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BUSHFIRE HAZARD ASSESSMENT



Site Details: Lot 318 DP 11162 House No. 33 Kirkwood Street Seaforth NSW 2092

Report Prepared for: Phobos Hera Pty Ltd C/- Willoughby Homes Pty Ltd 207/4 Columbia Court Baulkham Hills NSW 2153

Construction of a two storey dwelling

Executive Summary

As required by Northern Beaches Council a bushfire risk assessment has been carried out in accordance with the procedures and requirements outlined in *Planning for Bushfire Protection* (2006) *Addendum – Appendix 3* (2010) as issued by the NSW Rural Fire Service (RFS). A summary of the findings of this assessment are provided below. Subject to the recommendations provided in this report, the proposed development has the potential to comply with the aims and objectives of *Planning for Bushfire Protection* (2006).

Site Address	
	Lot 318 DP 11162
	House No. 33
	Kirkwood Street
	Seaforth NSW 2092

GPS Coordinates	
Latitude:	-33.781423
Longitude:	151.239121

Aspect	
	West

Fire Danger Index Applied	
	FDI 100

Vegetation Classifications							
North	Managed	East	Managed	South	Managed	West	Low Threat
	Land		Land		Land		Vegetation

Distance to Vegetation							
North	>140m	East	>140m	South	>140m	West	66m

Effective S	Slope						
North	N/A	East	N/A	South	N/A	West	0-5°
							Downslope

Bushfire Attack Level							
North	BAL-LOW	East	BAL-LOW	South	BAL-LOW	West	BAL-LOW

Contents Page

Exec	cutive Summary	2
1.	Project Brief	4
2.	Introduction	4
3.	The Proposed Development	4
4.	Assessment of Site Characteristics	5
4.1	Slope	7
4.2	Surrounding Vegetation Types	9
4.3	Category of Bushfire Attack	10
5.	Construction and Landscaping Recommendations	10
6.	Conclusion	11
7.	References	12
R	Annendices	12

1. Project Brief

We have been engaged by Willoughby Homes Pty Ltd to assess the threat posed to this development in the event of a bushfire. Current fire maps prepared by Northern Beaches Council in accordance with the requirements of Section 146 of the *Environmental Planning and Assessment Act 1979* (as amended) (EPAA) indicate that the site is situated within a bushfire prone area (BPA). The aim of this report is to identify the Bushfire Attack Level (BAL) to which the proposed development should be constructed under *AS 3959-2009: Construction of buildings in bushfire-prone areas* and the NSW variations as contained within *Addendum: Appendix 3* of *Planning for Bushfire Protection* (2010) by the NSW Rural Fire Service to outline the provisions required to facilitate the fighting of bushfires.

The site is located at Lot 318, DP 11162, 33 Kirkwood Street, Seaforth NSW 2092.

This report will supplement the development application to Northern Beaches Council for the proposed development of a new dwelling and has been prepared in accordance with the procedures and requirements contained within *Planning for Bushfire Protection* (2006) – *A Guide for Councils, Planners, Fire Authorities and Developers'* with *Addendum: Appendix 3* (2010) as issued by the NSW Rural Fire Service.

The report relies upon the following information:

- Inspection of the site
- Details of the proposed dwelling produced by Willoughby Homes Pty Ltd (See Appendix 2)

2. Introduction

As required by Northern Beaches Council and in accordance with the requirements of Section 79BA of EPAA, a bushfire assessment of the site has been carried out. This was done in accordance with the procedures and requirements contained within AS 3959–2009 and Addendum: Appendix 3 (2010) of Planning for Bushfire Protection (2006) as issued by the NSW Rural Fire Service. The findings have been outlined in this report to determine compliance with the Building Code of Australia.

The assessment of the site found that any development on the site is <u>not</u> at significant risk of bushfire attack. Construction to the Bushfire Attack Level of **BAL-LOW** to all elevations of the proposed building is recommended.

3. The Proposed Development

The proposed development is a two storey dwelling. The dwelling will feature a family room, dining, kitchen, study, four bedrooms with three bathrooms and garage. The development will have a building footprint area totalling 140.47m². Landscaped areas are proposed to cover approximately 368.08m² of the site.

The building will be on a reinforced slab with frames and roof trusses. A brick with a colorbond sheet roof covering will form the façade of the dwelling.

4. Assessment of Site Characteristics

The site is located in suburb of Seaforth, within Northern Beaches Local Government Area. The site is located on Kirkwood Street, which will provide access to the property. The site borders onto similar lots on the north eastern and south eastern aspects. The western aspect of the site faces a roadway, then onto managed lands.

The site is triangular in shape, with a street frontage of 30 metres, with the total subject lot size being 574.6m².

The development site has downward slope from the front of the property to the rear. Figure 1 below displays the allotment boundaries and their surroundings as given by the NSW Government 'SixMaps' website.



Figure 1 – Aerial Mapping showing the lot boundary (NSW SixMaps 2019)

All aspects of the subject site face towards vacant lots ready for the construction of similar dwellings or public infrastructure assets such as roadways and footpaths. These properties and assets are reduced vegetation forms (i.e. maintained lawns and gardens) as well as areas of non-vegetation (i.e. dwellings, roads, paths, ancillary structures) and as such, are not considered to harbour any predominant vegetation formations which are described in *Planning for Bushfire Protection* (2006). Any future developments within this area should come under the R2 – Low Density Residential planning codes as per Manly Local Environmental Plan 2013.



Figure 2 - Photograph showing the northern aspect of the site



Figure 3 – Photograph showing the eastern aspect of the site



Figure 4 - Photograph showing the southern aspect of the site



Figure 5 - Photograph showing the western aspect of the site

As seen within Figures 2-5, all aspects of the site look towards a landscape that is classified as 'Managed Land' as defined within *AS 3959-2009*. This landscape surrounds the entire site from a 100m distance, with no prominent vegetation in this area.

The vegetation toward the eastern aspect was classified as 'Forest', as defined in *AS 3959-2009*. This is due to the vegetation being dominated by eucalypts with crowns that either touch or overlap. A prominent understorey is present. This vegetation was measured to be within 140m from the proposed developments location. As such this vegetation was noted in accordance with the Site Methodology procedure given in Section A3.5 of *Addendum: Appendix 3* of *Planning for Bushfire Protection* (2010) however it was not considered to warrant any BAL construction requirements as specified in Table 2.4.2 of *AS 3959-2009*.

Furthermore, *Part* (b) in *Section 2.2.3.2* of *AS3959-2009* outlines that single areas of vegetation less than 1 hectare in size is considered a low threat. It states that low threat vegetation and non-vegetated areas are to be classified as BALLOW. The subject vegetation covers an area of 0.95ha, as seen in figure 6, and so satisfies the requirements laid out by the standard to achieve a BALLOW. Further to this, this area also appears to have boundaries outlining future allotments that are to be developed.



Figure 6 – Screenshot showing potential vegetation risk to east of proposed dwelling (Nearmap 2019)

4.1 Slope

The intensity and rate spread of fires burning uphill increases markedly with increasing slope. This is reflected in an increase in the fire hazard index for a particular fuel type with an increasing slope. Similarly the rate of spread and intensity of fires decreases when they burn downhill. Table 1 below outlines the general slope underneath the vegetation measured to be within 140m of the proposed dwelling to all elevations:

Elevation	Slope	Degrees (°)
Northern	-	-
Eastern	Downslope	0-5°
Southern	-	-
Western	-	-

Table 1: Effective Slope

These slope measurements are based on measurements acquired during a site inspection on the 14^{th} December 2019, a site plan prepared by Willoughby Homes Pty Ltd (Job no. 15227 – Issue B, Dated 06/12/2019).

4.2 Surrounding Vegetation Types

The fuel categories in *Planning for Bushfires Protection* are described using botanical terminology, such as "forest" and "grassy woodland". It should be noted that when used for bushfire hazard assessment these terms refer to the fuel production capacity and flammability of different vegetation types. Therefore their meaning and application for bushfire hazard assessment may differ from their use in a strictly botanical context.

There are not any prominent forms of vegetation within a 100m distance of the proposed dwelling location. This is based on measurements taken during the site inspection and supplemented by satellite image data from Nearmap. Figure 6 displays a 140m radius surrounding the site. While the vegetation to the west of the site was measured to be within 140m, the vegetation did not contribute to any BAL requirements.

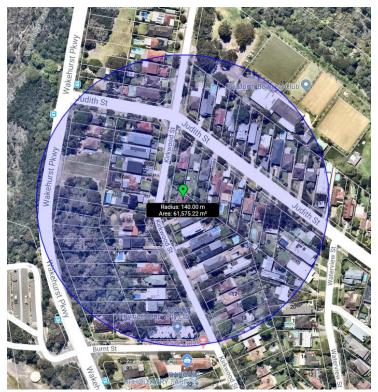


Figure 6 – 140m radius of the proposed dwelling (Nearmap 2019)

Using the information provided on the site plan produced by Willoughby Homes Pty Ltd and by measuring distances as part of the site inspection, the distance between the proposed developments façade to predominant vegetation was determined and is given in Table 2.

Table 2: Setbacks from vegetation

Facade	Distance to Predominant Vegetation
Northern	>140m
Eastern	>140m
Southern	>140m
Western	138m

4.3 Category of Bushfire Attack

In accordance with the Table 2.4.2 of AS 3959-2009, all elevations of the proposed development have been determined as being located within an area of a Bushfire Attack Level considered LOW (BAL-LOW). This is due to there being insufficient risk to warrant specific Bushfire construction requirements. This is predicated on low threat vegetation and non-vegetated areas surrounding the site. Table 3 outlines the construction requirements for the proposed development elevations.

Table 3: BAL construction requirements for the development

Elevation	Level of Construction as per		
	AS 3959-2009		
Northern	BAL – LOW		
Eastern	BAL – LOW		
Southern	BAL – LOW		
Western	BAL – LOW		

5. Construction and Landscaping Recommendations

This site has been assessed to be within an area that will require a bushfire attack level of **BAL-LOW for all elevations of the dwelling**. Attached as an Appendix 1 are the construction requirements for BAL-LOW from Section 4 of Australian Standard *AS3959-2009: Construction of buildings in bushfire prone areas.*

However, even though the dwelling is located within 140m of bushfire threatening vegetation, the following construction and landscaping techniques are recommended to mitigate the risk of potential ember attack from this vegetation:

- Using non-combustible gutter and valley guards in the dwelling to limit the accumulation of debris in gutters.
- Storage of combustible materials as far from the dwelling as possible

6. Conclusion

In conclusion, construction standards for building within bushfire-prone areas are set out in Australian Standard *AS 3959–2009: Construction of Buildings in Bushfire Prone Areas. Addendum: Appendix 3* (2010) of *Planning for Bushfire Protection* (2006) provides a procedure for determining the category of bushfire attack and the appropriate level of construction. It is considered that the proposed dwelling is <u>not</u> at particular risk warranting a specific construction standard as given in *AS 3959-2009*, hence a **BAL-LOW rating** is recommended for the proposed development.

However, as the development is located within 140m of bushfire threatening vegetation, the following recommendations are made for the dwelling to mitigate the risk of ember attack:

- Using non-combustible gutter and valley guards in the dwelling to limit the accumulation of debris in gutters.
- Storage of combustible materials as far from the dwelling as possible

Craig Hardy

MBA; M.App.Sc.(Env.Toxicology); B.App.Sc.(Env.Health) Accredited Certifier – Building Surveying A2 – 0167

BPAD-D Certified Practitioner - 24168

December 2019

7. References

- Nearmap Pty Ltd (2019) PhotoMaps by Nearmap. Available: http://maps.au.nearmap.com/. Last accessed 20/12/19
- NSW Rural Fire Service (2006) Planning for Bushfire Protection, A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners. NSW Rural Fire Service, Lidcombe NSW.
- NSW Rural Fire Service (2010) *Planning for Bushfire Protection: Addendum Appendix 3*. NSW Rural Fire Service, Lidcombe NSW.
- NSW State Government. (2019). SixMaps. Available: https://maps.six.nsw.gov.au/. Last accessed 20/12/19
- Ramsay C & Dawkins D (1993) Building in Bushfire Prone areas Information and Advice. CSIRO and Standards Australia.
- Standards Australia (2009) Australian Standard AS 3959–2009: Construction of Buildings in Bushfire-Prone Areas. SAI Global Ltd, Sydney.

8. Appendices

1. Proposed Development Plans provided by Willoughby Homes Pty Ltd – Job no. 15227, Issue B, Dated 06/12/2019



WILLOUGHBY HOMES



PROPOSED 'CUSTOM'



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BUILDERS LICENCE No: 204985C ABN: 80 056 751 592

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SITING REGISTER

PAGE NO. SHEET NAME

- COVER PAGE
- COMPLIANCE SITING
- 3 FLOOR PLANS
- **ELEVATIONS**

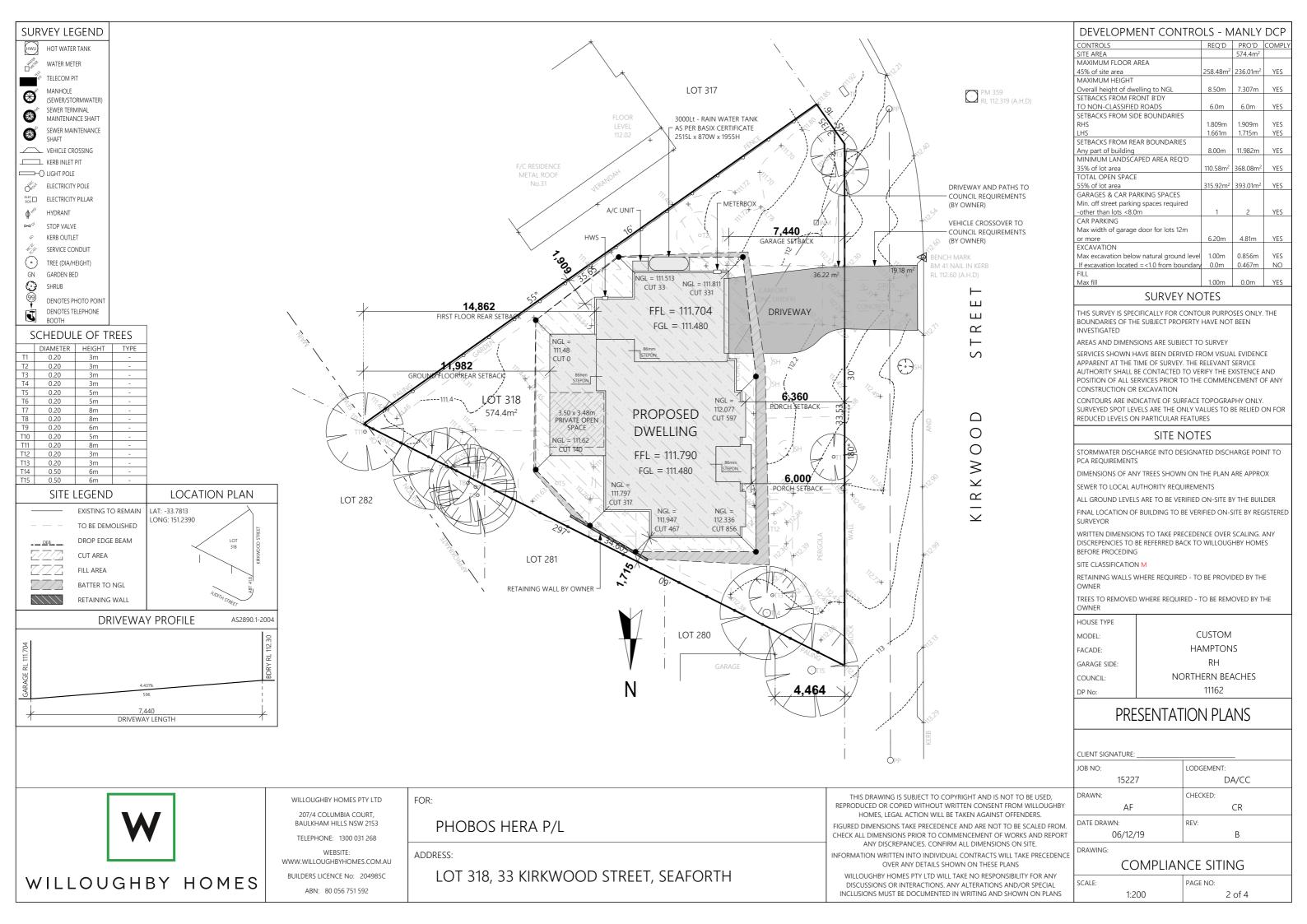
REV	DRW	СНК	DATE	STAGE
Α	AF	JB	11/11/19	SALES PLANS
В	AF	CR	06/12/19	PRESENTATION PLANS
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		RH		
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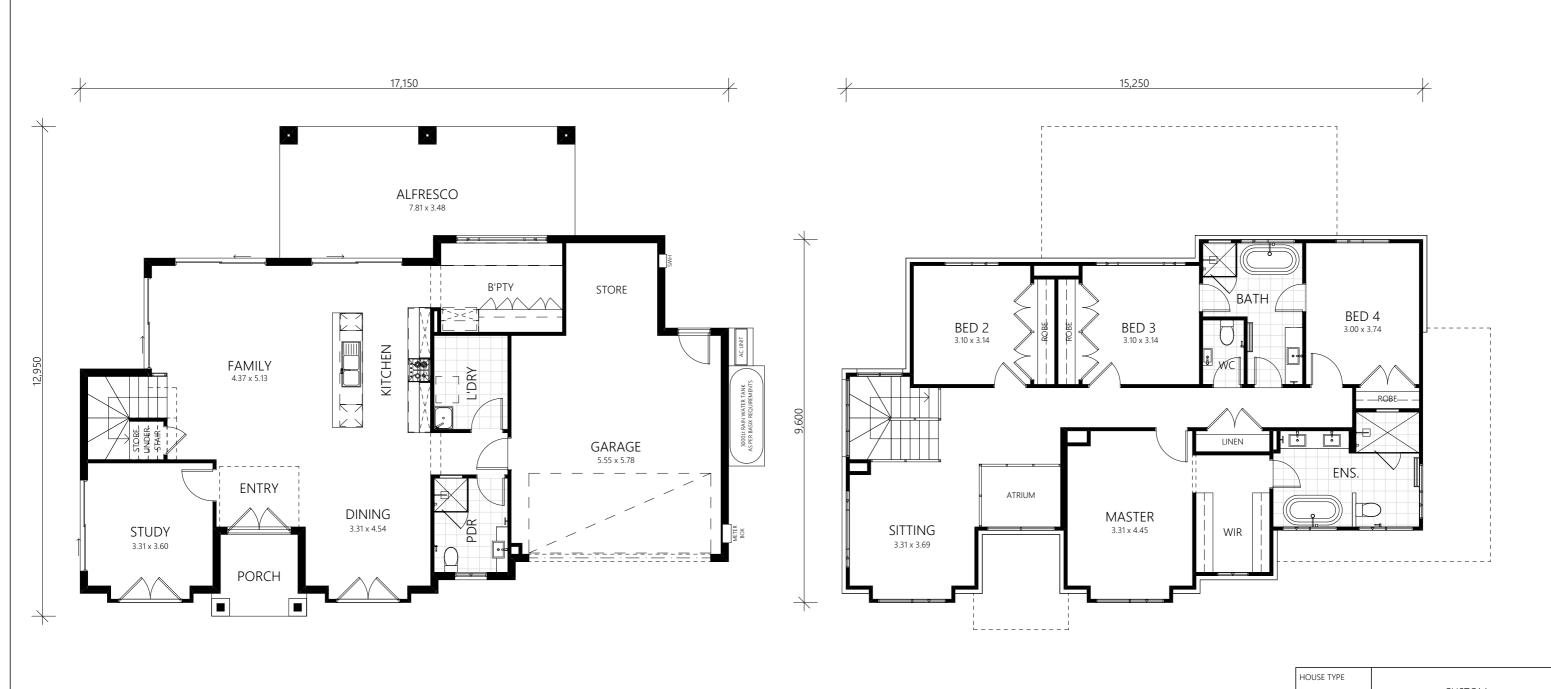
PRESENTATION PLANS

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В

COVER PAGE

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FLOOR	AREAS	
GROUND FLOOR	98.81	
GARAGE	41.66	
PORCH	4.70	
ALFRESCO	24.93	
FIRST FLOOR	121.64	
	291.74 m²	

HOUSE TYPE	
MODEL:	CUSTOM
FACADE:	HAMPTONS
GARAGE SIDE:	RH
COUNCIL:	NORTHERN BEACHES
DP No:	11162

PRESENTATION PLANS

CLIENT SIGNATURE:	
JOB NO:	LODGEMENT:
15227	DA/CC
DRAWN:	CHECKED:

06/12/19

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	FLOOR PLANS

3 of 4

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LOT 318, 33 KIRKWOOD STREET, SEAFORTH



ELEVATION 1

1:100



ELEVATION 3

1:100



ELEVATION 2

1:100



ELEVATION 4

1:100

HOUSE TYPE	
MODEL:	CUSTOM
FACADE:	HAMPTONS
GARAGE SIDE:	RH
COUNCIL:	NORTHERN BEACHES
DP No:	11162

PRESENTATION PLANS

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