Midal Cables International Pty Limited

Tomago Rod and Conductor Manufacturing Facility

Bushfire Constraints Analysis

July 2011

Contents

1. Introduction

1.1 Purpose of this Report

Midal International Pty Limited (Midal) is proposing to construct an Aluminium Rod and Conductor Manufacturing Facility at Tomago in Port Stephens LGA NSW.

This report has been prepared by GHD as part of the environmental assessment of the project. Midal is the proponent of the project, and the environmental assessment is being prepared by GHD in accordance with the requirements of Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report assesses potential bushfire constraints on the project.

1.2 Project Outline

Midal proposes to construct an aluminium rod and conductor manufacturing facility on a 2.8 hectare parcel of land adjacent to the Tomago Aluminium Smelter at Tomago in Port Stephens. This facility will process molten aluminium purchased and transported from the Tomago Aluminium Smelter, effectively value adding to the smelter's existing output. It will produce products not previously manufactured in Australia thus reducing imports into Australia of aluminium conductors for electricity transmission purposes and provide an export opportunity for aluminium rod.

Midal have entered into a long term supply contract with Tomago to supply molten metal to the proposed facility. The facility will process 50,000 tonnes of aluminium per year. This aluminium will be cast into rods with half the production being exported and half being further processed into aluminium conductors.

The proposal includes:

- Construction of an approximately 150 metre long dedicated haul road from the Tomago Aluminium Smelter to the proposed facility;
- Two large buildings to accommodate the rod and conductor manufacturing processes and storage of finished products;
- Several smaller buildings providing workshop facilities and storage;
- Provisions for car parking; and
- Provisions for efficient drainage, water reuse and sewage treatment.

A detailed site layout of the proposal is provided in Figure 3.

1.3 Site Details

The site of the proposed facility is on industrial land off McIntyre Road within the Tomago Industrial Area approximately six kilometres north-west of the Port of Newcastle and immediately east of the Tomago Smelter (Figures 1 & 2). This land comprises Lots 5 and 6 in DP 270328 and is of an area of approximately 2.8 hectares.

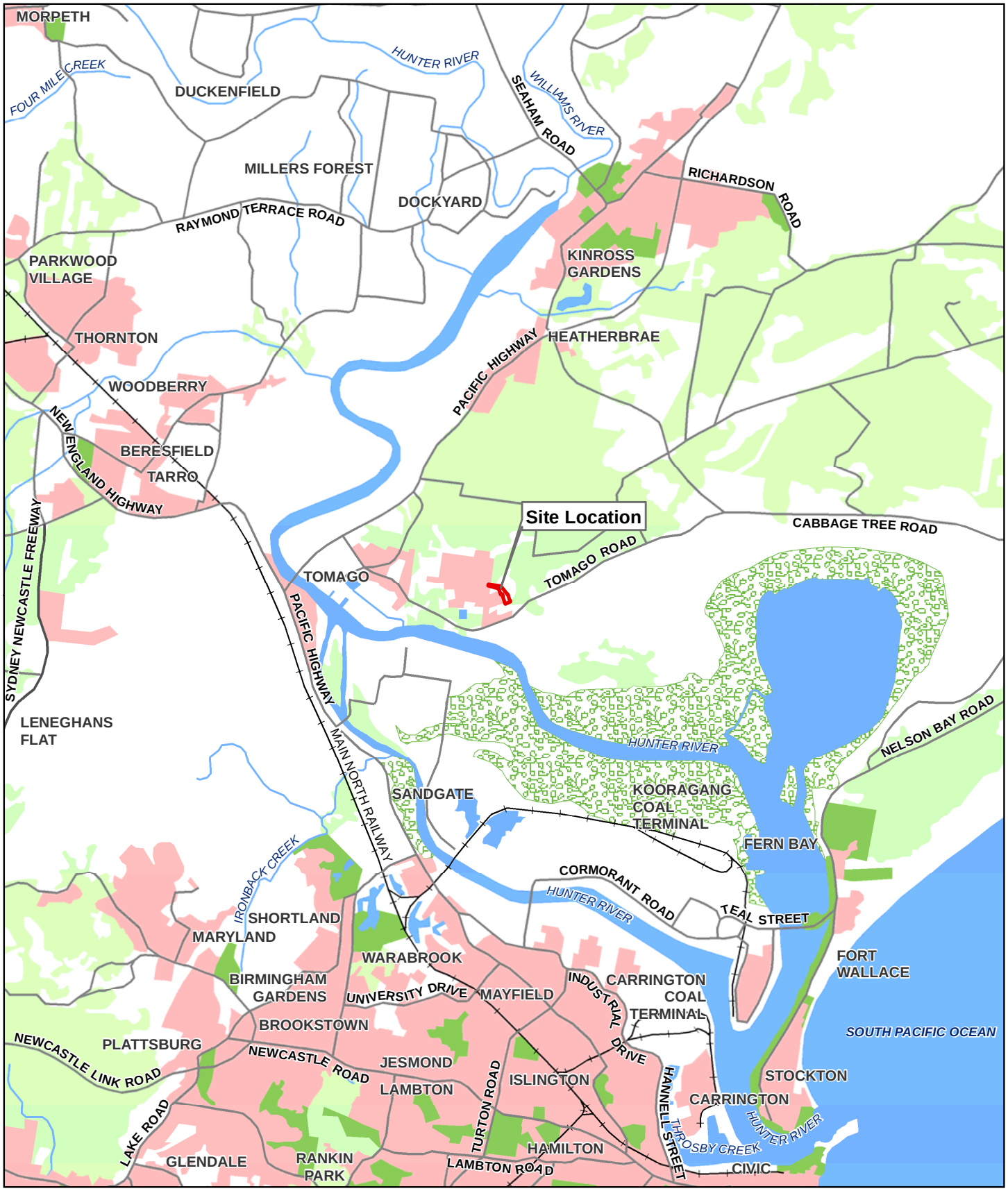
The surrounding development to the east and west comprises industrial activities relating to the Tomago Aluminium Smelter. The land immediately to the north and south is bushland and lies within the Tomago Aluminium Corporation (TAC) Buffer Zone. The buffer zone was established as a condition of consent for the development approval of the Tomago Aluminium facility. The zone is designated as an environmental

management zone which aims to reduce land uses that are incompatible with the operations of the smelter through controlling the uptake of land.

1.4 Scope and Structure of Report

The report includes a description of the existing location and environment of the study area, an assessment of the potential bushfire hazards and recommended bushfire protection measures for incorporation into the development. The report culminates with an assessment of compliance of the development in relation to the standards presented in Section 79BA of the EP&A Act and Section 4 of *Planning for Bushfire Protection* (PBP) (NSW RFS 2006a) and *Addendum: Appendix 3* of the PBP (NSW RFS 2010).

This report can be used for its intended purpose only. Any recommendations made in this report relating to the clearing or modification of vegetation to meet setback requirements do not constitute approval or authority to modify or remove vegetation.



LEGEND

- Freeway
- Roads
- Railways
- Watercourse
- Watercourse Area
- Built Up Areas
- Recreation Areas
- Forestry Reserve
- Mangrove
- Forest Or Shrub
- Extent of Works

1:100,000(at A4)

0 365 730 1,460 2,190 2,920

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Midal Cables International Pty Ltd
Tomago Rod and Conductor Manfacturing Facility
Environmental Assessment

Job Number	22-15280
Revision	A
Date	13 JUL 2011

Regional Context Plan

Figure 1

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

G:\22\15280\GIS\Maps\Deliverables\EA\2215280_EA_001_RegionalContext_20110713_A.mxd

Data Source: Geoscience Australia: 250k Topographic Data Series 3 - 2006. Created by: fmackay, tmorton

LEGEND

Extent of Works

1:25,000 (at A4)

0 95 190 380 570 760

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Tomago Rod and Conductor Manfacturing Facility
Environmental Assessment

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Date	13 JUL 2011

Local Context Plan

Figure 2

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

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Data Source: Nearmap: Imagery - 2011. Created by: fmackay, tmorton

LEGEND

- Proposed Car Park
- Proposed Building Footprint
- Proposed Haul Road
- Extent of Works
- Cadastre

1:2,500 (at A4)

0 10 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Midal Cables International Pty Ltd
Tomago Rod and Conductor Manfacturing Facility
Environmental Assessment

Job Number 22-15280
Revision A
Date 12 Oct 2011

Site Layout

Figure 3

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

G:\22\15280\GIS\Maps\Deliverables\EA\2215280_EA_003_OverallLayout_20110713_A.mxd

Data Source: NearMap: PhotoMap - 2011; LPMA: DTDC - 2007. Created by: fmackay, tmorton, mbarnier

2. Methodology

The methodology used for this assessment involved the following steps:

2.1 Desktop Assessment

The desktop assessment included collation and analysis of:

- Bushfire Prone Land mapping;
- Aerial photography sourced from NSW Land and Property Management Authority;
- Slope assessment from contour information; and
- Vegetation, physical relief, tenure, roads and other descriptive feature mapping.

2.2 Vegetation Assessment

Vegetation surveys and vegetation mapping on and surrounding the site comprised

- Ecological investigations carried out by GHD for this project;
- Aerial photography interpretation to map vegetation cover and extent for a distance of 140 metres; and
- Confirmation of the vegetation assemblage typology from site inspection carried out as part of GHD's ecological investigations.

2.3 Analysis

The project is an industrial development (Building Code of Australia – Building Class 8) and the objectives, intent, performance criteria and solutions for bush fire protection measures detailed in PBP are presented below as a guide for:

- Restricting development types;
- Asset protection zone (APZ) setbacks;
- Access – public roads, property access roads and fire trails; and
- Services – water, electricity and gas.

3. Hazard Assessment

3.1 Bush Fire Prone Land

The subject land is zoned bushfire prone (Vegetation Category One (orange)), according to a Bush Fire Prone Land map certified by the Commissioner of the NSW Rural Fire Service for the Port Stephens LGA (Figure 4). Vegetation within and adjoining the subject land and site of the proposed works constitutes a potential bushfire threat, with adjoining lands also classified as bushfire prone or bushfire buffer.

Development of land classified as bushfire prone land is subject to a number of bushfire related planning controls under the NSW EP&A Act and the *NSW Rural Fires Act 1997*. The specific planning controls are detailed in PBP (NSW RFS 2006a) and *Addendum: Appendix 3* of PBP (NSW RFS 2010).

The aims and objectives of *Planning for Bushfire Protection* (NSW RFS 2006a and 2010) apply to industrial developments and are used to guide this analysis.

Figure 4 Bushfire Hazard Map

3.2 Vegetation

Predominant vegetation formations were determined in accordance with A2.3 of PBP (NSW RFS 2006a) and Table A3.5.1 of the addendum to PBP (NSW RFS 2010).

Vegetation within the subject land is comprised of the following communities as shown in Figure 5:

- Smooth-barked Apple – Red Bloodwood Shrubby Open Forest (Smooth-barked Apple (*Angophora costata*)/ Red Bloodwood (*Corymbia gummifera*)); and
- Exotic open grassland.

Using broad vegetation types identified in PBP and derived from Keith (2004) these vegetation types fall into the Dry Sclerophyll Forest – Shrubby subformation and Grassland (NSW RFS 2010), described as:

Dry Sclerophyll Forest – Shrubby subformation:

- Dominated by eucalypts 10-30 m with crowns that touch or overlap.
- Canopy foliage cover in many areas is 20-50%; and
- Understorey dominated by shrubs, including banksias.

Grassland:

- Dominated by grasses and broadleaved herbs; and
- Lack of woody plants.

These vegetation classifications are synonymous with AUSLIG (1990) Forest and Scrub classifications (respectively) utilised by A3959-2009 – *Construction of Buildings in Bushfire Prone Areas.*

3.3 Effective Slope

The site of the proposed facilities is of gentle relief rising slightly from south to north. North of the site is upslope while south of the site is 0-5 degrees downslope.

Effective slope will significantly influence fire behaviour for the site and have been used guide APZs determination (Table 1).

3.4 Fire Weather

Port Stephens LGA area is within the Greater Hunter Region, and has a corresponding Fire Danger Index rating of 100 (NSW RFS 2006a).

3.5 Environmental and Cultural Features

The subject land is located to the immediate east of Tomago Aluminium Smelter approximately 300 metres north of the Tomago Road. To the north of the subject land is undeveloped land zoned for environmental management as part of the TAC buffer zone and has previously been subject to bushfire, clearing, sandmining and vehicle access. The land includes a range of exotic grasses and weeds such as lantana.

The Nationally listed threatened species the New Holland Mouse (*Pseudomys novaehollandiae*) is recorded from the site.

There are no Aboriginal Cultural Heritage sites recorded from the subject land.

LEGEND

- **Investigation Area**
- Smooth Barked Apple Red Bloodwood Shrubby Open Forest
- Exotic Open Grassland
- Hardstand

1:3,000 Paper Size A4

0 10 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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Midal Cables International Pty Ltd
Tomago Rod and Conductor Manfacturing Facility

Vegetation of the Site

Job Number	22-15280
Revision	3
Date	27 Jul 2011

Figure 5

Level 3, 24 Honeysuckle Drive, Newcastle NSW 2300 Australia **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com **W** www.ghd.com

G:\22\15280\GIS\Maps\Working\22_15280_5_1_VegitationOfTheSite20110727_Rev3.mxd

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by:mabarnier

4. Bushfire Protection Measures

The subject land is zoned as bushfire prone (Section 3.1). The subject land does not have a specific zoning under the Bush Fire Risk Management Plan (Lower Hunter Bush Fire Management Committee (LHBFMC) 2009).

The aims and objectives of PBP (NSW RFS 2006a) and Addendum: Appendix 3 (NSW RFS 2010) apply to industrial development. The following bushfire protection measures have been developed from the bushfire assessment to assist in minimising potential impacts from bushfire.

4.1 Asset Protection Zones

An APZ is an area surrounding a residential development or asset, managed to reduce bushfire hazard to an acceptable level. PBP provides a consistent and transparent basis for determining minimum requirements for APZs for residential or special purpose developments in bush fire prone areas in NSW.

While the proposed development is not a residential or a special purposes development, as an industrial development the APZ setbacks have been developed to meet the aims and objectives of PBP, with PBP and *Addendum: Appendix 3* used as a guide. Industrial developments are not required to achieve the APZ requirements for a residential or special purposes development sited at the same location, and the construction standards of industrial buildings serve to reduce the impacts of bushfire. The infrastructure is not intended for habitation and it is therefore considered that the planned APZ widths for the site are adequate. The APZ width for the site is 20-25 metres with APZs as detailed in Table 1.

Table 1 Asset Protection Zone Setbacks

Boundary	Vegetation Class	Effective Slope Class	APZ (if a residence)
Northern	Forest	Upslope	20 m
Eastern	Grass	Upslope	Not required
Southern	Forest	>0-5º	25 m
Western	Nil	N/A	Not required

Standards for Asset Protection Zones (NSW RFS 2005) identifies requirements to reduce fuels in APZs. The APZ widths for the subject land can be incorporated within the site and as they will be formed as hardened surfaces for the operation of the facility, exceed the standard required for the maintenance of an APZ.

4.2 Construction Standard

As an industrial development (Class 5,6,7 and 8), the *Building Code of Australia* (BCA) bushfire performance requirements or A3959-2009 – *Construction of Buildings in Bushfire Prone Areas* do not apply, however these construction provisions relating to access and services have been addressed as acceptable solutions (Section 5).

4.3 Access

Site access is via sealed roads from the west (Tomago Aluminium Smelter) and from the south to Tomago Road. These access routes exceed the 'Fire Trail – Category 1' standard (BFCC 2003) for access.

Vehicular access in and around the proposed buildings would cater for heavy vehicle movements and is considered adequate for the provision of fire access throughout the developed portion of the site.

4.4 Services (Water, Electricity and Gas)

The project is serviced by access to mains water supply.

The following acceptable solutions relate to the provision of new services:

- Where fire fighting water supply outlets are fitted they have suitable coupling for fire fighting services, are located next to carparks and not located within a carriageway;
- Electrical transmission lines are to be located underground;
- Reticulated or bottled gas shall be installed and maintained in accordance with AS 1596 and the requirements of relevant authorities;
- Fixed gas cylinders are to be located at a minimum distance of 10 m from all flammable materials and are to be shielded from radiant heat; and
- Gas release valves are to be located a minimum of 2 m from combustible material and be directed away from buildings. All gas connections are to be metal.

4.5 Additional Recommendations

A number of additional recommendations are suggested for bushfire protection during construction and operation of the project. They include:

- Preparation of a site management plan that details bushfire prevention measures to be implemented during construction and later for the operation of the facility during the designated bushfire season including but not limited to:
  - Work involving risk of ignition should not be carried out during total fire bans;
  - Details of the fire suppression equipment available on site; and
  - Appropriate storage and maintenance of fuels and other flammable materials'
- Emergency procedures should be detailed for any persons located at the site during the bushfire season; and
- Local Rural Fire Service Control Centre should be notified of the dates during which construction is to be undertake and any dates during which 'hot works' are to be conducted should be highlighted, this would enable the Rural Fire Service to advise when weather conditions are not appropriate to carry out the works proposed.

In addition it is recommended that retained vegetation within the site (outside the identified APZs) and adjoining the development site (Dry Sclerophyll Forest - Shrubby subformation) is managed in accordance with the *Bush Fire Risk Management Plan* (Lower Hunter Bush Fire Management Committee (LHBFMC) 2009), the burning intervals identified under the *Bushfire Environmental Assessment Code*

(NSW RFS 2006b) and the *Threatened Species Hazard Reduction List* (NSW RFS 2004). The burning interval for Dry Sclerophyll Forest – Shrubby subformation within a designated land management zone (LHBFMC 2009) is one fire within 10 years (NSW RFS 2006b). This prescription would coincide with the burning regime recommended for the New Holland Mouse (*Pseudomys novaehollandiae*) of patchy, low-intensity autumn burns at intervals of 10 years to maintain a mosaic of habitat types and fuel ages (TSU 1999).

5. Assessment of Compliance

The bushfire protection measures (Section 4) are designed to reflect the compliance standards Section 79BA of the EP&A Act and Section 4 of PBP (NSW RFS 2006a). The project's compliance is detailed in Table 2 below.

Table 2 Assessment of compliance

Measure	Assessment of Compliance
Asset Protection Zones	**The proposed development can achieve the performance criteria by complying with the acceptable solutions,** *i.e.:* ◗ APZs are provided with regard to the *Aims and* Objectives and Appendix 2 of *Planning for Bushfire Protection 2006a* (Section 4.1); ◗ The APZ is wholly within the boundaries of the development site (Section 4.1); ◗ The APZ will exceed the requirements for *Standards for Asset Protection Zones (RFS 2005)* (Section 4.1); and ◗ The APZ is located on lands with slopes less than 18 degrees.
Public Roads and Property Access Roads	**The proposed development can achieve the performance criteria by complying with the acceptable solutions**, *i.e.;* Public roads and internal access routes are two-wheel drive and: ◗ Do not have a crossfall or average road grade exceeding 10 degrees; ◗ Permit turning circles of sufficient dimensions; ◗ Curves are minimal and have the required dimensions; ◗ Road capacity is greater than 15 tonnes; ◗ Hydrants will be located outside of parking areas; and ◗ Fire suppression vehicles can operate from internal property access or the public road.
Services – Water, Electricity and Gas	**The proposed development will achieve the performance criteria, and aims and objectives of PBP by complying with the following acceptable solutions:** ◗ Water supply on site are adequate to meet the needs of fire fighters (and others assisting); ◗ Electricity will be underground; and ◗ Gas supplies will be installed in accordance with AS 1596.

6. Conclusion

The project consists of the construction of non-residential industrial buildings, internal site roads and a carpark. Construction would result in alteration of the physical environment, both through the removal of vegetation and ground disturbance.

The proposed development would not change the bushfire hazard, and would increase the provision of services and access within the site.

The bushfire protection measures incorporated into the project comply with the *Aims and Objectives*, and the *Acceptable Solutions* of the performance criteria, identified in *Planning for Bush Fire Protection* (NSW RFS 2006a and 2010). This includes the incorporation of asset protection zones along the boundaries of buildings adjoining natural bushland, and provision of access and egress routes within and outside the site. Any vegetation retained within the site is to be managed in accordance with the requirements of *Planning for Bush Fire Protection* (NSW RFS 2006a) and other relevant legislation.

7. References

Bush Fire Coordinating Committee (BFCC). 2007. *BFCC Policy No. 1/2003 – Fire Trails*, adopted by the NSW Bush Fire Coordinating Committee – Minute No. 26/2007

Lower Hunter Bush Fire Management Committee (2009) *Bush Fire Risk Management Plan,* prepared for submission to the BFCC.

NSW RFS (NSW Rural Fire Service) (2004) *Threatened Species Hazard Reduction List,* NSW Rural Fire Service

NSW RFS (2006a) *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities and Developers.* Prepared by NSW Rural Fire Service in cooperation with the Department of Planning

NSW RFS (2006b) *Bush Fire Environmental Code for NSW.* Prepared by NSW Rural Fire Service

NSW RFS (2010) *Addendum: Appendix 3* of the Planning for Bushfire Protection

NSW RFS (undated) *Standards for Asset Protection Zones.* NSW Rural Fire Service, Granville NSW

Standards Australia 1999. *AS3959 – 1999 Construction of Buildings in Bushfire-prone areas.* Standards Australia and the Australian Building Codes Board, Sydney

Standards Australia 2002 *AS/NZS 1596 The Storage and Handling of LP Gas.*

Standards Australia 2005. *AS2419.1 – 2005 Fire Hydrant installations – System design, installation and commissioning*

Threatened Species Unit (TSU) (1999). Listing Statement: New Holland mouse *Pseudomys novaehollandiae*. Tasmanian Parks and Wildlife Service. Hobart ***in*** *EPBC Nomination to list Fire regimes that cause biodiversity decline as a key threatening process* Department of Sustainability, Environment, Water, Population and Communities (http://environment.gov.au/biodiversity/threatened/ktp/fire-regimes.html Accessed 26 July 2011)

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
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