

Our ref: 22-0099EBF

20th August 2022

PacificCorp (Adele) Pty Ltd
PO Box 29
OXENFORD, QLD, 4207

Re: Memo regarding Bushfire Hazard Assessment at 19 – 23 Adele Crescent, Bahrs Scrub, QLD 4207 (Lot 27 and 28 on RP169807).

1. INTRODUCTION

Wolter Consulting Group (WCG) was engaged by PacificCorp (Adele) Pty Ltd (hereafter referred to as 'the client') to undertake an assessment¹ of the potential bushfire hazard associated with a proposed residential development with the potential to be exposed to radiant heat during a wildfire event. The subject site is associated with two (2) adjoining land parcels (collectively the subject site) located within an area zoned as emerging community at 19-23 Adele Crescent, Bahrs Scrub, QLD 4207.

The land parcels are formally described as Lot 27 and 28 on RP169807 and are located within the Logan City Council (LCC) Local Government Area (LGA). This analysis has been undertaken for the purposes of determining the actual hazard represented by retained bushland within 100m of the subject site boundary that is proposed for reconfiguration of two (2) lots into 11 for residential purposes.

¹ Wolter Consulting Group has conducted this Assessment based on the interpretation of government guidelines and Australian standards in assessing the anticipated risk associated with this assessment. The work was conducted, and the report has been prepared with reliance on data and information available to WCG and as such WCG hold no responsibility for inconsistencies and/or inaccuracies based upon this data.

Whilst the author has utilised best practice and endeavours to ensure that the information contained herein is valid and comprehensive, WCG makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which might be incurred as a result of the data being inaccurate or incomplete in any way and for any reason. The report is tailored for the area of interest and as such the findings herein are not to be applied elsewhere. This document is and shall remain the property of Wolter Consulting Group. The document may only be used for the purposes for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

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2. SUMMARY DETAIL

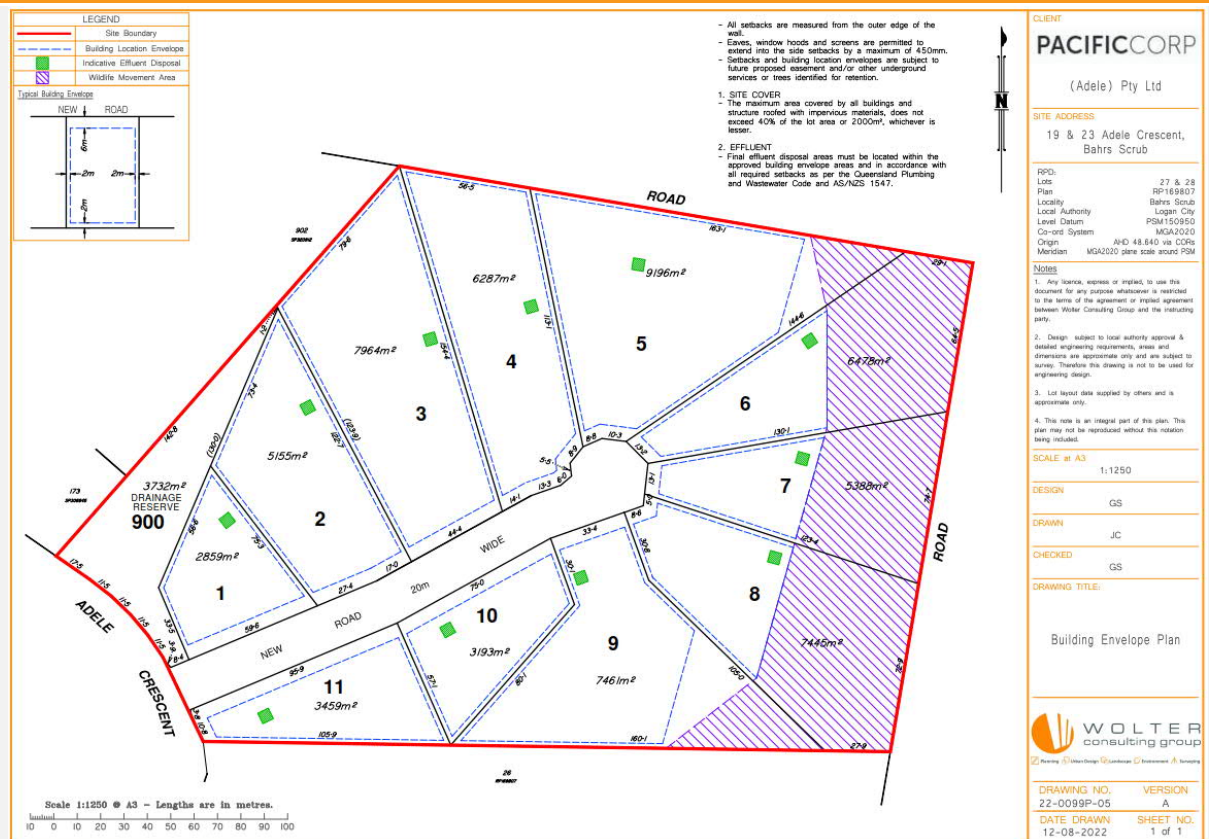
Site summary details	
Address	19-23 Adele Crescent, Bahrs Scrub, QLD, 4207
Plan Detail	Lot 27 and 28 on RP169807
Total Area	7.33 ha
Local Government Area	Logan City Council
Council Zoning	Emerging Community
Existing Land Use	Residential
Proposed Land Use	Residential. Refer Figure 2
Local Council Bushfire Hazard Status	Potential Impact Buffer, High Potential Fireline Intensity
State SPP Bushfire Hazard Status	Potential Impact Buffer, High Potential Fireline Intensity

Table A: Site Summary

Figure 1: Subject site and surrounding area



Figure 2: Proposed Plans



3. REGULATORY FRAMEWORK

The determination of a Bushfire Prone Area is defined under the State Planning Policy 2017 as:

Bushfire prone area is land that is potentially affected by significant bushfires, including vegetation likely to support a significant bushfire; adjacent land that could be subject to impacts from a significant bushfire (i.e. potential impact buffer) and is:

- identified by a local government in a local planning instrument** as a bushfire prone area, based on a localised bushfire study, prepared by a suitably qualified person; or
- if the local government has not identified bushfire prone areas in a local planning instrument in accordance with (a) above, **shown on the SPP IMS** as a bushfire prone area.

The above definition relies upon the mapping methodology derived by Leonard et al. (2014) and detailed in the document A New Methodology for State Wide Mapping of Bushfire Prone Areas in QLD

where it is acknowledged that the methodology is subject to ground truthing and validation by a suitably qualified practitioner.

The applicant proposes to reconfigure two (2) land parcels into eleven (11) for residential purposes (refer **Figure 2**). Where a bushfire prone area is observed / quantified to potentially affect a development site the following actions (or a relevant cross section thereof) would be generally required.

- Conformance with the relevant local planning scheme including preparation of a bushfire management plan detailing relevant options to mitigate the identified hazard.
- Where a local planning scheme does not adequately support the State Interest compliance with the overarching policies supporting development within a bushfire prone area contained within the SPP Natural Hazards, Risk and Resilience – Bushfire must be demonstrated.
- Where Class 1, 2 and 3 building and associated Class10a structures are proposed they demonstrate conformance with the performance-based requirements contained within The Building Code of Australia (BCA) and National Construction Code (NCC) and the associated deemed to satisfy construction requirements associated with Australian Standard 3959:2018 (Construction of buildings in bushfire prone areas).

Pursuant to the NCC residential dwellings, such as those that ultimately will be constructed on the developed land parcels, represent Class 1a structures with connected ancillary structures (such as garages, decks and verandas) classified as Class 10a.

The figures presented below indicate the subject site is located within a Bushfire Prone Area under both the Logan Planning Scheme 2015 and the SPP Natural Hazards, Risk and Resilience – Bushfire IMS mapping.

Figure 3: Logan Planning Scheme 2015 OM03.01 Bushfire Hazard Risk Area Overlay – V8.0

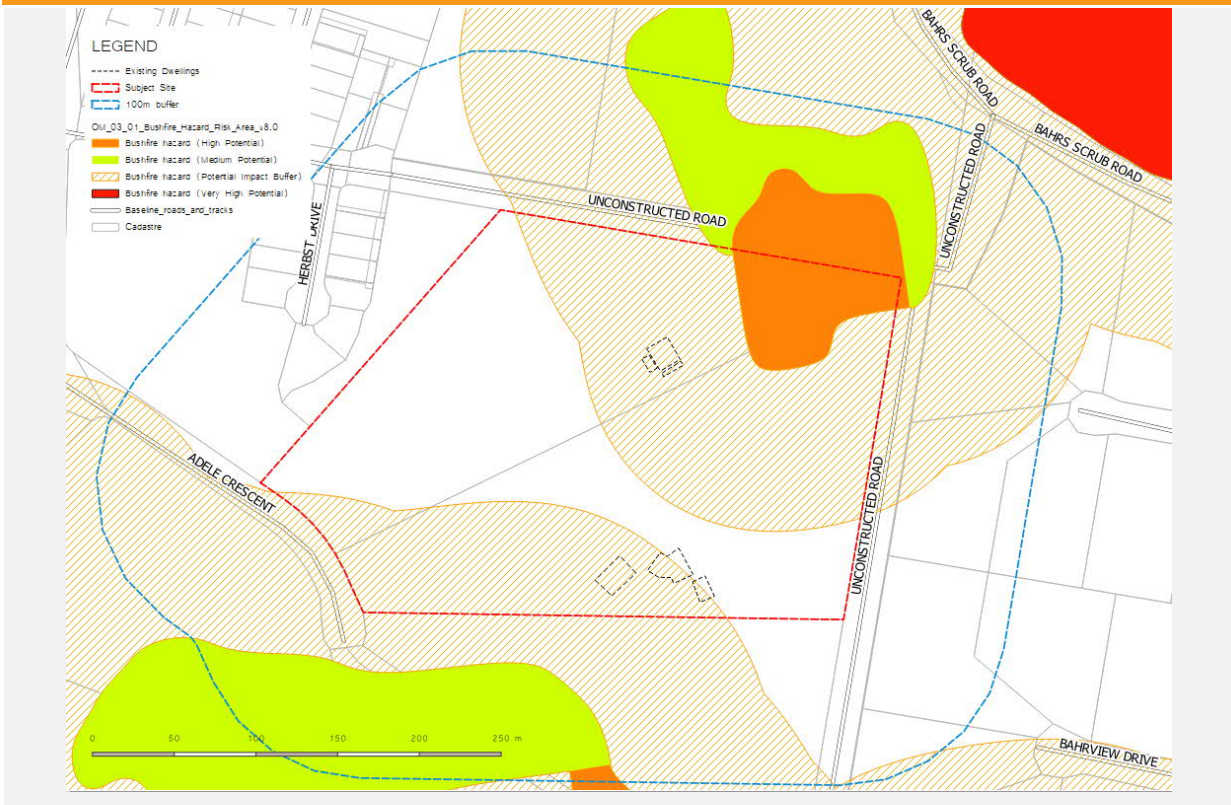
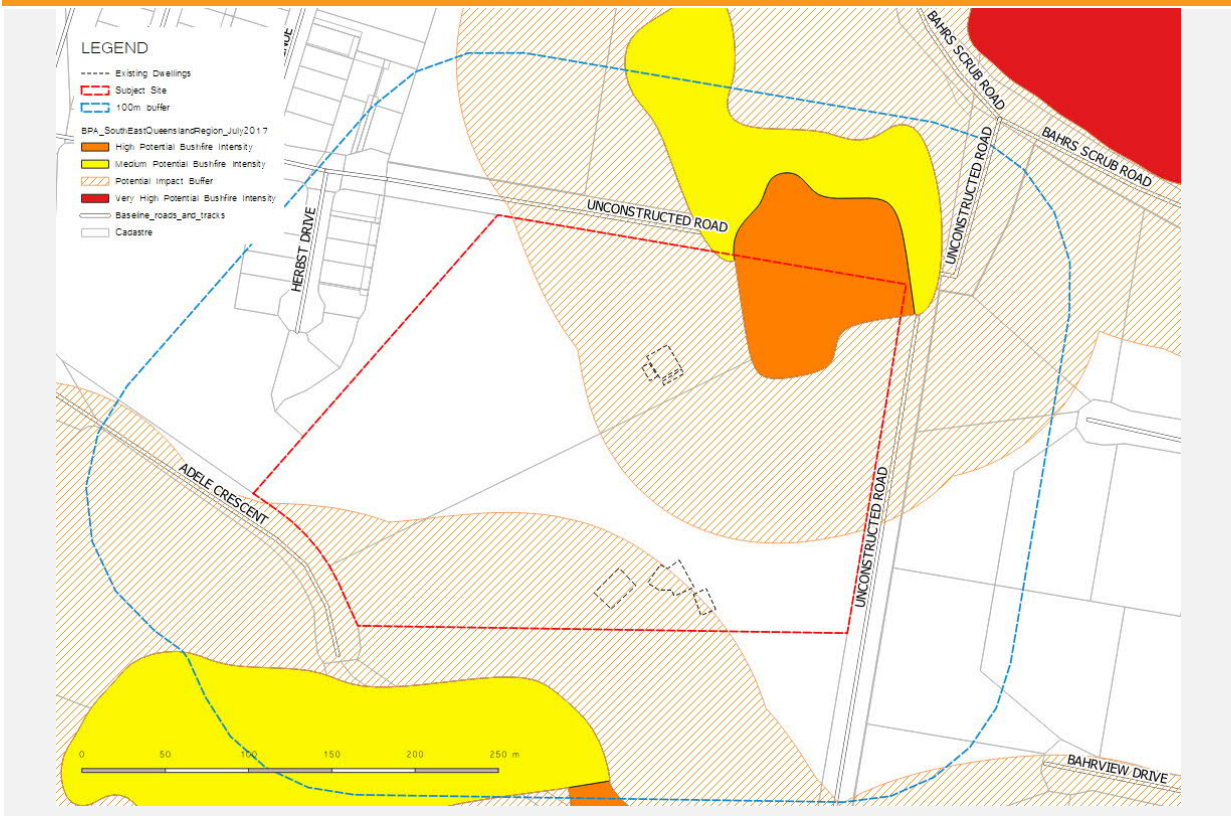


Figure 4: State Planning Policy Bushfire Hazard Assessment Mapping (SPP IMS)



4. HAZARD ASSESSMENT

A review undertaken of the potential hazard associated with the subject site has been undertaken by WCG's senior bushfire analyst who is an appropriately qualified and experienced practitioner in the field of bushfire hazard assessment and mitigation.

Interrogation of current aerial photography of the bushfire hazard mapped under both State government and the LPS 2015 planning scheme suggests that the vegetation representing the hazard to the subject site has not duly considered all exempt hazardous vegetation scenarios provided within AS3959:2018 in which the vegetation can be considered as a LOW hazard to development. As such, this assessment has amended the mapped polygon to include these considerations.

Amendment to the hazard polygon have included areas that meet one or more of the following variables conforming with S.2.2.3.2 of AS3959-2018 where the potential hazard is considered as **Low** and as such are exempt from further assessment. These areas are represented by:

- **Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load (including managed grasslands and maintained public reserves and parklands).**
- **Areas subject to regular maintenance and associated with residential areas.**
- Windbreaks.
- **Areas dedicated to buildings and structures and residential landscaping.**
- **Areas that have been cleared of vegetation including those currently under construction.**
- Developed land consisting predominantly of hardstand areas.
- **Roads; and**
- Areas dedicated to agricultural cropping.

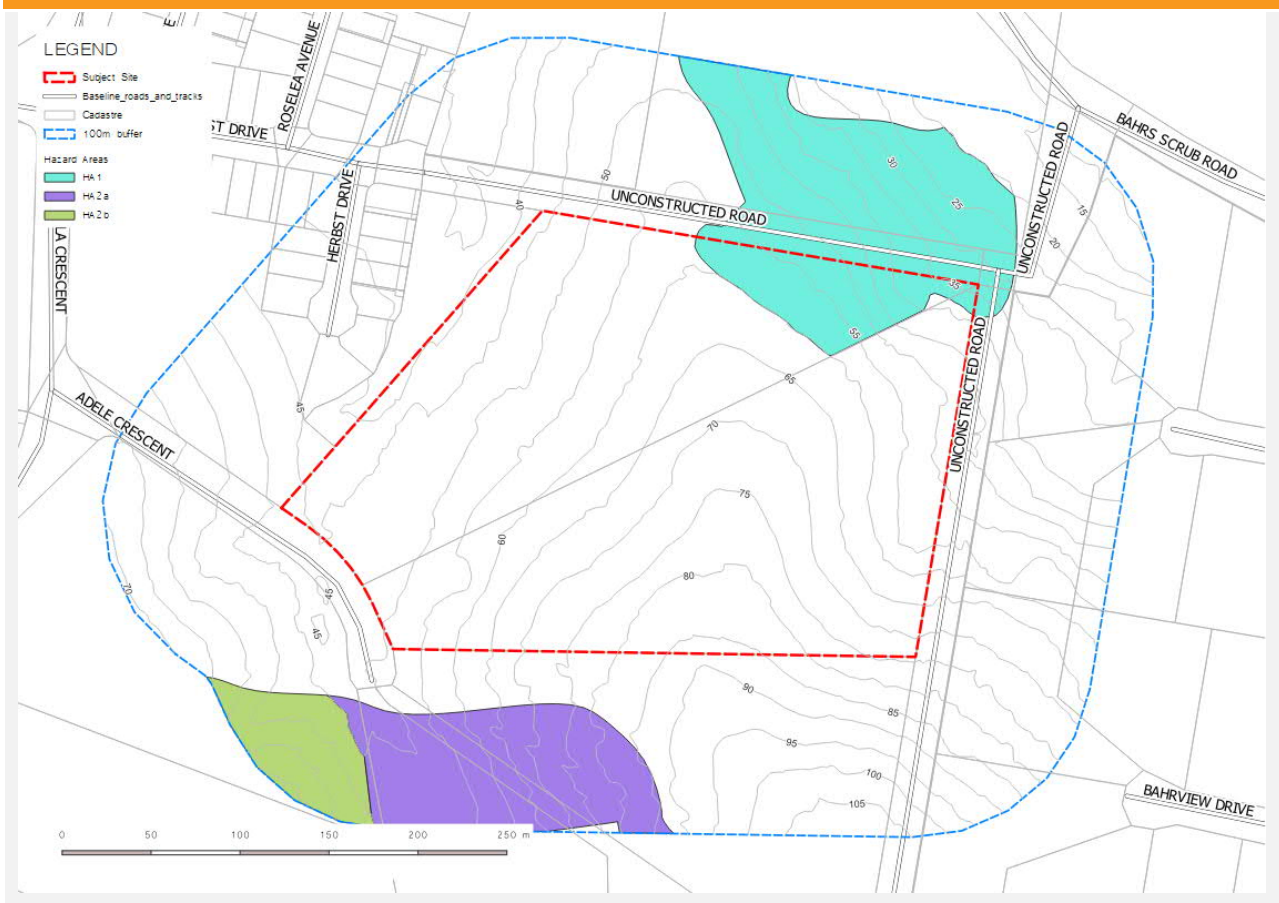
Table B below details the adopted fuel areas.

Fuel Area	Description	Location
HA1	Areas associated with RE12.11.10, downslope of the development and holding grades of approximately 15° -16°	On and adjoining the north-eastern areas of the subject site.
HA2a	Areas associated with RE12.11.10, across slope of the development and holding grades (parallel to contours) of approximately 16° -17°	To the south of the development within the adjoining land parcel
HA2b	Areas associated with RE12.11.10, up slope of the development and holding grades (parallel to contours) of approximately 16° -17°	To the south-west of the development on the southern side of Adele Crescent.

Table B: Adopted Fuel Areas

Figures 5 below provide a visual representation of the hazardous vegetation areas adopted within this assessment.

Figure 5: Adopted Hazardous Vegetation Units



5. HAZARD RELIABILITY ASSESSMENT

An assessment of the identified hazardous vegetation areas within 100m of the site was undertaken to identify potential fire hazard to the proposed development via the process known as hazard reliability assessment. The hazard reliability assessment aims to determine the true potential fireline intensity emitted from the hazardous vegetation based on site specific variables rather than the adoption of generic mapping.

Fireline intensity measures the rate that a fire would consume fuel energy per unit time per unit length of fire front and is based upon the following equation (in accordance with DILGP 2016 ‘Fit for Purpose’ approach):

$$PFI = 0.62 PFL^2 \times FFDI \exp(0.069 \text{ Slope}) \quad (\text{Equation 1}^2)$$

The resultant fire-line intensity values are then compared with the DILGP 2016 Potential Bushfire Hazard Classes (**Table C** below) to transparently assess the Fuel Areas potential hazard to the proposed development.

Hazard Class	Potential Fireline Intensity
1. Very High	40,000+ kW/m
2. High	20,000 – 40,000kW/m
3. Medium	4,000 – 20,000kW/m
4. Low	0 – 4,000kW/m

Table C: Potential bushfire hazard classes (adopted from DILGP 2016).

Unless otherwise detailed the following variables and associated references have been adopted for the PFI assessment (**Table D**).

² Where PFI = Potential Fire Line Intensity (kW/m), PFL = Potential Fuel Load (tonnes/ha), FFDI = Fire Weather Severity and Slope = Maximum slope (°)

PFI modelling variables		
Variable	Value adopted	Justification
Fire Danger Index	53	QFES Fire Weather Severity V1.0 data, Leonard et al 2014
Site Slope	3.9°	FFL design contours (Burchills Engineering Solutions)
Hazard Area 1		
Vegetation Classification	Vine forest RE12.11.10 VHC 2.1	DNRME Regional Ecosystem Database Version 12.2 (2022) Queensland Fire Emergency Service (QFES) vegetation hazard class (2019)
Understory Fuel Load*	3.5 t/ha	QFES 2019, BRCTRG. October 2019. Brisbane, Australia
Total Fuel Load*	3.5 t/ha	QFES 2019, BRCTRG. October 2019. Brisbane, Australia
Effective Slope	15.5°	QSpatial Data 1m contour shapefiles
Hazard Area 2a – Across Slope		
Vegetation Classification	Vine forest RE12.11.10 VHC 2.1	DNRME Regional Ecosystem Database Version 12.2 (2022) Queensland Fire Emergency Service (QFES) vegetation hazard class (2019)
Understory Fuel Load*	3.5 t/ha	QFES 2019, BRCTRG. October 2019. Brisbane, Australia
Total Fuel Load*	3.5 t/ha	QFES 2019, BRCTRG. October 2019. Brisbane, Australia
Effective Slope	16.7°	QSpatial Data 1m contour shapefiles
Hazard Area 2b – Up Slope		
Vegetation Classification	Vine forest RE12.11.10 VHC 2.1	DNRME Regional Ecosystem Database Version 12.2 (2022) Queensland Fire Emergency Service (QFES) vegetation hazard class (2019)
Understory Fuel Load*	3.5 t/ha	QFES 2019, BRCTRG. October 2019. Brisbane, Australia
Total Fuel Load*	3.5 t/ha	QFES 2019, BRCTRG. October 2019. Brisbane, Australia
Effective Slope	16.7°	QSpatial Data 1m contour shapefiles

* Adopted from QFES 2019. No canopy fuel included to account for fire run <150m

Table D: Data Sources for PFI assessment.

Conservative data (i.e. worst scenario) for slope and fuel load have been adopted for the hazard area typical fire scenarios. Fuel loads adopted from QFES (2018) fuel load data represent the mature fuel accumulation state and are therefore considered a conservative assessment undertaken in accordance with Bushfire Resilient Communities (QFES, 2019). This results in an ultra-conservative assessment of the hazard areas individual PFI in the site-specific context.

With reference to the adopted fuel loads provided in **Table D** above, it is not considered that a fire front from within any of the hazard areas to be capable of achieving a continuous fire run greater than 150m in length where canopy engagement and the associated additional fuel loading would be required. As such we have **not applied an additional 10t/ha** to account for canopy load. Justification for short fire run fuel considerations are provided in Delany et al 2017.

Table E below provides an assessment of the potential fire-line intensity of the adopted hazard areas in accordance with **Equation 1** and based upon the max state fuel loads (non-inclusive of canopy loading to account for short fire run conditions).

Fuel Area	VHC	PFL (t/ha)	Adjusted PFL**	Slope (°)	FFDI	PFI (kW/m)	Hazard Class
HA1	2.1	3.5*	NA	15.5	53	1166.7	LOW
HA2a	2.1	3.5*	NA	16.7	53	1274.2	LOW
HA2b	2.1	3.5*	NA	16.7	53	1274.2	LOW

* Adopted from QFES 2019 non-inclusive of 10 t/ha to account for canopy fuel for fire run <150m (Delany et al 2017).

Table E: Potential Fireline Intensity Assessment

As can be seen the ground truthed hazard classification, all hazard areas are considered as holding a 'Low' hazard and as such differ to that detailed in both the State Hazard Mapping and the LPS2015 Bushfire Hazard Overlay Mapping. This represents the impacts of adopting hazard exemptions provided in AS3959:2018 and the lack of potential for canopy engagement due to short fire runs (Delany et al, 2017) congruent with the vegetation types associated with the adopted hazard areas being broadly described as Semi Deciduous Mesophyll to Notophyll vine forest. Whilst this drier vine forest type holds fuel levels marginally greater than that of true vine forest the community is still generally considered to be of low hazard compared to the sclerophyll woodlands and forests more commonly encountered within the SEQ region.

With relevance to the vegetation communities present in the vicinity of the subject site, it is acknowledged that the drainage reserve and wildlife corridor indicated on **Figure 2** will be subject to

weed management with the long term aim of restoration of the pre-clearing vegetation community. This represents the potential for development of additional areas of hazardous vegetation in the future. Whilst not previously considered within this assessment, it is reasonable to assume that the end community developed after regeneration would be congruent with the RE12.11.10 vine community. Given the drainage reserve holds slopes of lower degree than those assessed herein, and the wildlife corridor holds similar slopes to those assessed herein, it is therefore reasonable to anticipate the resultant PFI for these future vegetation areas would also be considered as LOW as per the outcomes for HA1, HA2a and HA2b.

6. DISCUSSION/CONCLUSION

As a consequence of the hazard reliability assessment, the mapped hazardous vegetation potentially affecting the proposed development can be reassigned with a hazard rating of **LOW**. With the mapped hazards reduced to a **LOW** categorisation, the associated potential impact buffer category is also eliminated leaving the subject site un-impacted and removed from any area considered as a Designated Bushfire Prone Area as per the definitions of the LPS2015, the SPP, the NCC and AS3959:2018.

Further support for the previous statement is found in AS3959:2018 Section 2.2.3.2 that describes vegetation that shall be excluded from BAL assessment as:

- AS3959:2018 Exclusion 2.2.3.2(f) – Vegetation regarded as low threat due to factors such as flammability, moisture content or **fuel load**.

With removal of the mapped threat, the nearest intact hazardous vegetation to the subject site now lays approximately 150m to the north-east. This area can also be considered as a LOW hazard given the location being greater than 100m from the subject site. As supported by AS3959:2018, exclusion 2.2.3.2(a) states any vegetation that is more than 100m from the site shall be excluded from a BAL assessment as being of a LOW hazard.

Considering the above assessment, the mapped hazard potentially affecting the subject site has been de-classified to a “**LOW HAZARD**”. As the purpose of the LPS2015 Part 8.2.3.2 specifically states that “the purpose of the code is to protect people and premises in a Bushfire hazard area”, and that this assessment has demonstrated that the subject site **IS NOT** located within a Designated Bushfire hazard area the proposal will not be subject to the constraints of the code. Additionally, removal of the subject site from a designated bushfire prone area eliminates any further requirements of the NCC 2019, the future NCC 2022 and AS3959:2018.

As such, it is considered that no further bushfire related planning and construction constraints are required associated with the proposed reconfiguration of a lot application nor for building applications associated with the end use of the proposed development.

5. CLOSURE

This assessment has been undertaken by an appropriately qualified and experienced practitioner in the field of ecology and bushfire management.

We hope that this correspondence provides you with all required details, however, please don't hesitate to contact us should you wish to discuss further.

Yours sincerely,

Author:

A handwritten signature in black ink, appearing to be 'S. Hayes', with a long horizontal line extending to the right.

Steve Hayes
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Wolter Consulting Group

6. REFERENCES

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