINGS
AT 137 JOSEFSKI ROAD,
STANWELL.
FOR A. GREEN

Scale	AS SHOWN ON A1	Date	JULY '24	Issue	B
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Checked					
Approved					



ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Dated: 18 September 2025

BUSHFIRE MANAGEMENT PLAN (BMP)

Property

137 Josefski Road, Stanwell
Lot 1 on RP801290

Prepared for: BLH Quality Building
December 2024

Disclaimer

This document has been prepared for the benefit of BLH Quality Building. This report is prepared for the benefit of the named client only. No third party may rely upon any advice or work done by Queensland Bushfire Planning (QBP) in relation to the services, including this report, except to the extent expressly agreed to in writing by QBP.

It is acknowledged and agreed that the site may be subject to a degree of bushfire hazard. The client acknowledges and agrees that QBP has not created or contributed to the creation of this hazard and the client indemnifies QBP for claims arising out of or result from a bushfire event except to the extent attributable to the negligence of QBP.

The client agrees that QBP shall have no liability in respect of any damage or loss incurred as a result of bushfire. Compliance with this report shall be the responsibility of the client and/or the land-owners. This disclaimer shall apply notwithstanding the report may be made available to the relevant Local Government Authority and other persons for an application for permission or approval to fulfill a legal requirement.

GLOSSARY OF TERMS AND ABBREVIATIONS

4WD	Four wheel drive
APZ	Asset Protection Zone - An area between an asset and a bushfire hazard where the bushfire fuel hazard has been reduced significantly to reduce the likely intensity of the any bushfire attack so that fire suppression and asset protection activities may be carried out.
AS3959	Australian Standard 3959-2018 - Construction of Buildings in Bushfire-prone Areas
Asset	Anything valued by the community that may be at risk of harm from bushfire, including people, house, crops, heritage buildings and places, infrastructure, the environment, businesses and forest resources.
BAL	Bushfire Attack Level as defined in AS3959 - A means of 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 metre squared and the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.
Bushfire attack	Attack by burning debris, radiant heat or flame generated by bushfire which might result in ignition and subsequent destruction of the building.
Bushfire catchment	The geographical area surrounding a community which a bushfire ignition is likely to impact on assets valued by the community.
Bushfire hazard area	An area where the combination of fuel load, fuel arrangement and topography under particular climatic and weather conditions has the potential to sustain a bushfire of sufficient severity to pose a risk to people, property or the environment. Bushfire hazards are variable in their severity with severity levels usually measured in terms of fire intensity (kW/m ²) arising from the hazard.
Bushfire management	All activities directed to the prevention, detection, damage mitigation and suppression of bushfires and recovery after bushfire events. It includes bushfire policy, administration, law enforcement, community education, training of fire fighters, planning, communication systems, equipment, research, and the multitude of field operations undertaken by land managers and emergency service personnel relating to bushfire control and use of fire to meet land management goals and objectives.

Bushfire-prone area	An area that can support bushfire or is likely to be subject to bushfire attack due to its proximity to a bushfire hazard area.
Ember attack	Attack by smouldering or flaming windborne debris that is capable of entering or accumulating around a building and may ignite the building and other combustible materials and debris (eg garden mulch, pine fencing).
Emergency warning	An emergency warning is a message signalling an imminent hazard, which may include advice on protective measures. Emergency warnings in relation to bushfires are issued by QFES and are used to inform residents of threat to properties, time to impact, the direction and strength of the fire and of the steps residents must take to survive. There are three National bushfire warning levels defined as follows: • ADVICE: indicates a fire or other emergency has started, however there is no immediate threat. • WATCH AND ACT: there is a heightened level of threat, you need to be aware of your situation and take action to be prepared and protect yourself and your family. • EMERGENCY WARNING: you are in danger.
Environment	The term environment includes: • Ecosystems and their constituent parts, including people and communities. • Natural and physical resources. • The qualities and characteristics of locations, places and areas. • Heritage value of places. • The social, economic and cultural aspects of a thing mentioned above.
FFDI	Forest Fire Danger Index (see also FDR) - A relative number denoting an evaluation of the fire rate of spread, or suppression difficulty for specific combinations of temperature, relative humidity, drought effects and wind speed. The numbers range from 1 to 100.
FDR	Fire Danger Rating - A relative class denoting an evaluation of rate of spread, or suppression difficulty for specific combinations of temperature, relative humidity, drought effects and wind speed indicating the relative evaluation of the fire danger. Ratings are low-moderate (FDI 0-11), high (FDI 12-24), very high (FDI 25-49), severe (FDI 50-74), extreme (FDI 75-99), catastrophic (FDI 100+).
Fine fuel	Fuels such as grass, leaves, bark and twigs (dead plant material less than 6mm and live plant material less than 3mm in diameter) that ignite readily and are burnt readily when dry.

Fire control line	A natural (such as a creek line) or constructed barrier (such as trail or mineral earth break), or treated fire edge used in fire suppression and prescribed burning to limit the spread of the fire.
Fire regime	The history of fire in a particular vegetation type or area including the frequency, intensity and season of burning. It may also include proposals for the use of fire in a given area.
Fuel	Any material such as grass, leaf litter, and live vegetation which can be ignited and sustains a bushfire. Fuel is usually measured in tonnes per hectare.
Fuel layer	The layering of fuels will influence fire behaviour. The five main fuel layers consist of surface fuel, near surface fuel, elevated fuel, bark fuel and canopy fuel.
GIS	Geographic Information System
LGA	Local Government Area
QFES	Queensland Fire and Emergency Services
Regional ecosystem	A grouping of vegetation classes with common ecological requirements for fire and common fire behaviour characteristics.
Residual Risk	The risk of adverse impacts from a bushfire after implementation of risk mitigation/management measures.
Risk	The likelihood of a bushfire igniting and developing to the point that it will threaten an asset and the resultant nature and magnitude of the social, economic and environmental consequences to the community or the assets they value.
Risk mitigation/management	A systematic process that provides a range of treatments which are designed to reduce bushfire risk and thereby contribute to the wellbeing of communities and the environment which may suffer the adverse impacts of bushfire.
ROS	Rate Of Spread
SPP Interactive Mapping System	The State Planning Policy (SPP) Interactive Mapping System, as amended from time to time, published by DLGIP and located at https://spp.dsdip.esriaustraliaonline.com.au/geoviewer/map/planmaking
Unacceptable risk	A situation where people or property are exposed to a predictable hazard event that may result in serious injury to, loss of life, failure of community infrastructure, or property damage that would make a dwelling unfit for habitation.

VHC	Vegetation Hazard Class (VHC) - based on the available bushfire fuel load typically associated with a particular vegetation type.
Water point	Any natural or constructed supply of water that is readily available for fire control operations.
Wildfire	Another term for a bushfire.

EXECUTIVE SUMMARY

Queensland Bushfire Planning has been engaged on behalf of BLH Quality Building to develop a site-based Bushfire Hazard Assessment and Bushfire Management Plan in relation to a residential development at 137 Josefski Road, Stanwell, Lot 1 on RP801290. The site is captured by the State Planning Policy Natural Hazards and Resilience - *Bushfire Prone Area* mapping and in accordance with the provisions of the Rockhampton Regional Council Planning Scheme 2015 - Bushfire Hazard Overlay Code, a detailed Bushfire Management Plan has been prepared. This report includes a number of recommendations regarding bushfire risk mitigation in accordance with AS3959-2018 and Rockhampton Regional Council Planning Scheme 2015.

As detailed in Section 5 the bushfire hazard and risk management measures that have been incorporated into the design of the proposed development at 137 Josefski Road, Stanwell, Lot 1 on RP801290, combined with the implementation of the additional recommended measures during the construction and occupational phase of the development should ensure compliance with the Rockhampton Regional Council Planning Scheme 2015 - Bushfire Hazard Overlay Code.

In conclusion, the residential development at 137 Josefski Road, Stanwell, Lot 1 on RP801290 is a residential development associated with an acceptable level of risk with regards to people or property being exposed to harm in the event of a bushfire.

Recommendation

1. Ingress and egress for residents and emergency services will be via the access road to the proposed build on Lot 1 will be constructed with a minimum clearance width of 6m, a minimum formed width of 4m, minimum vertical clearance of 4m to any overhanging obstructions including tree branches, a maximum gradient of 15%. The constructed access will be suitable for a 15-tonne rural fire-fighting appliance, a passing bay will be constructed/available every 200m, 20m long by 3m wide, making a minimum trafficable width of 7m at the passing bay.
2. Reticulated water will be provided to the reconfiguration.
3. Proposed buildings will be constructed to meet the requirements of the Australian Standard AS3959- 2018 - *Construction of buildings in bushfire prone areas*.
4. The vegetation on 137 Josefski Road, Stanwell will be managed to achieve BPZ requirements and will be maintained in managed low hazard state.
5. Fencing on 137 Josefski Road, Stanwell will be constructed of non – combustible materials.
6. A bushfire information kit will be provided to residents to inform them of the bushfire risks and their roles and responsibilities for prevention, preparedness and response to any fire event.

GLOSSARY OF TERMS AND ABBREVIATIONS

EXECUTIVE SUMMARY

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 - 1.1.2 Rockhampton Regional Council Planning Scheme 2015
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APPENDIX 1

POTENTIAL BUSHFIRE ATTACK LEVEL

APPENDIX 2

- + Bushfire assessments
- + Property vegetation assessments
- + Site planning for bushfire
- + Property management for bushfire
- + Bushfire management plans

1. INTRODUCTION

This Bushfire Management Plan has been prepared on behalf of BLH Quality Building for a residential development at 137 Josefski Road, Stanwell, Lot 1 on RP801290. The focus of this Report refers to the statutory planning and building requirements as they may apply, pursuant to all relevant policies, standards and regulation, along with end-user consideration. In addition, this report seeks to ensure fire risk and evacuation for adjoining and nearby properties is not inadvertently adversely impacted. This assessment report aims to mitigate the risk to life and property from bushfire threat and the impact of bushfire attack which includes:

- Direct flame contact;
- Ember and firebrand attack;
- Radiant heat; and
- Fire-driven wind.

This Report provides:

- In Section 2 a description of the residential development.
- In Section 3 an assessment of the bushfire hazards and risks that will be present within the residential development pre and post completion.
- In Section 4 details concerning the bushfire hazard and risk management measures that have been incorporated into the residential development and additional measures that are recommended for implementation during the construction and occupational phases of the development.
- In Section 5 assessment of the level of compliance of residential development against the requirements of the Rockhampton Regional Council Planning Scheme 2015 - Bushfire Hazard Overlay Code.

This assessment does not seek to remove the threat of any bushfire risk, but provide detailed siting, layout, building and/or servicing information to assist the ability of the owner(s) to manage the potential threat of this risk. This assessment report is prepared in accordance with best practice industry standards as applicable in Queensland and pursuant to both State and local government bushfire hazard policies and guidelines.

1.1 Bushfire Regulatory Framework

1.1.1 State Planning Policy (SPP)

The SPP identifies the Queensland Government's policies about matters of state interest in land use planning and development (DILGP, July 2017). The SPP is a broad and comprehensive statutory planning instrument. It sits above regional plans, standard planning scheme provisions and local government planning schemes within the hierarchy of planning instruments outlined in the Planning Act 2016.

The SPP is supported by the following guidance material:

- The SPP state interest guidance material - Natural hazards, risk and resilience – Bushfire ('SPP guidance') (DSDMIP, 2019), which provides further context to the SPP and explains how the SPP policies can be applied, in particular for local government when making or amending local planning instruments. The SPP guidance is also intended to assist assessment managers and practitioners in applying the SPP assessment benchmarks when state interests have not been integrated into the local planning scheme (where applicable).
- The 'Bushfire Resilient Communities – Technical Reference Guide for the State Planning Policy State Interest - Natural Hazards, Risk and Resilience – Bushfire ('BRC technical document') (QFES, 2019), which provides technical guidance and policy positions of the Queensland Fire and Emergency Services (QFES). It includes procedures for undertaking a bushfire hazard assessment (BHA), calculating asset protection zones and preparing a Bushfire Management Plan.

1.1.2 Rockhampton Regional Council Planning Scheme 2015

The Rockhampton Regional Council Planning Scheme 2015 – SC6.5 Bushfire Management Planning Scheme Policy applies when a proposed development is situated on land affected by the bushfire hazard overlay map OM-4 and the bushfire hazard overlay code where:

1. a bushfire mapping reliability assessment is required; or
2. the development application cannot meet all the requirements of the bushfire hazard overlay code and a bushfire management plan is required.

Under SC6.5.4 the Bushfire Management Plan identifies strategies for mitigating the impacts of bushfire on life, property and the environment. This includes identifying specific risk factors associated with the development, planning for the separation of at-risk elements and potential hazards and providing access and treatments to facilitate an effective response to bushfire.

1.1.3 AS3959:2018 Construction of Buildings in Bushfire Prone Area

The Australian Standard AS3959:2018 Construction of Buildings in Bushfire-Prone Areas (Standards Australia, 2009) specifies the requirements for the construction of buildings in bushfire-prone areas in order to improve their resistance to bushfire attack. AS3959:2018 applies to those areas where a regulated map (i.e. a planning scheme overlay map) identifies an area as a bushfire prone area (or similar), requiring calculation of Bushfire Attack Level (BAL) in accordance with a methodology outlined in the standard. AS3959:2018 prescribes the construction details for buildings depending on the calculated BAL. The detailed requirements relating to construction methods and materials are typically dealt with as part of building design and enabled via private certification in accordance with the Building Code of Australia.

2. SITE DESCRIPTION AND DETAILS

2.1 Overview

The site is located at 137 Josefski Road, Stanwell and is described as Lot 1 on RP801290 within Rockhampton Regional Council (Figure 1).



Figure 1

Lot 1 on RP801290 has an area of 400000 square metres and is aligned north-south with a southwesterly aspect (Figure 2).



Figure 2

Lot 1 on RP801290 is currently zoned Rural (Figure 3).



Figure 3

2.2 Proposed Development

The proposed development is residential (Figure 4).

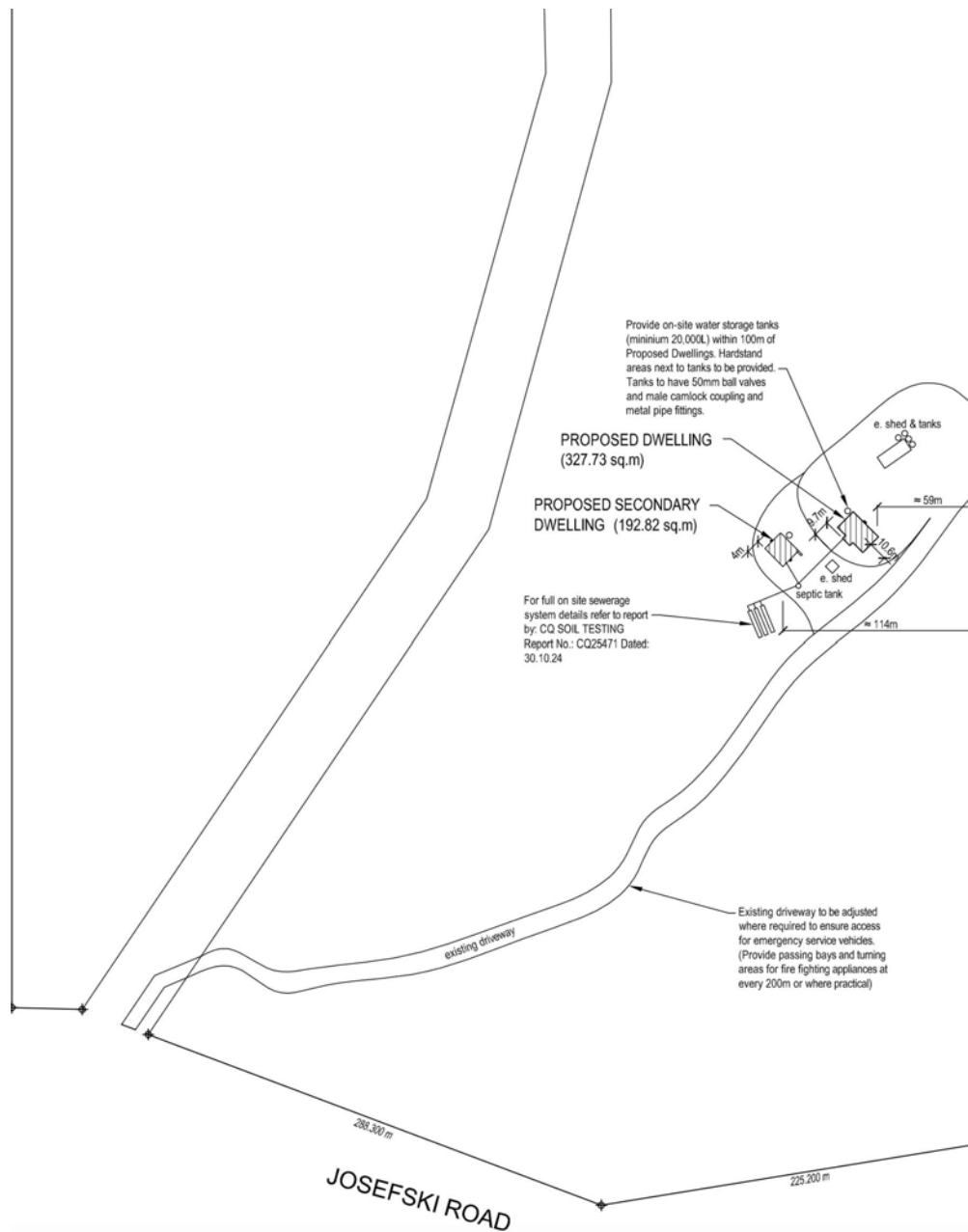


Figure 4

3. BUSHFIRE HAZARD AND RISK ASSESSMENT

3.1 Overview

Rockhampton Regional Council is situated in Central Queensland, an area characterised by a mild sub-tropical coastal climate which does not normally experience extended periods of severe fire weather that are frequently experienced in southern Australia. The Central Queensland region has a sub-tropical climate with hot, moist summers and warm, dry winters, with occasional frost in the south. The average annual temperature is 21°C. Summer average temperature is 27°C, autumn is 22°C, winter 15°C and spring is 22°C. Annual and seasonal average rainfall are variable, affected by local factors such as topography and vegetation, and broader scale weather patterns, such as the El Niño–Southern Oscillation. The greatest rainfall occurs in summer, averaging 277mm per year. The number of days each year characterised by weather conditions conducive to the ignition and rapid spread of a high intensity bushfire are limited. The Central Queensland fire season (when more severe bushfires normally occur) is generally recognised as August to December.

Consistent with the relatively low frequency of high risk bushfires in Central Queensland compared to southern states, the number of lives and houses lost as a result of bushfire is relatively low. Notwithstanding, bushfires still do frequently occur in Central Queensland and present a risk that needs to be considered as part of a comprehensive approach to land use planning and development.

3.2 Bushfire Hazard Assessment

3.2.1 Rockhampton Planning Scheme Bushfire Risk Map

Figure 5 shows the bushfire hazard overlay mapping in the Rockhampton Planning Scheme.

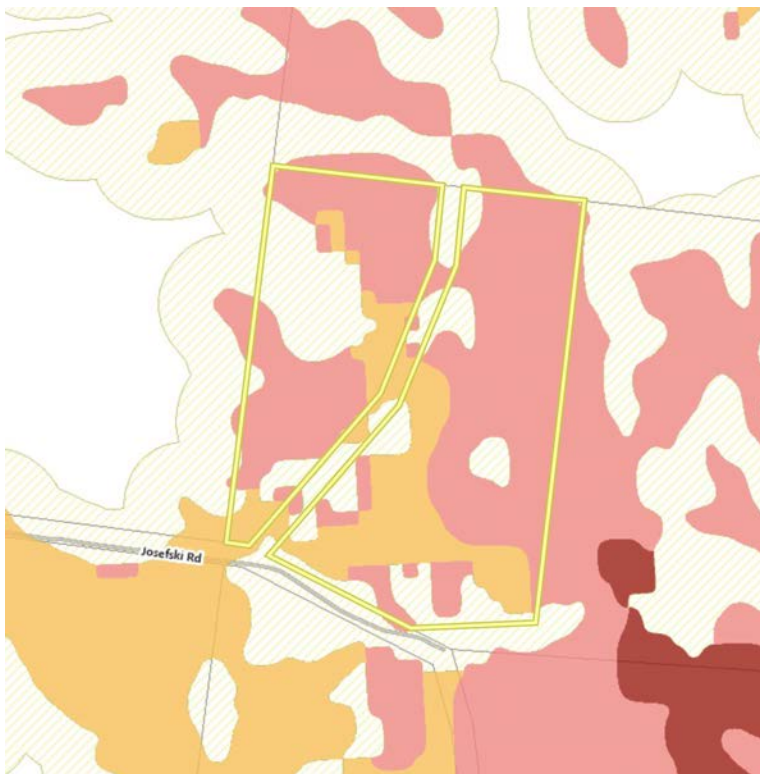


Figure 5



3.2.2 SPP Natural Hazard Mapping

The State Government Single State Planning Policy (SPP) released in 2017, includes mapping that is an outcome of the new bushfire hazard mapping methodology developed by the CSIRO and the Queensland Government. The new Bushfire Prone Area mapping was found to have an average reliability of 85%. The new methodology provides a major improvement in Bushfire hazard mapping. The new modified approach calculates potential fire line intensity using total fuel loads, landscape slope and fire weather severity. A default 100-metre buffer was determined from analysis of heat and radiation decay curves and research that indicates 80% of housing loss and 80% of life loss occurred within 100 metres of bushland.

The subject site is identified on the State Planning Policy Natural Hazards Risk and Resilience mapping as being within potential bushfire impact zone, requiring the bushfire hazard impacts be addressed (Figure 6).

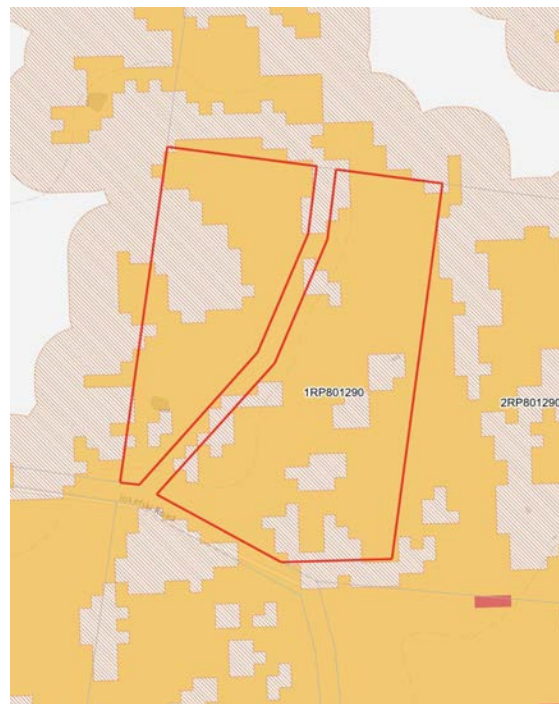


Figure 6



3.3 Site Assessment

The site specific assessment of the bushfire hazard classification for the development at 137 Josefski Road, Stanwell, Lot 1 on RP801290 and immediate locality has been completed based on a review of aerial imagery, topographic data, available vegetation mapping was conducted on 13 December 2024. The site inspection was conducted to confirm and record the relevant information to determine the bushfire hazard in accordance with the requirements of the Gladstone Regional Council Planning Scheme 2017 V2. These assessments account for changes that will occur to the extent and nature of the vegetation types as a result of the proposed development at 137 Josefski Road, Stanwell. The site specific assessments were based on the methodology specified in Australian Standard AS3959:2018 - Construction of Building in Bushfire Prone Areas.

The classification of an area's Potential Bushfire Intensity takes into account three key variables:

- Total Fuel Load - primarily a function of the vegetation type(s) in an area.
- McArthur Forest Fire Danger Index (FFDI) - an index that considers variability in fire intensity associated with a range of weather variable including recent precipitation, current wind speed, relative humidity and temperature.
- Slope - an important variable controlling the rate of fire spread and fuel consumption.

3.3.1 Pre Development Vegetation

Table 1 shows the original vegetation on and about the site identified using the *Public Safety Business Agency (PSBA) State-wide Bushfire Hazard (Bushfire Prone Area)* mapping.

VHC Description	Regional Ecosystem (RE)	Site Specific Assessment of Presence	Potential Fuel Load (t/Ha) Surface	Potential Fuel Load (t/Ha) Total
1. VHC: 17.2 (Photo 1)	11.11.10 Eucalyptus melanophloia woodland on deformed and metamorphosed sediments and interbedded volcanics	Broad landscape vegetation	9.0	9.6

Table 1



Photo 1

3.3.2 Classified Vegetation

Australian Standard, *Construction of Buildings in Bushfire Prone Areas* (AS 3959–2018) requires any classified vegetation within 100 metres of the proposed works must be assessed. Table 2 shows the vegetation on and about the site identified using the *Public Safety Business Agency (PSBA) State-wide Bushfire Hazard (Bushfire Prone Area)* mapping

VHC Description	Regional Ecosystem (RE)	Site Specific Assessment of Presence	Potential Fuel Load (t/Ha) Surface	Potential Fuel Load (t/Ha) Total
1. VHC: 17.2 (Photo 2)	11.11.10 Eucalyptus melanophloia woodland on deformed and metamorphosed sediments and interbedded volcanics	Non - remnant vegetation	9.0	9.6

Table 2



Photo 2

Based on the above, the Potential Fuel Loads available within and adjacent to Lot 1 on RP801290 range from:

- a minimum of 9.0 associated with existing and proposed fuel load: to
- a maximum of 9.6 associated with areas of remnant vegetation located within 100m of the development.

3.3.3 Forest Fire Danger Index

For land use planning purposes in Queensland the 1:20 year Forest Fire Danger Index, adjusted to reflect the expected climate in the year 2050, has been adopted as the design fire weather conditions. The FFDI for a 1:20 year is equivalent to a 5% annual exceedance probability (ie. 5% chance of occurring in any given year) and integrates the combined effect of a range of weather variables including long term dryness, recent precipitation, current wind speed, relative humidity and temperature.

The QFES Redi-Map Portal provides more refined mapping of FFDI (1 in 20 years) index values. Utilising this mapping the applicable FFDI for the development at 137 Josefski Road, Stanwell has resulted in an FFDI for the development of 70. An FFDI of 70 falls within the 70 Fire Danger Rating (FDR) according to the FDR system developed by Australasian Fire Authorities Council (AFAC) and summarised in Table 3.

Fire Danger Rating	AFAC Description of Likely Fire Behaviour and Consequence
Catastrophic FFDI > 100	Fires will be uncontrollable, unpredictable and fast moving. These are the worst conditions for a bush or grass fire. If a fire starts and takes hold, it will be extremely difficult to control. It will take significant fire fighting resources and cooler conditions to bring it under control. Spot fires will start well ahead of the main fire and cause rapid spread of the fire. Embers will come from many directions. Homes are not designed or constructed to withstand fires in these conditions. The safest place to be is away from bushfire prone areas.
Extreme FFDI 75-99	Fires will be uncontrollable, unpredictable and fast moving. These are very hot, dry and windy conditions for a bush or grass fire. If a fire starts and takes hold, it will be unpredictable, move very fast. It will be very difficult for fire fighters to bring under control. Spot fires will start and move quickly. Embers may come from many directions. Homes that are prepared to the highest level, have been constructed to bushfire protection levels and are actively defended, may provide safety. You must be prepared physically and mentally to defend in these conditions. The safest place to be is away from bushfire prone areas.

Fire Danger Rating	AFAC Description of Likely Fire Behaviour and Consequence
Severe FFDI 50-74	Fires will be uncontrollable and move quickly. These are hot, dry and possibly windy conditions for a bush or grass fire. If a fire starts and takes hold, it will be hard for fire fighters to bring under control. Well-prepared homes that are actively defended can provide safety. You must be prepared physically and mentally to defend in these conditions.
Very High FFDI 25-49	Fires Can be difficult to control. Flames may burn into the tree tops. There is a chance people may die or be injured. Some homes and businesses may be damaged or destroyed. Well prepared and actively defended house can offer safety during a fire. Embers may be blown ahead of a fire. Spot fires may occur up to 2km ahead of the fire. Leaving is the safest option for your survival. Your home will only offer safety if it and you are well prepared and you can actively defend during a fire.
High FFDI 12-24	Fires can be controlled. Loss of life is highly unlikely and damage to property will be limited. Well prepared and actively defended houses can offer safety during a fire. Embers may be blown ahead of the fire. Spot fires can occur close to the main fire. Know where to get more information and monitor the situation for any changes.
Low-Moderate FFDI <12	Fires can be easily controlled. Little or no risk to life and property. Know where to get more information and monitor the situation for any changes

Table 3

Note: An FFDI of 70 specified for use in the SPP for land use planning purpose is higher than the FFDI of 40 specified in AS3959-2018 for all of Queensland for building design and approval purposes.

3.3.4 Slope Assessment

From a bushfire hazard perspective slope of the land under the bushfire prone vegetation can greatly influence fire behaviour. This slope is referred to as the **effective slope**. If the potentially hazardous vegetation is located upslope of the asset(s) the contribution that slope makes towards the intensity and rate of spread of the fire is negligible. **Site slope** is the gradient of the land between retained vegetation and adjoining assets. The site slope influences the 'view factor' of the flame geometries in Bushfire Attack Level models.

Where potentially hazardous vegetation is located downslope of the asset(s) the effective slope gradient of the vegetated land will have significant influence on bushfire intensity and rate of spread. Typically, for each 18-20% (or 10 degrees) increase in slope gradient the rate of forward spread and intensity of a bushfire will double for a fire moving up the slope towards an asset. Similarly if the fire is moving down the slope the rate of spread will decrease by approximately double for each 18-20% (or 10 degrees) increase in slope gradient. As the rate of spread of a bushfire increase so does its intensity.

The effective and site slope for the proposed development at 137 Josefski Road, Stanwell were measured on site using a Nixon Forestry Pro II laser rangefinder/hypsometer as 7 degree effective slope and 7 degrees site slope.

NOTE: As fire travels slower down a hill, all classified vegetation that is upslope will assume a value of 0 degrees (i.e. flat land) (AS3959:2018).

3.4 Bushfire Risk Assessment

3.4.1 Risk Classification

With reference to AS/NZS ISO 31000 Risk Management - Principles and Guidelines, The bushfire risk profile of an asset may be defined as "*the chance of something happening that will have an impact on objectives*" and can be qualified in terms of:

- **Likelihood:** the frequency with which it is expected a bushfire of a particular level of intensity will threaten an asset via smoke, embers, radiant heat or flame attack. This can be influenced by local environmental factors, fuel biomass and structure, density of potential ignition sources, fire management and intervention capability etc. , all of which can vary over time due to the influence of resource availability, weather and climate variability.
- **Consequences:** The nature and significance of the potential adverse outcomes for an asset exposed to a certain intensity of bushfire attack (eg. health effects, damage to structures, economic loss, interference with ecosystem processes, loss of biodiversity). This can be influenced by the vulnerability and resilience of the asset to bushfire exposure, the social, economic and environmental values of the asset, post fire recovery and prospects, costs and timeframes.

Assessing the risks to people and property posed by bushfires requires an understanding of the tolerances of people and property to different levels of bushfire attack, in particular attack by flames and radiant heat. For people there is generally no safe level of direct flame exposure and radiant heat is recognised as the biggest killer in a bushfire. Radiant heat levels increase with the increase in the proximity and intensity of bushfire.

The vulnerability of buildings and structures to bushfire attack is largely determined by:

- The material used in their construction.
- The severity and duration of the exposure to radiant heat or flame attack.

For land use planning purposes a maximum radiant heat flux exposure of 29 kW/m² for residential dwellings on newly created lots is increasingly being recognised as the benchmark for an acceptable level of risk exposure. In this respect the building setback distance needed to achieve a 29 kW/m² heat flux exposure:

- Reduces potential exposure to bushfire attack, particularly direct flame contact.
- Reduces the likelihood of piloted ignition due to radiant heat exposure.
- Provides opportunities for emergency access and operational space for firefighters before the arrival of a bushfire,
- Improves consistency between planning and building outcomes, thereby reducing the potential for conflicts between planning and building approvals.
- Avoids duplication and regulatory burden on home owners.

3.4.2 Bushfire Behaviour and Risk Exposure Modelling

For land use planning purposes, an important element of a "fit for purpose" method of assessing whether or not a proposed development provides a tolerable or acceptable level of bushfire risk is to consider likely bushfire behaviour and consequences for future residents, QFES personnel and built infrastructure under a design bushfire event. One method for assessing bushfire risk exposure levels examining the likely levels of flame, radiant heat and ember attack that people and property would be exposed to under a design fire event using the Australian Standard AS3959-2018: Construction of buildings in Bushfire Prone Areas - Bushfire Attack Level Method 2. This approach involves:

- **Step 1:** Determine the relevant FDI.
- **Step 2:** Determine the vegetation classification, fuel loads.
- **Step 3:** Determine the effective slope in degrees under the classified vegetation.
- **Step 4:** Determine the slope in degrees of the land between the site and the classified vegetation.
- **Step 5:** Determine the distance of the site from classified vegetation.
- **Step 6:** Determine the BAL rating using Method 2.

For the purposes of this assessment the relevant FFDI, classified vegetation types and slope characteristics used in this assessment are detailed in Section 3.3.2 and 3.3.4 of this Report.

3.4.3 Assessment of Bushfire Hazard

Australian Standard - *Construction of Buildings in Bushfire Prone Areas (AS 3959–2018)* requires that any classified vegetation within 100 metres of the proposed works must be assessed. Figure 9 shows the extent of the 100-metre separation zone (BAL Impact Zone (AS 3959-2018)).

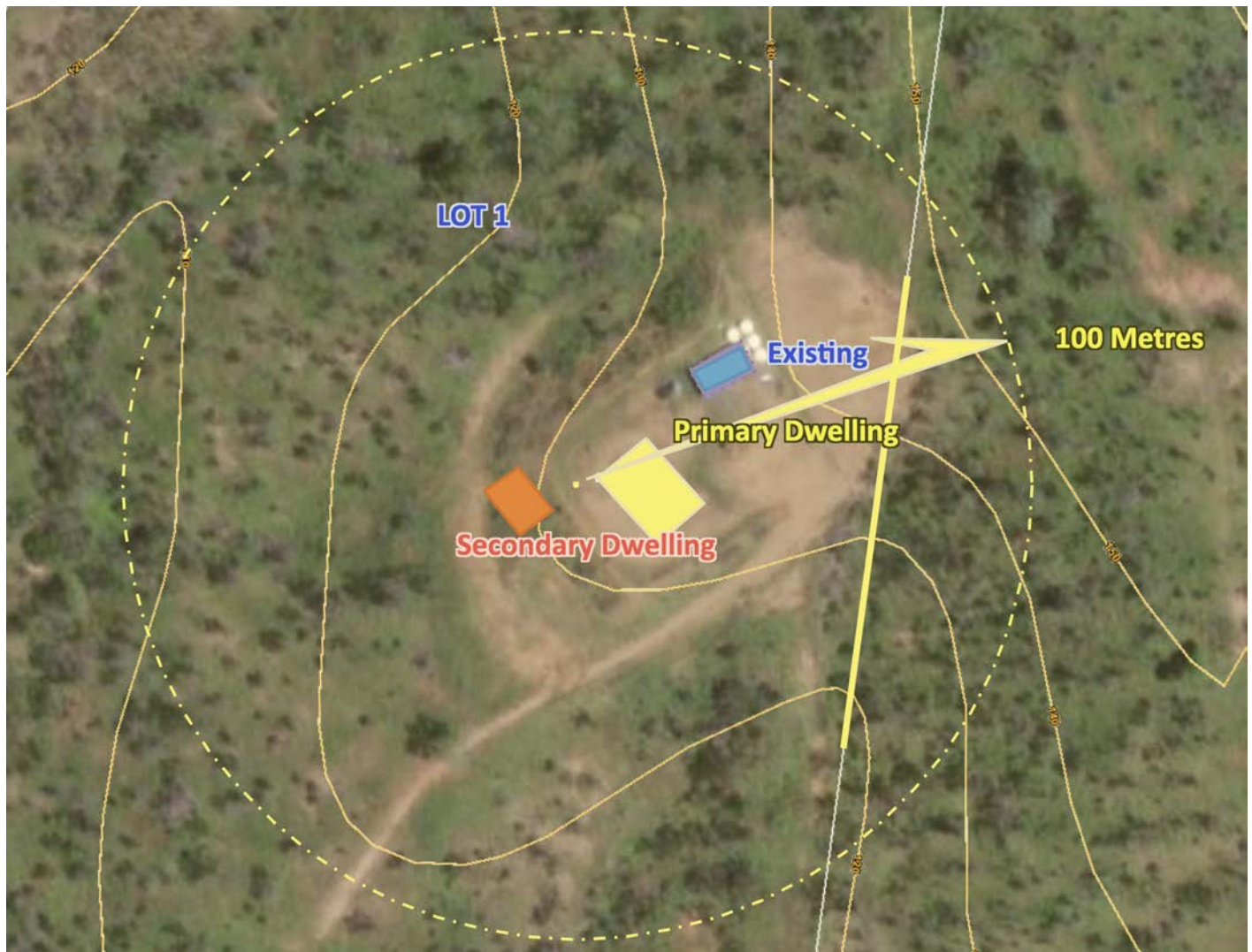


Figure 9

Figure 10 shows the separation to identified classified vegetation.



Figure 10

Calculations using AS 3959-2018, in accordance with Appendix B - *Detailed Method for Determining the Bushfire Attack Level (BAL) – Method 2 (Normative)*, indicate that at a separation distance of 50 metres a building located on the proposed site will be exposed to a radiant heat flux of 5.26 kW/m² equating to a Bushfire Attack Level (BAL) of 12.5 (Appendix 1). Table 4 describes the six (6) Bushfire Attack Levels.

Bushfire Attack Level (BAL)	Radiant Heat Exposure (AS3959)	Description of Predicted Bushfire Attack and Levels of Exposure
BAL - Low	Insignificant	The risk is very low, radiant heat on the building is insignificant to warrant specific construction requirements. However, ember attack may still occur.
BAL 12.5	0 to 12.5kW/m ²	Primarily risk of ember attack. Risk of radiant heat is considered low.
BAL 19	12.5 to 19kW/m ²	Risk is considered moderate with increasing levels of ember attack and burning debris ignited by wind borne embers. Increasing likelihood of exposure to radiant heat.
BAL 29	19 to 29kW/m ²	Risk is considered to be high. Increasing levels of ember attack and burning debris ignited by wind borne embers. Increasing likelihood of exposure to radiant heat.
BAL 40	29 to 40kW/m ²	Risk is considered to be very high. Increasing levels of ember attack and burning debris ignited by wind borne embers. Increasing likelihood of exposure to radiant heat and some direct exposure to flames possible.
BAL FZ	40kW/m ² plus (flame contact)	Risk is considered to be extreme. Direct exposure to flame from the fire front is likely in addition to high levels of radiant heat exposure and ember attack.

Table 4

4. BUSHFIRE HAZARD AND RISK MITIGATION

Figure 11 illustrates that effective protection against bushfire can only be achieved by the integration of multiple measures. Removing the bushland (hazard) will remove the risk but this option is neither necessarily possible nor desirable. An acceptable level of protection of life and property can be achieved while still retaining and protecting biodiversity and the natural values of the bushland.



Figure 11

The appropriate mitigation and management of bushfire hazards and risks involves the integration of a combination of bushfire hazard mitigation measures during the design, construction and operational phase of any development, including:

- Ensuring development design, including the layout of roads and driveways and the location, size and orientation of residential lots and buildings, is responsive to bushfire hazards;
- Appropriate firefighting and management infrastructure is provided, including an adequate and accessible water supply, fire breaks and maintenance/access trails;
- Specifications and materials for building design and construction are in accordance with AS3959-2018 Construction of Buildings in Bushfire Prone Areas;
- Management of potentially hazardous vegetation taking into account the conservation values of that vegetation and the important role fire plays in the functioning of many Australian ecosystems;
- Landscape design and property maintenance requirements;
- Community awareness, education and training; and
- Identification of parties to be responsible for specific bushfire management tasks and actions.

The design of the residential development at 137 Josefski Road, Stanwell has been informed by the above. The following sections provide detail concerning some of the key design elements which have been incorporated into the design of the development to ensure an acceptable level of risk to human safety and property is maintained in the event of a bushfire occurring in the general locality. Where appropriate, details concerning measures that need to be taken during construction and occupational phases of the development are also provided.

4.1 Access and Evacuation

The intent of design requirements for roads is to provide safe egress for residents and access for attending firefighting vehicles. A road system that is compliant with guideline measures provides fire services with easier access to buildings, a safe retreat for firefighters and residents, and can provide a fire control line where hazard reduction and back burning can take place. In determining safe access to a site, consideration is given to the fire brigade vehicles which are required to access public and private roads. Given the size of these vehicles and the poor visibility in which they often operate, roads need to be designed to specific requirements, including road width, grade, cross-fall, weight capacity, passing bays and turnaround areas, all of which may vary depending on whether it is a perimeter, access, cul-de-sac or battle-axe road type.

Ultimately egress and ingress to the residential development will be via the access road to the proposed build on Lot 1 will be constructed with a minimum clearance width of 6m, a minimum formed width of 4m, minimum vertical clearance of 4m to any overhanging obstructions including tree branches, a maximum gradient of 15%. The constructed access will be suitable for a 15-tonne rural fire-fighting appliance, a passing bay will be constructed/available every 200m, 20m long by 3m wide, making a minimum trafficable width of 7m at the passing bay. There is likely to be substantial warning of a major bushfire front approaching the development allowing site occupants sufficient time to implement their bushfire emergency plans.

4.2 Water Supply

Providing a sufficient water supply provides firefighters and residents with the appropriate levels of water to undertake building defense. There are two options in which a house site can be supplied with a sufficient water supply; from either reticulated water accessible via a hydrant, or a dedicated static water supply. Rural Area - reticulated water not available. On site storage water storage (minimum 20 000l) will be established. A minimum of 5 000l will be quarantined for fire fighting as separate storage or the domestic take off will be installed above the 5 000l point. The storage will be fitted with a 50mm ball valve and male camlock fitting at the lower level (Standard QFD fittings).

4.3 Building Design and Construction

Buildings within the residential development at 137 Josefski Road, Stanwell situated within 100metres of areas of hazardous vegetation (ie. bushfire prone vegetation with the capacity to support bushfires with an intensity of 4000kW/m² or greater under design fire weather conditions) need to be designed and constructed in accordance with AS3959-2018: *Construction of Buildings in Bushfire Prone Areas*.

4.4 Vegetation Management

The bushfire severity potential of an area can be substantially reduced by managing vegetation in a manner that reduces or removes potential bushfire fuel loads. This includes management of areas that are intended to provide a conservation function. The failure to manage vegetation fuel loads in conservation reserves can result in high intensity wildfires that have adverse ecological impacts for the reserve as well as creating an unnecessary hazard for adjacent urban areas.

Onsite vegetation and landscape management are important to maintaining low hazard conditions by:

- Limiting fuel accumulation;
- Reducing connectivity of fuels;
- Establishing and maintaining defensible space;
- Appropriate landscaping; and
- The proposed lot size of the development will constrain the development of any additional bushfire hazard.

Clearing - The site will be cleared to facilitate the proposed development.

4.5 Residential Landscape Design

Inappropriate landscape design in bushfire prone areas (ie. any land within 100m of bushfire prone vegetation) may expose a dwelling to increased levels of ember attack, radiant heat and flame contact. Well designed and maintained landscaping with appropriate plant species can actually help protect houses by:

- Reducing the amount of radiant heat received by a house;
- Reducing the chance of direct flame contact with the house;
- Deflecting and filtering embers; and
- Reducing flammable landscaping materials within the defensible space.

In general "mesic" plant species that have a higher leaf moisture content, less bark and a lower rate of leaf drop will assist with reducing available bushfire fuel loads thereby assisting in reducing the likelihood and severity of bushfire attack. The use of mesic plant species in combination with the following guidelines form the basis for a low risk landscape design in bushfire prone areas:

- Establish and maintain lawn or paved areas such as paths and/or pebble garden with herbs near to the house.
- Maintain cleared areas around all driveways, pathways, fire trails and roadways that may be need to used as access/egress route during a bushfire.
- Plant trees at least 5m from any dwelling house to allow clear access and minimise canopy overhang of roofs and associated accumulation of leaf litter.
- Space trees and shrubs to avoid the creation of continuous canopy that may carry fire.
- Prune lower limbs of trees to height of 2m above ground level.
- Avoid using confers, paperbarks (ie. *Melaleuca* species), stringy bark and ribbon bark eucalyptus in landscape planting.
- Avoid using organic mulch with preference given to non-flammable mulches such as scoria (light weight volcanic stone), pebbles, recycled crushed bricks.
- Regularly water landscape plantings to maintain plant health and moisture levels.

4.5 Fencing

Fencing materials have the capacity to contribute to fire spread and intensity. It is recommended that non-combustible fencing materials should be used.

4.6 Community Awareness

Property owners are responsible for developing their own knowledge and understanding of the level of bushfire risk specific to their respective properties. A household bushfire plan is required and must take account of matters such as where occupants are during the day (at home, work or school), if any occupants require special assistance (i.e. infants, the elderly or the ill), evacuation routes available, evacuation destinations, property maintenance and preparation and arrangements for pets. Planning ahead of any perceived bushfire event is essential.

The warning systems now implemented by Emergency Services and Local Authorities provide timely information and advice to occupants. Understanding what to do in the event of bushfire emergency is critical. Prior knowledge as to the steps to take during the lead up to a fire event, during the passage of bushfire, and what to do immediately after the fire front has passed is critical. The Rural Fire Service Queensland (RFSQ) 'Bushfire Survival Plan' provides detailed information on how to prepare for the bushfire season and how to take action to survive in the event of bushfire. A copy of this publication can be obtained from the RFSQ website. <https://bushfire-survival-plan.qfes.qld.gov.au/>

5. COMPLIANCE ASSESSMENT

Bushfire Hazard Overlay Code - Rockhampton Regional Council Planning Scheme 2015 (Section 8.2.4)

Performance Outcomes	Acceptable Outcomes	Compliance
PO1 Development ensures that the location, siting, and design of development and associated driveways and access routes: 1. avoid potential for entrapment during a bushfire; 2. facilitate safe and efficient emergency services to access and egress the site during a bushfire; and 3. enables safe evacuation of the site during a bushfire for site occupants.	AO1.1 AO1.1.1 Where the development is located in an urban area, the development: 1. has direct access to a constructed, all-weather, public road capable of carrying emergency service vehicles; 2. has a maximum single access driveway length of sixty (60) metres from the street to the development; and 3. access driveways have a maximum gradient of 12.5 per cent. OR AO1.1.2 Where the development is located in a non-urban area, the development: 1. has direct access to a constructed, all-weather, public road capable of carrying emergency service vehicles; 2. is separated from hazardous vegetation by a public road or fire trail with a minimum width of four (4) metres and at least six (6) metres clear of vegetation, with a minimum of 4.8 metres vertical clearance and a maximum gradient of 12.5 per cent; and	Rural Area The access road to the proposed build on Lot 1 will be constructed with a minimum clearance width of 6m; a minimum formed width of 4m; minimum vertical clearance of 4m to any overhanging obstructions including tree branches; with a maximum gradient of 15%. The constructed access will be suitable for a 15-tonne rural fire-fighting appliance; a passing bay will be constructed/available every 200m, 20m long by 3m wide, making a minimum trafficable width of 7m at the passing bay.

Performance Outcomes	Acceptable Outcomes	Compliance
	3. has: 1. a maximum single access driveway length of sixty (60) metres from the street to the development; or 2. access driveways that are greater than sixty (60) metres from the street to the <u>dwelling</u> provide a turning circle with a minimum radius of eight (8) metres every sixty (60) metres.	
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: 1. 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 2. 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. 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:	Rural Area - Reticulated water not available On site storage water storage (Min 20 000l) will be established. A minimum of 5 000l will be quarantined for fire fighting as separate storage or the domestic take off will be installed above the 5 000l point. The storage will be fitted with a 50mm ball valve and male camlock fitting at the lower level. (Standard QFD fittings)

Performance Outcomes	Acceptable Outcomes	Compliance
	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 the water requirement outlined in Table 8.2.4.3.3; 2. a hardstand area allowing heavy rigid fire appliance access within six (6) metres of a tank; and 3. fire brigade tank fittings consisting of: 1. for above ground tanks, 1. fifty (50) millimetre ball valve and male camlock coupling; and 2. above ground water pipe fittings that are metal; or 2. for underground tanks, an access hole of 200 millimetre diameter (minimum) to allow access for suction lines.	A hardstand suitable for a 15 tonne appliance will be established within 6 metres of the outlet.

Performance Outcomes	Acceptable Outcomes	Compliance
PO3 Public safety and the environment are not adversely affected by the impacts of bushfire on hazardous materials.	AO3.1 Development does not involve the manufacture or storage of hazardous materials within a bushfire hazard area.	No manufacture or storage of hazardous materials.
PO4 The development is compatible with the level of risk associated with the bushfire hazard.	AO4.1 The development has a Bushfire Attack Level of less than 12.5.	Not applicable
PO5 Essential community infrastructure and community facilities are highly vulnerable development are located, designed and sited to: 1. protect the safety of people during a bushfire; 2. not increase the exposure of people to the risk from a bushfire event; 3. minimise the risk to vulnerable populations; and 4. ensure essential community infrastructure can function effectively during and immediately after bushfire events.	AO5.1 The following uses are not located in high or very high bushfire hazard areas: 1. childcare centre; 2. educational establishment; 3. hospital; 4. multiple dwelling; 5. relocatable home park; 6. retirement facility; 7. shopping centre; 8. telecommunications facility; 9. tourist attraction; 10. utility installation.	Compliant. No identified uses.

Performance Outcomes	Acceptable Outcomes	Compliance
PO6 Where reconfiguration is undertaken a separation distance from hazardous vegetation is provided.	AO6.1 In urban areas lots are separated from hazardous vegetation by a distance: 1. that achieves a Bushfire Attack Level of twenty-nine (29) or less at all boundaries; and 2. is contained wholly within the development site. OR AO6.2 In non-urban areas a building envelope of reasonable dimensions is provided on each lot which achieves a Bushfire Attack Level of twenty-nine (29) or less at all boundaries	The Bushfire Management Plan prepared by Queensland Bushfire Planning (QBP) has determined a Bushfire Attack Level of 12.5.
PO7 In urban areas development includes a constructed perimeter road between the lots and hazardous vegetation with reticulated water supply. The access is available for both fire fighting and maintenance works.	AO7.1 In urban areas lot boundaries are separated from hazardous vegetation by a public road which: 1. has a two lane sealed carriageway; 2. contains a reticulated water supply; 3. is connected to other public roads at both ends and at intervals of no more than 500 metres; 4. accommodates geometry and turning radii in accordance with Queensland Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines; 5. has a minimum of 4.8 metres vertical clearance above the road; 6. is designed to ensure hydrants and water access points are not located within parking bay allocations; and 7. incorporates roll-over kerbing.	The access road will be constructed with a minimum clearance width of 6m, a minimum formed width of 4m, minimum vertical clearance of 4m to any overhanging obstructions including tree branches, a maximum gradient of 15%. The constructed access will be suitable for a 15-tonne rural fire-fighting appliance, a passing bay will be constructed/available every 200m, 20m long by 3m wide, making a minimum trafficable width of 7m at the passing bay.

Performance Outcomes	Acceptable Outcomes	Compliance
PO8 In non-urban areas development includes a perimeter road or an all-weather fire access trail which is available for both fire fighting and maintenance/hazard reduction works.	AO8.1 In non-urban areas the development includes a perimeter road or an all-weather fire access trail which: 1. separates the development from the hazardous vegetation with a width of at least twenty (20) metres; 2. with a minimum formed width of four (4) metres; 3. a minimum of 4.8 metres vertical clearance above the road; 4. has a turning circle with a minimum radius of eight (8) metres every sixty (60) metres; 5. has adequate drainage and erosion control devices; 6. has a gradient no greater than 12.5 per cent and a cross fall of no greater than ten (10) degrees; 7. has access at each end of the perimeter road or the fire trail from a public road; 8. has the access point signed and direction of travel identified; and 9. has a suitable arrangement in place to ensure maintenance in perpetuity.	
PO9 Road widths and construction within the development are adequate for fire emergency vehicles.	No acceptable outcome is nominated.	The constructed access will be suitable for a 15-tonne rural fire-fighting appliance.

Performance Outcomes	Acceptable Outcomes	Compliance
PO10 Development facilitates the safe and efficient access and egress of <u>emergency services</u> during a bushfire event.	AO10.1 The development includes a perimeter road or a fire access trail which: 1. separates the development from the hazardous vegetation; 2. is a minimum of ten (10) metres in width, with a minimum formed width of four (4) metres; 3. is a minimum of six (6) metres clear of standing flammable vegetation; 4. has passing bays twenty (20) metres long by three (3) metres extra trail width, or turning facilities every 200 metres; 5. has adequate drainage and erosion control devices; 6. has a gradient no greater than 12.5 per cent and a cross fall of no greater than ten (10) degrees; 7. has access at each end of the perimeter road or the fire trail from a public road; 8. has the access point signed and direction of travel identified; and 9. has suitable arrangements in place to ensure maintenance in perpetuity.	The constructed access will be suitable for a 15-tonne rural fire-fighting appliance.

Performance Outcomes	Acceptable Outcomes	Compliance
PO11 Road widths and construction within the development are adequate for fire emergency vehicles to gain access to a safe working area close to dwellings and near water supplies whether or not on-street parking spaces are occupied.	AO11.1 Road access minimum clearances of 3.5 metres wide and 4.8 metres high are provided for safe passage of emergency vehicles.	The access road to the proposed build on Lot 1 will be constructed with a minimum clearance width of 6m; a minimum formed width of 4m; minimum vertical clearance of 4m to any overhanging obstructions including tree branches; with a maximum gradient of 15%. The constructed access will be suitable for a 15-tonne rural fire-fighting appliance; a passing bay will be constructed/ available every 200m, 20m long by 3m wide, making a minimum trafficable width of 7m at the passing bay.
PO12 Hydrants are suitably identified so that fire services can locate them at all hours.	AO12.1 Hydrants are identified as specified in Queensland Fire and Emergency Service: Fire hydrant and vehicle access guidelines for residential, commercial and industrial lots.	Not applicable

Appendices

APPENDIX 1

POTENTIAL BUSHFIRE ATTACK LEVEL

The Australian Standard, Construction of Buildings in Bushfire Prone Areas (AS 3959-2018) provides a suitable methodology for identifying assessable vegetation and determining the requirements for the construction of buildings in order to improve their resistance to bushfire attack from burning embers, radiant heat, flame contact and a combination of the three attack forms.

Determination of BAL

Step 1. Relevant Fire Danger Index

The PSBA bushfire hazard mapping identifies the FFDI as 70.

Step 2. Vegetation Classification - Fuel Loads

The vegetation type was classified as 17.2 dry woodlands dominated by poplar box, silver-leaved ironbark or White's ironbark on sand or depositional plains. Available fuel weights were derived from *PSBA State – Wide Bushfire Hazard (Bushfire Prone Area) Mapping*. Fuel weight was determined as: 9.0 tonne/hectare.

Fuel weights were determined as:

- 6.0 tonne/hectare surface fuels
- 3.0 tonne/hectare near surface fuels
- 0.6 tonne/hectare elevated fuels
- 0.0 tonne/hectare bark fuels
- Total fuel weight = 9.0 tonne/hectare.

Step 3. Determine the effective slope in degrees under the classified vegetation

The classified vegetation is downslope at 7 degrees, calculated using a Nikon Forestry Pro Range Finder and Inclinometer.

Step 4. Determine the slope in degrees of the land between the site and the classified vegetation

The slope between the site and the classified vegetation is with an average slope of 7 degrees.

Step 5. Determine the distance of the site from classified vegetation

Distance is calculated from the closest edge of the classified vegetation. Classified vegetation under AS 3959-2018 does not include low threat vegetation. The distance to the classified vegetation was calculated using a Nikon Forestry Pro Range Finder and Inclinometer at 50 metres.

Step 6. Calculations

Effective slope (°) - 7

Site slope (°) - 7

Distance (m) - 50

Vegetation classification — 17.2 dry woodlands dominated by poplar box, silver-leaved ironbark or White's ironbark on sand or depositional plains

Forest Fire Danger Index (FFDI) – 70

Surface fuel load (t/ha) – 6.0

Overall fuel load (t/ha) – 9.0

Heat of combustion (kJ/kg) – 18600

Flame temperature (K) – 1200

Outcomes

Intensity (kW/m²) – 4 776

Radiant heat flux (kW/m²) – 5.26

Bushfire Attack Level (BAL) - 12.5

APPENDIX 2

About the Report Author



This Report was prepared by Bushfire Specialist Bernard Trembath. Bernard has extensive practical knowledge and experience in bushfire planning and management and an intimate working knowledge of Queensland vegetation and climate, particularly in relation to fire prediction and behaviour.

Prior to establishing Queensland Bushfire Planning in 2014, Bernard was the Regional Manager Rural Operations, Brisbane Region, for Queensland Fire and Emergency Services (QFES). As Regional Manager, Bernard was responsible for bushfire mitigation within the Brisbane Region, working with Local Governments and many other organisations to help reduce the impacts of bushfires. Bernard was also the QFES bushfire planning specialist, providing specialist bushfire planning and management advice on behalf of QFES.

Since 2014, Bernard has provided his specialist bushfire planning knowledge to advise and assist a large number of individuals, companies and government agencies. His happy clients include:



- + Bushfire assessments
- + Property vegetation assessments
- + Site planning for bushfire
- + Property management for bushfire
- + Bushfire management plans