STATE FORESTS of NSW.
THREATENED SPECIES PROTOCOL PRE-LOGGING AND PRE-ROADING SURVEY REPORT.

Nth Rivers REGION Tenterfield MANAGEMENT AREA

STATE FOREST: Bookookoorara

SURVEY REPORT NO: Book.2/98 COMPARTMENT 163 & 164

PART A. DESKTOP REVIEW

Date of Review: 27/1/98 Undertaken by: McCray and Kooyman: refer to appended map and print out of fauna records

1. Previous Surveys undertaken within 2 km or 5 km.

Survey Type	Source	Date	Distance	Reliable Survey
Flora	TMA EIS			
Spotlight	TMA EIS			
Nocturnal Playback	TMA EIS			
Hairtubes	TMA EIS			
Scat and Track	TMA EIS			
Riparian Frog	TMA EIS			
Non-riparian Frog	TMA EIS			
Micro Bats	TMA EIS			
Small Mammals	TMA EIS			
Diurnal Birds	TMA EIS			
Reptiles	TMA EIS			

Notes: EIS for TMA had one transect / site located in Bookookoorara SF AMG 418200 6829500 Pattersons Scrub area. Standard EIS methodology.

Northern Rivers Region - Threatened Species Pre-logging and Pre-roading Survey

2. Results of Database Search - Species recorded within 2 km or 5 km.

Species Name	AMGNorth	AMGEast	Date	Observation Type	Observers Name	Source
Sooty owl	6829500	418200			Fanning,D	EIS
RCFruit-dove	6829500	418200			Fanning,D	EIS
Scot. ruepp.	6829500	418200				
Fals. Tasman YEBG	6829500	418200				

NPWS Atlas Date: Records accessed 11/3/97.

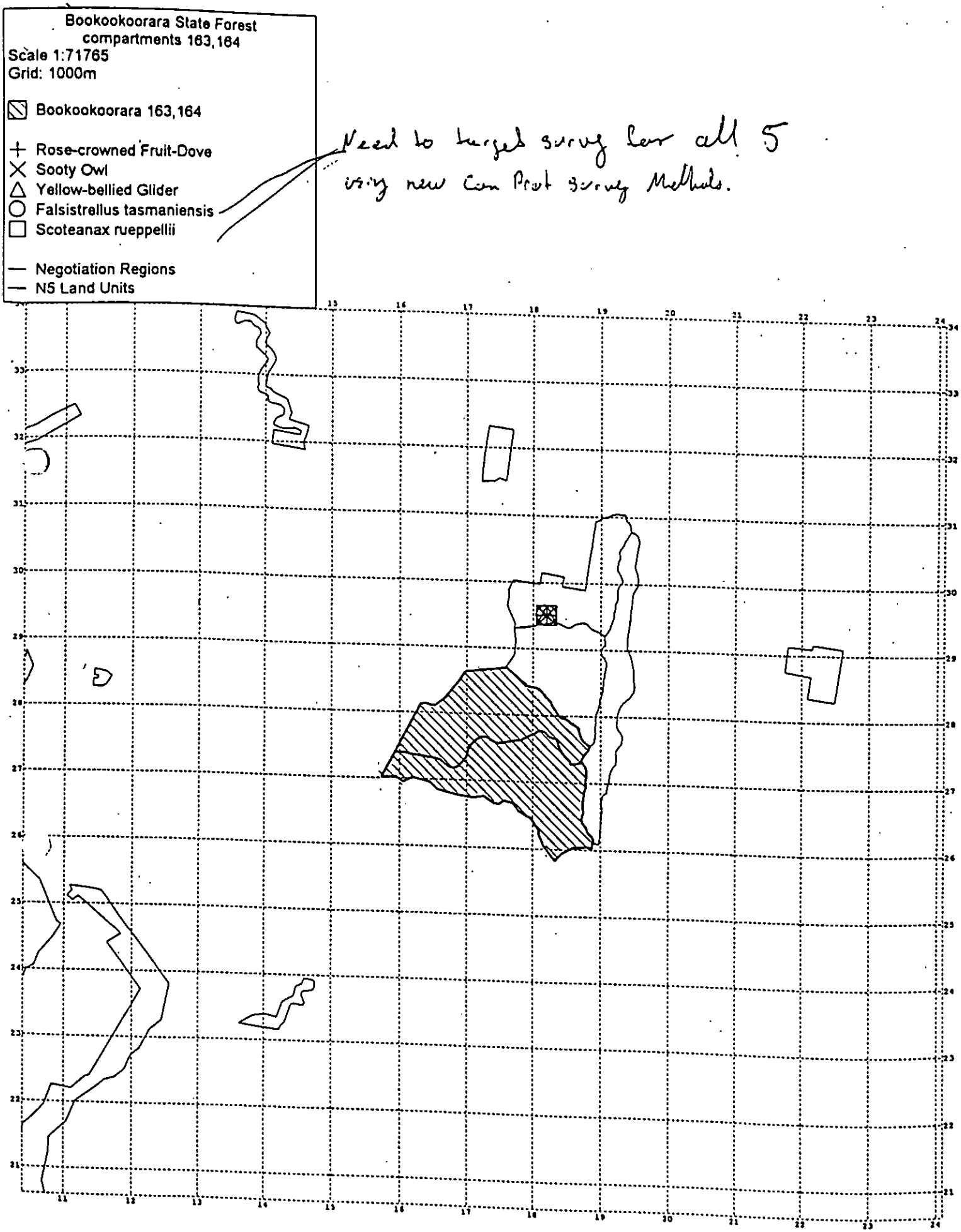
Notes: No scheduled flora records in data base.

Fauna Data - Schedule 1 and 2 Sightings

Forest = Bookookoorara
(FORESTID = 306)

Source Ref		AMG Coordinates Zone	Easting	Northing	Forest	Cpt.	Recorder Name	Scientific Name	Common Name	Location	Type	Distr	Ref. Date	Valid
TENEIS92	599	56	418200	6829500	306		FANNING, Dr Dominic	Falsistrellus tasmaniensis	Eastern Falsistrelle		W		29/01/1994	
TENEIS92	604	56	418200	6829500	306		FANNING, Dr Dominic	Scotorax rueppellii	Greater Broad-nosed Bat		W		29/01/1994	
TENEIS92	13251-8	56	418200	6829500	306		FANNING, Dr Dominic	Ptilinopus regina	Rose-crowned Fruit-Dove		O		01/02/1992	
Compartment ID				Total		3								
NP-ATLAS	SPXEI0104681	56	418200	6829500	306	161	Unknown or Unrecorded	Scotorax rueppellii	Greater Broad-nosed Bat	State Forest Eis Survey Site	W		29/01/1994	F
NP-ATLAS	SPXEI0104685	56	418200	6829500	306	161	Unknown or Unrecorded	Falsistrellus tasmaniensis	Eastern Falsistrelle	State Forest Eis Survey Site	W		29/01/1994	F
NP-ATLAS	SPXEI0105787	56	418200	6829500	306	161	Unknown or Unrecorded	Ptilinopus regina	Rose-crowned Fruit-Dove	State Forest EIS Site	O		01/02/1992	F
Compartment ID 161				Total		3								
Forest ID 306				Total		6								
Management Area 51				Total		6								
District 12				Total		6								

--- End Of Report ---


Bookookoorara State Forest
compartments 163,164
Scale 1:71765
Grid: 1000m
Bookookoorara 163,164
Rose-crowned Fruit-Dove
Sooty Owl
Yellow-bellied Glider
Falsistrellus tasmaniensis
Scoteanax rueppellii
Negotiation Regions
NS Land Units
Need to target survey for all 5
using new Com Prot Survey Methods.

Nth. Rivers REGION Tenterfield MANAGEMENT AREA

STATE FOREST: Bookookoorara

SURVEY REPORT NO: Book.2/98 COMPARTMENT 163 &164

PART B. Flora and Threatened Fauna Features Traverse

Net Area: 208 hectares
Traverse Length: 8 kilometres (route of traverse on attached map)
Surveyed By: Robert Kooyman
Duration of Traverse: twenty (Person Hours)

1. Conservation Protocol Appendix 1 Flora Detections

Species Name	AMGNorth	AMGEast	Locality Description	Date	Observers Name	Number Observed	Count/ Estimate
NA							

Notes: No Sch.1 or 2 species located.

Location of detections shown on attached map - NA
Threatened Flora Individuals or Populations are marked in the field - NA

2. Conservation Protocol Threatened Fauna Features Detected

Feature Type	Marked in Field	Marked on Map
Glossy-black Cockatoo feed site	yes	yes
long nosed potoroo, diggings [possible]	no	yes

Notes:

Number of Data Sheets Attached: refer to field notes, Kooyman (3 pages).

Nth. Rivers REGION Tenterfield MANAGEMENT AREA

STATE FOREST: Bookookoorara

SURVEY REPORT NO: Book.2/98 COMPARTMENT 163 & 164

PART C: TARGETED FAUNA SURVEYS

1. Assessment of Surveys Required

Survey Type	Previous Surveys (Date)	Adequate	Survey Required (Y/N/IP[1])
Spotlight			YES
Nocturnal Call Playback[1]			YES
Hairtubes			NO, IP - CWR
Scat and Track			YES
Riparian Frog			YES
Non-riparian Frog			YES
Micro Bats			YES
Small Mammals			NO, IP
Diurnal Birds			YES
Reptiles			YES

[1]IP = implement prescription without survey

Notes: Refer to HRM prescription, habitat assessments, this survey and Tweedie - 4/97

2. Surveys Undertaken

Survey Type	Date Undertaken	Time Spent	Undertaken By
see appended sheets			

Location of surveys shown on attached maps.

Notes: Refer to 'surveys undertaken' sheets attached to this section of report.

Number of Data Sheets Attached: 20

NORTHERN RIVERS REGION WILDLIFE SURVEYS

Surveys Undertaken by Robert Kooyman. SF: BOOKOOKOONARA

	Survey Type	Location / Cpt	Date	Time	Undertaken By	Comments/ Significant Results
Site1.	Call Playback	163	3-2-98	11:00pm. →	KOOYMAN	Sooty Owl heard earlier (Ian Gl).
	SONAR	163/4	3-2-98	7:00pm. →	N.H. / R.K.	Faunist. trans. Mainlight. schr.
	check harptraps.	163	3-2-98	10:30pm.	RK	nil.
	LISTEN	163	3-2-98	after 11:00pm →	RK	No sch. species heard.
	FLORA SURVEYS (integrated)	163/4	4-2-98	8am - 5:30pm	RK	Species Lists etc. GBC.
	HRM Habitat Assess.	163/4	4-2-98.	integrated with above...	RK	Potaroo diggings. High & Medium Habitat.
						disturbed roosting Powerful owl.
	Fauna Survey/night.	163	4-2-98	7:30pm →	RK	Sooty owl heard & seen.
	(listen, walk, spotlight).					P.O. - calling.
Site..	Playback calls.	163	4-2-98	9:10pm →	RK	P.O. - calling.
	Driving Spotlight	163	4-2-98	9:40pm →	RK	(5) Greater Gliders.
	(and listening).					
	FLORA SURVEYS (integ)	163/4	5-2-98	9am - 7pm.	RK	GBC - (2).
	HRM HAB. ASS.	163/4	5-2-98	as above.	RK / RP	High / Med. Habitat HRM.
	Fauna - listen	163/4.	5-2-98	7:30pm →	RK	Sooty Owls (2) seen plus PO - calling.
Site3.	Call Playback	164	5-2-98	9:50pm →	RK	
Site4	Call Playback	164	5-2-98	10:30pm →	RK	
	Fauna / Listen.	164	5-2-98	11:00pm →	RK	
	Flora Survey (integ).	163/4	6-2-98	8am - 1pm.	RK	species lists etc.
	HRM Hab. Ass.	163	6-2-98	as above...	RK	Medium Habitat.
	: plus a number of short / opportunistic walking spotlight searches and listening points....					
	: Flora I.D. etc.					
	Diurnal bird (listening..	163/4	3/4/5/2/98	- early morning - evening.	RK	no target species heard or seen.

Location of surveys shown on attached maps.
Survey details in data sheets and reports.

NORTHERN RIVERS REGION WILDLIFE SURVEYS

urveys Undertaken

SF: BOOKDOKOORARA

Survey Type	Location / Cpt	Date	Time	Undertaken By	Comments/ Significant Results
HARP TRAP 1	164	3-2-98		K.H. + RH.	-
HARP TRAP 2	163	3-2-98		ND., NH. RP	-
HARP TRAP 3	163/164	3-2-98		ND. NH. RP	Falsistrellus tasmaniensis Miniopterus schreibersii
SONAR (A)	163/164	3-2-98		NH. RK	Falsistrellus tasmaniensis Miniopterus schreibersii
SPOTLIGHT (Driving)	163	3-2-98		ND, RP	Sooty Owl.
Spot Light (walkin	163	4-2-98		RP	2 Sooty owls 10 greater gliders
Library falls enabal	163	4-2-98		ND NH	Hand release Bats and record.
Walking Seal transe	163	5-2-98		ND	2 km.
H. trap 4	163	5-2-98		NDNHNH	
check traps	163	5-2-98		NDNH	
Sonar B	163	5-2-98		NHRP	Miniopterus Schreibersii
Sonar C	163	5-2-98		NHRP	-
Walking Spotlight transect	163	5-2-98		ND	2km Sooky Greater gliders.
fauna reporting	163	6-2-98		NDNH	travel casino.

Location of surveys shown on attached maps.

Survey details in data sheets and reports.

NORTHERN RIVERS REGION WILDLIFE SURVEYS

Surveys Undertaken

SF: Bookookoorara

Survey Type	Location / Cpt	Date	Time	Undertaken By	Comments/ Significant Results
Call Playback	164	3-2-98	9:15	R. Herklots	
Call Playback	164	3-2-98	10:15	R. Herklots	
Walking S/light	163/164	3-2-98	8:30	K Harvey	4. GG. 22.
Frog Transect	163/164	3-2-98	8:30	K. Harvey	1 Leaf-Tailed Gecko
Call Playback	164	4-2-98	8:15	R Herklots	repeats of the 2
Call Playback	164	4-2-98	9.30	R. Herklots	sites where call backs were played night before.
Call Playback	163	4-2-98	10.45	R. Herklots	
Walking S/light	164/163	4-2-98	8:15	K. Harvey.	10 G.G. 22k
					1 P.O call
Frog Survey	163	4-2-98	10:30 pm	K. Harvey.	
Scat Survey	164. Rd 164/1	5-2-98	8:30 am	Harvey/Herklots	1 predator scat 1.6k
Scat Survey	163	5-2-98	6:30 pm	Harvey/Herklots	
Frog Survey	163 Fern Tree Creek.	5-2-98	8:00pm	Harvey/Herklots.	
Call play back	163 site 4	5-2-98	8:30pm	Herklots/Harvey.	
Call playback	163 (site 3)	5-2-98	9.15pm	Harvey/Herklots	repeat of site 3
Walking S/light	163	5-2-98	9:15pm	Harvey/Herklots	Young Sooty owls
Frog Survey	163	5-2-98	10:30 pm	Harvey/Herklots	

Location of surveys shown on attached maps.
Survey details in data sheets and reports.

BOOKOOKOOLARA S.F. CMPTS: 163 – 164.

SURVEY EFFORT (DISTANCES IN KMS.)

COMPARTMENT	SPOTLIGHT SAMPLE WALKED	SPOTLIGHT SAMPLE DRIVEN	FLORA & FAUNA (random)	INTEGRATED KOALA TRANSECT.	BAT SAMPLE HARP	BAT SAMPLE ANABAT	FROG SAMPLE GENERAL	FROG SAMPLE TARGET SPP.	CALL PLAYBACK NOS. PER SITE	CALL PLAYBACK	SCATS Pred.	SCATS Herb.	DIURNAL BIRDS	SEASONALITY CONSTRAINTS YES / NO.
163	4·9kms.	1·3kms (x2)	4·5kms.	N.A.	✓	✓	✓	✓	4	3x1 1x2	✓	✓	✓	
164	2·2kms.		3·5kms.	N.A.	✓	✓	✓	✓	4	4x1	✓	✓	✓	

Nth.Rivers REGION Tenterfield MANAGEMENT AREA

STATE FOREST: Bookookoorara

SURVEY REPORT NO: Book.2/98 COMPARTMENT 163 & 164

PART D. SURVEY RESULTS

Prepared By: Robert Kooyman Date: 16/2/98

New Threatened Fauna Detections

Species Name	AMGNorth	AMGEast	Date	Observation Type	Observers Name	Survey/ Incidental

Notes: New Threatened Fauna detections are provided on appended sheets.

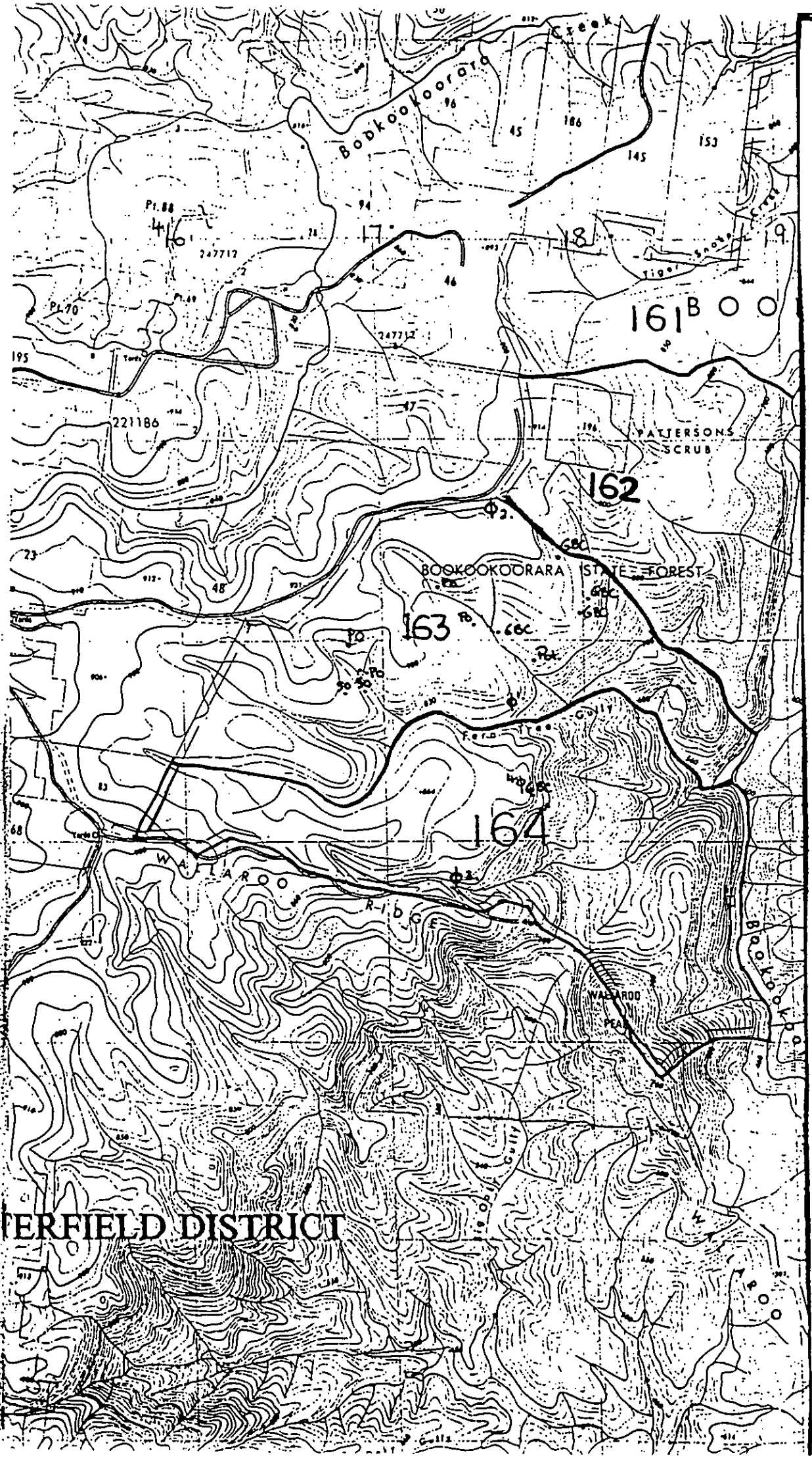
SUMMARY

The results of the database search, threatened flora and fauna traverse and spotlighting, nocturnal callback surveys result in the implementation of the following threatened flora and fauna prescriptions:

- CWR terrestial and arboreal
- HRM [Hastings River Mouse
- PO [Powerful Owl]
- SO [Sooty Owl]
- RF [Rainforest]
- GBC [Glossy-Black Cockatoo]

Attachments:

1. **HRM mapping and results of habitat assessments**
2. **Floristic descriptions**
3. **Field notes and data sheets**
4. **Detailed report, site descriptions, habitat assessments, and methodology.**

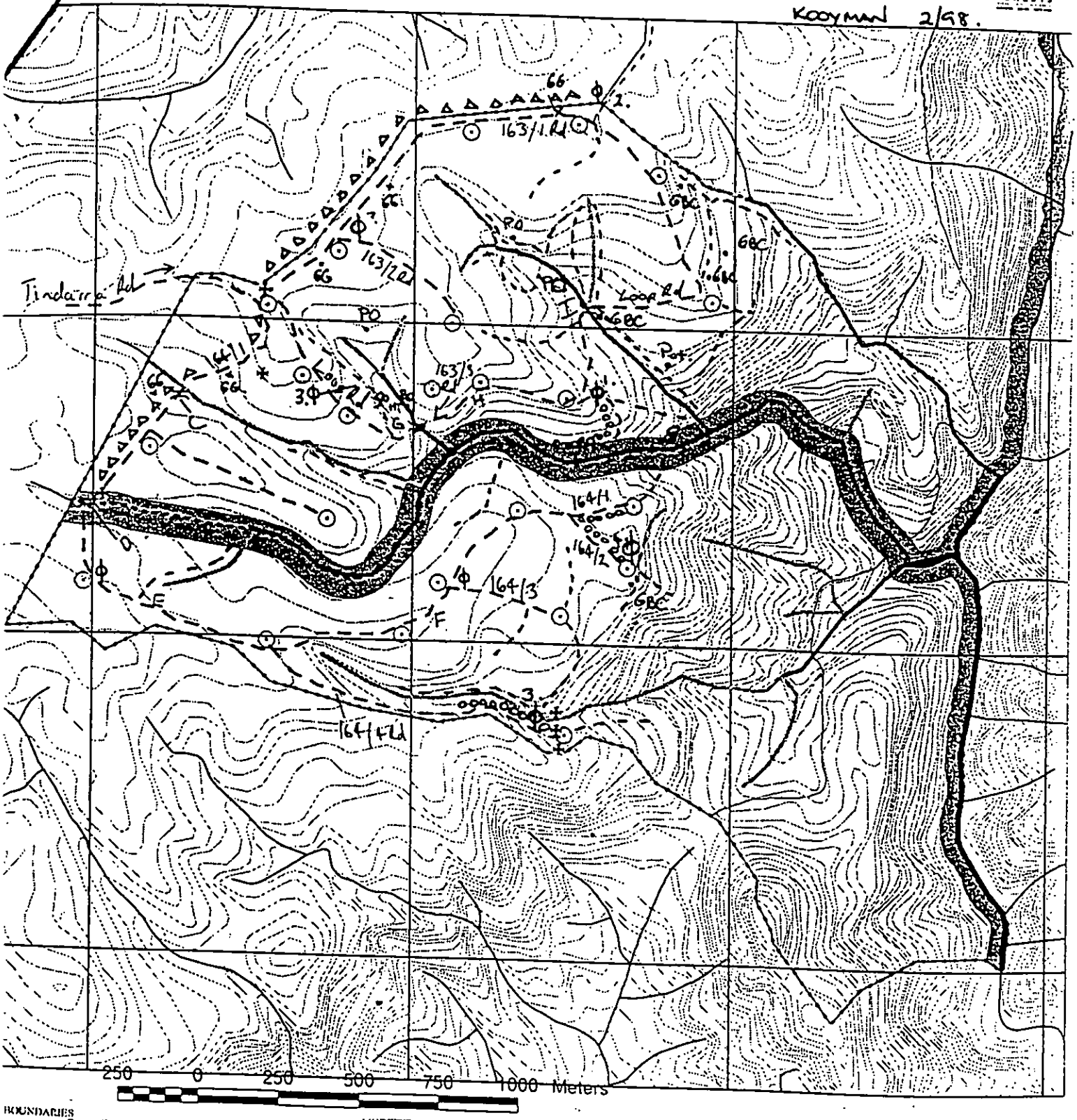


TERFIELD DISTRICT

NORTHERN REGION - GLEN INNES
DISTRICT
HARVEST PLAN OPERATIONAL MAP
COMPARTMENT 163/164
BOOKOOKOORARA STATE FOREST
LISTON MAP SHEET
HARVEST PLAN NUMBER 97/02TEN
SCALE 1:17 000

FORESTS

Kooyman 2/98.



BOUNDARIES
State Forest Boundary
Compartment Boundaries
ROADS (Proposed in Red)
Natural Surface
Sealed or Gravelled
Four wheel drive
NORMAL PRESCRIPTIONS
Harvestable Area
MODIFIED PRESCRIPTIONS
Flora and Fauna Protect

MODIFIED PRESCRIPTIONS
Slopes likely over 30 degrees
Deferred Forest Type 161
Slopes >30 degrees
HRM Buffer
Historical Site
Connection Corridor
Non Developed Forest

DUMP SITES OR LANDINGS
Temporary Dry
Temporary Wet
WATERCOURSES & DRAINAGE
External Drainage
1st order stream (10m buffer)
2nd order streams (20m buffer)
3rd order streams (40m buffer)
Approved Crossings
Soil Sample Sites

MN

PO = Powerful Owl
SO = Sooty Owl
SBC = Glossy Black Cockatoo.
Pot = (possible) Potoroo - diggings.
---------- Flora & Fauna Traverse.
ϕ - Playback and Listening Site.
ΔΔΔΔ - Driving Spotlight transect.
ooooo - Walking Spotlight

Casino District
Reporting of Scheduled - Fauna Sightings

BOOKOOKOORAEA SF

OBSERVER: Robert Kooyman.

February, 1998.

Date	State Forest	Cpt No.	Type of Inspection (*)	Species of Fauna Sighted	Description of Fauna Sighted - eg adult, juvenile, breeding female, call only etc	AMG Reference	General Comments (eg at log dump, road side, Forest Type etc)
4/2	BOOK	163	11	GBC	♀♂ - 2 birds.	417575	6828040
Possible-ably 4/2	BOOK.	163	11	Potoroo (long-nosed)	Possible dugings.	417730	6827900
4/2	BOOK	163	1	Sooty Owl	calls / seen.	416500	6827740
4/2	BOOK.	163	11	Powerful Owl.	seen / disturbed during daytime.	417450	6828075
4/2	BOOK.	163	1	Powerful Owl.	calls.	417280	6828275.
5/2	BOOK.	163	11	GBC	seen / heard.	417980	6828140.
5/2	BOOK	163	1	Sooty owls(2)	heard / seen.	416900	6827750
5/2	BOOK.	163	1	Powerful Owl.	calls - heard.	416810	6827990
6/2	BOOK.	163	11	GBC (Feathers)	- heard & seen.	418020	6828200
6/2	BOOK.	163	11	GBC	heard / seen.	417880	6828400
6/2	BOOK.	164	11	GBC	heard / seen.	417700	6827225.

(*) Type of Inspection

1. Night Time Surveys
2. Follow-up Clearance Inspection
3. Rejects Inspection
4. Regeneration inspection
5. Road Line. Dump Sites Inspection
6. Timber Assessment
7. Marking Boundaries. Filter Strips or Conservation Areas
8. Reports from Log Faller
9. Head Disposal Burning
10. Harvesting Planning
11. Other Flora & Fauna

N. Douglas
N. Harvey.
R. Prado

Casino District
Reporting of Schedule 12 Fauna Sightings

Date	State Forest	Cpt No.	Type of Inspection (*)	Species of Fauna Sighted	Description of Fauna Sighted - eg adult, juvenile, breeding female, call only etc	AMG Reference	General Comments (eg at log dump, road side, Forest Type etc)
3.2.98	Booke	163/164	Anabal	Falsistrellus	tasmaniensis	4.17.600	68.27.600
"	"	"	"	"	"	"	"
"	"	"	"	Miniopterus	Schreiberrii	4.17.600	68.27.600
"	"	"	"	"	"	"	"
3-2-98	"	163/4	"	Falsistrellus	tasmaniensis	4.17.350	68 27.650 x 3
"	"	"	"	"	"	"	" x 2
"	"	"	"	Miniopterus	Schreibersii	"	"
3.2.98	"	"	SpotLighting	Sooty owl	Heard calling	[redacted] 416850	6827700
4-2-98	"	163	"	Powerful Owl	"	4.17.200	68.28.200
"	"	"	"	Greater G.	SEEN	4.17.400	68.27.700
"	"	"	"	Sooty Owl	"	4.17.350	68.27.700
"	"	"	"	Greater G.	"	4.17.340	68.27.700
"	"	"	"	Greater G.	"	4.17.300	68.27.840
"	"	"	"	Greater Glider	" (x2)	4.17.800	68.27.760
"	"	"	"	Greater Glider	Seen	4.16.940	68.27.700
"	"	"	"	Greater Glider	"	4.16.740	68.27.760
"	"	"	~~Hearing~~	Sooty Owl	Heard	4.16 700	68.27.800
"	"	"	"	Greater Glider	Seen	4.16.700	68.27.860
"	"	"	"	G.G.	"	4.16.600	68.27.860
"	"	"	"	G G.	"	4.16.680	68.27.940
"	"	164	Captured N. Tree	Falsistrellus tasmaniensis		4.16.000	68.27.420
5-2-98	"	163	Sonar ~~Acquisition~~	Miniopterus schreibersii		4.17.550	68.28.050
5.2.98	"	163	SpotLighting	Greater glider	Sighted	4.17.900	68.28.100
"	"	"	"	Greater glider x2	Sighted	4.17.600	68.29.700
"	"	"	"	Sooty owl	Heard calling	4.17.850	68.28.600
5.2.98	"	163	Walking transect	Glossy Black	Sighted	4.17.650	68.27.900

(*) Type of Inspection

1. Night Time Surveys
2. Follow-up Clearance Inspection
3. Rejects Inspection
4. Regeneration Inspection
5. Road Line, Dump Sites Inspection
6. Timber Assessment
7. Marking Boundaries, Filter Strips or Conservation Areas
8. Reports from Log Faller
9. Head Disposal Burning
10. Harvesting Planning
11. Other

Bookookoorara State Forest (Compartments 163 / 164)

SONAR RECORDINGS

Site Name	Cpt	Species Recorded	Count
A	163/164	*Prob. Falsistrellus tasmaniensis*	2
		Prob. Scotorepens orion	14
		Prob. Vespadelus darlingtoni	3
		Prob. Vespadelus pumilus	1
		Prob. Miniopterus schreibersii	2
B	163	*Prob. Miniopterus schreibersii*	1
		Prob. Scotorepens orion	7
C	164	*Prob. Scotorepens orion*	3
		Total	33

Sonar Recording Summary

Bookookoorara State Forest (Compartments 163/164)

HARP TRAP CAPTURES

Site Number	Cpt	Species Recorded	Count
1	164	*Vespadelus pumilus*	2
		Nyctophilus geoffroyi	2
		Falsistrellus tasmaniensis	1
2	163	*Nil*	
3	163/164	*Falsistrllus tasmaniensis*	5
		Vespadelus sp.	5
		Nyctophilus geoffroyi	1
		Nyctophilus gouldi	2
		Miniopterus schreibersii	1
4	163	*Chalinolobus sp.*	1
		Total	**20**

Casino District
Reporting of Schedule 12 Fauna Sightings

Date 198	State Forest ↓	Cpt No.	Type of Inspection (*)	Species of Fauna Sighted	Description of Fauna Sighted - eg adult, juvenile, breeding female, call only etc	AMG Reference	General Comments (eg at log dump, road side, Forest Type etc)
3.2	Richmond Para	163	(1)	GG		416400	6827850
3.2	"	164	(1)	GG		416000	6827420
3.2		164	(1)	GG		416420	6826980
3.2		164	(1)	GG		416850	6827040
4.2		164	(1)	GG		417180	6827250
4.2		164	1	GG		417100	6827120
4.2		164	1	PO	Heard from here	416670	6826970
4.2		164	1	GG		416670	6826970
4.2		164	1	GG		416550	6826970
4.2		164	1	GG		416450	6826980
4.2		163	1	GG	2	415980	6827350
			1			[redacted]	
4.2		163	1	GG	2	416150	6827600
4.2		163	1	GG		416300	6827780
4.2		163	1	GBG	2	417620	6827760
5.2		164	1	GBC	2	417870	6827620
5.2				[redacted]			
5.2		163	1	SOwl	2 yng chicks	416900	6828450
5.2		163	1	GG		416300	6828140

(*) Type of Inspection

1. Night Time Surveys
2. Follow-up Clearance Inspection
3. Rejects Inspection
4. Regeneration Inspection
5. Road Line, Dump Sites Inspection
6. Timber Assessment
7. Marking Boundaries, Filter Strips or Conservation Areas
8. Reports from Log Faller
9. Head Disposal Burning
10. Harvesting Planning
11. Other

Sent to: Dr. Barbara Triggs
'DEAD FINISH'
GENOA, VIC 3891

From: State Forests
Regional Office, Casino
PO BOX 688
NSW 2470

Date Sent: 6/02/98
Invoice No: 461 - 157754
State Forest: Bookookoorara & Ewingar

REF. No.	CPT	TRANSECT No.	DISTANCE (m)	DEFINITE	PROBABLE	COMMENTS
1	163	-	-			Macropod scat
2	164	-	-			Predator scat?
3	163	-	-			Macropod scat
4	679	-	-			Ewingar S.F. - steep rocky area
						- macropod scat

AWAITING RESULTS 17/2/98

Scat Analysis Sheet

NORTHERN RIVERS REGION - TENTERFIELD MANAGEMENT AREA

HARVEST PLAN OPERATIONAL MAP

HRM - HABITAT MAPPING.

COMPARTMENT 163/164

BOOKOOKOORARA STATE FOREST

LISTON MAP SHEET

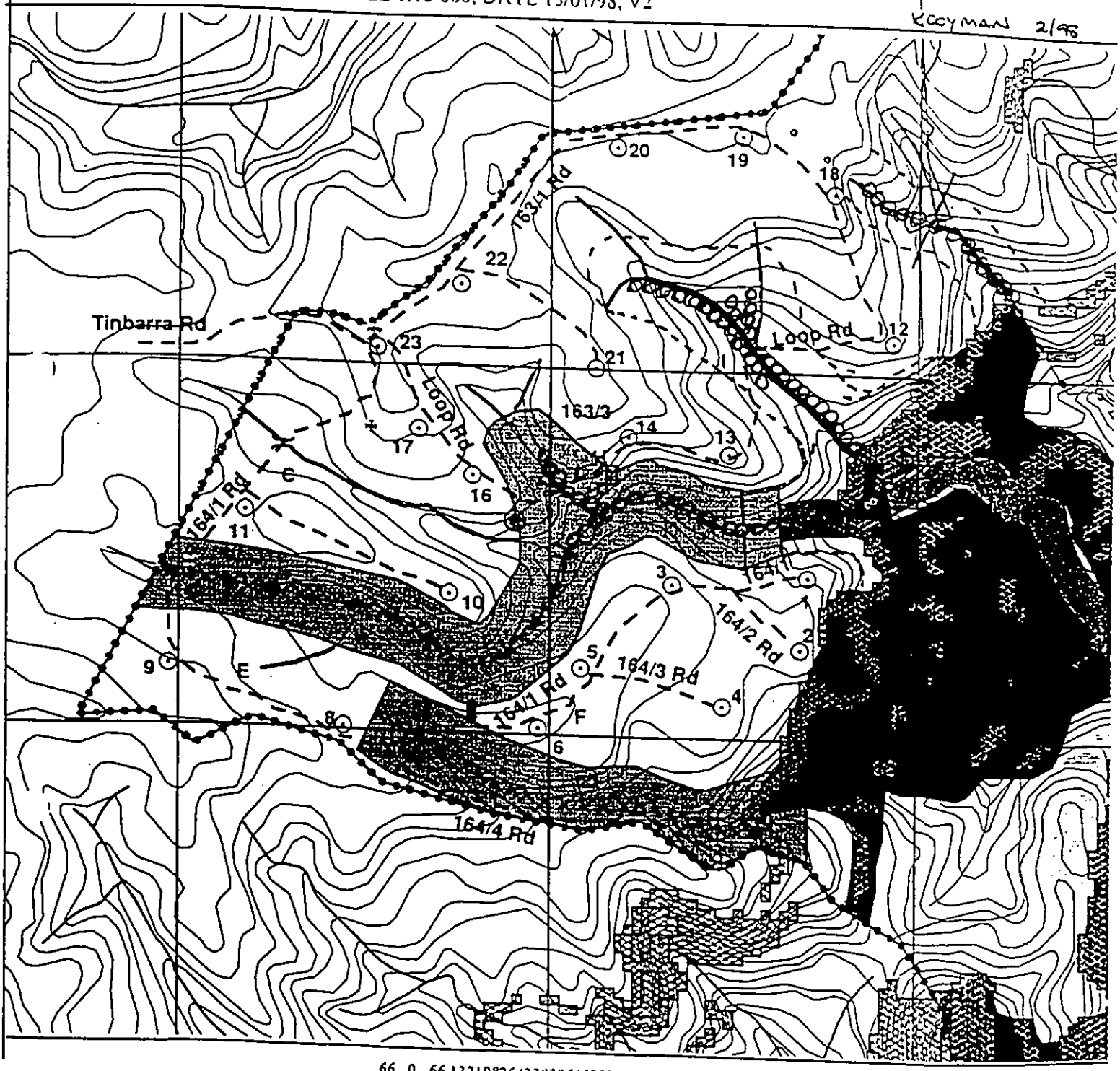
HARVEST PLAN NUMBER 97/02TEN

SCALE 1:15 000, DATE 15/01/98, V2

MEDIUM [illegible]
HABITAT [illegible]
TO HERE [illegible]

FORESTS

KCOYMAN 2/98



66 0 66 132 198 264 330 396 462 528 594 660 Meters

BOUNDARIES
- State Forest Boundary
- Compartment Boundaries

ROADS
- Natural Surface
- Sealed or Gravelled
- Four wheel drive

NORMAL PRESCRIPTIONS
- Harvestable Area

NON-HARVEST AREAS
- Slopes likely over 30 degrees
- Slopes >30 degrees
- HRM Buffer (100m wide)
- Historical Site
- Connection Corridor (40m)
- Rainforest
- Flora/Fauna Protection (100m wide)

WATERCOURSES & DRAINAGE
- External Drainage
- 1st order stream (10m buffer)
- 2nd order streams (20m buffer)
- 3rd order streams (40m buffer)
- Approved Crossings

DUMP SITES OR FEATURES
- Temporary Dry
- Temporary Wet
- Soil Sample Sites

HRM HABITAT - XXXXX - HIGH = 100m + 20m

OOOOOOO - MEDIUM = 100m + 10m

NB: additional areas in north of C163.

FLORA and FAUNA SURVEY of COMPARTMENTS 163 & 164, BOOKOOKOORARA STATE FOREST.

-prepared by Robert M. Kooyman, [FA- flora and fauna, Ecology] Northern Rivers Region. 2/98.

Results of field surveys are provided as field diary notes, data sheets, and species lists, with scheduled and target species records provided as AMG co-ordinants. Maps provide details of sample sites, playback locations, harp trap locations, sonar detection sites, species records and distributions, and extent and location of the various transects and traverses undertaken.

Introduction:

Flora and Fauna Surveys were conducted by Kooyman, [3/2/98, to 6/2/98], with Harvey and Douglas, et al [SFNSW] assisting with the integrated transect surveys [fauna only], and the general and target species fauna surveys, over the same period. As part of the core survey team Robyn Herklots, and Nicole Harvey assisted with surveys of all fauna groups. [refer to 'surveys undertaken' lists appended].

Results of the detailed analysis of recorded microchiropteran bat calls, [and capture records for harp trapping], conducted by Noel Douglas and Nicole Harvey are appended to this report, as are the results of Frog transects and habitat searches conducted by Kevin Harvey.

SFO Robert Predo assisted the survey team as part of ongoing training in fauna survey.

General Description of Survey Area:

The two compartments cover an area of [approx] 488 hectares, with the proposed net loggable area adjusted to [approx] 208 hectares, after deletion of mapped Old-growth, steep areas, standard riparian and forest type exclusions, and the Hastings River Mouse habitat exclusions and buffers.

Geology appears to be dominated by two main elements: the variously eroded coarse granites in the northern and eastern part of the survey area, and the finer granitic sediments from the main range in the central portion of cmpt.163, and the south- eastern portion of cmpt.164. The coarser [granitic] soils are siliceous and of shallow to moderate depth, with varying amounts of exposed rock on the steeper slopes. Soils vary from grey to red-brown, sandy to clay loams, with areas of deeper red earth [possible residual granidiorites - basic hornfels, indicating some tertiary volcanic activity] in the upper reaches of a tributary of Fern Tree Gully Creek in the centre of cmpt.163, and in the east of cmpt.164. Altitudinal range varies from 920m. to 460m.[approx. 920-800m in the harvestable area] Slope classes vary from almost flat to moderate in the harvestable area, with steeper slopes in the north and east of the compartments.

The vegetation of the area is only generally illustrated by the forest type map [SFNSW], which underestimates the area of Ft.53 [riparian], and fails to record the presence of the rainforest types [Ft.23/26, 26] in cmpt.163. **Species lists for each forest type have been compiled and are appended to this report as field notes.** These provide an indicative sample of the various habitats, floristic alliances, forest types, transitional boundaries and overlaps.

The sequence of forest types largely follows the altitudinal, topographical, and soil gradients, and variations, with most of the upslope areas dominated by Ft.163, New England Blackbutt [Eucalyptus andrewsii subsp. campanulata], with the previously deferred Ft.161 [Eucalyptus amplifolia var. amplifolia] dominating [and co-dominating] relatively extensive areas of the mid and lower slopes. The steeper eastern escarpment edges and slopes are dominated by Ft.62 [Grey-gum, Stringybark], with smaller areas of Ft.122 [New England Stringybark], and Ft.153 [Silvertop stringy - Messmate].
Rainforest, [Ft 23/26, 26], is restricted to several lower slope, gully head, and creek-line areas in compartment 163, and extends upslope in association with Ft.53 [Lophostemon confertus], and Ft.161 [E.amplifolia var. amplifolia], in the moister areas of that compartment, [see map appended]. Elsewhere rainforest is restricted to small riparian occurrences where rocky areas provide protection from fire, [in both compartments]. Species diversity is low in these areas, with Streblus brunonianus, Trochocarpa laurina, and Syzygium australe dominating the rocky creek area with Lophostemon confertus and Eucalyptus amplifolia var. amplifolia.
Of particular interest is the occurrence of a small but floristically rich area of high altitude subtropical rainforest [upland cool notophyll vine forest] in cmpt.163, [see map appended]. The forest type is reminiscent of Floyds [Ficus - Dendrocnide] Alliance, suballiance 14/15, [Ficus - Dysoxylum/Toona - Dendrocnide], with this area having Citronella moorei, Syzygium crebrinerve, Ficus macrophylla, Dendrocnide excelsa, Elaeocarpus obovatus, Litsea reticulata, Emmenosperma alphitinioides, and Dysoxylum fraseranum, with some drier vine forest and riparian species such as Streblus brunonianus, Alectryon subcinereus, Cupaniopsis foveolata, Cassine australe, Elaeocarpus obovatus, Syzygium australe, [see species list appended].

Flora survey methodology: Plant species recorded from each forest type [and habitat] were listed, and frequency of occurrence and stratum [canopy, sub-canopy] indicated. Walked traverses were mapped . [See field notes attached.]
Particular attention was directed to locating and recording the distribution and numbers of ROTAP plant species [Briggs and Leigh, 1995 Revised], and Schedules 1&2 [NSW Threatened Species Act, 1995] plant [and animal] species.

Fauna survey methodology: Includes application of the pre-logging / roading survey design forming part of the Threatened Species Protocol [3/6/97], incidental records collected during flora survey and habitat assessments, as well as the results of integrated koala transect surveys, and includes -:
1. walked spotlight transects, one kilometre long [minimum], 100 watt light, [with dimmers fitted].
minimum 10 minute listen at start and finish.
2. call playback for target species. Nocturnal -: powerful owl, masked owl, sooty owl, yellow bellied glider, koala.
Diurnal -: Rufous Scrub-bird, Olive Whistler.
Calls are started after a substantial listening period and played briefly at low volume. This is done to avoid disrupting localised activity of the target or other species which may respond, [or be disturbed], and to maximise knowledge of actual habitat use, rather than

gaining responses from further afield, [at least initially]. Louder playback calls are then initiated if no clear response is heard.
3. transect and incidental scat collection and identification. - results of predator, and [remaining unidentified] non-predator scat analysis provided by Barbara Triggs. - **not yet available.**
4. track identification on sandy or soft sections of roads, tracks and creek areas.
5. extended listening time for calls, [variable sample length, and dependent on conditions], targetting all playback target species listed above [plus Bush Thick-knee], and including seasonally variable species such as Wompoo Fruit-dove.
6. harp trapping and sonar detection for bat species.
7. frog surveys - creek transects, habitat searches, and call recording.
8. search for all other features listed in the Threatened Species Protocol Survey Design while applying the above flora and fauna surveys. [this will be supplemented by the SFO while marking out and supervising harvesting operations].
9. hair-tube sampling - no hair-tube sampling was undertaken on this survey, thus potentially under sampling for a number of CWR vertebrate species, eg. tiger quoll, rufous bettong, long nosed potoroo. Conservation protocols should be applied for these species, to ameliorate potential impacts of proposed operations
10. small mammal trapping - was conducted on this occasion only as a non targeted training component. The target species here is HRM which requires a large trap effort for compliance to survey design in HRM Recovery Plan and SFNSW has decided to substitute habitat assessment and application of buffers on mapped / described habitat, [see Tweedie, 4/97, and Kooyman, this report], in lieu of a large trapping effort..
11. one of us, [Kooyman], camps out in the survey area every night, moving from site to site, [habitat to habitat] during the course of the survey. This provides a substantial increase in; listening time, incidental and opportunistic scheduled and non-scheduled species records, diurnal and nocturnal survey effort, and overall survey time/effort.

Rare, Threatened, or Significant Plants recorded in Bookookoorara SF, compartments 163 and 164.

NONE LOCATED.

Results of Fauna Surveys: including target species surveys are -:

1. Glossy Black Cockatoo [Calyptorhynchus lathami] - sch.2, this species was located in both the surveyed compartments [163/4] by calls and sightings. Suitable habitat includes much of the steeper slopes and escarpment country where Allocasuarina torulosa occurs at higher densities. This species is likely to be present in all forest types and associations where Allocasuarina torulosa is present. One site with evidence of Glossy-black cockatoo feeding activity was located. No nest hollows were located. Application of the Conservation Protocol and retention of known and potential feed trees and nest sites, located during this survey and / or the mark-up phase, should assist this species.

2. Square tailed Kite [Lophoictinia isura] - sch.2, not recorded on this survey, but is likely to use the larger river valleys, flood plains, and woodlands of this area. [Debus et al 1993, Gilmore and Parnaby 1994]

3. Red Goshawk [Erythrotriorchis radiatus] - sch.1, not recorded on this survey, but there are records for this species from the Clarence and Richmond River valleys and associated forests. This species is thought to favour the higher nutrient / higher productivity tall open forests and riparian vegetation of the larger river valleys, where prey species are abundant. However, it extends up to 1000 metres in altitude in suitable forest. [Debus,1991, 1993]

4. Bush Thick-knee [Burhinus grallarius] - sch.1, not seen or heard on this survey. Good to excellent habitat occurs in the northern part of the survey area.
Searches for this species were incorporated into the general flora traverses. Listening samples were undertaken at a number of sites in these compartments, [at dusk and during the night], and one of us [Kooyman] camped in suitable habitat during the survey to extend available listening time.

5. Regent Honey-eater [Xanthomyza phrygia]- sch.1, not recorded on this survey. Nectar resources were limited at the time of survey to Eucalyptus propinqua. This species optimum habitat is in the eucalypt dominated woodlands and dry sclerophyll forests with large, mature trees which produce high nectar flows. [alt. Sea level to 1400m] Principally a winter visitor with recent observations indicating that it may be present in Spring to early Summer. [Webster and Menkhorst 1992]

6. Swift Parrot [Lathamus discolor]- sch.2, not recorded on this survey. Occurs from near sea level to 1000m in the Tenterfield area, where it seeks the nectar of [mature, larger size class, winter flowering] Eucalyptus species. The nectar resource was limited to just a few species during the survey time. Principally a winter visitor to this area [March to November].

7. Powerful owl [Ninox strenua] - sch.2, this species was recorded calling on three occasions during this survey, in cmpt.163, in close proximity to, or in, the moist forest types [Ft.23/26, 161, 163, 53]. Playback and listening was conducted for this species over the whole of the survey period, with one record from a playback response in cmpt.163, [playback site cmpt.164] and the others from unprompted calling in the moist forest; areas in cmpt.163, [see maps, AMG]

8. Masked owl [Tyto novaehollandiae] - sch.2, not recorded during this survey. Suitable habitat for this species occurs throughout the survey area in the drier forest types with a more open understorey, [the grassy woodland areas]. The species is likely to be present in the general survey area.

9. Sooty owl [Tyto tenebricosa] - sch.2.- recorded on this survey in Cmpt.163, and along the boundary creek [Fern Gully] with cmpt.164, [see records and mapping for details].

The habitat in this area is excellent with records on this survey indicating roosting / nesting activity in cmpt.163, with the home-range based on these compartments. Records were from listening and one playback response.
The large creek [Fern Gully] and tributaries draining these compartments, and the associated moist, and dry forest types, provide excellent habitat for Sooty Owl.
Previously recorded from Bookookoorara SF [AMG 418200 6829500].

10. Brush-tailed Rock Wallaby [Petrogale penicellata] - sch.2. Potential habitat for this species was located in the east of Cmpts.163/4, [along the eastern escarpment], where there are areas of steep rocky terrain in the steep slope exclusion area. The species was not observed during the course of the survey, and no scats collected could be attributed to this species. It is known from areas nearby, and the Boonoo Boonoo NP.

11. Tiger Quoll [Dasyurus maculatus] - sch.2, suitable habitat occurs in the area, and the species has been sighted by nearby landowners [pers.comm.]. No sightings or other records on this survey. Searches of rocky areas suitable for latrine sites or den areas were integrated into the general flora and fauna surveys, and target species surveys. None were located, however these searches will be supplemented by SFO habitat and 'fauna features' searches during mark up stage of operations. Given the known occurrence of this species in the general area, the SFO should be aware of the possible presence of latrine and den sites in the area.

12. Yellow bellied Glider [Petaurus australis] - sch.2, not recorded on this survey. Absence at the time of survey does not indicate absence of this species from the survey area all year round as yellow-bellied gliders are very mobile and can cover large areas, depending on the availability of habitat and feeding resources. SFO should look for V-notch and other incisions during mark-up and supervision stages of operations, particularily in the round leaved gum [Ft.161], and grey gum [Ft.62], associations.
Previously recorded from Bookookoorara SF [AMG 418200 6829500].

13. Squirrel Glider [Petaurus norfolcensis] - sch.2. Not recorded on this survey. No response to playback calls. Habitat in the drier forest types, Ft 62,&122, and the moist Ft161, looks fair to good [with available resources of Acacia and Eucalyptus spp]. This species is known from the nearby Boonoo SF, [TMA - EIS].

14. Koala [Phascolarctos cinereus] - sch.2, - Results of target surveys indicate no evidence of scats or other indications of this species were located during the survey, either during random traverses, along transect lines, or as a result of other target species surveys. Habitat appears fair to good with a number of primary and secondary browse species such as -: Eucalyptus propinqua, E.eugenioides, E.saligna. The species is known from nearby forest areas, for example Gilgurry SF.

15. Rufous Bettong [Aepyprymnus rufescens] - sch.2. Not recorded during this survey. Generally good to excellent habitat throughout the drier, more open part of the survey area in cmpts.163/4. A range of non predator scats were collected. **Scat analysis results**

are not yet available, [only those not identified in the field by comparison to labelled scat specimens provided by Barbara Triggs, or the scat keys in her book, have been sent on for identification].

16. Brush tailed Phascogale [Phascogale tapoatofa] - not recorded on this survey. Known from the TMA by records from Girard SF and near the town of Drake. Dry forest habitat within the survey area is well devloped along the escarpment ridges and steep rocky slopes, but lacks ironbark species [and other dry forest species] normally associated with this species habitat. However this species has also been recorded from wet sclerophyll forest, and temperate rainforest [Harden 1977, Dickman and McKechnie 1985].

17. Long -nosed Potoroo [Potorous tridactylus] - sch.2,- possibly recorded on this survey in cmpt.163, from diggings with part eaten fungal bodies. Not previously recorded for the area but habitat appears good to excellent.

18. Parma Wallaby [Macropus parma] - sch.2, not recorded on this survey. Known to use dry forest grazing close to gully-lines or gully-heads with thicker, moist forest and rainforest vegetation in similar areas. The moist forest component may not be large enough in this area to support this species with current feral animal predation levels, [fox]. The survey area is in the north-western extreme of the possible range of this species.

19. Red-legged Pademelon [Thylogale stigmatica] - sch.2. Not recorded on this survey. The species would be at its western distributional limits in this area. Excellent habitat in the moist forest gullies and adjoining forest types. The rainforest and gully areas were relatively under sampled by the walking spotlight transects, contributing to a paucity of records for this species[and other CWR moist forest dependent species in the survey area].

20. Microchiropteran Bats - [Survey Protocol requires a minimum of two harp traps for two nights per. 200ha in suitable habitat]. Anabat Sonar sites were sampled to provide a more comprehensive and verifiable sample of the microchiropteran bats of the study area. Overall, a three night sample was conducted, with records for eight species, including two[2], schedule 2 species. [see maps and data sheets]

Miniopterus schreibersii - sch.2, harp trap records, and [Anabat 5] sonar records

Falsistrellus tasmaniensis - sch.2, harp trap and sonar records

Chalinolobus sp. - sonar records
Scotorepens orion - sonar records
Vespadelus pumilus - sonar record
Vespadelus darlingtoni - sonar record
Nyctophilus gouldi - harp-trap captures

Nyctophilus geoffreyi - harp-trap
Bat work was done by Noel Douglas and Nicole Harvey [assisted by Harvey,K., Herklots,R., and Kooyman]. Sonar calls were recorded directly onto laptop computer and later analysed and then compared to library calls by Noel Douglas and Nicole Harvey. Sonar calls are ascribed file names and are retained for future reference or verification. A comprehensive library of calls for the NE of NSW is not yet available, limiting our ability in many cases to ascribe species names to recorded calls. We are currently expanding our call library and this situation should steadily improve to the limits of the technology,[and with all survey calls retained for future review.]
No caves were detected. Any such sites located during operations should be buffered from proposed operations to ameliorate potential impacts on potential roost / maternity / torpor sites.
Harp trapping for Kerivoula papuensis and Myotis adversus in suitable habitat, [flyways and larger pools along creeks], resulted in no captures for Kerivoula papuensis, and no captures of Myotis adversus.

21. Frog species - Transect and habitat based surveys were conducted at a number of sites, and habitat assessments and searches were integrated into the other surveys. Results are appended and indicate nine frog species were recorded in the survey area. Limnodynastes peroni, L. Dumerillii, Litoria fallax, L. revelata, L. leseuri, L. peroni, L. phyllochroa, Mixophyes fasciolatus, Pseudophryne coracea.

Philoria sp. 2 - sch.2. Based on habitat assessments conducted by Harvey, and Kooyman, this survey, it seems the potential habitat is limited, however there are several soak areas, and rainforest gullies [of limited extent] which could provide suitable habitat. Habitat searches were not completed, but SFO should locate and buffer any other suitable habitat areas [in particular wet areas and soaks in moist forest types] during mark-up and supervision stages of the proposed operations. Rainforest and riparian buffers and exclusions should also assist to secure this species [possible] habitat.
Mixophyes iteratus- sch.2, not located this survey, [generally occurs at lower altitudes]. Survey area lacks critical habitat components, eg larger mountain streams, and moist forest areas.
Mixophyes balbus - sch.2, not located this survey. Survey area lacks critical habitat components, eg larger mountain streams, and moist forest areas.
Assa darlingtoni - sch.2, not located this survey. Habitat seems suitable, but of very limited extent, in the moist forest areas of cmpt.163. Not recorded in TMA but known from nearby in Ewingar SF.
Litoria subglandulosa - sch2, not located this survey. Stream flow in the survey area is intermittent, and there are few soak areas, perhaps explaining the failure to detect this, and other, species.

22. Stephen's Banded Snake [Hoplocephalus stephensii] - sch.2, not recorded this survey but excellent habitat in the survey area, particularily the moist forest areas of cmpt.163. Known from Girraween / Stanthorpe area nearby.

23. White Crowned Snake [Cacophis harrietae] - sch.2, not recorded on this survey. Known from near Stanthorpe. Habitat appears suitable.

24. Rufous Scrub Bird [Atrichornis rufescens] - sch.2, not recorded this survey. Very limited areas of suitable habitat at altitudes in excess of 800m occurs in these compartments. These areas have been sampled by listening in potential habitat, and by habitat assessments [Kooyman, this survey].

25. Olive Whistler [Pachycephala olivacea] sch.2 - not recorded this survey. Area of suitable higher altitude [= >800m asl.] moist forest habitat coincides with that of the rufous scrub-bird, listening for this species was included at the same time.

26. Wompoo Fruit-dove [Ptilinopus magnificus] sch2 - not recorded this survey. Small area of high quality rainforest habitat in cmpt.163, rich in fruiting tree species utilised by this species, eg Syzygium crebrinerve, Litsea reticulata, Ficus macrophylla, etc.

27. Rose-crowned Fruit-dove [Ptilinopus regina] sch2 - not recorded this survey. Small area of high quality rainforest habitat in cmpt.163, rich in fruiting tree species utilised by this species, eg Syzygium crebrinerve, Litsea reticulata, etc. Previously recorded from Bookookoorara SF [AMG 418200 6829500].

28. Hastings River Mouse [Pseudomys oralis] sch.1 - Following on from initial HRM habitat assessments, [see report by Tweedie, 4/97], it was decided by SFNSW to forego small mammal trapping in favour of applying protective buffers [100 metres] to the potential high and medium quality habitat areas in these compartments. Part of the 'brief' for this survey effort in cmpts.163/4 was to define the extent of the high and moderate habitat [for HRM] and to develop a practical protective prescription in response to the recognition of such habitat in these compartments. The criteria for assessment was based on the draft HRM Recovery Plan [7/97, ammended 9/97] habitat ranking, and requires the following factors to be considered -:

- Determine whether or not the survey area falls within the predicted range of this species.
- Classify and map the area according to broad vegetation cover categories, eg. Grassy woodland, Heath, Rainforest, Wet Sclerophyll forest, etc.
- Inspect the site and conduct micro-habitat surveys, based on recognition of the following features -:

a. open woodland, wet or dry sclerophyll forests with a grass, sedge, or heath understorey, [or dispersed patches of these elements, there in], should be delineated for microhabitat survey.
b. identify areas with exposed rock, boulder fields, or scree slopes in, or close to the survey area.
c. identify areas which have 'fire-barriers' close to potential habitat areas, such as the rock and scree areas above, and shielding moist forest, or creek lines.

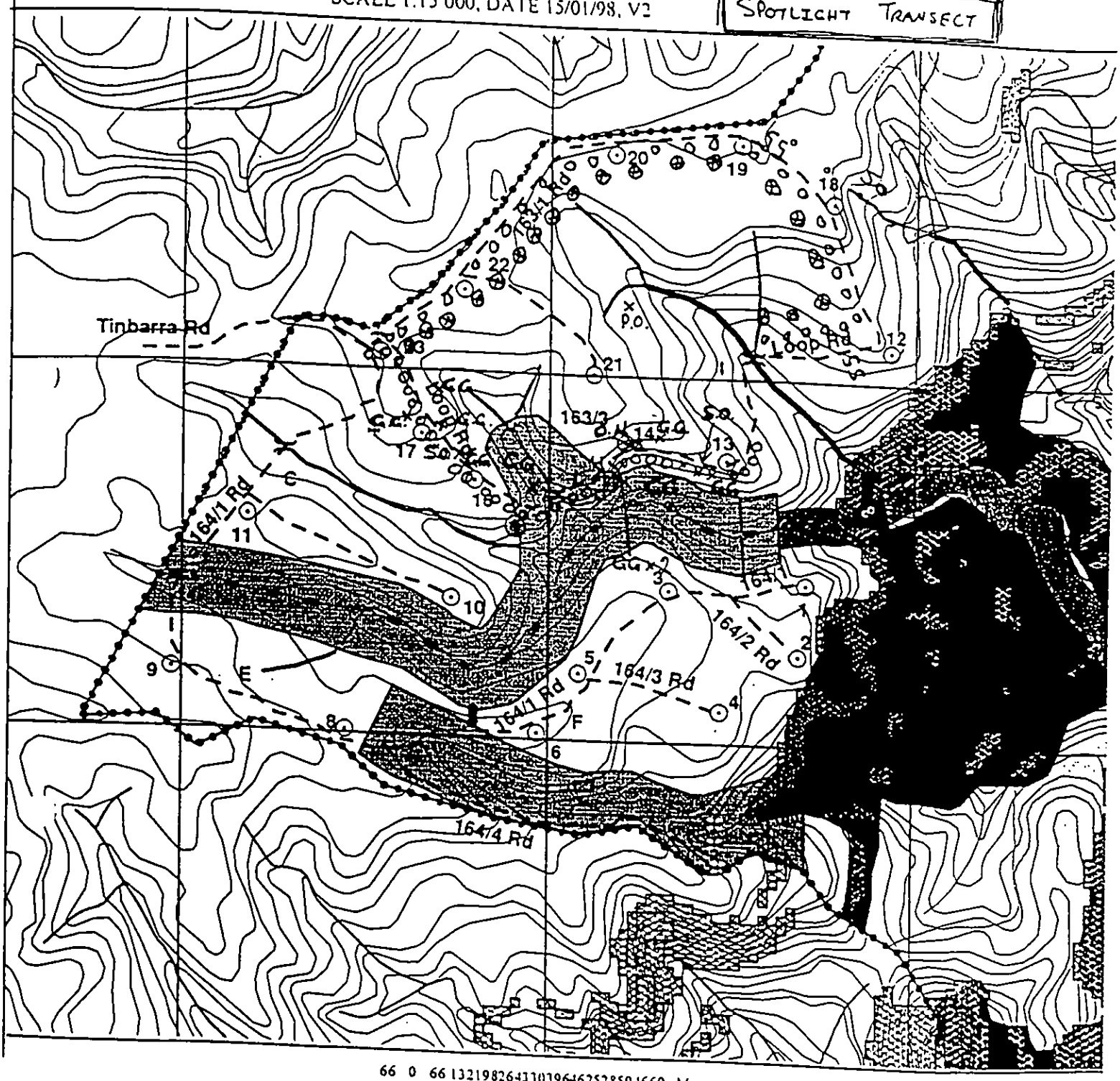
d. identify areas with a thick groundcover of vegetation, [grass, sedge, fern, or heath], adjacent to other habitat components, such as moist sedge areas.
e. identify areas with small natural hollows, basal cavities, tunnels, logs, and rock crevices, [that is potential nest sites], in proximity to other essential habitat features.
f. identify areas with known food plants, various seeds and vegetative material from sedges, grasses, and other plants, [eg.Glycine clandestina, Townley,S. Billilimbra SF].
g. determine time since last fire, or patchiness of previous burns, relative to presence of habitat components.

As a result of these surveys, [and the previous surveys by Tweedie [4/97], areas to be buffered are delineated on the accompanying maps, [appended this report]. These maps define the areas of medium and high quality habitat for HRM based on the convergence of most, or all of the habitat features listed above. The outer edge of the extent of this habitat attribute convergence zone becomes the point from which the 100 metre buffer is applied. In this case the medium and high quality habitat is restricted to areas close to the main creeks, requiring a measured distance to be nominated from the creek areas. This has resulted in the following [proposed] general prescription being developed for high and medium quality habitat buffering, [100m, plus 20m from the flood flow creek bank for high, and 100m, plus 10m from the flood flow creek bank for medium], in these two compartments. [measurements should be adjusted for slope]

NORTHERN RIVERS REGION - TENTERFIELD MANAGEMENT AREA
HARVEST PLAN OPERATIONAL MAP
COMPARTMENT 163/164
BOOKOOKOORARA STATE FOREST
LISTON MAP SHEET
HARVEST PLAN NUMBER 97/02TEN
SCALE 1:15 000, DATE 15/01/98, V2

FORESTS

SPOTLIGHT TRANSECT



66 0 66 132198264330396462528594660 Meters

BOUNDARIES
State Forest Boundary
Compartment Boundaries

ROADS
Natural Surface
Sealed or Gravelled
Four wheel drive

NORMAL PRESCRIPTIONS
Harvestable Area

NON-HARVEST AREAS
Slopes likely over 30 degrees
Slopes >30 degrees
HRM Buffer (100m wide)
Historical Site
Connection Corridor (40m)
Rainforest
Flora/Fauna Protection (100m wide)

WATERCOURSES & DRAINAGE
External Drainage
1st order stream (10m buffer)
2nd order streams (20m buffer)
3rd order streams (40m buffer)
Approved Crossings

DUMP SITES OR FEATURES
Temporary Dry
Temporary Wet
Soil Sample Sites

MN

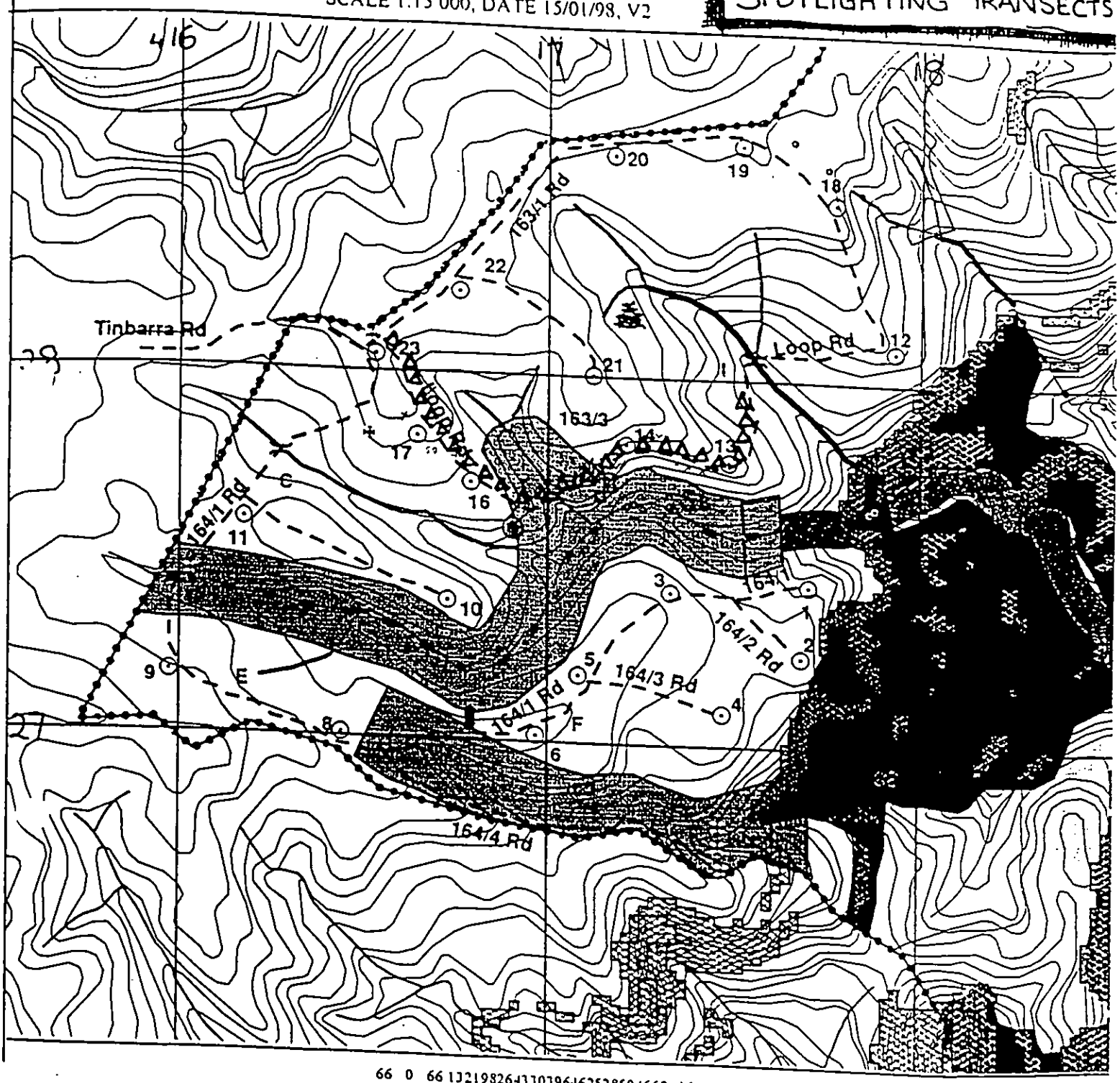
G.G. - GREATER GLIDER.
O.N. - OWLET NIGHTJAR.
S.O. - SOOTY OWL.
P.O - PALLARSH PINE

ooooo - WALKING SPOTLIGHT TRANSECT.
⊗ ⊗ ⊗ ⊗ Walking Scat transect.

NORTHERN RIVERS REGION - TENTERFIELD MANAGEMENT AREA
HARVEST PLAN OPERATIONAL MAP
COMPARTMENT 163/164
BOOKOOKOORARA STATE FOREST
LISTON MAP SHEET
HARVEST PLAN NUMBER 97/02TEN
SCALE 1:15 000, DATE 15/01/98, V2

FORESTS

SPOTLIGHTING TRANSECTS



66 0 66 132198264330396462528594660 Meters

BOUNDARIES
- State Forest Boundary
- Compartment Boundaries

ROADS
- Natural Surface
- Sealed or Gravelled
- Four wheel drive

NORMAL PRESCRIPTIONS
- Harvestable Area

NON-HARVEST AREAS
- Slopes likely over 30 degrees
- Slopes >30 degrees
- HRM Buffer (100m wide)
- Historical Site
- Connection Corridor (40m)
- Rainforest
- Flora/Fauna Protection (100m wide)

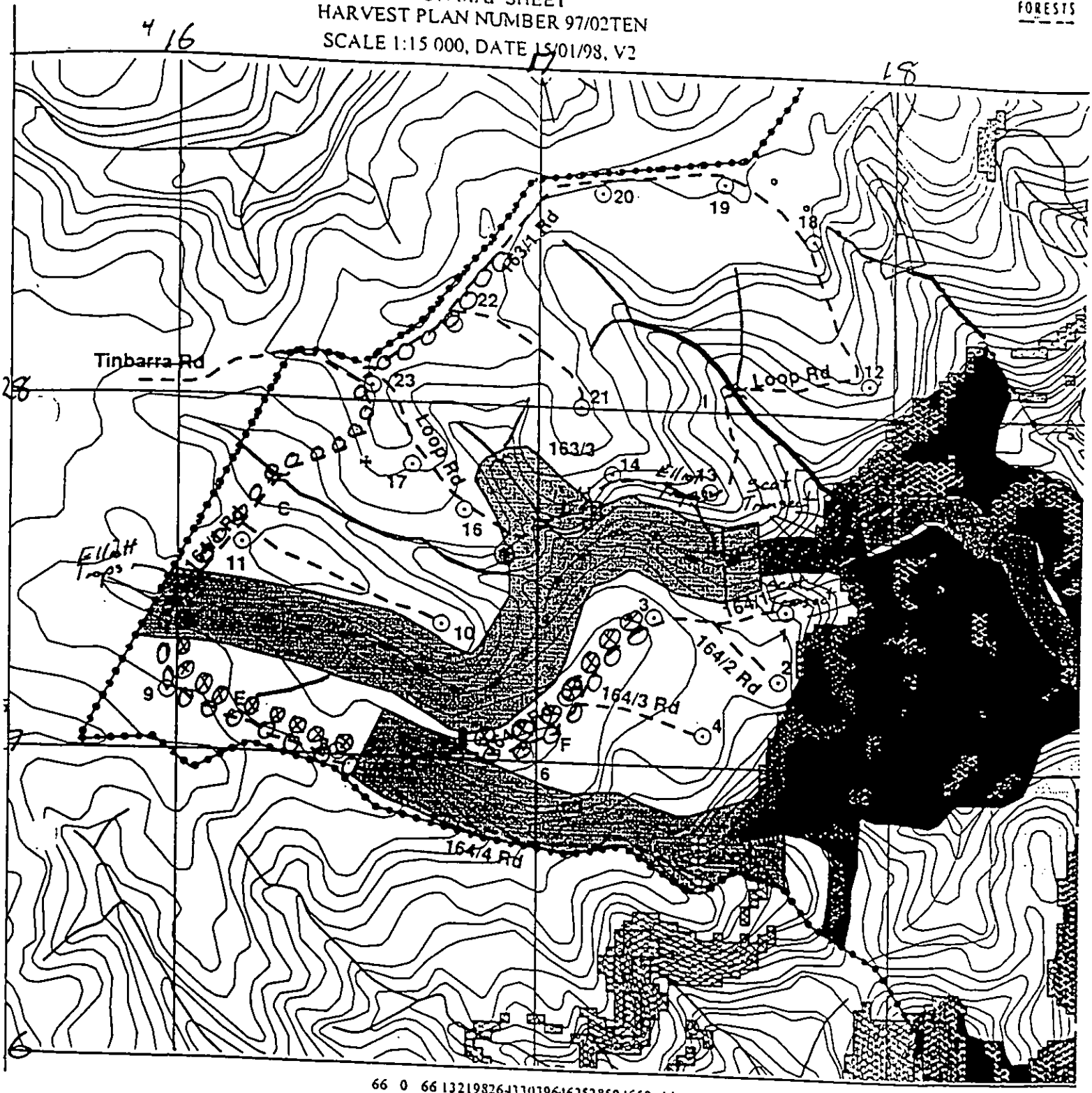
WATERCOURSES & DRAINAGE
- External Drainage
- 1st order stream (10m buffer)
- 2nd order streams (20m buffer)
- 3rd order streams (40m buffer)
- Approved Crossings

DUMP SITES OR FEATURES
- Temporary Dry
- Temporary Wet
- Soil Sample Sites

000000 - Walking spotlight transect.
ΔΔΔΔΔ - Driving spotlight transect.

GB - Glossy Back

NORTHERN RIVERS REGION - TENTERFIELD MANAGEMENT AREA
HARVEST PLAN OPERATIONAL MAP
COMPARTMENT 163/164
BOOKOOKOORARA STATE FOREST
LISTON MAP SHEET
HARVEST PLAN NUMBER 97/02TEN
SCALE 1:15 000, DATE 15/01/98, V2



66 0 66 132198264330396462528594660 Meters

BOUNDARIES
State Forest Boundary
Compartment Boundaries
ROADS
Natural Surface
Sealed or Gravelled
Four wheel drive
NORMAL PRESCRIPTIONS
Harvestable Area

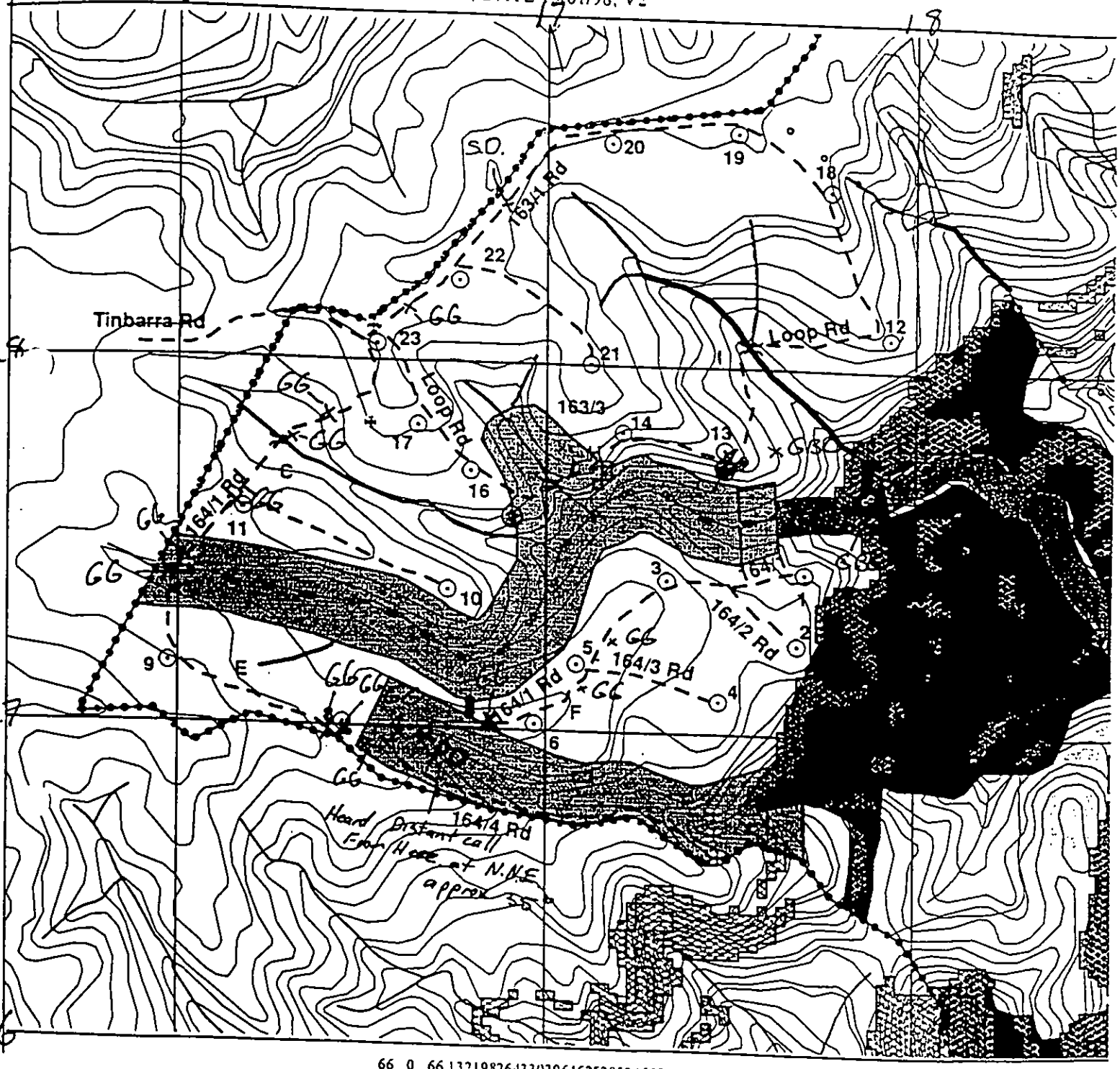
NON-HARVEST AREAS
Slopes likely over 30 degrees
Slopes >30 degrees
HRM Buffer (100m wide)
Historical Site
Connection Corridor (40m)
Rainforest
Flora/Fauna Protection (100m wide)

WATERCOURSES & DRAINAGE
External Drainage
1st order stream (10m buffer)
2nd order streams (20m buffer)
3rd order streams (40m buffer)
Approved Crossings

DUMP SITES OR FEATURES
Temporary Dry
Temporary Wet
Soil Sample Sites

OOOO - walking spotLight Transect.
⊗⊗⊗⊗ - scat Transect.
~~~~~~ - Elliott Trap
~~~~~~

NORTHERN RIVERS REGION - TENTERFIELD MANAGEMENT AREA
HARVEST PLAN OPERATIONAL MAP
COMPARTMENT 163/164
BOOKOOKOORARA STATE FOREST
LISTON MAP SHEET
HARVEST PLAN NUMBER 97/02TEN
SCALE 1:15 000, DATE 15/01/98, V2



66 0 66 132198264330396462528594660 Meters

BOUNDARIES
State Forest Boundary
Compartment Boundaries
ROADS
Natural Surface
Sealed or Gravelled
Four wheel drive
NORMAL PRESCRIPTIONS
Harvestable Area

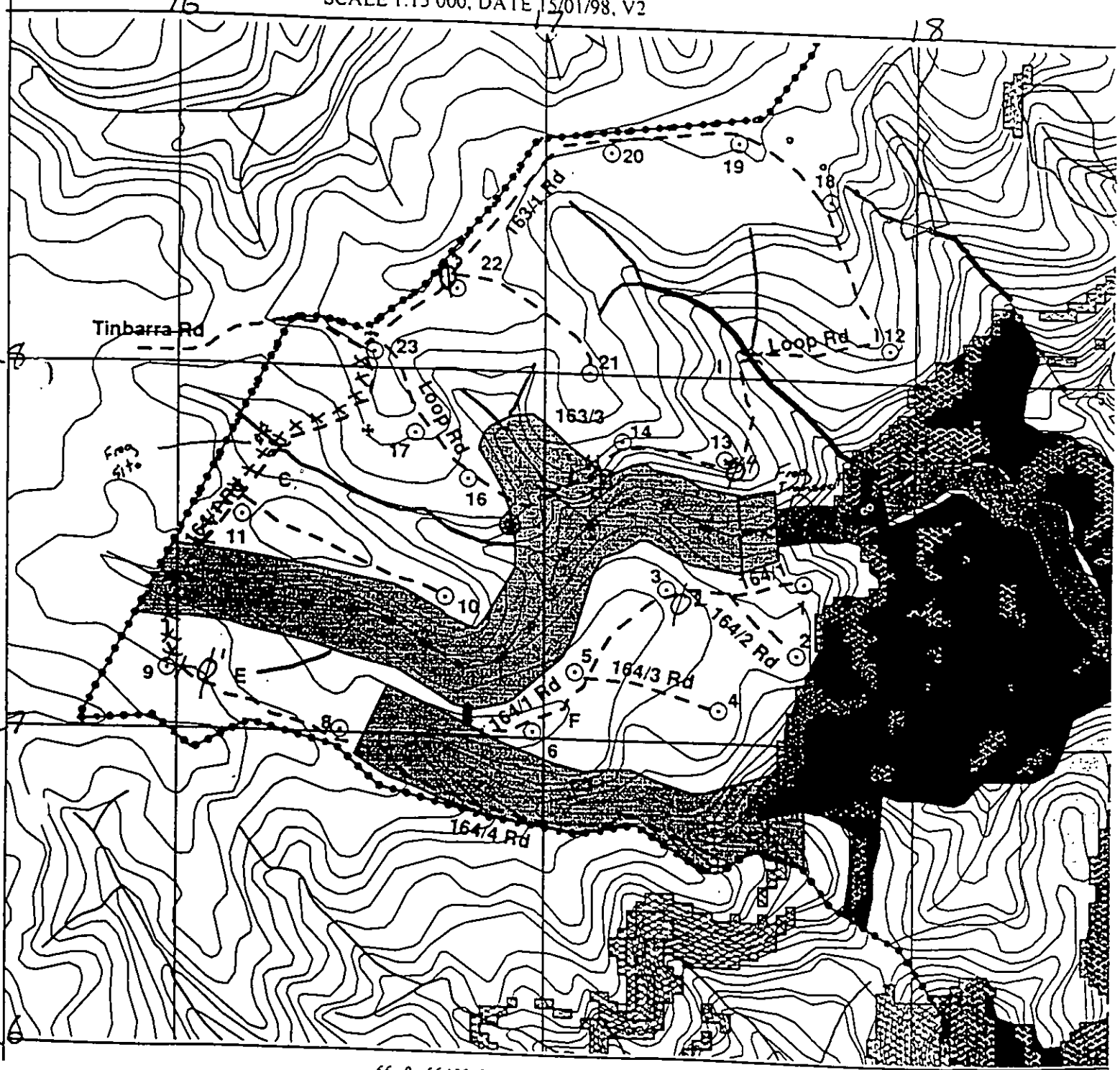
NON-HARVEST AREAS
Slopes likely over 30 degrees
Slopes >30 degrees
HRM Buffer (100m wide)
Historical Site
Connection Corridor (40m)
Rainforest
Flora/Fauna Protection (100m wide)

WATERCOURSES & DRAINAGE
External Drainage
1st order stream (10m buffer)
2nd order streams (20m buffer)
3rd order streams (40m buffer)
= Approved Crossings

DUMP SITES OR FEATURES
Temporary Dry
Temporary Wet
Soil Sample Sites

GG - Greater Glider.
GBC - Glossy Black
S.O. - Sooty Owl
P.O. - Powerful owl.

NORTHERN RIVERS REGION - TENTERFIELD MANAGEMENT AREA
HARVEST PLAN OPERATIONAL MAP
COMPARTMENT 163/164
BOOKOOKOORARA STATE FOREST
LISTON MAP SHEET
HARVEST PLAN NUMBER 97/02TEN
SCALE 1:15 000, DATE 15/01/98, V2



66 0 66 132 198 264 330 396 462 528 594 660 Meters

BOUNDARIES
State Forest Boundary
Compartment Boundaries
ROADS
Natural Surface
Sealed or Gravelled
Four wheel drive
NORMAL PRESCRIPTIONS
Harvestable Area

NON-HARVEST AREAS
Slopes likely over 30 degrees
Slopes >30 degrees
HRM Buffer (100m wide)
Historical Site
Connection Corridor (40m)
Rainforest
Flora/Fauna Protection (100m wide)

WATERCOURSES & DRAINAGE
External Drainage
1st order stream (10m buffer)
2nd order streams (20m buffer)
3rd order streams (40m buffer)
= Approved Crossings

DUMP SITES OR FEATURES
Temporary Dry
Temporary Wet
Soil Sample Sites

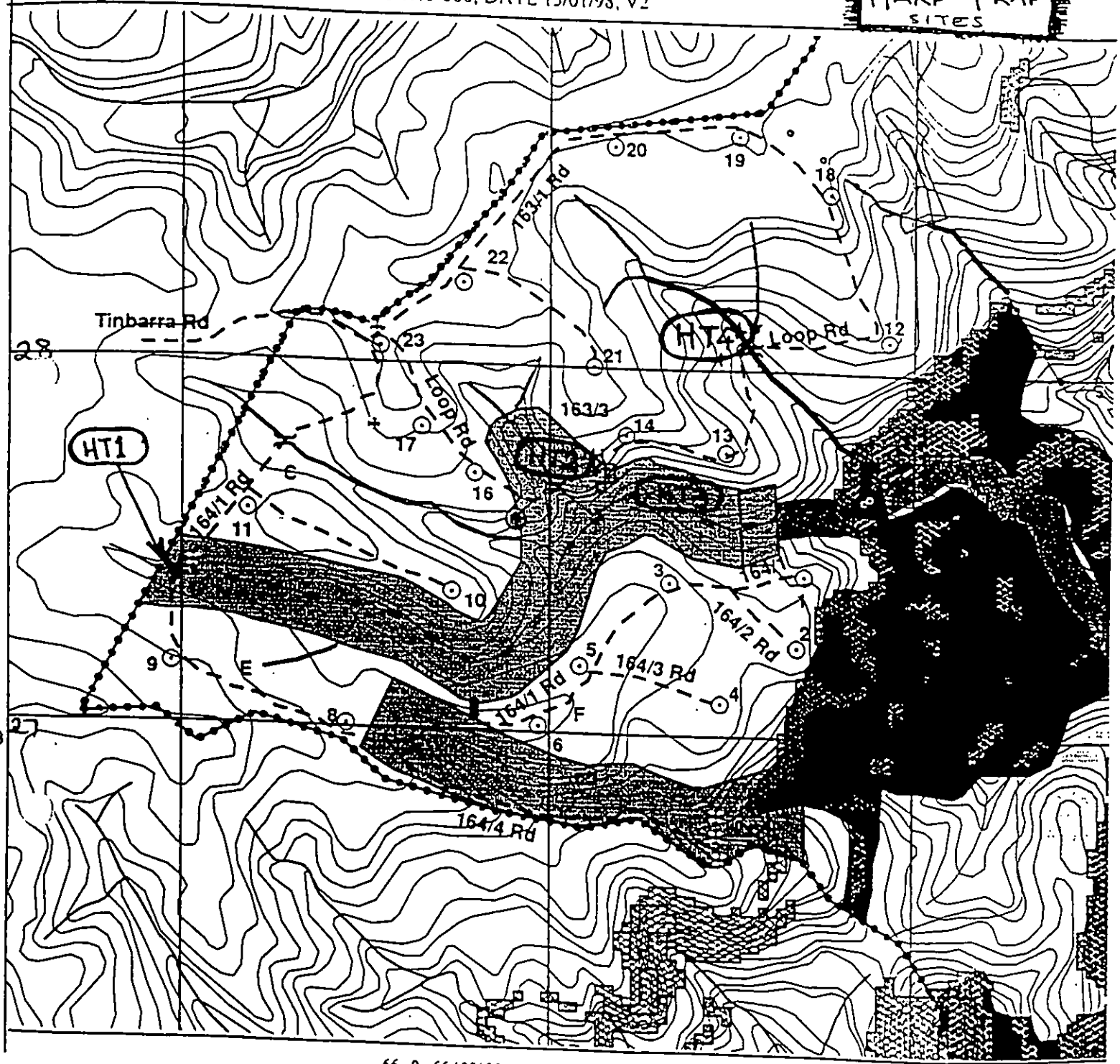
Ø - call Play Back site
xxxx - Frog Transect

NORTHERN RIVERS REGION - TENTERFIELD MANAGEMENT AREA
HARVEST PLAN OPERATIONAL MAP
COMPARTMENT 163/164
BOOKOOKOORARA STATE FOREST
LISTON MAP SHEET
HARVEST PLAN NUMBER 97/02TEN
SCALE 1:15 000, DATE 15/01/98, V2

FORESTS

4 16

HARP TRAP SITES



66 0 66 132198264330396462528594660 Meters

BOUNDARIES
- State Forest Boundary
- Compartment Boundaries

ROADS
- Natural Surface
- Sealed or Gravelled
- Four wheel drive

NORMAL PRESCRIPTIONS
- Harvestable Area

NON-HARVEST AREAS
- Slopes likely over 30 degrees
- Slopes >30 degrees
- HRM Buffer (100m wide)
- Historical Site
- Connection Corridor (40m)
- Rainforest
- Flora/Fauna Protection (100m wide)

WATERCOURSES & DRAINAGE
- External Drainage
- 1st order stream (10m buffer)
- 2nd order streams (20m buffer)
- 3rd order streams (40m buffer)
- Approved Crossings

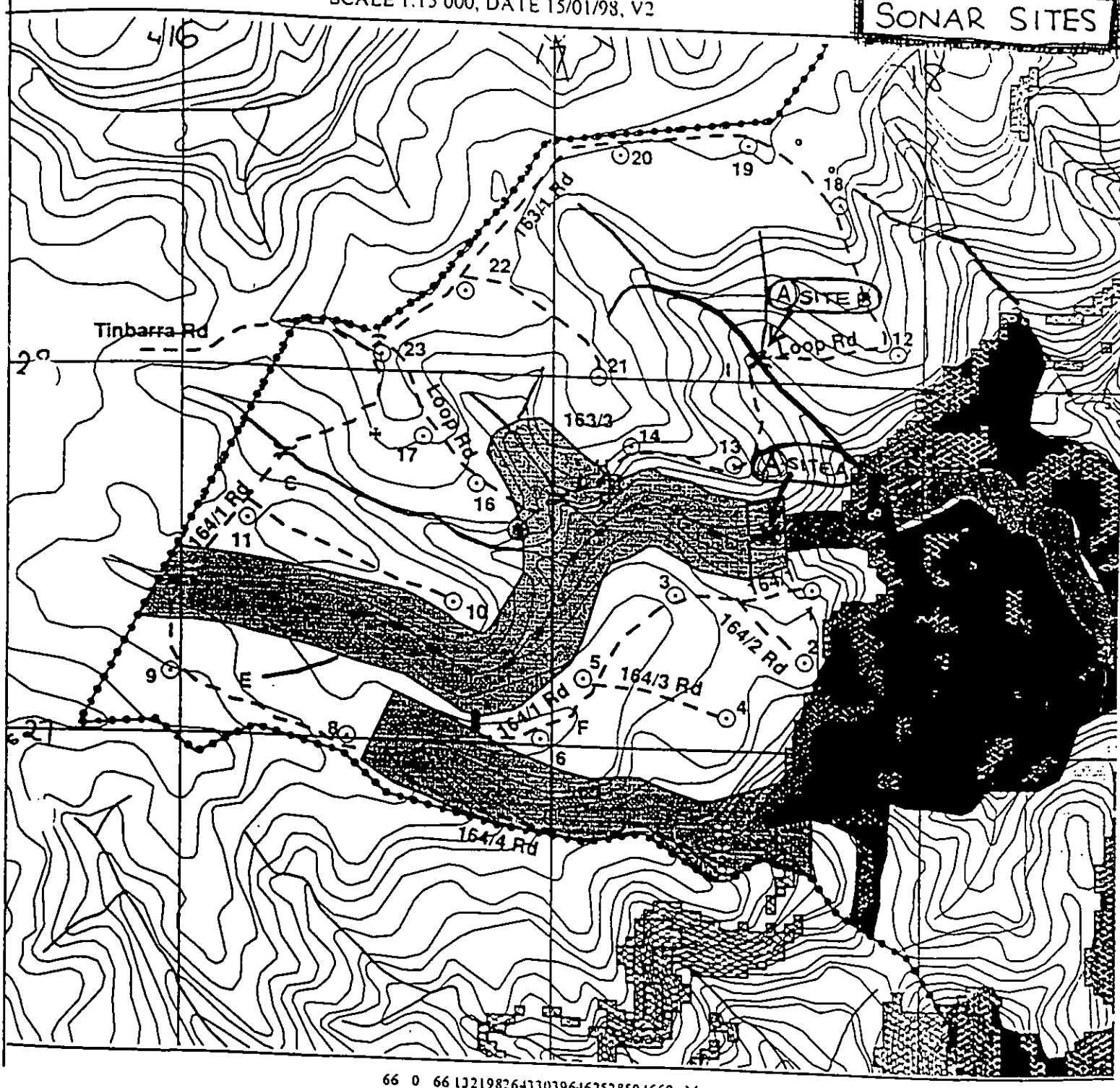
DUMP SITES OR FEATURES
- Temporary Dry
- Temporary Wet
- Soil Sample Sites

MN

NORTHERN RIVERS REGION - TENTERFIELD MANAGEMENT AREA
HARVEST PLAN OPERATIONAL MAP
COMPARTMENT 163/164
BOOKOOKOORARA STATE FOREST
LISTON MAP SHEET
HARVEST PLAN NUMBER 97/02TEN
SCALE 1:15 000, DATE 15/01/98, V2

FORESTS

SONAR SITES



66 0 66 132198264330396462528594660 Meters

BOUNDARIES
- State Forest Boundary
- Compartment Boundaries

ROADS
- Natural Surface
- Sealed or Gravelled
- Four wheel drive

NORMAL PRESCRIPTIONS
- Harvestable Area

NON-HARVEST AREAS
- Slopes likely over 30 degrees
- Slopes >30 degrees
- HRM Buffer (100m wide)
- Historical Site
- Connection Corridor (40m)
- Rainforest
- Flora/Fauna Protection (100m wide)

WATERCOURSES & DRAINAGE
- External Drainage
- 1st order stream (10m buffer)
- 2nd order streams (20m buffer)
- 3rd order streams (40m buffer)
- Approved Crossings

DUMP SITES OR FEATURES
- Temporary Dry
- Temporary Wet
- Soil Sample Sites

MN