

# BUSHFIRE ATTACK LEVEL ASSESSMENT

Stockland Caboolture West – Precinct 2  
60 and 67-177 Litherland Road, Wagtail Grove

27 November 2025

PLANS AND DOCUMENTS  
referred to in the PDA  
DEVELOPMENT APPROVAL

Approval no: DEV-2026-WAR-4925

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Queensland  
Government



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# CONTENTS

|           |                                    |    |
|-----------|------------------------------------|----|
| <b>1</b>  | Introduction                       | 3  |
| <b>2</b>  | Approved Development               | 5  |
| <b>3</b>  | Proposed Development               | 8  |
| <b>4</b>  | Bushfire Hazard                    | 9  |
| <b>5</b>  | Regulatory Framework               | 11 |
| 5.1       | State Planning Policy              | 11 |
| 5.2       | MBRC Planning Scheme               | 12 |
| <b>6</b>  | Methods                            | 14 |
| 6.1       | Radiant Heat Flux                  | 14 |
| <b>7</b>  | Results                            | 16 |
| <b>8</b>  | Bushfire Attack Level requirements | 17 |
| <b>9</b>  | Summary                            | 20 |
| <b>10</b> | References                         | 22 |
|           | Appendix 1: Plan of Development    | 24 |

# 1 INTRODUCTION

Litoria Consulting has prepared the following Bushfire Attack Level (BAL) Assessment on behalf of Stockland Development Pty Ltd for land described as Lot 4 on RP886161 or Precinct 2 (the subject land). Figure 1 (Map 1) shows an aerial photo of the subject land.

The BAL has been prepared as part of a proposal to accompany a development application for Reconfiguring a Lot (RAL).

The purpose of the BAL Assessment was to assess Bushfire Attack Level (BAL) in accordance with Method 2 (View Factor Method) of *Australian Standard 3959:2018 Construction of buildings in bushfire-prone areas* (AS 3959:2018) utilising the SPP Asset Protection Zone calculator.

The BAL Assessment has been prepared in accordance with the View Factor Method described in *Australian Standard 3959:2018 Construction of buildings in bushfire-prone areas* according to the parameterisation rules prescribed by Bushfire Resilient Communities (Queensland Fire and Emergency Services 2019a).

The BAL Assessment is divided into the following sections:

1. Approved and proposed development
2. An overview of bushfire hazards
3. Regulatory framework
4. BAL assessment methods
5. BAL assessment results
6. Bushfire Attack Level requirements
7. Summary



**FIGURE 1: RECTIFIED DIGITAL AERIAL PHOTOGRAPH OF THE STRUCTURE PLAN SITE (NEARMAP 2025)**

## 2 APPROVED DEVELOPMENT

The subject land is located within the Moreton Bay Regional Council local government area. The proposed development is located on land that is subject to a current development approval:

*Preliminary Approval under s49(2) of the Planning Act 2016) for a Material Change of Use for development involving Residential activities, Retail and commercial activities, Civic activities, Community activities, Interim activities & Sport, recreation and open space activities, including a request (Variation Request) to vary the effect of the Moreton Bay Regional Council Planning Scheme 2016 over the whole of the site (Council Ref: DA/41766/2020/V23P, 22 June 2023).*

A Bushfire Hazard Assessment (Litoria Consulting, dated 30 June 2022) (BHA) was prepared as part of the Preliminary Approval and Variation Request application. The BHA was prepared generally in accordance with the *State Planning Policy* and relevant MBRC Planning Scheme requirements in place at the time of the application. The BHA modelled two separate bushfire hazard scenarios, including:

- i. **Existing scenario** – bushfire hazard based on existing land use and vegetation communities, and,
- ii. **Proposed development scenario** - bushfire hazard arising from vegetation cover and fuel loads based on the proposed structure plan. The latter incorporated VHCs associated with proposed vegetation retention or revegetation, including the protection and enhancement of native vegetation areas within the proposed Green Infrastructure Network; incorporating conservation and drainage reserves based on the Preliminary Rehabilitation Plan (Saunders Havill Group, February 2021) and classified according to either:
  - a. Preclearing regional ecosystem mapping; or,
  - b. Where observed vegetation differed, quaternary botanical survey according to Neldner *et al.* (2012).

Modelling results based on the AEP 5% fire weather severity indicated that:

- The land contained medium potential fireline intensity bushfire prone areas and associated potential impact buffers (100m), under both the existing and proposed land use scenarios.
- Areas of regrowth / revegetation of Vegetation Hazard Class 4.1 *Notophyll to microphyll vine forests (regrowth)* contributed to short-term bushfire hazard.
- Apart from Precinct 1, model results suggest all other precincts are affected by potential areas of bushfire hazard.
- Potential forward rates of fire spread within the study area were low (between 0.2 – 0.45m/sec) in all areas of hazardous vegetation within and adjacent to the SNDP area,
- Potential flame lengths of up to:

- 6m to 8m could occur in floodplain areas of VHC 4.1 (revegetation) and VHC 16.1 / 16.2 where slopes did not exceed 3 degrees,
- 10m to 12m could be expected in areas of VHC 16.1 and 13.2 in areas where slopes exceeded 4 degrees.

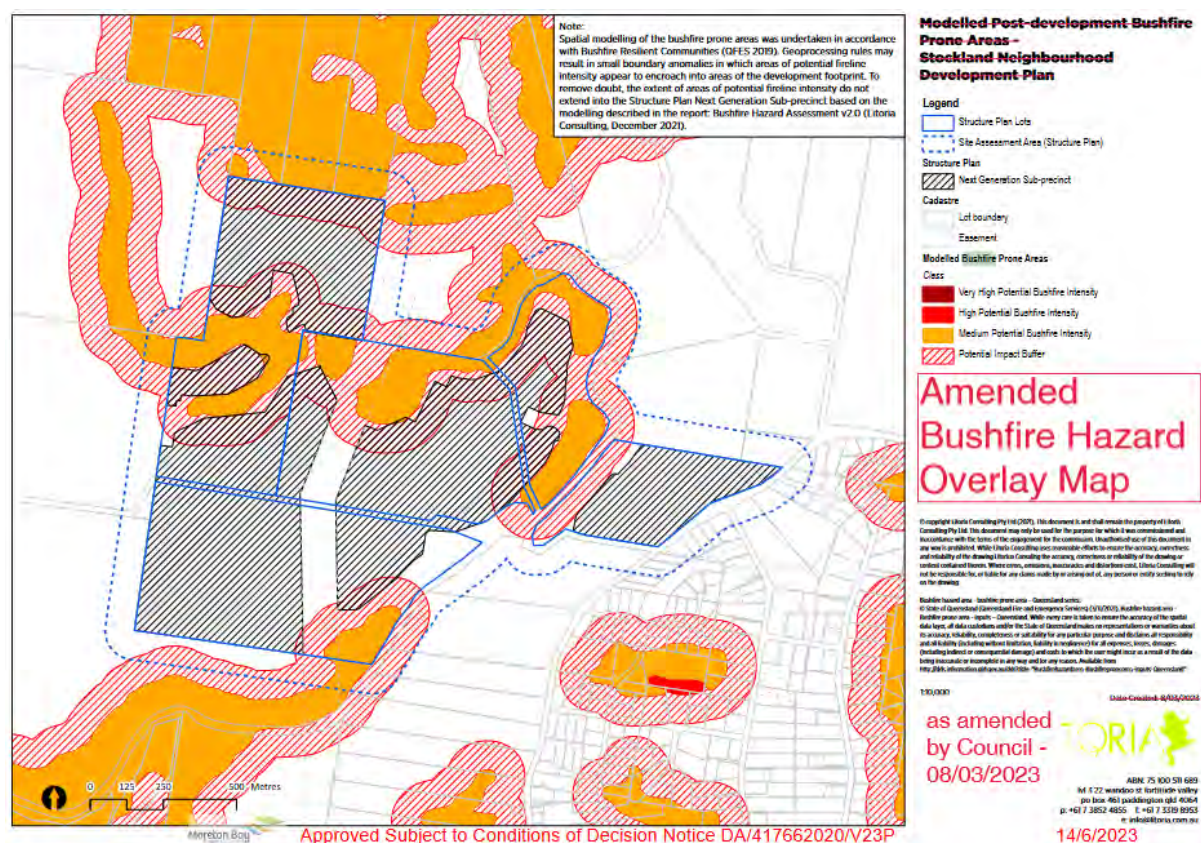
Overall, results indicated that the proposed development was at risk of bushfire attack and that planning and management measures would be required to reduce the risk of bushfire attack to an acceptable or tolerable level. The latter measures should be specified as part of future development applications associated with proposed Precincts 2, 3, 4, 5 and 6.

The modelling outcomes based on the proposed development scenario have been reflected in the development approval. The development approval (Variation Request) included an Amended Bushfire Hazard Overlay Map as part of the approved plans and documents. Variation A. viii. of the approval indicates that the Amended Bushfire Hazard Overlay Map replaces the Bushfire Hazard Overlay Map in the MBRC Planning Scheme for the subject lots<sup>1</sup>. A copy of the approved Amended Bushfire Hazard Overlay Map is indicated in Figure 2.

The next section of the report discusses the proposed development.

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<sup>1</sup> The Bushfire Hazard Overlay Map OM-23 BFH and OM-31 BFH in Schedule 2.5 Overlay Maps of the MBRC Planning Scheme specific only to Lot 2 SP185212, Lot 4 RP886161, Lot 5 C311690, Lot 15 C31239 and Lot 100 C311086 is varied to the Amended Bushfire Hazard Overlay Map specific for Lot 2 SP185212, Lot 4 RP886161, Lot 5 C311690, Lot 15 C31239 and Lot 100 C311086 identified in the Table of Approved Plans and Documents.



**FIGURE 2: EXTRACT OF THE AMENDED BUSHFIRE HAZARD OVERLAY MAP (SOURCE: MORETON BAY REGIONAL COUNCIL REF: DA/41766/2020/V23P, DATED 14/06/2023; LITORIA CONSULTING, DATED 8/03/2023).**

### 3 PROPOSED DEVELOPMENT

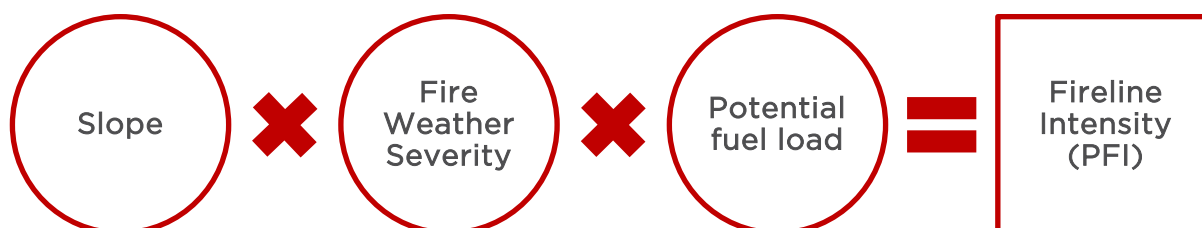
The proposed development for Precinct 2 is located on the western side of the Caboolture River. The development is for a Land Lease Community entailing 311 lots over three (3) stages to establish residences, community hubs, open space, stormwater treatment areas and carparking. The proposed development is displayed in Figure 3 below in extract and in full in Appendix 1.



**FIGURE 3: PROPOSED DEVELOPMENT (PREPARED BY RPS, TITLED: WAGTAIL GROVE - CABOOLTURE WEST LAND LEASE STAGING PLAN - PRECINCT 2 (29 OCTOBER 2025)).**

## 4 BUSHFIRE HAZARD

Bushfire prone areas in Queensland are identified, mapped and categorised as a function of potential fireline intensity (kW/m). Potential fireline intensity is a function of fire weather severity (FFDI), landscape slope and fuel load based on classified vegetation communities according to the method described by Leonard *et al.* (2014) (Refer to Figure 4).



**FIGURE 4: METHOD FOR CALCULATION OF POTENTIAL FIRELINE INTENSITY (PFI) (LEONARD *ET AL.* 2014).**

Areas of potential fireline intensity include potentially hazardous vegetation that could support a significant bushfire or be subject to significant bushfire attack. It includes potentially hazardous vegetation with a Medium (4,000 – 20,000 kW/m), High (20,000 – 40,000 kW/m) or Very High (40,000+ kW/m) Potential Bushfire Intensity. Bushfires in these areas have the potential for high to extreme levels of flame attack, radiant heat and ember attack. Land adjacent to bushfire prone areas is also at risk of significant bushfire attack from embers, flames or radiant heat. The latter are identified as potential impact buffer areas and include all land within 100m of areas mapped as Medium, High or Very High Potential Bushfire Intensity. Together, the areas of potential fireline intensity and potential impact buffer form bushfire prone areas.

Vegetated parts of the landscape which support fireline intensities of less than 4,000 kW/m are categorised as grassfire prone areas or low hazard areas (e.g. rainforest or water or non-vegetated urban areas).

The SPP methodology was developed to overcome limitations of the approach adopted by the previous State Planning Policy (SPP 1/03), including the failure to consider regional differences in fire weather severity, effective slope and the diversity of vegetation types and fuel loads across Queensland (Leonard and Blanche 2012). The new methodology estimates the potential fireline intensity at the landscape scale. Fireline intensity is a standardised measure of the rate that an advancing head fire would consume fuel energy per unit time per unit length fire front (Byram 1959). As noted by Leonard *et al.* (2014), the benefits of utilising fireline intensity as the principal measure of bushfire hazard, is that it can also be used to estimate the potential flame length (e.g. Alexander and Cruz 2012) and radiant heat flux based on distance from hazardous vegetation. Radiant heat flux can then be used to determine:

- minimum separation distance from hazardous vegetation needed to afford safety levels to people and/or buildings (Zarate *et al.* 2008; Newnham *et al.* 2013), and
- estimates of Bushfire Attack Level (Standards Australia 2018), which can provide a connection between landscape scale bushfire metrics and site level decisions for building design.

The new methodology also excludes extraneous variables such as an ambiguous weighting of hazard according to topographic aspect. The improved hazard assessment methodology provides for more accurate identification of bushfire prone areas and the potential severity of bushfires — providing the basis for planning and development strategies which are proportional to the level of bushfire hazard.

## 5 REGULATORY FRAMEWORK

Management of bushfire hazard in Queensland is considered an integral component of land use planning and development decisions given the potential significant impact on people, social wellbeing, property, the economy, the environment and infrastructure.

There are two (2) bushfire hazard planning instruments considered as part of this BMP that regulate development to avoid and mitigate potential impacts associated with bushfire hazard, namely:

- State Planning Policy (SPP) under the *Planning Act 2016* (Qld); and,
- MBRC Planning Scheme.

### 5.1 STATE PLANNING POLICY

The SPP identifies the Queensland Government's policies about matters of state interest in land use planning and development (Department of Infrastructure Local Government and Planning 2017). The SPP is a broad and comprehensive statutory planning instrument which 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* (Qld).

The SPP identifies the State interest in relation to bushfire hazard planning and management outcomes for development in bushfire prone areas. It sets out, *inter alia*, development assessment requirements for certain applications where a local planning scheme has not yet appropriately integrated the SPP and includes a State-wide map of bushfire prone areas. The SPP map of bushfire prone areas (SPP map) is based on modelled potential fireline intensity according to the method described by Leonard *et al.* (2014). The SPP identifies land that could support a significant bushfire or be subject to significant bushfire attack. It includes areas of hazardous vegetation with a Very High, High or Medium Potential Bushfire Intensity, together with land within 100m of *bushfire prone areas* as a *potential impact buffer*. The potential impact buffer identifies land that may be subject to significant flame attack, radiant heat or ember attack. Research indicates that not only does a very high intensity bushfire have the potential to cause injury from radiant heat exposure up to 100m away, but over 80% of housing loss and human life loss occurs within 100m of bushland (Leonard *et al.* 2014).

The SPP is supported by a technical manual: *Bushfire Resilient Communities* (Queensland Fire and Emergency Services 2019a), which provides an overview of the method for undertaking bushfire hazard assessment as per Leonard *et al.* (2014).

The Bushfire Hazard Assessment (Litoria Consulting, dated 30 June 2022) (BHA) was prepared as part of the Preliminary Approval and Variation Request application. The BHA was prepared generally in accordance with the *State Planning Policy* including mapping of

existing and post-development potential fireline intensity according to the method described by Leonard *et al.* (2014) and *Bushfire Resilient Communities* (Queensland Fire and Emergency Services 2019a).

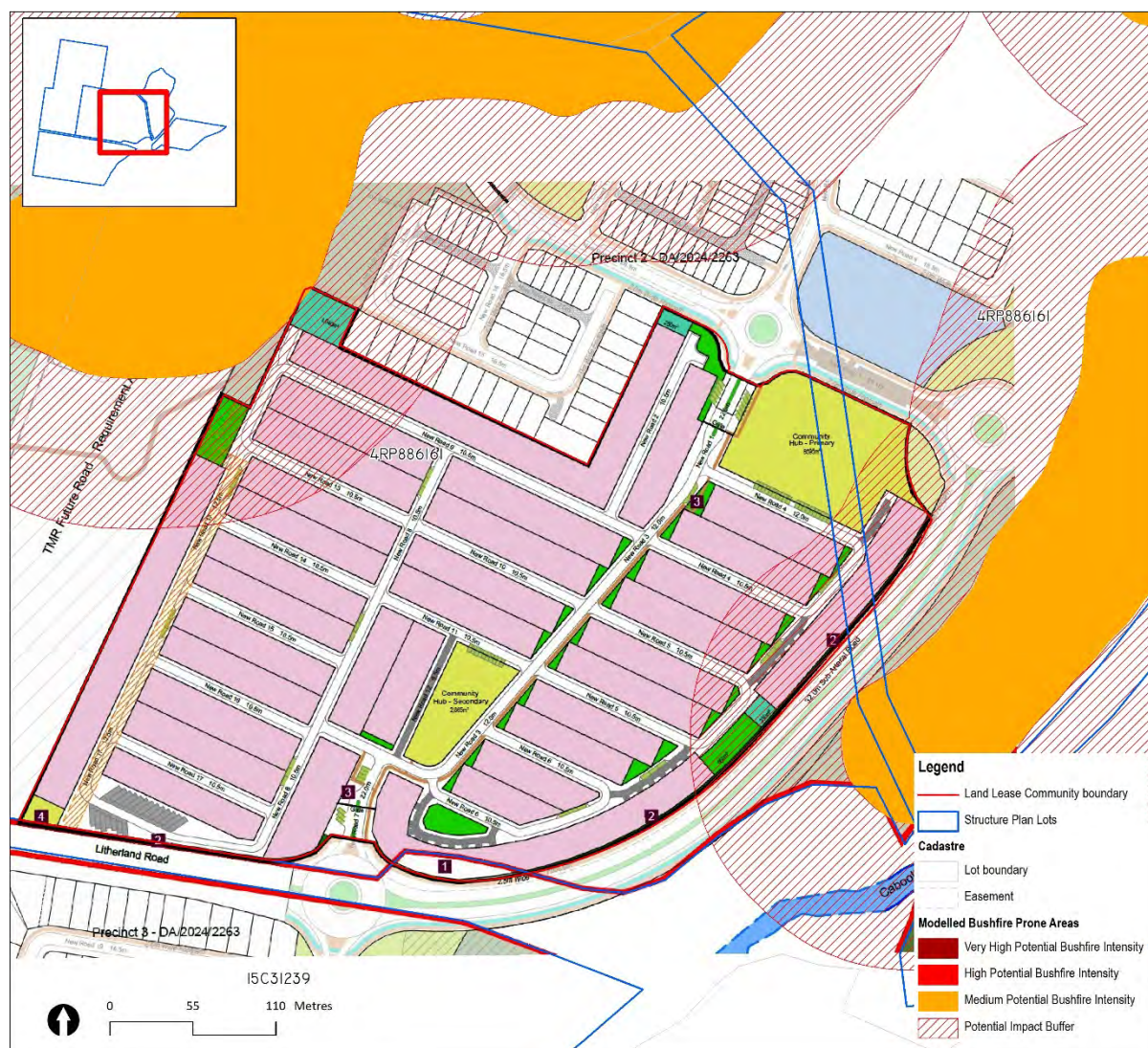
## 5.2 MBRC PLANNING SCHEME

The MBRC Planning Scheme identifies areas subject to bushfire hazard on the Overlay map – Bushfire hazard (Bushfire Hazard Overlay map). For the purposes of the approved and proposed development, the development approval (Variation Request) included an Amended Bushfire Hazard Overlay Map as part of the approved plans and documents. Variation A. viii. of the approval indicates that the Amended Bushfire Hazard Overlay Map replaces the Bushfire Hazard Overlay Map in the MBRC Planning Scheme for the subject lots<sup>2</sup>.

The approved Amended Bushfire Hazard Overlay Map, together with the proposed development footprint, is indicated in Figure 5 and Map 2, attached.

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<sup>2</sup> The Bushfire Hazard Overlay Map OM-23 BFH and OM-31 BFH in Schedule 2.5 Overlay Maps of the MBRC Planning Scheme specific only to Lot 2 SP185212, Lot 4 RP886161, Lot 5 C311690, Lot 15 C31239 and Lot 100 C311086 is varied to the Amended Bushfire Hazard Overlay Map specific for Lot 2 SP185212, Lot 4 RP886161, Lot 5 C311690, Lot 15 C31239 and Lot 100 C311086 identified in the Table of Approved Plans and Documents.



**FIGURE 5: PROPOSED DEVELOPMENT - LAND LEASE PRECINCT AND AMENDED BUSHFIRE HAZARD OVERLAY MAP (SOURCE: ).**

## 6 METHODS

Bushfire hazards for the proposed development were assessed as part of the BHA. As the Amended Bushfire Hazard Overlay Map already incorporates and reflects the effect of post-development configuration of hazardous vegetation on bushfire hazard, further assessment or remodelling of bushfire hazards is not required.

The Amended Bushfire Hazard Overlay Map indicates that Precincts 2 and 3 includes areas of medium potential fireline intensity and potential impact buffer. As such, it is necessary to calculate radiant heat flux and determine asset protection zones in order to demonstrate compliance with the outcomes sought by the MBRC Planning Scheme and assess bushfire attack level construction requirements to minimise risk of bushfire attack to future buildings and structures.

The following section of the report describes the method used to calculate radiant heat flux.

### 6.1 RADIANT HEAT FLUX

Where hazard assessment results indicated that proposed development was located within a bushfire prone area, radiant heat flux and associated Bushfire Attack Level (BAL) was calculated according to the View Factor Method described in AS 3959:2018 (Standards Australia 2018).

Separation distances for achieving the various radiant heat exposure and BAL levels were calculated using the SPP Bushfire Asset Protection Zone Width Calculator (Queensland Fire and Emergency Services 2019b), including inputs based on:

- Fuel loads derived from site-specific assessment of vegetation hazard classes and the VHCs associated within post-development land uses (Refer to Maps 3 and 4).
- Effective slope under classified vegetation and site slopes were calculated from the Moreton Bay Regional Council's 1m contour data (2019) (Refer to Map 5, attached).
- An FFDI of 55 based on the 5% AEP event as per Leonard et al. (2014) (Refer to Map 6, attached).

Supplementary Method 2 input parameters and adopted values are listed in Table 1.

Radiant heat flux was assessed for bushfire prone vegetation hazard classes located conservation and drainage reserves based on the Preliminary Rehabilitation Plan (Saunders Havill Group, February 2021) that the BHA identified met the minimum fireline intensity threshold (4000 kW/m). For each combination of bushfire prone VHC which was located within the Amended Bushfire Hazard Overlay, the maximum view factor and

radiant heat exposure were calculated i.e. the combination of fuel, FFDI and site and effective slopes which maximised radiant heat flux<sup>3</sup>.

Non-bushfire prone vegetation hazard classes and other non-vegetated areas were excluded as low threat vegetation in accordance with AS 3959:2018 (Standards Australia 2018). The latter included proposed residential areas and areas of linear parkland located between lots and areas of retained vegetation or revegetation identified on the Preliminary Rehabilitation Plan (Saunders Havill Group, February 2021). Also excluded were small patches and fragments of vegetation which were previously excluded as bushfire prone areas due to the effects of patch and corridor filtering (Refer to BHA).

**TABLE 1: METHOD 2 INPUT PARAMETERS AND VALUES (QUEENSLAND FIRE AND EMERGENCY SERVICES 2019B).**

| Input Parameter      | Unit     | Value    |
|----------------------|----------|----------|
| Flame width          | m        | 100.00   |
| Fuel moisture factor | -        | 5.00     |
| Fuel age             | y(years) | 20.00    |
| Heat of combustion   | kJ/kg    | 18600.00 |
| Flame temperature    | K        | 1200.00  |
| Ambient temperature  | K        | 308.00   |
| Relative humidity    | %        | 25.00%   |
| Flame emissive power | -        | 0.95     |
| Wind speed           | km/h     | 45.00    |

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<sup>3</sup> The modelling was carried out for discrete VHCs rather than hybrid VHCs as individual VHCs will be relevant when assessing buildings and lots at the scale of an individual development application (<1:5000), whilst hybrid VHCs are suitable for modelling purposes at the structure plan scale (1:20000).

## 7 RESULTS

Radiant heat flux was calculated in accordance with Method 2 of AS 3959-2009 (View Factor Method), utilising the SPP Asset Protection Zone calculator and input data described in Section 6.1. For each combination of bushfire prone VHC which was located within the Amended Bushfire Hazard Overlay, the maximum view factor and radiant heat exposure were calculated, i.e. the combination of fuel, FFDI and site and effective slopes that maximised radiant heat flux<sup>4</sup>.

The outcomes of the calculations suggested that:

- Effective slopes under hazardous vegetation varied from relatively flat (1-degree floodplain terraces) to moderate (6-degree upper slopes under VHC 13.2, 9 degrees Caboolture River banks).
- Site slopes were assumed to be 1 degree (the maximum view factor).
- Minimum asset protection zones necessary to achieve a radiant heat flux of less than or equal to 29 kW/m<sup>2</sup> varied from 8m to 16.5m, due to the combination of steep effective slopes and fuel load.

The results are displayed in Table 2.

Assessment results are preliminary only and subject to final design and building approval. Changes to aspects of the development, including building setbacks may result in changes to radiant heat flux.

**TABLE 2: RADIANT HEAT FLUX (RHF) ASSET PROTECTION ZONE (APZ) DIMENSIONS FOR EACH BUSHFIRE PRONE HAZARDOUS VEGETATION (VHC) TYPE WITHIN PRECINCT 2.**

| VHC                            | Max.<br>effective<br>slope<br>(degrees) | Site slope<br>(degrees) | APZ RHF 29<br>kW/m <sup>2</sup> (m) | APZ RHF 19<br>kW/m <sup>2</sup> (m) | APZ RHF 12.5<br>kW/m <sup>2</sup> (m) |
|--------------------------------|-----------------------------------------|-------------------------|-------------------------------------|-------------------------------------|---------------------------------------|
| <b>Precinct 2</b>              |                                         |                         |                                     |                                     |                                       |
| 5.1<br>(Regrowth/revegetation) | 9                                       | 1                       | 8                                   | 12                                  | 17                                    |
| 13.2                           | 6                                       | 1                       | 16.5                                | 24                                  | 34                                    |

<sup>4</sup> The modelling was carried out for discrete VHCs rather than hybrid VHCs as individual VHCs will be relevant when assessing buildings and lots at the scale of an individual development application (<1:5000), whilst hybrid VHCs are suitable for modelling purposes at the structure plan scale (1:20000).

## 8 BUSHFIRE ATTACK LEVEL REQUIREMENTS

The outcomes of the radiant heat flux calculations indicated that the proposed development is at risk of bushfire attack and that bushfire attack level construction is required for future buildings located within the potential impact buffer.

Improving the design and construction of buildings to withstand bushfire attack is one of the most significant management measures to reduce the likelihood of property loss or loss of life (Blanchi *et al.* 2014).

Certain new buildings within *designated bushfire prone areas* require assessment against the National Construction Code (NCC). The NCC performance requirement is deemed to have been met where the building complies with either AS 3959:2018 or the NASH Standard - Steel Framed Construction in Bushfire Areas<sup>5</sup> (National Association of Steel Framed Housing 2014). Both AS 3959:2018 and the NASH Standard contain provisions which can be used for construction to resist bushfires in order to reduce the risk of bushfire attack. These provisions include requirements for burning debris and ember protection, controls on the combustibility of exterior materials, and the protection of openings, such as windows and doors. The NCC requirements do not apply to non-residential buildings (Class 4-9) such as offices, shops, hospitals and schools.

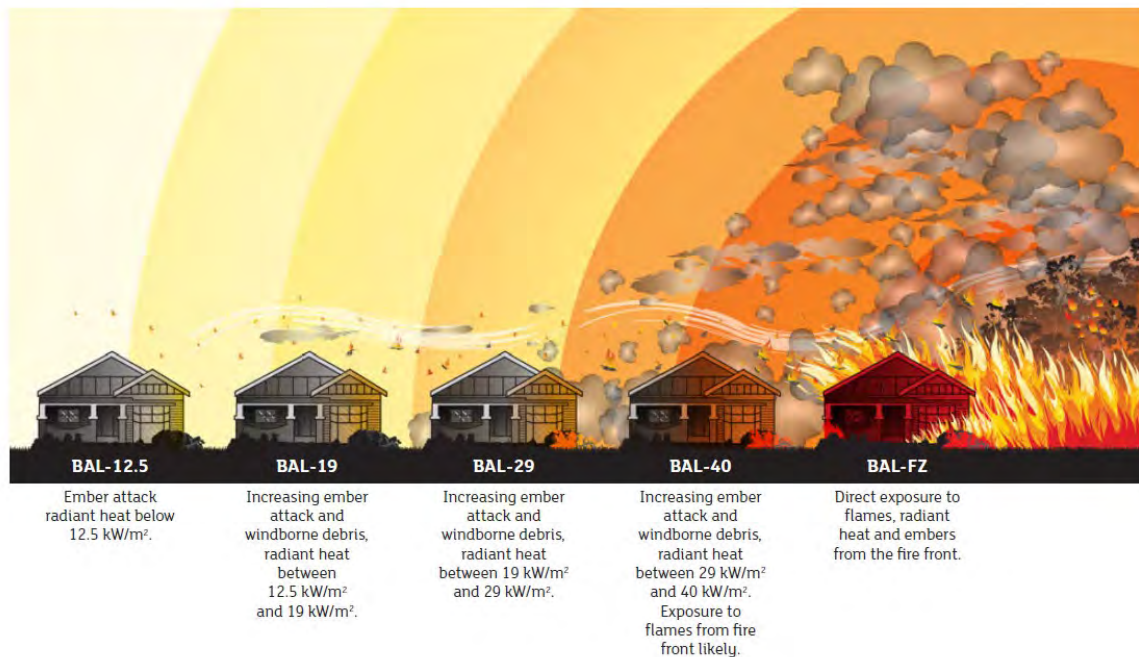
Both AS 3959:2018 and the NASH Standard aim to improve the ability of buildings in designated bushfire-prone areas to withstand bushfire attacks better, protecting the building occupants (until the fire front passes) as well as the building itself. Table 3 outlines current Bushfire Attack Levels, radiant heat flux thresholds and relevant sections of AS 3959:2018, which specifies building design and construction features.

**TABLE 3: BALS AND REPRESENTATIVE HEAT FLUX THRESHOLDS, LEVELS OF EXPOSURE AND RELEVANT SECTIONS OF AS 3959:2018 OUTLINING RELEVANT CONSTRUCTION REQUIREMENTS (STANDARDS AUSTRALIA 2018).**

| Bushfire Attack Level (BAL) | Heat flux exposure thresholds | Relevant sections of AS 3959:2018 |
|-----------------------------|-------------------------------|-----------------------------------|
| BAL 12.5                    | < 12.5kW/ m2                  | 3 and 5                           |
| BAL 19                      | >12.5 kW/m2 to 19 kW/m2       | 3 and 6                           |
| BAL 29                      | >19 kW/m2 to 29 kW/m2         | 3 and 7                           |
| BAL 40                      | >29 kW/m2 to 40 kW/m2         | 3 and 8                           |
| BAL FZ                      | >40 kW/m2                     | 3 and 9                           |

<sup>5</sup> Applies to steel-framed construction only.

Figure 8 illustrates the relationship between BAL, radiant heat and bushfire attack mechanisms.



**FIGURE 6: BAL/RADIANT HEAT LEVELS AND BUSHFIRE ATTACK MECHANISMS (SOURCE: COUNTRY FIRE AUTHORITY 2012).**

Results of the radiant heat flux calculations according to Method 2 of AS 3959:2018 using the SPP Bushfire Asset Protection Zone Width Calculator (Queensland Fire and Emergency Services 2019b) indicated that:

- The proposed 'lease areas', which will contain future residential buildings, are separated from hazardous vegetation by a combination of perimeter roads, open space and caravan/boat storage areas by distances of at least 24m.
- Based on the current layout, the majority of buildings with parts of Stages 1, 2, 3 and 4 that are located within the potential impact buffer may need to be constructed to BAL 12.5. A small number of lots located in the northwestern corner of Stage 2 will need to be built to BAL 19.

The radiant heat flux levels and equivalent BAL contours are indicated in Figure 6 and Map 7.

Assessment results are preliminary only and subject to final design and building approval. Changes to aspects of the development, including building setbacks, may result in changes to radiant heat flux and BAL construction levels.

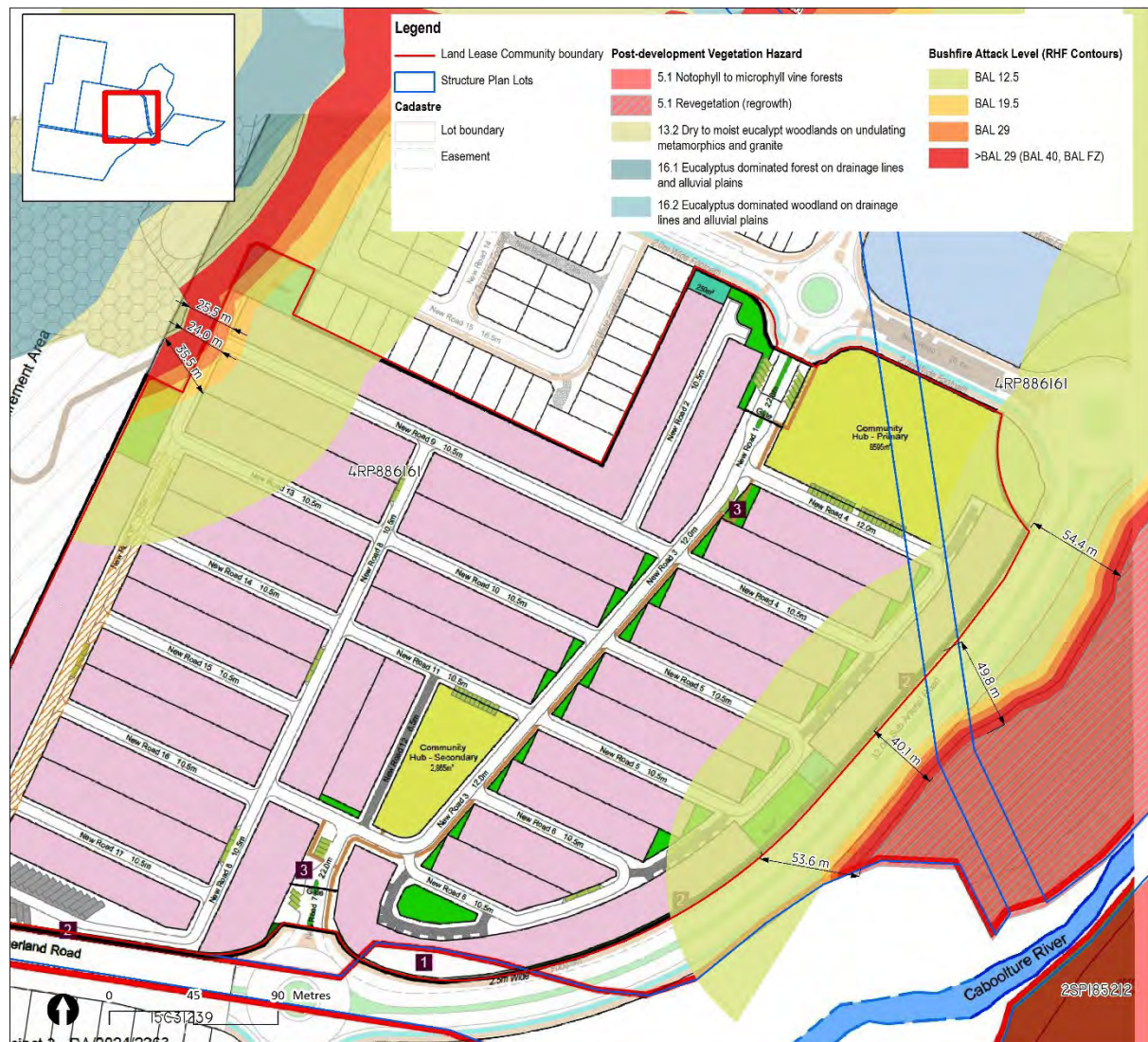


FIGURE 7: RADIANT HEAT FLUX AND SEPARATION DISTANCES – LAND LEASE COMMUNITY.

## 9 SUMMARY

Litoria Consulting has prepared the BAL Assessment on behalf of Stockland Development Pty Ltd for land described as Lot 4 on RP886161 or Precinct 2 (the subject land).

The subject land is located within the Moreton Bay Regional Council local government area. The proposed development is located on land that is subject to a current development Preliminary Approval under s49(2) of the *Planning Act 2016* for a Material Change of Use, including a request (Variation Request) to vary the effect of the Moreton Bay Regional Council Planning Scheme 2016 over the whole of the site (Council Ref: DA/41766/2020/V23P, 22 June 2023).

A Bushfire Hazard Assessment (Litoria Consulting, dated 30 June 2022) (BHA) was prepared as part of the Preliminary Approval and Variation Request application. The BHA was prepared generally in accordance with the *State Planning Policy* and relevant MBRC Planning Scheme requirements in place at the time of the application. The development approval (Variation Request) included an Amended Bushfire Hazard Overlay Map as part of the approved plans and documents. The Amended Bushfire Hazard Overlay Map replaces the Bushfire Hazard Overlay Map in the MBRC Planning Scheme for the subject lots<sup>6</sup>. As the Amended Bushfire Hazard Overlay Map already incorporates and reflects the effect of the post-development configuration of hazardous vegetation on bushfire hazards, further assessment or remodelling of bushfire hazards is not required.

The purpose of the BAL Assessment was to assess Bushfire Attack Level (BAL) in accordance with Method 2 (View Factor Method) of *Australian Standard 3959:2018 Construction of buildings in bushfire-prone areas* (AS 3959:2018) utilising the SPP Asset Protection Zone calculator.

The BAL Assessment has been prepared in accordance with the View Factor Method described in *Australian Standard 3959:2018 Construction of buildings in bushfire-prone areas* according to the parameterisation rules prescribed by Bushfire Resilient Communities (Queensland Fire and Emergency Services 2019a).

The outcomes of the BAL Assessment indicated that the proposed development is at risk of bushfire attack and that bushfire attack level construction is required for future buildings located within the potential impact buffer.

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<sup>6</sup> The Bushfire Hazard Overlay Map OM-23 BFH and OM-31 BFH in Schedule 2.5 Overlay Maps of the MBRC Planning Scheme specific only to Lot 2 SP185212, Lot 4 RP886161, Lot 5 C311690, Lot 15 C31239 and Lot 100 C311086 is varied to the Amended Bushfire Hazard Overlay Map specific for Lot 2 SP185212, Lot 4 RP886161, Lot 5 C311690, Lot 15 C31239 and Lot 100 C311086 identified in the Table of Approved Plans and Documents.

Results of the radiant heat flux calculations according to Method 2 of AS 3959:2018 using the SPP Bushfire Asset Protection Zone Width Calculator (Queensland Fire and Emergency Services 2019b) indicated that:

- The proposed 'lease areas', which will contain future residential buildings, are separated from hazardous vegetation by a combination of perimeter roads, open space and caravan/boat storage areas by distances of at least 37m.
- Based on the current layout, the majority of buildings with parts of Stages 1, 2, 3 and 4 that are located within the potential impact buffer may need to be constructed to BAL 12.5. A small number of lots located in the northwestern corner of Stage 2 will need to be built to BAL 19.

## 10 REFERENCES

Alexander, M. E. and M. G. Cruz (2012). "Interdependencies between flame length and fireline intensity in predicting crown fire initiation and crown scorch height %J International Journal of Wildland Fire." **21**(2): 95-113.

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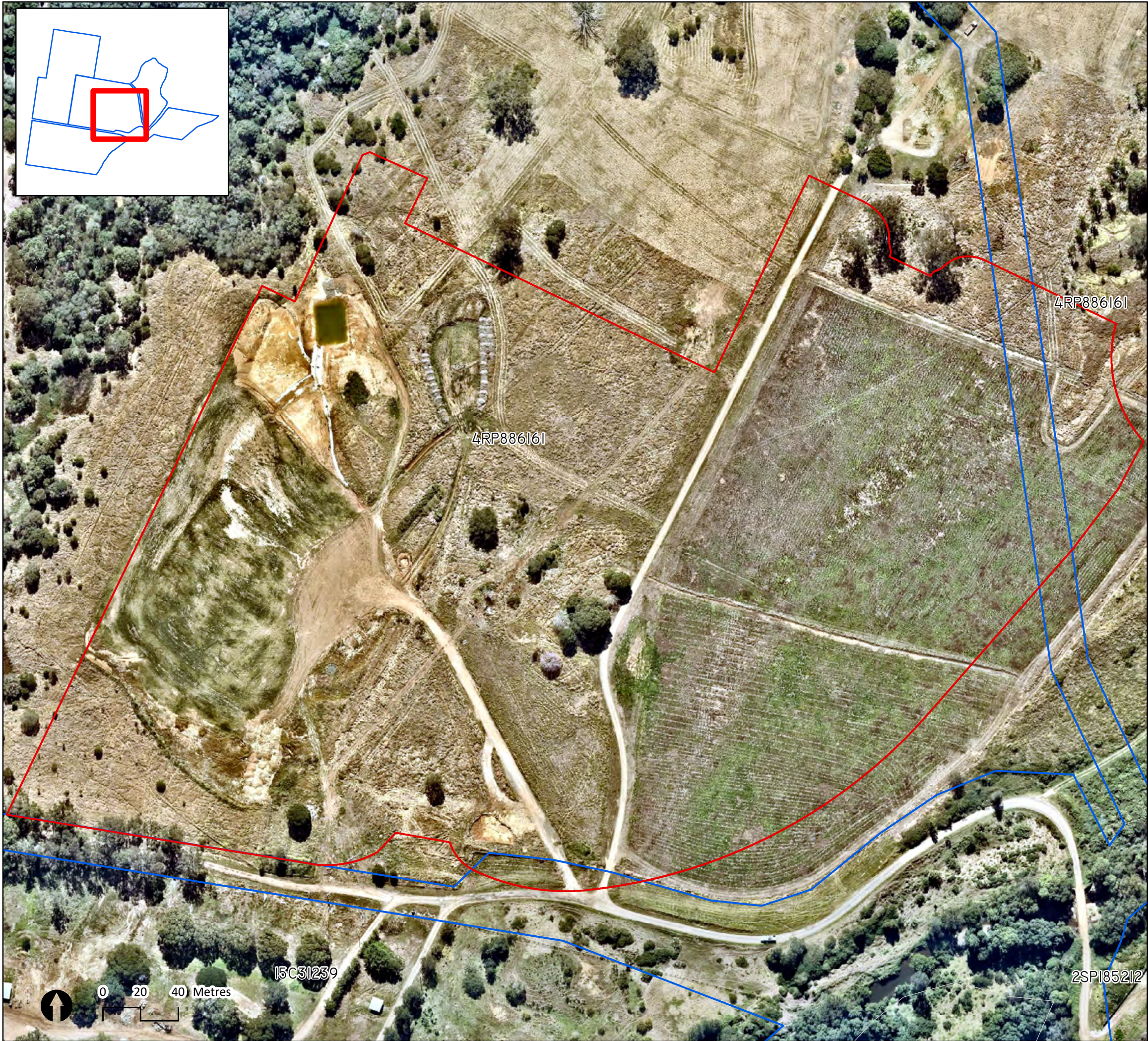
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**Map 1: Aerial photograph of the site**

**Legend**

— Land Lease Community boundary

— Structure Plan Lots

**Cadastre**

— Lot boundary

— Easement

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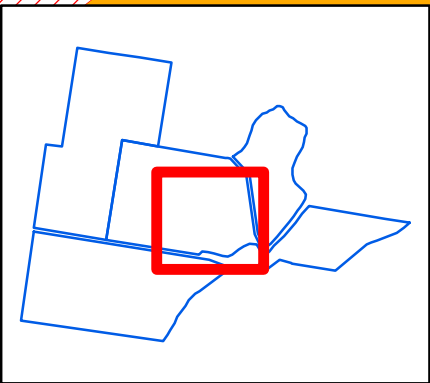
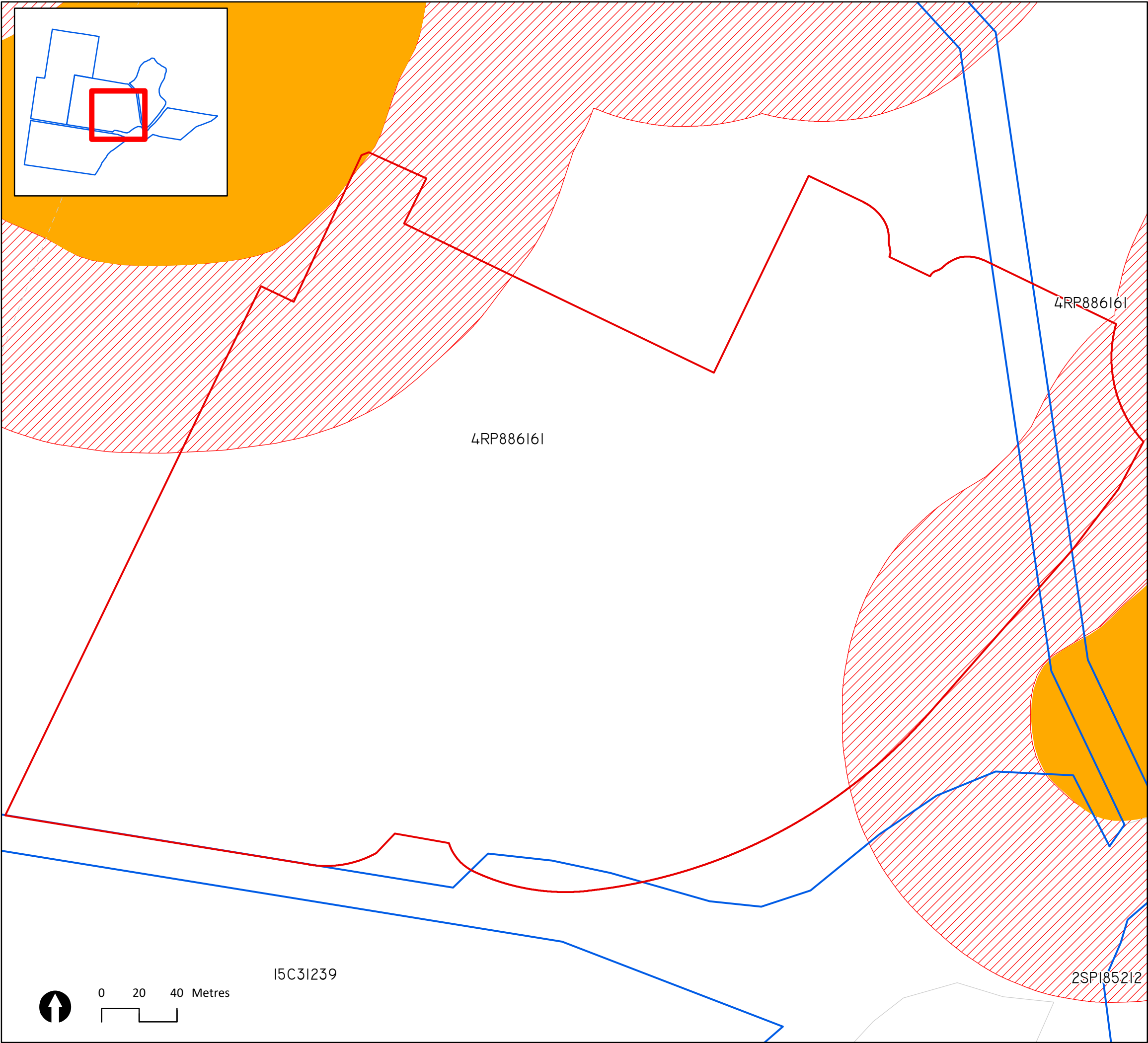
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## Map 2: Amended Bushfire Hazard Overlay

### Legend

Land Lease Community boundary

Structure Plan Lots

### Cadastre

Lot boundary

Easement

### Modelled Bushfire Prone Areas

Very High Potential Bushfire Intensity

High Potential Bushfire Intensity

Medium Potential Bushfire Intensity

Potential Impact Buffer

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0 20 40 Metres

15C31239

4RP886161

4RP886161

2SP185212



### Map 3: Post-development Vegetation Hazard Class

#### Legend

— Land Lease Community boundary

— Structure Plan Lots

#### Cadastre

— Lot boundary

— Easement

#### Post-development Vegetation Hazard

5.1 Notophyll to microphyll vine forests

5.1 Revegetation (regrowth)

13.2 Dry to moist eucalypt woodlands on undulating metamorphics and granite

16.1 Eucalyptus dominated forest on drainage lines and alluvial plains

39.2 Low to moderate tree cover in built-up areas

40.4 Continuous low grass or tree cover

41.4 Discontinuous low grass or tree cover

42.6 Nil to very low vegetation cover

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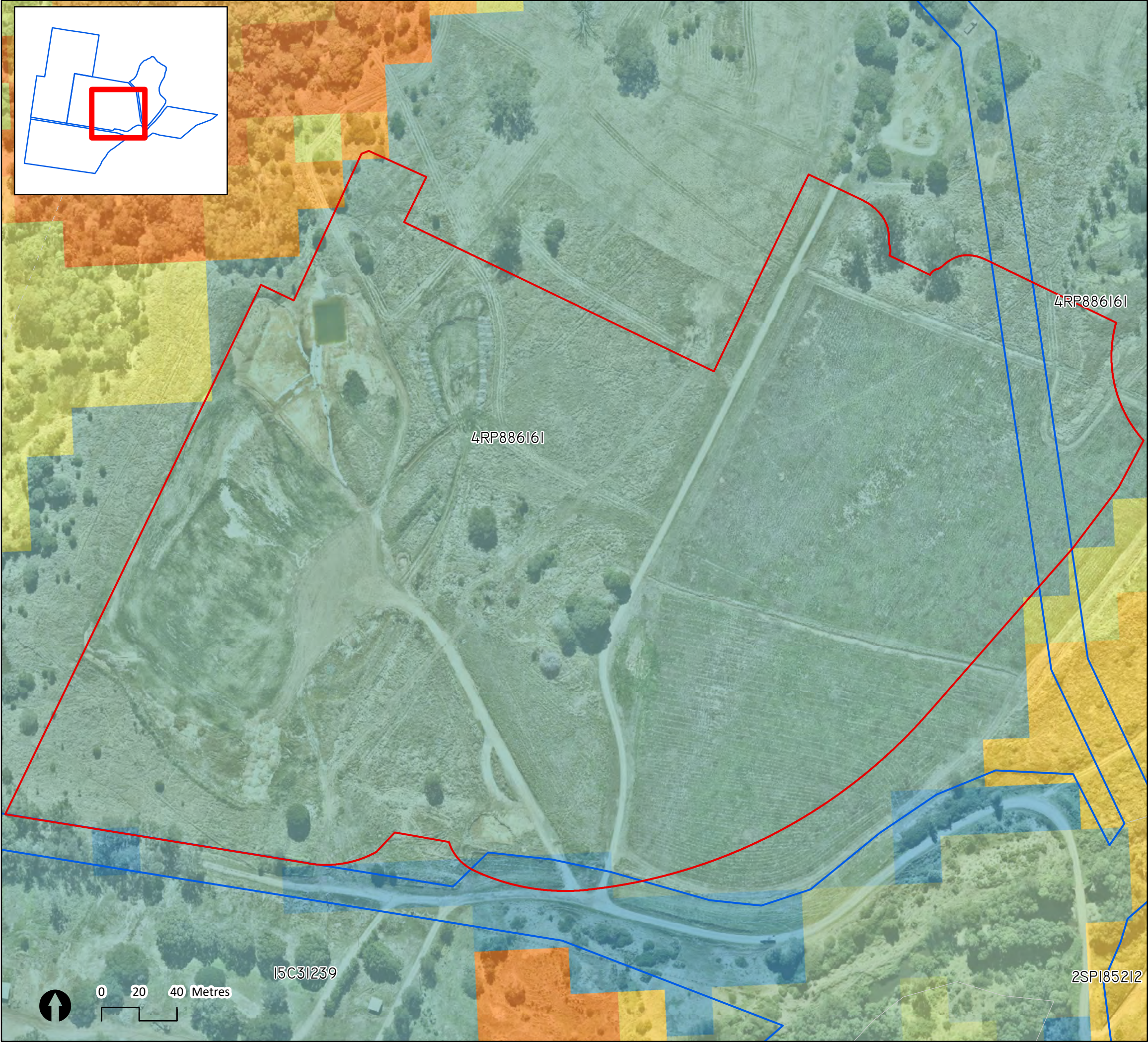
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# Map 4: Post-development Potential Fuel Load

## Legend

Land Lease Community boundary

Structure Plan Lots

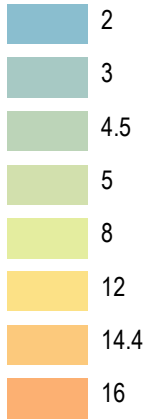
## Cadastre

Lot boundary

Easement

## Post -development Potential Fuel Load

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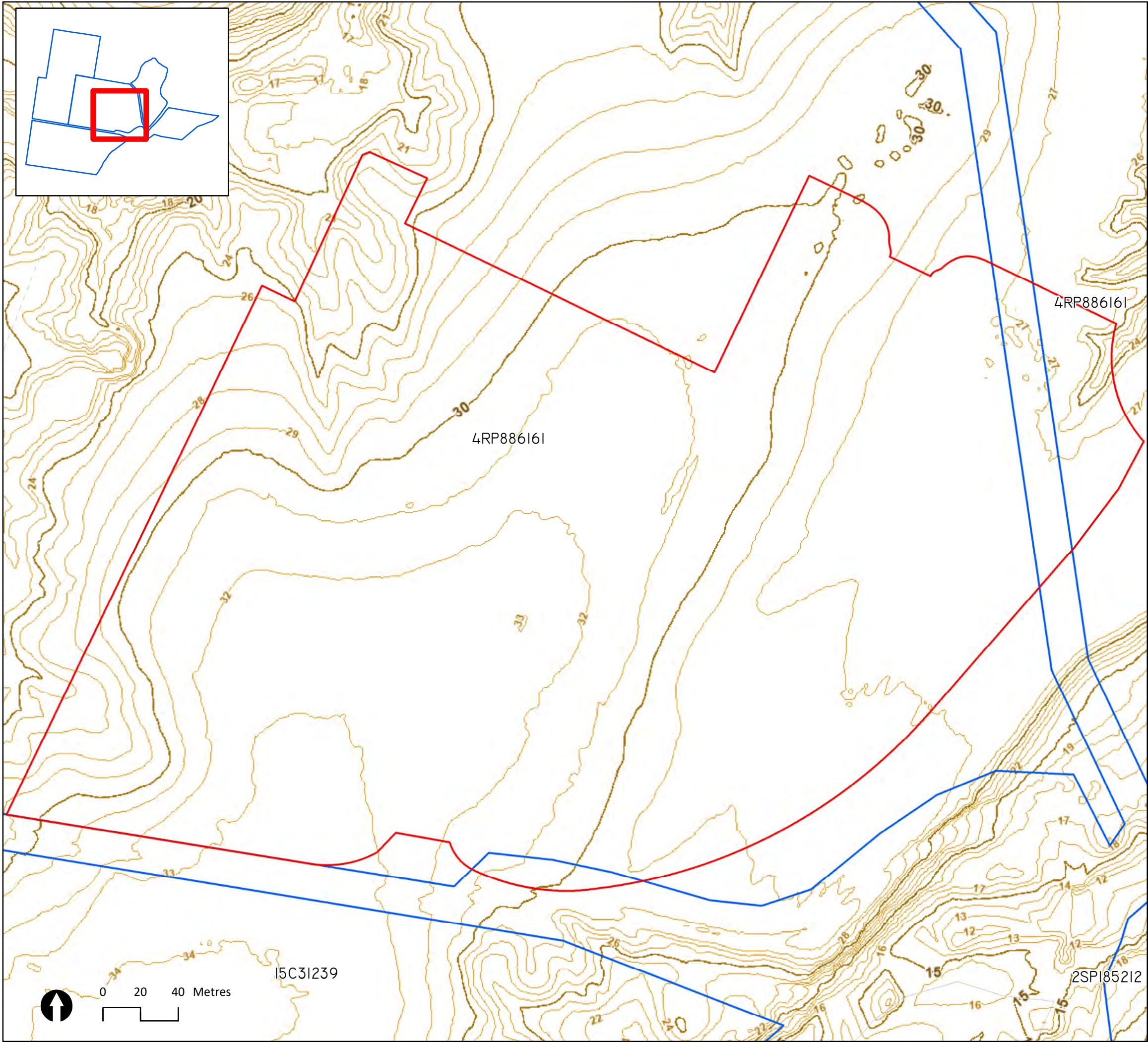
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## Map 5: Contours

### Legend

— Land Lease Community boundary

— Structure Plan Lots

### Cadastre

— Lot boundary

- - - Easement

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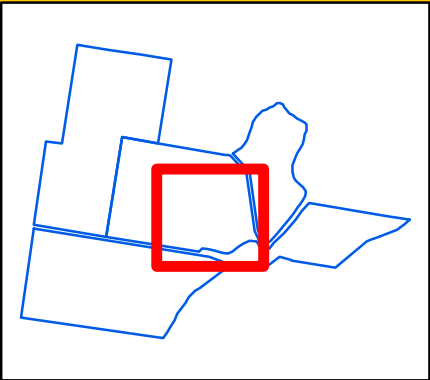
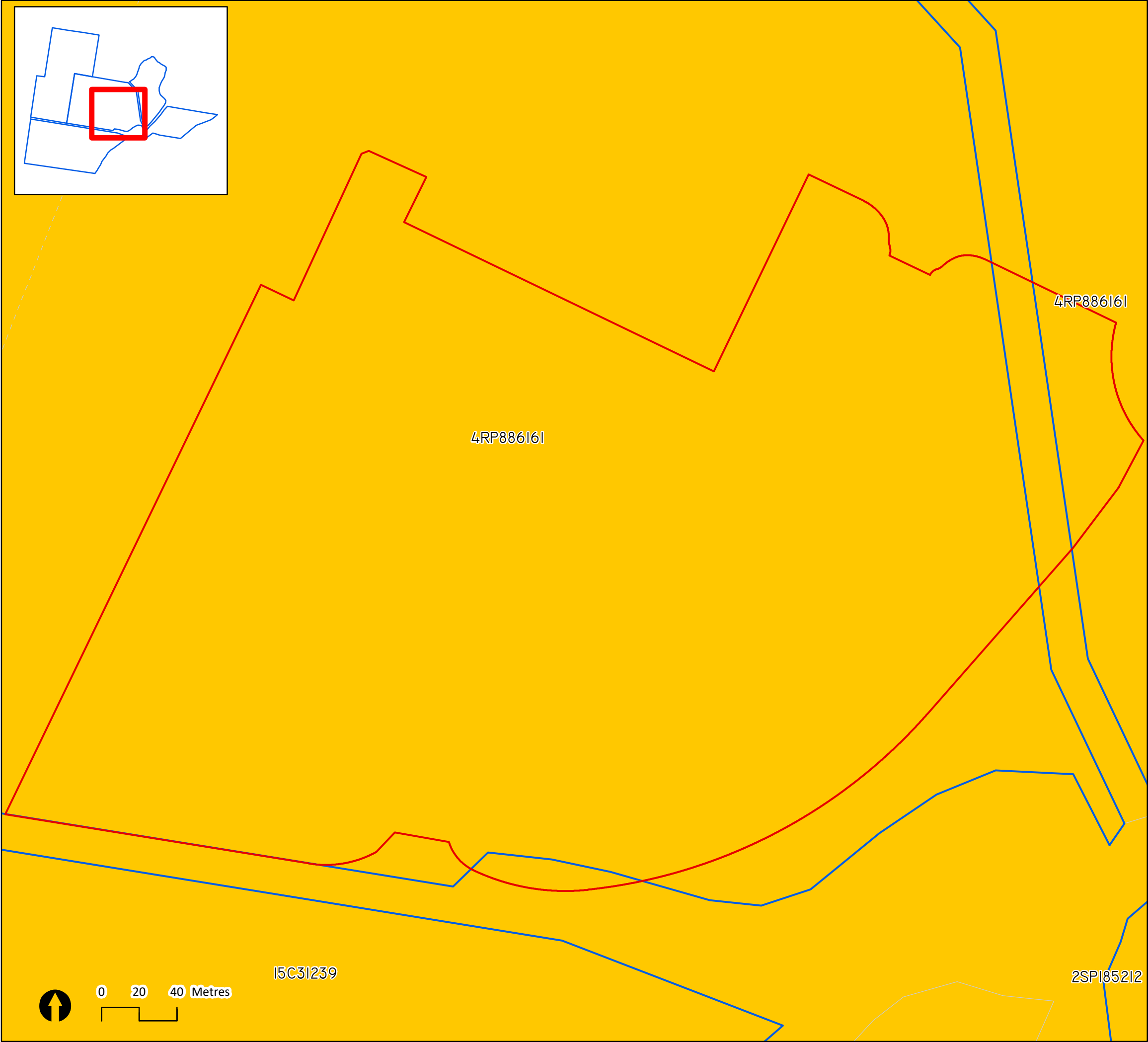
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Map 6: Fire Weather Severity

Legend

Land Lease Community boundary

Structure Plan Lots

Cadastre

Lot boundary

Easement

Fire Weather Severity

FFDI

High : 55

Low : 55

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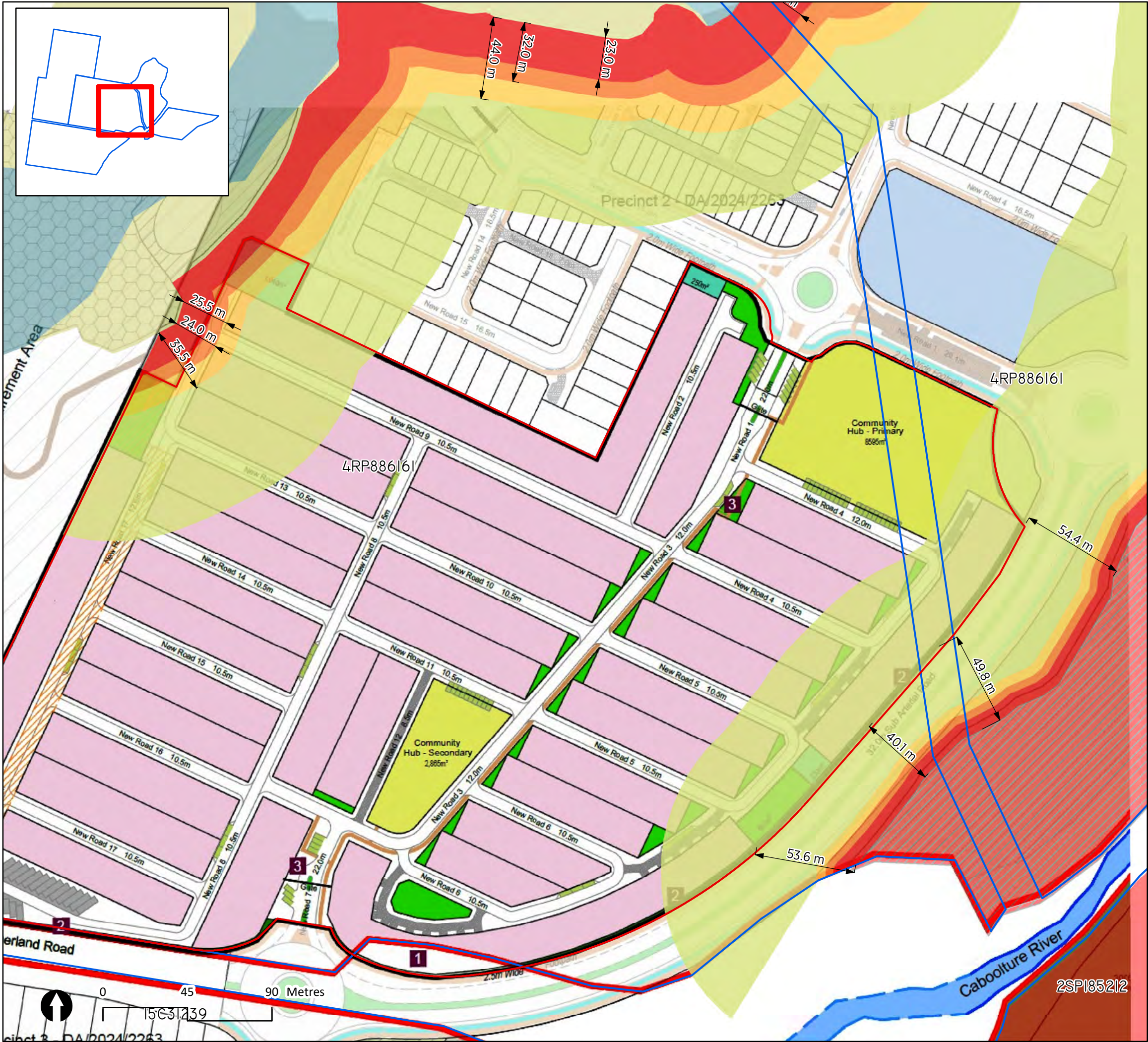
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**Map 7: Post-development Radiant Heat Flux, BAL and Separation**

**Legend**

— Land Lease Community boundary

— Structure Plan Lots

**Cadastre**

— Lot boundary

— Easement

**Post-development Vegetation Hazard Class**

5.1 Notophyll to microphyll vine forests

5.1 Revegetation (regrowth)

13.2 Dry to moist eucalypt woodlands on undulating metamorphics and granite

16.1 Eucalyptus dominated forest on drainage lines and alluvial plains

16.2 Eucalyptus dominated woodland on drainage lines and alluvial plains

**Bushfire Attack Level (RHF Contours)**

BAL 12.5

BAL 19.5

BAL 29

>BAL 29 (BAL 40, BAL FZ)

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# APPENDIX 1: PLAN OF DEVELOPMENT



**Note:**  
All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

**Source Information:**  
**Site boundaries:** Partial Re-Instatement  
**Adjoining information:** DCDB  
**Contours:** Lidar (1m Intervals)  
**Geomorphic Stream Channel:** Wolters & Saunders Havill  
**Stormwater:** Design Flow  
**Rehabilitation:** Saunders Havill  
**Bushfire:** To be Advised

- Legend**
- Stockland Ownership
  - Precinct 2 - LLC Development Area - 14.85Ha
  - LLC - Lease Areas - 8.72Ha
  - LLC - Community Facility
  - LLC - 10m Wide Sewer Easement
  - LLC - Open Space
  - LLC - Stormwater Treatment
  - LLC - Carparking: 78 Spaces
  - LLC - Caravan/Boat Storage: 20 Spaces
  - LLC - 1.5m Indicative Pedestrian Path
  - 1 Future Lease lots subject to road closure application
  - 2 2m Landscape zone inclusive of retaining wall and acoustic fence
  - 3 Letterboxes
  - 4 Maintenance Shed and Buffer
- Precinct 2 and 3 - Subject to DA/2024/2263
- Neighbourhood Hub
  - Linear and Conservation Open Space
  - Local Park
  - TMR Future Road Requirement Area
  - 2m & 2.5m pedestrian path
  - 3m pedestrian path
  - 3m wide cycle network
  - EPBC regenerating vegetation - potential koala habitat to retain
  - Rehabilitation area

WAGTAIL GROVE - CABOOLTURE WEST  
LAND LEASE PRECINCT PLAN  
PRECINCT 2

