Bushfire Assessment Report

Proposed Residential Dwelling

Dual Occupancy (Torrens)

5 Stoney Creek Drive

Farley Rise

Farley, NSW 2320

Prepared for

NCL GROUP Pty Ltd

6 November 2024

Version V1.0

COOL BURN FIRE + ECOLOGY

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Project Details

Project Name:	J005_2025_T17 – Proposed Residential Dwelling Dual Occupancy, Farley
Client Details:	NCL GROUP Pty Ltd
Project Address	Lot 216 DP1280557 5 Stoney Creek Drive, Farley Rise, Farley NSW 2320
Local Government Area	Maitland City Council – (FDI 100)
Zoning (LEP)	Maitland City Council Local Environmental Plan 2011 R1 - General Residential
Bushfire Prone Land Category	Bushfire Prone Land (Cat 3 - grassland)
Proposed Development	Infill Development Residential Dwelling / Dual Occupancy
Approval Path	Council Development Application (DA) (no BFSA from RFS required)
Building Classification	Residential Development – Class 3 Building

Document Control

Version	Primary Author(s)	Description	Date Completed
V1.0	Dan Pedersen Review D. Milburn	Draft	6 November 2024

Dan Pedersen / Director Cool Burn Fire Ecology

B.Sc. (ecology), Grad. Dip. (Design for Bush fires)
Fire Protection Association of Australia BPAD Level 3 BPD-PA 16293

Contents

1. INTRODUCTION

NCL GROUP Pty Ltd have commissioned Cool Burn Pty Ltd (Cool Burn) to prepare a Bushfire Assessment Report to support the Development Application (DA) for the proposed development of a residential construction and Torrens title dual occupancy at 5 Stoney Creek Drive, Farley Rise (legally identified as Lot 216 DP1280557) in the Farley Urban Release Area (URA), Maitland City Council local government area (Appendix 1 Figure 1).

This Bushfire Assessment Report relates to the proposed building site and plans provided in Appendix 1 Site Plans.

To satisfy bushfire risk and protection requirements, Cool Burn have reviewed and applied the following guidelines and performance standards:

- Chapter 7 – Residential Infill Development - Planning for Bushfire Protection 2019 (PBP 2019)
- Chapter 8.2.1 – Other residential development (dual occupancy): increased residential densities (PBP 2019)
- Chapter 5 – Residential Subdivision Development (PBP 2019).

This assessment has been prepared by a suitably qualified bushfire practitioner, Dan Pedersen (BPAD Level 3 BPAD 16293).

1.1.Development

The Farley Rise estate residential subdivision was designed and approved prior to the introduction of Category 3 (Grassland) into the Bush Fire Prone Land system, a 3 year transition commencing in 2015. At that time, the subdivision was mapped as bushfire prone land and there was no trigger to adopt bushfire planning. Subsequently, the Farley Rise estate did not apply bushfire protection measures and planning principles such as asset protection zones (APZ). The Maitland City Council have updated the bushfire prone land maps since the Farley Rise estate was developed, and now the proposal to develop Lot 216 now must consider the bushfire planning principles, in particular adequate APZ to mitigate radiant heat levels so the building will not be exposed to radiant heat levels exceeding 29 kW/m^2 (or bushfire attack level BAL29).

Farley Estate is a staged development, Stage 1 being a 40 Lot subdivision (DP1280557), which has been constructed and ready for land sales and development. The Lot 216 development site is located at the northern extent of the Farley Rise estate and interfaces a vegetated

riparian zone/drainage line. This vegetated riparian zone/drainage line is on adjacent land (Lot 10 DP1229964), within the future planned subdivision of 21-33 Owlpen Lane to the north. The Owlpen Lane subdivision has been designed with regard to bushfire planning principles, and a bushfire assessment report has been prepared for that subdivision proposal (Bushfire Threat Assessment for proposed subdivision at 21-33 Owlpen Ln, Farley NSW 2320, Firebird ecoSultants Pty Ltd, ref:3133B, dated 19/08/2022). The bushfire assessment results from the Firebird report have been reviewed and considered in this assessment, and detailed further in Section 3 below.

Farley Rise estate and Owlpen Lane subdivision are both newly designed, approved and partly developed residential estates in the Farley Urban Release Area (URA).

The subject site is zoned R1 - General Residential and has existing services that will not require spatial extension (access, power and water).

The proposal assessed in this report is to construct a dual occupancy, Torrens title residential dwelling that consists of 2 x 4 bedroom units. Dual occupancy developments are considered as 'increased residential density' under PBP 2019 and the same principles and criteria associated with subdivisions in bushfire prone areas will apply.

2. Legislative Framework

The development for a single dwelling is defined as "infill development". PBP 2019 defines infill development as development of land by the erection of, or addition to, a residential building (or buildings) which does not require the spatial extension of services including public roads, electricity, water, or sewerage and is within an existing allotment. This includes new houses, alterations, and additions.

Infill development proposals can be constrained by existing situations – pre-existing subdivision or Lot patterns and existing built forms surrounding the site. Consequently, each proposal must be considered on its merits and in accordance with the intent and performance criteria for infill development (detailed in Chapter 7 PBP 2019).

2.1.Increased Residential Densities

Dual occupancy developments are deemed an increased residential density development and the same principles and criteria associated with subdivisions will apply (detailed in Chapter 8.2.1 PBP 2019). This includes ensuring an APZ based on radiant heat threshold of 29 kW/m^2 for any new dwellings, along with suitable provision for construction, access, water and landscaping.

This development does not require a subdivision approval from NSW RFS under s100B of the *Rural Fires Act 1997* (RF Act). The consent authority (Council) is only required to consult with the RFS under section 4.14 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) when a development does not comply with the acceptable solutions within PBP 2019 or meet performance requirements.

Approval can be achieved by the following means:

a. the consent authority is satisfied that the development conforms to the specifications and requirements of PBP 2019; or

b. the consent authority has been provided with a certificate by a person who is recognised by the NSW RFS as a qualified consultant in bush fire risk assessment stating that the development conforms to the relevant specifications and requirements; or

c. the consent authority is satisfied that the development does not conform to the relevant specifications and requirements. The consent authority may, despite subsection (1), grant consent to the carrying out of the development but only if it has consulted with the Commissioner of the NSW RFS concerning measures to be taken with respect to the

development to protect persons, property and the environment from danger that may arise from a bush fire.

2.2.General Objectives of Planning for Bushfire Protection

All development on Bushfire Prone Land (BFPL) must satisfy the aim and objectives of PBP 2019.

The aim of PBP 2019 is to provide for the protection of human life and minimise impacts on property from the threat of bushfire, while having due regard to development potential, site characteristics and protection of the environment.

The objectives of PBP 2019 are to:

- *afford buildings and their occupants protection from exposure to a bush fire;*
- *provide for a defendable space to be located around buildings;*
- *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;*
- *ensure that appropriate operational access and egress for emergency service personnel and occupants is available;*
- *provide for ongoing management and maintenance of Bushfire Protection Measures (BPMs); and*
- *ensure that utility services are adequate to meet the needs of firefighters.*

3. BUSHFIRE RISK ASSESSMENT

3.1. Bushfire Prone Land

The site is identified as 'bushfire prone land' as mapped by Council for the purposes of Section 10.3 of the *EP&A Act* and the legislative requirements for building on bushfire prone lands are applicable. Appendix 1 Figure 2, shows that the site is mapped as:

- Bushfire Prone Vegetation Cat 3 – Grassland.

3.2. Fire Weather

The fire weather is dictated by PBP 2019 and assumes a credible worst-case scenario and an absence of any other mitigating factors relating to aspect or prevailing winds.

The site is located within the Lower Hunter district and has a corresponding Fire Danger Index (FDI) of 100 and a Grassland Fire Danger Index (GFDI) 130.

3.3. Vegetation Assessment

The bushfire behaviour assessment methodology assesses the vegetation classification on and surrounding the area proposed for residential dwellings (out to 140 metres) in accordance with the system for classification of vegetation contained in PBP 2019. Predominant Vegetation is classified by structure or formation using the system adopted by Keith (2004) and by the general description using PBP 2019.

The nearest bushfire prone vegetation is the Vegetated Riparian Zone (Firebird ecosultants, 2022) situated to the north of the proposed development. Site assessment confirmed the vegetation was predominantly a Typha Reed wetland with scattered and unconnected paperbark trees, consistent with a forested wetland (Keith 2004) (Plate 1).

The potential rehabilitation of the Vegetated Riparian Zone has been taken into account. The Vegetated Riparian Zone parcel is a narrow vegetation corridor that extends east and west into urban development areas. The perpendicular fire run does not exceed 50m. Applying the simplified approach (PBP 2019 Chapter A1.11.1), the Vegetated Riparian Zone can be assessed as remnant vegetation. This is consistent with the assessment and planned design for the Owlpen Lane subdivision development (Firebird ecosultants, 2022). Remnant vegetation is considered a low hazard and APZ setbacks and building construction standards may be the same as for rainforest classification.

The property is surrounded by urban development to the south, east and west and is classified as non-vegetated.

Plate 1 Vegetation in the Vegetation Riparian Zone

3.4.Slopes Influencing Bushfire Behaviour

The bushfire behaviour assessment methodology assesses the slope of the land with bushfire hazard (effective slope) on and surrounding the property, out to 100 metres from the boundaries of the proposed development (dwelling) footprint.

The effective slope for Vegetated Riparian Zone remnant vegetation to the north is determined as flat to upslope, which is supported by the assessment for the Owlpen Lane subdivision development, which conversely applies a 0-5 degree downslope (Firebird ecosultants, 2022). The site assessment confirms that the predominant slope will be Flat-Upslope, taking in to account a very short rise from the drainage line embankment toward the subject site (not exceeding 5m) (Plate 2). This short run will not define the fire behaviour.

Plate 2 Effective slope slight rise from drainage line less than 5m, will not define fire behaviour.

3.5.Bushfire Risk Summary

The bushfire risk assessment and bushfire attack level (BAL) summary has been derived from Table A1.12.5 (PBP 2019), based on the above site information.

Table 1 Summary of bushfire risk, vegetation and slopes.

Direction	Vegetation	Slope	Distance	BAL
N	**Remnant vegetation**	**Flat Upslope**	**11m**	**BAL 29**
E	non vegetated	N/A	>100m	BAL Low
S	non vegetated	N/A	>100m	BAL Low
W	non vegetated	N/A	>100m	BAL Low

4. RECOMMENDED BUSHFIRE PROTECTION MEASURES (BPM'S)

The BPMs for residential infill development include provisions relating to APZs, access, water supply, electricity and gas services, construction standards, landscaping, and emergency evacuation (Plate 3).

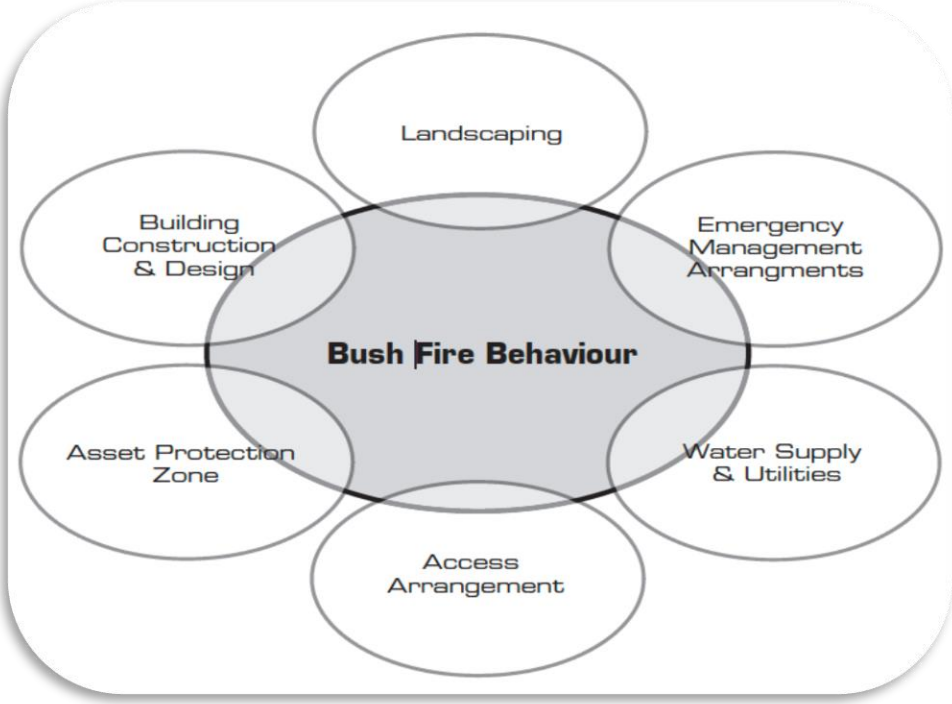

Plate 3 Bushfire Protection Measures

4.1.BPM - Asset Protection Zones

The Asset Protection Zone (APZ) is a fuel-reduced, physical separation between structures and bushfire hazards. Site specific APZ have been considered commensurate with the bushfire risk (Section 3) and provided in accordance with Table A1.12.5 of PBP 2019.

The proposed development can provide APZ wholly within the allotment boundary, which will require management in perpetuity. There will be no requirement for management on adjoining properties.

Design has applied an **APZ separation distance 11m** between the riparian remnant vegetation hazard and the proposed building and dual occupancy, achieving a BAL 29 rating (Table A1.12.5, PBP 2019).

The APZ measures provide acceptable solutions and meets the performance criteria as detailed in PBP 2019 Table 7.4a as follows:

- APZs are provided commensurate with the construction of the building (BAL 29).
- A defendable space is provided (see landscaping section below), are managed and maintained to prevent the spread of a fire to the building.
- APZs are managed and maintained to prevent the spread of a fire to the building (see landscaping section below).
- The APZ is provided in perpetuity.
- APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.

The APZ width also provides acceptable solutions and meets the same radiant heat performance criteria as for subdivisions as detailed in PBP 2019 Table 5.3a as follows:

- Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m^2 (<BAL 29).

4.2.BPM - Landscaping

The whole allotment will be managed to the prescribed APZ standards for an Inner Protection Area (IPA) as described in Appendix 4 PBP 2019 and detailed below. The IPA creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

When establishing and maintaining an IPA the following requirements apply:

- Trees
    - tree canopy cover should be less than 15% at maturity;
    - trees at maturity should not touch or overhang the building;
    - lower limbs should be removed up to a height of 2m above the ground;
    - tree canopies should be separated by 2 to 5m; and
    - preference should be given to smooth barked and evergreen trees.
- Shrubs
    - create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
    - shrubs should not be located under trees;
    - shrubs should not form more than 10% ground cover; and

- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

- Grass
  - grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
  - leaves and vegetation debris should be removed.

Fences and gates can play a significant role in the vulnerability of structures during bushfires. The fence should be made from non-combustible material.

The landscaping measures provide acceptable solutions and meet the performance criteria as detailed in PBP Table 7.4a as follows:

- Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.

4.3.BPM - Construction

The Bushfire Attack Level (BAL) is a means of measuring the ability of a building to withstand attack from bushfire. The BAL is defined in *Australian Standard AS 3959-2018 Construction of buildings in bushfire-prone areas* (AS 3959). Table A1.12.5 of PBP 2019 has been used to determine the relevant BAL rating applying to the site and the required level of AS3959 construction for the dwellings, given the hazard type, distance, and slope.

Based on the provision of the11m setbacks (as detailed in Section 4.1 above), construction standards for **BAL 29 apply**. The dual occupancy construction will therefore require construction to a minimum BAL 29 as per Section 3 & 5 of AS3959 and Section A3.7 of PBP Addendum Appendix 3.

The recommended construction measures provide acceptable solutions and meet the performance criteria as detailed in PBP 2019 Table 7.4a as follows:

- The proposed building can withstand bush fire attack in the form of embers, radiant heat, and flame contact.

- Proposed fences and gates designed to minimise the spread of bush fire.

4.4.BPM – Access

Public Road:

Access is provided to the property from Stoney Creek Drive, a sealed public non-perimeter road, within a 21m wide road easement, with the capacity to carry fully loaded firefighting vehicles. The existing public road access is considered adequate for simultaneous evacuation and fire suppression (Plate 4).

Plate 4 Existing access provisions for Farley Rise estate.

Property Access:

Existing property access to the building site will be via an all-weather driveway.

Table 7.4a of PBP 2019 provides that:

> *'There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.'*

The most distant part of the dwelling is less than 30 from Stoney Creek Drive, ensuring full access for emergency services.

The proposed access design measures provide acceptable solutions would meet the performance criteria as detailed in PBP Table 7.4a, as follows:

- Provide firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.

- The capacity for the public access road is deemed adequate for fire fighting vehicle access (up to 23 tonnes).
- There is appropriate access to water supplies.
- Firefighting vehicles can access the dwelling and exit the property safely.

4.5. BPM - Water and Services

The site is located within a reticulated water supply area. The closest hydrant is located on Stoney Creek Drive. It is expected that the newly designed and constructed hydraulic system, hydrant design, spacing, flows and pressures are in accordance with AS 2419.1:2021.

It is recommended that all new electricity and gas provisions to the proposed development site are installed to relevant standards and will limit the possibility of ignition of surrounding bushland or the fabric of buildings:

- Electrical transmission is underground.

Bottled gas (if installed):

- Is to be installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used.
- All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side.
- Connections to and from gas cylinders are metal.
- Polymer-sheathed flexible gas supply lines are not used.
- Above-ground gas service pipes are metal, including and up to any outlets.

The services measures provide acceptable solutions and meets the performance criteria as detailed in PBP 2019 Table 7.4a, as follows:

- An adequate water supply is provided for firefighting purposes.
- The water supply is located at regular intervals and is accessible and reliable for firefighting operations.
- Water flows and pressures are appropriate.
- The integrity of the water supply is maintained.

- The location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.
- The location and design of gas services will not lead to ignition of surrounding bushland or the fabric of the buildings.

5. SUMMARY AND CONCLUSION

Maitland City Council (as consent authority) has been provided with a certificate prepared by Dan Pedersen of Cool Burn Fire and Ecology (a person who is recognised by the NSW RFS as a qualified consultant in bush fire risk assessment), stating that the development conforms to the relevant specifications and requirements of PBP 2019. It is considered that the proposed development adequately considers bushfire risk and conforms to the specifications and performance criteria of PBP 2019, providing a suitable outcome commensurate with the bushfire risk.

This Bushfire Assessment Report supports the Development Application (DA) for the proposed residential dwelling and dual occupancy at 5 Stoney Creek Drive, Farley (Lot 216 DP1280557) in the Maitland City Council area.

The property is located within a bushfire prone area and is influenced by a remnant parcel of riparian vegetation to the north within the drainage line with a predominant upslope effective fire behaviour. The proposed design has incorporated the following bushfire protection measures to demonstrate acceptable solutions satisfy the performance criteria as detailed in Chapter 8 and 5 of PBP 2019:

- APZ – 11m APZ to the remnant vegetation is provided within the allotment.
- Landscaping –management within the boundary of the property to specifically IPA standards (Section 4.2 of this report / Appendix 4 PBP).
- Construction – BAL 29 construction standards (AS3959).
- Access –
    - Public road access is suitable, and property access can demonstrate acceptable solutions.
- Water – a reticulated water supply is provided suitable for firefighting purposes.
- Gas and electricity services can meet acceptable solutions.

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6. ASSESSMENT AGAINST THE AIMS AND OBJECTIVES OF PBP

The bushfire assessment identifies the extent to which the proposed residential development conforms with or deviates from the aims and specific objectives set out in PBP 2019. Table 2 details the compliance with PBP aims and objectives.

Table 2 Compliance with Aim & Objectives of PBP

Aim	**Meets Aim**	**Comment**
to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.	Yes	The location of the proposed development has considered bushfire risk and applied relevant bushfire protection measures to mitigate bushfire impact, commensurate with the risk
General Objectives	**Meets Objective**	**Comment**
afford buildings and their occupants protection from exposure to a bush fire;	Yes	The proposed development is afforded acceptable APZ protection and defendable space, commensurate to the risk
provide for a defendable space to be located around buildings;	Yes	Design will provide for a defendable space
provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;	Yes	APZ setbacks to achieve BAL 29 and construction commensurate with assessed risk
ensure that appropriate operational access and egress for emergency service personnel and occupants is available;	Yes	Access can be provided to acceptable PBP2019 standards
provide for ongoing management and maintenance of BPMs; and	Yes	Bushfire management and maintenance responsibility contained within the site
ensure that utility services are adequate to meet the needs of firefighters.	Yes	Water and services will be provided to acceptable PBP 2019 standards

References

Firebird ecoSultants Pty Ltd (2022). Bushfire Threat Assessment for proposed subdivision at 21-33 Owlpen Ln, Farley NSW 2320, ref:3133B, 19/08/2022.

Keith, David (2004) – Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT. The Department of Environment and Climate Change

NSW Government (1979) Environmental Planning and Assessment Act 1979. NSW Government Printer

NSW Rural Fire Service (2015). Guide for Bushfire Prone Land Mapping

NSW Rural Fire Service (2019). Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Homeowners. Australian Government Publishing Service, Canberra

Appendix 1 Site Plan and Proposed Development Site Mapping

Figure 1

Locality

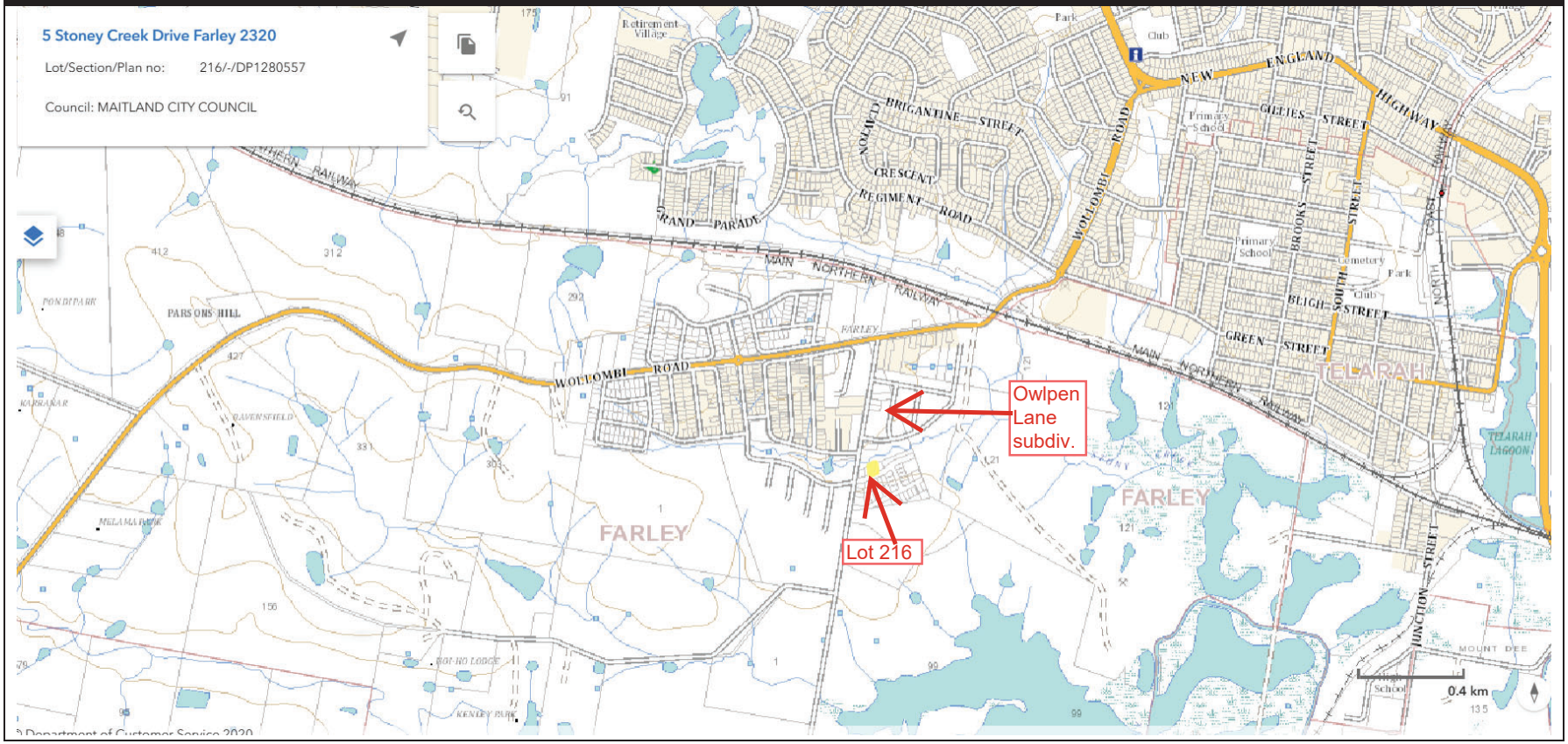

Figure 2

Bushfire Prone Land Map

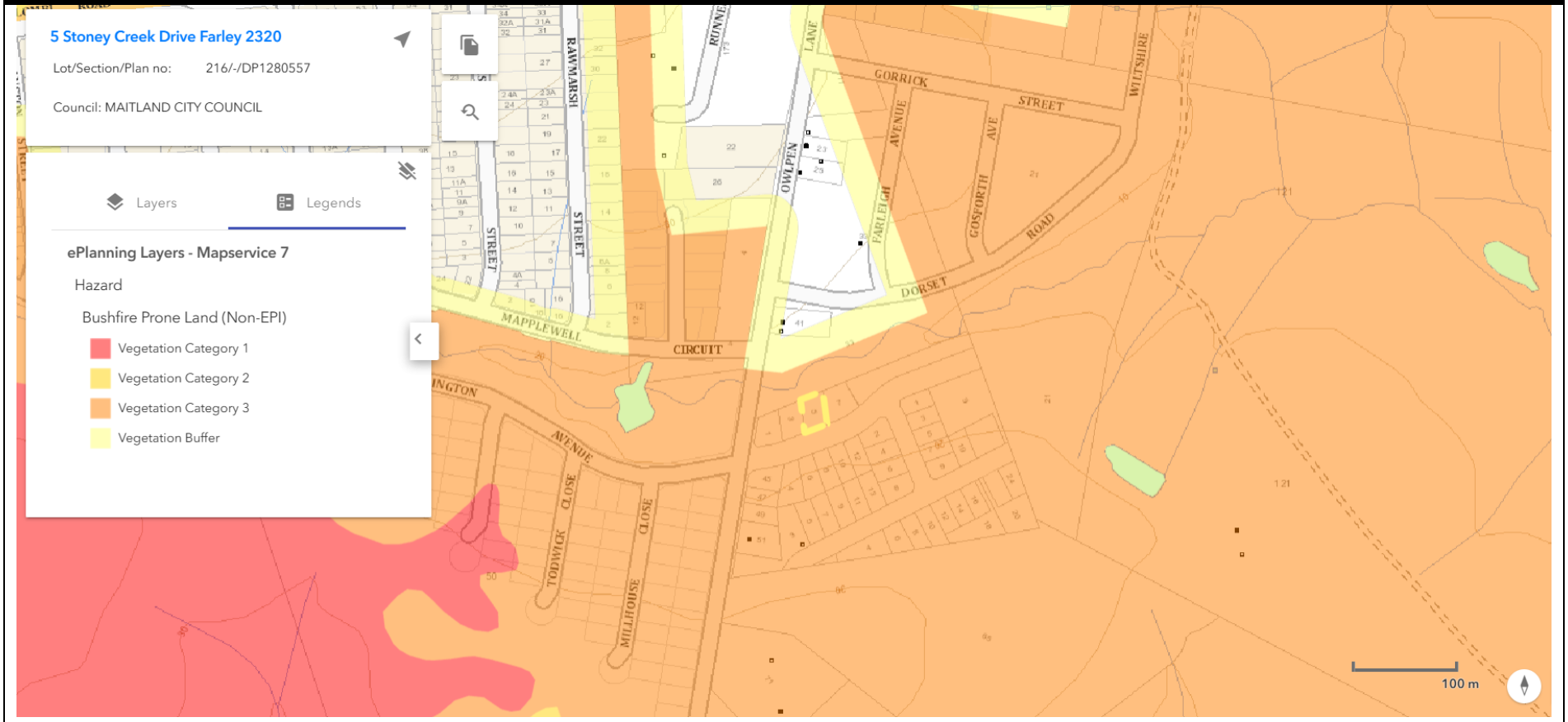

Figure 3

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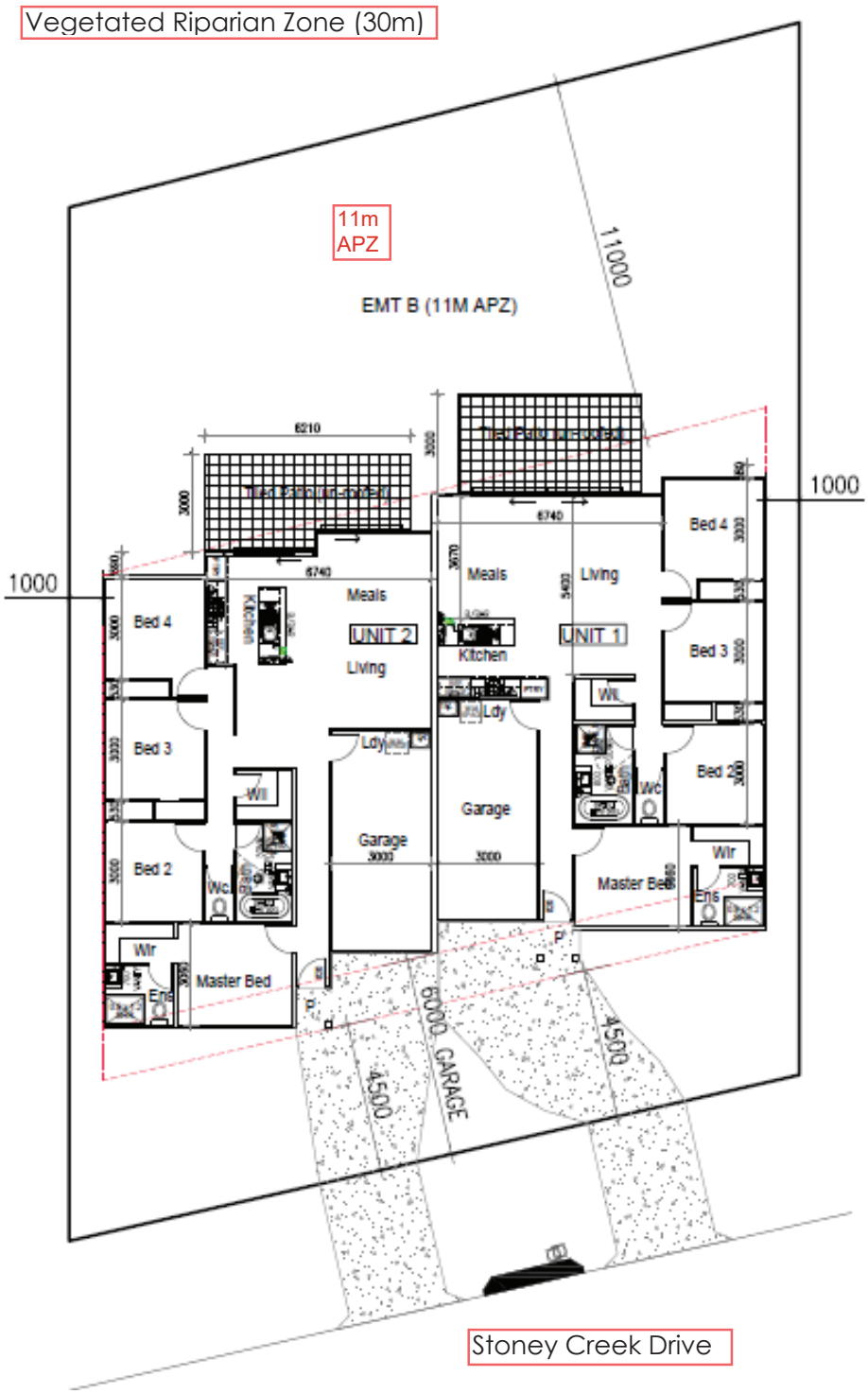
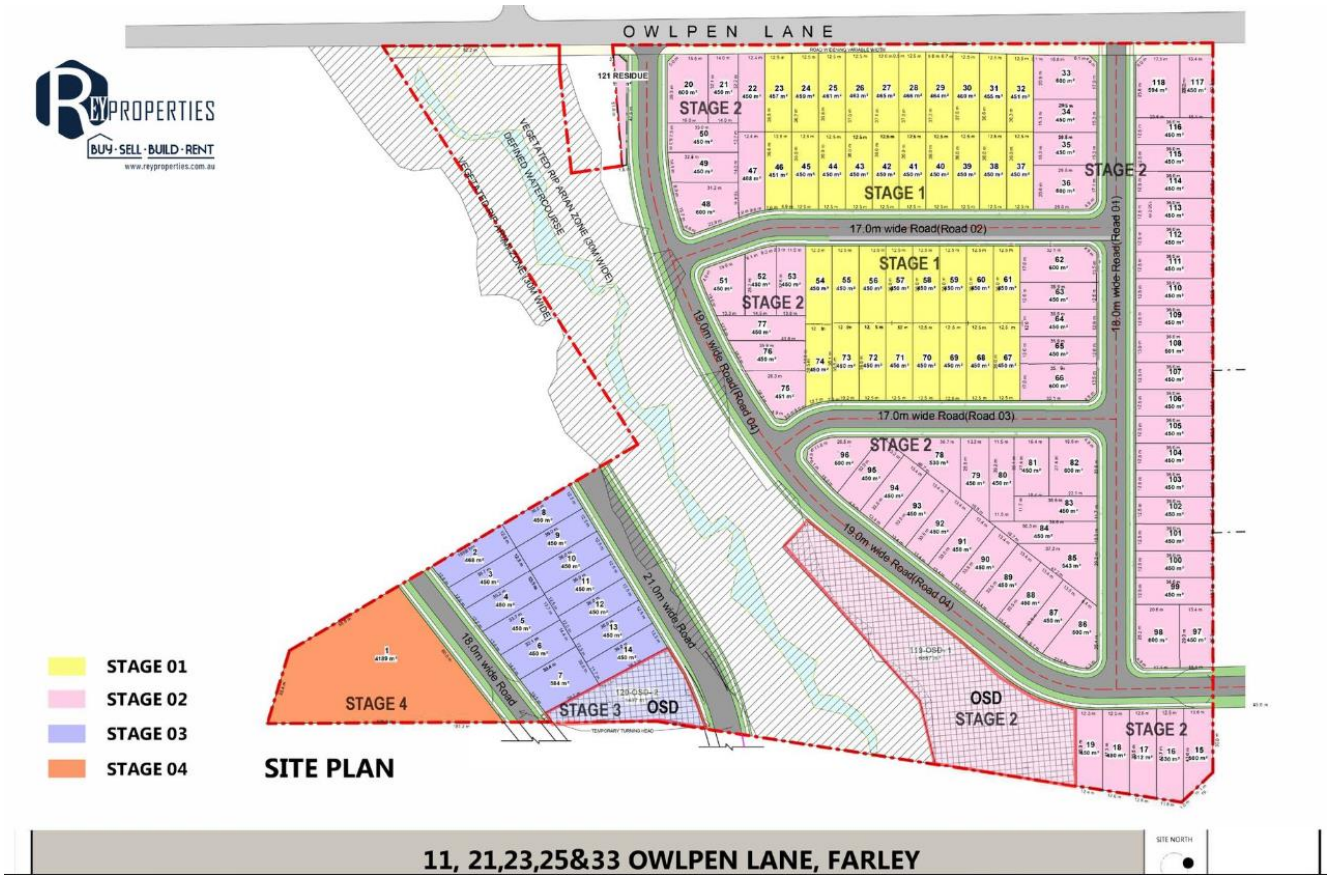
Site Assessment





Owlpen Lane sales Plan (Rey Properties)