



Approved Bushfire Hazard Assessment - Addendum

4 Dalma Street, Ormeau Hills

Lot 4 on RP883725

Gold Coast City Council, Qld

Prepared by:

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Amendment Details: Addition of Approved Site Plan

Prepared for:

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Proviso

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It should be noted that the recommendations within this advice have been formulated based on site conditions at the time of assessment and utilising current best-practise hazard and impact assessment methodologies, and have been developed to reduce the potential severity of impacts on the development in the event of a bushfire emergency rather than prevent impacts altogether. No guarantee is provided or assumed that the area will not be affected by bushfire at some time.



Introduction

Wollemi Eco-Logical has been engaged to prepare an addendum to the Bushfire Hazard Assessment for the subject site, prepared by Wollemi Eco-Logical (dated 20th January 2016), and subsequently approved by Council. This addendum is required due to an amended subdivision layout plan being prepared for the subject site, and will detail any changes to apparent Bushfire Hazard posed, and to detail Bushfire Attack Level for the development, consistent with the Australian Standard – *Construction of Buildings in Bushfire Prone Areas* (AS3959-2009).

Subject Site

The subject site is located at 4 Dalma Street, Ormeau Hills and is formally described as Lot 4 on RP883725. The subject site covers an area of 5.708 ha is represented in **Figure 1**.



Figure 1: Subject Site

Proposed Development

It is understood a Reconfiguration of a Lot (1 into 100 + 2 drainage Lots) for the purpose of residential subdivision is proposed to be constructed on the subject site. The amended development layout is provided in **Figure 2**.



Figure 2: Proposed Development



Current Bushfire Hazard Mapping

A review of Gold Coast City Councils (GCCC) Bushfire Hazard Overlay Mapping, revealed the site is mapped as containing patches of High and Medium Potential Bushfire Hazard, and Potential Impact Buffer areas (**Figure 3**).



Figure 3: Bushfire Hazard Overlay Mapping

Potential Bushfire Hazard

It is understood the majority of site vegetation is to be removed as part of the proposed development, and subsequently is not considered further in this assessment.

Previous quantitative assessment of Bushfire Hazard undertaken in January 2016, and applying the methodology as detailed in the State Planning Policy 1/03 Guideline – Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (SPP 1/03 Guideline), determined a Medium Potential Bushfire Hazard posed to the subject site by adjacent vegetation to the northwest and to the south. A further qualitative assessment subsequently determined that the potential for a bushfire (i.e. wildfire) to impact on the proposed development was consequently considered to be Low, due to limited patch



extent and limited fire-runs to the subject site. No change to this bushfire hazard assessment outcome is considered necessary due the nature of potentially hazardous vegetation adjacent the site.

It is however, deemed appropriate to re-assess the required Bushfire Attack Level assessment in accordance with the *Australian Standard-3959 (2009) - Construction of buildings in bushfire-prone areas* due to the amended site layout plan, and recent refinements in the application of the AS3959-2009 since the approved assessment has occurred. The result is a re-assessment of the Bushfire Attack Level (BAL) and building construction standards, for the proposed development. This is detailed in the following section with regard to assessable vegetation observed to the northwest and south of the proposed development.

Bushfire Attack Level Assessment

Australian Standard 3959 (2009) Construction of buildings in bushfire-prone areas provides minimum construction standards for new dwellings in designated Bushfire Prone Areas. The construction standards are intended to improve the performance of buildings subjected to burning debris, radiant heat or flame contact. The AS3959-2009 methodology prescribes Bushfire Attack Levels (BAL's) to the facades of proposed buildings to which corresponding construction safety standards are applied. AS3959-2009 defines Bushfire Attack Levels as:

'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, which is the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.'

In accordance with the Australian Standard – *Construction of Buildings in Bushfire-prone Areas* (AS 3959, 2009), an assessment of the required construction standards for the proposed development has been undertaken based on the potential Bushfire Hazard to the northwest and south.

It is noted that the vegetation to the northwest has been classified as Low Threat as per the Exclusions for Low Threat Vegetation in the AS-3959, being *'less than 1ha and not within 100m of other areas of vegetation being classified'*. Potentially hazardous vegetation to the south is approximately 2ha in area, and is consequently assessed in **Table 1** below.

This assessment has been based on the following assumptions:

- A Fire Danger Index (FDI) of 40 (AS 3959- 2009);
- Proposed development will be located in the layout as represented in **Figure 2**.
- Adjacent assessable vegetation community to the south has been classified as Woodland as per the AS 3959 – 2009;
- Fuel load calculations (Method 2 BAL) for potentially hazardous vegetation to the south has been determined as reflective of *'Class 13.2: Dry to moist eucalypt woodlands on undulating metamorphics and granite'* with fuel load of 14.4t/ha.
- Slope under potentially hazardous vegetation is downslope at approximately 3 degrees.
- For the purpose of this assessment, setback of the proposed development to potentially hazardous vegetation to the south is understood to be >8m. This includes current setbacks on



site and proposed BLE locations, on Lots immediately adjacent the potentially hazardous vegetation.

- Additional parameters applied are detailed in the following table.

Table 1 - Determination of Site BAL – Potentially Hazardous Vegetation to the South

Calculated July 11, 2018, 4:15 pm (BALc v.4.8)			
4 Dalma St, Ormeau Hills - South			
Bushfire Attack Level calculator - AS3959-2009 (Method 2)			
Inputs		Outputs	
Fire Danger Index	40	Rate of spread	0.35 km/h
Vegetation classification	Woodland	Flame length	4.03 m
Surface fuel load	6 t/ha	Flame angle	75 °
Overall fuel load	14.4 t/ha	Panel height	3.89 m
Vegetation height	n/a	Elevation of receiver	1.8 m
Effective slope	3 °	Fire intensity	2,635 kW/m
Site slope	1 °	Transmissivity	0.873
Distance to vegetation	8 m	Viewfactor	0.2404
Flame width	30 m	Radiant heat flux	15.96 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-19
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,090 K		
Rate of Spread - McArthur, 1973 & Noble et al., 1980			
Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980			
Elevation of receiver - Douglas & Tan, 2005			
Flame angle - Douglas & Tan, 2005			
Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005			

In accordance with AS 3959 (2009), the required Bushfire Attack Level for the proposed development on the subject site has been determined. Based on this assessment, the proposed development is potentially subject to a Maximum Bushfire Attack Level (BAL) of **BAL-19**.

Subsequently, the required BAL's for construction within individual Lots of the proposed development have been determined, and are summarised as follows:

- BAL-19:** Lots 1, 98-100 (refer Sections 3 & 6 in the AS3959-2009);
- BAL-12.5:** Lots 2-8, 68-97 (refer Sections 3 & 5 in the AS3959-2009).
- BAL- LOW:** Lots 9-67 (refer Section 4 in the AS3959-2009).

The nominated construction standards should be reviewed by an experienced consultant/designer at the time of detailed building design. Should the proposed site layout or vegetation setbacks identified above change, this may alter the determination of the required BAL.

N.B. it is noted that a development (Council Ref: ROL201600044) is proposed for the land immediately adjoining the southern boundary of the subject site, and including western connection road (Yarwood Crescent). It is envisaged that the majority of potentially hazardous vegetation on the adjacent site in this locality, will be removed as part of a residential subdivision development. In the case where this



vegetation is removed prior to construction on Lots immediately adjacent, the applicable BAL ratings as detailed above, will be considered BAL-LOW.

Conclusion

An addendum to the approved Bushfire Hazard Assessment for the proposed development has been undertaken based on a revised subdivision layout plan. Previously determined Low Potential Bushfire Hazard posed to the proposed development has been verified as appropriate with no increase in the bushfire hazard identified.

An amendment to the previously determined Bushfire Attack Level requirements of the proposed development has been undertaken with respect to Lots within 100m of the assessable vegetation to the south of the subject site. BAL ratings for individual Lots has been provided.

It is noted that a development (Council Ref: ROL201600044) is proposed for the land immediately adjoining the southern boundary of the subject site, and including western connection road (Yarwood Crescent). It is envisaged that the majority of potentially hazardous vegetation on the adjacent site in this locality, will be removed as part of a residential subdivision development. In the case where this vegetation is removed prior to construction on Lots immediately adjacent, the applicable BAL ratings as detailed above, will be considered BAL-LOW.

Important Note:

It should be noted that this Bushfire Attack Level Assessment (BAL) has been determined based on site conditions at the time of writing, the identified setbacks being achieved, and utilising current best-practice assessment methodologies as detailed. These methodologies are not able to factor in and predict catastrophic bushfire events. Bushfires are intrinsically unpredictable, and no guarantee is able to be provided or should be assumed that the area will not be affected by bushfire at some time.

Bushfires are an intrinsic part of Australia's environment, are often unpredictable, and have potentially extremely serious consequences. Regardless of the results of this assessment, owners should be aware of the unpredictability of Bushfire in the landscape, and the need to be bushfire aware and prepared for extreme events.

All Queenslanders should be familiar with the official Bushfire Warnings system and have a completed Bushfire Survival Plan. Print ready guides for preparing a Bushfire Survival Plan and to assist in the interpretation of the official Bushfire Warnings system are available for download from the Rural Fire Service Queensland website – <https://ruralfire.qld.gov.au/bushfires/>.

There are three formal Bushfire Warning levels:



Advice

Monitor conditions and review your bushfire survival plan.



Watch and act

Conditions are changing. Start taking action and follow your bushfire survival plan.



Emergency Warnings

You are in danger. Act on your bushfire survival plan now.