FRANCOIS PERON NATIONAL PARK: PARK NOTE (DRAFT - N. Burrows)
1995

BUSHFIRE IN THE BAY
PROJECT EDEN FIRE MANAGEMENT

The Francois Peron National Park, like almost all bushland in Western Australia, is prone to bushfires. The vegetation is a flammable fuel and the Shark Bay region experiences long periods of hot, dry and windy weather. Combined with an ignition source, such as lightning, or a careless camper, the ingredients are there for a bushfire. A massive bushfire swept through the entire Peron Peninsula about 55 years ago and since then there have been many smaller bushfires.

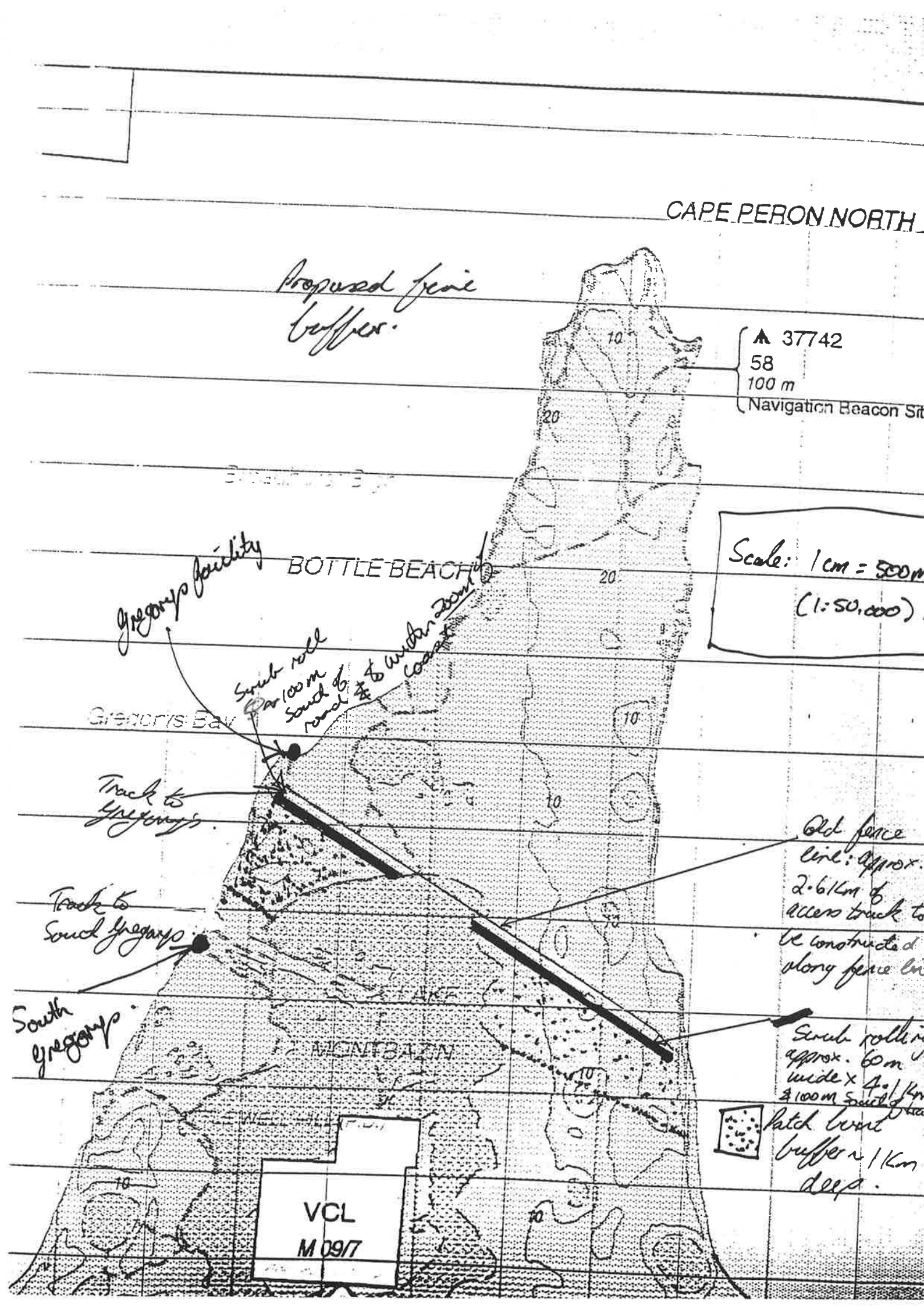
For thousands of years before European settlement on the Peninsula, bushfires at infrequent intervals were started by lightning and by Aborigines, who fired the vegetation for a range of reasons including access, to hunt, and to encourage fresh new growth of food and medicine plants. The vegetation in the Park has evolved a range of adaptations to survive or regenerate after the occasional bushfire, including the ability to resprout and to regenerate from seeds stored either in the soil or in woody capsules on the plants.

While small bushfires occurred in the Park when it was a pastoral lease, heavy grazing of the vegetation by sheep and goats reduced the threat of large bushfires. With the recent removal of these animals, the bush is regenerating vigorously and while this good for the wildlife, it increases the potential for large bushfires which can threaten human life and property and damage habitat. A bushfire could seriously disrupt Project Eden, which aims to control introduced predators on the Peninsula, and, if this is successful, to reintroduce native mammals which are now extinct on the Peninsula.

CALM wants to minimise the impact of bushfires in the Park by establishing fuel reduced buffers at strategic locations in the Park. These fuel reduced buffers, or areas of sparse vegetation (fuel), will not prevent bushfires, but they will restrict the size, severity and impact of bushfires.

The first stage of constructing a fuel reduced buffer is to mechanically modify a narrow strip (60-100 m) of vegetation so that it can be burnt under controlled conditions, forming a firebreak. Then, controlled wind-driven strips of fire are set up to 1 km down wind of this firebreak under carefully defined weather conditions. These wind driven strips will run into the firebreak and stop because there is insufficient fuel (vegetation) to allow the fire to spread. The final result is a fuel reduced buffer about I km wide, which will stop or slow the spread of a severe bushfire for up to about 6-8 years when the vegetation will have regenerated sufficiently to carry a bushfire. About this time, a second fuel reduced buffer will be installed adjacent to the first, and so on.

Scientists will closely monitor the effects of fire and of grazing by rabbits on the vegetation in the fuel reduced buffers.


CAPE PERON NORTH
Proposed fence buffer.
37742
58
100 m
Navigation Beacon Sit
Scale: 1cm = 500m
(1:50,000)
Gregorys facility
BOTTLE BEACH
Scrub roll ~100m south of road & to within 200m of coast
Gregory's Bay
Track to Gregorys.
Track to Scrub Gregorys.
South gregorys.
Old fence line: approx. 2.6 Km of access track to be constructed along fence line
Scrub rolling approx. 60m wide x 4.1 Km & 100m South of
Patch burnt buffer ~1 Km deep.
VCL
M 09/7
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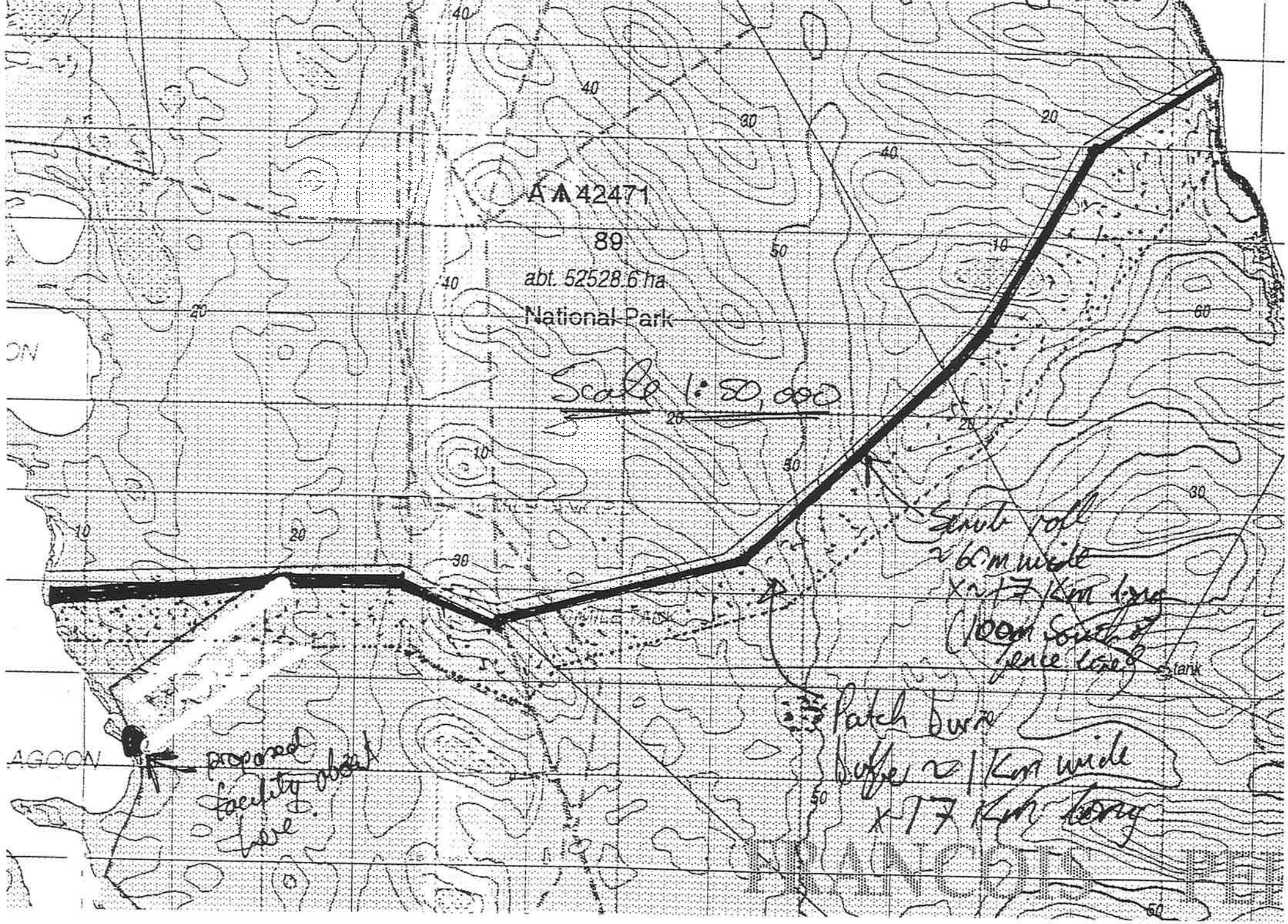
20


AA42471
89
abt. 52528.6 ha
National Park
Scale 1:50,000
Scrub roll
~60m wide
x ~17 Km long
(100m South of
fence line)
Patch burn
buffer ~1 Km wide
x 17 Km long
proposed
boundary about
here

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

OPERATIONS PLAN - PROJECT EDEN

PART A

1. **Project Title:** A fire management plan for Francois Peron National Park

2. **Location:** Francois Peron National Park, Peron Peninsula

3. **Staff:** Nigel Sercombe, Ron Shepherd, Ray Smith, Neil Burrows, Alex Robinson

4. Proposed Commencement Date: Winter 1995

5. **Proposed Completion Date:** Fire management will be ongoing. This plan covers the period to the re-introduction stage - mid 1997.

6. **Planning Officer:** Dr Neil Burrows, Principal Research Scientist, Nigel Sercombe, Midwest Region.

7. Date of Submission of Plan: 16 February 1995

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PART B - ENDORSEMENTS

8. Community Advisory Committee:

9. Steering Committee:

10. Technical Advisory Committee:

11: District/Regional Manager:

12: Project Operations Officer:

13: CALM Animal Experimentation Committee:

PART C - PROJECT DETAILS

14. **Background**: As with most terrestrial biomes in Western Australia, the Peron Peninsula is prone to bushfires. The climate and vegetation of the region are conducive to the development of large and intense bushfires and ecosystems on the Peninsula have probably evolved to cope with infrequent, intense fires. The climate of the region could be characterised as arid with the mean annual rainfall being about 220? mm. Three major fuel/vegetation types can be recognised on the peninsula. Wanyu, or acacia shrubland is most ubiquitous, with hummock grassland (spinifex) and coastal heath making up most of the remainder. All fuel types could be characterised as discontinuous "shrub" fuel. The "natural" or pre-European fire history is unknown, but it is likely that fires burnt infrequently (20+ years) due to the slow fuel accumulation rate and limited ignition sources. Fires were probably lit occasionally by Aborigines and by lightning. The fire frequency probably declined dramatically when large numbers of sheep, goats and rabbits were introduced to the peninsula earlier this century. The peninsular last burnt entirely from south to north about 40 years ago (Arthur Pepper), but there have been numerous smaller fire outbreaks in the last 20 years. Most of these have occurred in the non-palatable but highly flammable spinifex and coastal heath fuels. The recent de-stocking and consequent increase in vegetation cover, and ever increasing recreational activity on the peninsula will lead to an increased probability of large and intense wildfire outbreaks.

    The fire management plan proposed here is based on a number of facts and fundamental principles, namely:

    - CALM is responsible for managing fire in the Francois Peron National Park (FPNP).
    - Infrequent fire is a natural environmental factor. Wildfires will occur, it is a question of when and where.
    - Fire management is constrained by a) the limited resources at Denham and b) limited knowledge of fire behaviour and fire effects in acacia shrubland fuels.
    - There are a number of fire management options for the FPNP, including the "do nothing" option. As the risk of a major wildfire is >0, and given the real threat that a large wildfire could pose to park users, amenities, the ecosystem and to Project Eden, the "do nothing" option is rejected.
    - Another option is broad area, cyclic fuel reduction burning. While this strategy could provide optimum protection to human life and property, there are insufficient resources in the district to implement such a program and, importantly, there is very little scientific knowledge of fire ecology and fire behaviour on which to base such a strategy.
    - The preferred option is to establish strategic fuel reduced buffers within the FPNP.
    - There are natural firebreaks in the landscape such as lagoons and birradas which should be used to best effect.
    - Proposed fire management activities must be monitored and evaluated to minimise any possible negative impacts on the ecological and world heritage values of the FPNP (e.g., weed invasion, overgrazing).

15. Project Aims:

    - To minimise the threat of wildfire to human life and property.
    - To minimise the risk of total incineration by wildfire of the proposed mammal reintroduction sites at Cape Peron, Peron Road and Herald Bight (see Zones 1 and 2, map attached and Re-introduction Operational Plan by Keith Morris).
    - To minimise the impacts of prescribed fire and wildfire on park users, facilities and on conservation values.

16. **Methods:** Management aims and strategies (methods) will be tempered by the various limitations described above, i.e., limited resources and limited fire behaviour and effects knowledge. The aims will be achieved by a three pronged strategy:

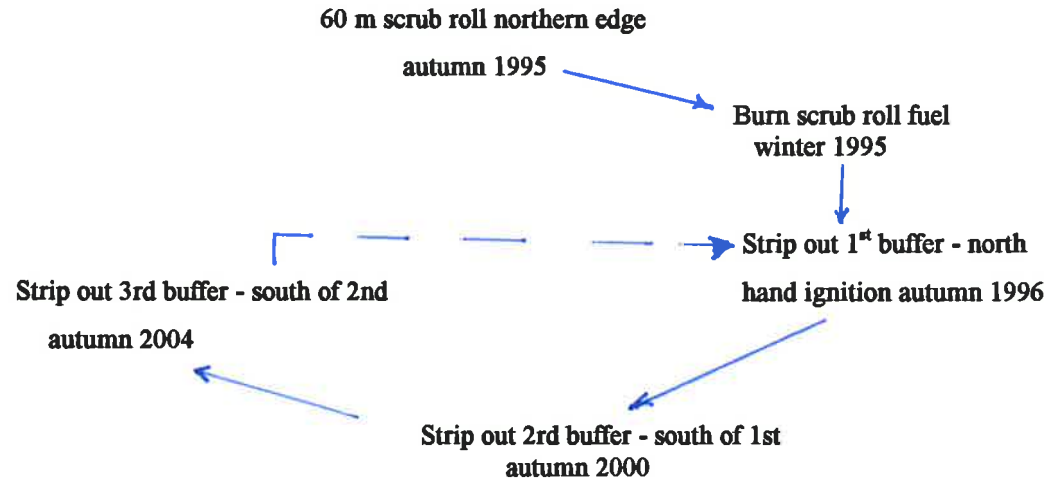
1. Progressively install strategically located rolling fuel reduced buffers. These buffers will be designed to take full advantage of natural fire barriers and existing tracks and will be sufficiently wide to stop the run of an intense wildfire.
2. Public awareness and education program.
3. Detection, suppression and emergency response procedures for CALM and other relevant local agencies such as Shire, Police, WAFB volunteers, BFB brigades, tour operators etc.

Rolling Fuel Reduced Buffers (Rolling FRBs)

The network of natural barriers (birradas and lagoons), the elongate shape of the peninsula and the S-SW domination of prevailing winds provides an opportunity for the construction of east-west orientated fuel reduced buffers across the peninsula. Based on expert opinion, the buffers would need to be about 1 km wide and less than 6 years old to stop a running wildfire. Rather than attempting to modify fuels in the buffers every 6 years, a series of parallel rolling FRBs will be implemented.

In any one rolling FRB zone (see attached map), the initial buffer will be constructed on the northern side of the rolling FRB zone because prevailing winds are from the south. A most difficult part of the operation will be the construction of the first buffer, as, apart from a narrow vehicle track, there will be no protective edges against which to work with prescribed fire. The construction of additional mineral earth breaks, and particularly wide mineral earth breaks, is incompatible with national park and world heritage values and should be avoided where possible. However, some additional firebreak construction will be inevitable. Because of its discontinuous nature, the shrub fuel will be extremely difficult to prescribe burn safely. Conditions under which fire will spread are likely to be so severe as to make fire control very difficult. Therefore, it will be necessary to mechanically modify a portion of the fuel in the buffer in the first instance, allowing fuel to be burnt with minimal risk of fire escape. Rolling FRBs will be installed by the following steps.

1. Clean up existing tracks on north side of first stage buffer.
2. Mechanically modify (scrub roll) fuel on northern edge to a depth of about 60 m.
3. Burn modified fuel under mild winter conditions.
4. The following autumn, strip out first stage buffer to a depth of 1 km south of scrub rolling using hand-held drip torches and wind driven strips. Run fires up against recently scrub rolled and burnt strip. As winds will be constantly from the south, and fuels are discontinuous, there will be no need for a mineral earth break on the south side of the buffer.
5. After about 4 years, Strip out second stage buffer, 1 km south of first stage buffer.
6. Repeat 5. above, but for third stage buffer.



Contracts should be let out for the scrub rolling. Will need approval for necessary operations in a national park. Fire appliances at Denham are limited so other districts will be called upon to provide assistance by way of at least three or four heavy duty units, crews and officers when burning the buffers.

The program for 1995/96 will be to construct first stage buffer in Zone 1 only to gain experience with managing these fuel types. Further works in other zones will depend on the outcome of this.

Detailed records and documentation will be kept of all phases of the operation. Permanent vegetation monitoring sites will be established in the scrub rolled strip and in the greater buffer. Plots to be assessed before and after treatment and monitored annually (species composition, and structure). SID scientists to prepare science project plan.

Public awareness and education program

This program to be prepared in consultation with CALMFIRE and Corporate Relations. Elements to include;

- Ongoing awareness of wildfire threat and impact on the region; brochures, news media, information panels, schools etc.
- Ongoing education of CALMs fire management program - what, where, why, when; education kits.
- Provision of safe BBQ facilities throughout the Park - phase out wood camp fires, phase in gas.

Fire response system

In south-west forest areas, there are detailed predetermined fire detection and fire suppression response procedures. While bushfires are not so prominent or threatening outside the forest areas, the same level of professional organisation and protocols should be in place for fire control in these areas. Likewise, staff from these regions should be well trained and have a basic level of fire suppression equipment. In the event of a wildfire in the Shark Bay region, the cooperation between the local Shire, CALM, Police, WAFB volleys BFB volleys etc. will be essential if any fire emergency is to be dealt with effectively. CALMfire should be involved in setting up inter-agency cooperation and protocols in the event of a major fire on the Peron Peninsula. Staff transfers should consider the blend of experience in fire control in all districts or regions.

17. Budget Detail:

Financial year 1994/95

OPERATION	PLANT	MATERIALS	WAGES	CONTRACT	TRAVEL	TOTAL
Scrub rolling (4km x 60 m)				1,500		1,500
Firebreak construction (4 km)				750		750
Burn scrub roll strip (3 H/D, 6 crew, 2 L/D, 2 officers)	4,920	500	1,680		1,440	7,100
Establish monitoring sites	750	550			850	2,150
Publicity/ education		2,500				2,500
					TOTAL	**14,000**

10,500

Financial year 1995/96

OPERATION	PLANT	MATERIALS	WAGES	CONTRACT	TRAVEL	TOTAL
Strip out buffer - hand ignition	5,900	500	1,800		1,800	10,000
Publicity/ education		2,500				2,500
					TOTAL	12,500

18. Anticipated Outcome: Successful application of this plan will provide a significant level of protection to Project Eden and to Park visitors against wildfire. Without this, the project could be severely jeopardised by wildfire.

19. Schedule of Events:

TASK	START	END	RESP.	COST	1995 May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1996 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Scrub roll and fire break construct. Zone 1	May 1995	May 1995	N. Sercombe / R. Shepherd	2,250																
Burn scrub roll strip	August 1995	August 1995	as above	7,100																
Hand burn buffer 1	April 1996	May 1996	as above	10,000																