

**MALDON EMPLOYMENT LANDS
LOCAL ENVIRONMENTAL STUDY**

BUSHFIRE PROTECTION ASSESSMENT

FOR

WOLLONDILLY SHIRE COUNCIL



Australian Bushfire Protection Planners Pty Limited

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Assessment Number	Document	Preparation Date	Issue Date	Directors Approval
B101304 - 1	Final	16.12.2010	2.8.2011	<i>G.L.Swain</i>

EXECUTIVE SUMMARY

Wollondilly Shire Council resolved at the Ordinary Meeting of Council held on Monday 17th March 2008 that in accordance with Section 54 of the *Environmental Planning & Assessment Act 1979*, Council prepare a Draft Wollondilly Local Environmental Plan 1991 [WLEP1991] – Amendment No. 75 or Draft Wollondilly Local Environmental Plan 2010 [WLEP 2010] – Draft Amendment No. 1 to rezone Lot 2 in DP 818975; Lots 1, 2 & 3 in DP 732582; Lot 1 in DP 105348; Lot 31 in DP 731012; Lots 30 & 31 in DP 826690 and Part of Lot 1 in DP 1128013.

The land is currently zoned RU2 Rural Landscape under Wollondilly LEP 2011 and is located immediately adjacent to two parcels of land which are zoned IN3 Heavy Industrial. It is proposed to rezone the lots from RU2 to IN1 General Industrial pursuant to Wollondilly LEP 2011. An E3 Environmental Management Zone is proposed adjacent to the Nepean River to protect the riparian buffer and ecologically endangered communities.

Adjoining industrial zoned land is zoned IN3 Heavy Industrial under LEP 2011 in keeping with current uses.

The land to be rezoned is adjacent to the Blue Circle Southern Cement Works and the recently constructed Allied Mills Flour Mill.

The Commissioner of the NSW Rural Fire Service advised Wollondilly Shire Council in a letter dated 28 July 2009 that *'the subject area is identified as bushfire prone on the Wollondilly Bushfire Prone Land Map. Development applications for all development on bushfire prone lands will be required to comply with either Section 79BA of the Environmental Planning & Assessment Act 1979 or Section 100B of the Rural Fires Act 1997 depending on the nature of the proposed development'*.

'In relation to future commercial, industrial or other development uses [excluding residential or Special Fire Protection Purpose development] on bushfire prone land it is suggested that the aims and objectives of Planning for Bushfire Protection 2006 be considered in the planning stages of these developments. Consideration of the aim and objectives includes the following:

Aim:

- *The protection of human life [including fire-fighters] and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, on-site amenity and protection of the environment;*

Objectives:

- *Afford occupants of any building adequate protection from exposure to a bushfire;*
- *Provide for a defensible space to be located around buildings;*
- *Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*

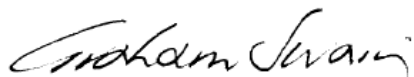
- *Ensure that safe operations access and egress for emergency service personnel and residents is available;*
- *Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the Asset Protection Zone [APZ];*
- *Ensure that utility services are adequate to meet the needs of fire-fighters [and others assisting in bushfire fighting]’.*

Australian Bushfire Protection Planners Pty Limited has been commissioned to prepare a Bushfire Protection Assessment for the proposed rezoning of the land within the Maldon Employment Lands Study.

The Wollondilly Bushfire Prone Land Map records that the rezoning precinct is impacted by bushfire prone vegetation therefore future development within the precinct will be required to address the provisions of Sections 79BA of the *Environmental Planning & Assessment Act 1979* or the provisions of Section 100B of the *Rural Fires Act 1997* [for the future subdivision of the land if the land contains residential development i.e. Manager’s Residence.

This report undertakes an assessment of the bushfire protection measures required to address the bushfire risk to the future General Industrial development, consistent with the Aim & Objectives of *Planning for Bushfire Protection 2006*.

The characteristics of the site, as discussed in this report, together with the fire protection measures recommended, provide that the proposed General Industrial Zoning is suitable in terms of its intended land use.



Graham Swain
Managing Director,
Australian Bushfire Protection Planners Pty Limited.

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SECTION 1

INTRODUCTION

1.1 Statutory Requirements.

This report has been prepared having regard to the following legislative and planning requirements:

1.1.1 Legislation.

(a) *Environmental Planning and Assessment Act (EPA Act)*

Planning and development within NSW is regulated by the *Environmental Planning & Assessment Act, 1997* (EPA Act).

In relation to the rezoning of land for the protection against the impacts of bushfires, Ministerial Direction No. 4.4 – *Planning for Bushfire Protection* issued 1st July 2009 [under Section 117 (2) of the *Environmental Planning & Assessment Act – 1979*] applies to all Councils that are required to prepare a bushfire prone land map under Section 146 of the *Environmental Planning & Assessment Act 1979*.

Pursuant to Ministerial Direction No. 4.4 – Planning for Bushfire Protection, the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under Section 56 of the Act, and prior to undertaking community consultation in satisfaction of Section 57 of the Act, and take into account any comments so made:

A planning proposal must:

- Have regard to Planning for Bushfire Protection 2006;
- Introduce controls that avoid placing inappropriate developments in hazardous areas, and;
- Ensure that bushfire hazard reduction is not prohibited within the Asset Protection Zone.

A planning proposal must, where development is proposed, comply with the following provisions, as appropriate:

(a) Provide an Asset Protection Zone [APZ] incorporating at a minimum:

- An Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and

- An Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road.
- (b) For infill development [that is development within an already subdivided area], where an appropriate APZ cannot be achieved, provide for an appropriate performance standard in consultation with the NSW Rural Fire Service. If the provisions of the draft LEP permit Special Fire Protection Purposes [as defined under Section 100B of the *Rural Fires Act 199*], the APZ provisions shall be complied with;
- (c) Contain provisions for two-way access roads which link to perimeter roads and/or to fire trail networks;
- (d) Contain provisions for adequate water supply for fire fighting purposes;
- (e) Minimise the perimeter of the area of land interfacing the hazard which may be developed;
- (f) Introduce controls on the placement of combustible materials in the Inner Protection Area, and;

A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Director General of Planning [or an officer of the Department nominated by the Director-General] that Council has obtained written advice from the Commissioner of the NSW Rural Fire Service, to the effect that, notwithstanding the non-compliance, the NSW Rural Fire Service does not object to the progression of the planning proposal.

1.1.2 Planning Policies.

Planning for Bushfire Protection – 2006 (NSW Rural Fire Service)

This document provides guidance on the planning and development control processes in relation to bushfire protection measures for residential subdivision, Special Fire Protection and Industrial Developments in bushfire prone areas.

The Commissioner may determine, under Section 100B of the *Rural Fires Act*, additional measures that are considered necessary to protect the development against the impact of bushfire.

1.2 Development Proposal.

Wollondilly Shire Council resolved at the Ordinary Meeting of Council held on Monday 17th March 2008 that in accordance with Section 54 of the *Environmental Planning & Assessment Act 1979*, Council prepare a Draft Wollondilly Local Environmental Plan 1991 [WLEP1991] – Amendment No. 75 or Draft Wollondilly Local Environmental Plan 2010 [WLEP 2010] – Draft Amendment No. 1 to rezone land at Maldon for future General Industrial landuse.

1.3 Documentation reviewed in this assessment.

- Wollondilly Vision 2025;
- Wollondilly Development Contributions Plan;
- Wollondilly Local Environmental Plan 1991;
- Draft Wollondilly Local Environmental Plan 2009;
- Strategy Documents supporting Draft Wollondilly Local Environmental Plan 2009;
- Maldon Industrial Lands Investigation – TCG Planning 28 March 2008;
- Draft Community Strategic Plan 2030 – Growing Your Future Together May 2010;
- Metropolitan Strategy “City of Cities, A Plan for Sydney’s Future”;
- Draft Sub-regional Strategy for Southwest Sydney;
- Section 117 Directions;
- DECC – General Guidelines for Strategic Planning – Metropolitan Sydney – updated July 2008;
- Maldon Local Environmental Study Flora & Fauna Survey and Constraints Maps prepared by Biosis Research Pty Ltd;
- *Planning for Bushfire Protection 2006* prepared by the NSW Rural Fire Service/Planning N.S.W.;
- Australian Standard AS3959 - 2009 *Construction of Buildings in Bushfire Prone Areas*;
- *Rural Fires Regulation 2008*;
- Wollondilly Shire Bushfire Prone Land Map.

1.4 Site Inspection.

Graham Swain of *Australian Bushfire Protection Planners Pty Limited* inspected the rezoning precincts on the 3th November 2010.

SECTION 2

DESCRIPTION OF REZONING PRECINCT

2.1 Location.

The lots which are the subject of the rezoning proposal are:

- Lot 2 in DP 818975 [200 Picton Road];
- Lot 1 in DP 732582 [240 Picton Road];
- Lot 2 in DP 732582 [250 Picton Road];
- Lot 3 in DP 732582 [290 Picton Road];
- Lot 1 in DP 105348 [Maldon Zone Substation];
- Part Lot 1 in DP 1128013 [Allied Mills - 330 Picton Road];
- Lot 31 in DP 731012 [300 Picton Road]; and
- Lots 30 & 31 in DP 826690 [390 – 400 Picton Road]

These nine properties are located within Maldon, to the east of the township of Picton and include the southern part of the Allied Mills site which rises steeply from the heavily vegetated Nepean River riparian corridor up to undulating cleared grazing land adjacent to the Main Southern Railway Line.

The remaining properties occupy the cleared land between Picton Road and the Main Southern Railway Line.

Figure 1 – Location of Rezoning Precinct



Figure 2 – Cadastre Plan

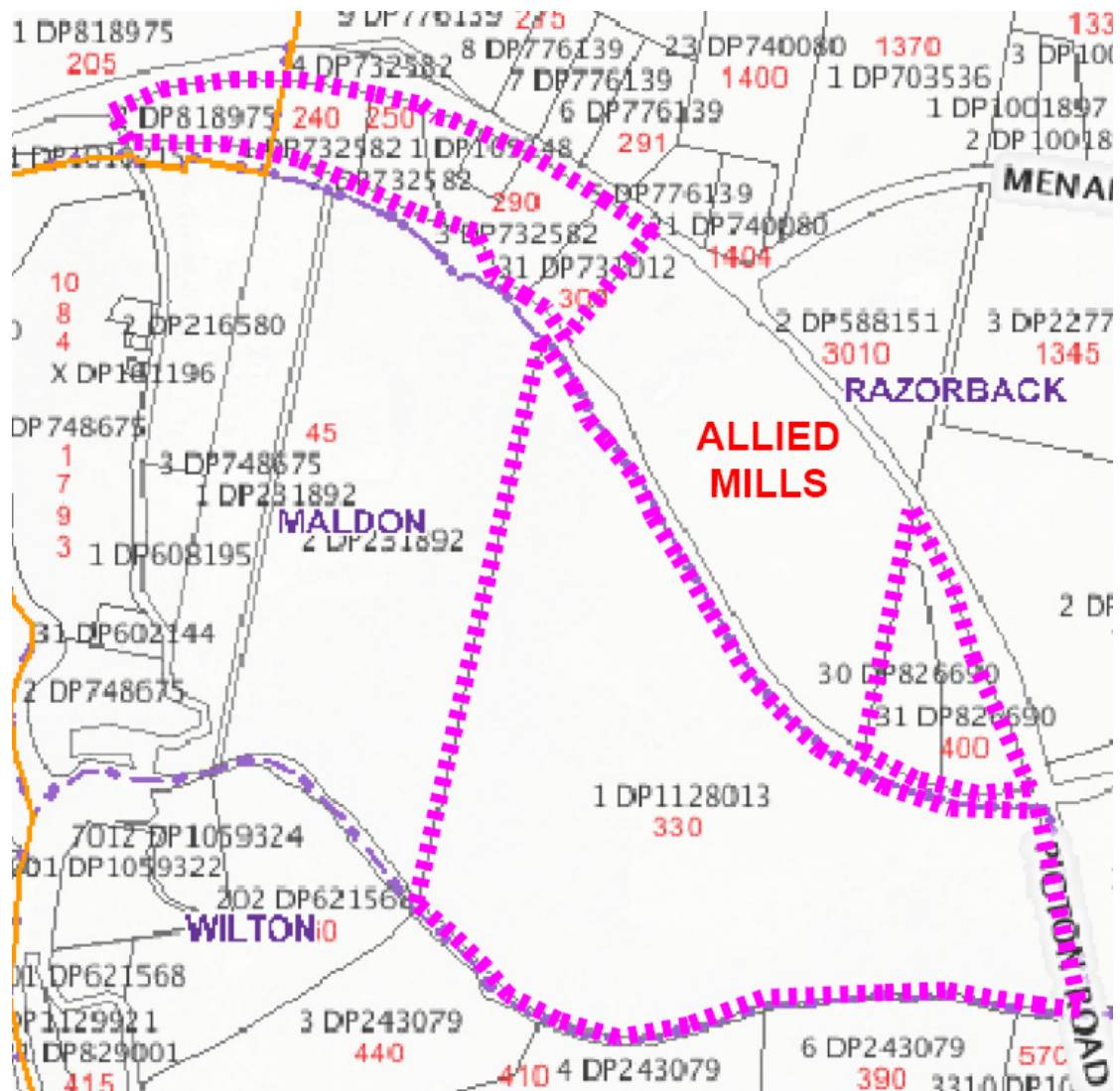


Figure 3 – Wollondilly Local Environment Plan 2011 showing current zoning for the Rezoning Precinct.

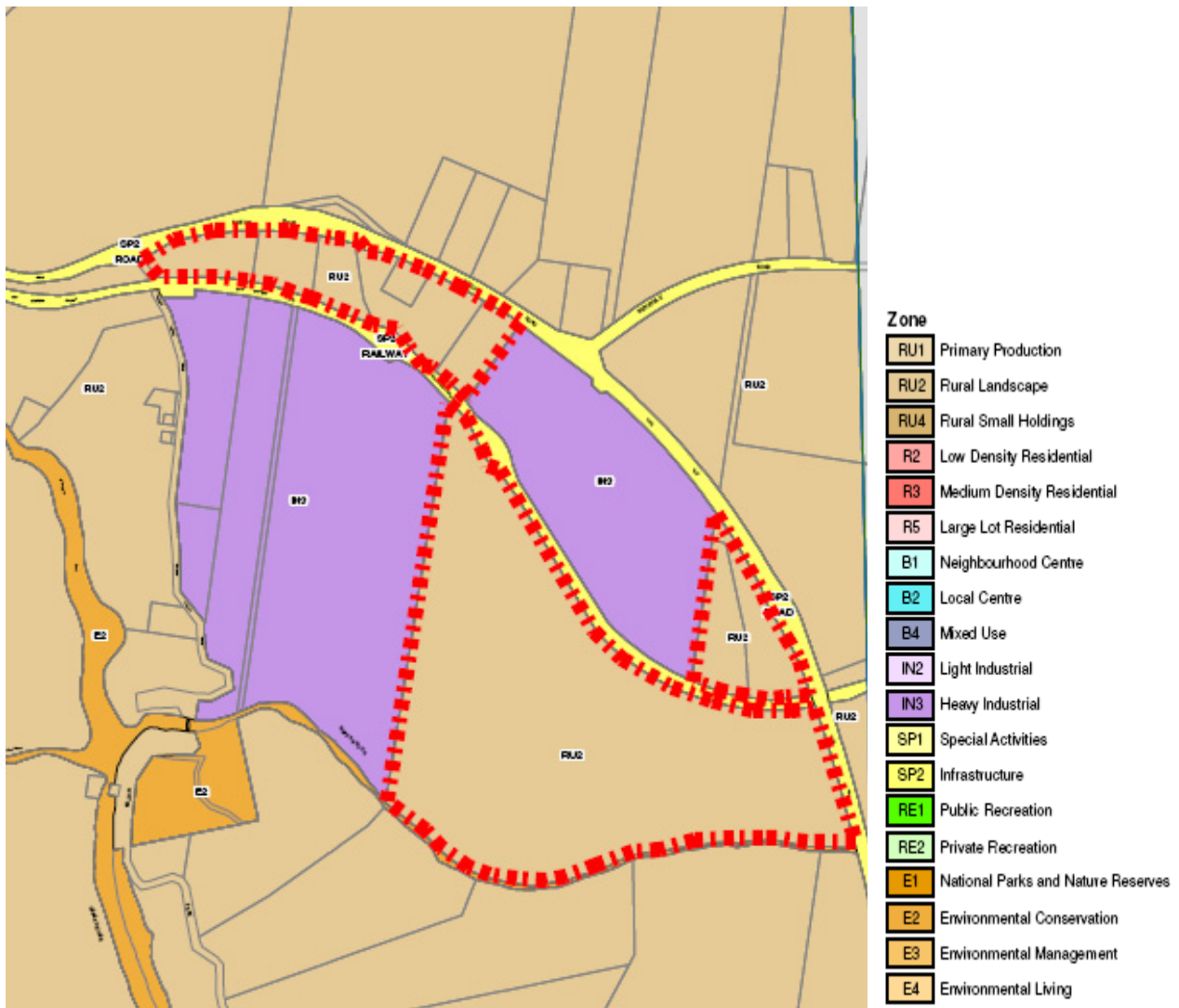
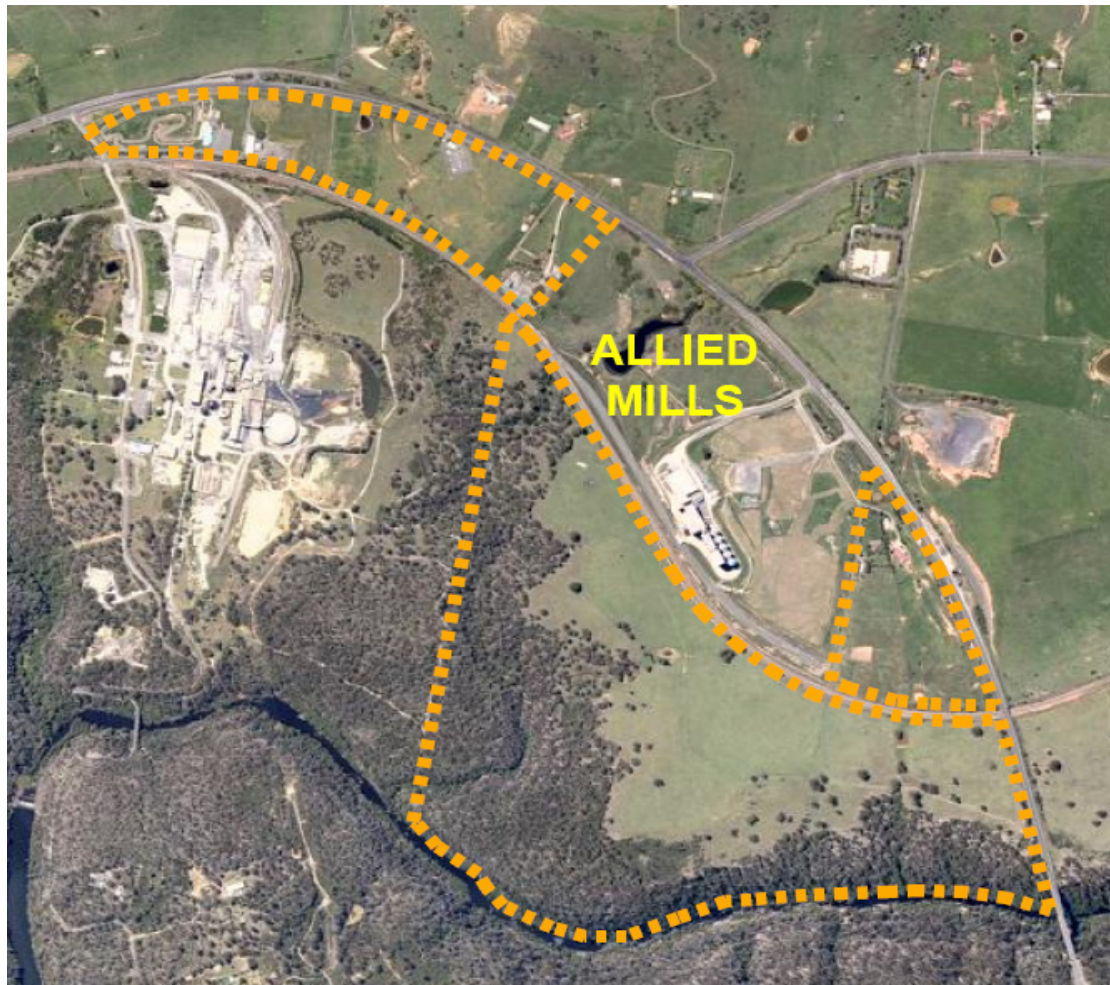


Figure 4 – Aerial Photograph of Rezoning Precinct.



2.2 Existing Land Use.

The existing landuse within the rezoning precinct consists of:

- Lot 2 in DP 818975 [200 Picton Road] – Picton Karting Track;
- Lot 1 in DP 732582 [240 Picton Road] – Civil Engineering Business;
- Lot 2 in DP 732582 [250 Picton Road] - Vacant grazing land;
- Lot 3 in DP 732582 [290 Picton Road] - Rural Residential;
- Lot 1 in DP 105348 – Maldon Zone Substation;
- Part Lot 1 in DP 1128013 [330 Picton Road] - Allied Mills – vacant grazing land;
- Lot 31 in DP 731012 [300 Picton Road] - Commercial vehicle & plant maintenance and repair facility.
- Lots 30 & 31 in DP 82669 [390 & 400 Picton Road - Rural Residential].

2.3 Surrounding Land Use.

The adjoining land to the north and northeast of the rezoning precinct contains existing rural and rural residential development to the north and northeast of Picton Road.

The land to the south of Lot 2 in DP 818975 [200 Picton Road; Lot 1 in DP 732582 [240 Picton Road]; Lot 2 in DP 732582 [250 Picton Road]; Lot 3 in DP 732582 [290 Picton Road] and Lot 31 in DP 731012 [270 Picton Road] contains the existing Blue Circle Southern Cement Works or vacant grazing land which occupies the land to the east of the Cement Works.

The property to the west of the southern portion of the Allied Mills Flour Mill site consists of vacant grazing land within the Blue Circle Southern Cement Works whilst the land to the south of the Nepean River consists of vacant land.

2.4 Topography.

Appendix 2 of *Planning for Bushfire Protection 2006* states that slopes should be assessed, over a distance of at least 100 metres, from a development site and that the gradient of the land should be determined which will most significantly influence the fire behaviour to the site.

a) Within the Rezoning Precinct.

The topography of the land within the rezoning precinct consists of gently undulating land along Picton Road, falling to the south toward the Nepean River.

Carriage Creek and its tributaries form a deep valley within the western portion of the Allied Mills land whilst the topography along the northern side of the Nepean River consists of rocky cliff/scarp lines which fall at more than 40 degrees into the river corridor. A secondary gully line is located in the eastern portion of the southern section of the Allied Mills allotment.

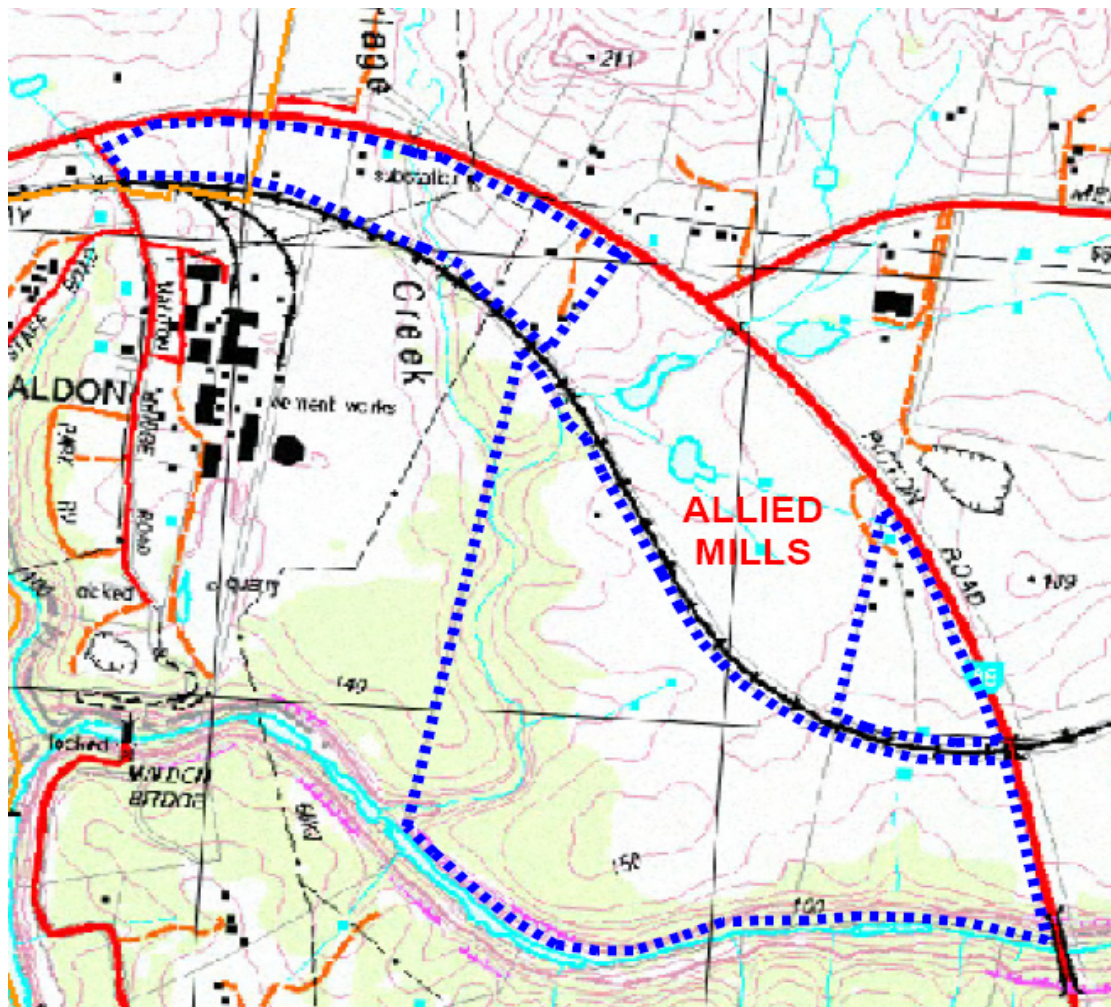
b) Beyond the Rezoning Precinct.

The topography of the land to the north and northeast of the rezoning precinct rises to the low ridgelines to the north of the western 'leg' of the precinct and northeast of Lots 30 & 31 in DP 826690 [No. 390 – 400] Picton Road.

The land within the Blue Circle Southern Cement Works, to the west of the vacant land within the Allied Mills allotment rises to the west and forms the western bank to Carriage Creek.

The land to the south of the Nepean River rises steeply across rocky the cliff/scarplines and continues to rise to the south across the vacant land.

Figure 5 – Topographic Map



2.5 Vegetation.

Appendix A2.3 of *Planning for Bushfire Protection 2006* provides a methodology for determining the predominant bushfire prone vegetation for at least 140 metres in all directions from the future development on the site. Vegetation is classified using Table A2.1 of *Planning for Bushfire Protection 2006*, which classifies vegetation types into the following groups:

- (a) Forests [wet & dry sclerophyll forests];
- (b) Woodlands;
- (c) Plantations – being pine plantations not native plantations;
- (d) Forested Wetlands;
- (e) Tall Heaths;
- (f) Freshwater Heaths;
- (g) Short Heaths;
- (h) Alpine Complex;
- (i) Semi – arid Woodlands;
- (j) Arid Woodlands; and
- (k) Rainforests.

2.6 Vegetation within the Rezoning Precinct.

The vegetation within the Allied Mills site was assessed by Ambrose Ecological Services as part of the EIS prepared in December 2004 for the construction of the Four Mill complex. Further assessment has been undertaken by Biosis Research as part of the rezoning study. A copy of the Biosis Research vegetation communities recorded within the precinct is shown on Figure 6 below.

A total of 123 plant species were recorded including 91 locally occurring native species and 32 introduced species.

The vegetation mapping records Shale Sandstone Transition Forest [SSTF] on the upper banks of Carriage Creek and sandstone terraces above the Nepean River. The canopy is 15 – 25 metres tall and dominated by *Eucalyptus crebra* Narrow-leafed Ironbark, *Eucalyptus eugenioides* Thin-leaved Stringybark and *Eucalyptus punctata* Grey Gum with *Eucalyptus fibrosa* Red Ironbark occasional. The mid-storey consists of regenerating canopy species and small trees including *Acacia decurrens* Black Wattle, Port Jackson Pine and Black She-oak with Coast Mall dominating in areas of shallow soils.

There is a narrow band of Riparian Forest over the lower and mid-slopes of the gully in the southern section of Carriage Creek. Western Sandstone Gully Forest is present on the narrow benches and escarpments of the Nepean River and lower section of Carriage Creek.

Riparian Scrub is mapped by the NPWS as occupying a narrow corridor along the bank. The shrub stratum can be locally dense, but shrub patches are frequently dispersed between rock pavement, recent deposits of sediment and water.

The riparian corridors within the rezoning precinct have been assessed by Biosis Research. A copy of these corridors is shown on Figure 7 below and confirm that Carriage Creek is a third order stream requiring a vegetated Critical Riparian Zone of 40 metres to both sides of the watercourse plus a vegetated buffer zone of an additional 10 metres to each side of the CRZ.

This corridor of vegetation is required to be rehabilitated and will become a bushfire wick which will necessitate the provision of Asset Protection Zones [Defendable Spaces] between the edge of the unmanaged vegetation and future industrial development. The Nepean River corridor requires the provision of a 100 metre wide riparian corridor along the southern boundary of the Allied Mills allotment.

Figure 8 provides a copy of the Biosis Biodiversity Constraints Mapping.

Figure 7 – Copy of the Biosis Riparian Corridor Mapping.

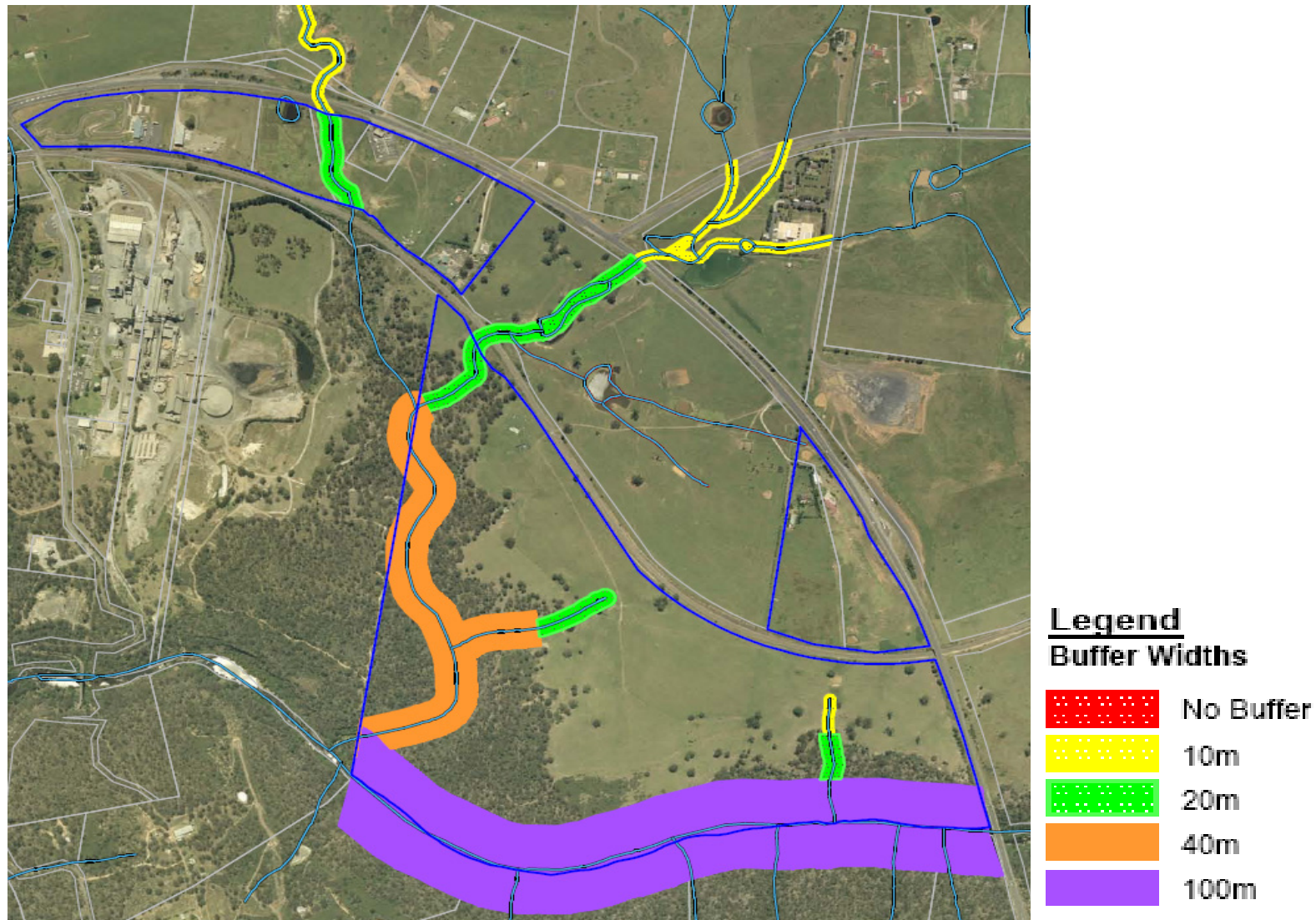
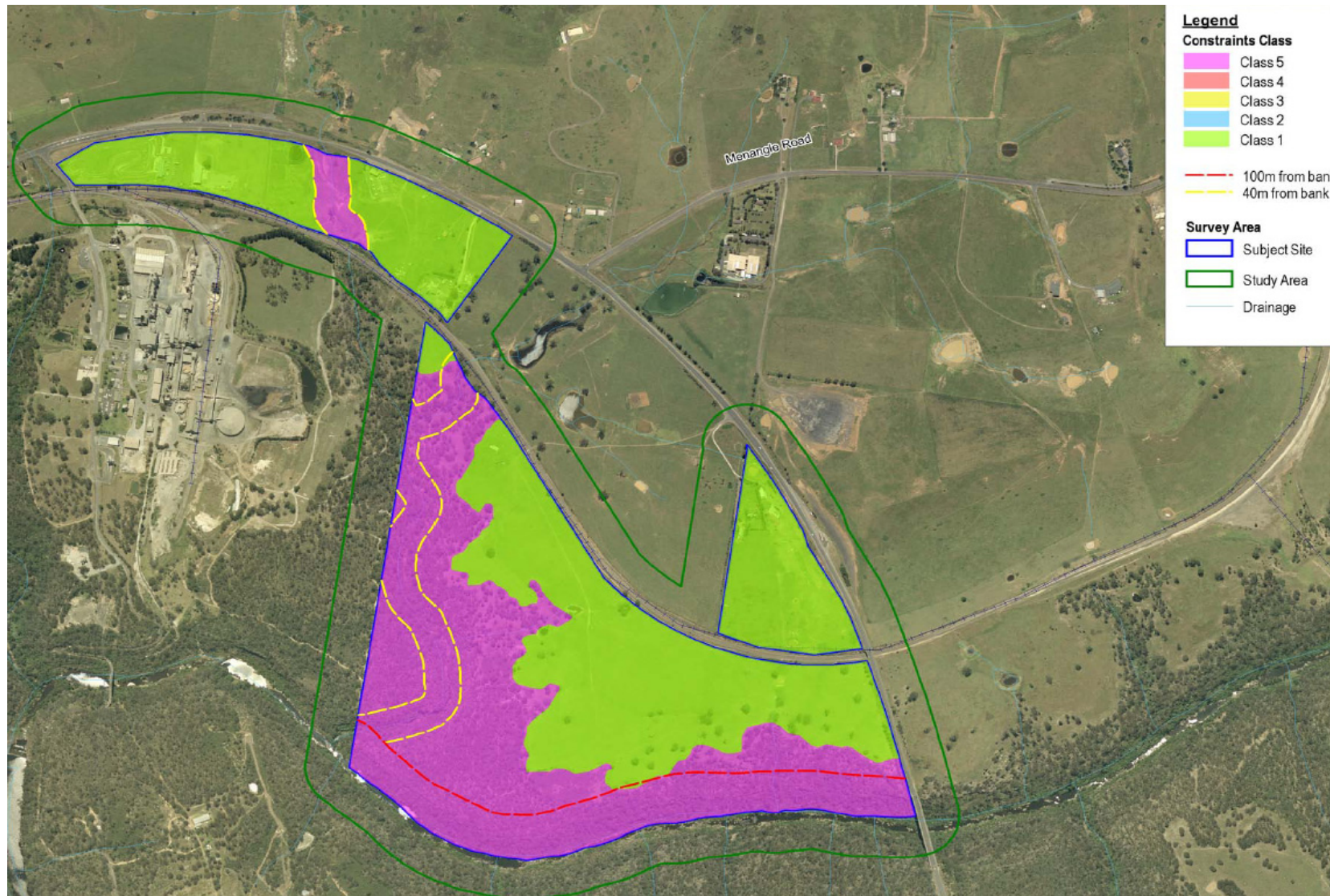


Figure 8 – Copy of the Biosis Biodiversity Constraints Mapping.



2.7 Vegetation within 140 metres of Rezoning Precinct.

The vegetation to the north and northeast of the rezoning precinct, on the land beyond Picton Road, consists of grazed grassland on the rural / rural residential landuse.

The vegetation on the Blue Circle Southern Cement Works consists of landscaped gardens adjoining the buildings with grazed grassland vegetation on the cleared land adjoining the rezoning precinct. Unmanaged Sydney Sandstone Transition Forest [SSTF] occupies the land adjacent to the eastern boundary of the Cement Works site, forming a contiguous corridor of EEC vegetation within the Carriage Creek valley.

The vegetation on the land to the south of the Nepean River consists of unmanaged Dry Sclerophyll Low Open Forest.

2.8 Significant Environmental Features within the Rezoning Precinct.

The development site does not contain significant environmental features such as SEPP 14 Wetlands; SEPP 26 Littoral Rainforests; land slip areas; National Parks Estate or areas of geological interest.

The riparian corridor to Carriage Creek occupies the western portion of the Allied Mills allotment and the Nepean River forms the southern boundary of the Allied Mills allotment. The cliff/scarpline within the Nepean River corridor forms land which is greater than 18 degrees [steep land].

The Woodland vegetation is a potential Koala habitat.

2.9 Known Threatened Species, Population or Ecological Community within the Rezoning Precinct.

The vegetation within the Carriage Creek corridor consists of Shale Sandstone Transition Forest and the Nepean River corridor contains Western Sydney Gully Forest, both listed as endangered ecological communities under the TSC Act.

2.10 Details and location of Aboriginal Relics or Aboriginal Place within the Rezoning Precinct.

A Preliminary Assessment of Aboriginal Sites was undertaken by AMP as part of the EIS for the construction of the Allied Mills Flour Mill and found eight Aboriginal objects and sites – two small artifact scatters, five isolated finds and a scarred tree.

Further Aboriginal and Non-Aboriginal heritage investigation within the rezoning precinct has been undertaken by Biosis Research. The field survey team identified several new areas of Aboriginal archaeological sensitivity and re-assessed one previously registered Aboriginal archaeological site

SECTION 3

FIRE MANAGEMENT RESPONSIBILITIES

Fire management within the development site is the responsibility of:

3.1 Wollondilly Shire Council.

Wollondilly Shire Council has responsibility, under Section 66 of the *Rural Fires Act*, to issue a notice in writing requiring an owner / occupier of any land within the LGA to carry out bushfire hazard reduction works on that land. Section 100E of the *Rural Fires Act* requires Council to issue bushfire hazard Reduction certificates for hazard reduction to be undertaken on private lands.

3.2 New South Wales Rural Fire Service.

The NSW Rural Fire Service (RFS) has the responsibility for undertaking fire suppression activities, hazard management activities and other functions relative to emergency management, within its areas of operation. *Section 73* of the *Rural Fires Act (1997)* enables the Commissioner to carry out bush fire hazard reduction works on any land as required by a bush fire risk management plan if the work has not been carried out satisfactorily. Incurred costs can be recovered as a debt owed to the Crown.

3.3 New South Wales Fire Brigade.

The NSW Fire Brigade has the responsibility for undertaking fire suppression activities, and other functions relative to emergency management, within its area of operation and through Mutual Aid Agreements, provide assistance to the NSW Rural Fire Service, particularly for structural fire operations within the NSW Rural Fire Brigade Districts. Hazmat management within New South Wales is the responsibility of the NSW Fire Brigade.

3.4 Wollondilly Shire Bush Fire Management Committee.

The Wollondilly Shire Bushfire Management Committee has the responsibility for planning for co-ordinated fire fighting activities / hazard management activities on a local government level. It is not an operational organization, a fire fighting organization or a funding source for fire management activities.

The Bush Fire Management Committee is supported by the following provisions of the Rural Fires Act 1997:

- **Section 52** requires each Bush Fire Management Committee to prepare a draft bush fire management plan for their local areas which includes a plan of operations and a bush fire risk management plan.
- **Section 54** of the Act specifies that a draft bush fire risk management plan is to 'set out schemes for the reduction of bush fire hazards in the rural fire district or other part of the State'.

A draft bush fire risk management plan may also restrict or prohibit the use of fire or other fire hazard reduction activities in all or specified circumstances or places to which the plan applies.

3.5 Public Authorities & owners/occupiers of land.

The Rural Fires Act, 1997 provides several legislative opportunities to require Public Authorities, land owners and occupiers to manage hazardous fuels. These are listed below:

- **Section 63(1)** states that it is the duty of a public authority to take any practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of a bushfire on or from:
 - (a) any land vested in or under its control or management, or*
 - (b) any highway, road, street, land or thoroughfare, the maintenance of which is charged on the authority.*
- **Section 63(2)** states that *'it is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land'.*
- **Section 65A** states that the *'Commissioner may nominate a member of the Service as a hazard management officer'.*
- **Section 65(2)** states that *'an authorised person may, with the permission of the fire fighting authority or other authority responsible for unoccupied Crown land or managed land or a person nominated by the authority to give such permission, enter the land and carry out bushfire hazard reduction work with the assistance of such other persons as the authorised person considers to be necessary for the purpose'.*
- **Section 65(3)** states that *'the authority responsible for unoccupied Crown land or managed land is to be taken to have given the permission under this section to the extent necessary to give effect to a bushfire risk management plan'.*
- **Section 65(4)** states that *'if permission under this section is given subject to conditions, the conditions must be complied with'.*
- **Section 66(1)** states that *'a hazard management officer may, by notice in writing, require the owner or occupier [not being a public authority] of any land to carry out bushfire hazard reduction work specified in the notice on the land'.*

- **Section 66(2)** states that *‘a hazard management officer must serve a notice under this section if required to do so by a bushfire risk management plan applicable to the land that is in force’.*
- **Section 66(3)** states that *‘a hazard management officer must issue a bushfire hazard reduction certificate in respect of any bushfire hazard reduction work required by a notice issued in accordance within section (2)’.*
- **Section 66(6)** states that *‘the requirements and conditions so specified must include any requirements in a bushfire risk management plan that is applicable to the land and is in force and may include a requirement or condition that the burning of fire breaks or of combustible material;*
(a) must in fire district constituted under the Fire Brigades Act 1989 be carried out by or under the supervision of the fire brigade or an officer in charge of the fire brigade;
(b) must outside a fire district, be carried out by or under the supervision of the rural fire brigade specified in the notice or an appropriate officer of the rural fire brigade or any hazard management officer.
- **Section 66(7)** states that *‘a notice requiring the establishment of a firebreak cannot require an occupier or owner to kill or remove any trees that are reasonably necessary for shade, shelter, windbreak or fodder purposes or the protection of threatened species, populations, ecological communities or critical habitats within the meaning of the ‘Threatened Species Conservation Act 1995’.*
- **Section 66(8)** states that *‘an occupier or owner to whom a bushfire hazard reduction notice is given must, despite the fact that a fire permit has not been granted under Division 5, comply with the requirements specified in the notice’.*
- **Section 70(2)** states that *‘if within the time specified in the relevant notice the owner or occupier to whom it is given fails to comply with any requirement of the notice, the Commissioner may, without prejudice to liability of the owner or occupier, enter on the land and carry out the bushfire hazard reduction work the owner or occupier was required to do under the notice’.*
- **Section 70(3)** states that *‘any costs incurred by the Commissioner in carrying out such work may be recovered from the owner or occupier of the land as a debt due to the Crown in a court of competent jurisdiction’.*
- **Section 87** allows the removal of hazards in the bush fire danger period by the provision of a permit system. The permits are valid for 21 days, excluding TOBAN days.

Section 10 permits are not required to adhere to *Part V* provisions of the EPA Act 1979 in the assessment of impact, except for public authorities. An owner/occupier of private land must obtain from the NSW Rural Fire Service, a bushfire hazard reduction certificate before undertaking hazard reduction works on that land (Section 100E of the *Rural Fires Act 1997*).

3.6 Bushfire Hazard Management within the Development Site.

The management of the landscaped gardens and the remnant vegetation within the future General Industrial development will remain the responsibility of the property owner or their successor/s.

A Bushfire Management Plan shall be prepared for the retained bushland vegetation.

SECTION 4

WOLLONDILLY BUSHIFRE PRONE LAND MAP

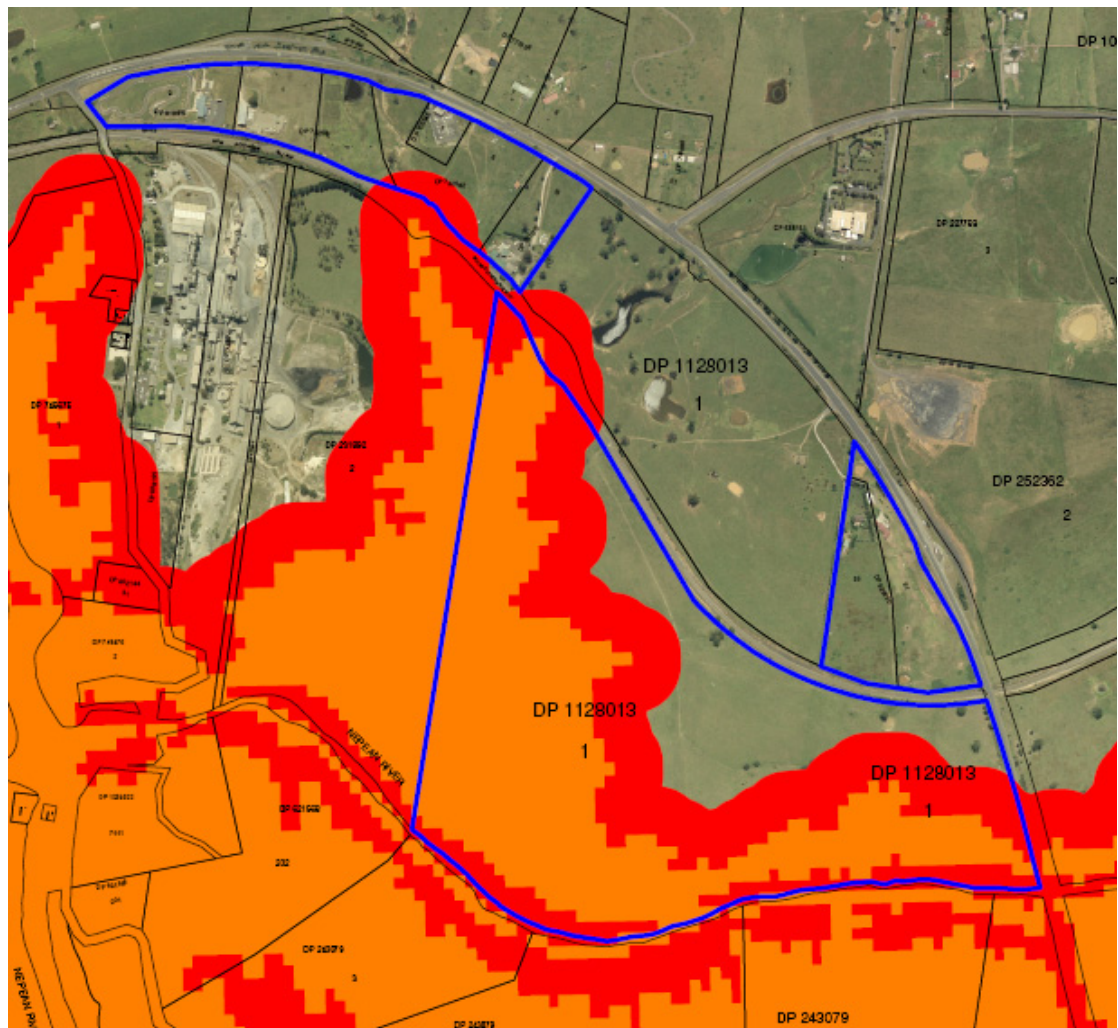
4.1 Certified Bushfire Prone Land Map.

Section 146 of the *Environmental Planning & Assessment Act 1979* requires councils, where a Bushfire Risk Management Plan applies, to prepare a Bushfire Prone Land Map in consultation with the Commissioner of the NSW Rural Fire Service. The Commissioner will designate lands to be Bushfire Prone within an area and, when satisfied that the lands have been recorded on a map, will certify the map as a Bushfire Prone Land Map for the purposes of this or any other Act.

Figure 9 is an extract from the Certified Wollondilly Shire Bushfire Prone Land Map for the land within and surrounding the rezoning precinct.

The site inspection confirmed the accuracy of the Bushfire Prone Land Map in recording the extent of the Category 1 Bushfire Prone Vegetation and the 100 metre wide buffer zone to this vegetation within the rezoning precinct. The 100 metre wide buffer zone to this vegetation extends across the grassland grazing paddock on the Allied Mills allotment and across the Southern Railway Line, onto Lots 2 & 3 in DP 732582.

Figure 9 is an extract from the Certified Wollondilly Shire Bushfire Prone Land Map



Bushfire Prone Land

- BFPL Vegetation Category 1
- BFPL Vegetation Category 2
- BFPL Vegetation Buffer -100m & 30M

SECTION 5

BUSHFIRE PROTECTION ASSESSMENT

5.1 Introduction.

Planning for Bushfire Protection 2006 provides deemed-to-satisfy fire protection measures for residential development [Class 1, 2 & 3 buildings]; “Special Fire Protection Developments [Hospitals, Nursing Homes / Retirement Villages / Schools / Childcare Centres & Tourist Accommodation]; Industrial / Commercial Development and residential and Special Fire Protection “infill” development.

In reference to the construction of the future General Industrial development these structures are classified as Class 7 buildings as defined by the Building Code of Australia [BCA].

Chapter 1, Section 1.3 of *Planning for Bushfire Protection 2006* states that the construction of Class 5 – 10 buildings on bushfire prone land, or land impacted by bushfire prone vegetation, must meet the aim and objectives of the document.

Chapter 4, Section 4.3.6(f) discusses the bushfire protection to buildings of Class 5 to 8 and 10b of the Building Code of Australia and states:

“The Building Code of Australia does not provide for any bushfire specific performance requirements and as such AS 3959 -1999 does not apply as a set of “deemed-to-satisfy” provisions.

The general fire safety construction provisions [of the BCA] are taken as acceptable solutions, but the aim and objectives of Planning for Bushfire Protection 2006 apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management”.

“Where the aim and objectives of PfPFP [Section 1.1] are not met, then the construction requirements for bushfire protection will need to be considered on a case-by-case basis”.

“In many cases, these types of developments will require on-site parking and loading areas. In such cases, it is prudent to place these facilities in the most appropriate location in order to establish defensible space for fire-fighting purpose”.

The objectives of *Planning for Bushfire Protection 2006* are:

- (i) Afford occupants of any building adequate protection from exposure to a bushfire;
- (ii) Provide for a defensible space to be located around buildings;
- (iii) Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;
- (iv) Ensure that safe operational access and egress for emergency service personnel and residents is available;
- (v) Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the asset protection zones;

and
- (vi) Ensure that utility services are adequate to meet the needs of fire-fighters and others assisting in bushfire fighting.

The document identifies six core bushfire protection requirements. These are:

- Provision of Asset Protection Zones / Defensible Spaces in accordance with the specific landuse, the predominant bushfire prone vegetation type within 140 metres of the development and the topography of the land containing the bushfire prone vegetation;
- Access for fire fighting operations;
- Water Supplies for fire fighting operations;
- Construction standards of buildings located within 100 metres of the bushfire hazard interface, dependant on specification landuse, the predominant bushfire prone vegetation type within 140 metres of the development and the topography of the land containing the bushfire prone vegetation;
- Emergency Planning;
- Landscape Management – in particular the management of the Asset Protection Zones / Defensible Spaces and residual bushfire prone vegetation.

Planning for Bushfire Protection 2006 provides a methodology to determine the Asset Protection Zones [defensible space] and Bushfire Attack [Construction Standards] required for **habitable buildings** in development for **residential purposes** that are designated as bushfire prone.

The document does not provide deemed to satisfy solutions for Class 5 – 10 buildings constructed in bushfire prone areas but states that where the aim and objectives of the document are not met, then the construction requirements for bushfire protection will need to be considered on a case by case basis.

Section 5.2 of this report examines the provision of a suitable “defendable space” between the bushfire hazard and the future General Industrial buildings and the protection against the potential impacts of a future fire occurrence in the retained vegetation within the Carriage Creek and Nepean River corridor, as these are the only aspects of the rezoning precinct which adjoin bushfire prone vegetation, and provides recommendations on the bushfire construction measures required to be implemented to mitigate the potential bushfire threat.

The provision of access and water supplies for fire-fighting operations; management of the defendable space [Asset Protection Zone] and evacuation planning are examined in Sections 5.3 – 5.6 of this report.

5.2 The provision of Defendable Space/s [Asset Protection Zones].

Appendix 2 of *Planning for Bushfire Protection 2006* provides the following procedure for determining setback distances (Asset Protection Zones) for **residential development** in bushfire prone areas:

- (a) *Determine vegetation formations as follows:*
 - Identify vegetation in all directions from the site for a distance of 140 metres;
 - Consult Table A2.1 to determine the predominant vegetation type; and
 - Select the predominant vegetation formation as described in Table A2.1.
- (b) *Determine the effective slope of the land under the predominant vegetation Class.*
- (c) *Determine the appropriate fire [weather] area in Table A2.2.*
- (d) *Consult Table A2.3 and determine the appropriate setback [APZ] for the assessed land use, vegetation formation and slope range.*

The methodology does not determine the requisite Defendable Space requirements for Class 5 – 10 developments as defined by the Building Code of Australia [BCA].

Table 1 examines the width of defendable space requirements based on the widths required to provide a separation distance which is sufficient to minimise flame contact with the building/s and to provide a fire-fighting platform wide enough to permit the safe extinguishment of a bushfire, after the fire front has passed – as required by the advice received from the NSW Rural Fire Service [letter dated 28 July 2009].

Table 1. Determination of Defendable Space to the future General Industrial Development. Fire Danger Index for the site is 100

Aspect	Vegetation within 140m of development	Predominant Vegetation Formation Class [Table A2.1 Planning for Bushfire Protection 2006]	Effective Slope of Land for 100 metres from buildings	Flame Zone Width determined by calculation	Available width of Defendable Space to proposed building
<i>South of development within the Allied Mills allotment</i>	Western Sandstone Gully Forest in the Nepean River corridor	Forest	> 25 degrees downslope into the Nepean River	50 metres	Defendable Space of more than 50 metres to be provided to buildings adjacent to the Nepean River vegetated corridor / buffer zone.
<i>West of development within the Allied Mills allotment</i>	Shale Sandstone Transition Forest in the Carriage Creek corridor	Forest	10 - 18 degrees downslope to the west	50 metres	Defendable Space of more than 50 metres to be provided to buildings adjacent to the Carriage Creek vegetated corridor / buffer zone.
<i>South of development on Lot 3 in DP 732582 & Lot 31 in DP 731012</i>	Shale Sandstone Transition Forest on the adjoining land to the south	Forest	< 10 degrees downslope to the south along Carriage Creek	31 metres	Defendable Space of more than 31 metres to be provided to the south of buildings located to the north of the adjoining land.

Note 1:

The minimum defendable space width to the future General Industrial development within the rezoning precinct has been determined to provide a separation width to the future buildings which minimises the likelihood of flame contact with the structures and also to provide a fire-fighting platform from which fire-fighters can safely operate to extinguish the bushfire after the fire front has passed.

The Defendable Space widths reduce the potential radiant heat on the exterior of the buildings to less than 40kW/m². Therefore, those future buildings located adjacent to the bushfire hazard shall be constructed to comply with BAL 40 standards pursuant to A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’.

The following construction standards are also recommended in addition to the specifications of BAL 40 – A.S. 3959 - 2009:

- Access doors [PA and Vehicle] to the buildings shall be fitted with seals that seal the bottom, stiles and head of the door against the opening/frame to prevent the entry of embers into the building. Particular attention shall be paid to the gap at the head of the curtain of the roller doors, where mohair type seals can be used;
- Any external vents, grilles and ventilation louvres shall have stainless steel mesh with a maximum aperture of 2mm square fitted to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.
- Roof ventilators shall be fitted with stainless steel flymesh [2mm aperture] to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.

5.3 Access Standards for Firefighting Operations.

Chapter 4, Section 4.2 “Access” of *Planning for Bushfire Protection 2006* provides specifications on the access provisions for fire-fighting operations within developments which are subject to bushfire attack.

Public Road access to the future General Industrial development shall comply with, as a minimum, the deemed-to-satisfy provisions of Section 4.2(1) of *Planning for Bushfire Protection 2006*.

A perimeter road of minimum 8.0 metre formed width shall be provided to the southern and western aspect of the future development adjoining the Nepean River and Carriage Creek corridors. This perimeter road shall be designed to provide a two-way loop road which connects to the main access road across the railway line. Internal connector roads shall be provided to permit safe evacuation from the perimeter road to the main access road to the Allied Mills allotment.

5.4 Water Supplies for Firefighting Operations.

The fire-fighting water supply to the new buildings shall comply with the Building Code of Australia [BCA] and A.S. 2419.1 – 2005.

5.5 Emergency Management for Fire Protection / Evacuation.

Due to the potential high bushfire risk to the buildings located adjacent to the bushfire hazard in the Nepean River and Carriage Creek corridors there shall be prepared a Bushfire Evacuation Plan for those buildings located within 100 metres of the bushfire prone vegetation.

5.6 Bushfire Hazard Management.

The intention of bushfire hazard management is to prevent flame contact with a structure, reduce radiant heat to below the ignition thresholds for various elements of a building, to minimize the potential for wind driven embers to cause ignition and to reduce the effects of smoke on occupants and fire-fighters.

The management of the Defendable Spaces and the future General Industrial allotments generally shall comply with the recommendations of Appendix A5.4 & Appendix A5.5 of *Planning for Bushfire Protection 2006* and *Standards for Asset Protection Zones*.

Management of the Defendable Spaces within the development, including the perimeter road corridors, shall comply with the following:

- Maintain a clear area of low cut lawn or pavement adjacent to the buildings; Utilise non-flammable materials such as Scoria, pebbles and recycled crushed bricks as ground cover to landscaped gardens in close proximity to building;
- Keep areas under shrubs and trees raked and clear of combustible fuels;
- Trees and shrubs should be maintained in such a manner that tree canopies are separated by 2 metres and understorey vegetation is not continuous [retained as clumps].

SECTION 6

BUSHFIRE MANAGEMENT STRATEGIES

Strategies to mitigate the potential bushfire risk to the future General Industrial development within the rezoning precinct are as follows:

6.1 Strategy 1 – Defendable Space to Buildings located adjacent to bushfire prone vegetation in the Nepean River and Carriage Creek corridors:

The following Defendable Space setback shall be provided to the future General Industrial buildings located adjacent to the bushfire prone vegetation in the Nepean River and Carriage Creek corridors:

Aspect	Vegetation within 140m of development	Predominant Vegetation Formation Class [Table A2.1 Planning for Bushfire Protection 2006]	Effective Slope of Land for 100 metres from buildings	Available width of Defendable Space to proposed building
South of development within the Allied Mills allotment	Western Sandstone Gully Forest in the Nepean River corridor	Forest	> 25 degrees downslope into the Nepean River	Defendable Space of more than 50 metres to be provided to buildings adjacent to the Nepean River vegetated corridor / buffer zone.
West of development within the Allied Mills allotment	Shale Sandstone Transition Forest in the Carriage Creek corridor	Forest	10 - 18 degrees downslope to the west	Defendable Space of more than 50 metres to be provided to buildings adjacent to the Carriage Creek vegetated corridor / buffer zone.
South of development on Lot 3 in DP 732582 & Lot 31 in DP 731012	Shale Sandstone Transition Forest on the adjoining land to the south	Forest	< 10 degrees downslope to the south	Defendable Space of more than 31 metres to be provided to the south of buildings located to the north of the adjoining land

6.2 Strategy 2 – Management of Defendable Space / Landscape Management:

Management of the defendable spaces/landscaped areas within the future General Industrial development shall comply with the following:

- Maintain a clear area of low cut lawn or pavement adjacent to the building;
- Keep areas under shrubs and trees raked and clear of combustible fuels;

- Utilise non-flammable materials such as Scoria, pebbles and recycled crushed bricks as ground cover to landscaped gardens in close proximity to building;
- Trees and shrubs should be maintained in such a manner that tree canopies are separated by 2 metres and understorey vegetation is not continuous [retained as clumps];

6.3 Strategy 3 – Construction Standards to the Building:

The future buildings located adjacent to the bushfire hazard shall be constructed to comply with BAL 40 standards pursuant to A.S. 3959 – 2009 – *‘Construction of Buildings in Bushfire Prone Areas’*.

The following construction standards are also recommended in addition to the specifications of BAL 40 – A.S. 3959 - 2009:

- Access doors [PA and Vehicle] to the buildings shall be fitted with seals that seal the bottom, stiles and head of the door against the opening/frame to prevent the entry of embers into the building. Particular attention shall be paid to the gap at the head of the curtain of the roller doors, where mohair type seals can be used;
- Any external vents, grilles and ventilation louvres shall have stainless steel mesh with a maximum aperture of 2mm square fitted to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.
- Roof ventilators shall be fitted with stainless steel flymesh [2mm aperture] to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.

6.4 Strategy 4 – Water Supplies for Firefighting Operations:

The fire-fighting water supply to the future buildings shall comply with the Building Code of Australia [BCA] and Australian Standard A.S. 2419.1 – 2005.

6.5 Strategy 5 – Access for Firefighting Operations:

Public Road access to the future General Industrial development shall comply with, as a minimum, the deemed-to-satisfy provisions of Section 4.2(1) of *Planning for Bushfire Protection 2006*.

A perimeter road of minimum 8.0 metre formed width shall be provided to the southern and western aspect of the future development adjoining the Nepean River and Carriage Creek corridors. This perimeter road shall be designed to provide a two-way loop road which connects to the main access road across the railway line. Internal connector roads shall be provided to permit safe evacuation from the perimeter road to the main access road to the Allied Mills allotment.

6.6 Strategy 6 – Evacuation Planning:

There shall be prepared a Bushfire Evacuation Plan for those buildings located within 100 metres of the bushfire prone vegetation.

SECTION 7

CONCLUSION

Wollondilly Shire Council resolved at the Ordinary Meeting of Council held on Monday 17th March 2008 that in accordance with Section 54 of the *Environmental Planning & Assessment Act 1979*, Council prepare a Draft Wollondilly Local Environmental Plan 1991 [WLEP1991] – Amendment No. 75 or Draft Wollondilly Local Environmental Plan 2010 [WLEP 2010] – Draft Amendment No. 1 to rezone Lot 2 in DP 818975; Lots 1, 2 & 3 in DP 732582; Lot 1 in DP 105348; Lot 31 in DP 731012; Lots 30 & 31 in DP 826690 and Part of Lot 1 in DP 1128013.

These nine properties are located within Maldon, to the east of the township of Picton and include the southern part of the Allied Mills site which rises steeply from the heavily vegetated Nepean River riparian corridor up to undulating cleared grazing land adjacent to the Main Southern Railway Line. The remaining properties occupy the cleared land between Picton Road and the Main Southern Railway Line.

Council sought, pursuant to Section 62 of the *Environmental Planning and Assessment Act 1979*, advice from the Commissioner of the NSW Rural Fire Service on those measures required to address the potential bushfire hazard to the construction of future General Industrial development within rezoning precinct. The Commissioner provided the following advice:

'In relation to future commercial, industrial or other development uses [excluding residential or Special Fire Protection Purpose development] on bushfire prone land it is suggested that the aims and objectives of Planning for Bushfire Protection 2006 be considered in the planning stages of these developments. Consideration of the aim and objectives includes the following:

Aim:

- *The protection of human life [including fire-fighters] and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, on-site amenity and protection of the environment;*

Objectives:

- *Afford occupants of any building adequate protection from exposure to a bushfire;*
- *Provide for a defensible space to be located around buildings;*
- *Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*

- *Ensure that safe operations access and egress for emergency service personnel and residents is available;*
- *Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the Asset Protection Zone [APZ];*
- *Ensure that utility services are adequate to meet the needs of fire-fighters [and others assisting in bushfire fighting]’.*

This report provides an assessment of the proposed rezoning of the land to permit the construction of General Industrial development and confirms that the extent of the bushfire hazard to the future buildings is restricted to the retained vegetation in the Nepean River and Carriage Creek riparian corridors, the retained vegetation on the land to the west of the rezoning precinct and the vegetation within riparian corridor on Lots 2 & 3 in DP 732582.

This report contains recommendations on the provision of an appropriate separation [Defendable Space] between the bushfire hazard and the future General Industrial buildings which, in combination with construction standards, prevent direct flame contact and material ignition.

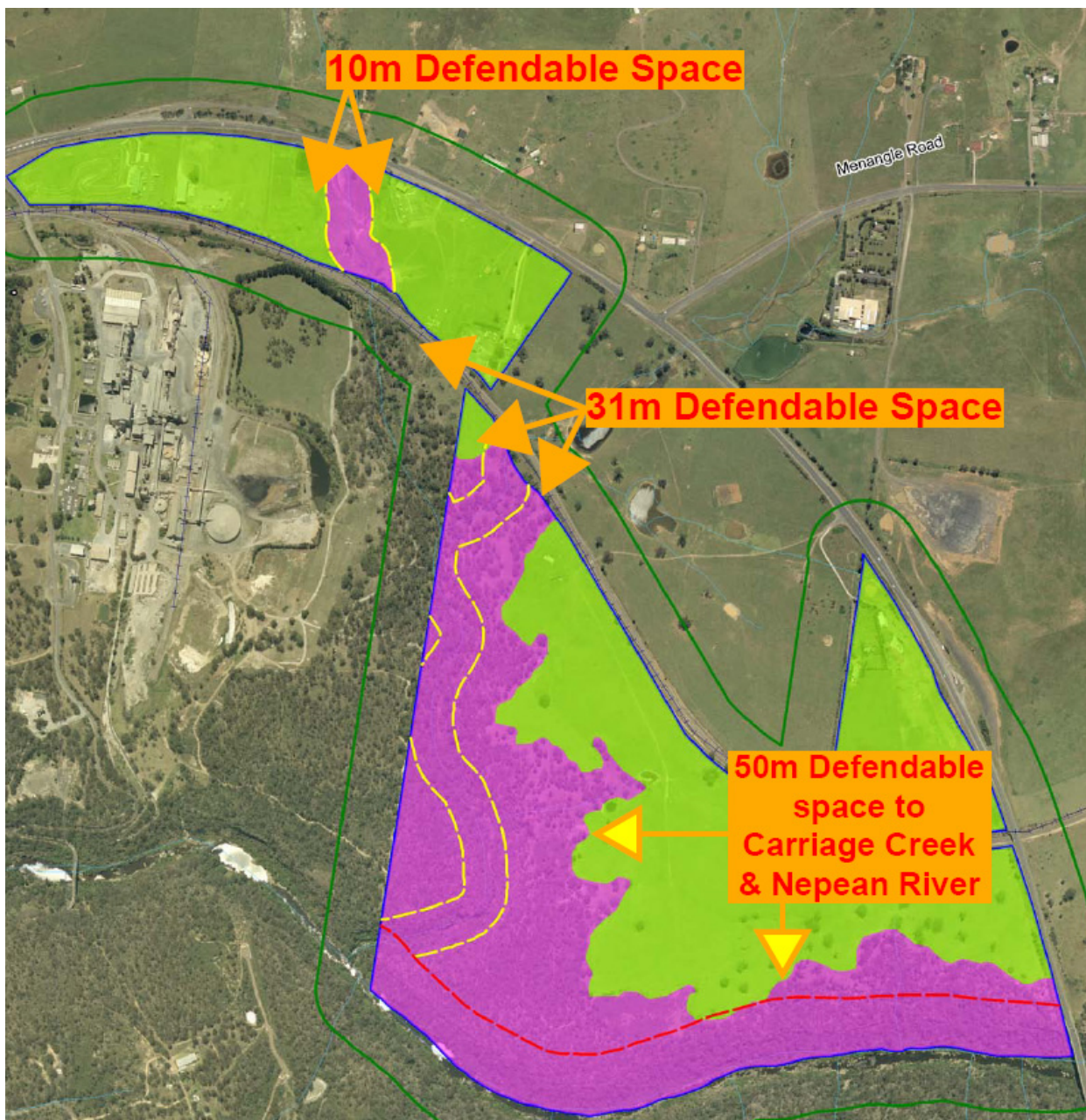
Further recommendations have been made on the provision of access and water supplies for fire-fighting operations; landscape / vegetation and emergency management protocols to address the potential bushfire risk from the bushfire prone vegetation retained within the rezoning precinct.

These recommendations address the in the aim and objectives of *Planning for Bushfire Protection 2006*.



Graham Swain
Managing Director,
Australian Bushfire Protection Planners Pty Limited.

SECTION 8 – Plan of Defendable Spaces to Bushfire Prone Vegetation



REFERENCES:

- N.S.W Rural Fire Service – *Planning for Bushfire Protection 2006*;
- *Environmental Planning & Assessment Act – 1979*;
- *Rural Fires Act – 1997*;
- *Rural Fires Regulation 2008*;
- NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping 2002*;
- *Threatened Species Conservation Act 1995*;
- *Native Vegetation Act*;
- *Bushfire Environmental Assessment Code 2003*;
- Building Code of Australia;
- Australian Standard A.S 3959- 2009 “*Construction of Buildings in Bushfire Prone Areas*”;
- *Flora & Fauna Study* – Biosis Research Pty Ltd;
- *Wollondilly Bushfire Prone Land Map*.