Bushfire Management Plan

Rose Bay Reserve, Bowen

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1. Introduction

Bushfire management is an important issue for most rural communities in Australia. The latest bushfire hazard map (June 2008) from Queensland Fire & Rescue Services (QFRS) provides a preliminary indication of the bushfire hazard for the Whitsunday region. This map can be used to assess the bushfire risk for local areas and identify the communities most at risk of serious injury or death. This risk once identified can be used to guide the mitigation strategies Council and other stakeholders can implement through their Bushfire Management planning.

Rose Bay reserve has been identified as a site at risk of uncontrolled wildfires due to vegetation type, slope and aspect. The potential for loss of life and/or property could be high if the hazard is not managed appropriately.

Rose Bay reserve is located approximately three kilometres north-east of Bowen and this area is comprised of private land, Council reserves and Unallocated State Land. The Council reserve described as Lot 205 on Plan SP194014 surrounds the residential community of Rose Bay, (Figure 1 below). This reserve is characterised by granite outcrops, steep south westerly facing ridge and coastal flood plain.

Figure 1. Rose Bay Township.

The purpose of this Bushfire Management Plan is to identify the actions required to reduce bushfire hazard in the Rose Bay reserve. The objectives of this plan include;

- Identify where fire lines are required to protect life and property from fire,
- Maintain an ecologically appropriate controlled burn program
- Improve community awareness, involvement and liaison,
- Improve coordination with adjoining landowners,
- Implement a maintenance program to reduce bushfire hazard and risk

It is envisaged that this Plan will be used as a communication tool to let stakeholders and the community know how the Bushfire hazard on Rose Bay reserve will be managed.

2. Background

2.1 Legislation

There is a legislative requirement under common Law and the Fire Services Act 1990 for Local Government as owners and occupiers of land to prevent fires escaping from their land and damaging property (Tran and Peacock, 2002). Councils have an obligation to manage their land responsibly to prevent the loss of life or property and reduce the 'human' impacts of bushfires. Council is also required however to achieve this and still maintain their obligations under other legislation. Obligations under the Nature Conservation Act 1992 for example require local authorities to protect and conserve rare or threatened species, biodiversity and ecological processes. The challenge for Council is to deliver management actions which will protect and conserve simultaneously.

2.2 Site Description

Rose Bay bushland reserve covers an area of 151 ha and is composed of nine (9) different vegetation types. Each of these vegetation types has a different fire management requirement. Therefore, to enable Council to manage this reserve sustainably the Rose Bay bushland reserve has been divided into two management areas. The first management area "Management Area A" refers to the northern side of Rose Bay road. The second management area "Management Area B" refers to the southern side of Rose Bay road as shown in Figure 3.

Figure 3. Rose Bay bushland management areas.

3. Bushfire hazard rating

The first step in achieving this balance between protection and conservation is to assess the bushfire hazard at a site and threat potential. This threat potential is based on the overall site specific bushfire hazard rating which is assessed based on the cumulative calculation of each of the five (5) main landscape characters. The bushfire hazard rating is determined using the scheme in the State Planning Policy 1/03 for bushfire hazard. The main landscape characters used in the assessment are:

- Vegetation
- Land use
- Slope
- Aspect
- Fire History

Table 1. The Vegetation types of Management area A

Short Description	Percentage of total vegetation	Vegetation type (SPP Guideline 1/03)	Vegetation Hazard Rating
11.2.3 Microphyil vine forest ("Beach Scrub') on sandy beach ridges and dune swales	2%	Rainforest	0
11.1.4c. Estuarine wetlands Mangrove forest / woodland on marine clay plains. A shrub layer is not usually present. Occurs on upstream creek edges and toward the landward edge of the upper intertidal limit. Only inundated by spring tides.	5%	Mangrove	0
11.12.16./11.12.1. Mixed low woodland to shrubland on igneous rock Coastal hills and Eucalyptus crebra woodland on igneous rock	93%	Open woodland and Eucalypt forest with dry-shrub layer	5-8

Table 2. The Vegetation types of Management area B

Short Description	Percentage of total vegetation	Vegetation type (SPP Guideline 1/03)	Vegetation Hazard Rating
11.2.3. Microphyll vine forest ("Beach scrub") on sandy beach ridges and dune swales	20%	Rainforest	0
11.2.5. Contains palustrine wetland (e.g. in swales). Corymbia-Melaleuca woodland complex of beach ridges and swales	5%	Paperbark health and swamps	8
11.3.7./11.3.30/11.3.31 Corymbia spp. Woodland on alluvial plains, Eucalyptus crebra, Corymbia dallachiana woodland on alluvial plains and Ophiuros exaltatus, Dichanthium spp. Grassland on alluvial plains.	10%	Eucalypt forest with dry shrub layer, Gassy Eucalypt and Acacia forest. And Native grasslands (Ungrazed), open woodland	5-8
11.1.4a. Estuarine wetlands mangrove forest/woodland on marine clay plains	30%	Mangrove	0
11.1.2a/11.1.2b. Samphire forbland on marine clay plain or bare mud flats on Quaternary estuarine deposits and saltpans and mudflats with clumps of saltbush.	25%	Mudflats/ Saltpans	0
11.12.16/11.12.1. Mixed low woodland to shrubland on igneous rock. Coastal hills and Eucalyptus crebra woodland on igneous rock	5%	Eucalypt forest with dry-shrub layer	8

Table 3. Bushfire Risk Factor for dominant woodland vegetation the Management Areas

Bushfire Risk	Description	Hazard Rating
Slope	Steep Hills (>10% to 20%). (SPP 1/03 2003)	4
Aspect	North to East some Western slopes	3
Vegetation	Ungrazed grassland and open woodlands	6
Total		13

The bushfire hazard for each vegetation type will vary. The dominant vegetation in Management areas A is Eucalypt woodland. The bushfire hazard rating using the SPP1/03 scheme for Management area A woodland is “13” which is a “high” bushfire risk. The land use of site is a vacant lot which is ungrazed without any defined management plan. The land use adjacent to the reserve is residential. It has been reported that there have been instances of uncontrolled fire in the reserve within the last 10 years. The eucalypt and bloodwood woodland in Management Area B cover approximately 20% of the site and has a high bushfire rating.

4. Management Plan

4.1 Bushfire mitigation strategies

4.1.1 Fuel reduction

Fuel, oxygen and heat are the three main ingredients of fire. The type and amount of fuel can influence the character of a fire. If the accumulation of organic flammable material is not present on the ground or in the shrub and tree layer, a fire will be difficult to start. The dumping of green waste in the Rose Bay reserve from residential areas increases the fuel load in the reserve.

The method of back-burning can be used to reduce fuel loads. Back burning is the technique of intentionally lighting fires to reduce fuel loads in a managed way. If fuel loads are not present in sufficient quantities, a back burning operation will fail. The back burning operations will require an estimate of fuel loads prior to burning operation and a determination of whether a cool low intensity burn or a hot burn is desired or expected under the climatic conditions. Most back burning operations aim for low intensity (cool) fire to reduce the risk of out-of-control fires, risk to property and too much damage to vegetation.

The prescribed burn program for Rose Bay Reserve will be designed around the site vegetation, seasonal fuel load and timed for optimum climatic conditions. The timing of prescribed burns will be based on recommendations as given at the time of annual hazard assessments. The frequency of prescribed burns will be assigned as per the recommendations set out in “Fire Management Guidelines” by Reef Catchments 2009, and from annual fuel load assessments.

4.1.2 Protection of property

Fire lines or fire breaks are dozed and maintained tracks which can be used to access the bush land reserve to fight fires, but also used to stop the spread of fires or reduce fire impacts on property. The placement of fire lines are located between property which needs to be protected and the likely direction of the advancing fire. Fire lines are constructed well in advance of bushfire seasons and their maintenance is vital to protecting property. The fire lines range in width but are commonly 3-6m wide.

4.1.3 Building construction standards

The design of a house can minimise the risk of fire starting from air borne embers. Ramsay and Rudolf (2003) describe house design options that can reduce the risk of embers catching on the house and starting a fire. Some potential ignition points include vertical surfaces, timber surfaces and places where combustible materials accumulate such as gutters. Gullies and hills can be used to offer some protection to houses and should be considered prior to the allocation of a building site. The construction of earth embankments and retaining walls can be useful in reducing the radiation from fires and therefore damage to property (Ramsay and Rudolf, 2003). The Australian standard AS 3959 (Construction of buildings in bushfire – prone areas), can be used to assist with designing a house to minimise the risk of fire starting in and around the house. Future residential buildings adjacent to Rose Bay Reserve should be constructed in accordance with the Australian standards

4.1.4 Communication and community preparedness

The community have an important role in minimising fuel loads in the reserve and need to prepare themselves for bushfire season. Residents can reduce fuel loads by not dumping green waste in the reserve. Prior to the back burning operations the Council should inform the likely affected residents at least two week prior to the fires.

4.2 Management areas and fire lines

The Rose Bay reserve will be divided up into two management areas. The existing roads through the reserve will be used as fire breaks or fire lines and also used to define bushfire management areas. Fire lines will be constructed adjacent to residential areas. The proposed management areas and location of fire lines are shown in Figures 4 and 5. In future years fire lines will be constructed adjacent to fire sensitive areas. It is anticipated that one management area will be burnt every three years in rotation. This cell burning system will reduce overall bushfire hazard, minimise erosion, maintain biodiversity values and reduce the amount of unsightly burnt areas.

However, it should be noted that rainfall patterns will influence the amount of fuel that is accumulated in the reserve. Fuel inspections should be conducted leading into the dry season to determine fuel loads and bushfire risk. The fuel load and bushfire risks will be used to assess the need and timing of back burning operations. The timing of the burns will also depend on weather conditions such as rain, wind and heat. While the Plan states that each management area will be burnt every three years, this frequency will be monitored and may change over time.

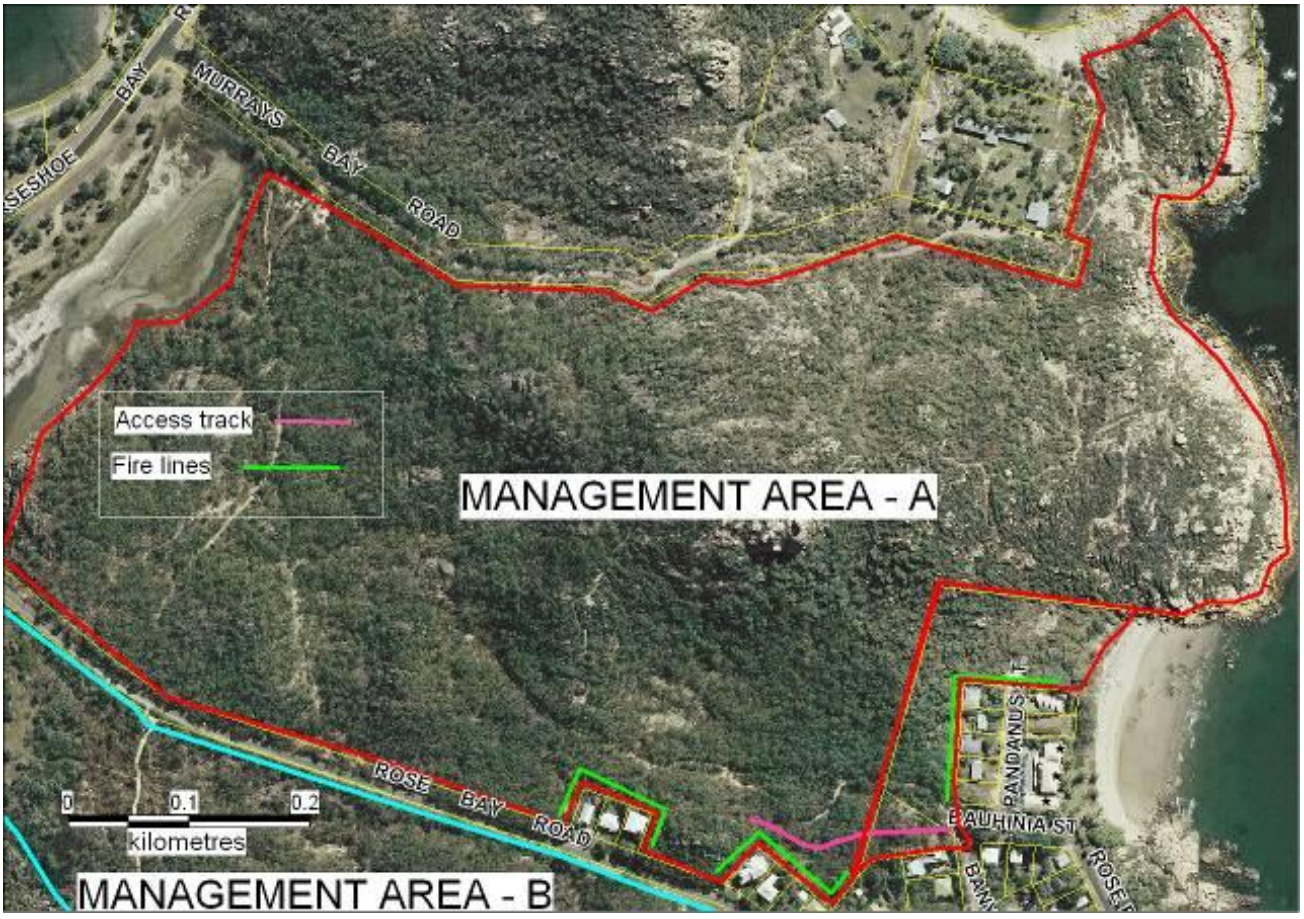

Figure 4. The fire lines for Management area A

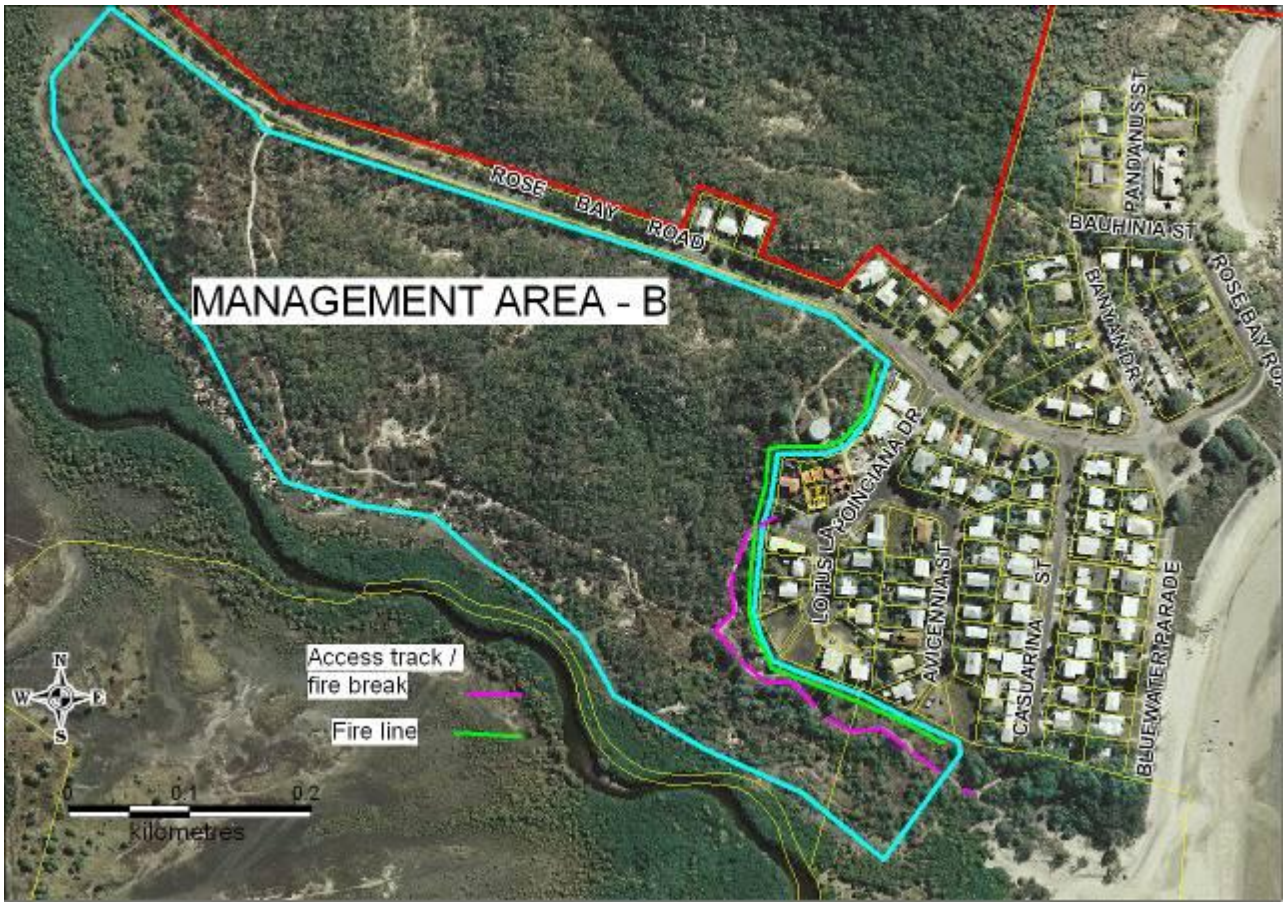

Figure 5. The fire lines for Management area B.

4.3 Management and maintenance actions

4.3.1 Schedule of actions

Table 4. Schedule of bushfire management actions.

Year	Task	Who is Responsible	Resources	Timing	Estimated Costs
1 – 2010-11	Develop fire lines	WRC	Employ a contractor to doze agreed fire lines	September 2010	$1900
	Installation of gates	WRC	Steel gates will be used to restrict access to fire breaks.	September 2010	$800
	Monitoring areas	WRC	Development of photo monitoring points. Prior to fire season	June 2010	In-kind
	Reserve signage	WRC	Preventing unauthorized vehicle access	October 2010	$600
	Fuel load inspections	DERM and WRC		August – September 2010	-
	Community awareness	WRC	Letter drop to residents to inform of pending back burning operations and press release articles.	August – September 2010	In-kind
	Coordinate back burning operations in Management area 1	DERM	DERM fire team with water trucks	August – September 2010	In-kind
2 – 2011-12	Maintain fire lines	WRC	Slasher	June 2011 and November 2011	$1500
	Grade access behind Bauhinia Street and Banyan Drive	WRC		July 2011	$2500
	Monitoring areas	WRC	Photo monitoring points prior to fire season	June 2010	In-kind
	Fuel load inspections	DERM and WRC		August – September 2011	-
	Community awareness	WRC	Letter drop to residents to inform of pending back burning operations and press release articles.	August – September 2010	In-kind
	Coordinate back burning operations in Manage	DERM	DERM fire team with water	August – September 2010	In-kind
3 – 2012-13	Maintain fire lines	WRC	Slasher	June 2012 and November 2012	$1500
	Monitoring areas	WRC	Photo monitoring points prior to fire season	June 2012	In-kind
	Fuel load inspections	DERM and WRC		August – September 2012	-
4 – 2013-14	Maintain lines	WRC	Slasher	June 2013 and November 2013	$1600
	Monitoring areas	WRC	Photo monitoring points prior to fire season	June 2013	In-kind
	Fuel load inspections	DERM and WRC		August – September 2013	-
	Community awareness	WRC	Letter to residents to inform of pending back burning operations and press release articles	August – September 2013	In-kind
	Coordinate back burning operations in Management area 3	DERM	DERM fire team with water trucks	August – September 2013	In-kind

5 – 2014 - 15	Maintain fire lines	WRC	Slasher	June 2014 and November 2014	$1700
	Monitoring areas	WRC	Development of photo monitoring points. Prior to fire season	June 2014	In-kind
	Fuel load inspections	DERM and WRC		August – September 2014	-
	Community awareness	WRC		August – September 2014	In-kind
	Coordinate back burning operations in Management are A – in accordance with burn plan	DERM		August – September 2014	In-kind
6 – 2015 - 16	Maintain fire lines	WRC	Slasher	June 2015 and November 2015	$1800
	Fire line earthwork maintenance	WRC	Use of machinery to remove eroded areas of fire lines and access tacks	Jun 2015	$1500
	Monitoring areas	WRC	Photo monitoring points prior to fire season	June 2015	In-kind
	Fuel load inspections	DERM and WRC		August – September 2015	-
7 – 2016 - 17	Maintain fire lines	WRC	Slasher	June 2014 and November 2014	$1900
	Monitoring areas	WRC	Development of photo monitoring points. Prior to fire season	June 2014	In-kind
	Fuel load inspections	DERM and WRC		August – September 2014	-
	Community awareness	WRC		August – September 2014	In-kind
	Coordinate back burning operations in Management are A – in accordance with burn plan	DERM		August – September 2014	In-kind

4.3.2 Prescribed Burn Plan

The rationale for the back burning regime frequency is based on Regional Ecosystem recommendations and the recommendations set out in “Fire Management Guidelines” (Reef Catchments 2009). The fire intensity should be low, and timed for late wet/dry season when there is good soil moisture. Management of this fire tolerant vegetation type should be based on maintaining vegetation composition, structural diversity, animal habitats and preventing extensive wildfire.

Table 5. Burn Plan Management Area A.

Vegetation Type	Burn Pattern	Burn Frequency	Recommendation
Re: 11.2.3. Microphyll vine forest on sandy beach ridges and dune swales. (Refer Appendix – Regional Ecosystem map)	Unburnt	**Should remain unburnt**	
Re: 11.1.4c Estuarine wetlands, Mangrove	Unburnt		
Re: 11.12.16/11.12.1. Mixed low woodland to shrubland on igneous rock Coastal hills with the dominant species *Eucalyptus crebra*	Maintaining a fire mosaic to ensure protection of habitat and mitigate against wildfires.	Maintain 6-15 years cycle could be achieved by Burning less than 30% in any one year, ***At 3 year intervals.***	Fire intensity should be low, and timed for late wet/dry season when there is good soil moisture. Management of this fire tolerant vegetation type should be based on maintaining vegetation composition, structural diversity, animal habitats and preventing extensive wildfire.

Table 6. Burn Plan Management Area B.

Vegetation Type	Burn Pattern	Burn Frequency	Recommendation
Re: 11.2.3. Microphyll vine forest on sandy beach ridges and dune swales. (Refer Appendix – Regional Ecosystem map)	Unburnt		
Re: 11.2.5. Coastal woodland complex of beach ridges and swales.	Maintain a mosaic burn pattern.	***Do not burn the same area more than once in a 10 year interval.***	Maintain a 15 - 20 years fire cycle. In a 20 year cycle burn less than 50% At 10 year intervals. Fire intensity should be low, and timed for late wet/dry season (June – August), when there is good soil moisture.
Re:11.3.7./11.3.30./11.3.31. Coastal woodland,	Maintain a mosaic burn pattern.	Ideally maintain a 5 - 7 years fire cycle. In a 7 year cycle Burn 20 - 40% Do not burn the same area more than once in a 7 year interval. **Selected burn areas every 3 years.**	Fire intensity should be low, and timed after the wet season, generally late March – April onwards. Planned buns should be undertaken with good soil moisture to ensure rapid recovery of groundcover.
Re: 11.1.4a Mangrove forest/woodland	Unburnt		
Re: 11.1.2a./11.1.2b. Samphire forbland on marine clay plain	Unburnt		
Re: 11.12.16/11.12.1. Mixed low woodland to shrubland,	Maintaining a fire mosaic to ensure protection of habitat and mitigate against wildfires.	**Selected burn areas every 3 years.**	Ideally maintain a 6 - 15 years fire cycle. In a 15 year cycle Burn 30%. Do not burn the same area more than once in a 6 year cycle. Fire intensity should be low, and timed for late wet/dry season (June – August), when there is good soil moisture.

4.3.3 Fire Fighting and Evacuation Plan

Table 7. Fire fighting and evacuation plan – Management area A.

Strategy	Description	Communication Priority	Emergency Response
Availability of water on site.	Water will need to be trucked in as there are no hydrant are on site	1. QFS Phone: 000 2. Malcolm Wubble DERM Phone: 0428675580 3. WRC 49450237 4. Fire warden	QFS Phone: 000
Evacuation Plan	Exit via Banyan Drive and Rose Bay Road to the turn around at the bottom of Rose Bay Road adjacent to the Caravan Park.	1. QFS Phone: 000 2. Malcolm Wubble DERM Phone: 0428675580 3. WRC 49450237 4. Fire warden	QFS Phone: 000
Safe Exit Route	Via existing walking track behind residences to Banyan Drive.	1. QFS Phone: 000 2. Malcolm Wubble DERM Phone: 0428675580 3. WRC 49450237 4. Fire warden	QFS Phone: 000
Fire Line Placement	Fire lines have been established behind all residences and along existing walking track following the power lines	1. QFS Phone: 000 2. Malcolm Wubble DERM Phone: 0428675580 3. WRC 49450237 4. Fire warden	QFS Phone: 000

Table 8. Fire Fighting and Evacuation Plan - Management area B.

Strategy	Description	Communication Priority	Emergency Response
Availability of water on site.	Water will need to be trucked in as there are no hydrant are on site	Malcolm Wubble WRC: 49450237	QFS Phone: 000
Evacuation Plan	The reserve has mangrove forest along the southern side of the access track and road access points at Lotus Lane and Casuarina Drive. Vehicle access via access track form Poinciana drive to Bluewater parade.	Malcolm Wubble WRC: 49450237	QFS Phone: 000
Safe Exit Route	Via Lotus Lane and Casuarina drive.	Malcolm Wubble WRC: 49450237	QFS Phone: 000
Fire Line Placement	Fire breaks have been established behind all residences	Malcolm Wubble WRC: 49450237	QFS Phone: 000

4.3.4 Contacts / Stakeholders

Table 9. Contacts / Stakeholders

Contact Name	Title	Organisation	Responsibility	Phone	Mobile
Malcolm Wubble	Operations Fire Management	DERM	Controlled burns	49670815	0428675580
Catchment Services (Leigh Benson)	Environment Officer	WRC	• Establishment and maintenance of fire lines and access tracks • Signage • Monitoring	49450237	0427738321
Bowen Emergency Services		ESQ	Fire fighting and emergency response	132500	0419756013
Rose Bay Resort	Manager		Emergency assistance	47869000	
Rose Bay Caravan Park	Manager		Emergency assistance	47862388	
Chris Spargo		Ergon Energy	Power Lines	47864497	

5. References

Ball, D., Squires, R., Martin, E., Nolan, B., & Schaper, D., (2002). Fire Strategy for the Conway National Park & State Forest. Queensland Parks and Wildlife Service

Fire & Biodiversity Consortium (2002) Individual Property Fire Management Planning Kit; Balancing fire safety with conservation of bushland plants and animals.

Gold Coast City Council (2007). Planning Scheme Policies Policy 9; Guidelines for Preparing Fire Management Plans. Gold Coast City Council Queensland Australia.

Hardy. S (2004) Draft: Whitsunday rural bushfire mitigation frame work. Whitsunday Shire Council. Qld 4800.

Kington. D and Blaik. J (2004) Fire Management System, Queensland Parks & Wildlife Service; South D'Aguilar Range. Australia.

Ramsay, C. and Rudolf, L., 2003. *Landscape and building design for bushfire areas*. CSIRO publishing, Melbourne

Tran. C & Peacock. C (2002) Fire Management Strategic Manual; Guidelines for planning and implementing a council or shire wide fire management strategy. SEQ Fire and Biodiversity Consortium Queensland Australia.

Queensland Government Planning Department (2003) Sustainable Planning Policy 1/03 (2003) Guideline. Queensland Government, Brisbane.

Reef Catchments (2009), Fire Management Guidelines. The Clarke Connors Range Bushfire Consortium Mackay Australia.

6. Appendix: Regional Ecosystems.