Swan Region Community Forest Inspection

Cobiac 01 06

April 2008

Contents

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- Locality map
- Base map
- FPC 109 Pre operations checklist
- Vegetation complex base map
- *Phytophthora cinnamomi* Management Plan
- Threatened flora survey
- Fauna Habitat Zone analysis, including maps
- Aerial Photography interpretation map
- Fauna Distribution Information System Report
- Tree marking map
- Decade of last harvest
- Esitimated and Actual volumes timber
- Year of last fire

Note:

1. Area has not be prescribed for fire as yet

Community Forest Inspection

Cobiac 01 06

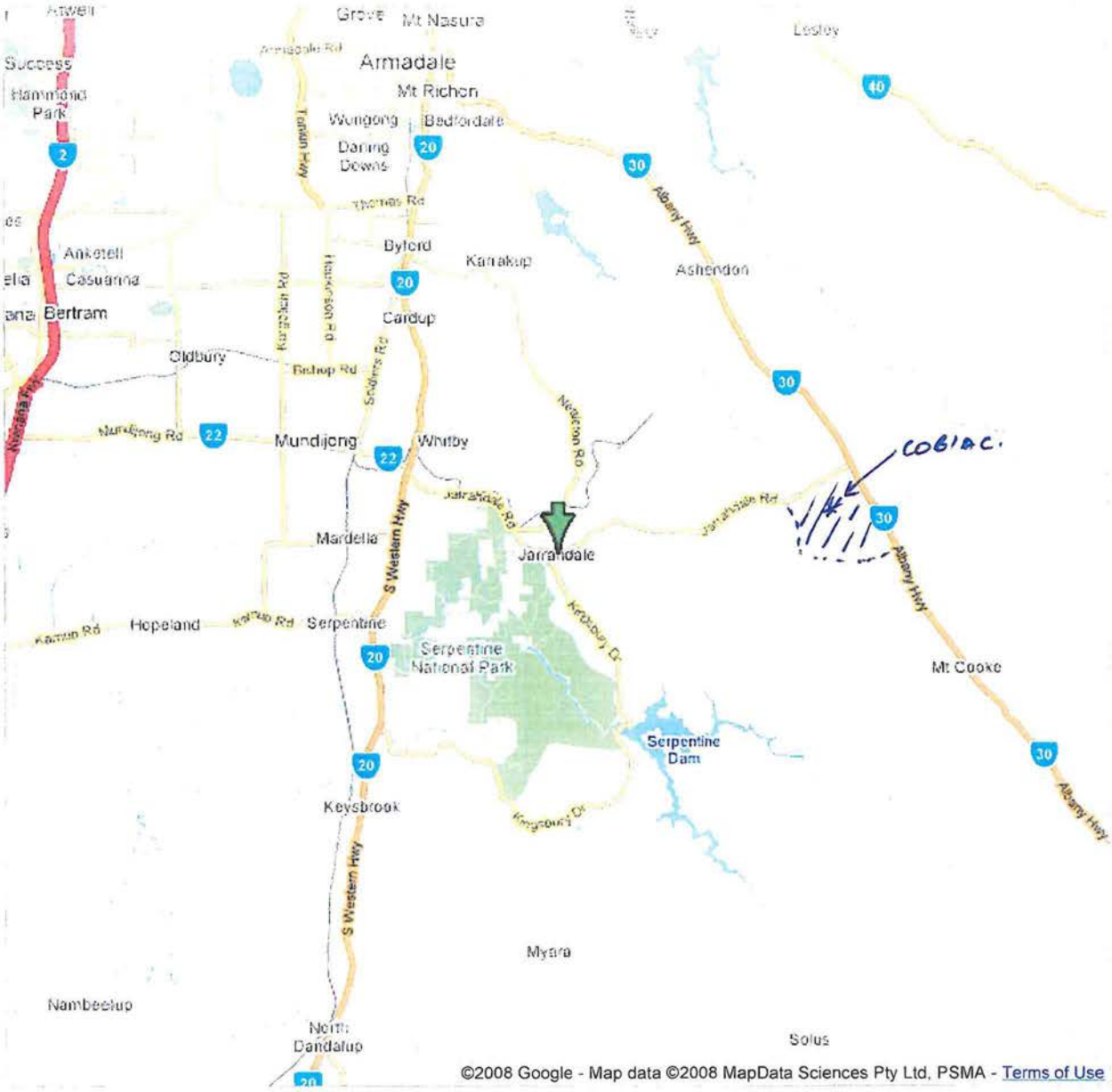
Tuesday 29 April 2008, 0930

Venue: Commencing at DEC Office @ Jarrahdale

Agenda

930	Participants arrive, (Coffee and tea on arrival)	
945	Welcome and Overview of tour	Steve Raper
1015	Depart	
1045	Arrive at Cobiac and inspect	
	Number of stops dependent upon discussion, (min of 3) issues for discussion includes FHZ location, silvicultural treatment, and influence of Wungong trial.	
1230	Lunch (provided)	
1400	Continue inspection and discussion	
1530	Depart Cobiac and return to Jarrahdale office	
1600	Wrap up	

Address **Jarrahdale WA**



FOREST PRODUCTS COMMISSION

PRE OPERATIONS CHECKLIST – SOUTH WEST FORESTS

The Pre Operations Checklist (FPC 109) must be completed prior to any integrated harvesting and regeneration operation. This should be completed on public land approved for harvesting and prior to any clearing or felling of trees associated with road construction. The designated area subject to the checklist is, under normal circumstances limited to a forest block. For road construction, a checklist must be completed for each operation as decided by the Forest Products Commission, Section Manager. Integrated harvesting and regeneration operations may commence, or trees can be cleared for road construction following the approval by the FPC Section Manager. The FPC 109 should be provided to DEC Regional Managers two weeks prior to commencement of tree felling where operations are on or will impact on DEC managed land. In answering each question on this checklist, write "Yes", "No", or "N/A" where required.

OPERATION AREA.

Coupe name and compartment number(s): COBIAC 01 06 **LOIS Operation code(s): JCO0106**

Operation description: *Stage 1: Initial Access Track Creation/Road Selection* (Minimum checks required to facilitate "Blade-up" access)
Stage 2: Road Construction, Harvest and Regeneration activities.

The latest version "Coupe Base Map" with the following attributes is attached:							
Tenure boundaries; Formal reserves; Informal reserves - Old growth forest. Old growth forest (status under review). River and stream zones. Travel route zones. Diverse ecosystem zones. Less well reserved vegetation complexes. Poorly reserved forest ecosystems. RFA accredited linkage zones. Fauna Habitat Zones (Indicative / Final). Significant Trees.							

PART A: THE STRATEGIC CHECKLIST		CHECKED		ACTION REQUIRED		COMPLETED	
		Initials	Date	Details	By (name)	Initials	Date
1 Is the coupe part of a formally approved "Annual Harvest Plan"? If "Yes", what year: ***2006***	*YES*	JB	*16/08/06*	*N.F.A.R*			
2 What is the land tenure? **State Forest** NOTE: Timber harvesting is permitted on public land including State forest, Timber Reserves, Director General land and road reserves.		JB	*16/08/06*	*N.F.A.R*			
3 Is any part of the area adjacent to a formal conservation reserve? If "Yes", provide details: ***Adjacent to Monadocks Conservation Reserve. Albany Hwy is reserve boundary.***	*YES*	JB	*16/08/06*	*N.F.A.R*			
4 Has the formal conservation reserve boundary been demarcated to the appropriate level of accuracy? If "No" schedule for demarcation to occur.	*YES*	JB	*16/08/06*	*N.F.A.R*			
5 Does the area contain any forest that has been mapped as "old growth" forest?	*NO*	JB	*16/08/06*	*N.F.A.R*			
6. Does the area contain any forest that has been mapped as "old growth (status under review) " forest?	*NO*	JB	*17/08/06*	*N.F.A.R*			

7 Does the area contain an indicative "fauna habitat zone"? If "Yes", refer to DEC FMB for determination of the final fauna habitat zone.	*YES*		*17/08/06*	• *Confirm location of Final FHZ.*	*S/F Planning*		
8 Is any part of the area subject to a proposed land exchange? If "Yes", provide details and consult with the DEC Regional Manager to identify appropriate management option(s):	*NO*		*17/08/06*	*N.F.A.R*			
9 Is any part of the area subject to a current or proposed Forest Lease? If "Yes", provide details:	*NO*		*17/08/06*	*N.F.A.R*			
10 Is the area within the proposed 5-year mining envelope for Alcoa or Worsley bauxite operations or coal mining operations? If "Yes", provide details:	*NO*		*17/08/06*	*N.F.A.R*			
11 Does the area contain or adjoin any DEC recreation sites or facilities? If "Yes" provide details of the site and management actions to conserve the values of the site: ***Munda Biddi Cycle Track.***	*YES*		*17/08/06*	• *Consult Perth Hills PVS staff for management options.* • *Minimal disturbance where possible on Munda Biddi alignment* • *Munda Biddi re-aligned for the duration of the operation*	*Coupe Manager.*		
12.Are the proposed roadworks and associated harvesting activities compliant with "Native Title Amendment" legislation?	*YES*		*17/08/06*	*N.F.A.R*			
1 3 Does the area contain or adjoin a Registered Aboriginal Site? If "Yes", provide details:	*NO*		*17/08/06*	*N.F.A.R*			
14 Does the area contain or adjoin any places on the Western Australian "Register of Heritage Places"? If "Yes" provide details of the site and management actions to conserve the values of the site:	*NO*		*17/08/06*	*N.F.A.R*			
15 Does the area contain any places listed on the "Municipal Inventory " for the local Shire? If "Yes" identify the site and provide details of the management actions to conserve the values of the site:	*NO*		*17/08/06*	*N.F.A.R*			
16 Does the area contain any places listed on the DEC RATIS "Cultural Heritage Database"? If "Yes" provide details of the site and management actions to conserve the values of the site:	*YES*		*1/12/06*	• *One site of significance…Details to be provided by Perth Hills DEC* • *See point 43*	*S/F Silviculture*		11/12.
17 Does the area contain any Apiary sites? If "Yes" provide details of the site number and management actions to conserve the apiary values: ***Site No :1381 – A.J & M.E. Fewster & Sons. P.O. Box 30, Muchea W.A. 6501.***	*YES*		*21/08/06*	• *Letter of notification mailed to apiary site owners, week commencing20/11/06.*	*S/F Silviculture*		11/12.

18 Has an FDIS analysis been completed for the area? If "Yes", provide details of SENSITIVE (harvesting and fire if applicable) species predicted for the area:	*YES*		*10/11/06*	*N.F.A.R*			
19 Is field inspection/survey required to determine the fauna management requirements for the area? If "Yes", provide details of what is required:	*NO*		*14/11/06*	*N.F.A.R*			
20 Does the area contain any DEC Inventory plots? If "Yes" provide details of the site and management actions to conserve the values of the site: ***4 x Jarrah Ground Inventory plots and 1 x Permanent Sample plot.***	*YES*		*1 7/08/06*	• *Confirm accurate plot location before harvesting commences. Contact Peter.Jones, FMB Bunbury 1 week prior to the commencement of harvesting.*	*Coupe Manager*		
21 Does the area contain a reservoir, a reservoir protection zone, or a Public Drinking Water Supply Area? If "Yes" provide details of the site and management actions to conserve the water values of the site: ***Wungong Catchment – Part of catchment thinning trials.***	*YES*	JB	*17/08/06*	• *Apply native forest prescription established for Wungong catchment.*	*S/F Silviculture.*	JB	11/12
22 Is the area within or does it contain a CAWS Act (1947) Catchment?	*NO*		*17/08/06*	*N.F.A.R*			

PART B: FIELD PLANNING CHECKLIST		*CHECKED*		*ACTION REQUIRED*		COMPLETED	
		Initials	*Date*	*Details*	*By (name)*	Initials	Date
23 Is machine disturbance required in informal reserves to ensure accurate placement of boundaries? If "Yes", have DEC Regional Manager approvals been completed?	*NO*	JB	*14/11/06*	*N.F.A.R.*			
24 Does the area contain "Diverse Ecosystem Zones"?	*YES*	JB	*14/11/06*	• *Demarcation of DEZ completed.*	*S/F Silviculture*	JB	11/12
25 Does the area contain a "less well reserved vegetation complex"?	*NO*	JB	*14/11/06*	*N.F.A.R.*			
26 Does the area contain a "poorly reserved forest ecosystem"?	*NO*	JB	*14/11/06*	*N.F.A.R.*			
27 Does the area contain a "RFA accredited linkage zone"?	*NO*	JB	*14/11/06*	*N.F.A.R.*			
28 Is the area in the intermediate or low rainfall zone of the jarrah forest? If "Yes" the harvesting prescription should ensure that at least 30% of each second order catchment has a retained basal area of at least 15m^2/ha or remains unharvested.	*YES*	JB	*14/11/06*	• *Intermediate / high rainfall zone*	*S/F Silviculture*	JB	11/12
29 Is the area within or does it contain a designated High salt risk 2nd order catchment? If "Yes", provide details:	*NO*		*14/11/06*	*N.F.A.R.*			
30 Does the coupe contain High Impact Dieback sites? If "Yes", 15m^2/ha of overstorey to be retained.	*YES*	JB	*14/11/06*	• *Retain 15sqm in 'High Impact' Dieback sites*	*S/F Silviculture*	JB	11/12

31 What is the forest type and the proposed silvicultural treatment for the coupe?		JB	14/11/06	• Non commercial thinning will be conducted post harvest.	S/F Silviculture	JB	11/12
32 Do Visual Landscape values require consideration?	YES	JB	14/11/06	• Adjacent to Jarrahdale road • Adjacent to Albany Highway	S/F SIlviculture	JB	11/12
33 What are the prescribed gap size limits for the forest type?		JB	14/11/06	• 10ha....coupe mostly thinning, shelterwood. Some small minimum size (.25ha) gaps may be createdwhere appropriate.	S/F Silviculture	JB	11/12
34 Have the required flora inspections of road alignments and BRM pits been completed? What was the corridor width used along the road alignments?	YES	JB	1/12/06	• Flora searches planned for completion week commencing 27 November 2006	S/F Roading		
35 Is a "P. cinnamomi Occurrence or Protectable Areas Map" available for the area? If "Yes", use by date:	YES	JB	1/12/06	• Area interpreted Oct 2005 (East of Jarrah Rd) August 2006(West of Jarrah Road). • Pc recheck required Oct 2006 (East of Jarrah Road) August 2007 (West of Jarrah Road)	S/F Silviculture	JB	11/12
36 Is the proposed operation in a Disease Risk Area, and/or will access to the area require a DRA permit? If "Yes" then provide details of the DRA Permit Number and expiry date.	YES (NO)	JB	1/12/06	• Current Perth Hills FPC DRA permit will apply; permit No.3010	S/F Silviculture	JB	11/12
37 Is an approved "P.cinnamomi Management Plan & Map" available?	YES	JB	1/12/06	• Pc management meeting held 10/11/06 • Pc management plan approved 12/07	S/F Silviculture	JB	11/12
38 Have apiary site owners been notified?	YES	JB	14/11/06	• Notified week commencing 13/11/06	S/F Silviculture	JB	11/12
39 Have adjacent landowners been notified, including Water Corp. if applicable?	YES	JB	1/12/06	N.F.A.R.			
40 Have the Main Roads Department/Local Government Authority been advised or consulted about the proposed work? If "Yes", provide details:	NO	JB	1/12/06	N.F.A.R.			
41 Have neighbours, local interest or Advisory groups been advised or consulted about the proposed work? Provide details:	YES	JB	14/11/06	• Ongoing Liaison with DEC and Water Corp.	S/F Silviculture	JB	11/12
42 Is there likely to be any conflict between log trucks and other road users such as school buses? If "Yes", provide details of measures to address these issues:	NO	JB	14/11/06	• Signs conforming to Australian standards to be erected at coupe exit and entry points	Coupe Manager		

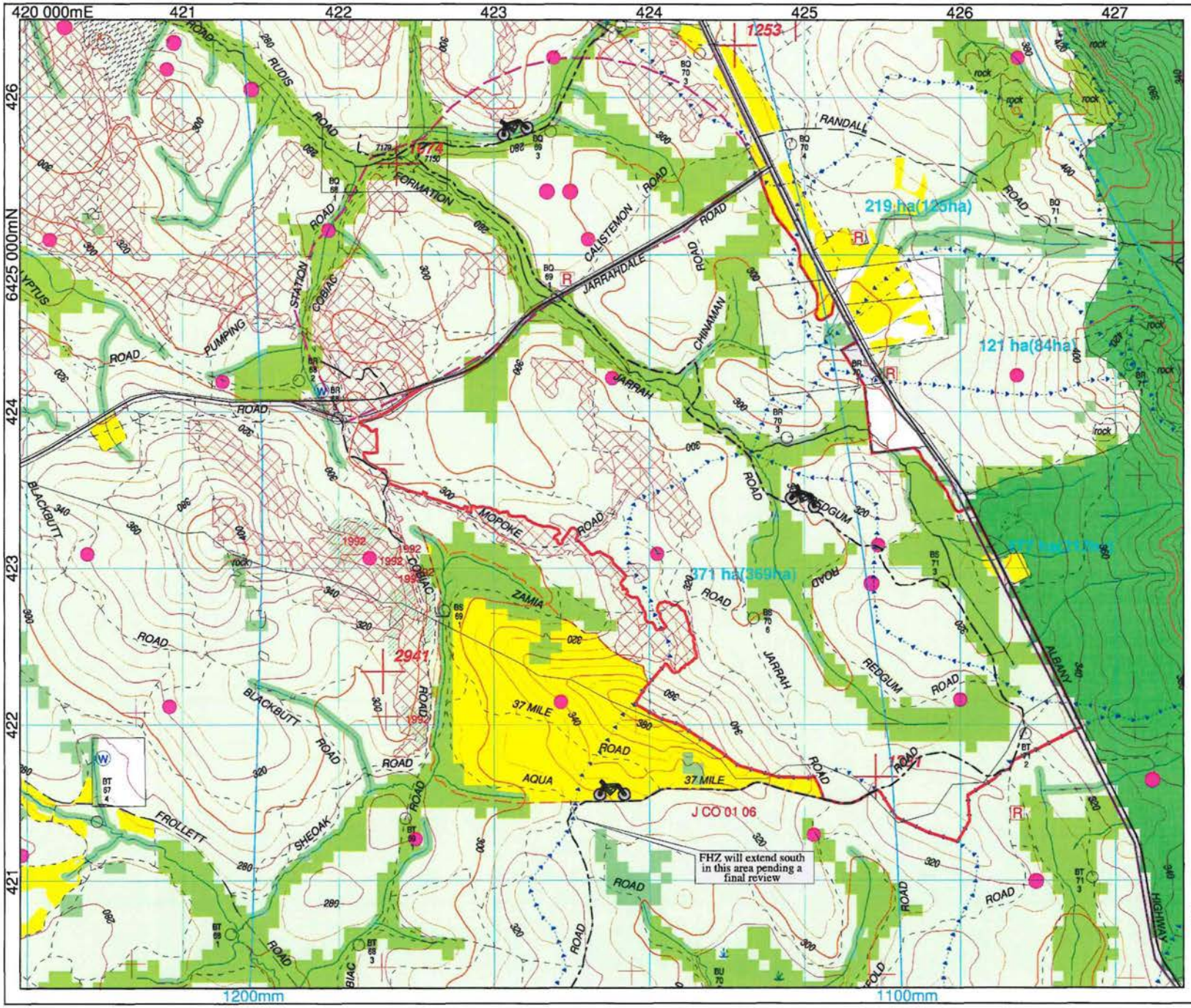
43 Are there any historical structures or cultural sites adjoining the coupe which may be affected by harvesting or fire (Eg: Bridges/buildings) If "Yes", provide details:	*YES*	TB	*1/12/06*	• *European cultural heritage site. Details to be provided by DEC Perth Hills District* • *Rock structure- purpose unknown. Location (GPS) 424849 – 6424561 on the edge of Chainaman rd- photo attached*	*S/F Silviculture*	TB	11/12.
44 Have Inventory or research plots within the coupe been defined, and where necessary excluded from harvesting?	*YES*	TB	*14/11/06*	• *3 plots occur within the coupe. Contact FMB 2 weeks prior to harvesting*	*Coupe Manager*		
45 Does the area contain DEC Research plots or scientific reference areas? If "Yes" provide details of the site and management actions to conserve the values of the site:	*NO*	TB	*1/12/06*	*N.F.A.R.*			
46 Is an accurate Coupe Concept Plan available? NOT PROVIDED. Provide a copy for retention by the DEC Regional Manager.	*YES*	TB	*1/12/06*	*N.F.A.R.*			

PART C: AUTHORITIES	Name/Signature	Date	Approvals/Requests/Comments
Senior Forester Forest Products Commission	***Todd Brittain***		Preliminary Sensitivities identified
	Todd Brittain	11/12.	All Sensitivities addressed
Section Manager Forest Products Commission	***Chaz Newman***		Preliminary access only approved (Blade up only)
		11.12.06	Operational access approved
Regional Manager Department of Environment and Conservation	***Alan Sands***		Copy of FPC 109 and Coupe Concept Plan provided for your information and comment
		22.12.6	

PART D: TO BE COMPLETED BY FIELD OFFICER		CHECKED		ACTION REQUIRED		COMPLETED	
		Initials	Date	Details	By (name)	Initials	Date
Has field demarcation been completed for the following where applicable? HARVEST EXCLUSION AREAS. • Proposed / Existing Formal reserves.....***N/A*** • Old growth areas. .....***N/A*** • C.A.R. informal reserves. .....***YES*** • Other informal reserves. .....***YES*** • Other. .....***YES*** SPECIAL INTEREST AREAS. • Coupe boundary. .....***YES*** • Declared Rare Flora sites..... • Indigenous and European Cultural registered sites.....***YES*** • Heritage listed areas/sites.....***N/A*** • Fragile areas. .....***N/A*** • VLM areas. .....***N/A*** • Hygiene Management Plan conditions. (Clean down/ signage etc)... • Fauna management issues. ..... • Significant trees..... ***N/A***		LB	11/12.	• ***CAR and other informal reserves have been demarcated in the field*** • ***European Cultural heritage site. Avoid disturbance***		LB	11/12.
47 Have roading contractors been briefed on required works?	Y / N		1/12/06	***Contractors receive mandatory briefing prior to the commencement of roadworks***			
48 Have harvesting contractors been briefed on required works?	Y / N		1/12/06	***Contractors receive mandatory briefing prior to the commencement of harvesting***			

Part D: Associated Documents.	Original Held at:	Date Approved/Completed
"Coupe Concept Plan".	FPC Harvey	
"Phytophthora cinnamoni Management Plan & Map".		
"Flora Search Form".		
"FDIS Analysis".		

(To facilitate operational approval, please attach a copy of the "Coupe Concept Plan and Map" and an approved "P.c. Management Plan and Map")



COBIAC 01

HARVEST COUPE BASE MAP 2008

LEGEND

LOIS OPERATION	SILVIC STATUS	OPERATION TYPE	COUPE AREA (ha)
J CO 01 06	J2T	XX	887

Creation Date - 7th January 2008 Amendment Date - 25th January 2008

HARVEST EXCLUSION AREAS

- EXISTING / PROPOSED CONSERVATION RESERVES
- C.A.R. INFORMAL RESERVES
- OTHER INFORMAL RESERVES
- OLD GROWTH and areas previously classified old growth
- PREVIOUSLY CLASSIFIED OLD GROWTH (status under review)
- REMNANT DARLING SCARP ECOSYSTEM
- LESS-WELL-RESERVED VEGETATION COMPLEXES.
- BAUXITE MINING REHABILITATION.
- INDICATIVE FAUNA HABITAT ZONES (final location will need consideration)
- FAUNA HABITAT ZONES - Interim State Agreement Act areas
- FAUNA HABITAT ZONES - Final location
- SIGNIFICANT TREE

SILVICULTURAL CONSIDERATIONS

RAINFALL ZONE: Int'/High (1000 - 1200mm)

- HIGH SALT RISK CATCHMENT
- 350 ha 2ND ORDER CATCHMENT AREA
- 2ND ORDER CATCHMENT BOUNDARY
- EASTERN JARRAH VEGETATION COMPLEXES
- KARRI REGEN & YEAR
- JARRAH REGEN & YEAR

ADMINISTRATIVE CONSIDERATIONS

- MULTIPLE USE FOREST
- OTHER PUBLIC LAND
- PLANTATION AREA
- LOCAL GOV'T AUTHORITY
- BIBBULMUN TRACK
- MUNDABIDDI CYCLE TRACK
- COUPE BOUNDARY
- O137 SCIENTIFIC PLOTS
- FOX BAIT SCIENTIFIC AREAS
- F.M.B. PLOTS (CONTACT F.M.B.)
- SCIENTIFIC AREAS
- APIARY SITE

CONCEPT INFORMATION

	ADD MANUALLY
PROPOSED ROAD CONTRUCTION	☐
TEMPORARY EXCLUSION BUFFER (tan)	☐
MANAGEMENT CONVENIENCE (VLM & OTHER) (brown)	☐
(2) HARVEST CELL No.	☐
CF SPECIES TREATMENT CODE (J, K, mix, g, sw, CF, th)	☐
PROPOSED LANDING	☐
GP PROPOSED GRAVEL PIT	☐

DATA DIRECTORY

THEME	SOURCE	DATE	CUSTODIAN
RESERVE STATUS	CALM	2004 - 2013	F.M.B.
FOREST STRUCTURE	CALM	2007	F.M.B.
HYDROGRAPHY / 2ND ORDER CATCHMENTS	CALM	2008	LMB.

Forest Products Commission WESTERN AUSTRALIA

GDA

SCALE 1:25 000

Metres 0 500 1000 1500 Metres

N

COBIAC 01

VEGETATION COMPLEX BASE MAP 2007

LEGEND

LOIS OPERATION	SILVIC STATUS	OPERATION TYPE	COUPE AREA (ha)
J CO 01 06	J2T	XX	855 ha

Creation Date - 9th February 2007 Amendment Date -

VEGETATION COMPLEXES

BD	BE1	BK	BN	BO	CE	CL1	CO1	CP	CRb	CRy	D1
D4	DP	DS1	GC	GA	JL	KI	LF	LY	My2	PM1	PM2
Pn	Q	S	TL	WG	WH1	WS2	Yg1	Yg2	YN1	Ce	Y5
My1	D2	Ce									

Cooke (Ce)
Mosaic of open forest of Eucalyptus marginata subsp. marginata-Corymbia calophylla (subhumid zone) and open forest of Eucalyptus marginata subsp. thalassica-Corymbia calophylla (semiarid and arid zones) and on deeper soils adjacent to outcrops, closed he

Dwellingup (D1)
Open forest of Eucalyptus marginata subsp. marginata-Corymbia calophylla on lateritic uplands in mainly humid and subhumid zones.

Dwellingup 2 (D2)
Open forest of Eucalyptus marginata subsp. marginata-Corymbia calophylla on lateritic uplands in subhumid and semiarid zones.

Murray 1 (My1)
Open forest of Eucalyptus marginata subsp. marginata Corymbia calophylla Eucalyptus patens on valley slopes to woodland of fs24 Eucalyptus rudis Melaleuca rhaphiophylla on the valley floors in humid and subhumid zones.

Swamp (S)
Mosaic of low open woodland of Melaleuca preissiana-Banksia littoralis, closed scrub of Myrtaceae spp., closed heath of Myrtaceae spp. and sedgelands of Baumea and Leptocarpus spp. on seasonally wet or moist sand, peat and clay soils on valley floors in

Yarragil 1 (Yg1)
Open forest of Eucalyptus marginata subsp. marginata-Corymbia calophylla on slopes with mixtures of Eucalyptus patens and Eucalyptus megacarpa on the valley floors in humid and subhumid zones.

Yarragil 2 (Yg2)
Open forest of Eucalyptus marginata subsp. thalassica-Corymbia calophylla on slopes, woodland of Eucalyptus patens-Eucalyptus rudis with Hakea prostrata and Melaleuca viminea on valley floors in subhumid and semiarid zones.

Int'/High (1000 - 1200mm)

ADMINISTRATIVE CONSIDERATIONS

COUPE BOUNDARY

PERCENTAGE SLOPE CLASS OF AVAILABLE COUPE AREA	
< 6	93
6 - 10	7
> 10	0

DATA DIRECTORY

THEME	SOURCE	DATE	CUSTODIAN
RESERVE STATUS	CALM	2004 - 2013	F.M.B.
FOREST STRUCTURE	CALM	2004	F.M.B.
HYDROGRAPHY / 2ND ORDER CATCHMENTS	CALM	2006	I.M.B.

Forest Products Commission WESTERN AUSTRALIA

GOVERNMENT OF WESTERN AUSTRALIA

GDA

SCALE 1:25 000

Metres 0 500 1000 1500 Metres

420 000mE 421 422 423 424 425 426 427

6425 000mN 426 424 423 422 421

1200mm 1100mm

PHYTOPHTHORA CINNAMOMI MANAGEMENT PLAN DISTRICT: Perth Hills PLAN & MAP ID No : J CO 01 06	

OBJECTIVE:

To ensure that approved human activities within the 'protectable' areas of ***Cobiac*** Block are an inconsequential vector for the establishment of new centres of infestation of *Phytophthora cinnamomi*.

ACTION REQUIRED: (Circle and complete where appropriate)

(1) TACTICS FOR THE LONG-TERM LAND MANAGEMENT OF THE AREA.

THE FOREST PRODUCTS COMMISSION IS RESPONSIBLE FOR ENSURING:

YES	The 'protectable' areas and their boundaries have been established and are identified as ...***P1 –P4.*** on the attached map.
YES	***Vernon Rutherford*** is to close & rehabilitate to the standard specified in the manual of management guidelines the roads within the 'protectable' areas identified at the points marked...**X1– X6(off Jarrahdale road)**on the attached map by...**30./01/2007.**
YES	Permanent *Phytophthora cinnamomi* management signs (see attached sign checklist) are installed by **Vernon Rutherford** on the retained roads that enter the 'protectable' areas at the points marked **COE 1 – 14** by **30/01/07** and effectively maintained.
YES	The roads marked ***Shunt 2-COE 9,12,13, Shunt 4- COE 14, Shunt 7-COE 5,10,11, Shunt 12 -COE 8*** on the attached map are only used when vehicles and machines will not pick up and move soil along them.
YES	Road drainage entering the 'protectable' areas to be redirected away from the 'protectable' areas by altering or adding run offs directed into p/c infested areas. To be completed during roading phase.

PLAN & MAP ID No: *J CL 03 05*

(2) TACTICS FOR THE MANAGEMENT OF *ROADING AND HARVESTING* ACTIVITIES

THE PROPONENT *FPC – Vernon Rutherford* IS RESPONSIBLE FOR ENSURING:
(PRINT NAME)

YES	Entry into the 'protectable' areas is via the permanent entry points *COE 1 - 14* and/or temporary entry points to be established by the proponent as per map details.
YES	Temporary *Phytophthora cinnamomi* management ***WASH down point*** at **W1 in gravel pit inside p/c on Albany Highway**
YES	All the temporary entry points are closed and rehabilitated to the standard specified in the manual of guidelines all at the completion of **Harvesting** activities.
YES	Where barrier systems are used to provide physical separation between machines and vehicles in uninfested areas from those in infested areas front and / or rear barriers must be maintained. Where work methods involve machines or vehicles working at demarcated boundaries cross contamination from infested areas to uninfested areas must not occur.
YES NO	Only uninfested basic raw materials from pits are used for all earthworks within the 'protectable' areas. Locations and hygiene status of all BRM pits to be identified DRF checked and signed of by D/M prior to any extraction of materials. **BRM pits to be identified in field – DRF checked prior to extraction of material**
YES	Machine movement **off road** into areas indicated as Protectable and p/c infected to be conducted under Guidelines as set in the Interim Manual for the Management of Soils Associated with Timber Harvesting in Native Forests – No1 2006
YES	Vehicles, machines & equipment are clean when entering 'protectable' areas and a written record of inspections and/or clean downs and their effectiveness is maintained.
YES	Completing (Describe Works) **Opening up and Upgrade of existing tracks as per map details** **Construction of new shunts and turnarounds** **Gary Davidson to remove p/c tape line in section of protectable adjacent to Red gum rd.**

PREPARED & RECOMMENDED BY:

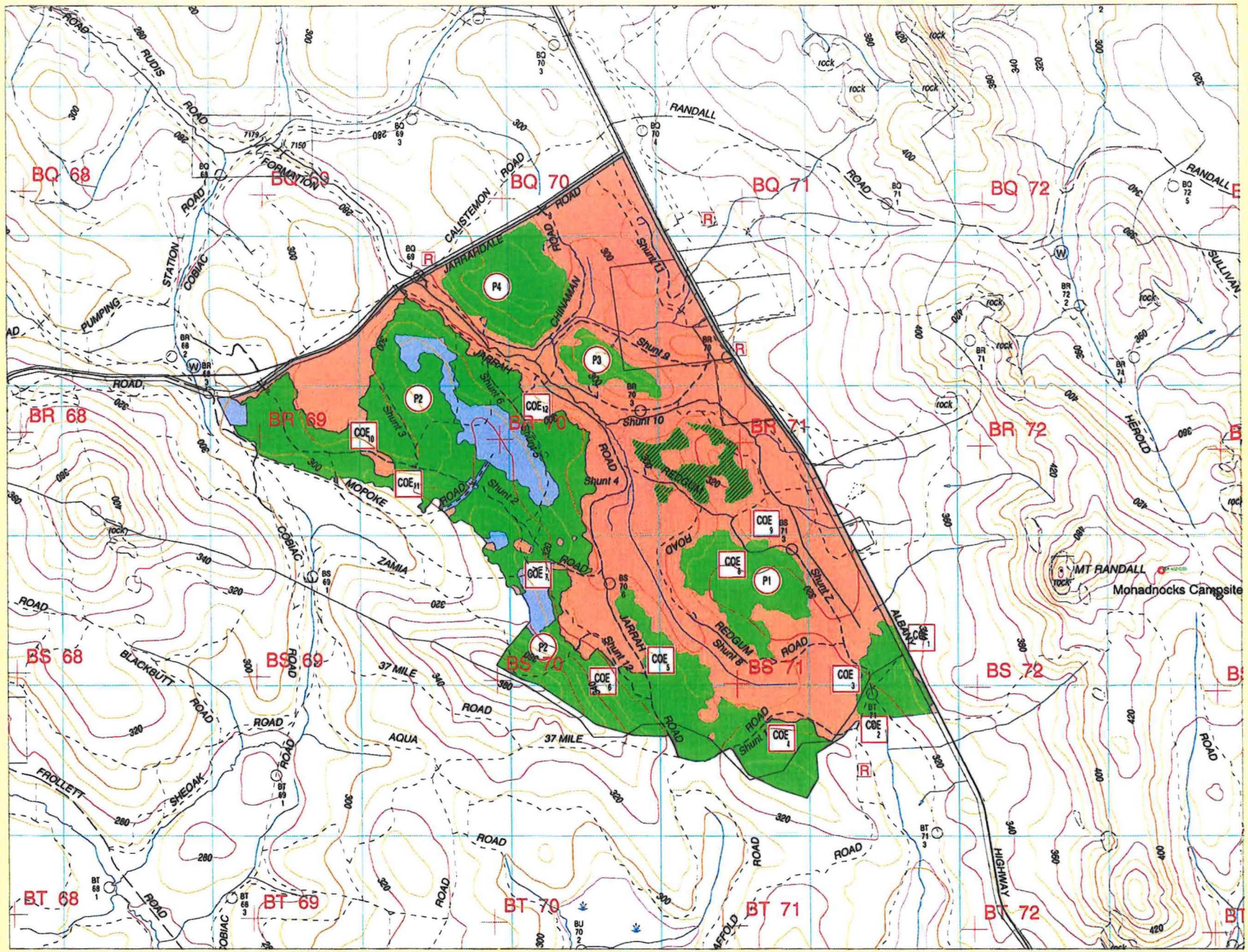
Mark Humble.		22/12/06
(PRINT NAME)	(SIGNATURE)	(DATE)

AGREED BY ACTIVITY PROPONENT: **Copy provided:** **Yes**

Vernon Rutherford		10/1/07
(PRINT NAME)	(SIGNATURE)	(DATE

PLAN APPROVED BY:

Mike Mahoney		1/2/07
(PRINT NAME)	(SIGNATURE)	(DATE)



PERTH HILLS DISTRI
COBIAC
BLOCK

Compartment No

PHYTOPHTHORA CINI
MANAGEMENT I

MAP LEGEND

UNINFESTED (PROTECTABLE)
Determined by a qualified Interpreter symptoms which indicates the presen

UNINTERPRETABLE (PROTECTABLE)
Where susceptible plants are absent interpretation of *P.cinnamomi* prese

INFESTED
Determined by a qualified Interpreter symptoms consistant with the presen

UNPROTECTABLE
Where current *P.cinnamomi* sympt areas autonomously.

BOUNDARY OF INTERPRETATION

CLEAN ON ENTRY

MANAGEMENT POINT

PROTECTABLE AREA NUMBER

AGE LIMITS FOR THIS MAP

Map Boundaries should be checked before Operations proceed if this map is older than 1 year (December 2008)

This map should not be used if it is older than 3 years (December 2009)

Areas that have had an Operation in them become unreliable and should be checked prior to Further / New activities

PRODUCT VERSION STATEM

Product	Code	Complete Date	Interps
Management	JOD0106 rck v2	01/12/07	MP, JV, HL

AREA STATEMENT

Categories	Area ha	Notes
UNINFESTED	403.5	
UNINTERPRETABLE	42.6	
INFESTED	457.4	
UNPROTECTABLE		(16.2) Overlays other Categories
TOTAL AREA	903.7	

LEGEND

2 LANE SEALED ROAD
2 LANE UNSEALED ROAD
1 LANE SEALED ROAD
1 LANE UNSEALED ROAD
VEHICULAR TRACK
POWERLINE, PYLON No.
REFERENCE TREE
HYDROLOGY
CONTOUR (5 metre interval)
SWAMP
DAM
LOADING RAMP
WATER POINT
SPOT HEIGHT

SCALE 1 : 25 000

500 0 250 500 1000
METRES METRES

PROJECTION: TRANSVERSE MERCATOR GDA 1994 ZONE 50
HORIZONTAL DATUM: GEOCENTRIC DATUM AUSTRALIA 1994
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM 1971

GDA

GOVERNMENT OF WESTERN AUSTRALIA

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PREPARED BY THE FOREST MANAGE
THE DIRECTOR GE
OF ENVIRONMENT AND CON

Department of
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Perth Hills District

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TO: Vern Rutherford, Forest Products Commission

SUBJECT: THREATENED FLORA SURVEY, COBIAC FOREST BLOCK

PROPOSED OPERATION:

- Access for haulage trucks carting timber harvested from a logging coupe in Cobiac Forest Block. The proposed roading alignments include the use of existing forest tracks and the construction of new shunt roads.

- The alignments for the new shunt roads require checking for the presence of DRF and Priority flora species. The existing tracks do not require checking unless they are being upgraded and/or widened, as they have been previously cleared.

Proponent: Forest Products Commission. Contact: Vern Rutherford.

SEARCH AREA FOR KNOWN POPULATIONS OF DECLARED RARE FLORA (DRF):

The boundary of the logging coupe comprises Jarrahdale Road, Albany Highway, Mopoke Road, 37 Mile Road and tracks that join these last 2 roads together.

Initially a desktop survey of DEC's Threatened Flora Database and the WA Herbarium's Florabase were searched for any known populations of DRF or Priority species that occur in the area of the logging coupe, or within a 5 km radius of the coupe.

An onsite survey of the proposed shunts and roading alignment throughout the coupe was undertaken on Friday 24 November 2006 by Alice Reaveley and Myles Mulvay, Nature Conservation Officers in Perth Hills District.

RESULTS OF RARE FLORA SEARCH

A desktop search of DEC's Threatened Flora Database and the WA Herbarium's Florabase indicated that there are no known populations of DRF or Priority species that occur within the logging coupe, and in particular along the alignment of the shunt roads.

However, species of Priority flora that could potentially occur in this area, given the proximity of known populations, include *Andersonia saxitalis* (P1), *Acacia horridula* (P3), *Grevillea drummondii* (P4), *Pimelea rara* (P4).

The onsite survey involved:

1. Slowly driving the length of the existing tracks that are being used for roading alignments throughout the coupe.
2. Walking the length of the proposed new shunt roads, surveying for DRF or Priority species along the alignment to a width of 10m. .

No species of DRF or Priority flora were observed during the onsite survey. Therefore, there are no management implications regarding threatened flora that require consideration prior to the proposed operation proceeding.

District Manager's authorisation to proceed with operation:

Signature: 1/12/06

Summary of Fauna Habitat Zone Analysis

Zone 39 – Cobiac 01 and 03

Abstract

The design of the final location for the fauna habitat zone (FHZ) labelled 39 resulted in the proposed FHZ being 227 hectares in size. It is located within Cobiac 01 and Cobiac 03 forest compartments. The FHZ is bordered by parts of Cobiac Road, 37 Mile Road, Jarrah Road and Zamia Road and some stream reserves. The proposed FHZ includes the northern half of the indicative FHZ and extends east. This area was preferred over the indicative FHZ because it contains more 'hard' boundaries and a greater diversity of vegetation structure, topographic features and less area infested with *Phytophthora cinnamomi*. The proposed FHZ includes the following features: mature forest last cut in the 1980s, two stream junctions, three streams and riparian vegetation within a Comprehensive, Adequate and Representative (CAR) informal reserve and a range of topographic features.

The following notes summarise the process and decisions taken when selecting the final location for the indicative FHZ labelled 39, which was associated with a thinning operation (the Wungong Catchment management project).

Proposed disturbance activity

The indicative FHZ labelled 39 in corporate records was examined because thinning operations are planned within Cobiac forest block for the Wungong Catchment management project during 2006. A portion of Cobiac 01 is also identified for integrated harvesting operations by the Forest Products Commission during 2006.

Definition of target area for analysis

A standard 'window' extending up to 5 kilometres from the boundaries of the indicative FHZ (as depicted on "Fauna Habitat Zones – Status at 30 June 2006 Map 1: Swan Region", <http://www.naturebase.net/forest_facts/pdf_files/fhz-swan062006.pdf>) was established, and the relative spacing to adjacent zones and formal reserves was calculated. Approximately 24% of Cobiac forest block is located within existing or proposed formal or informal reserves. The separation distances between FHZs, and between zones and the nearest formal reserve, may therefore exceed 4 kilometres (as specified in the Forest Management Plan 2004-2013).

A hierarchy of biological and physical attributes were examined within the target area. The attached checklist records the sequence and version of the corporate datasets inspected in this process.

Mature habitat and threatened species

Forest structure

According to corporate records approximately 71% of the target area has a mature forest structure. Mature forest comprises approximately 70% of Cobiac 01 and 73% of Cobiac 03 forest compartments. The main decades in which forest was last cut in the target area were the 1940s (approximately 23%), 1960s (22%), 1970s (14%) and

1980s (37%). Specifically, Cobiac 01 forest compartment was last cut in the 1940s (approximately 31%), 1960s (24%), 1970s (21%), 1980s (17%) and 1990s (7%). Cobiac 03 was last cut in the 1940s (approximately 12%), 1960s (20%), 1970s (5%) and 1980s (62%).

Old growth
No corporate record of mapped old-growth forest occurs within the target area of the indicative FHZ.

Proposed and existing formal and informal reserves
Approximately 24% of the target area is recorded as informal reserves (and 24% of each of Cobiac 02 and 03 forest compartments). The target area includes three informal stream reserves, and Comprehensive, Adequate and Representative (CAR) informal reserves around the streams. Monadnocks Conservation Park is approximately 2km east of the indicative FHZ, and has habitat connectivity to parts of the target area through informal reserves.

There are no records of poorly represented vegetation complexes or Darling Scarp forest ecosystems within the target area.

Biodiversity values
There are no records of Priority Flora or Threatened (Declared Rare) Flora on DEC's corporate database within the target area.

The target area was not described as being significant in the National Estate Identification of centres of endemic flora, relictual flora, disjunct flora or high flora species richness.

There are no Threatened Ecological Communities recorded in DEC's corporate database within the target area.

DEC's Threatened Fauna database contains several records of Threatened fauna surrounding the target area. These include five records of Schedule 1 mammal species – one within Cobiac 01 (a chuditch, approximately 2.5 km east of the indicative FHZ 39); one within Cobiac 02 (another chuditch, approximately 4.2 km southeast of the indicative FHZ 39); one within Cobiac 03 (a numbat, approximately 1.5 km southwest of the indicative FHZ 39); another approximately 2.6 km northeast of the indicative FHZ (a chuditch on Albany Highway); and one record of a quokka on an area of rehabilitated land approximately 2.8 km west of the indicative FHZ. There are also six records of Priority 5 mammals (all quendas) in Chandler 06 forest compartment (each record approximately 3.5 km northwest of the indicative FHZ) and one record of a Priority 5 mammal (another quenda) in Cobiac 03 forest compartment (approximately 1.5 km southwest of the indicative FHZ 39).

Other fauna and flora considerations

The Fauna Distribution Information System (FDIS) outputs for the Wungong 2006 plan area predict that there is a high probability that the following Threatened and Priority fauna occur in the target area based on the vegetation complexes as mapped for the Regional Forest Agreement:

- Western Brush Wallaby (*Macropus irma*)
- Quokka (*Setonix brachyurus*)
- Quenda (Southern Brown Bandicoot) (*Isoodon obesulus fusciventer*)

- Chuditch (Western Quoll) (*Dasyurus geoffroii*)
- Brush-tailed Phascogale (*Phascogale tapoatafa tapoatafa*)
- Western Falspistrelle (*Falsistrellus mackenziei*)
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*)
- Baudin's Cockatoo (*Calyptorhynchus baudinii*)

Four FDIS landscape units are represented within the target area. These are the 'Darling Plateau Jarrah Uplands North' (approximately 34%), 'Darling Plateau Jarrah Valleys North' (45%), 'Darling Plateau Depressions/Swamps East' (17%) and Darling Plateau Granite Outcrops (4%).

Options were reviewed with the Nature Conservation Program Leader (Swan Region) and Regional Ecologist (Swan Region) on 1st September 2006. The major point of interest raised was the need to ground-truth the options presented at the meeting, with particular focus on the option that contains the northern half of the indicative FHZ. This specifically included the need to determine the condition of riparian vegetation throughout the target area, in terms of (a) evidence of *Phytophthora cinnamomi*, (b) damage from salinity and (c) suitability as quokka habitat (ie presence of a dense shrub layer or observations of quokka runnels). Another important goal of the field check was to look for *Phytophthora cinnamomi* infestations throughout the proposed FHZ (ie not just in the riparian vegetation) and for stands of *Dryandra sessilis* (a partially-resistant shrub species that may provide ongoing fauna habitat values in otherwise heavily infested areas).

Phytophthora dieback status

All of the target area has been interpreted for the presence of *Phytophthora* dieback since 1976 (NB: detection methods prior to this did not include field verification of *Phytophthora* dieback presence). Cobiac 01 forest compartment was most recently interpreted for the presence of *Phytophthora* dieback in 2002. In conjunction with *Phytophthora* dieback mapped piror to 1976, approximately 44% of the forest compartment has been recorded as *Phytophthora* dieback-free. Cobiac 03 forest compartment was most recently interpreted in 2002. In conjunction with areas mapped prior to 1976, approximately 44% of Cobiac 03 forest compartment has been recorded as *Phytophthora* dieback-free. Overall, approximately 46% of the target area has been mapped as *Phytophthora* dieback-infested. Approximately 23% of the proposed FHZ has been mapped as *Phytophthora* dieback-infested.

Approximately 61% of the target area has vegetation complexes characterised by species upon which *Phytophthora* dieback is predicted to have a high impact, with 33% and 4% of the target area having vegetation complexes characterised by species upon which dieback is predicted to have moderate and low impacts respectively.

Cobiac forest block is not a proclaimed Disease Risk Area.

Cultural heritage

There are no records of Indigenous Sites within the target area.

There are no records in DEC's database of European cultural heritage sites within the target area.

Boundary design, spacing and continuity of fauna habitat zones with informal reserve network

A number of locations adjacent to the indicative FHZ were examined to avoid areas that were rehabilitated in 1992 following bauxite mining, and to include a greater range of values such as DEZ and increased variation in vegetation complexes. Options were considered to the southeast, southwest and northeast of the indicative location. Further options were limited by their proximity to other indicative FHZs and reserves.

The layout of the southeast option included the southern section of the indicative FHZ and extended east. This option was considered because preliminary desktop analysis showed: (1) swamp vegetation (in an area with recognised potential habitat for quokkas); (2) potential connectivity to the Serpentine River through stream reserves; (3) a range of DEZ (including an area classified as "Not Forest" and several areas of "Jarrah less than 30 m"); and (4) a variety of forest structure resulting from varying cutting history. Field investigations verified that approximately half of this option had been burnt in a 2040 ha prescribed burn in July 2006. Consequently examination of the vegetation structure and communities represented in the area was less detailed. Approximately the same area of stream reserves and DEZ was able to be obtained within the proposed FHZ. Several of the tracks that could have formed a hard boundary for this option were discovered not to exist in the field.

The layout of the southwest option included the southern section of the indicative FHZ and extended southwest. This option was considered because preliminary analysis showed it to have: (1) potential connectivity to the Serpentine River through a large system of stream reserves; (2) several areas of DEZ (all classified as "Jarrah less than 30 m"; and (3) several stream junctions. However, field observations revealed this option to be a poorer combination of fauna habitat values than the option ultimately selected as the proposed FHZ, with less topographic variation, a generally less mature forest structure, and a lower density of habitat trees. The riparian vegetation in this option had low structural and floristic diversity, with a very open overstorey over a low diversity shrub layer.

Some adjustments were made to the indicative FHZ boundary when establishing the proposed FHZ. Most of the northern half of the indicative FHZ was retained, and extended to the east to form the proposed FHZ. These adjustments were made primarily for management reasons, such as allowing the proposed FHZ boundary to follow roads and also to ensure it was not narrower than 150 metres. Such changes also had the beneficial effects of including more variation across vegetation complexes, topography and forest structure with varied history of past cutting from the 1960s, 1970s and 1908s.

The proposed FHZ is within Cobiac 01 and 03 forest compartments. The boundary includes parts of Cobiac Road, 37 Mile Road, Jarrah Road, Zamia Road and some stream reserves. The forest within the proposed FHZ was last cut in the 1980's.

Field check of suitable areas and proposed FHZ

The upland forest of the proposed FHZ was predominantly mature with four main vegetation communities observed. All four included an overstorey of *Eucalyptus marginata* and *Corymbia calophylla* over either a (1) sparse midstorey of *Banksia grandis* and *Persoonia elliptica*; (2) midstorey of *Allocasuarina fraseriana*, *Persoonia longifolia* and *Banksia grandis*; (3) midstorey dominated by *Allocasuarina fraseriana*,

Banksia grandis and some *Persoonia elliptica*; or (4) midstorey dominated by *Allocasuarina fraseriana*, *Banksia grandis* and *Persoonia longifolia*. Although subtle, these differences were easily identified in the field. The vegetation in the riparian zones had a lower overstorey density, but denser and taller understorey than the upland forest. The understorey species observed tended to differ from the upland vegetation. Dominant understorey species that were different in this area included *Agonis linearifolia*, *Gahnia decomposita*, *Mesomelaena tetragona* and *Taxandria* spp. Habitat trees were observed throughout the proposed FHZ with densities generally ranging from approximately 6 to 12 per hectare. Hollow logs were also observed throughout the proposed FHZ, generally with a pipe less than 30 cm in diameter. The topography of the proposed FHZ is dominated by a southeast to northwest ridge, with flanking gentle-to-steep slopes which grade into broad, flat valleys.

Other management implications

The proposed FHZ and the target area are within State Agreement Act mining lease areas.

The southeast corner of the proposed FHZ is partly within the Wungong Brook Catchment area and has been assigned policy use P1 by the Water Corporation. The remainder of the proposed FHZ has not been assigned a policy use by the Water Corporation.

There are no licensed apiary sites within the proposed FHZ. There are two current apiary sites within approximately 400 metres of the proposed FHZ, one to the west and one to the east.

There are no public firewood collection areas nominated within Cobiac forest block.

The Regional Parks and Visitors Services (PVS) Leader (Swan Region) was consulted on 1st September 2006 regarding the proposed FHZ. There are no PVS plans for future recreation tracks or infrastructure within or adjacent to the FHZ. The Munda Biddi cycle track is on the southern external boundary of the FHZ (along 37 Mile Road), for approximately 1.6 km.

Final location of FHZ 39

The proposed location of FHZ 39 is depicted on the attached maps and image. The proposed FHZ is located within Cobiac 01 and 03 forest compartments. The boundaries follow Cobiac Road, 37 Mile Road, Jarrah Road, Zamia Road and some stream reserves. Approximately 81% of the forest within the proposed FHZ is recorded as mature, with the last cutting in the 1980s.

There are two stream junctions within the proposed FHZ, and a variety of topographic features. A southeast to northwest ridgeline bisects the area with gentle to moderately steep slopes, grading into two broad, flat valleys. Approximately 20% of the proposed FHZ is contained within informal reserves.

All of the proposed FHZ has been interpreted for the presence of Phytophthora dieback since 1976. Detection methods prior to 1976 did not include field verification of Phytophthora dieback presence. Approximately 23% of the proposed FHZ has been mapped as Phytophthora dieback-infested. Approximately 37% of the proposed FHZ contains vegetation types upon which Phytophthora dieback is predicted to have a high impact. Also, around 37% of the proposed FHZ contains vegetation types upon which Phytophthora dieback is predicted to have a moderate

impact. The remaining 26% of the proposed FHZ contains vegetation types that *Phytophthora cinnamomi* is predicted to have a low impact on.

The 'Darling Plateau Jarrah Uplands North' (approximately 38%), 'Darling Plateau Depressions/Swamps East' (approximately 4%), 'Darling Plateau Jarrah Valleys North' (approximately 32%) and 'Darling Plateau Granite Outcrops' (approximately 26%) FDIS landscape units are represented within the proposed FHZ.

The proposed FHZ labelled 39 is located 3.5 kilometres south-southwest of the proposed FHZ 33 in Chandler 05, 06 and 07 forest compartments; approximately 3.3 kilometres southwest of the indicative FHZ 38 in Chandler 06; and 3.0 kilometres northeast of indicative FHZ 43 in Serpentine 04 and Balmoral 01. All these distances satisfy the spacing criteria outlined in the Forest Management Plan 2004-2013. Monadnocks Conservation Park is located approximately 2 kilometres east of the proposed FHZ which also satisfies the spacing criteria.

The total area of the proposed FHZ 39 is 227 hectares, of which 183 hectares were available for timber production prior to the introduction of FHZs. This total area exceeds the 200-hectare minimum.

Cobiac 01 and 03 Proposed FHZ (ID 39) Field Check **23rd Aug., 4th and 5th Sept.**

Structure

The upland forest of the proposed fauna habitat zone (FHZ) consisted of *Eucalyptus marginata* (Jarrah) and *Corymbia calophylla* (Marri) Open Forest. The dominant forest cohort was comprised of mature trees, with diameter at breast height over bark (DBHOB) most commonly between approximately 50 and 70 centimetres. Co-dominant tree heights generally ranged between 20 and 30 metres (aerial photographic interpretation (API) height class B+ and A). The other growth stages present were: (1) pole-sized and immature trees, and (2) senescent or habitat trees. There was moderate variation in the density of these growth stages across the proposed FHZ. Pockets of vegetation dominated by *Allocasuarina fraseriana* were also observed midslope across the proposed FHZ.

The vegetation communities in the forest uplands where *Phytophthora cinnamomi* was not apparent, included:

1. *Eucalyptus marginata* and *Corymbia calophylla* Open Forest over a sparse midstorey of *Banksia grandis* and *Persoonia elliptica*. This community is consistent with Havel and Mattiske's (2000) 'Cooke' vegetation complex, particularly in the Subhumid north geographic region south east of Jarrahdale. This community was observed surrounding the numerous granitic outcrops midslope in the proposed FHZ. Shrub and herb species observed in the field consistent with this complex include *Macrozamia riedlei, Leucopogon capitellatus, Leucopogon propinquus, Hakea lissocarpha, Hibbertia commutata and Hibbertia hypericoides* in an Open Low Heath.
2. *Eucalyptus marginata* and *Corymbia calophylla* Open Forest over a midstorey of *Allocasuarina fraseriana*, *Persoonia longifolia* and *Banksia grandis*. This community is consistent with Havel and Mattiske's (2000) 'Dwellingup' vegetation complex, typical of the Subhumid north geographic region south east of Armadale and also east of Jarrahdale. This community was observed on the upper slopes and ridgetop of the proposed FHZ. Shrub and herb species observed in the field consistent with this complex include *Adenanthos barbiger, Hovea chorizemifolia, Leucopogon capitellatus, Leucopogon propinquus, Macrozamia riedlei, Hakea lissocarpha and Styphelia tenuiflora* in an Open Low Heath.
3. *Eucalyptus marginata* Open Forest, with some *Corymbia calophylla* over a midstorey dominated by *Allocasuarina fraseriana, Banksia grandis* and some *Persoonia elliptica*. As with the vegetation community described above (#2), this is also consistent with Havel and Mattiske's (2000) 'Dwellingup' vegetation complex, characteristic of the Subhumid north geographic region south east of Armadale and also east of Jarrahdale. This community was also (as per #2 above) observed on the upper slopes and ridgetop of the proposed FHZ. Shrub and herb species observed in

the field consistent with this complex include *Adenanthos barbiger, Hovea chorizemifolia, Styphelia tenuiflora, Patersonia rudis* and *Lepidosperma squamatum* in an Open Low Heath.

4. *Eucalyptus marginata* Open Forest, with some *Corymbia calophylla* over a midstorey dominated by *Allocasuarina fraseriana, Banksia grandis* and *Persoonia longifolia*. This community is consistent with Havel and Mattiske's (2000) 'Yarragil' complex, particularly in the Subhumid north geographic region east of Armadale and Jarrahdale. This community was observed on the mid and lower slopes of the proposed FHZ. Shrub and herb species observed in the field consistent with this complex include *Styphelia tenuiflora, Adenanthos barbiger, Hovea chorizemifolia, Patersonia rudis* and *Hakea ruscifolia* in an Open Low Heath.

Where *Phytophthora cinnamomi* was present or had persisted for long periods of time in this landscape, variable modification of the understorey abundance and midstorey structure was evident.

The valleys within the proposed FHZ were shallow and broad. The vegetation structure of the riparian zones differed notably from the upland forest. The forest in these riparian areas was very open. The riparian vegetation on the western boundary was generally consistent with Havel and Mattiske's (2000) 'Yarragil' vegetation complex, particularly in the Subhumid north geographic region, east of Armadale and Jarrahdale. The western riparian vegetation was generally an Open Forest of *Eucalyptus megacarpa* and *Corymbia calophylla* with some *Xanthorrhea preissii* and *Banksia littoralis* in the midstorey and an Open Heath understorey dominated by *Agonis linearifolia*, *Gahnia decomposita*, *Mesomelaena tetragona*, *Hypocalymma angustifolium* and *Taxandria* spp. The riparian vegetation on the southern boundary was similar and also consistent with the same 'Yarragil' complex. However, there was no obvious midstorey and only scattered emergents of *Eucalyptus megacarpa, Eucalyptus patens* and *Corymbia calophylla*, forming a Woodland (less dense than an Open Forest). The riparian vegetation on the northern boundary was also consistent with the 'Yarragil' complex in the Subhumid north geographic region, east of Jarrahdale. However numerous scattered emergents of *Nuytsia floribunda* and *Banksia littoralis* were observed in the overstorey of the Open Woodland as well as the *Eucalyptus patens*, *Eucalyptus marginata* and *Corymbia calophylla* described by Havel and Mattiske (2000). The understorey in this area was dominated by *Taxandria* spp of various life stages forming a Closed Herbland.

The proposed FHZ includes a dominant south-east to north-west ridge in the eastern section. Consequently, most of the eastern section is upland vegetation with a moderately steep north easterly slope. The topography of the western section of the proposed FHZ contains a gentle north westerly and a gentle south westerly slope in two broad, flat valleys.

Habitat

The average density of habitat trees throughout the proposed FHZ ranged from 2 to 12 trees per hectare. The highest density of habitat trees was observed midslope, with an even mix of primary and secondary habitat trees. Around 60% of the habitat trees observed midslope were *Corymbia calophylla*; the others were *Eucalyptus marginata*. The second highest density of habitat trees was observed on the ridgetops of the proposed FHZ. Around 70% of the habitat trees observed in these areas were secondary. *Eucalyptus marginata* formed about 75% of these habitat trees; the others were *Corymbia calophylla*. The lowest density of habitat trees was observed in the riparian areas. These habitat trees were predominantly primary (about 70%) and around 75% were *Eucalyptus marginata*; the others were *Corymbia calophylla*. Hollow logs were observed at low frequencies throughout the proposed FHZ, generally with a pipe less than 30 cm in diameter. Digging and scratching was observed beneath and within most of the logs examined. An echidna (*Tachyglossus aculeatus)* was observed seeking refuge in one such log.

Xanthorrhoea preissii was present throughout the upland forest in low densities, mostly as single-headed plants between 1 and 2 metres, but also some large multiple-headed individuals. A greater frequency of multiple-headed individuals was observed in the riparian zones and in the vegetation communities surrounding the rocky outcrops. Large dried skirts were observed on mature *X. preissii* across the proposed FHZ.

Fire

Observations of scorch marks, regeneration, litter layer accumulation and skirt size of *X. preissii* indicated no evidence of recent or high intensity fires within the proposed FHZ. Corporate datasets indicate that the majority of the proposed FHZ was last burnt during the 1986 - 1987 fire season.

Harvest Records Check

Corporate records indicate that the majority of forest within the proposed FHZ was last cut in the 1980s. Field observations of chainsaw-cut stumps and the coppice size are consistent with this cutting history.

Roading

Forest tracks of varying condition form parts of the boundary of the proposed FHZ. Zamia Road forms the north eastern boundary. It most parts it was a single lane dirt track, apparently frequently-used, except for an upland section around 250 metres in length that was overgrown and not trafficable. A 400 metre section of Jarrah Road forms the eastern boundary; this was a well maintained gravel track. Thirty-Seven Mile Road, a well-maintained gravel track, forms approximately 1 kilometre of the southern boundary and extends approximately 2 kilometres into the proposed FHZ. Approximately 1.3 kilometres of Aqua Road and 1.1 kilometres of

Zamia Road extend into the proposed FHZ, and were trafficable dirt tracks. Various unnamed forest tracks followed the stream zone of the western boundary and extend approximately 1.1 kilometres into the proposed FHZ. No additional tracks were observed within the proposed FHZ.

Other disturbance checks

There were no gravel pits or powerlines located within or immediately adjacent to the proposed FHZ. Several areas rehabilitated from mining activities surround the proposed FHZ. There were signs of firewood collection adjacent to the proposed FHZ in the vicinity of Cobiac Road. The collection sites did not appear to be used intensively.

Other Comments

Forest Red-Tailed Black Cockatoos (*Calyptorhynchus banksii naso*) and various small bird species were observed within the proposed FHZ. A Wedge-Tailed Eagle (*Aquila audax)* was seen flying overhead within the proposed FHZ. Frogs were heard calling in creeklines of the proposed FHZ. A group of three western grey kangaroos (*Macropus fuliginosus*) were sighted in the midslope vegetation of the proposed FHZ. An echidna was seen in the upland vegetation adjacent to one of the rocky outcrops. Other fauna signs observed across the proposed FHZ include burrows, feral pig (*Sus scrofa*) diggings (and one piglet was sighted), possum scats and kangaroo scats, tracks and pads.

Selected Points of Interest

Point A (423912, 6422252)

Upland vegetation in the proposed FHZ. The vegetation community was described as *Eucalyptus marginata* and *Corymbia calophylla* Open Forest with a midstorey of *Persoonia longifolia, Xanthorrhea preissii* and *Banksia grandis* Shrubland over a *Leucopogon capitellatus, Leucopogon propinquus* and *Macrozamia riedlei* dominated Open Low Heath. This community was typical of the upland vegetation across the eastern side of proposed FHZ. The leaf litter in this area was thin and exposed gravels were observed under most mature trees; also typical for the proposed FHZ. At this location there were numerous fallen logs (none with hollows) and the forest was generally pole and sapling sized. The habitat tree density was estimated at 10 trees per hectare at this location. A Wedge Tail Eagle (*Aquila audax)* was seen circling low overhead.

Point B (422668, 6422097)

Creekline along the western boundary of proposed FHZ. This area was identified as potential quokka (*Setonix brachyurus*) habitat and the vegetation structure was described as a *Eucalyptus megacarpa* and *Corymbia calophylla* Open Forest. The creekline was dominated by a dense covering of tall *Agonis linearifolia, Gahnia decomposita and Lepidosperma tetraquetrum.* Dominant herb species in the

riparian vegetation included *Bossiaea aquifolium, Lasiopetalum floribundum* and *Macrozamia riedlei*. The leaf litter was approximately 5 to 10 cm deep, mostly comprised of *Eucalyptus megacarpa* bark and leaves. Several multiple-headed *Xanthorrhea preissii* with full skirts were also observed. No evidence of quokka activity was seen at this point.

Point C (423043, 6422970)

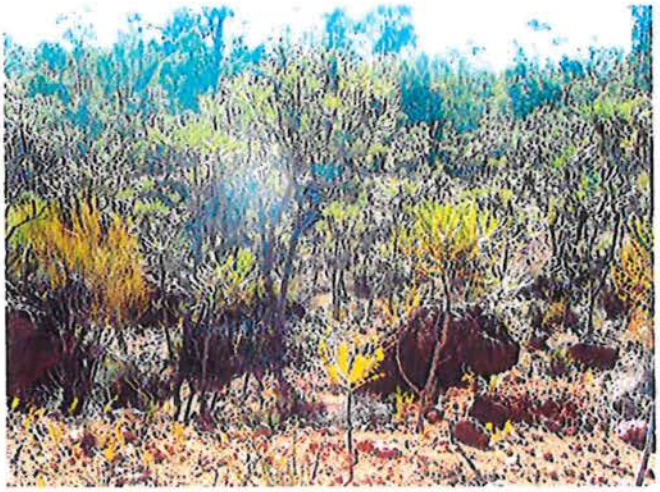
Riparian vegetation of the northern creekline. The riparian zone vegetation was dominated by *Melaleuca rhaphiophylla* in the midstorey and *Taxandria* spp in the shrub and herb storey. Scattered emergents of *Nuytsia floribunda* and *Banksia littoralis* were observed in the overstorey of the Open Woodland. There were well defined animal pads in the senescing scrub and a large number of kangaroo scats were noted. Possum scats were also observed. No water was in the stream at this location, but several frogs were heard calling. No habitat trees were observed from this point.

Point D (422683, 6422981)

Vegetation on the periphery of the northern stream. This vegetation was markedly different to the vegetation described at Point C, but the distance from the stream is similar. The overstorey was a *Eucalyptus marginata* and *Corymbia calophylla* Open Woodland, over *Eucalyptus marginata* and *Corymbia calophylla* saplings and smaller *Eucalyptus megacarpa* and *Eucalyptus patens* forming a Low Woodland. The midstorey and understorey were comparatively less dense than the vegetation

described at Point C. The species composition was noticeably different, with *Acacia pulchella*, *Xanthorrhea preissii* and *Xanthorrhea gracilis* dominating the understorey. There were approximately 4 habitat trees at this point.. Pole size and immature trees were the dominant forest cohort.

Point E (423273, 6422533)



Non Forest Diverse Ecotype Zone in the north west section of the proposed FHZ. The area was dominated by *Banksia grandis* with scattered emergents of *Allocasuarina fraseriana*, *Persoonia elliptica* and juvenile *Eucalyptus marginata*. There was also a very sparse cover of *Adenanthos obovatus*. There was very little leaf litter (apart from occasional *Banksia grandis* leaves), and the area was characterised by exposed gravely soil, with several small boulders and an exposed lateritic ridge (approximately 2 metres in height and 50 metres in length). The Non Forest area extends down slope of this ridge.

Point F (423598, 6422552)

Roadside vegetation typical across the proposed FHZ. The vegetation communities observed were generally consistent with the 'Dwellingup' complex in the Subhumid north (Havel and Mattiske, 2000). However, the overstorey observed was more open than the complex describes; being an Open Woodland (rather than Open Forest) of *Eucalyptus marginata* and *Corymbia calophylla*. *Allocasuarina fraseriana* was also observed in the overstorey rather than in the midstorey (as described

by the complex). *Persoonia longifolia* and *Banksia littoralis* were observed in the midstorey, in addition to the *Banksia grandis* and *Persoonia elliptica* described by the 'Dwellingup' complex. The species composition of the understorey in such roadside vegetation areas was very diverse compared to the species composition observed across the rest of the proposed FHZ. *Adenanthos barbiger*, *Grevillea wilsonii*, *Styphelia tenuiflora* and *Hakea ruscifolia* were observed at this location, all consistent with the 'Dwellingup' complex. Dominant plants observed in addition to those described by the complex included *Acacia drummondii and Dryandra nivea*. Habitat trees were observed at very high densities in the roadside vegetation (around 10 to 12 per hectare). This type of vegetation extended approximately100 metres from most roads, then graded into mature forest.

Point G (424226, 6421855)

Rocky Outcrop Diverse Ecotype Zone in the south east section of the proposed FHZ. This area consisted of several expanses of bare, granitic rock (most with at least a 20 metre radius). These rock faces were separated from each other and from the surrounding upland forest by a very dense cover of *Hakea undulata*, *Hakea cyclocarpa* and *Hakea lissocarpha*, with individual plants reaching approximately 2.5 metres in height, forming strips of vegetation reaching up to 20 metres in length in some parts. Moss and lichen species grew on the rocks, and there was a sparse covering of *Hakea lissocarpha* on the damp rock surface as well. Several small bird species were heard calling and kangaroo scats were observed across the area. Another Rocky Outcrop with smaller expanses of bare rock, but similar vegetation complexes and structure, was observed in the proposed FHZ.

Point H (424254, 6421918)

Ridgetop vegetation adjacent to Point G and representative of the ridgetop vegetation across the proposed FHZ. The ridgetop vegetation was described as a generally *Eucalyptus marginata* and *Corymbia calophylla* Open Forest with a midstorey dominated by *Banksia grandis* and *Persoonia longifolia*. Dominant shrub and herb species observed at this location were *Xanthorrhea preissii, Macrozamia riedlei, Phyllanthus calycinus, Leucopogon capitellatus, Leucopogon propinquus* and some *Hakea lissocarpha*. The leaf litter layer at the ridgetop was among the thickest observed across the FHZ, but small exposed boulders were also observed. The habitat trees observed from this point were secondary *Eucalyptus marginata* with approximately 10 per hectare. There was a relatively even mix of mature and regenerating trees across the ridgetop.

Field check of the alternative option within Cobiac 01 and 03

Point I (424570, 6422545)

Riparian vegetation in one of the alternative options. The overstorey was very open and consisted of senescent *Eucalyptus marginata* and *Corymbia calophylla*. *Xanthorrhea preissii* and *Acacia* spp formed a Shrubland. This riparian area had the greatest cover of grass species observed across the target area. However, the ground not covered by grasses was comprised of dark gravels (often associated with high impact *Phytophthora cinnamomi*). There was water flowing at the time of

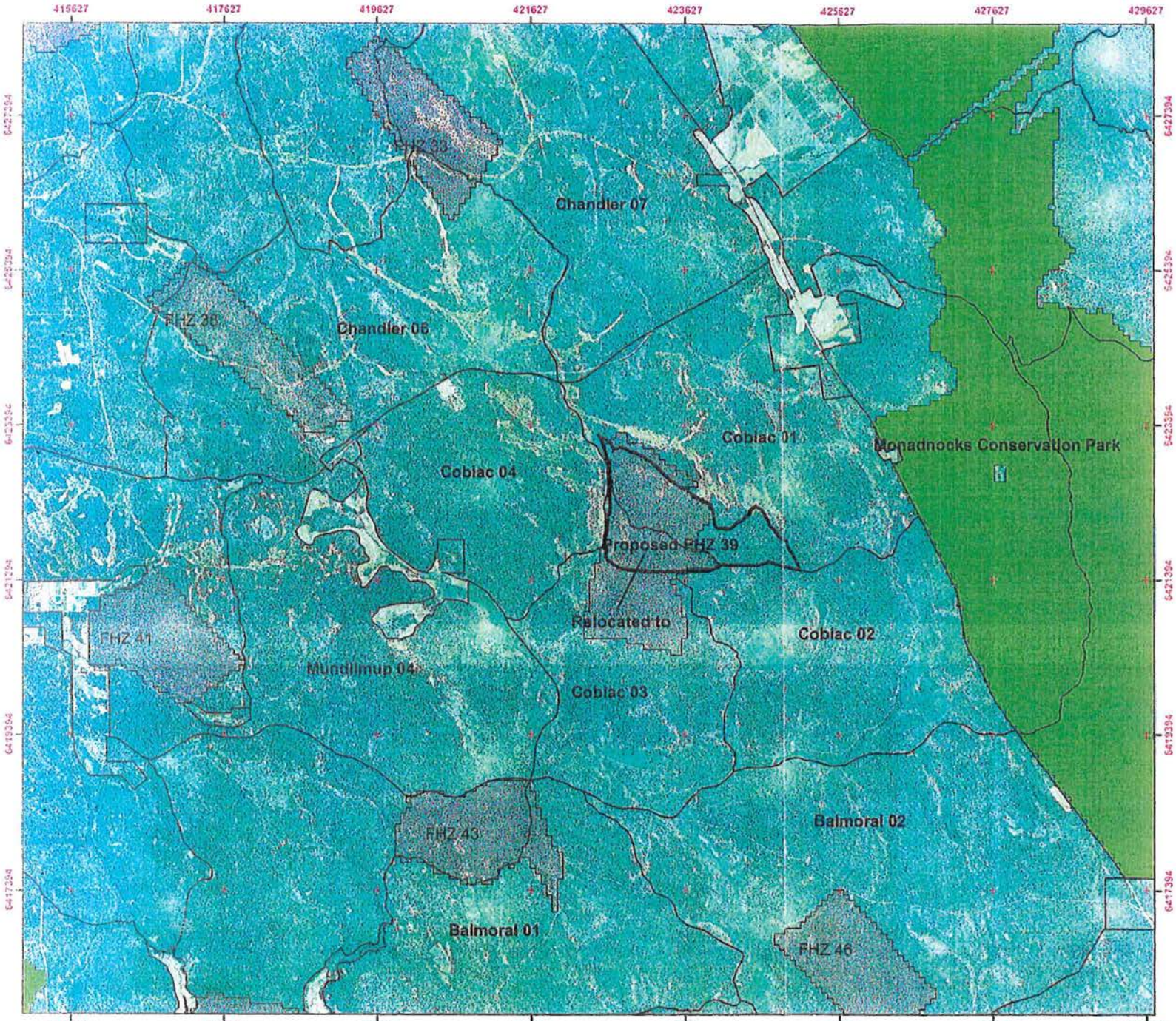
investigation and frogs were heard calling in the area.

Point J (424422, 6420503)

Burnt area in an alternate option, south-east of the proposed FHZ. During the field investigation it was discovered that a large area adjacent to the southeast boundary of the proposed FHZ had been recently burnt. Observations of scorch marks on the remaining vegetation indicates that the fire was not intense. Mapping by Fire Management Services (Department of Environment and Conservation) subsequently confirmed this as an autumn-2006 prescribed burn, over approximately 2040 ha.

Point K (421420, 6420750)

Riparian vegetation in another option considered, south-west of the proposed FHZ. The vegetation community and structure was described as a *Eucalyptus marginata* Woodland with abundant mature *Melaleuca rhaphiophylla*. Dominant midstorey species observed were *Xanthorrhea preiseii, Xanthorrhea gracilis* and *Hakea varia*. The cover of grass species was similar to the dense cover observed at Point I. Horse tracks were seen on an adjacent gravel road. Habitat trees were estimated at 8 per hectare. At this point of interest all of the habitat trees were formed by *Eucalyptus marginata* with an even mix of primary and secondary habitat trees.



Overview Location of Fauna Habitat Zone 39

Legend

- Fauna Habitat Zone
- Indicative Fauna Habitat Zone
- Forest Block Boundary
- Existing Formal Reserve

Scale 1:50,000

0 0.5 1 2 3 4 Kilometers

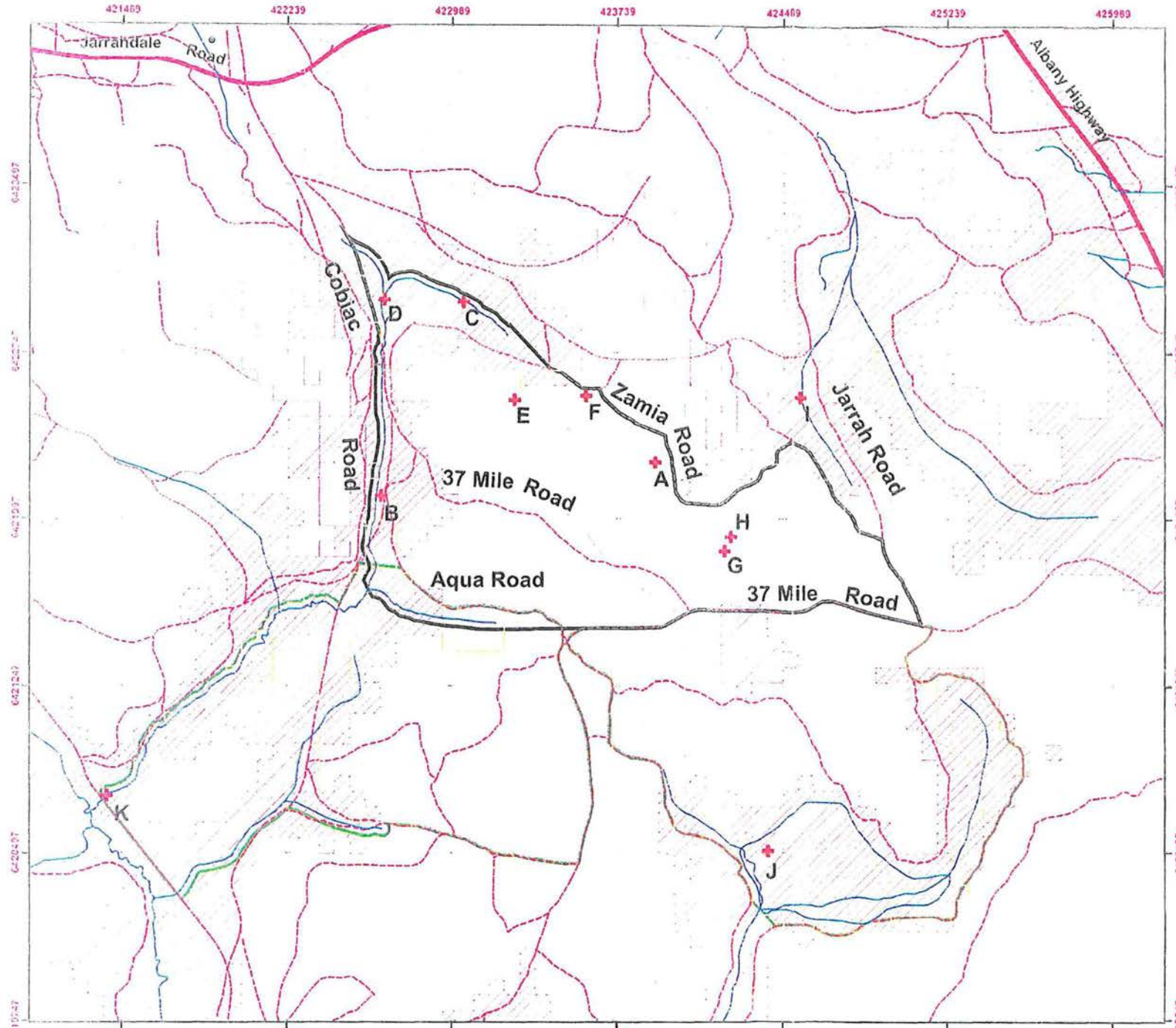
MGA Zone 50, Datum:GDA94

N

Department of Environment and Conservation

24 October 2006

Produced by Forest Management Branch under the direction of the Director General, Department of Environment and Conservation.



Field Check of Fauna Habitat Zone 39

Legend

- Fauna Habitat Zone
- Alternative Options
- Diverse Ecotype Zone
- Dieback present
- Alcoa Bauxite Mining Rehabilitation
- Roads and tracks
- Streams, rivers and waterways
- Permanent Water Point
- Point of Interest

Contour Interval: 10 metres

Scale 1:17,500

0 0.5 1 Kilometers

MGA Zone 50, Datum GDA94

N

Department of Environment and Conservation

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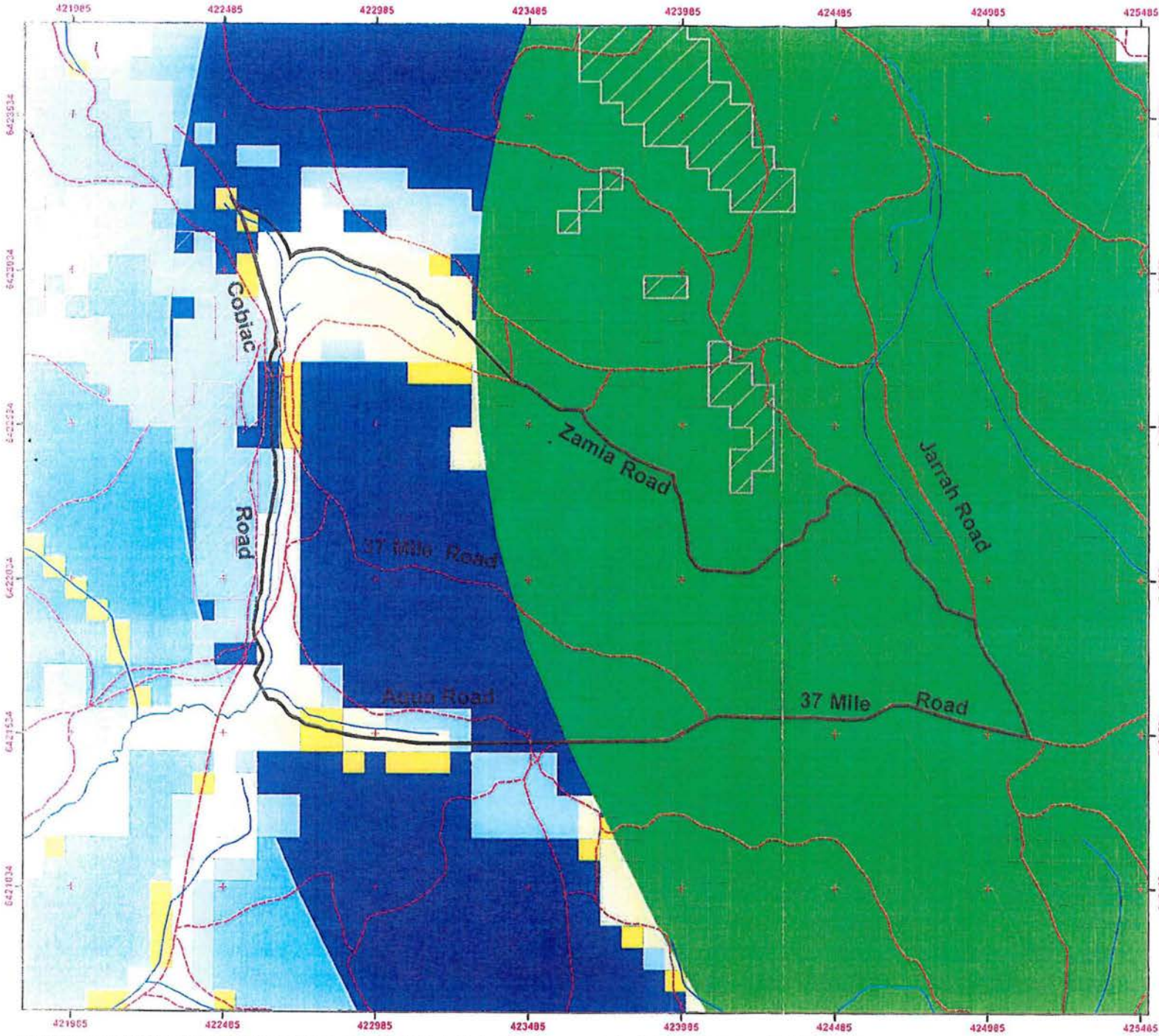


Forest Structure Surrounding Fauna Habitat Zone 39

Legend

- Fauna Habitat Zone
- Streams, rivers and waterways
- Roads and tracks
- Within 3km of >200ha reserved mature forest
- Other public land
- Reserve - mature
- Reserve - not mature
- SF - mature but outside 3km band
- SF - mature and within 3km band
- SF - not mature
- Aloca Bauxite Mining Rehabilitation

Total area of interim FHZ = 227 ha

Scale 1:12,500

0 0.5 1 Kilometers

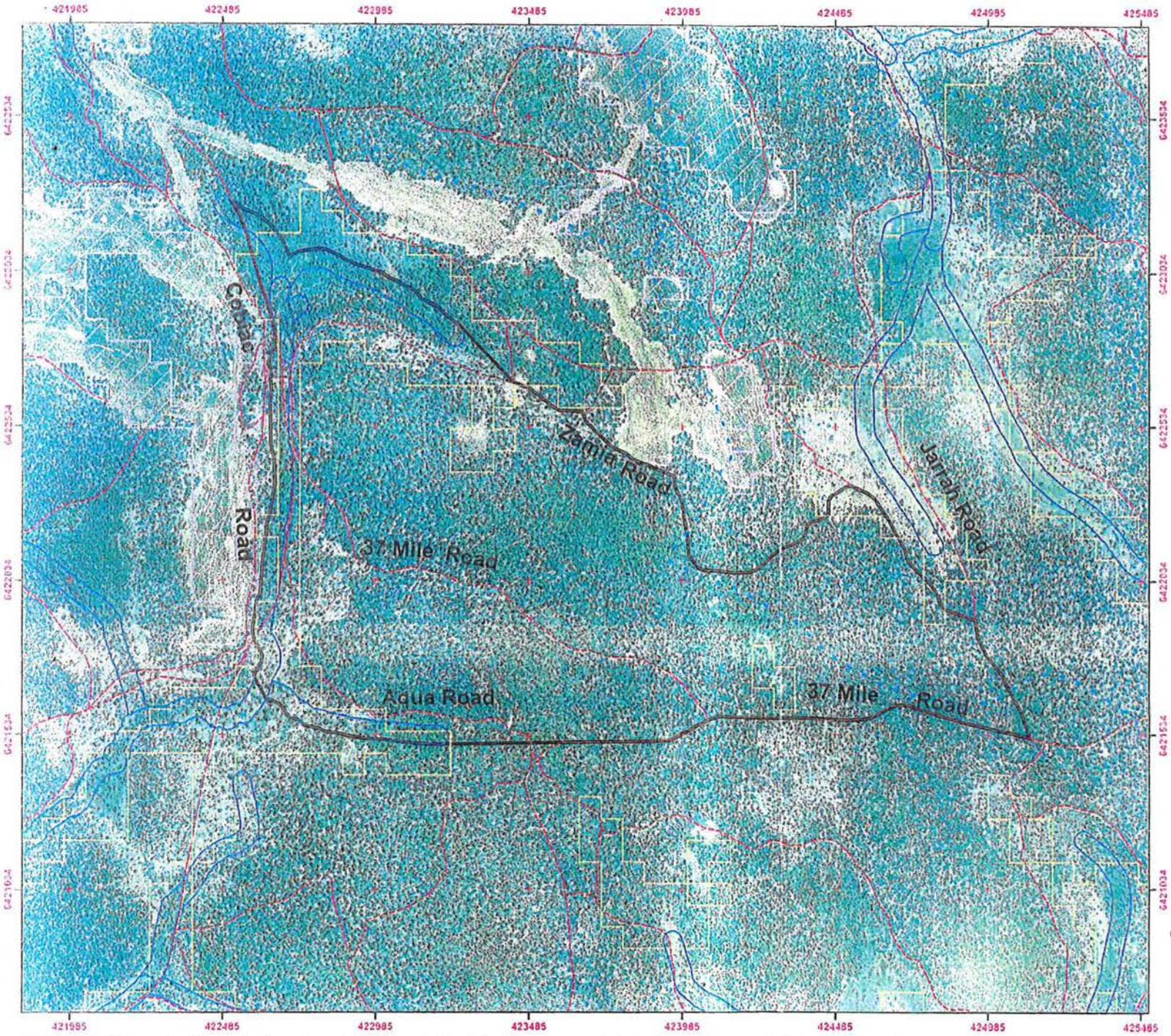
MGA Zone 50, Datum:GDA94

N

Department of Environment and Conservation

24 October 2006

Produced by Forest Management Branch under the direction of the Director General, Department of Environment and Conservation.



Select Values Recorded in the Vicinity of Fauna Habitat Zone 39

Legend

- Fauna Habitat Zone
- Stream Buffer
- Diverse Ecotype Zone
- Alcoa Bauxite Mining Rehabilitation
- Second order catchment boundary
- Roads and tracks

Note: Several threatened fauna sites were present and were considered in analysis but are not depicted on the map

Total area of interim FHZ = 22.7 ha

Scale 1:12,500

0 0.5 1 Kilometres

MGA Zone 50, Datum:GDA94

N

Department of Environment and Conservation

24 October 2006

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(Joins A.P.N./Plan)

CHANDLER PLOT 46 P.D.

CHANDLER PLOT 45 P.D.

COBIAC P.D. PLOT 16

COBIAC PLOT 15 P.D.

CHANDLER PLOT 44 P.D.

CHANDLER PLOT 43 P.D.

COBIAC PLOT 21 P.D.

COBIAC PLOT 20 P.D.

COBIAC PLOT 19 P.D.

COBIAC PLOT 2

MUNDLIMUP PLOT 21 P.D.

COBIAC PLOT 14 P.D.

COBIAC PLOT 13 P.D.

RANDALL ROAD

JOHNSON ROAD

ALBANY HIGHWAY

SCAFFOLD RD.

37 MILE ROAD

FROLLETT ROAD

ARBORETUM ROAD

BULLDOZER AQUA ROAD

COBIAC BROOK

MT. RANDALL 1720ft. A.I.1952

TO JARRAHDALE

LEGEND

1ST CLASS ROAD	
2ND CLASS ROAD	
3RD CLASS ROAD	
UNMAINTAINED TRACK	
REFERENCE TREE	THEODOLITE 2
	COMPASS 1
TRANSFERRED FROM TOPO SHEETS	4 3
PHOTO PRINCIPAL POINT	15
PHOTO PICTURE TIE	
PHOTO CONTROL POINT	G

J	JARRAH
M	MARRI
K	KARRI
W	WANDOO
Bbt.	BLACKBUTT
Bull.	BULLICH
B'sia	BANKSIA
D	NON FOREST
D b	DIEBACK
P.D.	POSITION DOUBTFUL
F.D.	Light Fire Damage
S.F.D.	Severe Fire Damage

F	Flats
Sc	Scrub
Rb	Ringbarked
Orch.	Orchard
Pt. Cl.	Part Cleared
Cul.	Cultivated
P	Pasture
▪	Building
S. T.	Shade Trees
V.O.	Very Open
Dec.	Decadent
V	Virgin Forest

SCALE 1 : 25000

500 0 1000 2000 Metres

20 10 0 20 40 60 80 100 Chains

PHOTOGRAPHY	JARRAHDALE 1960
BASE PLAN	H.A.C. NOV. '61
INTERPRETATION	HARV.W.P.O. OCT. '62
PLOTTING	D.E.C. JUNE '64
COMPILED	E.C.B. JULY '64
CHECKED	A.J.B. JULY '64
AMENDED	I.C.H. AUG '82

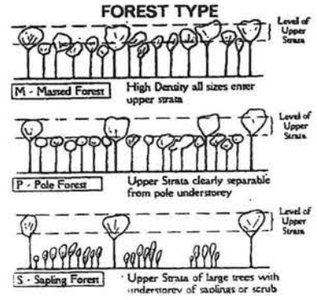
FOREST ASSESSMENT

HEIGHT CLASSES

Metres

J M Bbt	
A+	30+
A	25-29
B+	20-24
B	15-19
C	under 15
KARRI	
A	50+
B	40-49
C	under 40

FOREST TYPE



UPPER STRATA

Percentage Crown Cover

JARRAH		KARRI	
0	1 - 5	1 - 4	5 - 9
6 - 19	20 - 29	10 - 14	15 - 19
30 - 39	40 +	20 - 24	25 - 29
		30 - 34	35 - 39
			40 +

20=% Upper Strata

60=% Total Density

M type—total density only

Wungong 2006 Summary

Common Name	Scientific Name	Cons Status	Timber Harvest
Australian Painted Snipe	*Rostratula bengehalensis australis*	VU	
Barking Owl	*Ninox connivens*	P2	
Baudin's Cockatoo	*Calyptorhynchus baudinii*	EN	1,2
Brush-tailed Phascogale	*Phascogale tapoatafa tapoatafa*	P3	1,2
Calamanthus or Rufous Fieldwren	*Calamanthus campestris montan*	P4	
Carpet Python	*Morelia spilota*	P4	
Chuditch (Western Quoll)	*Dasyurus geoffroii*	VU	
Common Brushtail Possum	*Trichosurus vulpecula*		1,2
Crested Shrike-tit	*Falcunculus frontatus*	P4	
Darling Range Ctenotus	*Ctenotus delli*	P4	
Forest Red-tailed Black Cockatoo	*Calyptorhynchus magnificus*	P3	1,2
Hooded Plover	*Thinornis rubricollis rubricollis*	P4	
Masked Owl	*Tyto novaehollandiae*	P3	
Numbat	*Myrmecobius fasciatus*	VU	
Peregrine Falcon	*Falco peregrinus*	P4	
Quenda (Southern Brown Bandicoot)	*Isoodon obesulus fusciventer*	P4	
Quokka	*Setonix brachyurus*	VU	2
Southern Death Adder	*Acanthophis antarcticus*	P3	
Tammar Wallaby	*Macropus eugenii*	P4	1
Water-rat	*Hydromys chrysogaster*	P4	
Western Brush Wallaby	*Macropus irma*	P4	
Western Falspistrelle	*Falsistrellus mackenziei*	P4	1,2
Western Ringtail Possum	*Pseudocheirus occidentalis*	VU	1,3
White-browed Babbler	*Pomatostomus superciliosus*	P4	
Woylie (Brush-tailed Bettong)	*Bettongia penicillata*	P4	?

Wungong 2006 Detail

Common Name	Scientific Name	Cons Status	Timber Harvest	Score	Habitat ID	FDIS LAND SYSTEM	FDIS LANDSCAPE UNIT
Western Brush Wallaby	*Macropus irma*	P4		3	1	Darling Plateau	Jarrah Uplands North
Western Brush Wallaby	*Macropus irma*	P4		3	11	Darling Plateau	Depressions / Swamps East
Western Brush Wallaby	*Macropus irma*	P4		3	13	Darling Plateau	Jarrah Valleys North
Western Brush Wallaby	*Macropus irma*	P4		3	20	Darling Plateau	Granite Outcrops
Tammar Wallaby	*Macropus eugenii*	P4	1	1	11	Darling Plateau	Depressions / Swamps East
Quokka	*Setonix brachyurus*	VU	2	3	13	Darling Plateau	Jarrah Valleys North
Woylie (Brush-tailed Bettong)	*Bettongia penicillata*	P4		1	1	Darling Plateau	Jarrah Uplands North
Common Brushtail Possum	*Trichosurus vulpecula*		12	2	1	Darling Plateau	Jarrah Uplands North
Common Brushtail Possum	*Trichosurus vulpecula*		12	1	11	Darling Plateau	Depressions / Swamps East
Common Brushtail Possum	*Trichosurus vulpecula*		12	2	13	Darling Plateau	Jarrah Valleys North
Common Brushtail Possum	*Trichosurus vulpecula*		12	2	20	Darling Plateau	Granite Outcrops
Western Ringtail Possum	*Pseudocheirus occidentalis*	VU	13	1	1	Darling Plateau	Jarrah Uplands North
Western Ringtail Possum	*Pseudocheirus occidentalis*	VU	13	1	13	Darling Plateau	Jarrah Valleys North
Quenda (Southern Brown Bandicoot)	*Isoodon obesulus fusciventer*	P4		2	1	Darling Plateau	Jarrah Uplands North
Quenda (Southern Brown Bandicoot)	*Isoodon obesulus fusciventer*	P4		3	11	Darling Plateau	Depressions / Swamps East
Quenda (Southern Brown Bandicoot)	*Isoodon obesulus fusciventer*	P4		3	13	Darling Plateau	Jarrah Valleys North
Quenda (Southern Brown Bandicoot)	*Isoodon obesulus fusciventer*	P4		2	20	Darling Plateau	Granite Outcrops
Chuditch (Western Quoll)	*Dasyurus geoffroii*	VU		3	1	Darling Plateau	Jarrah Uplands North
Chuditch (Western Quoll)	*Dasyurus geoffroii*	VU		2	11	Darling Plateau	Depressions / Swamps East
Chuditch (Western Quoll)	*Dasyurus geoffroii*	VU		3	13	Darling Plateau	Jarrah Valleys North
Chuditch (Western Quoll)	*Dasyurus geoffroii*	VU		2	20	Darling Plateau	Granite Outcrops
Brush-tailed Phascogale	*Phascogale tapoatafa tapoatafa*	P3	12	3	1	Darling Plateau	Jarrah Uplands North
Brush-tailed Phascogale	*Phascogale tapoatafa tapoatafa*	P3	12	2	11	Darling Plateau	Depressions / Swamps East
Brush-tailed Phascogale	*Phascogale tapoatafa tapoatafa*	P3	12	3	13	Darling Plateau	Jarrah Valleys North
Brush-tailed Phascogale	*Phascogale tapoatafa tapoatafa*	P3	12	2	20	Darling Plateau	Granite Outcrops
Numbat	*Myrmecobius fasciatus*	VU		1	1	Darling Plateau	Jarrah Uplands North
Numbat	*Myrmecobius fasciatus*	VU		2	11	Darling Plateau	Depressions / Swamps East
Water-rat	*Hydromys chrysogaster*	P4		2	13	Darling Plateau	Jarrah Valleys North
Western Falspistrelle	*Falsistrellus mackenziei*	P4	12	3	1	Darling Plateau	Jarrah Uplands North
Western Falspistrelle	*Falsistrellus mackenziei*	P4	12	3	11	Darling Plateau	Depressions / Swamps East
Western Falspistrelle	*Falsistrellus mackenziei*	P4	12	3	13	Darling Plateau	Jarrah Valleys North
Western Falspistrelle	*Falsistrellus mackenziei*	P4	12	2	20	Darling Plateau	Granite Outcrops
Peregrine Falcon	*Falco peregrinus*	P4		1	1	Darling Plateau	Jarrah Uplands North
Peregrine Falcon	*Falco peregrinus*	P4		2	20	Darling Plateau	Granite Outcrops
Forest Red-tailed Black Cockatoo	*Calyptorhynchus magnificus*	P3	12	3	1	Darling Plateau	Jarrah Uplands North
Forest Red-tailed Black Cockatoo	*Calyptorhynchus magnificus*	P3	12	1	11	Darling Plateau	Depressions / Swamps East
Forest Red-tailed Black Cockatoo	*Calyptorhynchus magnificus*	P3	12	3	13	Darling Plateau	Jarrah Valleys North
Forest Red-tailed Black Cockatoo	*Calyptorhynchus magnificus*	P3	12	1	20	Darling Plateau	Granite Outcrops
Baudin's Cockatoo	*Calyptorhynchus baudinii*	EN	12	3	1	Darling Plateau	Jarrah Uplands North

FDIS TABLES - EXPLANITORY NOTES

Cons Status: C - Critically Endangered (Declared Threatened Fauna)
E - Endangered (Declared Threatened Fauna)
V - Vulnerable (Declared Threatened Fauna)
X - Presumed Extinct (Declared Threatened Fauna)
S - Specially Protected Fuana
D - Conservation Dependent Fauna (also ranked as P5)
(Gazetted - Wildlife Conservation Act - 6 June 2006 list)

P1 - Priority 1 Fauna (See over for explanation)
P2 - Priority 2 Fauna
P3 - Priority 3 Fauna
P4 - Priority 4 Fauna
P5 - Priority 5 Fauna
(CALM Threatened and Priority Fauna List - January 2007)

Timber Harvest Harvesting Sensitive Species not all included on above lists
Fire Fire Sensitive Species not all included on above lists
(after Christensen and Liddlelow 1997)

Score A probability rating on occurrance in a Fauna Habitat Type
3 - High probability of species occurrence in the Fauna Habitat Type
2 - Moderate probability of species occurrence in the Fauna Habitat Type
1 - Species could possibly occur in the Fauna Habitat Type

NOTE: The Woylie (Brush-tailed Bettong), *Bettongia penicillata*, currently P5 has been recommended for gazettal as Endangered by the TSAC and is currently with the Minister. This will probably occur before this plan comes into operation.

PRIORITY CODES:

Priority One: Taxa with few, poorly known populations on threatened lands.

Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

Priority Two: Taxa with few, poorly known populations on conservation lands.

Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

Priority Three: Taxa with several, poorly known populations, some on conservation lands.

Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

Priority Four: Taxa in need of monitoring.

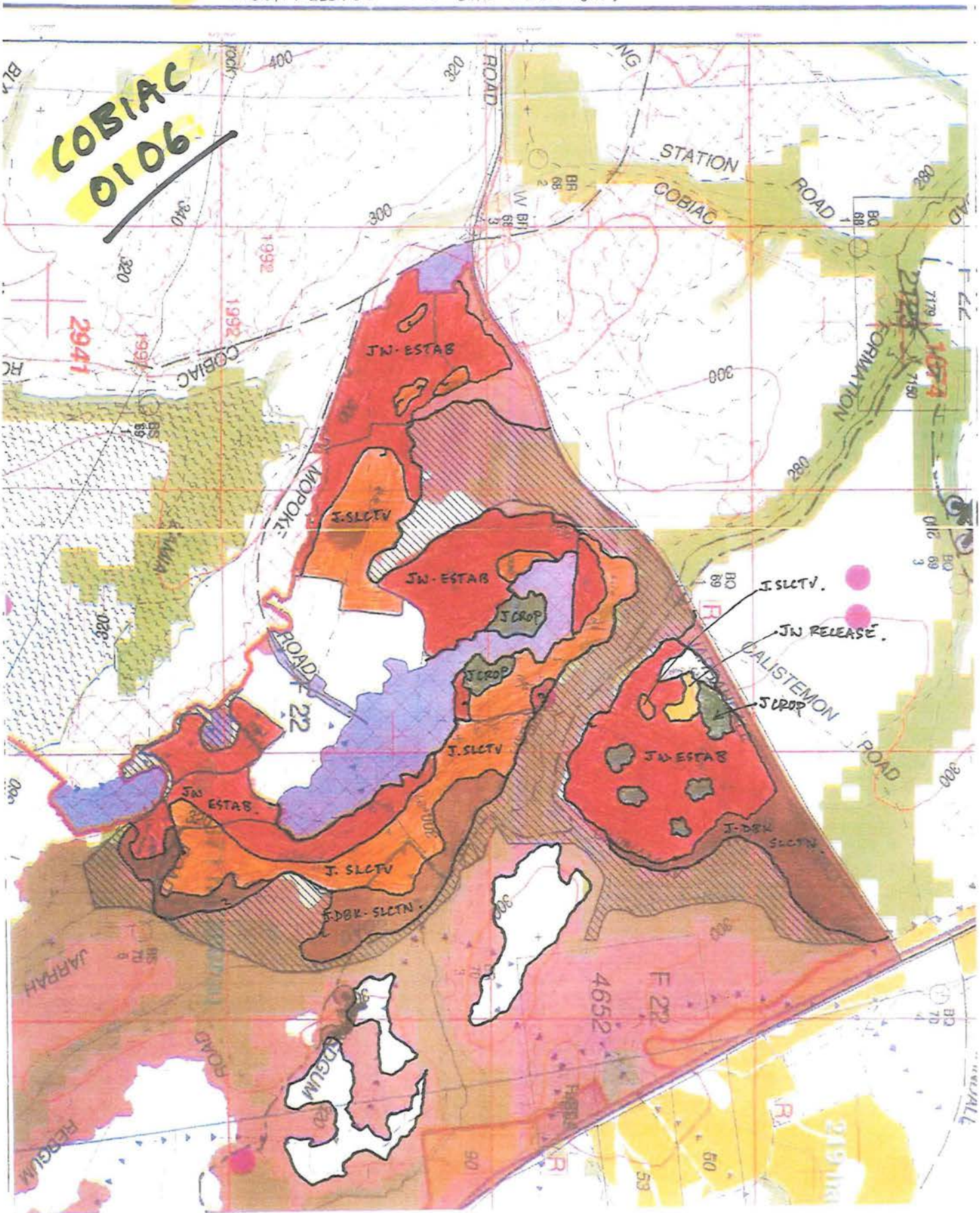
Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

Priority Five: Taxa in need of monitoring.

Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

* NOTE - ALL Pc INFESTED FOREST - INTENTION IS TO RETAIN 15 m^2

- S' WOOD 8-10 m^2
- 'SELECTIVE' - NO OBJECTIVE POSSIBLE: CULLS > 12 m^2
- THIN 10 m^2
- REGEN RELEASE via GAP CREATION.



420000

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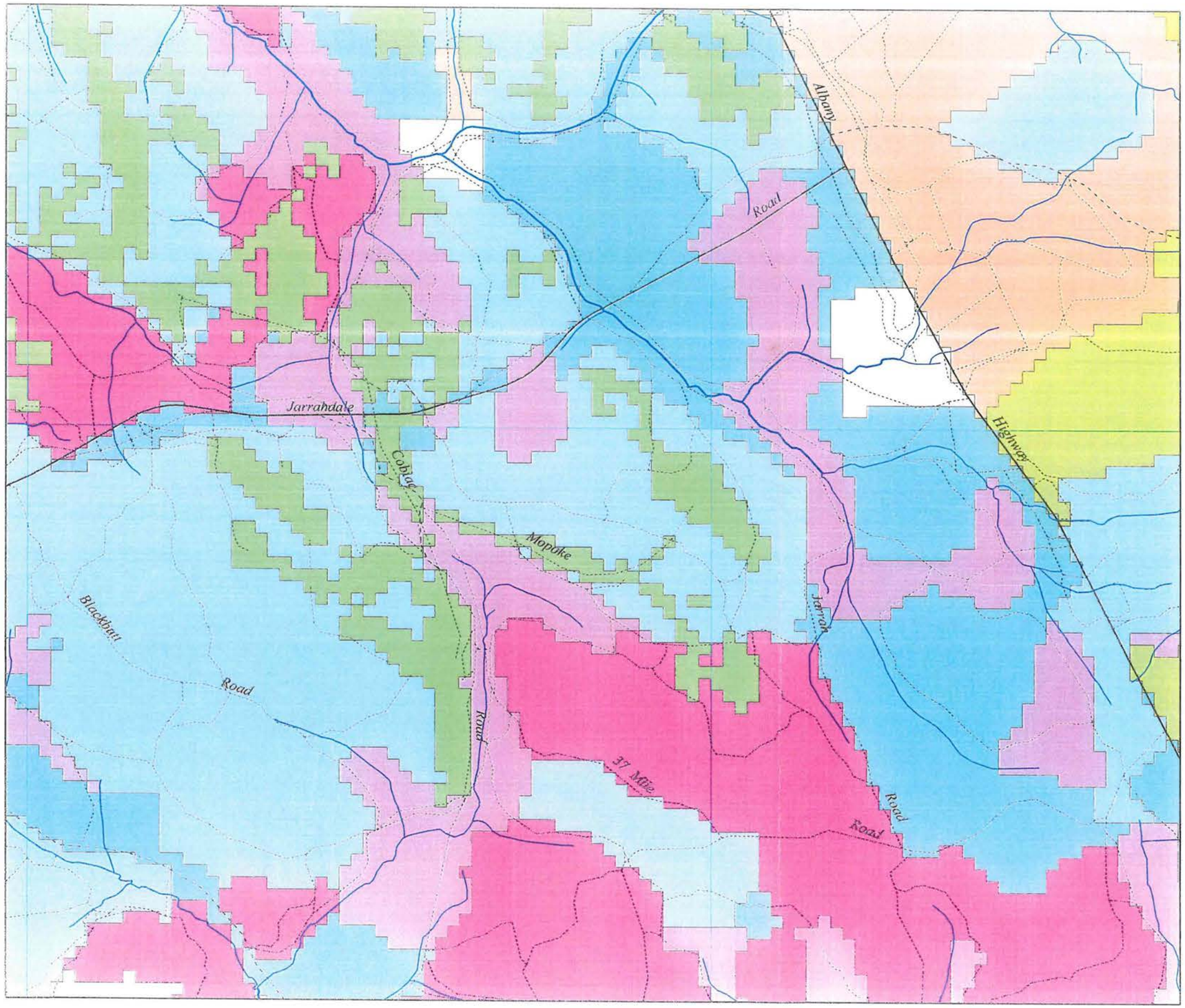


COBIAC: DECADE OF LAST HARVEST
(Prior to harvesting in 2007)

- Before 1920
- 1920 - 29
- 1930 - 39
- 1940 - 49
- 1950 - 59
- 1960 - 69
- 1970 - 79
- 1980 - 89
- 1990 - 99
- 2000 - 2004
- No recorded harvest

DATA DIRECTORY

theme	source	date	custodian
Harvest history	DEC	2006	Forest Management Branch

Scale 1 : 25,000

0 1 2Km

N

Produced by Forest Management Branch
under the direction of the Director General,
Department of Environment and Conservation
17 April 2008.

Note: Information on this map is referenced to the Geodetic Datum of Australia (GDA94).

Department of
Environment and Conservation

420000

424000

fmisSolor EALAE.ps

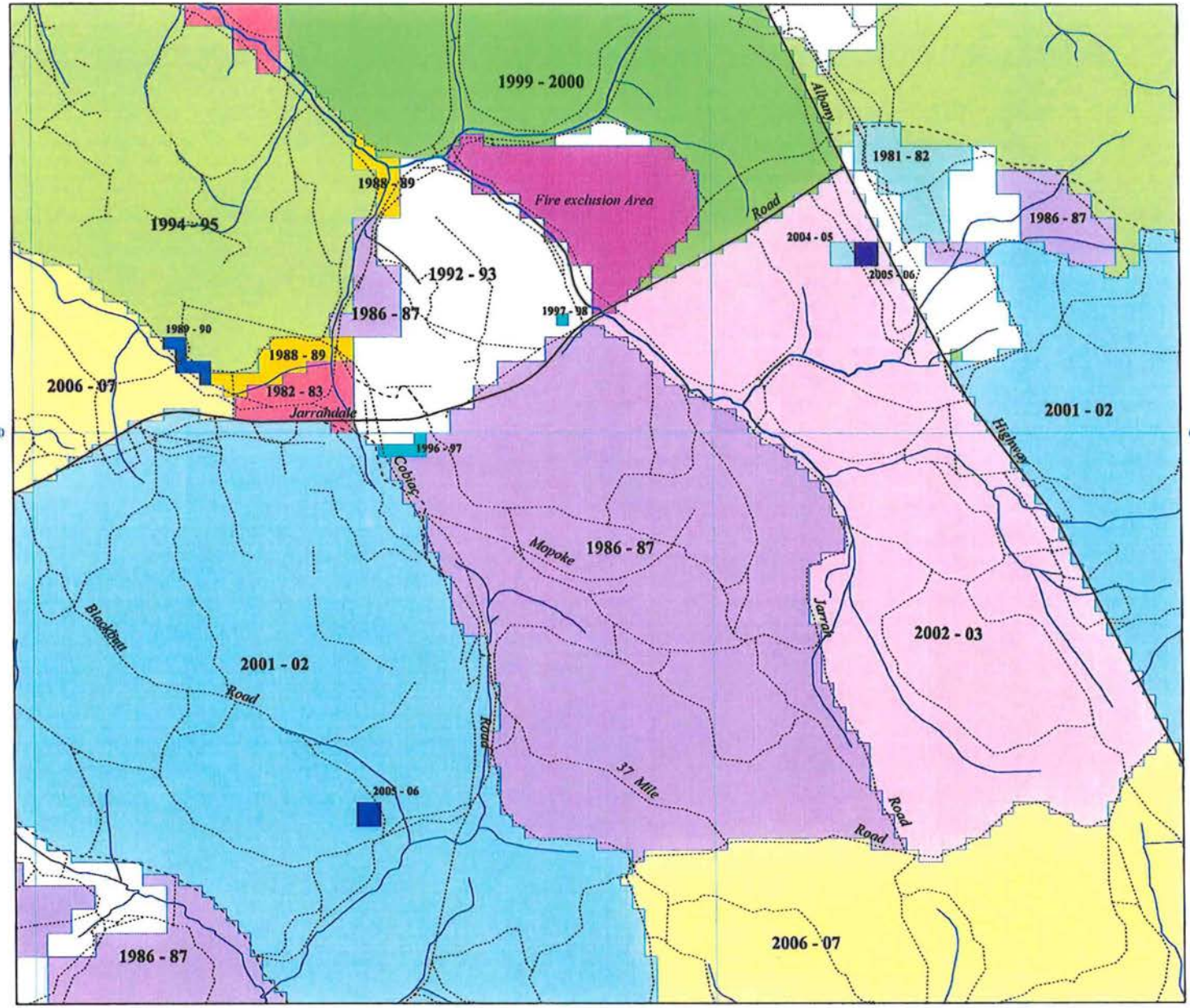
Estimated Volumes

Not provided as cell not identified on its own but as part of the Wungong catchment project.

Volume of Timber Removed from Cobiac 0106

Jarrah 1st Grade	2127 m^3
Jarrah 2nd Grade	42 m^3
Jarrah 3rd Grade	306 m^3
Dry Charcoal	438 m^3
Dry Domestic firewood	540 m^3
Fresh Green Firewood	356 m^3
Residual Bole Log	108 m^3
Sheoak low grade feature	112 m^3
Total	4029 m^3

(Source: FPC, Logging Operations Information System 4 April 2008)



COBIAC: YEAR OF LAST FIRE

DATA DIRECTORY

theme	source	date	custodian
Fire History	DEC	2007	Fire Management Services

Scale 1 : 25,000

0 1 2Km

N

Department of Environment and Conservation