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# *Bushfire Hazard Assessment*
# *1650 Horsley Drive*
# *Horsley Park*

*August 2015*

# CERTIFICATION

## Fire Hazard Assessment: 1650 Horsley Drive Horsley Park

Prepared by :-
Name : Joy Hafey
Qualifications : B. Sc. Ecology &Molecular Biology
Bushfire Consultant

I hereby certify that I have prepared the contents of this assessment
And to the best of my knowledge, it is true in all material particulars
And does not, by its presentation or omission of information, materially mislead

Signature....Joy Hafey.....
Name...Joy Hafey.....
Date 29th August 2015.....

## Summary

This Bushfire Hazard Assessment has been undertaken in support of a residential development application. It has been prepared in accordance with the Rural Fires Act and takes into consideration, the provisions for Planning for Bushfire Protection 2006 and the Addendum to Appendix 3 (2010). The following provides a summary of those requirements:

| | |
|---|---|
| **Subject Land** | 1650 Horsley Drive, Horsley Park |
| **Local Govt. Area** | Fairfield City Council |
| **Proposal** | Construction of a church hall and associated infrastructure |
| **Adjoining Development** | Residential development adjoining north, south and west, service station to the east |
| **Zoning** | Ru 2 (Rural Landscape) |
| **Bushfire Prone Land** | Category 1 vegetation to the southwest. |
| **Vegetation Classification** | Woodland (<1ha) |
| **Effective Slope** | Flatland |
| **Asset Protection Zones** | APZ able to be met within the site |
| **Road Access** | Sealed public road, two way. |
| **Water Supply** | Reticulated water service. Water hydrant adjacent to property. |
| **Electricity & Gas** | Underground electricity & other services. |
| **BAL** | Low BAL |
| **Level of Construction** | No-AS3959 construction required: Class 9b building |
| **Special Considerations** | No aboriginal or archaeological artifacts known. No threatened species identified on the site |

## Table of Contents

## A. Introduction

This Bushfire Hazard Assessment has been undertaken in support of a development application for the construction of a church and associated infrastructure. The site is located within a designated Bushfire Prone Area (Fairfield City Council ). The assessment has been prepared in accordance with the Rural Fires Act and takes into consideration, the provisions for Planning for Bushfire Protection 2006 and the more recent addendum to Appendix 3 (2010). As a Building Code of Australia (BCA) Class 9b building, the proposed development (place of worship) is not subject to AS 3959 but is 'considered on their merit under sections 79BA and 79C of the EP & A Act'. However, RFS 2006 Guidelines for the 'Planning for Bushfire Prevention', state that 'Class 9 buildings not being a SFPP should be considered as if they were an SFPP (Special Fire Protection Purpose Developments) and be subject to 4.2.7 Standards for Bush Fire Protection Measures for Special Fire Protection Purpose Developments Guidelines at building stage.

**The aim** of this report is to address the following

- To assess the bushfire threat to the property.
- To review the capabilities of the site to provide safe residential development
- To recommend mitigating measures to reduce the threat of bushfire attack.

## 1. The Proposal

A Development Application (DA) for Lot 90A (DP 17288), 1650 the Horsley Drive, Horsley Park has been lodged with Fairfield City Council, by Bethol Mar Thoma Church Sydney. The Development Application proposal is for the construction of a church / hall and associated infrastructure.

## 2. Description of the Subject Site (Study Site)

The subject site covers an area of approximately 30,000m$^2$.

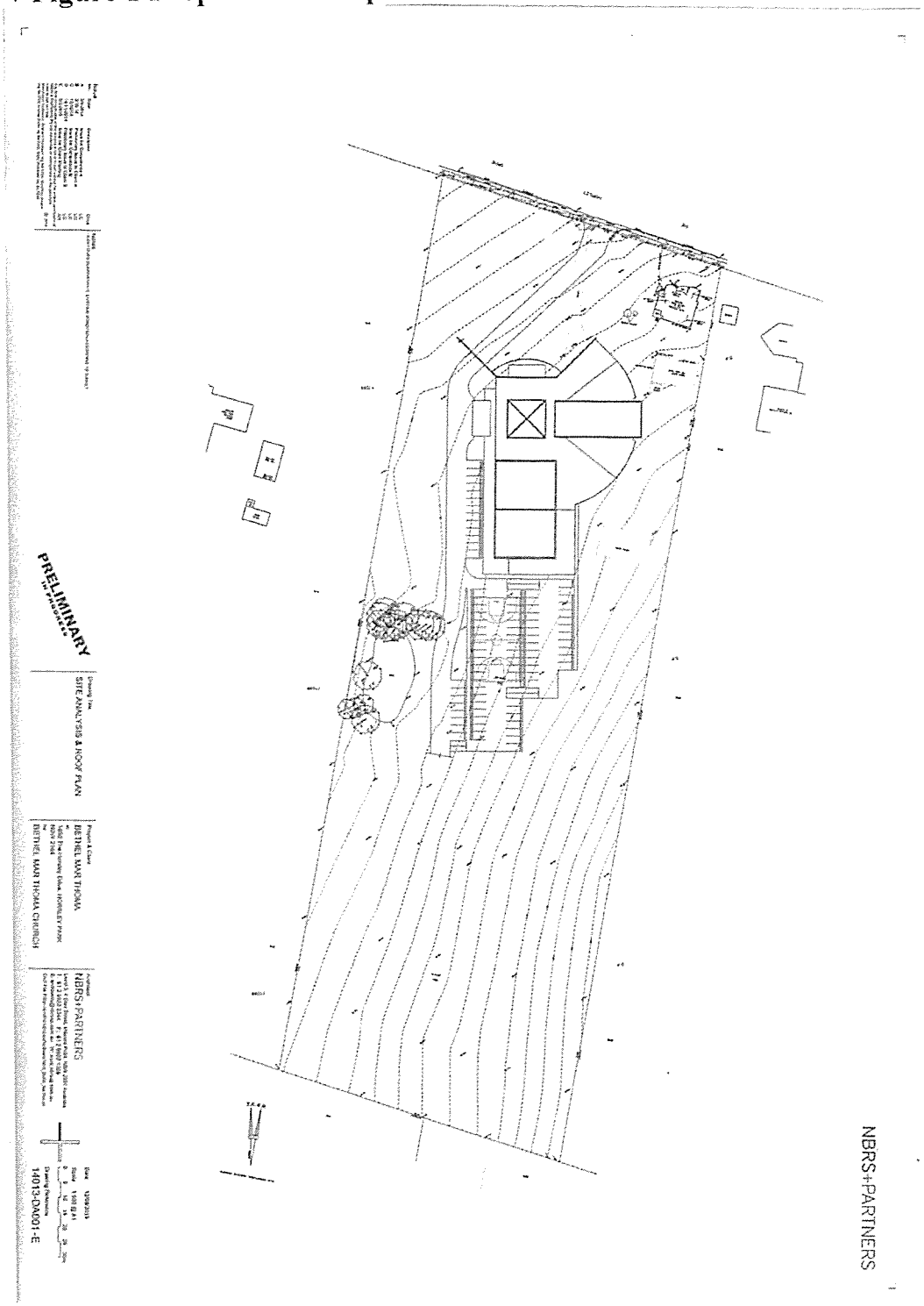
**2.1 Location** – The study site is situated 0.5 km east of the M7 motorway and approximately 40km west of Sydney CBD in the Fairfield LGA (see Figures 2& 3).

**2.2 Landform**- The subject site forms a part the undulating hills and flats of the Cumberland Plain. The property is relatively flat with a slight slope to the north west. The site forms a part of the Eastern Creek catchment.

**2.3 Soils** – The geology of the region consists of the mid Triassic period

with Wianamatta Group Shales overlaying Hawkesbury Sandstone. Soils on site are predominantly fertile clays of the Blacktown soil landscape (UBBS).

**▼Figure 1 Proposed Development**



**2.4Climate** - The climate of the area is temperate with the mean daily maximum temperature at 23.2 °C, the highest temperatures are recorded in December, January and February. The mean daily minimum temperature is 11.7° C with the lowest temperatures recorded in June, July and August. (Bureau of Meteorology). Frosts are common and the annual rainfall for the area is approximately 860 mm per annum.

**2.5.Biodiversity:**

The subject site is predominantly cleared and has been historically used for irrigation based agriculture. The raised garden beds with remnants of the irrigation system are still obvious on the site. The site is now covered in grasses and weeds with a small remnant of Shale Plains Woodland species on the mid western boundary (green line Fig.2.) surrounding the dam. This stand is not considered to constitute a fire hazard and contains abundant *Ligustrum lucidum* (Large Leaf privet), *Ligustrum sinese* (Small Leaf Privet) and *Olea europa sbsps. Africana* (African Olive). These are all noxious weeds to be removed.

It should be noted that this stand of vegetation is isolated from the main stand of vegetation presenting a fire hazard to the south east by a clearing and does not pose a fire hazard, being comprised of only a few trees around a small pond.

The remnant is dominated by *Eucalyptus amplifolia* to 20m in height. There is a dense understorey consisting predominantly of the above weed species. The retention of this small area of vegetation around the dam is important as it habitat for the threatened species, *Meridolum corneovirens* (Cumberland Plain Land Snail).


Reference : Sixmaps.nsw.gov.au. Accessed Nov. 2014

▲**Figure 2 Conditions on the Proposed Development Site 2015:** 1650 Horsley Drive proposed church location footprint shown in black, yellow lines denoting adjacent car park and facilities. The small stand of native vegetation around the dam is shown in purple. Vegetation presenting a fire hazard to the south east is indicated by the purple line. The vegetation within 140m radius from the church is included within the red circle.


Reference : Sixmaps.nsw.gov.au (Accessed May. 2015)

◄**Figure 3 Aerial Overview of the Development Site and Surrounds 2015:** The site, is located 0.5km to the east of the M7 expressway and to the south of Horsley Drive, Horsley Park in the Fairfield LGA. Remnant native vegetation occurs on the western boundary.

**The Aim** of the Bushfire Hazard Assessment is to provide an adequate assessment of the bushfire risk posed by the new development so that it is not sited in high hazard areas. The fire hazard to any existing dwellings is also taken into account.

**Revision of the standard levels of bushfire attack** has been undertaken in 2010. New categories of Bushfire Attack Levels (BAL) have been defined and they are as set out in table 1.

**The bushfire hazard assessment** is based on a number of parameters e.g condition of slope, aspect, distance from the hazard, fuel type and fuel level. The categories of bushfire attack for a site are used to determine the appropriate level of building construction.

**The current bushfire hazard assessment is based on:**

- A field survey on the 2nd August, 2015 to ascertain vegetative conditions and other abiotic features which influence fire events and behaviour eg., slope and aspect.
- Interpretation of aerial photographs and bushfire prone maps of the area.
- Review of the NSW Rural Fire Service and Planning NSW literature, Planning for Bushfire Prevention. (RFS 2006).

**Table 1 Bushfire Attack Levels**
**(Reference NSW Rural Fire Service 2010)**

| Bushfire Attack Level (BAL) | Description of predicted bushfire attack and level of exposure | Building construction AS3959 |
|---|---|---|
| BAL Low | Minimum attack from radiant heat and flame due to distance from the fire hazard vegetation. Some attack from burning debris possible. | Insufficient threat to warrant special construction standards |
| BAL 12.5 | Burning debris attack significant with low levels of radiant heat, not greater than 12.5 KW/m$^2$. Radiant heat is unlikely to threaten unscreened glass. | Specific construction required for ember protection and accumulation of burning debris. Level 1 AS3959 required |
| BAL 19 | Attack by burning debris is significant | Specific construction |

| | | |
|---|---|---|
| | with increased radiant heat levels (not greater than 19 KW/m²) threaten building elements | requirements for protection against ember and radiant heat necessary. Level 2 AS 3959 warranted. |
| BAL 29 | Attack by burning debris is significant with increased radiant heat levels (not greater than 29 KW/m²) threaten building integrity | Specific construction requirements for protection against embers and higher radiant heat are warranted. Some flame contact is possible. |
| BAL 40 | Increased attack by burning debris with significant radiant heat levels and potential for flame contact. The extreme radiant heat and potential flame contact could threaten building integrity. | Buildings must be designed and constructed in a manner that can withstand the extreme heat and potential flame contact. |
| BAL FZ | Radiant heat levels with exceed 40 KW/m². Radiant heat levels and flame contact are likely to significantly threaten building integrity and result in significant risk to residents who are likely to be inadequately protected. | Flame zone is outside the scope of the Building Code of Australia and the NSW RFS may recommend protection measures |

**Vegetation Assessment**

The subdivision site falls within Bushfire Prone Land (Fairfield City Council Bushfire Maps). See Figure 5 (below). A field survey of the site on the second of August 2015; however, showed this land to be substantially cleared.


▲ **Figure 5. Bushfire Prone Land Fairfield City Council**
Reference: Fairfield City Council Bushfire Prone Map (2003)

The vegetation category was assessed over a distance of 140m from the proposed residence. The following conditions were noted.

- To the immediate north, south, west and east the vegetation is cleared and managed on rural residential development.
- To the south west Shale Plains Woodland occurs; the vegetation is not continuous and the vegetation impacting on the proposed building constitutes <1ha in size. It therefore, has reduced fuel load and can be accorded the same set backs as a rainforest type vegetation

**Fire Danger Index of 100** is required to be used as the site falls within the Greater Sydney Region.

**Slope Assessment and Aspect**
The site has a northerly facing aspect. The effective slope between the fire hazard and the proposed development is measured over a distance of 100m. The effective slope is 0°, flatland.

**Category of fire attack**
The proximity of the proposed residence to the vegetation (<100), results in the building being exposed to a **12.5 BAL on the western and southern side.**

**Table 2 BAL Operating on the proposed church 1650 Horsley Drive, Horsley Park.**

| Parameter | North | South | East | West |
|---|---|---|---|---|
| Vegetation | Managed land | Managed land and forest (rainforest type setback as <1ha) | Managed Land | Managed Land and forest (rainforest type setback as <1ha) |
| Slope | Flatland | Flatland | Upslope | Flatland |
| APZ | n/a | 30m * | n/a | 30m * |
| BAL | BAL 12.5 | BAL 12.5 | BAL 12.5 | BAL 12.5 |

**Note. To comply with RFS Guidelines, 'A building with any facade identified as requiring a construction level must build all facades to at least BAL-12.5. Where more than one facade is exposed to a hazard, then the facade with the highest construction requirement is used to determine the appropriate level of construction. All other facades may be reduced by one level of construction unless that facade is also subject to the same bush fire attack level.**

*** The APZ listed is derived from Table A2.6 Minimum Specifications for Asset Protection Zones for Special Fire Protection Purposes in Bushfires Prone Areas <10kW/m$^2$, rainforest type set back as <1ha**

**C Bushfire Assessment Protection**

**Asset Protection Zone (APZ)**

If a bushfire hazard exists on or adjacent to the proposed development site, an Asset Protection Zone (APZ) must be established on the hazard side of the proposed development. The APZ will then act as a buffer zone between the proposed development and the hazard. The APZ consists of an Inner Protection Zone (IPZ) and an Outer Protection Zone (OPZ).

- The OPZ is located adjacent to the fire hazard and it is an area where fuel loads must be reduced. The outer protection zone may contain a few trees as long as they are free standing and do not form a continuous canopy.
- The IPZ is located next to the property to be protected and is an area