

**FUEL MANAGEMENT PLAN**

**FOR**

**LOTS 1-8, PRECINCT 13  
ST PATRICKS ESTATE,  
MANLY**

**AMENDED JULY 2005  
(REF. 5194 FMP)**

# FUEL MANAGEMENT PLAN

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ST PATRICKS ESTATE,  
MANLY**

**AMENDED JULY 2005**

## Conacher Travers

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5194B	July 2005	Draft	July 2005	MH	

## PREFACE

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The subdivision of St Patricks Estate, Manly, has been identified by Manly City Council as requiring the preparation of a Fuel Management Plan for proposed Lots 1-8 of Precinct 13.

The preparation of this Fuel Management Plan draws together the recommendations provided in the previous report by Conacher Travers entitled '*Bushfire Protection Assessment*' (2003) for the subdivision.

It should be noted that the site-specific requirements for this report above that of similar Fuel Management Plans is the determination of the site as the habitat of the Long-nosed Bandicoot. The report endeavours to address both the preservation of viable habitat for the Bandicoots and to provide the necessary Bushfire Protection measures for the occupants of the Estate.

This Plan brings together various policies, guidelines and instructions relative to the fire management of the property and has been designed to be used as a constant reference by the current and future land managers.

The Plan aims to provide a suite of bushfire mitigation measures and to reduce the hazardous fuels that may accumulate over time within the Inner Protection Area and Fuel Managed Habitat Corridor of Lots 1-8, Precinct 13.

Present and future landholders are required to follow the recommendations outlined within this report to reduce the potential fire hazard within their property during fire events and to preserve the habitat requirements of the local Bandicoot population.

Any alteration or addition to the properties that might contravene the requirements or recommendations of either the Bushfire Protection Assessment or the Fuel Management Plan would necessitate the preparation of a supplementary Bushfire Protection Assessment.

Graham Swain  
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**CONACHER TRAVERS PTY LTD**

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## TABLE OF CONTENTS

	<b>FUEL MANAGEMENT PLAN</b>	
<b>SECTION 1</b>	<b>INTRODUCTION</b>	1
	1.1 Aim of the Plan	1
	1.2 Enforcement of Plan	1
	1.3 Location Map	1
	1.4 Landscaping Plan	1
<b>SECTION 2</b>	<b>BUSHFIRE MITIGATION MEASURES</b>	1
<b>SECTION 3</b>	<b>FUEL MANAGEMENT STRATEGIES</b>	2
	3.1 Environment Management	2
	3.2 Fuel Management of the Site	2
	3.3 Frequency of Works	2
	3.4 Treatment Options	3
	3.5 Hazard Reduction Performance Standards	3
<b>ANNEXURE 1</b>	LANDSCAPE MASTERPLAN	
<b>ANNEXURE 2</b>	LANDSCAPE AREA WEST OF PRECINCT 1	
<b>ANNEXURE 3</b>	FUEL MANAGEMENT HABITAT CORRIDOR PLANTING	
<b>ANNEXURE 4</b>	LESSOR / LESSEE RESPONSIBILITY DEMARCATION SCHEDULE	

# FUEL MANAGEMENT PLAN

## 1.0 INTRODUCTION

### 1.1 Aim of Plan

- (a) To preserve the habitat requirements of the local Long-nosed Bandicoot population.
- (b) To provide a suite of bushfire mitigation measures to the proposed residential dwellings of Lots 1-8, Precinct 13.
- (c) To reduce the hazardous fuels that may occur within the Fire Protection Zones of Lots 1-8, Precinct 13.
- (d) To maintain the integrity of the residual vegetation and aesthetics of the local area.

### 1.2 Enforcement of Plan

This plan will form part of a lease agreement over the title of Lots 1-8, Precinct 13.

### 1.3 Location Map

Refer to Annexure 1- "LANDSCAPE MASTERPLAN" Dwg No. DA-L02 prepared by Oculus, 21.05.04 and Annexure 2 – "LANDSCAPE AREA WEST OF PRECINCT 1" Dwg No. R-01 prepared by Knox & Partners, 21.05.04.

### 1.4 Fuel Managed Habitat Corridor

Refer to Annexure 3; "FUEL MANAGED HABITAT CORRIDOR PLANTING" Dwg No. SK-10/Revision C prepared by Oculus, 15/07/05.

## 2.0 BUSHFIRE MITIGATION MEASURES

- (i) The dwellings should be sited with the Preferred Building Zone identified in Schedule 1 – Plan of Bushfire Protection Measures of the Bushfire Protection Assessment completed by *Conacher Travers Pty Ltd*.
- (ii) Fuel Managed Asset Protection Zones should be provided to the proposed dwelling. Fire Protection Zones shall be measured from the extremities of the building as described below in Table 1.

**Table 1**

Aspect	Inner Protection Area (Fuel Free)	Outer Protection Area (Fuel Reduced)	Total Asset Protection Zone Width
West Lot 1	20m	Nil	20m
South to Lots 1-8	5m	Fuel Managed Habitat Corridor	Approximately 10 metres

- (iii) Fuel management should be maintained by regular mowing or maintenance in accordance with the guidelines provided in Section 3.0 of this plan.
- (iv) The application of the Australian Standard AS3959 'Construction of Buildings in Bush Fire Prone Areas', in accordance with Part 2.3.4 of the 'Building Code of Australia' should apply to the proposed dwellings within lots 1-8.

- (v) Roof gutters and valleys should be leaf proofed by the installation of an external gutter protection shroud or a gutter system that denies all leaves from entering the gutter and building up on that gutter. Any material used in such a system should have a flammability index of no greater than 5 (as measured against AS 1530.2).
- (vi) It is the duty of the owner or occupier of land (lessee/ lessor of Lots 1-8, Precinct 13) to take the notified steps (if any) and any other practicable steps to prevent the occurrence of bush fires on, and to minimise the danger of the spread of bushfire on or from, that land (Section 63 (2) *Rural Fires Act*).
- (vii) The lessee/ lessor of Lots 1-8, Precinct 13 should obtain suitable NSW Rural Fire Service publications e.g. "*Guidelines for Asset Protection Zones*" available from the Rural Fire Service Head Office at Rosehill.

### **3.0 FUEL MANAGEMENT STRATEGIES**

#### **3.1 Environmental Management**

Some activities associated with fuel management can have a long-term impact upon ecological systems. The NSW National Parks and Wildlife Service (NPWS) have identified the area as native wildlife habitat and provision has been made to support this habitat stipulation.

Therefore the application of fuel management strategies along the southern and western boundaries of Lots 1-8, Precinct 13 should only be carried out in accordance with the Fuel Management Plan and guidelines issued by the NPWS.

A balance has to be established between fuel management and habitat preservation. The optimum fire protection in terms of ground fuels would remove any dry vegetative material before it accumulated, however the foraging strategies of the Bandicoots requires a developed layer of litter and humus as well as a low level of planting as shelter.

Whilst an initial figure can be placed on the suggested depth to weight ratio of the fuel bed, the practical considerations of preserving the Bandicoot populations habitat are such that professional environmental management would assume an adaptive management role with monitoring to ensure guidelines and recommendations suit the physical conditions affecting the site at the time of implementation. Variable factors such as unseasonable weather and the success/failure of planting regimes could dramatically alter the requirements of the site.

Standard measures such as the raised sections of fenceline for Bandicoot movement between sites would have to be preserved, as well as a stipulation that excluded domestic animals from the site. In addition, the species type, growth size and design of plantings should be preserved by successive property owners to ensure the clarity of the Bandicoot Habitat, whilst using fire retardant species in designated areas.

#### **3.2 Fuel Management of the Site**

An initial depth to weight ratio for the fuel-bed of the planted Habitat Corridor to the south of Lots 1-8 should be in the order of 25-30mm of accumulated dry material. Maintenance of this area should involve actual measuring of the ground fuel layer to ensure this requirement and physical reduction by way of raking and removal of surplus material. This area should not be allowed to exceed 8 tonnes per hectare.

The lawn areas adjoining the rear of Lots 1-8 (refer Annexure 1) should be maintained by hand or mechanical means to a level not exceeding 25mm or > 3 tonnes per hectare. An annual inspection by an accredited individual should be mandatory for at least the first year to provide accurate determination of prescribed recommendations.

The structural integrity of the design for Bandicoot habitat could potentially be comprised if the areas of planted native shrub species were allowed to overgrow. The areas of low shrubs and Tick Bush in the Fuel Management Zone to the west of Lot 1 should be kept to original design stipulations as per Annexure 2. This area should be kept to 3-4 tonnes per hectare in the mown lawn areas and no greater than 5 tonnes per hectare in the landscaped areas.

### 3.3 Frequency of Works

The hazard reduction works will be carried out in the Asset Protection Zones according to the following preliminary schedule and is based on fire seasons and does not intend to inhibit the owner from taking a day-to-day management approach to the fuels. Refer Table 2.

**Table 2 – Fire Seasons**

Time	Elevated Fuels	Surface Fuels
August	✓	✓
November		✓
February		✓

**Note:** *Elevated fuels: e.g. Shrub/sapling/tree limbs*  
*Surface Fuels: e.g. Grasses, leaves, twigs and branches*

### 3.4 Treatment Options

The fuel management treatment will be either through mechanical or physical means. Mechanical means includes the use of brush cutters, whipper snipper, push mower, slashers and lawnmowers but not the use of tracked dozers, excavators or similar.

### 3.5 Hazard Reduction Performance Standards

#### (a) Fuel Managed Outer Protection Area

The prescriptions for these areas including the lawn and landscaped areas within the proposed fuel managed Outer Protection Area have been individually detailed for each allotment (Lots 1-8) by Landscape Architects. The types of works that are required within this zone are in line with the following:

- (i) In general terms, no new trees are permitted, other than the designated existing native trees. (See Landscaping Plan – Annexure 3).
- (ii) Shrubs should be maintained to requirements detailed in Landscaping Plans.
- (iii) Cutting of all lawn areas to a maximum height of 25mm measured from mineral earth.
- (iv) Fuel material build-up should be managed as recommended in Section 3.0 above.

### 3.6 Lessor / Lessee Responsibilities

The lessee and lessor are to follow the bushfire hazard mitigation measures outlined in this report in accordance with the responsibility demarcation schedule included in Annexure 4.

**ANNEXURES 1 - 4**





TREES

LINE OF 10m SETBACK TO HABITAT CORRIDOR

TREES

LAWN

NATIVE GRASSES AND PLANTS

NATIVE GRASSES AND SHRUBS IN THIS AREA

Issue	Amendment	Date
A	Review	24.06.05
B	Review	27.06.05

CONSULTANTS	
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<b>ARCHITECT</b> Alexander Tzannes and Associates ph: 9319-3744	<b>STRUCTURAL ENGINEER</b> Hughes Trueman ph: 9439-2633
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<b>ELECTRICAL ENGINEER</b> Brian Knight & Associates ph: 9997-5244	<b>MECHANICAL ENGINEER</b> Tlmar Partnership ph: 9966-0037
<b>HERITAGE CONSULTANT</b> Tanner & Associates ph: 9281-4399	<b>PLANNING CONSULTANT</b> Bigham Planning ph: 9416-0111

<b>SURVEYOR</b> Winters ph: 8234-8300	<b>BUSH FIRE CONSULTANT</b> Cotchester Traversa ph: 4340-0677
<b>BANDICOOT CONSULTANT</b> Rozsda Ball ph: 9642 0298	

<b>LANDSCAPE ARCHITECTS</b> <b>OCULUS</b> Level 1, 5 Wilson Street, Newtown, NSW, 2042 ph: 9557 5533 fax: 9519 8323 e-mail: mail@oculus.com.au A.C.N. #074. 882. 447	<b>ST. PATRICK'S ESTATE</b>
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**Lend Lease**  
LACHLAN  
Partnership

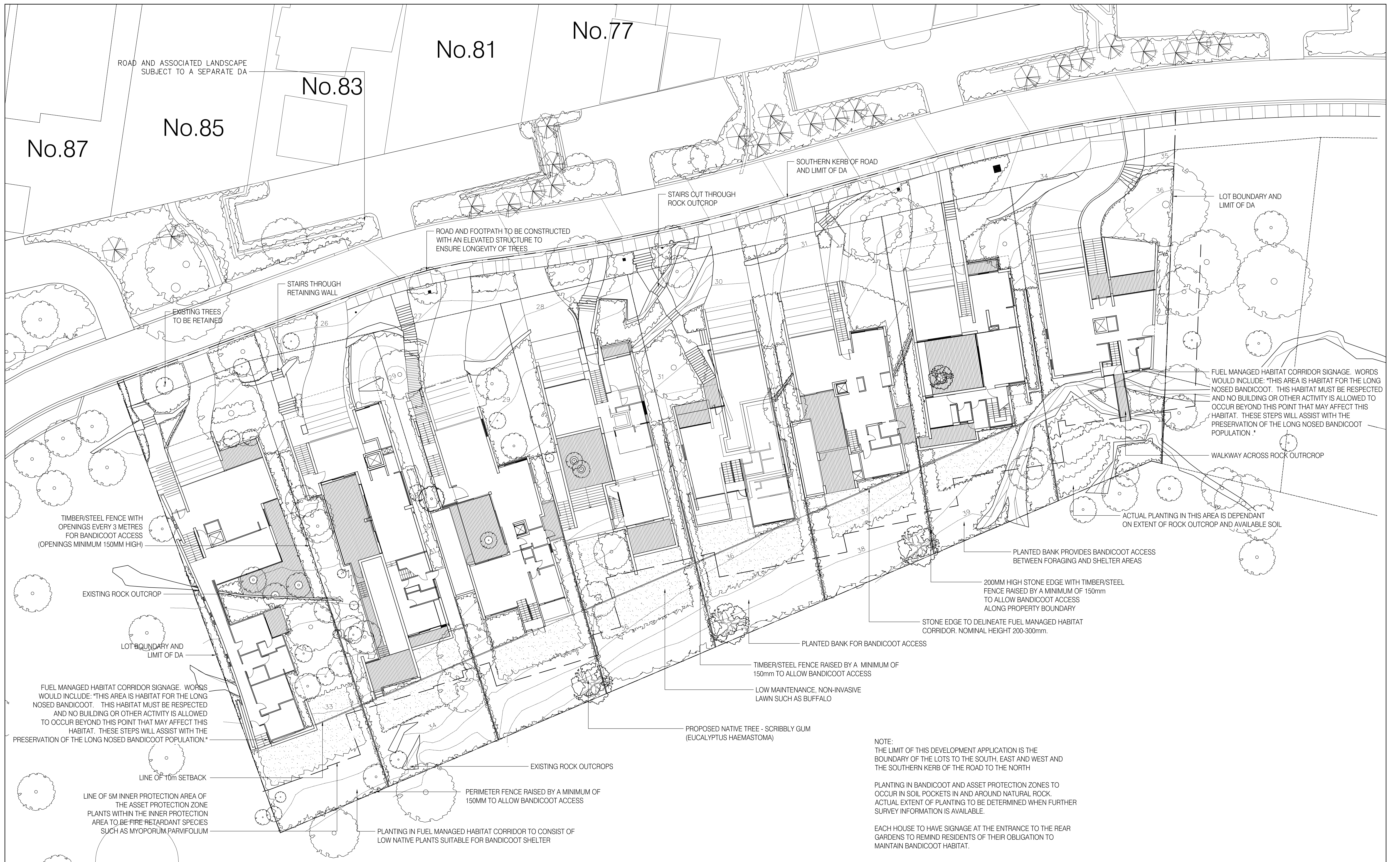
**ST. PATRICK'S ESTATE**

PROJECT
St. Patricks Estate Manly Precinct 1 & 13 for Lend Lease
<b>DRAWING TITLE</b> FUEL MANAGED HABITAT CORRIDOR PLANTING

Drawn CS	Date 27.06.05
Architect Authorised CS	Scale 1:300@A3
Client Lend Lease	Status REVIEW
JOB NUMBER S03-059	DRAWING NUMBER / ISSUE SK-10/B







ROAD AND ASSOCIATED LANDSCAPE SUBJECT TO A SEPARATE DA

No.81 No.77

No.83

No.87

No.85

SOUTHERN KERB OF ROAD AND LIMIT OF DA

STAIRS CUT THROUGH ROCK OUTCROP

ROAD AND FOOTPATH TO BE CONSTRUCTED WITH AN ELEVATED STRUCTURE TO ENSURE LONGEVITY OF TREES

LOT BOUNDARY AND LIMIT OF DA

STAIRS THROUGH RETAINING WALL

EXISTING TREES TO BE RETAINED

FUEL MANAGED HABITAT CORRIDOR SIGNAGE. WORDS WOULD INCLUDE: "THIS AREA IS HABITAT FOR THE LONG NOSED BANDICOOT. THIS HABITAT MUST BE RESPECTED AND NO BUILDING OR OTHER ACTIVITY IS ALLOWED TO OCCUR BEYOND THIS POINT THAT MAY AFFECT THIS HABITAT. THESE STEPS WILL ASSIST WITH THE PRESERVATION OF THE LONG NOSED BANDICOOT POPULATION."

WALKWAY ACROSS ROCK OUTCROP

ACTUAL PLANTING IN THIS AREA IS DEPENDANT ON EXTENT OF ROCK OUTCROP AND AVAILABLE SOIL

TIMBER/STEEL FENCE WITH OPENINGS EVERY 3 METRES FOR BANDICOOT ACCESS (OPENINGS MINIMUM 150MM HIGH)

PLANTED BANK PROVIDES BANDICOOT ACCESS BETWEEN FORAGING AND SHELTER AREAS

EXISTING ROCK OUTCROP

200MM HIGH STONE EDGE WITH TIMBER/STEEL FENCE RAISED BY A MINIMUM OF 150mm TO ALLOW BANDICOOT ACCESS ALONG PROPERTY BOUNDARY

LOT BOUNDARY AND LIMIT OF DA

STONE EDGE TO DELINEATE FUEL MANAGED HABITAT CORRIDOR. NOMINAL HEIGHT 200-300mm.

FUEL MANAGED HABITAT CORRIDOR SIGNAGE. WORDS WOULD INCLUDE: "THIS AREA IS HABITAT FOR THE LONG NOSED BANDICOOT. THIS HABITAT MUST BE RESPECTED AND NO BUILDING OR OTHER ACTIVITY IS ALLOWED TO OCCUR BEYOND THIS POINT THAT MAY AFFECT THIS HABITAT. THESE STEPS WILL ASSIST WITH THE PRESERVATION OF THE LONG NOSED BANDICOOT POPULATION."

PLANTED BANK FOR BANDICOOT ACCESS

TIMBER/STEEL FENCE RAISED BY A MINIMUM OF 150mm TO ALLOW BANDICOOT ACCESS

LOW MAINTENANCE, NON-INVASIVE LAWN SUCH AS BUFFALO

PROPOSED NATIVE TREE - SCRIBBLY GUM (EUCALYPTUS HAEMASTOMA)

NOTE: THE LIMIT OF THIS DEVELOPMENT APPLICATION IS THE BOUNDARY OF THE LOTS TO THE SOUTH, EAST AND WEST AND THE SOUTHERN KERB OF THE ROAD TO THE NORTH

PLANTING IN BANDICOOT AND ASSET PROTECTION ZONES TO OCCUR IN SOIL POCKETS IN AND AROUND NATURAL ROCK. ACTUAL EXTENT OF PLANTING TO BE DETERMINED WHEN FURTHER SURVEY INFORMATION IS AVAILABLE.

EACH HOUSE TO HAVE SIGNAGE AT THE ENTRANCE TO THE REAR GARDENS TO REMIND RESIDENTS OF THEIR OBLIGATION TO MAINTAIN BANDICOOT HABITAT.

LINE OF 10m SETBACK

EXISTING ROCK OUTCROPS

LINE OF 5M INNER PROTECTION AREA OF THE ASSET PROTECTION ZONE PLANTS WITHIN THE INNER PROTECTION AREA TO BE FIRE RETARDANT SPECIES SUCH AS MYOPORUM PARVIFOLIUM

PERIMETER FENCE RAISED BY A MINIMUM OF 150MM TO ALLOW BANDICOOT ACCESS

PLANTING IN FUEL MANAGED HABITAT CORRIDOR TO CONSIST OF LOW NATIVE PLANTS SUITABLE FOR BANDICOOT SHELTER

Issue	Amendment	Date	CONSULTANTS							Landscape Architects		PROJECT		Drawn	SP	Date	21.05.04	
4	Development Application	21.05.04	ARCHITECT Alex Popov Architects ph: 9439-2634	CIVIL ENGINEER Hughes Trueman Reinhold ph: 9439-2633	ELECTRICAL ENGINEER Brian Knight & Associates ph: 9997-5244	SURVEYOR Whelan ph: 8234-8300	BUSH FIRE CONSULTANT Concher Traverses ph: 4340-0677	ARCHITECT Alexander Tammes and Associates ph: 9219-3744	STRUCTURAL ENGINEER Hughes Trueman Reinhold ph: 9439-2633	MECHANICAL ENGINEER Timmer Plattenship ph: 9966-0037	HERITAGE CONSULTANT Tanner & Associates ph: 9281-4399	BANDICOOT CONSULTANT Renata Ball ph: 9542-0298	Lend Lease	St. Patrick's Estate Manly Precinct 1 & 13 for Lend Lease	Architect Authorised	CS	Scale	:200@A1
			ARCHITECT Tanner and Associates ph: 9281-4399	HYDRAULIC ENGINEER Hughes Trueman Reinhold ph: 9439-2633	PLANNING CONSULTANT Ingham Planning ph: 9416-9111									Client	Lend Lease	Status	Development Application	
														File				
														DO NOT SCALE OFF THIS DRAWING - USE DIMENSIONS ONLY - VERIFY ALL DIMENSIONS ON SITE - RESOLVE DISCREPANCIES WITH LANDSCAPE ARCHITECT BEFORE PROCEEDING. COPYRIGHT OF THIS DRAWING AND THE DESIGN IS RESERVED BY LEND LEASE (PTY) LTD.				
														JOB NUMBER	S03-059	DRAWING NUMBER / ISSUE	DA-L02	

**FUEL MANAGEMENT PLAN  
RESPONSIBILITY DEMARCATION SCHEDULE FOR BUSHFIRE MITIGATION MEASURES**

Item	Key Mitigation Measures	Responsibility	
		Lessor	Lessee
<b>General</b>			
1	The dwellings to be sited with the preferred building zone – see Annexure 1	<b>X</b>	
2	Fuel managed asset protection zones to be provided to the proposed dwelling	<b>X</b>	
3	Roof gutter & valleys to be installed with external gutter protection system	<b>X</b>	
4	Annual Inspections by accredited individual	<b>X</b>	
<b>Inner Protection Zone</b>			
5	Lawn areas to be maintained to a level not exceeding 25mm from mineral earth or > 3 tonnes per hectare		<b>X</b>
<b>Outer Protection Zone</b>			
6	Initial depth to weight ratio for the fuel-bed of the planted Habitat Corridor to the south of Lots 1-8 to be in the order of 25mm-30mm of accumulated dry material	<b>X</b>	
7	Maintain fuel bed of the planted Habitat Corridor so as not to exceed 8 tonnes per hectare	<b>X</b>	
8	Maintaining low shrub and tick bush in the Fuel Management Zone to the west of Lot 1 as per original design stipulations of Annexure 2 and not exceeding 3-4 tonnes per hectare for mown lawn areas and 5 tonnes for landscaped areas	<b>X</b>	
9	No new trees are permitted (except where approved by relevant authority – see Annexure 4)		<b>X</b>