BUSHFIRE CONSTRAINTS
REPORT

for a
Proposed Residential Rezoning and Subdivision

at
Pt Lot 262 DP 1066601 and Pt Lot 72 DP 1069287
Heddon Greta
NSW

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1.0 INTRODUCTION
This Bushfire Constraints Report (BCR) is intended to identify suitable protection measures against the potential threat posed by bushfire for a proposed residential rezoning within Pt Lot 262 DP 1066601 and Pt Lot 72 DP 1069287, Forbes Crescent, Heddon Greta NSW (Figure 1). This BCR addresses the relevant requirements of the Environmental Planning and Assessment (EPA) Act (1979) and Rural Fires (RF) Act (1997) through the evaluation of such site specific considerations as vegetation assemblages, topographical features, the potential for mitigative measures and actual firefighting and evacuation capabilities of the site.

1.1 GENERAL DESCRIPTION OF THE SITE
The site is approximately 2 ha in area (Figure 2), and is located within the Heddon Greta Township. The topography of the site is generally level. The land has undergone a large amount of disturbance due to clearing and underscrubbing for bushfire protection purposes. As such the site is mostly cleared and vegetation has been reduced to a small number of trees with some shrub species growing at the base of these trees (Figures 3 & 4). Trees species mainly consisted of Angophora bakeri (Narrow-leaved Apple), Eucalyptus agglomerata (Blue-leaved Stringybark) and Eucalyptus parramattensis ssp. decadens (Drooping Redgum).

A drainage line flows along the southern boundary in a westerly direction. Access to the site is from Forbes Crescent along the northern boundary and from Ashleigh Street in the south. The immediate surrounds of the site are as described below:

- The northern boundary fronts Forbes Crescent with built rural/residential development on the other side of the road.
- Vacant residential lots that are currently on sale border the southern boundary. This area poses no bushfire risk.
- The northern half of the western boundary is adjacent to a rural/residential property and the rest of the boundary is situated next to grassland which currently forms part of the APZ for Lots in DP 1082561
- The eastern boundary is adjacent to a row of existing residential properties associated with the Heddon Greta township.

1.2 DESCRIPTION OF THE PROPOSAL
It is proposed that the site be rezoned from 6(a) Open Space to 2(a) Residential and subsequently be subdivided to provide 13 residential and rural residential allotments varying in size between 927.6m²
to 2405.4m². Ashleigh Street will be extended to provide access to 11 of the 13 lots proposed for the site and 2 lots will have access and direct frontage to Forbes Crescent.

1.3 PREVIOUS APPROVALS

To the south of the site vacant residential lots (DP 1082561) are approved for construction. This land is still currently for sale and construction has still not begun. As a condition of approval for this site a Section 88B Covenant (Conveyancing Act 1919) detailing the required APZ areas required was established. This APZ forms part of the western boundary for this site.

To the north of the site Heddon Leigh Estate has been approved and is under construction.
Figure 1: Location of the site
Figure 3: Photo of site looking south from the northern boundary showing the Woodland in the centre of the site and the cleared residential blocks beyond.

Figure 4: Photo of site looking northeast from the southwest corner.
2.0 LEGISLATIVE REQUIREMENTS

This report is specifically aimed at addressing the proposed rezoning in terms of protection from the threat of bushfire under the Environmental Planning and Assessment (EPA) Act (1979) and the Rural Fires (RF) Act (1997), particularly with regard to the following:

- **Section 63(2) of the RF Act (1997)**
  
  It is the duty of the owner or occupier of land to take the notified steps (if any) and any other particular steps to prevent the occurrences of fires on, and to minimise the danger of the spread of fires on and from that land.

- **Section 79C(1) of the EPA Act 1979**
  
  In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:
  
  - the likely impacts of the development (eg. natural hazards such as bushfire threat)
  
  - the suitability of a site for development (eg. bushfires)

- **Section 91 of the EPA Act 1979**
  
  What is Integrated Development?


  In this case the proposal is a residential rezoning and subdivision and accordingly qualifies as integrated development, requiring a Bushfire Safety Authority from the Rural Fire Service.
3.0 METHODOLOGY

3.1 VEGETATION ASSEMBLAGES
The initial determination of the basic vegetation community boundaries was undertaken through the review of an orthophoto covering the site. Following this, a detailed ground survey was conducted. The ground survey was undertaken on 11th May 2005, and involved a foot traverse of the site and the vegetation communities within 140 metres of the site. During this traverse the species observed were recorded as well as the physical attributes of the surrounding area, taking into account the height of each primary structural layer and relative cover abundance of the species within. The vegetation communities identified were classed according to Specht’s ‘Pictorial Key to the Structural Forms of Australian Vegetation’, as reproduced in Figure A2.2 of ‘Planning for Bushfire Protection’ (NSW Rural Fire Service, 2001).

Through the identification of the dominant vegetation features present, a basis is provided for an evaluation of the occurrence of combustible plant species on the site.

3.2 TOPOGRAPHY
The slopes within the site were calculated from a LDS Surveyors topographic map of the subject site and verified during the site inspection using an inclinometer. The slopes on site and within the immediate vicinity were grouped into slope classes: 0-5°, 5-10°, 10-15°, 15-18° and >18° down slope and >5° and 5-0° upslope.

3.3 BUSHFIRE PROTECTION ASSESSMENT
The Bushfire Protection Assessment undertaken for the proposed development follows the methodology contained in Appendix 2 of ‘Planning for Bushfire Protection’ (NSW Rural Fire Service, 2001). The principal aim of this assessment is to determine the minimum protection zones required for the proposed development based on the vegetation assemblages present and the topography of the site. The threat of bushfire is from the vacant land surrounding the site on the western side, however this area forms part of an APZ created in the subdivision of DP 1082561 and therefore is already protected from bushfire attack.

3.4 BUSHFIRE ATTACK ASSESSMENT
The Bushfire Attack Assessment undertaken for the proposed development follows the methodology contained in Appendix 3 of ‘Planning for Bushfire Protection’ (NSW Rural Fire Service, 2001). The principle aim of this assessment is to determine the minimum building construction standards for the proposed development. The Bushfire Attack Assessment is based on the distance of proposed buildings from vegetation assemblages and the topography of the site and immediate surrounds.
4.0 RESULTS

4.1 VEGETATION SURVEY

A general description of the flora assemblage identified on site and 140m around the site is given below.

The site has undergone a high degree of disturbance due to clearing and underscrubbing for bushfire protection purposes. As such the site is mostly cleared and vegetation has been reduced to a small number of trees with some shrub species growing at the base of these trees.

An aerial view of the surrounding land uses is shown in Figure 5 and 6. The distribution of the vegetation communities denoted is shown in Figure 7*.

*Note on Vegetation Community Distribution Map. A map of vegetation of any area seeks to describe the distribution of the plant species in that area by defining a number of vegetation units (assemblages or communities) which are relatively internally homogenous. Whilst such mapping is a convenient tool, it greatly oversimplifies the real situation. Plants rarely occur in defined communities with distinct boundaries. Accordingly vegetation units used for the accompanying map should be viewed as indicative of their extent rather than being precise edges of communities.

4.1.1 FLORA ASSEMBLAGES

<table>
<thead>
<tr>
<th>Direction</th>
<th>Vegetation community description</th>
<th>Distance from site boundary</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>N/A</td>
<td>N/A</td>
<td>Road and residential properties.</td>
</tr>
<tr>
<td>South</td>
<td>Vacant residential Lots</td>
<td>0m - &gt;140m</td>
<td>Few large trees, no understorey. Recently cleared.</td>
</tr>
<tr>
<td>East</td>
<td>N/A</td>
<td>N/A</td>
<td>Residential properties</td>
</tr>
<tr>
<td>West</td>
<td>Grassland</td>
<td>0m - 100m</td>
<td>Tussocky grass. Patchy due to recent clearing for APZ purposes.</td>
</tr>
<tr>
<td></td>
<td>Kurri Sand Swamp Woodland</td>
<td>100m – 140m</td>
<td>Relatively undisturbed Kurri Sand Swamp Woodland.</td>
</tr>
</tbody>
</table>

Vegetation On Site

Disturbed Kurri Sand Swamp Woodland

This community is situated through of the centre of the site and is characterised by *Eucalyptus parramattensis* ssp. *decadens* (Drooping Red Gum) and *Angophora bakeri* (Narrow-leaved Apple). The understorey is restricted to the bases of trees due to recent underscrubbing associated with bushfire protection. Species found here included *Leptospermum polygalifolium* (Lemon-scented Tea Tree), *Bossiaea rhombifolia*, *Melaleuca thymifolia* and *Lambertia formosa* (Mountain Devils). The
Figure 5: Aerial photograph of the site and its surrounds taken in April 2005

Figure 6: Aerial photograph of the site and its surrounds taken in April 2005
Figure 7: Vegetation assemblages in the vicinity of the site
grass layer was relatively bare but sparsely consisted of several species including *Entolasia stricta*, *Chloris gayana* (Rhodes Grass) and *Themeda triandra* (Kangaroo Grass).

4.2 **TOPOGRAPHY**

The topography of the study area and the surrounding 140m was predominantly 0-5° (Figure 8).

4.3 **BUSHFIRE PROTECTION ASSESSMENT**

As mentioned in Section 3.3, the threat of bushfire for the proposed development is from the vacant land adjacent to the western boundary on land in Part Lot 72 DP 1069287.

To the southwest Grassland exists on a slope of 0-5° downslope. Grassland vegetation is classified as Group 3 vegetation. For a residential dwelling located near Group 3 vegetation irrespective of the slope class the recommended Asset Protection Zone is 20m, maintained to IPA standards and this is included in the APZ created in the subdivision of DP 1082561. Therefore no new APZ is required.

The implementation of the recommended APZs is discussed in Section 5.1.
<table>
<thead>
<tr>
<th>DIRECTION</th>
<th>SLOPE CLASS</th>
<th>VEGETATION CLASS</th>
<th>APZ REQUIRED (note A)</th>
<th>APZ AVAILABLE</th>
<th>CATEGORY OF BUSHFIRE ATTACK</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>0-5° upslope</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Road and developed land immediately north.</td>
</tr>
<tr>
<td>East</td>
<td>0-5° upslope</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Eastern boundary adjacent to residential land.</td>
</tr>
<tr>
<td>South</td>
<td>0-5° downslope</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Adjacent to vacant residential blocks.</td>
</tr>
<tr>
<td>West</td>
<td>0-5° downslope</td>
<td>APZ maintained to IPA standards</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Most of boundary adjacent to residential block, southwest exposed to Grassland</td>
</tr>
</tbody>
</table>

Notes
A: APZ required for Residential Purposes based on Planning for Bushfire Protection
4.4 BUSHFIRE ATTACK ASSESSMENT

This Bushfire Attack Assessment identifies categories of bushfire threat to the proposed development. The assessment is based on slope and distance from the vegetation. Using Table A3.3 as contained in Appendix 3 of the ‘Planning for Bushfire Protection’ (NSW RFS, 2001) potential attack categories include Flame Zone, Extreme, High, Medium and Low. Associated with these categories are building level classifications recommended for asset protection.

As shown in table 2, an APZ is already present along the western boundary negating the need for any further bushfire protection (Figure 9). This would result in development greater than 30m, but not greater than 50m from areas of Grassland.

The Grassland to the southwest of the site is on a slope of 0-5° downslope and as such the bushfire category of Low applies. The expected fire behaviour for this category is ‘Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible’. There is insufficient threat to warrant specific construction requirements.

Construction standards are discussed further in Section 5.2.
Figure 8: Slope classes in the vicinity of the site
Figure 9: Recommended APZ

Existing Asset Protection Zone on Lot 72 DP106287
5.0 RECOMMENDATIONS
The following recommendations are based on the results of the Bushfire Protection and Attack Assessment and are specifically aimed at providing the proposed development with adequate protection from bushfires. These recommendations relate to the ongoing management of the threat of bushfire to the proposed development.

5.1 ASSET PROTECTION ZONES
The primary purpose of an APZ is to ensure that a progressive reduction of bushfire fuel occurs between the bushfire hazard and any development. It incorporates two recognised zones, these being the Outer Protection Area (OPA) and the Inner Protection Area (IPA).

The Inner Protection Area is an area directly surrounding a building in which there is minimum fine fuel at ground level. Scattered trees can remain within the IPA, provided none of the trees have canopies that touch or that are immediately adjacent. The IPA can include lawns, gardens, swimming pools and driveways, as well as access roads such as perimeter fire trails. The Outer Protection Area is an area outside the IPA in which the fine fuels have been reduced such that the IPA is effectively isolated from the majority of the flames and heat and protected from airborne sparks, ash and incendiaries. These areas can be cleared by mechanical means or by controlled slow burning.

As calculated in Section 4.3 of this report, no APZ is required as an APZ is already present along the western boundary as a result of the subdivision of DP 1082561 (Figure 9). This APZ is maintained to IPA standards.

5.2 BUILDINGS
As stated in Section 4.4 of this report, the category of Bushfire Attack ‘Low’ applies to the proposed development. For the ‘Low’ Bushfire Attack category, no construction standards apply. The construction requirements relate to the specifications given in the Australian Standards AS3959 – 1999 and relate to flooring systems; support posts, columns, stumps, piers and poles; external walls; windows; external doors; vents and weepholes; roofs; eaves; fascias; gutters and downpipes; verandas and sundecks; and service pipes (water and gas). For example, the requirements in regards to windows as per the Australian Standards AS3959 – 1999 are as follows:

**Level 1 construction:** All operable windows, including louvres shall be screened with a corrosion-resistant steel, bronze or aluminium mesh with a maximum aperture size of 1.8mm in such a way that the entire opening remains screened when window is open.

**Level 2 construction:** As for Level 1 except that aluminium mesh shall not be used. In addition, where timber is used it shall be of fire retardant-treated timber except where protected by non-combustible shutters. Where leadlight windows are used,
they shall be protected by shutters constructed of non-combustible material or made of toughened glass.

**Level 3 construction:** as for Level 2 except that where windows are not protected by non-combustible shutters, they shall be glazed with toughened glass.

### 5.3 ROADS & ACCESS

Given that sealed suburban road access to the site is already available at two points in the north and south of the site it is considered that the design criteria as devised by the Rural Fire Service (2001) are already fulfilled.

### 5.4 BUSHFIRE EVACUATION

The subdivision design enables satisfactory evacuation via Ashleigh Street and Forbes Crescent during bushfire attack. These roads provide direct access to the existing village of Heddon Greta and Main Road.

### 5.5 FURTHER RECOMMENDATIONS

Water supply for the fighting of bushfires is an important consideration for all developments in bushfire prone areas. It is envisaged that in the event of a bushfire nearing the site, water would be sourced from Fire Brigade tankers and a reticulated water supply. HWC Reticulated Water Mains with fire hydrants currently exist in Hall Street and Forbes Crescent and will be extended into the proposed 13 Lot subdivision. Hydrants will be clearly marked and placed at suitable spacings.

In the event of a bushfire occurring in the vicinity of the site first response would most likely be from Kurri Kurri NSW Fire Brigade located approximately 3.5km from the site or Louth Park Rural Fire Brigade located approximately 6km from the site.
6.0 CONCLUSION

A Bushfire Constraints Report has been undertaken for a proposed residence on Pt Lot 262 DP 1066601 and Pt Lot 72 DP 1069287, Forbes Crescent, Heddon Greta NSW. The site is approximately 2 ha in size and is located on the western side of the Heddon Greta Township. The land has undergone a high degree of disturbance due to clearing and underscrubbing for bushfire protection purposes. As such the site is mostly cleared and vegetation has been reduced to a small number of trees with some shrub species growing at the base of these trees. The northern boundary fronts Forbes Crescent whereas developed residential lots border the eastern boundary and the northern part of the western boundary. Vacant residential lots and Grassland similar in appearance to the site border the remainder of the site. The topography of the study area and the surrounding 140m was predominantly 0-5°.

It is proposed that the site be rezoned from 6(a) Open Space to 2(a) Residential and subsequently be subdivided to provide 13 residential and rural residential allotments varying in size between 927.6m² to 2405.4m². Ashleigh Street will be extended to provide access to 11 of the 13 lots proposed for the site and 2 lots will have access and direct frontage to Forbes Crescent.

As calculated in the results section of this report, no APZ is required as an APZ is already present along the western boundary as a result of the subdivision of DP 1082561. This APZ is maintained to IPA standards.

As stated in Section 4.4 of this report, the category of Bushfire Attack ‘Low’ applies to the site and as such no construction standards under AS3959 are warranted.

In addition to APZs and construction requirements, consideration was given to access and water supply. Access to the site provided by Ashleigh Street in the south and the Forbes Crescent frontage in the north. In the event of a bushfire occurring in the vicinity of the site first response would be from Kurri Kurri NSW Fire Brigade located approximately 3.5km from the site or Louth Park Rural Fire Brigade located approximately 6km from the site. It is assumed that water supply in a bush fire situation would be sourced primarily from Fire Brigade tankers and a reticulated mains supply. HWC Reticulated Water Mains with fire hydrants currently exist in Hall Street and Forbes Crescent and will be extended into the proposed 13 Lot subdivision. Hydrants will be clearly marked and placed at suitable spacings.

It is believed that with the implementation of the bushfire protection measures recommended in this report that the potential threat of bushfire to the proposed development will be managed effectively and in accordance with the guidelines contained in the document ‘Planning for Bushfire Protection’ (NSW RFS, 2001).
7.0 BIBLIOGRAPHY

LPI (2001), *Topographic & Orthophoto Map 1:25000: Beresfield 9232-3N*, LPI, Bathurst, NSW


Wildthing Environmental Consultants (2005), *8-Part Test for a Proposed Residential Rezoning at Pt Lot 262 DP1066601 and Pt Lot 72 DP1069287 Heddon Greta NSW*. 

Wildthing Environmental Consultants