Bushfire Appendix H

Report

5 MW Biomass Power Plant

Eden, NSW

Bush Fire Assessment

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Prepared for

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Abbreviations

APZ	Asset Protection Zone
BCA	Building Code of Australia
EA	Environmental Assessment
EP&A Act	*Environment Planning and Assessment Act* 1979
IPZ	Inner Protection Zone
m	Meters
NSW	New South Wales
OPA	Outer Protection Area
PBP	Planning for Bushfire Protection
RF Act	*Rural Fires Act* 1997
RFS	Rural Fire Service
SEFE	South East Fibre Exports
URS	URS Australia Pty Ltd

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Introduction

South East Fibre Exports Pty Ltd (SEFE) operates a woodchip mill and export facility at Eden, NSW, approximately 400 km south of Sydney. The Munganno Point mill site is located on the southern shoreline of Twofold Bay (**Figure 1-1**) and has been in operation for some 40 years. The existing facility includes log receival and storage, debarking, chipping and an associated process plant, and wharf / ship-loading facility for the export of woodchips.

Figure 1-1 SEFE woodchip mill and export facility, Eden

SEFE plans to construct a Wood Waste to Energy (Biomass) facility (Power Plant) on the site of the existing waste burner. The Power Plant will burn wood waste generated from SEFE's current operations as well as wood waste imported from other mills.

The Project is being considered under Part 3A of the *Environment Planning and Assessment Act* 1979 (EP&A Act), and accordingly the Project does not require approvals under the NSW *Rural Fires Act* 1997 (RF Act). The Project does not require referral to the NSW Rural Fire Service (RFS) under Section 79BA of the EP&A Act as neither residential nor rural-residential developments are proposed.

Whilst there is no formal requirement for consideration of bush fire risk under Part 3A, an assessment has been requested by the Director General. URS has considered the guidelines and requirements of the RFS (2006a, 2006b) for site planning purposes, to determine the potential risk of bush fire to the proposed development and to provide mitigation measures to address any potential risk.

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Methodology

2.1 Desktop Review

The desktop study involved a detailed review of the planning and hazard management requirements contained in the RFS (2006a) document *Planning for Bush fire Protection* (PBP) and a review of the relevant standards under the Building Code of Australia (BCA)[1]. Bush fire prone land mapping for Bega Valley Shire was obtained from council and existing bush fire control measures for the current site obtained from SEFE.

2.2 Field Survey

A site inspection was carried out between 22 and 24 June 2009 during which the surrounding vegetation and existing fire protection measures were assessed.

The following were either determined during the survey or by assessing existing data recorded on the site and surrounding land:

- potential bush fire hazard; and
- existing fire protection measures.

Vegetation formation and slope are typically required in order to determine the appropriate bush fire protection measures under the PBP. However, given that the proposed development will be located within an industrial site with existing fire protection measures this information was not collected.

[1] PBP recognises AS 3959-1999 as the appropriate guide for certain classes of building. Where development occurs in a bush fire prone area certain bush fire provisions of the BCA will apply for building classes 1,2,3,4 and class 9 buildings that are also for special fire protection purposes.

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Hazard Assessment

3.1 Bush Fire Prone Land

The Bega Valley Shire bush fire prone mapping (**Figure 3-1**) indicates that the site and the surrounding land is mapped as bush fire prone land (categories one and two). The mapped areas correspond to areas of vegetative canopy cover visible in aerial photography and in vegetation mapping of the site.

3.2 Asset Protection Zones

Asset Protection Zones (APZs) are recommended in PBP as a key measure for the mitigation of bush fire risk. They are an interface between the proposed development and the adjacent bushland that is managed to minimise fuel loads. The aim of an APZ is to minimise fuel loads to ensure that radiant heat levels at buildings are below critical limits and to prevent direct flame contact with a building.

The APZ generally comprises two sections: an Inner Protection Zone (IPZ) and Outer Protection Area (OPA). The IPA is located adjacent to the building with the aim of reducing heat intensity at the building surface. It is maintained largely fuel-free and can contain widely spaced trees, with low density understorey vegetation and low fuel loads in the ground layer. Perimeter roads, car parks and cycle ways can be located in the IPA and serve as a 'defendable space' for fire fighting activities and for access to manage the APZ. The OPA is managed as a fuel reduced zone between the IPA and the adjoining bushland and aims to reduce the length of flames, filter embers and suppress a crown fire. The OPA can be maintained as managed bushland, with canopy thinning so there is limited canopy connection into the IPA and a reduced density of understorey vegetation.

The proposed Power Plant will be constructed on the site of the existing waste burner. Areas surrounding the proposed development site include site roads and access tracks, cleared land for stockpiling timber and existing plant infrastructure. These areas form part of the existing IPZ for the site. The existing OPA includes surrounding native vegetation broken up by perimeter access tracks and public roads (**Figure 1-1**). **Table 3.1** shows the distances of existing APZs from surrounding forest vegetation. These existing APZs satisfy requirements outlined in the PBP.

Table 3-1 Existing Asset Protection Zones

Site Boundary	Vegetation Formation *	Inner Protection Zone (m)	Outer Protection Area (m)	Total APZ (m)
North	Forest	40	50	90
South	Forest	160	190	250
East	Forest	320	40	360
West	Forest	180	80	260

* as measured over 140m from the proposed boundary of the facility

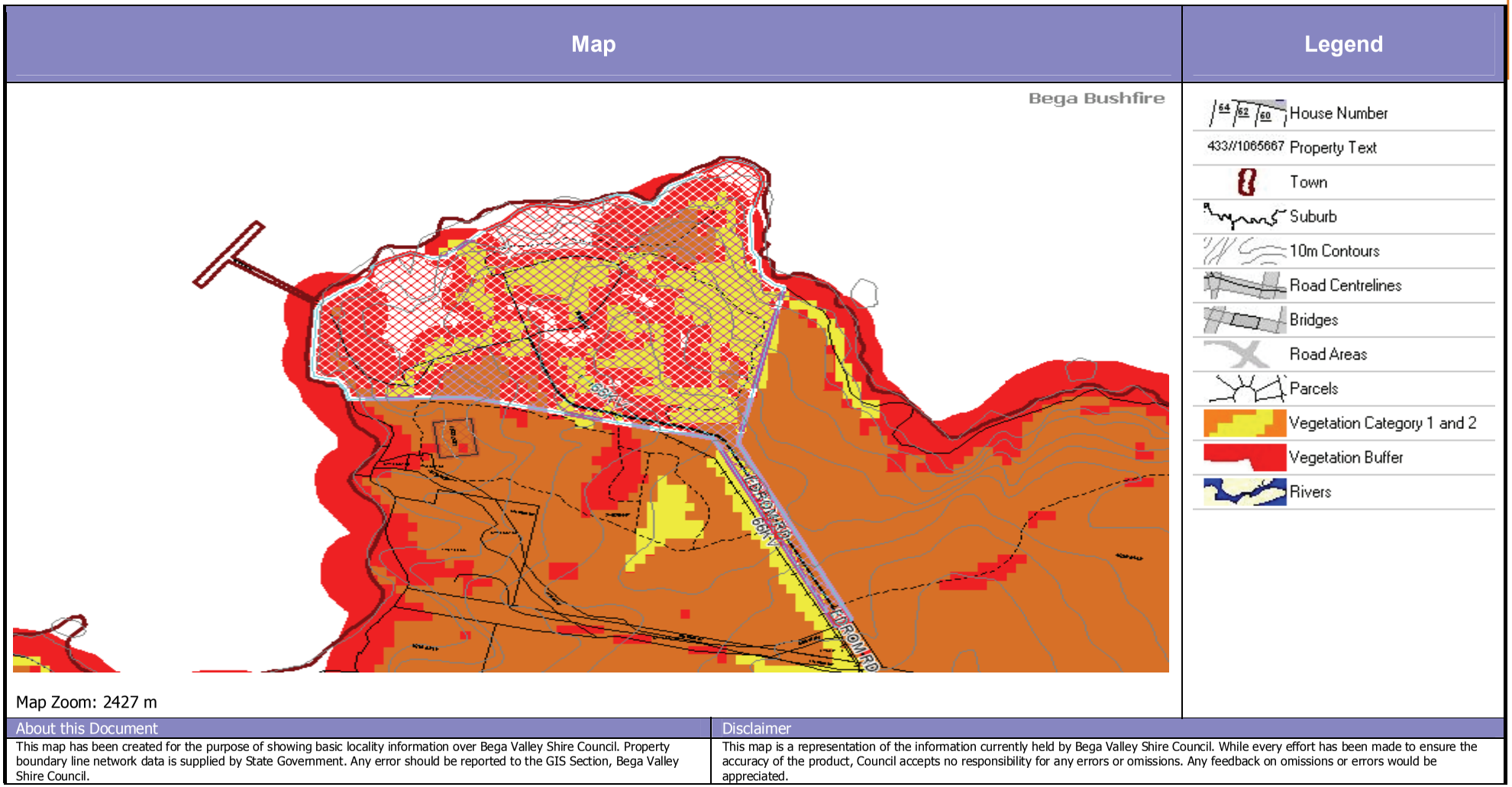

Figure 3-1 Bush fire mapping for the site

3.3 Bush Fire Assessment

PBP also prescribes minimum building standards or level of construction, according to the Building Code of Australia (BCA), for buildings in bush fire prone areas. In NSW the bush fire protection provisions are applied to Class 1, 2, 3 buildings, parts of Class 4 buildings and Class 9 buildings that are for Special Fire Protection Purposes. Building classes 5-8 and 10 include industrial facilities such as the proposed Power Plant.

Providing the existing APZs are maintained, GIS calculations of the distance between the proposed building and the nearest vegetation hazard are between 40-320 m (average of 207.5m). Reference to Table A3.3 of PBP (with a FDI of 100, vegetation class of forest and slope of 0), indicates that the category of bush fire attack for all boundaries adjacent to existing woodland and the corresponding building standard is ‘no requirement’, according to Australian Standard AS 3959-1999.

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Management

4.1 Active Mitigation/Suppression

There are currently a number of mitigation measures in place at the SEFE site to minimise the risk of bush fires. These will apply to the proposed development and are listed below:

- hazardous substances are appropriately stored with signage and fire control measures according to the Dangerous Goods Act and Regulations and the Australian Standards (AS 1940);
- an Emergency Response Plan is in place for the site and all staff are trained to ensure familiarity with the plan and their respective responsibilities;
- an underground fire main provides water for fire fighting;
- a buffer zone between the mill and surrounding vegetation is maintained;
- the site has a Fire Emergency Plan;
- the site has a dedicated fire tender; and
- routine fire training is undertaken for all mill personnel.

4.2 Water Supply

There is currently an underground fire main to provide water for fire fighting.

4.3 Access/Egress

The key access and egress issues of relevance to planning for bush fire protection during operation of the Power Plant relate to:

- maintaining existing access for fire fighting vehicles;
- safe evacuation egress for fire fighting vehicles and staff vehicles; and
- maintenance of existing defendable spaces, located between potential hazards that can accommodate fire fighting vehicles safely and provide a staging place for fire fighting.

The proposed works will be connected to the public road system via existing access to Edrom Road.

4.4 Vegetation Management

Implementation of the measures recommended below (during the operation of the plant) will reduce the risk of bush fire attack on the site.

4.4.1 APZ Management

Where practicable, vegetation surrounding the Site and within the APZ would be managed to provide:

- clearly defined on ground APZ management boundaries, e.g. logs placed on the ground, tagged star pickets or boundary fence;
- tree canopy separation (by at least 2m where possible);
- discontinuous shrub layer;
- vertical separation between vegetation strata;
- retention of low native groundcovers, including grasses and shrubs (where no connection exists between shrubs and between shrubs and trees); and
- maintenance of fuel loads through mowing/slashing during the spring/early summer months, as necessary.

4 Management

4.4.2 Landscaping

If landscaping is carried out as part of the proposed development the following is recommended:

- use of ‘fire retardant’ species where possible;
- use of local provenance stock, preferably representative of the vegetation communities recorded on the site;
- no planting of landscaping trees within 2m of any building;
- placement of plantings to ensuring tree canopies do not overhang structures; and
- use of non-combustible mulch, such as stones, where possible.

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Mitigation Measures

The Power Plant will be located within an existing wood chip plant adjacent to bush fire prone land, however the proposed facilities will be surrounded by cleared land within the existing plant boundary. Based on existing APZs for the proposed work site the risk to life and property of bush fire attack is rated as low. However it is considered prudent to maintain the existing AZPs and bush fire prevention strategies to minimise the risk of bush fire attack. Bush fire protection on the site comprises the following elements:

- APZs extending out (towards the hazard) to a minimum of 15m from the edge of proposed buildings, plant and structures;
- creation of access to the site (including to the water tanks) for fire fighting vehicles and for maintenance of the APZs;
- design and management of proposed landscaping to avoid creation of a new bush fire hazard;
- incorporation of infra red beam heat detectors to ensure fire protection and management systems for the site are activated in case of fire from adjoining land;
- water sprinkler or gaseous (e.g. CO_2) systems installed on high risk buildings; and
- heat detectors and smoke alarms on built assets to enable automatic commencement of fire suppression, which would include sprinkler systems and/or non ozone-depleting fire suppression and sealing of the enclosure to ensure fire is managed within structures.

Table 5-1 identifies the strategy for meeting bushfire planning and management objectives for the proposed works.

Table 5-1 PBP Bush Fire Planning & Management Objectives

PBP Objective	Approach
Ensure that the bush fire risk to adjoining lands is not increased.	Existing APZs would not be reduced and any landscaping would be suitable for fire prone areas.
Provide a minimum defendable space.	Maintenance of defendable space for all class 8 structures.
Provide better bush fire protection, on a re-development Site, than the existing situation. This should not result in new works being exposed to greater risk than an existing building.	Not applicable. The proposal is not for re-development.
Ensure that the footprint of the proposed building does not extend towards the hazard beyond existing building lines on neighbouring land.	Not applicable.
Not result in an increased bush fire management and maintenance responsibility on adjoining land owners unless they have agreed to the development.	All new bush fire protection measures would be contained within Site boundaries.
Ensure building design and construction enhances the chances of occupant and building survival.	Buildings and infrastructure would be constructed to BCA standards.

5 Mitigation Measures

A summary of the mitigation measures applicable to the proposed works is provided **Table 5-2**.

Table 5-2 Summary of Bush Fire Mitigation Measures

Mitigation Measures	Implementation of measures		
	Design	Construction	Operation
Manage the Power Plant consistent with current bush fire management practices employed on the site.	✓	✓	✓
Ensure that the Power Plant is included in the sites emergency response procedures.	✓	✓	✓
Maintain existing APZs along all boundaries consistent with *Standards for Asset Protection Zones* (RFS 2007).	✓	✓	
Maintain the current water supply to the site and ensure water supply tank(s) contain Storz fittings compatible with RFS hoses.	✓	✓	✓
Where practicable, provide landscaping that includes the following features: • tree canopy separation by at least 2m; • discontinuous shrub layer (clumps or islands of shrubs where possible; not rows); • vertical separation between canopy and shrub layer; • tree canopies not overhanging structures; • no landscaping trees within 2m of any building; • use of non-combustible mulch; and • use of 'fire retardant' species of local provenance.	✓	✓	✓

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References

Australian Building Codes Board (2006). *Building Code of Australia.* Commonwealth of Australia.

RFS (2007). *Standards for Asset Protection Zones.* NSW Rural Fire Service, Sydney [online] http://www.bushfire.nsw.gov.au/file_system/attachments/State08/Attachment_20060130_7DE0A145.pdf

RFS (2006a). *Planning for Bushfire Protection: a guide for councils, planners, fire authorities, developers.* NSW Rural Fire Service and Planning NSW, Sydney, NSW [online] http://www.rfs.nsw.gov.au/file_system/attachments/State08/Attachment_20070301_0A17F845.pdf

RFS (2006b) *Building in bushfire prone areas: single dwellings.* [online] http://www.rfs.nsw.gov.au/file_system/attachments/State08/Attachment_20071101_F80A043B.pdf

Standards Australia (2005). *AS 2419.1 – 2005 Fire hydrant installations – system design, installation and commissioning*.

Standards Australia (1999). *As 3959, Construction of buildings in bush fire prone areas*

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