

# **'Rosarii' Proposed Residential Subdivision Lot 2 DP 581117, Gregory Street, South West Rocks**


Bushfire Hazard Assessment

Macleay Valley Property Group

January 2007

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Environmental Resources Management Australia Pty Ltd Quality System

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Macleay Valley Property Group

'Rosarii' Proposed  
Residential Subdivision  
Lot 2 DP 581117, Gregory  
Street, South West Rocks  
*Bushfire Hazard Assessment*

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# 1 INTRODUCTION

## 1.1 BACKGROUND

Macleay Valley Property Group commissioned Environmental Resources Management Australia Pty Ltd (ERM) to undertake a bushfire hazard assessment for a proposed residential subdivision over three stages on Lot 2 DP 581117, Gregory Street, South West Rocks. The property is indicated on *Figure 1* (referred to as 'the site' throughout this report).

The site is located at Spencerville, on the north-eastern corner of Gregory Street (also known as South West Rocks Road) and Arakoon Roads. The site is zoned 2(a) Residential A under the *Kempsey Local Environmental Plan 1987*. The subdivision includes three stages to create a total of 45 residential allotments with primary vehicular access to Gregory Street via Cooper Street.

This report was prepared to accompany an Application under Part 3A of the EP&A Act for the proposal as part of the site has been identified as bushfire-prone land, being within 100 metres of vegetated land mapped as presenting a high bushfire risk. This report was prepared in accordance with NSW Rural Fire Service (2001) guidelines for submission with the development application.

## 1.2 PROPOSED DEVELOPMENT

The proposed subdivision involves the subdivision of Lot 2 DP 581117 into 45 residential allotments. This will occur in three stages:

- Stage 1) annexing of the existing dwelling on the property (8057 m<sup>2</sup>);
- Stage 2) development of low-density residential allotments (20 lots); and
- Stage 3) development of low-density residential allotments (24 lots).

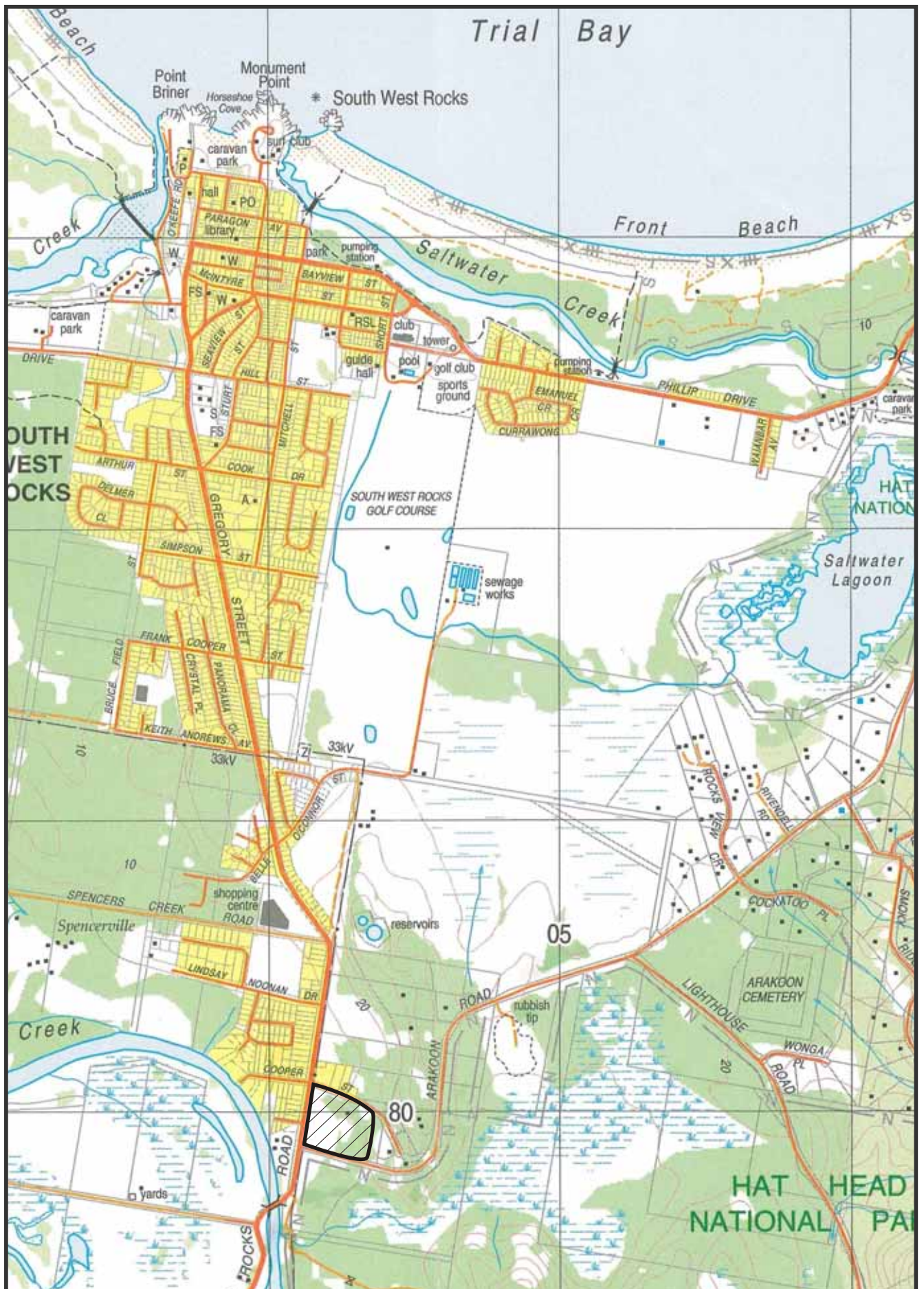
A new access road from Cooper Street will be required as part of Stage 2. Based on advice from Kempsey Council, the NSW Roads & Traffic Authority and NSW Department of Planning, it is not proposed to link the Cooper Street access through to Arakoon Road.

## 1.3 LEGISLATIVE REQUIREMENTS

The main objectives of the NSW *Rural Fires Act 1997* are to:

- prevent, mitigate and suppress bush and other fires in NSW;





0 500m

Figure 1

## Location of the study area

Proposed Residential Subdivision - Rosari, South West Rocks

- co-ordinate bushfire fighting and bushfire prevention throughout the State;
- protect people from injury or death and property from damage and as a result of bushfires; and
- protect the environment.

As the proposed development is subject to Part 3A of the EP&A Act, a Bush Fire Safety Authority under section 100B of the *Rural Fires Act 1997* is not required. However, the same principles and requirements have been assessed herein.

Clause 46 of the *Rural Fires Regulation 2002* sets out the matters that must be assessed in an application for a Bush Fire Safety Authority including a description of the property, classification of the vegetation, slope assessment, identification of significant environmental features, and details of threatened species and Aboriginal relic or place.

Clause 46(1)(g) of the *Rural Fires Regulation 2002* specifies that a bushfire assessment for a proposed development must address the following matters:

- (i) *the extent to which the development is to provide for setbacks, including asset protection zones,*
- (ii) *the siting and adequacy of water supplies for fire fighting,*
- (iii) *the capacity of public roads in the vicinity to handle increased volumes of traffic in the event of a bush fire emergency,*
- (iv) *whether or not public roads in the vicinity that link with the fire trail network have two-way access,*
- (v) *the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response,*
- (vi) *the adequacy of bush fire maintenance plans and fire emergency procedures for the development site,*
- (vii) *the construction standards to be used for building elements in the development, and*
- (viii) *the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development.'*

Clause 46(1)(h) of the *Rural Fires Regulation 2002* specifies that an assessment of the extent to which the proposed development conforms with or deviates from the specifications set out in Chapter 4 (Bushfire provisions—development stage) of *Planning for Bushfire Protection* (NSW Rural Fire Service 2001) must also be undertaken.

### 2.1 GENERAL APPROACH

The bushfire hazard assessment methodology utilised is based upon Appendix 2 and 3 of *Planning for Bushfire Protection 2001*. The main tasks in conducting the bushfire hazard assessment were:

- identifying the presence and extent of bushfire prone land in and adjacent to the proposed development site;
- identifying the distribution and structure of vegetation communities within and adjacent to the proposed development site;
- assessing the slope of the site and land in adjacent areas;
- using the above information to assess the bushfire risk posed by relevant bushfire hazards (ie adjacent vegetation); and,
- determine appropriate levels of building construction for the proposed development to withstand bushfire attack.

### 2.2 ASSESSING BUSHFIRE-PRONE LAND

Bushfire hazard mapping was used to define bushfire prone land in the vicinity of the lot.

NSW Rural Fire Service (2001) defines “bushfire-prone land” as “those areas within or within 100 metres of high or medium bushfire hazard, or areas within or within 30 metres of low bushfire hazards”. Such areas do not include existing residential areas or waterbodies.

### 2.3 FIELD SURVEY OF VEGETATION AND SLOPE

Vegetation within a 140-metre radius of the proposed development area was assessed in the field.

In accordance with NSW Rural Fire Service (2001), slope was assessed using the following guiding principle:

*"In assessing slope, there may be found a variety of slopes covering different distances. Determine the gradient which will most significantly influence the fire behaviour of the site having regard to vegetation found".*

The slope characteristics of the site and surrounding areas within 100 metres were determined using site survey data and 10 metre contour intervals from



the South West Rocks 1:25,000 topographic map. These were verified in the field.

## **2.4**      *ASSESSMENT OF BUSHFIRE RISK*

The risk posed by the proximity of the development to the nearest bushfire hazard was assessed in terms of NSW Rural Fire Service (2001) requirements for residential development.

This included analysis of asset protection zones, levels of building construction required and the overall bushfire suitability of the development in the context of the locality in particular the separation distance from hazards external to the property, existing roads and services.

### 3.1 *EXTENT OF BUSHFIRE-PRONE LAND*

Bushfire hazard mapping indicated that the site contained land classified as bushfire prone land, with the nearest mapped hazard occurring within the National Park and forested areas to the south and east.

### 3.2 *LAND USE BOTH ON AND ADJACENT TO THE SITE*

The site currently contains one dwelling. The remainder of the site is vacant land.

The site is bounded by the following land uses:

- **to the west:** Gregory Street road reserve (31.3m wide) and developed urban land fronting Gregory Street;
- **to the north:** Cooper Street road reserve (20m wide) and partially development residential zoned land. Mature trees have been retained on property to the northeast of the site, with developed areas along part of the Cooper Street frontage in this direction towards the east;
- **to the east:** developed residential land with many mature trees retained throughout. Most of this area has been underscrubbed and understorey fuel loads removed. Further to the east over the ridgeline (approximately 160m from the site boundary) is Hat Head National Park;
- **to the south:** Arakoon Road reserve (19 to 24m wide) and Hat Head National Park.

It is known that further residential development will likely occur to the north of the site within the existing 2(a) Residential 'A' zone.

### 3.3 *VEGETATION ON AND ADJACENT TO THE SITE*

The site has been subject to historical disturbance and is maintained as an open woodland structure with grassy understorey. It is assumed in this assessment that the vegetation on-site will be further cleared as part of the proposed development.

- **to the west:** no bushfire hazard – road reserve and urban land;

- **to the north:** no bushfire hazard for allotments in the northwest adjacent to Gregory Street. Forest vegetation (Group 1) is present to the northeast, relevant to Stage 1 of the subdivision;
- **to the east:** managed forest vegetation is present in this direction. For a conservative assessment, this has been considered as Group 1 vegetation due to the connectivity with Hat Head National Park and lack of clear asset protection zones around existing dwellings to the east of the site;
- **to the south:** The vegetation in this direction is separated from the site by the Arakoon Road reserve boundary of approximately 20 metres. The vegetation within Hat Head National Park to the south of the site comprises:
  - in the southwest, adjacent to Gregory Street: Banksia shrubland (Group 2 vegetation); and
  - in the southeast: open sclerophyll forest with shrubby understorey (Group 1 vegetation).

### 3.4 SLOPE

The site is relatively flat in the west, rising towards the ridgeline in the east. The relevant slopes to vegetation identified above are:

- to the northeast: vegetation is above 5 degrees upslope of the site;
- to the east: vegetation is above 5 degrees upslope of the site;
- to the south: vegetation is between 0 and 5 degrees downslope of the site.

### 3.5 ASSET PROTECTION ZONE REQUIREMENTS

The required Asset Protection Zones (APZs) were determined in accordance with NSW Rural Fire Service (2001) guidelines. These are outlined in *Table 1*.

**Table 1** *Asset Protection Zone Requirements*

Direction from Residential Land	Asset Protection Zone (APZ) (total)	Inner Protection Area (IPA)	Outer Protection Area (OPA)
West (Urban land)	0	-	-
Northwest (Urban land)	0	-	-
Northeast (Forest)	20m	20m	-
East (Forest)	20m	20m	-
Southeast (Forest)	40m	30m	10m
Southwest (Shrubland)	35m	25m	10m

The total APZ incorporates two areas, being:

- **Inner Protection Area:** Located immediately adjacent to the development, this area is maintained free of combustible materials (eg woodpiles) and with trees that are well spread out and do not form a continuous canopy. A minimum crown separation of 6 metres is required; and
- **Outer Protection Area:** Located as a buffer area between the hazard and the IPA, this area is managed as a fuel-reduced zone with a relatively discontinuous canopy to reduce the effects of direct flame, radiant heat and ember attack on the IPA.

The proposed APZ arrangement is indicated in the attached *Figure 2*. This allows for the location of the required APZs in the following manner:

- **to the northeast :** within the Stage 1 allotment;
- **to the east:** within the Stage 3 subdivision layout;
- **to the south:** utilising the existing fuel managed area of the Arakoon Road reserve (varying between approximately 18 and 25 metres in width) with the balance of the APZ within the Stage 3 subdivision layout.

### 3.6

#### VEHICULAR ACCESS

Primary vehicular access for fire fighting and emergency escape is provided from Cooper Street. This road access would be formed as part of Stage 2 and 3 works and will comply with design criteria for public roads as indicated in Section 4.3.1 of RFS (2001).

Bushfire access to the hazard interface areas to the east is enabled via Cooper Street and Arakoon Road. Areas to the south are accessed from Arakoon Road directly.

No links to Arakoon Road are proposed. The NSW Department of Planning and Kempsey Council have indicated a preference for this arrangement. Connection of a perimeter road to Arakoon Road would prove unsuitable given the lack of sight distance along Arakoon Road and the 80km/hr speed limit. This creates a *cul de sac* road of greater than 200 metres in length in the subdivision (internal roads No.1+ No.2). This potential access issue was considered to be mitigated by:

- Arakoon Road and Cooper Street providing additional access along the southern and eastern hazard interfaces, respectively;
- adequate space for turning of vehicles within the development; and



Edge of Vegetation  
APZ boundary  
Site Boundary



Figure 2

## Asset Protection Zones

Proposed Residential Subdivision  
Rosari, South West Rocks



- the ability of residents to potentially utilise the direct frontage to the service easement adjacent to Gregory Street, directly west of internal road No.2.

### 3.7 WATER SUPPLY

Water supply for fire fighting will be provided through the mains water supply. Fire hydrants will be located through the subdivision such that a fire tanker can stand within 20 metres of the hydrant and utilise a 60-metre hose with a 10 metre water jet in accordance with NSW RFS and *Australian Standard 2419.1-1994 Fire Hydrant Installation*.

All dwellings within 100 metres of the hazard interfaces should be required to maintain metal 19mm garden tap fittings for potential use in reducing risk of damage to property in a bushfire. Other services (eg electricity) will be installed underground where possible.

### 3.8 CONSTRUCTION REQUIREMENTS

Building construction requirements for the proposed development were assessed in accordance with *Table A3.3* of NSW Rural Fire Service (2001).

The level of construction, in accordance with *AS3959-1999 Construction of Buildings in Bushfire-prone areas*, applies to dwellings within proximity to the hazard interface as described in *Table 2*.

**Table 2** *Level of Construction Requirements*

Proximity to Hazard from Dwelling	Required Level of Construction <i>AS3959-1999</i>
between 20m and 30m	<i>Level 3</i>
between 30m and 50m	<i>Level 2</i>
between 50m and 80m	<i>Level 1</i>

Due to APZ requirements, no dwellings are to be located within 20m of the hazard interface, and no proposed building envelopes in allotments along the southern boundary would be within the 30m distance requirement for Level 3 construction along this interface.

Dwellings in the remaining areas of the site do not require specific bushfire protection measures to be implemented in dwelling design in accordance with *AS3959-1999*.



## CONCLUSION AND RECOMMENDATIONS

It is considered that the proposed subdivision generally complies with the NSW RFS guidelines (2001). Non-compliance is limited to the single public access road for the development. However Arakoon Road effectively provides access to the bushfire interface.

The only non-compliance noted was the lack of through-access to Arakoon Road creating a road of greater than 200m in length. This was mitigated by alternate hazard interface and emergency access via Cooper Street and Arakoon Road plus the internal emergency access opportunity via the service easement adjacent to Gregory Street.

Development of the site can be undertaken to meet the guidelines, subject to adoption of specific bushfire hazard reduction measures. The following hazard reduction and risk management measures are recommended for the development:

- formalisation of asset protection zones to identified potential hazards in the northeast, east, and south;
- use of 19mm metal tap fittings and provision of water supply points to residential areas; and
- the construction of dwellings to the appropriate Level of Construction in accordance with AS3959-1999, relative to the distance of the dwelling site to the nearest hazard.

## **REFERENCES**

NSW Rural Fire Service (2001) *Planning for Bushfire Protection - A Guide for Councils, Planners, Fire Authorities and Home Owners*.

Standards Australia (1999) AS3959 – 1999, *Construction of buildings in bushfire-prone areas*.

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