



## **BUSHFIRE PROTECTION ASSESSMENT REPORT**

### **PART 3A PROPOSAL RIVERSIDE TEA GARDENS**

**JULY 2012  
(REF:11116/2)**

# **BUSHFIRE PROTECTION ASSESSMENT REPORT**

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**JULY 2012**

### **Conacher Environmental Group**

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## **PREFACE**

A Bushfire Protection Assessment Report has been prepared by *Conacher Environmental Group* at the request of Crighton Properties for the proposed development at Myall Road, Tea Gardens.

This report provides an assessment of the bushfire protection measures required for the development to guard against the potential impact of bushfires. Recommendations have been made in respect to fuel management, construction standards / building protection, access, bushfire education and land ownership responsibility.

## **REPORT BY:**

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# SECTION 1

## INTRODUCTION

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### 1.1 AIMS OF THE ASSESSMENT

*Conacher Environmental Group* has been engaged by Crighton Properties to provide a Bushfire Protection Assessment for the proposed residential subdivision of land at Myall Road, Tea Gardens.

The aims of the bushfire protection assessment are to:

- i) Detail the assessment of the site in relation to bushfire hazard and attack;
- ii) Address the relevant requirements of Planning for Bushfire Protection (Rural Fire Service, 2006);
- iii) Identify if the development complies with the aims and objectives of Planning for Bushfire Protection (RFS, 2006);
- iv) Prepare a Report that supplies the relevant information for the Rural Fire Service and Council prior to granting a Bushfire Safety Authority (RFS) or development approval (Council).

### 1.2 BACKGROUND INFORMATION

As the development is to be assessed under the provisions of Part 3A of the *Environmental Planning and Assessment Act, 1979* by the *Department of Planning* the development and this report is therefore not subject to assessment under the provisions of Section 100B of the *Rural Fires Act* in this case.

Management of hazardous fuels is required to be undertaken in accordance with the *Rural Fires Act, 1997* - Sections 63 (2). This requires owners or occupiers to take all practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of bushfires.

Construction of future buildings in a bushfire prone area will need to be assessed under the *Environmental Planning and Assessment Act, 1979* - Section 79 BA. This requires Councils to be satisfied that developments in bushfire prone areas comply with *Planning for Bushfire Protection, 2006* before granting development consent.

Information sources reviewed include the following:

- Proposed development plan prepared by Crighton Properties
- Port Stephens 1:25,000 Topographic Map (9332-4S, second edition).
- DLWC 1:25,000 Port Stephens Aerial Photograph
- Planning for Bushfire Protection 2006'.
- Australian Standard 3959-2009 'Construction of Buildings in Bush Fire Prone Areas'

An inspection of the proposed development site and surrounds was undertaken to assess the topography, slopes, aspect, drainage, vegetation and adjoining land uses.

### ***Location and Surrounding Land Use***

The subject site is situated to the east of Myall Road and South of Toonang Drive with approximately 1.2 kilometre frontage along Myall Road. The site will link an existing rural residential settlement to the north with Leeward Circuit and Shoreline Drive in the south. The Myall River forms the eastern boundary to the subject site.

The subject site covers approximately 220 hectares and will be subdivided into residential urban lots, with some areas of the site developed as an eco-style tourist resort.

### **1.3 PROPOSED DEVELOPMENT**

It is proposed to develop the subject site at Myall Road, Tea Gardens for residential and tourist development.

The proposed development is for a mixed use commercial and residential development. According to the Concept Masterplan the proposal will include the following:

- Residential lot development (Community Title);
- Tourist lodging precinct;
- Wildlife movement corridors;
- Water management corridors;
- Open space corridors;
- Lake areas for water quality management;
- Public Reserve areas;
- Community park incorporating walking trails, gazebo and other facilities.

The proposed tourist development is classified as a Special Fire Protection Purpose development for bushfire hazard assessment purposes as identified in '*Planning for Bushfire Protection, 2006*' (RFS 2006).

The proposed residential subdivision will connect with adjacent existing residential areas. The subject site does not contain any existing dwellings or structures that would require removal as a part of the future development of the site.

## SECTION 2

### BUSHFIRE ATTACK ASSESSMENT

---

#### 2.1 BUSHFIRE ASSESSMENT CRITERIA

##### *Topography and Drainage*

The proposed development is located on flat land to the west of the Myall River. Drainage lines flow from the north into the subject site in a general southerly direction towards the river.

The land rises towards the existing rural residential development in the north. This forms the highest point in the area with the remainder of the site having slopes of less than five degrees.

##### *Vegetation*

The majority of the proposed development site consists of cleared pastureland with scattered trees. To the north and north-west is dry sclerophyll forest which extends along the northern hill slope. Forested Wetlands / Forest and Saltmarsh (saline wetland) are located to the east within land zoned for conservation which acts as a buffer to the SEPP14 wetlands. Saltmarsh is present to the south-east of the site.

Managed vegetation will remain within the residual areas in the form of grassed drainage reserves with scattered trees. Vegetation will be retained within the conservation zoned land and SEPP14 wetland to the east. A Wildlife Corridor is to be retained in the central to north-east part of the site linking the Open Forest of the northern slopes with the Forested Wetlands /Forest and Saltmarsh/Rushland areas adjoining the Myall River.

##### *Bushfire Categories*

The subject site is mapped as Bushfire Prone Land as identified in the Great Lakes Council Bushfire Prone Land Mapping. The site is within the North Coast areas categorised as having a Forest Fire Danger Index (FDI) of 80. Therefore Table A25 of RFS (2006) is the appropriate table to use for determining the category of bushfire attack and appropriate asset protection zones.

#### 2.2 BUSHFIRE ATTACK ASSESSMENT

'*Planning for Bushfire Protection*' (Rural Fire Service, 2006) provides concepts for building in bushfire prone areas and guidance on the planning and development control processes in relation to bushfire protection measures for proposed subdivisions.

Tables 1 - 5 provide a summary of Bushfire Attack and the asset protection zones required for both residential lots and the tourist accommodation precinct.

| <b>TABLE 1</b><br><b>BUSHFIRE ATTACK LEVEL ASSESSMENT</b><br><b>RESIDENTIAL SUBDIVISION – (NORTHERN AREA)</b><br><b>(from Table A2.5 RFS 2006)</b> |  |                                      |   |
|--|--|--------------------------------------|---|
| <b>Direction</b>   | <b>Vegetation Classification (greatest threat within 140m)</b> | <b>Effective Slope (within 100m)</b> | <b>Asset Protection Zone required from Bushfire Hazard (metres)</b> |
| <b>North</b>   | Pasture Managed Grassland                                      | upslope                              | 10  |
| <b>North-west</b>  | Forest   | upslope                              | 20  |
| <b>North-east</b>  | Forest   | 0-5° downslope                       | 20  |
| <b>East</b>  | Grassland  | 0-5° downslope                       | 10  |
| <b>South</b>   | Managed Land   | 0-5° downslope                       | NR  |
| <b>West</b>  | Forestg  | upslope                              | 20  |
| NR – No requirement as no bushfire hazard present within 100m  |  |                                      |   |

| <b>TABLE 2</b><br><b>BUSHFIRE ATTACK LEVEL ASSESSMENT</b><br><b>RESIDENTIAL SUBDIVISION – (CENTRAL AREA)</b><br><b>(from Table A2.5 RFS 2006)</b> |  |                                      |   |
|---|--|--------------------------------------|---|
| <b>Direction</b>  | <b>Vegetation Classification (greatest threat within 140m)</b> | <b>Effective Slope (within 100m)</b> | <b>Asset Protection Zone required from Bushfire Hazard (metres)</b> |
| <b>North</b>  | Forest   | 0-5° upslope                         | 20  |
| <b>East</b>   | Forest   | 0-5° downslope                       | 20  |
| <b>South</b>  | Managed Land   | 0-5° downslope                       | NR  |
| <b>West</b>   | Managed Land   | 0-5° downslope                       | NR  |
| NR – No requirement as no bushfire hazard present within 100m   |  |                                      |   |



| <b>TABLE 3</b><br><b>BUSHFIRE ATTACK LEVEL ASSESSMENT</b><br><b>RESIDENTIAL SUBDIVISION – (EASTERN AREA)</b><br><b>(from Table A2.5 RFS 2006)</b> |  |                                      |   |
|---|--|--------------------------------------|---|
| <b>Direction</b>  | <b>Vegetation Classification (greatest threat within 140m)</b> | <b>Effective Slope (within 100m)</b> | <b>Asset Protection Zone required from Bushfire Hazard (metres)</b> |
| <b>North</b>  | Forest   | upslope                              | 20  |
| <b>East</b>   | Forest   | 0-5° downslope                       | 20  |
| <b>South</b>  | Forest/Managed Land  | 0-5° downslope                       | 20  |
| <b>West</b>   | Managed Land   | upslope                              | NR  |
| NR – No requirement as no bushfire hazard present within 100m   |  |                                      |   |

| <b>TABLE 4</b><br><b>BUSHFIRE ATTACK LEVEL ASSESSMENT</b><br><b>RESIDENTIAL SUBDIVISION – (WESTERN AREA)</b><br><b>(from Table A2.5 RFS 2006)</b> |  |                                      |   |
|---|--|--------------------------------------|---|
| <b>Direction</b>  | <b>Vegetation Classification (greatest threat within 140m)</b> | <b>Effective Slope (within 100m)</b> | <b>Asset Protection Zone required from Bushfire Hazard (metres)</b> |
| <b>North</b>  | Forest<br>Managed Land   | upslope                              | 20  |
| <b>East</b>   | Managed Land   | 0-5° downslope                       | NR  |
| <b>South</b>  | Residential  | 0-5° downslope                       | NR  |
| <b>West</b>   | Managed Land<br>Industrial                                     | 0-5° downslope                       | NR  |
| NR – No requirement as no bushfire hazard present within 100m   |  |                                      |   |

**TABLE 5  
BUSHFIRE ATTACK ASSESSMENT  
TOURIST UNITS (SPECIAL FIRE PROTECTION PURPOSES 2006)**

| <b>Direction</b>  | <b>Vegetation within 140m of Development</b> | <b>Effective Slope Gradient</b> | <b>APZ (m)required</b> |
|---|--|---------------------------------|------------------------|
| <b>North</b>  | Managed Lands/<br>Residential development    | upslope                         | NR                     |
| <b>East</b>   | Grassland                                    | 0-5° downslope                  | 60                     |
| <b>South</b>  | Forest                                       | 0-5° downslope                  | 70                     |
| <b>West</b>   | Managed Lands/<br>Residential development    | upslope                         | NR                     |
| NR – No requirement as no bushfire hazard present within 100m |  |                                 |                        |

## SECTION 3

### BUSHFIRE PROTECTION MATTERS

---

#### 3.1 ASSET PROTECTION ZONE AND BUSHFIRE HAZARD MANAGEMENT

The asset protection zones applicable to the proposed residential development (Table A2.5 of RFS 2006) have been determined as 20 metres (both upslope and downslope) of forested vegetation. For assessment purposes areas of future revegetation/regeneration in the ecological off-set areas are categorised as forest vegetation, as are areas containing forested wetlands.

The areas of forested wetlands adjoining future residential areas have been assessed as forested vegetation for determining asset protection zones for future residential allotments. This consideration of the forested wetlands as forest is only relevant to residential lots, not special fire protection purpose developments whereby the asset protection zones are determined in accordance with Table A2.6 of RFS (2006).

The drainage reserves and open space areas within the residential areas are categorised as reduced vegetation (managed land) because these areas will be replanted as a managed/landscaped area regularly maintained to control vegetative growth so that it does not constitute a bushfire hazard.

Areas of grassland / pasture land which is not within the drainage reserves has been assessed as containing a bushfire hazard requiring a 10 metre APZ.

The location of asset protection zones relevant to the subdivision plan are shown in Figure 1.

Figure 1 shows that asset protection zones of 20 metres are required both upslope and downslope of forested land (and future regeneration/revegetation areas classed as forest). An APZ of 60-70 metres is required to the south, east and west of the proposed tourist units which are classified as special fire protection purpose development. A 10 metre APZ is required to the grassland and pasture lands in the northern parts of the site.

No asset protection zones are required for the residential areas adjoining the managed open space and drainage reserve areas as these areas will not contain vegetation comprising a bushfire hazard.

Part of the subject site is located at a distance of greater than 100 metres from vegetation with a bushfire hazard. This area acts as an asset protection zone and will contain regularly managed vegetation which has a very low/minimal fire hazard. Areas of the site within 100 metres to the bushfire hazard will require the implementation of bushfire protection measures, including Asset Protection Zones, between future dwellings and the forested vegetation as identified in Tables 1-5.

#### 3.2 FUTURE DWELLING CONSTRUCTION STANDARDS

A separate assessment in relation to building construction requirements will be required to be completed for future dwellings within the final approved dwelling sites. However, a preliminary assessment of the bushfire attack levels for future lots within the proposed subdivision utilizing Table 2.4.3 of AS3959-2009 (Construction of Buildings in Bushfire Prone Areas) has identified the following construction standards for units/dwellings.

- BAL 29 27 - <37 metres from downslope bushfire hazard (26-31 metres upslope).
- BAL 19 37 - <50 metres from downslope bushfire hazard (31-42 metres upslope).
- BAL 12.5 50 - <100 metres from downslope bushfire hazard (42-100 metres upslope).

### **3.3 ACCESS**

Section 4.1.3 of PBP (RFS 2006) outlines the requirements for public roads within a residential subdivision. The objective of the public road system in a bushfire emergency is stated in PBP (RFS 2006) as: *“To provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area”*.

The existing road system has been constructed to Councils requirements and meets the requirements of Planning for Bushfire Protection RFS (2006). The proposed roads within the estate and extensions of existing roads will need to be designed to meet the requirements of RFS (2006) and in particular Section 4.1.3 and Table 4.1 of RFS (2006).

### **3.4 WATER SERVICES**

The existing development in the local area has reticulated water mains. It is expected that the proposed development will extend the existing water reticulation from the surrounding infrastructure therefore a supplementary form of water supply will not be necessary for fire fighting purposes. This water supply arrangement is in compliance with *‘Planning for Bushfire Protection, 2006’* in respect of water supply.

The reticulated water supply, fire hydrant spacing, sizing and pressure is to comply with the requirements of AS2419.1 – 2005. A certification or test report from the Water Supply Authority is to be provided to demonstrate that the requirements of AS2419.1-2005 can be achieved during a bushfire event.

### **3.5 ENVIRONMENT AND HERITAGE ISSUES**

Detailed ecological and heritage studies have been undertaken for the site as part of the surveys and assessments for the development proposal.

## SECTION 4

### CONCLUSIONS AND RECOMMENDATIONS

---

#### 4.1 AIM AND OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION

*“The aim of Planning for Bushfire Protection is to use the NSW development assessment system to provide for the protection of human life 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” (PBP pg 1).*

The preparation of this Bushfire Assessment Report and subsequent assessment by Council and the Rural Fire Service ensures compliance with the aim of Planning for Bushfire Protection.

The following comments are provided in relation to satisfying the objectives of PBP.

##### *Objective 1*

*(i) afford occupants of any building adequate protection from exposure to a bush fire;*

Construction of dwellings to meet the requirements of the specific bushfire attack levels (BAL) for each lot, and the provision of the APZ as outlined in Sections 2 and 3, will ensure that adequate protection is provided to occupants of any future dwelling in the event of a bushfire.

##### *Objective 2*

*(ii) provide for a defensible space to be located around buildings;*

The establishment and maintenance of the completed development will provide a defensible space located around buildings.

##### *Objective 3*

*(iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*

The asset protection zones identified in Tables 1 to 5 show that dwellings are not to be constructed within the flame zone for any lot. The management of the APZ's as an inner protection area is designed to prevent direct flame contact to future dwellings.

##### *Objective 4*

*(iv) ensure that safe operational access and egress for emergency service personnel and residents is available;*

The existing road system and proposed extension of this road system will ensure safe operational ingress for emergency services and also simultaneous safe egress for residents during a bushfire emergency within the local area.

##### *Objective 5*

*(v) provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ);*

The APZ within the lots, the roadways and open space areas are to be managed as an inner protection zone during the staged development of the site.

*Objective 6*

- (vi) *ensure that utility services are adequate to meet the needs of fire fighters (and others assisting in bush fire fighting)*

The adequacy of utility services such as water supply is discussed in Section 3 of this document. The utility services are adequate to meet the needs of fire fighters (and others assisting in bush fire fighting).

## **4.2 CONCLUDING COMMENTS**

With the implementation of the combination of measures recommended, and outlined in Sections 2 and 3 of this report, the overall aims and objectives of Planning for Bushfire Protection (RFS 2006) can be achieved for the proposed development.

## **4.3 RECOMMENDATIONS**

The following recommendations are provided in relation to reducing the potential for loss of life and property by the impact of bushfire.

- i. Management of the areas identified as asset protection zones to the standards of an inner protection area;
- ii. Provision of an adequate water supply to meet the requirements of RFS (2006);
- iii. Construction of future subdivision roads to meet the design requirements of RFS (2006).

## REFERENCES

- Australian Building Codes Board (1996) – Building Code of Australia, Class 1 and Class 10 Buildings Housing Provisions Volume 2.
- Conacher Environmental Group (2011) Ecological Site Management Strategy, Riverside Tea Gardens
- Conacher Environmental Group (2011) Koala Management Strategy, Riverside Tea Gardens
- Councils of Standards Australia AS3959 (1999) – Australian Standard Construction of buildings in bush fire-prone areas.
- McArthur, (1967). A.G. Leaflet 107 Fire Behaviour in Eucalypt Forest A.G.McArthur, Canberra. Commonwealth of Australia Department of National Development. Forestry and Timber Bureau. (and reprinted later by) CSIRO Div. Forestry - Bush Fire Research Unit.1967.
- NSW Rural Fire Service (2006)- *Planning for Bush Fire Protection - A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*. NSW Rural Fire Service
- Standards Australia (2009) Australian Standard Construction Standards for Buildings in Bushfire Prone Areas.
- Walker, J. (1984) Fuel Dynamics in Australian Vegetation. In “Fire and the Australian Biota” Australian Academy of Science.

**FIGURE 1**

**PLAN OF BUSHFIRE PROTECTION MEASURES**

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## **APPENDIX 1**

### **BUSHFIRE MANAGEMENT DETAILS**

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**APPENDIX 1**  
**BUSHFIRE MANAGEMENT DETAILS**

**RIVERSIDE**  
**TEA GARDENS**

**NOVEMBER 2011**  
**(REF:11116/B)**

## **BUSHFIRE MANAGEMENT DETAILS**

### **RIVERSIDE TEA GARDENS**

**NOVEMBER 2011**

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| APPENDIX A1  | Bushfire Management Actions<br>(Extract from Ecological Management Strategy) |

## **1. INTRODUCTION**

This Report has been prepared to provide initial details on the overall bushfire management and bushfire hazard reduction measures proposed for the Riverside development at Tea Gardens. Relevant information of bushfire management measures has been summarised into one report appended to the Bushfire Protection Assessment Report so that the overall requirements for either bushfire management or hazard reduction for each of the identified site management areas can be readily reviewed.

The following documents have been referred to or used for information purposes in the compilation of the information and details in this report.

- 1) Ecological Site Management Strategy, Riverside, Tea Gardens (CEG 2011)
- 2) Bushfire Protection Assessment Report, Riverside, Tea Gardens (CEG 2011)
- 3) Koala Management Strategy, Riverside, Tea Gardens (CEG 2011)
- 4) Ecological Assessment Report, Riverside, Tea Gardens (Cumberland Ecology 2011)
- 5) Myall Lakes National Park Plan of Management (NPWS 2000)
- 6) Myall Lakes National Park Fire Management Strategy (NPWS 2005)
- 7) Bushfire Environmental Assessment Code for NSW (Rural Fire Service 2006)

This report provides details and information extracted from the above documents and summaries the relevant information in Table A1 and Figures A1 and A2 for the various Site Management Areas within the Riverside site and Myall Lakes Conservation Area (offset area).

## **2. SITE MANAGEMENT AREAS**

For ongoing land and vegetation management purposes the subject site (which covers the Riverside site has been grouped into six different site management areas which will be subjected to different conservation, restoration and long term management strategies. These management areas and respective strategies/actions are detailed in the Ecological Site Management Strategy (EMS) for Riverside (CEG 2011).

The EMS (CEG 2011) identifies that individual Environmental Management Plans will be prepared for each stage of the proposed development which incorporates the relevant actions and environmental management measures identified in the overall EMS. Refined details of bushfire management and bushfire hazard reduction measures for each development stage are to be incorporated into these stages specific Environmental Management Plans.

The various Site Management Areas identified in the EMS and covered in this Bushfire Management Plan are listed below.

|                   |  |
|-------------------|--|
| Management Area A | SEPP14 Wetlands                                  |
| Management Area B | Conservation Zoned Land                          |
| Management Area C | Asset Protection Zones and Environmental Buffers |
| Management Area D | Wildlife Linkages                                |
| Management Area E | Drainage Corridors and Open Space Areas          |
| Management Area F | Development Areas                                |

The overall objectives and actions relating to bushfire Management, as identified in the EMS are reproduced in Appendix 1 of this report.

### **3. BUSHFIRE HAZARD AREAS**

Areas containing bushfire hazards to future development are generally those areas of open forest to be retained (or to be revegetated) immediately adjacent to the proposed development areas. These areas are located to the north and east of the Riverside development area as depicted by Management Areas B & D of Figure 1.

The principle bushfire protection measures incorporating asset protection zones are a ten metre APZ to the east of the residential allotments (south-eastern and north-eastern lots) and a 60 metre APZ to the south of the eco-tourist development area. Dwellings constructed to specific bushfire attack levels (BAL) will be required for dwellings within the potential bushfire affected areas as identified in the Bushfire Protection Assessment Report (CEG 2011).

Areas of open space/wildlife linkages/drainage corridors and parklands within the development areas will be managed with a reduced level of vegetation regularly maintained by mowing/slashing of the groundcover to a level that does not create a bushfire hazard.

#### **4. MANAGEMENT OF RETAINED VEGETATION AND REVEGETATION AREAS**

The objective of the areas of retained vegetation and revegetated areas is to provide for flora and fauna conservation and potential for fauna movement linkages. These areas are currently regenerating from previous disturbances (fires, stock grazing, access disturbances etc.) and no hazard reduction burning or mechanical hazard reduction actions are proposed for the next 10 years to enable this to continue to regenerate. Regular monitoring of the regrowth and condition of the vegetation is proposed in the EMS (CEG 2011) prior to re-consideration of the need to develop a hazard reduction strategy over the next 10 years.

#### **5. CONCLUDING COMMENTS**

Bushfire management, hazard reduction and management of asset protection zones are important aspects of the Riverside site. These factors have been recognised in the assessment and design of the proposed development area and are integrated into the various ecological and environmental assessments of the proposal.

The general measures identified in this report are to be augmented by site specific details incorporated into an Environmental Management Plan for each stage of the proposed development using current best practice ecological bushfire management procedures and measures available at the time of preparation of the ongoing Environmental Management Plans.

**Table A1  
Bushfire Management Requirements For Each Management Area**

| <b>Site Management Areas</b>    | <b>Bushfire Hazard and Bushfire Management Requirements</b>   | <b>Hazard Reduction Measures</b>   |
|---------------------------------|---|--|
| A. 7a Wetlands                  | <ul style="list-style-type: none"> <li>• Saline Wetlands</li> <li>• No hazard to development</li> <li>• Exclude bushfires</li> </ul>  | <ul style="list-style-type: none"> <li>• None proposed</li> <li>• None required</li> </ul>   |
| B. 7b Conservation              | <ul style="list-style-type: none"> <li>• Open Forest/ Forested Wetlands</li> <li>• Moderate hazard from forest vegetation.</li> <li>• Exclude bushfires</li> <li>• Control bushfire outbreaks</li> </ul>  | <ul style="list-style-type: none"> <li>• None proposed</li> <li>• Review controlled burning after 10 year interval</li> </ul>  |
| C. Environmental Buffers        | <ul style="list-style-type: none"> <li>• Open Forest</li> <li>• Moderate hazard from forest vegetation</li> <li>• Control bushfires</li> <li>• Exclude bushfire outbreaks</li> </ul>  | <ul style="list-style-type: none"> <li>• Hazard reduction burn at &gt;15 year interval.</li> <li>• Slashing of APZ to adjoining buildings</li> </ul>   |
| D. 1 - Retained Vegetation      | <ul style="list-style-type: none"> <li>• Open Forest</li> <li>• Moderate hazard from forest vegetation</li> <li>• Exclude bushfires</li> <li>• Control bushfire outbreaks</li> <li>• Separated from development by setbacks or APZ</li> <li>• Future Open Forest</li> </ul> | <ul style="list-style-type: none"> <li>• Hazard reduction burn &gt;10 year interval</li> <li>• None proposed at present</li> <li>• Review controlled burning after 10 year interval</li> </ul>   |
| D. 2 - Revegetation             | <ul style="list-style-type: none"> <li>• Exclude bushfires</li> <li>• Control bushfire outbreaks</li> </ul>   | <ul style="list-style-type: none"> <li>• Remove weeds.</li> <li>• Exclude fires for at least 30 years.</li> <li>• Possible hazard reduction burn following assessment after 30 years.</li> </ul> |
| D. 3 - Water Management Areas   | <ul style="list-style-type: none"> <li>• Occasional tree/shrubs with grassy groundcover</li> <li>• Managed areas</li> <li>• Low bushfire hazard</li> </ul>  | <ul style="list-style-type: none"> <li>• Remove weed</li> <li>• Regular mowing/slashing of groundcover</li> </ul>  |
| E. 1 - Permanent Fresh Water    | <ul style="list-style-type: none"> <li>• No issues</li> </ul>   | <ul style="list-style-type: none"> <li>• No requirements for hazard reduction</li> </ul>   |
| E. 2 - Permanent Brackish Water | <ul style="list-style-type: none"> <li>• No issues</li> </ul>   | <ul style="list-style-type: none"> <li>• No requirements for hazard reduction</li> </ul>   |
| E. 3 - Parkland                 | <ul style="list-style-type: none"> <li>• Managed land.</li> <li>• No bushfire hazard</li> </ul>   | <ul style="list-style-type: none"> <li>• Regular mowing/slashing of groundcover.</li> <li>• Shrub/trees planted in groups separated by grass cover.</li> </ul>                                   |



## **APPENDIX A1**

### **BUSHFIRE MANAGEMENT ACTIONS (EXTRACT FROM ECOLOGICAL MANAGEMENT STRATEGY)**

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## BUSHFIRE MANAGEMENT ACTIONS

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### Objectives

- **Ensure all bushfire protection measures occur outside of bushland areas retained for conservation or off-set purposes**
- **Maximise tree and habitat protection**
- **Ensure that bushfire protection measures are implemented to reduce the risk of bushfire from retained bushland areas upon adjacent property**

### Actions

- i) Incorporate the findings of the Bushfire Protection Assessment which identified the requirements for bushfire protection measures for asset protection zones*

A Bushfire Protection Assessment (Conacher Environmental Group 2011a) has been prepared for the site. This Bushfire Protection Assessment identifies the bushfire protection strategies required to protect developed areas within Riverside. These strategies need to be incorporated into the vegetation management of the site.

- ii) Identification of retained areas and Asset Protection Zone (APZ) boundaries prior to construction*

Prior to construction commencing those areas to be retained as corridor and reserve and their adjacent APZ's are to be delineated on site plans and survey marked in the field. This will minimise the risk of damage to vegetation contained within retained areas and APZ's during construction.

- iii) Maximise tree protection in APZ's*

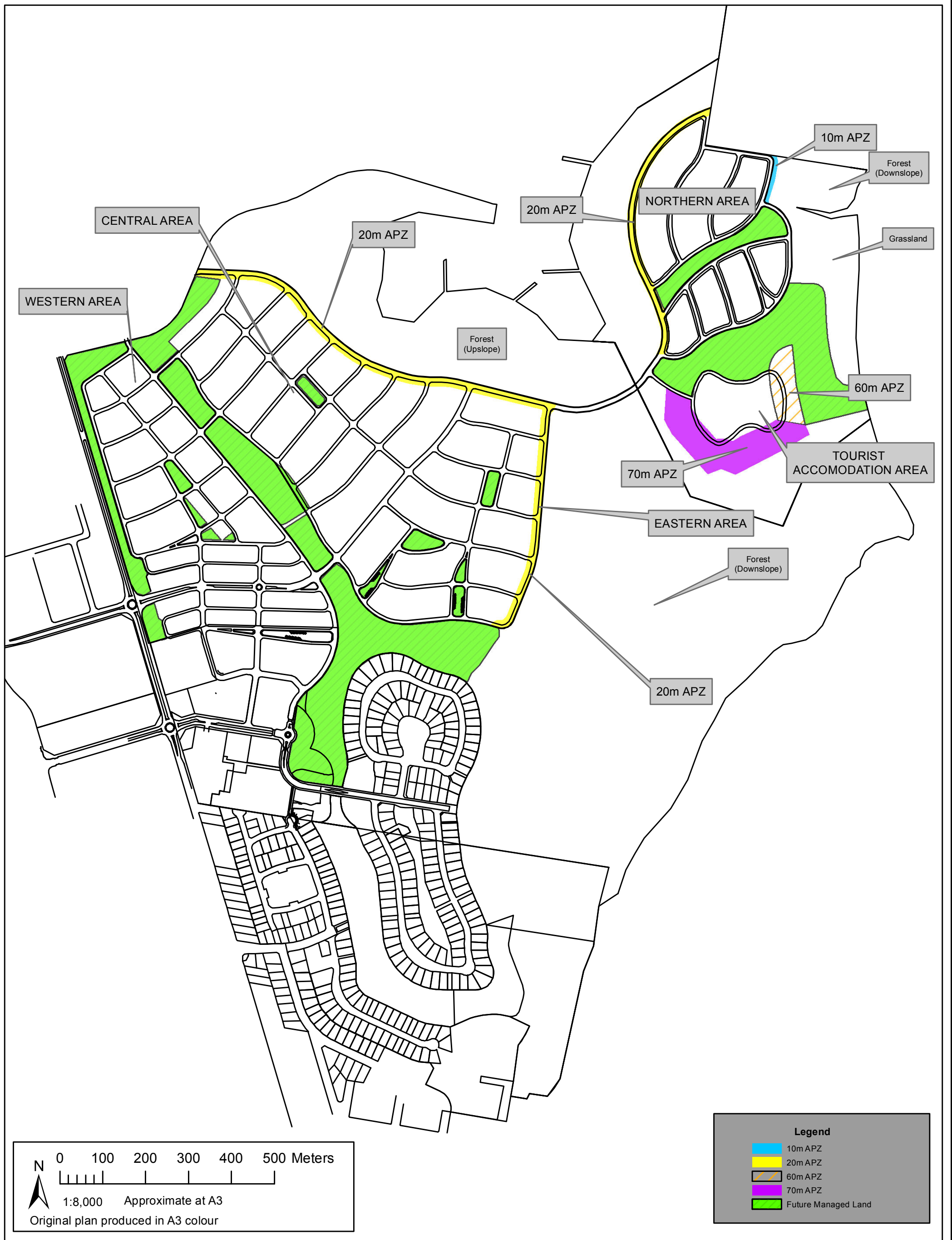
A discontinuous tree canopy is required as establishment of the Inner Protection Area of APZ's. It is considered that due to the relatively open nature of the vegetation communities present within that site that tree clearing required as part of the establishment of APZ's will be minimal.

- iv) Monitor bushfire risk within retained bushland areas*

While all hazard reduction is to occur outside of reserve, corridor areas and off-set areas the vegetation and accumulation of fuel and consequent bushfire risk over time within the reserve and corridor areas is to be monitored as a long term strategy. Full details of monitoring will be included within the Vegetation and Bushfire Management Plan.

- iv) Implementation fire hazard reduction and fuel management where considered necessary in accordance with vegetation management principles*

This may require future ecological burn strategies to be implemented using a sector/mosaic burn plan based physical/mechanical actions to reduce inground fuel levels or on best knowledge of appropriate regimes for the various vegetation communities present within the site. The results of monitoring will be used to plan for any subsequent fuel reduction operations carried out in conjunction with the RFS and other relevant statutory authorities such as the NSW Department of Environment and Climate Change.



Plan for indicative purposes only. Not for detailed measurement.



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|-------------|-------|------|----------|
| Drawing No. | 11116 | Date | 29/03/12 |
| Drawn By    | DC    | Date | 19/07/12 |
| Amendment   |       | Date | 27/12/12 |
| A           | CAD   |      |          |
| B           | CAD   |      |          |
| C           |       |      |          |

**Figure 1**  
**Bushfire Asset Protection Zones**  
 Riverside - Tea Gardens