



BUSHFIRE PROTECTION ASSESSMENT REPORT

RIVERSIDE TEA GARDENS

**NOVEMBER 2011
(REF:10122)**

www.cegconsult.com

Suite E, 78 York Street, East Gosford NSW 2250
PO Box 4300, East Gosford NSW 2250

• Ph (02) 4324 7888 • Fax (02) 4324 7899

• Email cegconsult@bigpond.com

ABN 62 274 841 042

BUSHFIRE PROTECTION ASSESSMENT REPORT

RIVERSIDE TEA GARDENS

NOVEMBER 2011

Conacher Environmental Group

Environmental and Land Management Consultants

Suite E, 78 York St, East Gosford NSW 2250
PO Box 4300, Gosford NSW 2250
Phone: 02 4324 7888 Fax: 02 43247899

This document is copyright ©
Conacher Environmental Group ABN 62 274 841 042

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:

PHILLIP ANTHONY CONACHER B. Sc. (Hons), Dip. Urb. Reg. Planning, M. Nat. Res.

NPWS Scientific Licence Number: SL100361

Director

Conacher Environmental Group

TABLE OF CONTENTS

SECTION 1 INTRODUCTION	1
1.1 AIMS OF THE ASSESSMENT	1
1.2 PLANNING RELATIONSHIPS.....	1
1.3 INFORMATION COLLATION	2
1.4 PROPOSED DEVELOPMENT	2
1.5 SITE DESCRIPTION	3
SECTION 2 BUSHFIRE THREAT AND PROTECTION ASSESSMENT	4
2.1 BUSHFIRE ATTACK ASSESSMENT	4
SECTION 3 SPECIFIC PROTECTION ISSUES	6
3.1 ASSET PROTECTION ZONES	6
3.2 HAZARD MANAGEMENT	6
3.3 EVACUATION SAFETY	6
3.4 AVAILABILITY OF FIRE FIGHTING SERVICES	7
3.5 ACCESS FOR FIRE FIGHTING OPERATIONS	7
3.6 WATER SUPPLIES	7
3.7 COMMUNICATIONS	7
3.8 OVERALL BUSHFIRE MANAGEMENT DETAILS	7
SECTION 4 CONCLUSION AND RECOMMENDATIONS	8
4.1 CONCLUSION.....	8
4.2 RECOMMENDATIONS	8
REFERENCES	9

SECTION 1

BACKGROUND

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:

- Review the bushfire threat to the property
- Review the capability of the property to provide a safe development
- Review the potential to carry out hazard management over the landscape
- Provide advice on mitigation measures including the provision of asset protection zones and construction standards in accordance with '*Planning for Bushfire Protection, 2006*'
- Advise on specific fire management issues

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 buildings in a bushfire prone area is 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.

Planning for Bushfire Protection – 2006 (RFS 2006) provides planning controls and bushfire protection guidance for development within a designated bushfire prone area.

Australian Standard AS3959-2009 Construction of Building in Bushfire Prone Areas identifies the relevant construction requirements for assessed bushfire attack levels for future dwellings.

1.3 INFORMATION COLLATION

To achieve the aims of this report, a review of the information relevant to the property was undertaken prior to the initiation of field surveys.

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. The identification of existing bush fire protection advantages and a visual appraisal of bush fire hazard and risk were also undertaken. (Bush fire protection advantages are those landscape features which act to suppress or mitigate a fire e.g. escarpments, creeks, roads and fire breaks etc).

1.4 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 eco-tourist component of the development is classified as special fire protection purpose development under the provision of Planning for Bushfire Protection (RFS 2006).

At this stage it is planned for this component of the development to be classified as an eco-tourism development with support and certification from the Ecotourism Association of Australia. Actions regarding this certification process are currently underway. If certified as an ecotourism development some re-assessment of the bushfire hazard management requirements will be undertaken. However for current assessment purposes the proposed tourist development area has been assessed as a special fire protection purpose development under the provisions of Planning for Bushfire Protection (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.

1.5 SITE DESCRIPTION

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.

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. An artificial lake on the southern boundary will be extended partly into the development. This lake is connected to the Myall River and is subject to regular tidal movements.

The land rises towards the existing rural residential settlement 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 2.4.3 of AS3959-2009 is the appropriate table to use for determining the category of bushfire attack and appropriate asset protection zones.

SECTION 2

BUSHFIRE THREAT AND PROTECTION ASSESSMENT

2.1 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. This document also provides a methodology for determining asset protection zones. Tables 1 & 2 provide a summary of this assessment.

'Planning for Bushfire Protection 2006' also provides a methodology for assessing bushfire attack at construction stage for a building within a designated bushfire prone area. This identifies the building construction requirements for a site and relates to AS3959.

Tables 1 & 2 provide a summary of Bushfire Attack and the construction standards required for both residential dwellings and tourist units.

TABLE 1 BUSHFIRE ATTACK LEVEL ASSESSMENT (from Table 2.4.3 of AS3959-2009)							
Direction	Vegetation Classification (greatest threat within 140m)	Effective Slope (within 100m)	Recommended Distance from Bushfire Hazard (metres)				
			BAL Flame Zone	BAL-40	BAL-29	BAL-19	BAL-12.5
North	Pasture Managed Grassland	0-5 ^u	NR	NR	NR	NR	NR
North-west	Forest	0-5 ^u	<16	16-<21	21≤31	31<42	42<100
North to North-east	Forest	0-5 ^u	<16	16-<21	21≤31	31<42	42<100
East	Forest	0-5 ^D	<20	20-≤27	27≤37	37-<50	50-<100
South to South-east	Saline Wetlands	0-5 ^D	NR	NR	NR	NR	NR
South	Residential	0-5 ^D	NR	NR	NR	NR	NR
West	Pasture Industrial	0-5 ^D	NR	NR	NR	NR	NR

NR – No requirement as no bushfire hazard present within 100m
 BAL – Bushfire Attack Levels
^u = Upslope
^D = Downslope

TABLE 2 BUSHFIRE ATTACK ASSESSMENT TOURIST UNITS (SPECIAL FIRE PROTECTION PURPOSES)			
Direction	Vegetation within 140m of Development	Effective Slope Gradient	APZ (m)required
North to North-east	Managed Lands/ Residential development	0-5 ^U	Nil
East	Saline Wetlands	0-5 ^D	Nil
South	Forested Wetlands	0-5 ^D	60 metres
North- west	Forest	0-5 ^U	60 metres
West	Managed Lands/ Residential development	0-5 ^U	Nil

SECTION 3

SPECIFIC PROTECTION MATTERS

3.1 BUSHFIRE ATTACK LEVELS AND BUILDING CONSTRUCTION LEVELS

For Residential Dwellings

'*Planning for Bushfire Protection, 2006*' provides a methodology for determining the setback requirements (asset protection zones) and construction standards for habitable buildings in special protection developments that are located within a designated bushfire prone area. The following recommendations are provided in direct accordance with '*Planning for Bushfire Protection, 2006*'.

For Residential Dwellings

In accordance with the provisions of '*Planning for Bushfire Protection, 2006*' the future residential development should be constructed to a Bushfire Attack Level of between BAL 40 and BAL 12.5 to protect against the level of bushfire attack depending on the distance from the bushfire hazard. This arrangement is in compliance with '*Planning for Bushfire Protection, 2006*' in respect of building construction requirements.

For Tourist Development

Class 9 structures as defined by the Building Code of Australia and Special Fire Purpose Protection buildings as defined by the RFS are required to be provided with asset protection zones in accordance with Table A2.6 of *PBP 2006*. In this case the maximum heat flux of 10 KW m can be accommodated by providing APZ's of 60 metres from the forest vegetation in the north west and 60 metres to the Forested Wetlands in the south.

3.2 HAZARD MANAGEMENT

The managers/owners the lot/s will have an ongoing liability to ensure the management of the Asset Protection Zones within the property to prevent the build up of combustible fuel.

Section 63(2) of the *Rural Fires Act* requires that '*it is the duty of the owner or occupier (including Councils) 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*'.

There is no physical reason that should constrain hazard management in any potential asset protection zone from being successfully carried out by normal means e.g. landscaping / mowing / slashing following initial clearing works.

3.3 EVACUATION SAFETY

Evacuation from the proposed development is possible during a bushfire event via multiple direct and indirect routes to Myall Road. From Myall Road safe egress can then be obtained in a northerly or southerly direction whereby existing residential development and associated clearing provides adequate separation from the surrounding bushfire threats.

3.4 AVAILABILITY OF FIRE FIGHTING SERVICES

There is a Rural Fire Brigade located at Tea Gardens approximately 3km (by road) to the property in a southeasterly direction. Tea Gardens Rural Fire Brigade would have a response time of approximately 10-15 minutes to service the development if they are not assisting elsewhere.

There is an additional Rural Fire Service located at Bulahdelah to the north. The Rural Fire Service would have a response time of approximately 30 - 45 minutes to service the development if they are not assisting elsewhere.

3.5 ACCESS FOR FIRE FIGHTING OPERATIONS

The internal road network of the proposed development will provide adequate access / egress for emergency vehicles. The connection of the internal road network within the proposed subdivision with the existing road networks in adjacent residential settlements will provide adequate access for fire fighting operations and simultaneous egress for residents.

All access requirements are to comply with the provisions of '*Planning for Bushfire Protection, 2006*'.

3.6 WATER SUPPLIES

Town reticulated water supply is available to the proposed residential subdivision, therefore an additional supplementary water supply will not be necessary for fire fighting purposes. A hydrant supply should be installed in accordance with Australian Standard AS2419-1 (1994). Access points for reticulated water supply are to incorporate a ring main system for all internal roads.

AS2419.1 recommends that hydrants be separated by no more than 120 metres (Source AS 2419.1 2005 Appendix B, B2) for residential development.

This water supply arrangement is to be in compliance with '*Planning for Bushfire Protection 2006*' in respect of water supply.

3.7 COMMUNICATIONS

Telephone communications will be provided for this development to aid in communications during a bushfire incident.

3.8 OVERALL BUSHFIRE MANAGEMENT DETAILS

Appendix 1 of this Report contains details in a separate section on the overall requirements for asset protection zones and vegetation management requirements for the masterplan area. This information has been provided as a separate section to the main bushfire assessment report at the request of the Department of Planning and Infrastructure.

SECTION 4

CONCLUSION AND RECOMMENDATIONS

4.1 CONCLUSION

The proposed development is classified as residential development within a bushfire prone area and therefore the requirements of 'Planning for Bushfire Protection 2006' apply.

The following recommendations are provided to ensure that the development is safe and in accord or greater than the requirements of 'Planning for Bushfire Protection 2006'.

4.2 RECOMMENDATIONS

Recommendation 1 - Asset protection zones should be provided to the proposed development area and shall be measured from the building line of development. The asset protection zones shall be as nominated in Table 1 and Table 2 and also as depicted in Figure 1.

Recommendation 2 - Fuel management within any asset protection zones should be maintained by regular maintenance in accordance with a site specific fuel management plan as generally described in '*Planning for Bushfire Protection, 2006*' and / or other publications by the RFS.

Recommendation 3 - The application of construction standards of the Australian Standard AS3959-2009 'Construction of Buildings in Bush Fire Prone Areas' should apply to the future development, as detailed in Section 4.1 and Tables 1 & 2.

Recommendation 4 - The public roads within the subdivision shall comply with the design criteria required by 'Planning for Bushfire Protection 2006'. With either an eight metre minimum (kerb to kerb) width two-way urban road or a 6.5 metre wide two-way public road with allocated parking bays or turning circles.

Recommendation 5 - A hydrant supply should be installed in accordance with Australian Standard AS2419-1 (1994).

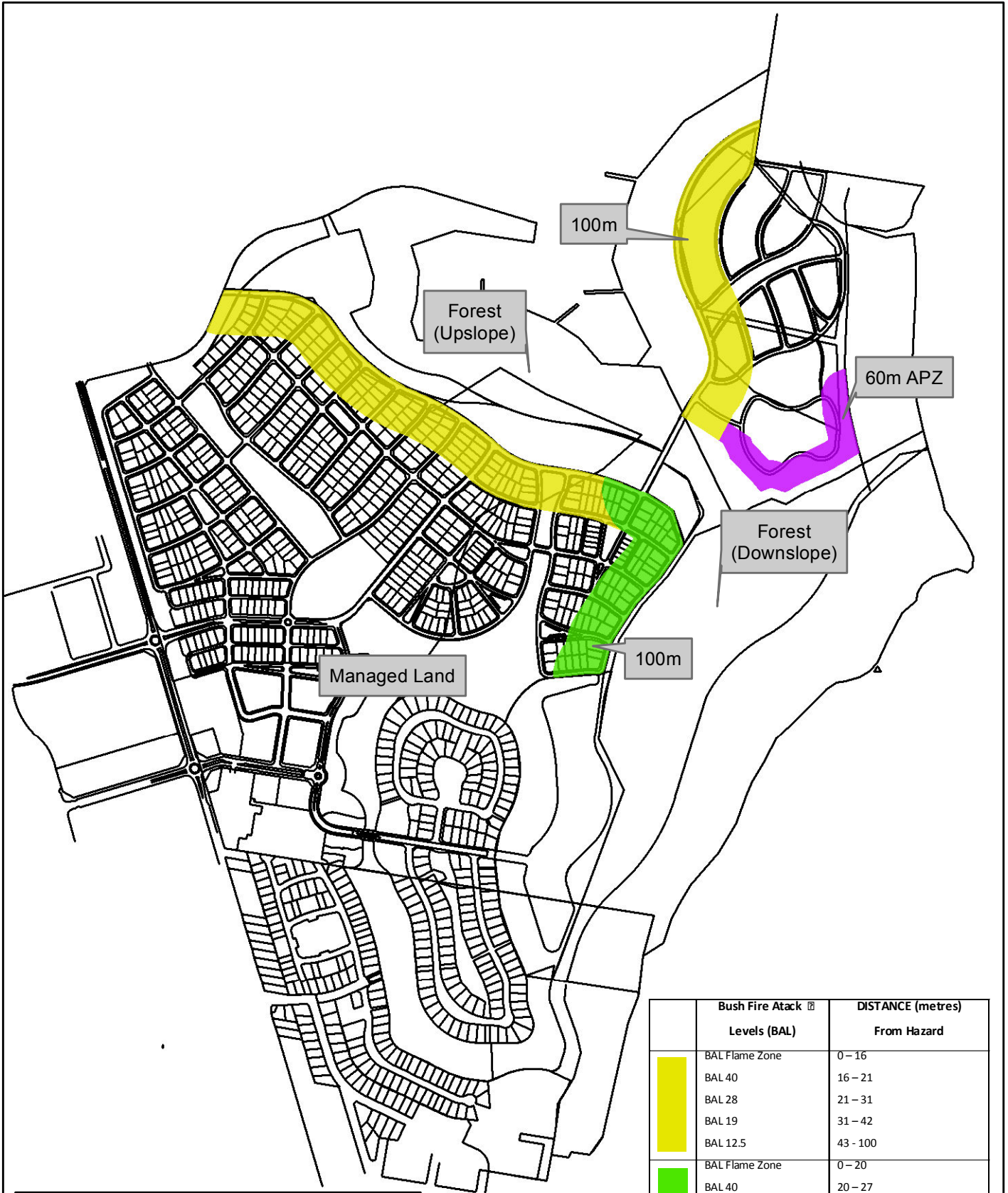
Recommendation 6 – A Bushfire Evacuation Plan should be prepared for the proposed tourist units and Community Title allotments. This Evacuation Plan can be incorporated into the Community Management Statement to be prepared for the proposed development.

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



	Bush Fire Attack	DISTANCE (metres)
	Levels (BAL)	From Hazard
Yellow	BAL Flame Zone	0 – 16
	BAL 40	16 – 21
	BAL 28	21 – 31
	BAL 19	31 – 42
	BAL 12.5	43 - 100
Green	BAL Flame Zone	0 – 20
	BAL 40	20 – 27
	BAL 28	27 – 37
	BAL 19	37 – 50
	BAL 12.5	50 - 100
	Tourist Lodging	
Purple	APZ	60

N
 1:12,000 Approximate at A4
 0 100 200 300 400 500 m

 Original plan produced in A4 colour

Flora and fauna survey locations are approximate and have not been fixed by land survey. *Subject Site boundary subject to final survey Plan for indicative purposes only. Not for detailed measurement.



ABN: 62 274 841 042
 PO Box 4300
 78 York Street
 East Gosford NSW 2250
 Ph: (02) 4324 7888
 Fax: (02) 4324 7899
 cegconsult@bigpond.com

By/DC
 01/12/11
 Ref No 11116

Figure 1
Bushfire Attack Levels
 Riverside - Tea Gardens

Source: CAD © Crighton Properties (2011)



APPENDIX 1
BUSHFIRE MANAGEMENT DETAILS

RIVERSIDE
TEA GARDENS

NOVEMBER 2011
(REF:11116/B)

BUSHFIRE MANAGEMENT DETAILS

RIVERSIDE TEA GARDENS

NOVEMBER 2011

Conacher Environmental Group

Environmental and Land Management Consultants

Suite E, 78 York St, East Gosford NSW 2250
PO Box 4300, Gosford NSW 2250
Phone: 02 4324 7888 Fax: 02 43247899

This document is copyright ©
Conacher Environmental Group ABN 62 274 841 042

TABLE OF CONTENTS

1. INTRODUCTION	1
2. SITE MANAGEMENT AREAS.....	1
3. BUSHFIRE HAZARD AREAS.....	2
4. MANAGEMENT OF RETAINED VEGETATION AND REVEGETATION AREAS.....	3
5. CONCLUDING COMMENTS.....	3

APPENDIX 1

Bushfire Management Actions (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 summarises 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

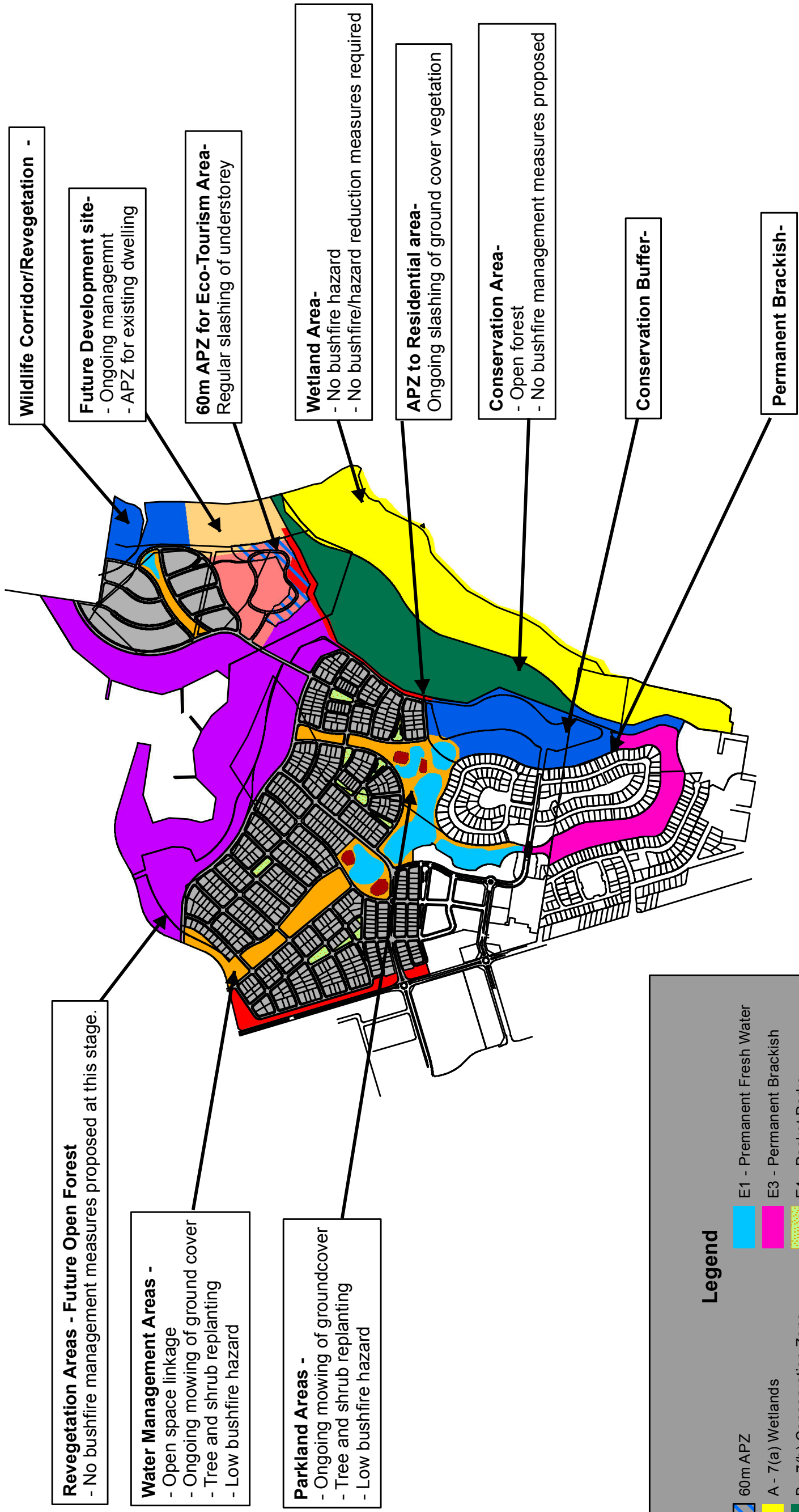
The overall objectives and actions relating to bushfire Management, as identified in the EMS are reproduced in Appendix 1 of this report.

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.



Wildlife Corridor/Revegetation -

Future Development site-
 - Ongoing management
 - APZ for existing dwelling

60m APZ for Eco-Tourism Area-
 Regular slashing of understorey

Wetland Area-
 - No bushfire hazard
 - No bushfire/hazard reduction measures required

APZ to Residential area-
 Ongoing slashing of ground cover vegetation

Conservation Area-
 - Open forest
 - No bushfire management measures proposed

Conservation Buffer-

Permanent Brackish-

Revegetation Areas - Future Open Forest
 - No bushfire management measures proposed at this stage.

Water Management Areas -
 - Open space linkage
 - Ongoing mowing of ground cover
 - Tree and shrub replanting
 - Low bushfire hazard

Parkland Areas -
 - Ongoing mowing of groundcover
 - Tree and shrub replanting
 - Low bushfire hazard

Legend

	60m APZ		E1 - Permanent Fresh Water
	A - 7(a) Wetlands		E3 - Permanent Brackish
	B - 7(b) Conservation Zone		E4 - Pocket Parks
	C - APZ/Environmental Buffers		F1 - Development (Urban)
	D1 - Wildlife Corridor/Revegetation		F2 - Development (Eco/Tourist)
	D2 - Conservation Buffer		F3 - Development (Future)
	D3 - Water Management Areas		F4 - Communal Facilities

Plan for indicative purposes only. Not for detailed measurement.

conacher
 environmental group

ABN: 62 274 841 042
 PO Box 4300
 78 York Street
 East Gosford NSW 2250
 Ph: (02) 4324 7888
 Fax: (02) 4324 7899
 cegconsult@bigpond.com

Scale: 1:15,000 Approximate at A3
 Original plan produced in A3 colour

North arrow pointing up.

Drawing No.	11116	Date	01/12/11
Drawn By	DC	Date	
Amendment		Date	
A			
B			
C			

Figure A1
Bushfire Management Measures
 Riverside, Tea Gardens
 Source: Aerial © Department of Lands 2011

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

APPENDIX 1

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

BUSHFIRE MANAGEMENT ACTIONS

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.