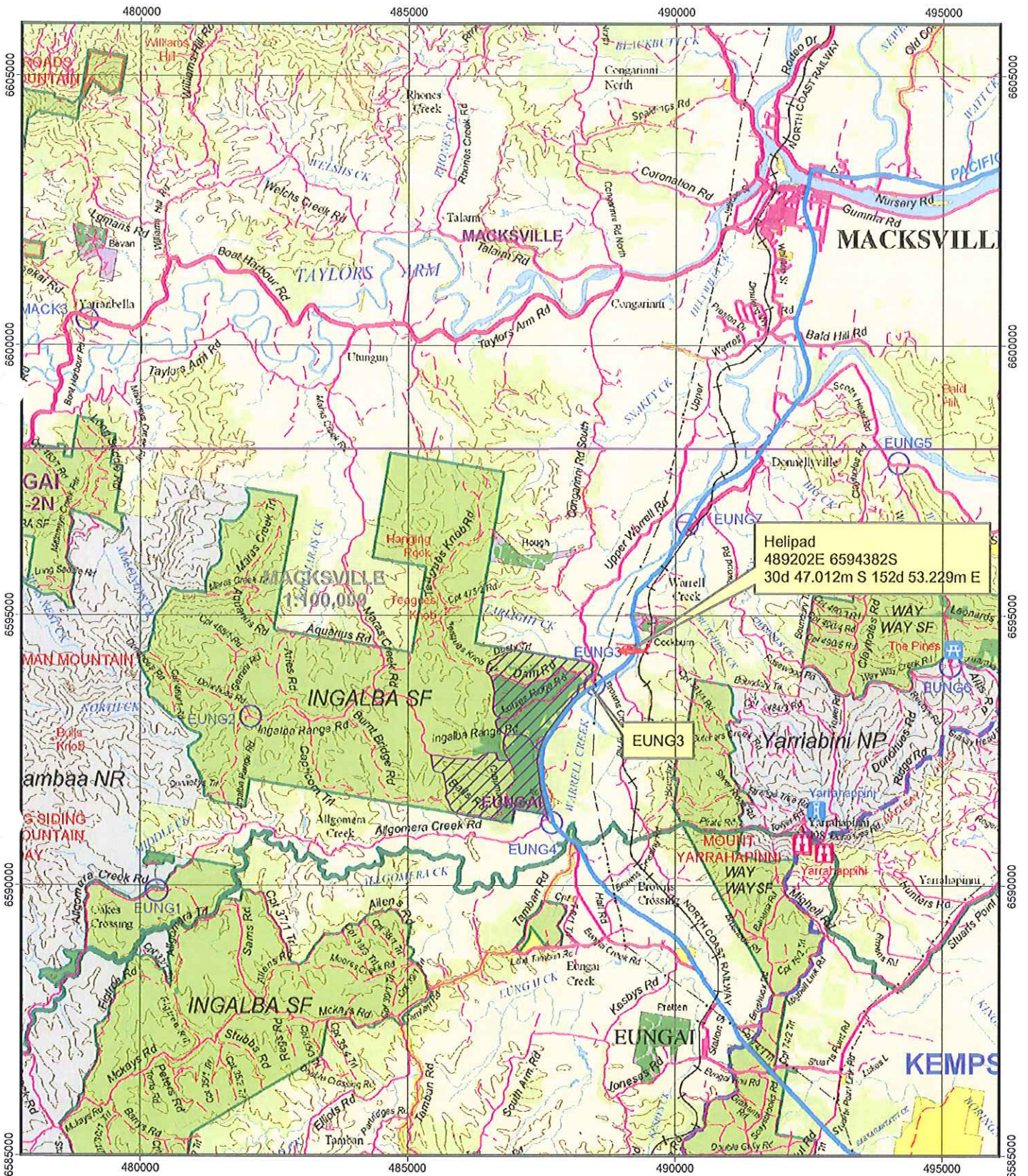




Map Sheets:
 1:25000 Eungai 9436-2N
 1:100000 Macksville 9436
 Scale: 1:100,000

North East Region -Urunga MA
 Locality Map
 Compartments 479 & 480
 Ingalba State Forest



Helipad
 489202E 6594382S
 30d 47.012m S 152d 53.229m E

MAP FEATURES

- Subject Area
- Emergency Meeting Point (Safety Point)
- Helicopter Landing Point
- State Forest
- 1:25000 Map Sheet
- 1:100000 Map Sheet
- National Park Estate



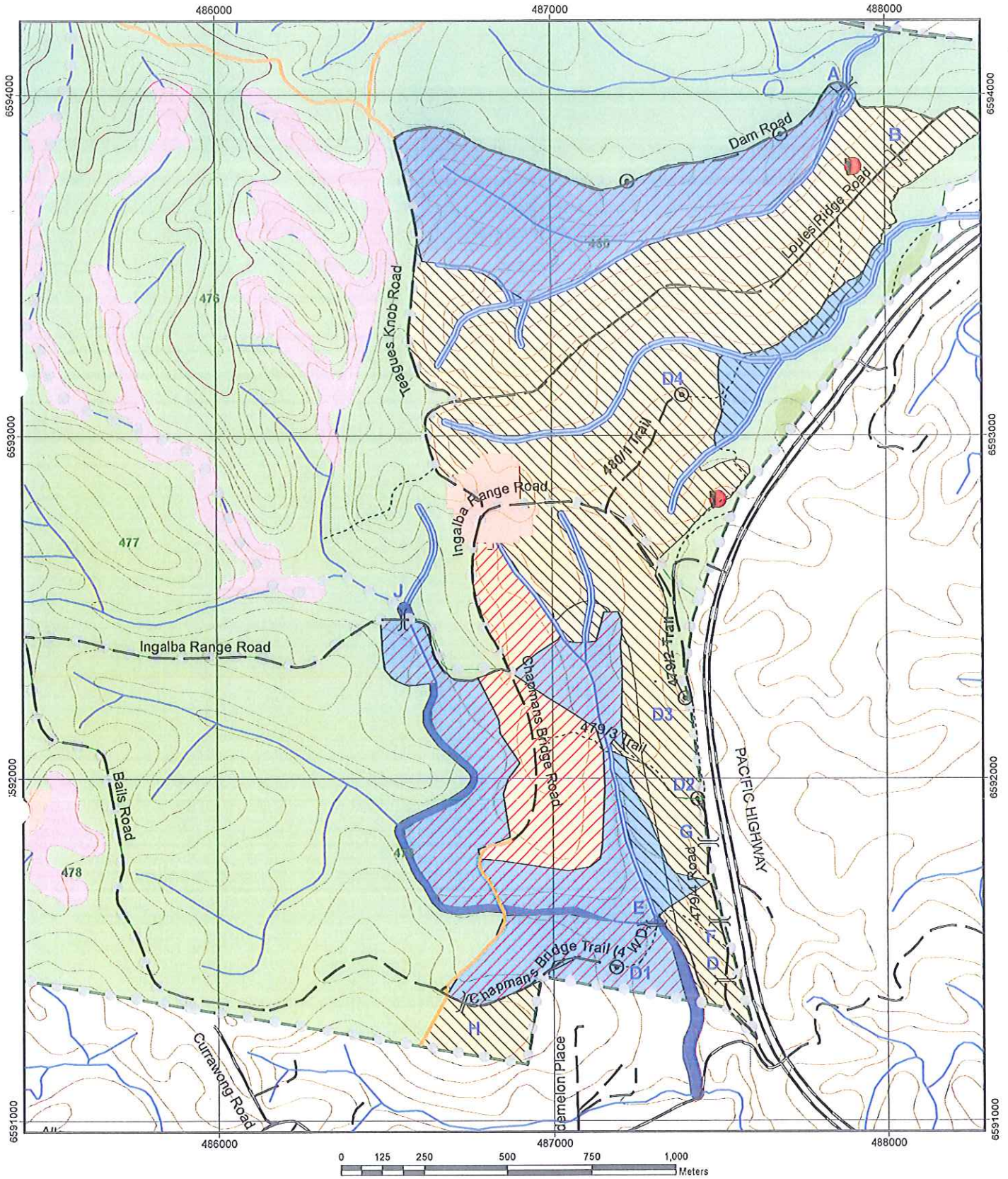
Prepared by... <XnameX>
 Date: <XdateX>

N Map Sheets:
1:25000 EUNGAI 9436 2 N

Scale: 1:15,000

North East Region - Urunga MA
Harvest Plan Operational Map
Compartments 479 & 480
Ingalba State Forest

Version 2
Prepared by
Kennedy K. Kujinga
Date: 11/10/07

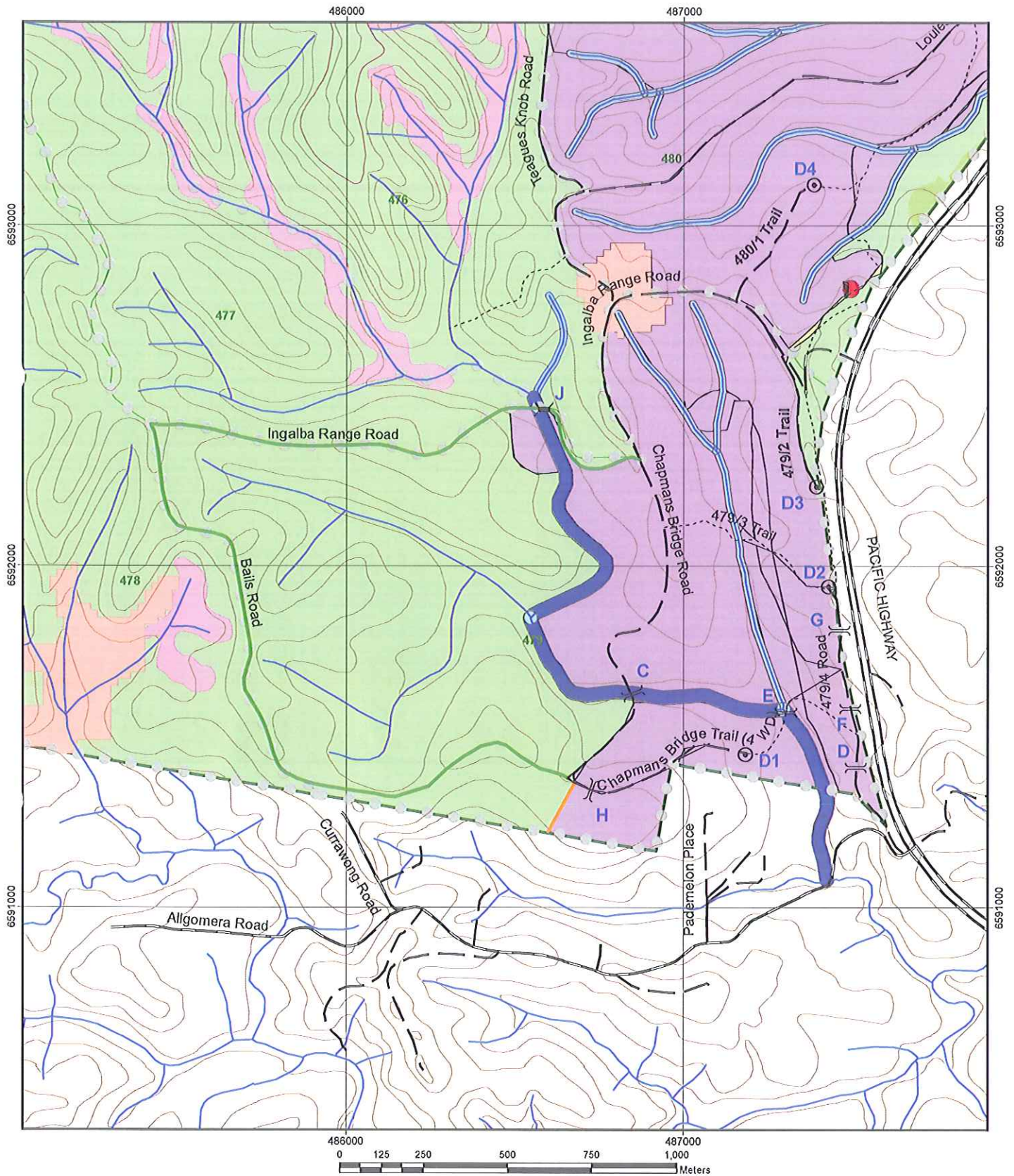


MAP FEATURES	ROADS	PLANTATION TO BE HARVESTED	FOREST MANAGEMENT PROTECTION
State Forest Boundary	Sealed	Blackbutt Plantation	High Conservation Value Old Growth
Compartments Boundary	Haulage Roads	Flooded Gum Plantation	FMZ Exclusions
1 Km Grid	Not to be used for haulage	Clearfall Stage 1	Aboriginal Site
10 / 100 m Contour	4WD Track	Clearfall Stage 2	Aboriginal Site - 50 metre buffer
State Forest			
Filter Strip 10m either side			
Filter Strip 20m either side			

N Map Sheets:
1:25000 EUNGAI 9436 2 N
Scale: 1:15,000

North East Region - Urunga MA
Roadworks Plan Operational Map
Ingalba Range and Bails Road Compartments 479
Ingalba State Forest

Version 1
Prepared by
Stephen Pickering
Date: 11/10/07



MAP FEATURES	ROADS	PLANTATION TO BE HARVESTED	FOREST MANAGEMENT PROTECTION
State Forest Boundary	Sealed	Plantation to be harvested	High Conservation Value Old Growth
Compartments Boundary	Haulage Roads		FMZ Exclusions
1 Km Grid	Not to be used for haulage		Aboriginal Site
10 / 100 m Contour	4WD Track		Aboriginal Site - 50 metre buffer
State Forest	Roadworks (as specified in plan)		
Filter Strip 10m either side			
Filter Strip 20m either side			

HARVESTING DETAILS

1. Area Identification

Region	North East
Management Area	Urunga
State Forest	Ingalba
Compartment/s	479 & 480

Cmpt	Gross Area (ha)	Net Area (ha)	Pricing Area	Op Type	Avg. Yield (contract)	Avg. Removal (contract)
479	219	104	Urunga Costal	Clearfall	120	0.3
480	224	129	Urunga Costal	Clearfall	120	0.3

2. Description of Proposal

2.1 Integrated harvesting of Plantation Areas

Clearfelling of Flooded Gum (*E.grandis*) and Blackbutt (*E. Pilularis*) plantation.

2.2 Other

	Proposed	Details
Roadworks	Yes	Roadworks Plan (attached)
Post harvest Burning	Yes	Plan to be prepared separately
Re-establishment (2R)	Yes	Plan to be prepared separately

3. Safety Considerations

See attached Hazard Assessment and Medical Emergency Evacuation Plan.

4. Plantation Condition and Silvicultural Prescription

4.1 Plantation Description

Plantation was established by the Forestry Commission during 1961, 1972 and 1981 on areas of degraded native forests. Most of the area was established with Flooded Gum (*E.grandis*) and Blackbutt (*E.pilularis*).

Flooded Gum

Stands can be divided into two distinct types:

Off site plantings,

- Planted on previously coastal hardwood sites including ridges.

- Stand is predominantly very poor, with high mortality rate (low stocking) poor form and low vigour throughout.
- Unthinned and unlikely to respond to thinning.
- These areas will produce a high proportion of salvage and pulp grade logs with some sawlog products.

Vigorous plantings adjacent to drainage lines and drainage depressions.

- Have good form and vigour
- Much of the stand has been first thinned, with superior stems retained
- Products include veneer logs, some sawlog products, salvage and pulp

Blackbutt

These stands have been previously thinned, leaving superior stems. Blackbutt stands are of high quality.

Fire Affected Stands

A fire during 2006 has caused extensive damage to stands in the southern part of compartment 479 (indicated on the attached HPOM). This has resulted in high levels of mortality within flooded gum areas and is likely to cause loss of vigour across all affected stands.

4.2 Silvicultural Objectives and Prescriptions

Clearfell

Re-establish with local native species within 12-18months.

Order of Work

Fire damaged plantation (Flooded Gum and Blackbutt) and poor quality Flooded Gum plantation will be harvested initially.

Blackbutt (with associated Flooded Gum in gullies) will be harvested as determined by market requirements and funding priorities for re-establishment.

4.3 Recording

- The area of clearfall must be mapped and recorded in the Post-logging Information section of this plan.

5. Legal Conditions

Legislation relating to the operations on State forests & Other Crown-Timber Lands is detailed in FNSW Forest Practices Codes. In addition this operation must specifically comply with:

- Forests NSW Forest Practices Code part 1 (Timber Harvesting in Forest NSW Plantations 2006)
- Forests NSW Forest Practices Code part 4, Forest Roads and Fire Trails (February 1999)
 - Licence Conditions issued by Forests NSW under the Forestry Act (1916)

The area to be harvested is a plantation authorised under the provisions of the Plantation and Re-forestation Act (1999)(GRO713P).The operation must comply with;

- Plantation and Reafforestation Act(1999)
- Plantation and Reafforestation(Code) Regulation 2001

6. Special Conditions

6.1 Non-harvest areas

The Operational Map indicates the non-harvest areas in the compartment, as detailed in the legend.

- Harvesting disturbance is not permitted in non-harvest areas without contacting the Harvest Planner to obtain the required Regional approval.
- Harvesting may take place within filterstrips (as indicated on the operational map) in accordance with the conditions outlined in section 10.2. except for 3rd or higher order streams.
- No harvesting is allowed within the buffer zone of any wetland or river(3rd order streams) under the Plantation Reafforestation(Code) Regulation.

6.2 Leases, Permits, Plots

	Occurs within compt	Site Id No.s
Crown Leases	No	
Occupation Permits (grazing)	No	
Occupation Permits (apiary)	No	
Occupation Permits (other)	No	
Research Plots	No	
Special Purpose Permits	No	

Contact details for recorded site numbers are held on the harvesting plan file.

6.3 Noise

Where there are residences in close proximity to an operation that are likely to be affected by noise (as determined by the SFO), mitigative measures to lessen the impact on those residences will apply. These measures are to be determined on a site specific basis by the SFO and should be discussed with the harvesting forester).

6.4 Boundaries

- For boundary locations refer to the operational map.
- Where there is uncertainty as to the location of any critical boundary precision survey must be undertaken by the North East Region Survey unit.

Private Property

Private Property adjoins plantations within compartment 479 to the south. All these boundaries are fenced.

- The harvesting must not impact on private property.
- Any damage to a fence must be immediately repaired by the contractor

Other Critical Boundaries

The remaining boundaries are adjacent to State forests

- No special Conditions Apply

6.5 Public Recreational Use

Areas adjacent to the plantation to be harvested and within the vicinity of the harvest area are frequently used by locals for recreation. During planning children were observed playing in the vicinity of crossing E on Chapmans Bridge Trail. The harvesting forester should liaise with property owners adjacent to the harvest area prior to harvesting operations in this area.

Paddy's Rest Area at the junction of Allgomera Creek Road and the Pacific Highway is a popular

Paddy's Rest Area at the junction of Allgoamera Creek Road and the Pacific Highway is a popular stopping place for the highway travellers. The harvesting and haulage contractors should be aware of frequent turning traffic at this point.

7. Forest Management Zoning And Approvals

7.1 Forest Management Zones

The compartments includes the following FMZs as indicated on the operational map:

- **Zone 2 and Zone 3B** are reserved from harvesting and are not to be disturbed.
- **Zone 4** General Management, not available for harvesting under this harvest plan
- **Zone 5 (Native Species Plantation)** available for harvesting in this operation – follow silvicultural prescriptions as outlined in section 4
- **Zone 8** has been allocated to its correct FMZ.

8. Cultural Heritage

8.1 Aboriginal Cultural Heritage

There are two Aboriginal Cultural Heritage sites marked in compartment 480. These sites must not be disturbed. To protect these sites, a clearly marked 50m buffer zone must be marked using three rings. The Local Aboriginal Land Council has been consulted in regard to the proposed logging and Land Council representatives and the Regional Aboriginal Cultural Heritage Officer have inspected the compartments. PFOB must be made aware of this site and the marked exclusion zone prior to 2R works commencing.

8.2 Non Aboriginal Cultural Heritage

No sites of non aboriginal cultural heritage were identified in this compartment.

9. Soils and Water

	Compartment 479	Compartment 480
Inherent hazard level	1	1
Dispersible Soils	No	No
Mass Movement Hazard	No	No
Seasonality	No	No

10. Drainage features

10.1 Drainage feature protection

- The Operational Map indicates known mapped drainage features and widths of protective measures.
- (**note:** some of the drainage features indicated on the Operational Map with filter strips may, at the time of marking, be determined as depressions).
- The minimum filter strip width for each side of drainage features is shown below.

Stream Order	Filter Strips each side of drainage feature (Haz Class 1)
Unmapped drainage lines	10
1st order	10
2nd order	10
3 rd order	20
4 th order or greater	20

10.2 Operational Conditions For Drainage Features

- Conditions 6-14, 17-27 of Schedule 4 of the Non IFOA EPL No 4016 must apply.
- 5m wide buffer strips must be retained along all drainage depressions. Conditions 15,16, 36-38 of Schedule 4 of the EPL must apply (Buffer strips).

11. Tree Marking Conditions and Code

- All exclusion zone and buffer zone boundaries must be marked in the field - except where specified forestry activities will not come within 50 metres of such boundaries. Where thick or impenetrable understorey obstructs marking UHF radio communication with operators may be used to indicate filter strips and boundaries. The SFO must document and justify such situations as it becomes apparent during compartment mark-up

STANDARD MARKINGS/SYMBOLS: Markings/Symbols that deliver key requirements on a state wide basis

Description	Symbol
Compartment boundary (Where not defined by clear features eg. Road, trail, creek)	"O" or Yellow tape
Exclusion zone (Line not to be crossed or disturbed by fallers or harvesting machinery at any time)	Three horizontal lines / rings OR Blue tape
Edge of net harvest area (eg unmerchantable) Retained trees and critical boundaries to be marked within 30m beyond the boundary Tree heads may fall across the line, provided they comply with boundary and tree retention rules (eg 5m debris)	"⊙"
Buffer Zone Areas where machinery is not permitted but there may be trees to be felled	Two horizontal lines / rings (indicate distance if required)
Drainage depression buffer strip	Not marked
Extraction System, OR Road/Track line	"I" or white tape
Dump site (with optional dump number reference)	"D" or red tape
Approved crossing site	"↕"
Slope angle Indication (commences here)	eg "25°"
Individual tree	"•" or dots
Directional felling mark	"←" over "•"
Retained trees not to be removed or damaged (eg grower)	One horizontal line or ring
Cancellation Mark (Mark to formally cancel previous marks)	"X"

12. Roads and Crossings

- There are a number of 4 WD trails and non-haulage roads as indicated on the operational map that are not to be used by haulage traffic. They may be used with SFO approval for snigging or extraction provided they are drained to the appropriate specifications. They may be used for vehicular access where they have been assessed by the SFO prior to use, and are in a stable condition unlikely to cause environmental harm. (See Regional Policy No. 6 – Use of Non-Haulage Roads in Harvest Areas)

Road Maintenance/Road Construction and Road re-opening – See Roadworks Plan

13. Log Dumps

13.1 Location

Logs may be stock piled beside roads for direct loading on to trucks. Log stockpile areas within native forest areas must be approved by the SFO prior to establishment and should be located so as to minimise disturbance to understorey elements.

13.2 Treatment

- Inherent hazard level 1 Conditions 41, 42, 45, of Schedule 4 of the EPL must apply.

14. Extraction Tracks

14.1 Conditions 53 to 56 of Schedule 4 of the EPL (Snig tracks), Conditions 85 to 95 of Schedule 4 of the EPL (Drainage of snig tracks), Conditions 57 to 83 of Schedule 4 of the EPL (Snig tracks - crossings), Condition 97 of Schedule 4 of the EPL (Downhill snigging), and Prescription 96 of Schedule 4 of the EPL (Wet weather-snig tracks) must apply

14.2 Suitability of existing log dams and gully stuffers

There are no known gully stuffers on snig or extraction tracks within the compartment

The suitability of any existing log dam or gully stuffers must be determined by a suitably qualified person, the determination enclosed in the compartment/stand history file and any recommendations for use prescribed in the harvest instructions before the log dam or gully stuffers is used for extraction. Condition 49 of Schedule 4 of the EPL must apply.

15. Product Specifications and Accounting

All timber products must be graded and required accounting procedures initiated prior to the products being removed from the dump.

16. Yield Estimates

Phase 1 Harvest

Flooded Gum			
Compartment	Op Type	Net (ha):	Area
479	CF		43
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)	
Poles	0	0	
Veneer	5	215	
HQL	15	645	
HQS	20	860	
E-logs	20	860	
Salvage grade 1	45	1935	
Salvage grade 2	40	1720	
Pulpwood	25	1075	
TOTAL	170	7310	
Blackbutt			
Compartment	Op Type	Net (ha):	Area
479	CF		20
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)	
Poles	15	300	
Veneer	0	0	
HQL	50	1000	
HQS	25	500	
E-logs	20	400	
Salvage grade 1	30	600	
Salvage grade 2	30	600	
Pulpwood	10	200	
TOTAL	180	3600	

Flooded Gum (High Quality)			
Compartment	Op Type	Net (ha):	Area
480	CF		21
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)	
Poles	0	0	
Veneer	35	735	
HQL	20	420	
HQS	25	525	
E-logs	15	315	
Salvage grade 1	50	1050	
Salvage grade 2	50	1050	
Pulpwood	15	315	
TOTAL	210	4410	
Flooded Gum (poor Quality)			
Compartment	Op Type	Net (ha):	Area
480	CF		19
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)	
Poles	0	0	
Veneer	5	95	
HQL	15	285	
HQS	20	380	
E-logs	20	380	
Salvage grade 1	45	855	
Salvage grade 2	40	760	
Pulpwood	25	475	
TOTAL	170	3230	

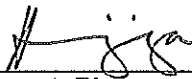
Phase 2 Harvest

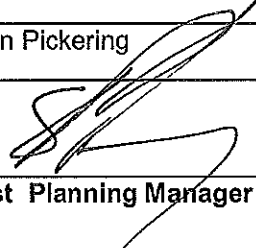
Flooded Gum		
Compartment	Op Type	Net Area (ha):
479	CF	4
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)
Poles	0	0
Veneer	5	20
HQL	15	60
HQS	20	80
E-logs	20	80
Salvage grade 1	45	180
Salvage grade 2	40	160
Pulpwood	25	100
TOTAL	170	680
Blackbutt		
Compartment	Op Type	Net Area (ha):
479	CF	34
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)
Poles	15	510
Veneer	0	0
HQL	50	1700
HQS	25	850
E-logs	20	680
Salvage grade 1	30	1020
Salvage grade 2	30	1020
Pulpwood	10	340
TOTAL	180	6120


Blackbutt		
Compartment	Op Type	Net Area (ha):
480	CF	84
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)
Poles	15	1260
Veneer	0	0
HQL	50	4200
HQS	25	2100
E-logs	20	1680
Salvage grade 1	30	2520
Salvage grade 2	30	2520
Pulpwood	10	840
TOTAL	180	15120
Flooded Gum (High Quality)		
Compartment	Op Type	Net Area (ha):
480	CF	8
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)
Poles	0	0
Veneer	35	280
HQL	20	160
HQS	25	200
E-logs	15	120
Salvage grade 1	50	400
Salvage grade 2	50	400
Pulpwood	15	120
TOTAL	210	1680

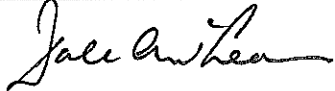
17. Certification

This plan has been prepared in accordance with the Environmental Protection Licence no. 4016 and the area is to be harvested as a plantation under the provisions of the Plantations and Reafforestation Act 1999 subject to the approval of the accompanying Environmental Impact Assessment prepared under the Environmental Planning and Assessment Act 1979.

Prepared by:	KENNEDY K. KUSINGA	02/10/07
Signature:		
Harvest Planner		

Endorsed by:	Stephen Pickering	Date: 2/10/2007
Signature:		
Harvest Planning Manager		

Endorsed by:	JOHN MURRAY	Date: 2/10/07
Signature:		
Regional Planning Manager		

Approved by:	STEVE RAYSON DALE MILEAN	Date: 2/10/07
Signature:		
A/ Regional Manager		

18. Pre operation briefing

- I acknowledge that I have received a copy of the Harvesting Plan for Compartments 479 and 480 in Ingalba State Forest and that I have been briefed on the conditions of the Plan and understand the supervision and operational control requirements as explained to me by the Forest Planner or his/her delegate.

Signature:		Name:	
Position	Supervising Forest Officer	Date:	

Signature:		Name:	
Position:	Relieving Supervising Forest Officer	Date:	

Harvesting Contractor Acknowledgment

- I acknowledge that I have received a copy of the Harvesting Plan for Compartments 479 and 480 in Ingalba State Forests and that I understand the conditions of the Plan as explained to me by a Forests NSW officer. I will brief other operators not present at this briefing prior to them starting operations and ensure that risk assessment for the Safety Management Plan is completed for this area prior to operations commencing

Signature:		Name:	
Position:	Principal Contractor / Other (explain)	Date:	

Personnel attending Induction

Contractor Personnel	Date	FNSW Personnel	Date

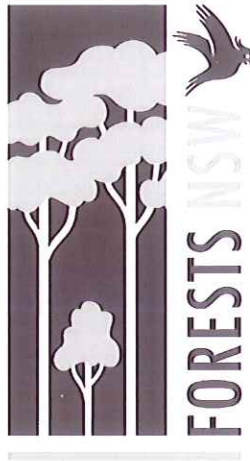
This pre operation briefing must be separated from the harvesting plan once the briefing is complete the signed copy of this must be filed with the official copy of the plan.

ROAD WORKS PLAN

Compartments 479 & 480

Ingalba State Forest

North East Region



Prepared by: Planner

[Handwritten Signature]
Signature

Date: 02/10/07

Endorsed by: Works Program Supervisor

[Handwritten Signature]
Signature

Date:

Approved by: Regional Manager

[Handwritten Signature]
Signature

Date: 02/10/07

Note: Roadworks Plan to be submitted with Harvest Plan documentation – or Due Dilligence checklist, UDL checklist and ecologist endorsement.

GENERAL INFORMATION FOR MAINTENANCE/CONSTRUCTION CREW

Compartments 479 & 480, Ingalba State Forest

1. Description of Proposal

- This proposal is to carry out maintenance to approximately 10.2 km of existing internal compartment roads to comply with the drainage requirements outlined in the EPL and facilitate harvesting. Eight crossings are proposed for use, with two requiring maintenance and replacement of bridge on Chapmans Bridge Road. Exact locations of road works may be found on the attached operational plan.

2. Need for the proposal

This proposal is required to service harvesting operations within compartments 479 & 480 Ingalba State Forest. The replacement of bridge on Chapmans Bridge Road is justified on the basis of future plantation management requirements. Alternative routes for timber haulage were considered but rejected on the basis of costs and future plantation management requirements. These compartments are scheduled for harvest in July 2007.

3. Financial Analysis

- The estimated total cost of the proposed road works is approximately **\$55,000**.
- The net revenue from this proposal will be gained by marketing of wood products from harvesting operations, estimated at **\$1,000,000**.
- A full breakdown of the costs and revenue estimates are given in appendix 1A, on file in the North East Region office.

4. Risk analysis

The planning has taken into account the complete plantation estate within Ingalba State Forest, however harvesting will follow an order of work and much of the Blackbutt plantation will not be harvested initially. This area of the plantation may be harvested at a later date. Road works will occur just-in-time with the components of the plantation to be harvested.

5. Specifications/Legal Conditions

- The area has been accredited as a plantation under the Plantation Re afforestation Act 1999.
- This operation is not licenced under the EPL
- All roadworks must comply with Schedule 5 of the EPL unless otherwise specified

6. Special Conditions

Feature	Conditions
Cultural Heritage	A site of aboriginal cultural heritage significance exists within cpt 480, adjacent to Louies Ridge Road. Works are not expected to impact on this site
Threatened Species Licence	No conditions
Seasonality	No
Dust and Noise	Where there are residences in close proximity to an operation that are likely to be affected by noise (as determined by the SFO), mitigative measures to lessen the impact on those residences will apply. These measures are to be determined on a site specific basis by the SFO and should be discussed with

Private Property	Private property adjoins compartment 479 in the south .All boundaries are fenced. These fences must not be damaged.
Road construction, upgrading, realignment, widening on slopes >30 degrees	None Authorised

ROAD CATERGORIES

Permanent – a road that forms (or is likely to form) part of our permanent road and fire trail network and receive regular periodic maintenance.

Temporary – a road that will not form part of the permanent road network, will be upgraded periodically as harvesting, fire or other management needs dictate, but otherwise will not receive maintenance and will be allowed to grow over.

Closed – Roads that may or may not be used during the harvesting operation, that for some particular reason (eg safety hazard, high risk of water pollution from unstable crossings, neighbour issues etc) needs to be permanently balked off and allowed to revegetate.

ROAD MAINTENANCE/RE-OPENING

ROAD NAME: Dam Road

Length of Maintenance: 1800m; start at Louis Ridge Rd and finish at Teagues Knob Road.

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none"> • Clear regrowth/shrubs/debris. • Repair surface wash and reform surface • Crown/outfall pavement. • Gravel wet patches. 	
Roadside & Batters	<ul style="list-style-type: none"> • Remove dangerous trees/stags. • Remove overhanging trees/shrubs. 	
Drainage	<ul style="list-style-type: none"> • Open existing mitres/table drains where required. • Install additional rollover/spoon drains with channel/belt drains on steeper grades (>3°) all at EPL spacings where road cannot be crowned and mitred 	

Future of Road: Permanent

Date Started: _____

Date Finished: _____

ROAD NAME: Louis Ridge Road

Length of Maintenance: 2500m; start at Upper Warrell Creek Rd and finish at Ingalba Range Road.

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none"> • Clear shrubs/debris. • Repair surface wash and reform surface • Crown/outfall pavement. • Gravel wet patches. 	
Roadside & Batters	<ul style="list-style-type: none"> • Remove dangerous trees/stags. • Remove overhanging trees/shrubs. • Sight distances at intersections must be improved by reducing vegetation regrowth. 	

Roadworks Plan – Ingalba 479 & 480

Drainage	<ul style="list-style-type: none"> Open existing mitres/table drains where required. Install additional rollover/spoon drains with channel/belt drains on steeper grades (>3°) all at EPL spacings where road cannot be crowned and mitred. 	
----------	--	--

Future of Road: Permanent

Date Started: _____

Date Finished: _____

ROAD NAME: Ingalba Range Road

Length of Maintenance: 1500m; start at Pacific Highway and finish at Chapmans Bridge Road.

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none"> Repair intersection with Pacific Highway – grade Clear shrubs/debris. Repair surface wash and reform surface Crown/outfall pavement. 	
Roadside & Batters	<ul style="list-style-type: none"> Remove dangerous trees/stags. Remove overhanging trees/shrubs. 	
Drainage	<ul style="list-style-type: none"> Open existing mitres/table drains where required. Install additional rollover/spoon drains with channel/belt drains on steeper grades (>3°) all at EPL spacings where road cannot be crowned and mitred 	

Future of Road: Permanent

Date Started: _____

Date Finished: _____

ROAD NAME: Teagues Knob Road

Length of Maintenance: 850m; start at Dam Road and finish at Ingalba Range Road.

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none"> Clear shrubs/debris. Repair surface wash and reform surface Crown/outfall pavement. Gravel wet patches. 	
Roadside & Batters	<ul style="list-style-type: none"> Remove dangerous trees/stags. Remove overhanging trees/shrubs. 	
Drainage	<ul style="list-style-type: none"> Open existing mitres/table drains where required. Install additional rollover/spoon drains with channel/belt drains on steeper grades (>3°) all at EPL spacings where road cannot be crowned and mitred. 	

Future of Road: Permanent

Date Started: _____

Date Finished: _____

ROAD NAME: 479/2 Trail

Length of Maintenance: 300m; start at Ingalba Range Road and finish at Turning Circle.

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none"> • Clear regrowth/shrubs/debris. • Repair surface wash and reform surface • Install outfall pavement and remove windrow. • Install turning circle where marked in field 	
Roadside & Batters	<ul style="list-style-type: none"> • Remove dangerous trees/stags. • Remove overhanging trees/shrubs. 	
Drainage	<ul style="list-style-type: none"> • Open existing mitres/table drains where required. • Install additional rollover/spoon drains with channel/belt drains on steeper grades (>3°) all at EPL spacings where road cannot be crowned and mitred. 	

Future of Road: Temporary

Date Started: _____

Date Finished: _____

ROAD NAME: Chapmans Bridge Road (West)

Length of Maintenance: 1100m; start at Ingalba Range Rd and finish at Bails Road Junction.

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none"> • Clear regrowth/shrubs/debris. • Repair surface wash and reform surface • Crown/outfall pavement. • Install turning circle as marked in field 	
Roadside & Batters	<ul style="list-style-type: none"> • Remove dangerous trees/stags. • Remove overhanging trees/shrubs. 	
Drainage	<ul style="list-style-type: none"> • Open existing mitres/table drains where required. • Install additional rollover/spoon drains with channel/belt drains on steeper grades (>3°) all at EPL spacings where road cannot be crowned and mitred. 	

Future of Road: Temporary

Date Started: _____

Date Finished: _____

ROAD NAME: 479/4 Road

Length of Maintenance 800m; start at Allgomera Creek Rd and finish at turning circle(D2)..

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none"> • Clear regrowth/shrubs/debris. • Repair surface wash and reform surface • Crown/outfall pavement. • Gravel wet patches. • Install turning circle as marked in field 	
Roadside & Batters	<ul style="list-style-type: none"> • Remove dangerous trees/stags. • Remove overhanging trees/shrubs. 	
Drainage	<ul style="list-style-type: none"> • Open existing mitres/table drains where required. • Install additional rollover/spoon drains with channel/belt drains on steeper grades (>3°) all at EPL spacings where road cannot be crowned and mitred. 	

Future of Road: Temporary

Date Started: _____

Date Finished: _____

ROAD NAME: Chapmans Bridge Trail to D1

Length of maintenance 600m

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none"> • Clear regrowth/shrubs/debris. • Repair surface wash and reform surface • Crown/outfall pavement. • Gravel wet patches. • Install turning circle as marked in field 	
Roadside & Batters	<ul style="list-style-type: none"> • Remove dangerous trees/stags. • Remove overhanging trees/shrubs. 	
Drainage	<ul style="list-style-type: none"> • Reform drainage feature crossing 'E' as detailed in this plan 	

Future of Road: Permanent

Date Started: _____

Date Finished: _____

Roadworks Plan – Ingalba 479 & 480

ROAD NAME: 480/1 Trail.

Length of maintenance 400m

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none">• Clear regrowth/shrubs/debris.• Repair surface wash and reform surface• Crown/outfall pavement.• Gravel wet patches.• Install turning circle as marked in field	
Roadside & Batters	<ul style="list-style-type: none">• Remove dangerous trees/stags.• Remove overhanging trees/shrubs.	
Drainage	<ul style="list-style-type: none">• Grade and drain as required.	

Future of Road: Permanent

Date Started: _____

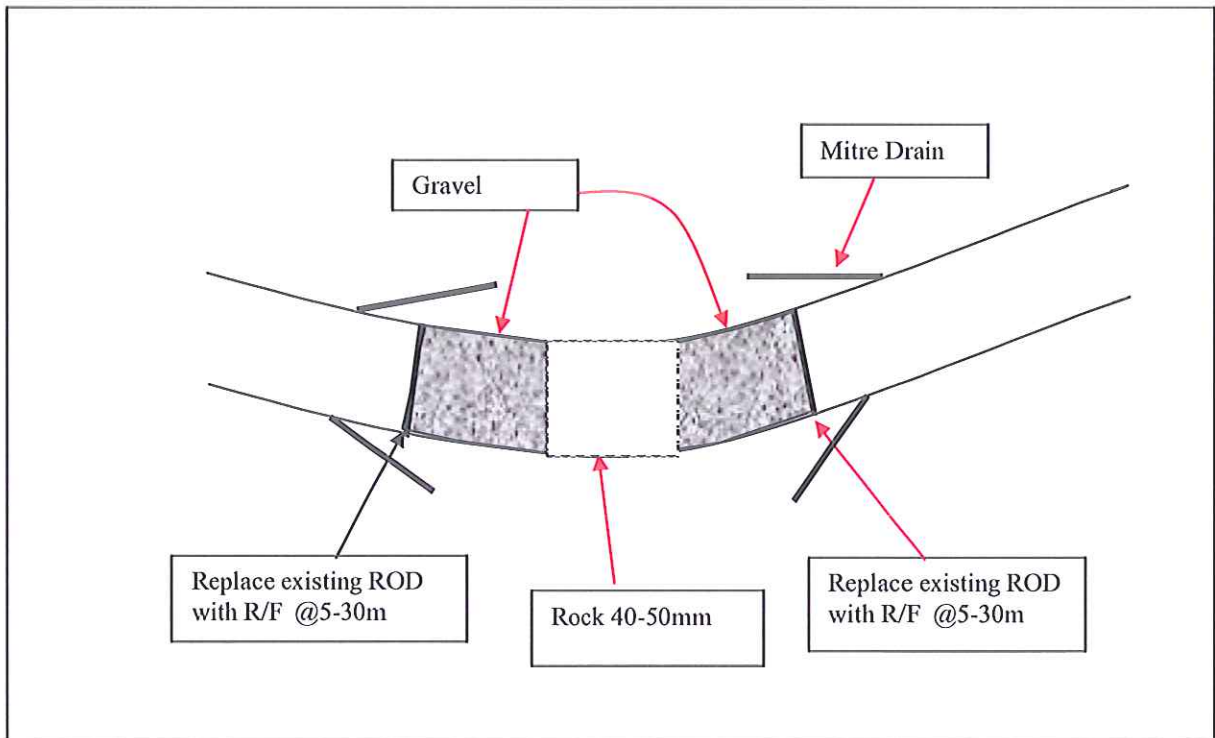
Date Finished: _____

Roadworks Plan – Ingalba 479 & 480

Crossing Point	'A' Dam Rd
Drainage feature type	2nd Order Mapped Drainage Line
Permanent/Intermittent Stream	Intermittent
Crossing Type	Causeway (Dam wall crossing).t
Existing or new	Existing

Features	Works	Plant/Materials
Reshaping of stream bed and banks	Nil Required	
Structure & approaches	Armour road with gravel & 7 rock Install mitre drains on both sides.	1 load rock, 4 loads gravel
Road drainage within 30m <ul style="list-style-type: none"> • Type • Outlet control • silt control in table and mitre drains 	Remove ROD and install Rubber Flaps Retain natural vegetation, drain outlet to be >5m from the drainage line Retain natural vegetation	2 * Rubber Flaps

Future of Crossing: Permanent



Date Started: _____
 Date Finished: _____
 Soil stabilisation must be completed within 5 days
 Record implementation date here: _____

Roadworks Plan – Ingalba 479 & 480

Crossing Point	'B', Louis Ridge Rd
Drainage feature type	Unmapped Drainage Depression
Permanent/Intermittent Stream	Intermittent
Crossing Type	Pipe
Existing or new	Existing

Features	Works	Plant/Materials
Reshaping of stream bed and banks	Nil Required	
Structure & approaches	Nil Required	
Road drainage within 30m <ul style="list-style-type: none"> • Type • Outlet control • silt control in table and mitre drains 	Nil Required	

Future of Crossing: Permanent

- Nil Works Required -

Date Started: _____

Date Finished: _____

Soil stabilisation must be completed within 5 days

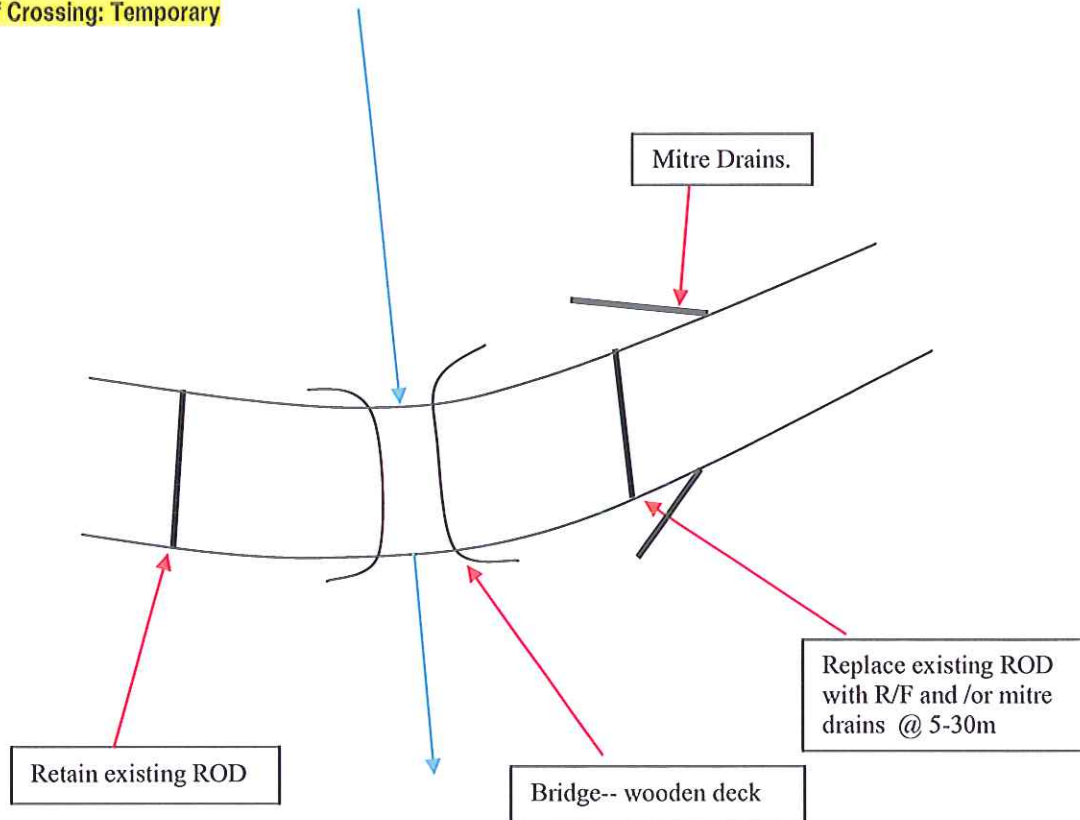
Record implementation date here: _____

Roadworks Plan – Ingalba 479 & 480

Crossing Point 'C', Chapmans Bridge Rd (West)
 Drainage feature type 4th order Mapped
 Drainage Line
 Permanent/Intermittent Stream Intermittent
 Crossing Type Bridge
 Existing or new Existing structure to be replaced.

Features	Works	Plant/Materials
Reshaping of stream bed and banks	Install new bridge using standard design.	Backhoe, Logs, Bridge construction material.
Structure & approaches	Remove & replace bridge	
Road drainage within 30m <ul style="list-style-type: none"> • Type • Outlet control • silt control in table and mitre drains 	Remove ROD on upstream right and install Rubber Flap. Retain ROD on upstream left Retain existing vegetation. Retain existing vegetation	1 Rubber Flap

Future of Crossing: Temporary



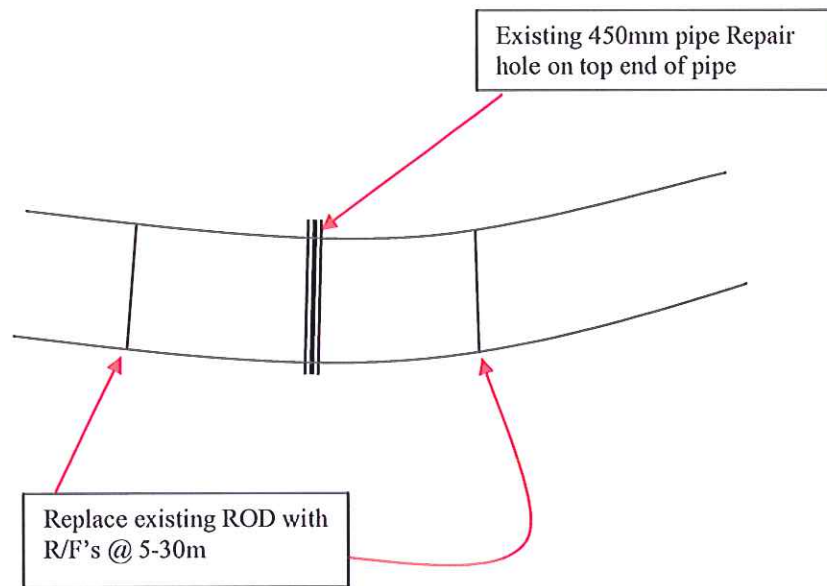
Date Started: _____
 Date Finished: _____
 Soil stabilisation must be completed within 5 days
 Record implementation date here: _____

Roadworks Plan – Ingalba 479 & 480

Crossing Point 'D' 479/4 Road
 Drainage feature type Unmapped
 Drainage Depression
 Permanent/Intermittent Stream Intermittent
 Crossing Type Pipe (450mm)
 Existing or new Existing

Features	Works	Plant/Materials
Reshaping of stream bed and banks	Nil required	
Structure & approaches	Existing pipe needs repair	Steel/metal plate.
Road drainage within 30m	Remove ROD and install Rubber Flaps Retain existing vegetation	2 R/F's
<ul style="list-style-type: none"> • Type • Outlet control • silt control in table and mitre drains 	N/A	

Future of Crossing: Temporary

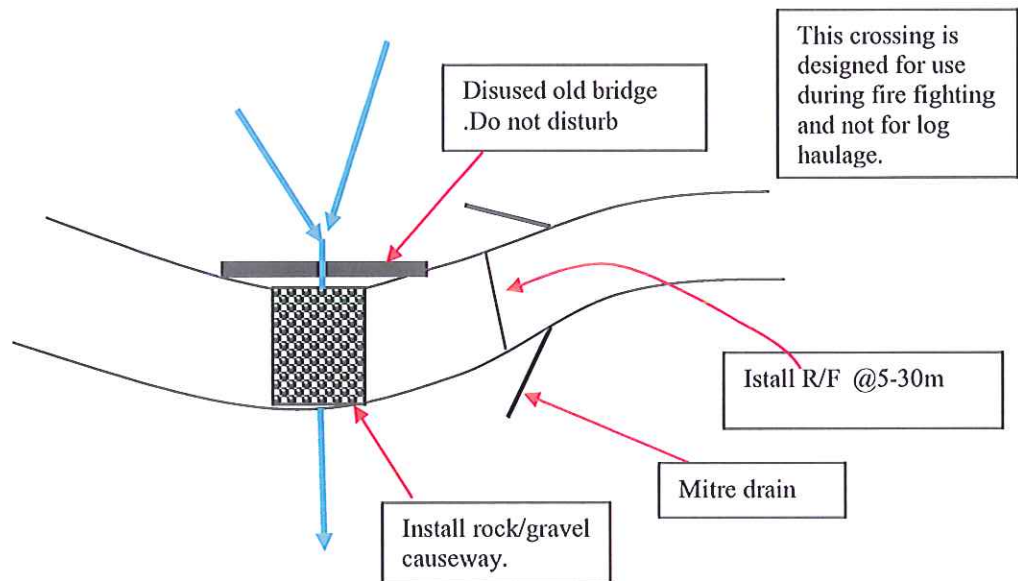


Date Started: _____
 Date Finished: _____
 Soil stabilisation must be completed within 5 days
 Record implementation date here: _____

Crossing Point 'E' Chapmans Bridge Trail(4WD)
 Drainage feature type 4th Order Mapped
 Drainage Line
 Permanent/Intermittent Stream Intermittent
 Crossing Type Causeway
 Existing or new Existing

Features	Works	Plant/Materials
Reshaping of stream bed and banks	Nil required outside crossing	
Structure & approaches	Install rock/gravel causeway Install sill log on downstream side	2 load gravel 2 loads rock
Road drainage within 30m <ul style="list-style-type: none"> • Type • Outlet control • silt control in table and mitre drains 	Install ROD 5-30m from drainage feature on upstream LHS Remove ROD on upstream RHS and move up slope to a point where it will drain into .5m undisturbed vegetation Retain >5m undisturbed vegetation on outlets of drains Retain vegetation where possible, seed as required	

Future of Crossing: Closed



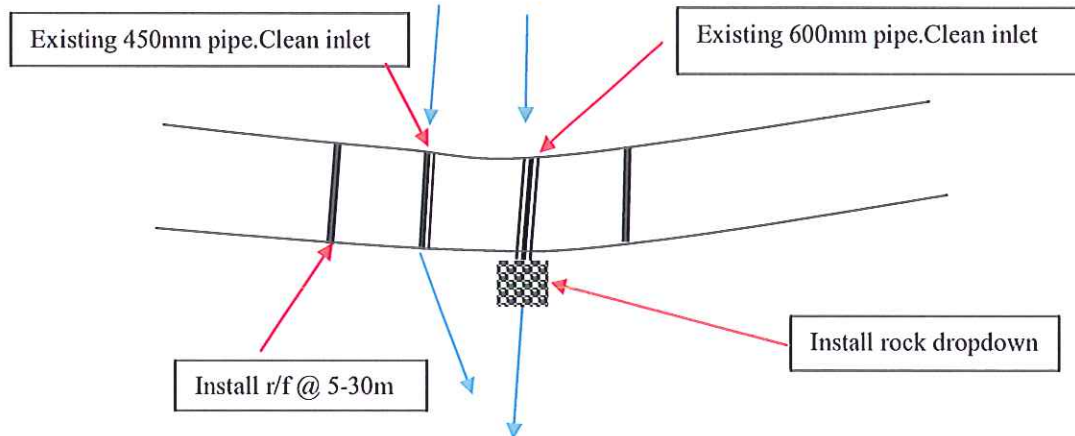
Date Started: _____
 Date Finished: _____
 Soil stabilisation must be completed within 5 days
 Record implementation date here: _____

Roadworks Plan – Ingalba 479 & 480

Crossing Point	F 479/4 Road
Drainage feature type	Unmapped Drainage Depression
Permanent/Intermittent Stream	Intermittent
Crossing Type	600mm Pipe
Existing or new	Existing

Features	Works	Plant/Materials
Reshaping of stream bed and banks	Nil required	
Structure & approaches	Install R/F @ 5-30m both sides of crossing	2 R/F's
Road drainage within 30m <ul style="list-style-type: none"> • Type • Outlet control • silt control in table and mitre drains 	Install ROD 5-30m from drainage feature on upstream LHS Remove ROD on upstream RHS and move up slope to a point where it will drain into .5m undisturbed vegetation Install rock dropdown on 600mm pipe outlet. Retain vegetation	3 loads rock

Future of Crossing: Closed



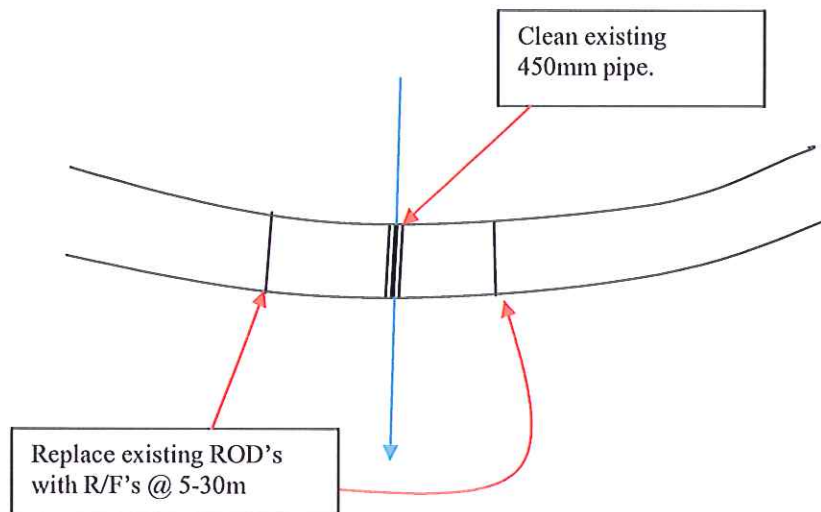
Date Started: _____
 Date Finished: _____
 Soil stabilisation must be completed within 5 days
 Record implementation date here: _____

Roadworks Plan – Ingalba 479 & 480

Crossing Point	G Old Pacific Highway
Drainage feature type	Unmapped Drainage Depression
Permanent/Intermittent Stream	Intermittent
Crossing Type	Pipe (450mm)
Existing or new	Existing

Features	Works	Plant/Materials
Reshaping of stream bed and banks	Nil required	
Structure & approaches	Existing pipe needs repair	
Road drainage within 30m <ul style="list-style-type: none"> • Type • Outlet control • silt control in table and mitre drains 	Remove ROD and install Rubber Flaps Retain existing vegetation, ensure >5m from outlet to line Retain existing vegetation	2 R/Fs or C/Cs

Future of Crossing: Temporary



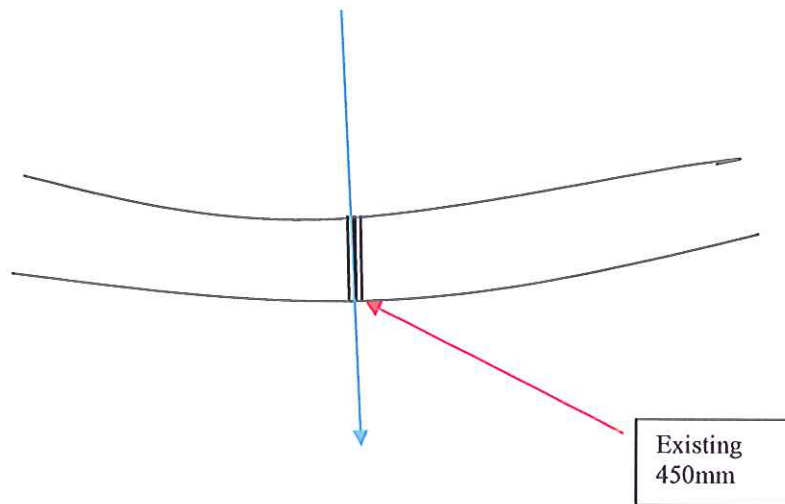
Date Started: _____
 Date Finished: _____
 Soil stabilisation must be completed within 5 days
 Record implementation date here: _____

Roadworks Plan – Ingalba 479 & 480

Crossing Point **H Chapman Bridge Trail .**
 Drainage feature type Unmapped
 Drainage Depression
 Permanent/Intermittent Stream Intermittent
 Crossing Type Pipe (450mm)
 Existing or new Existing

Features	Works	Plant/Materials
Reshaping of stream bed and banks	Nil required	
Structure & approaches	Existing pipe needs cleaning	
Road drainage within 30m	Not required	
<ul style="list-style-type: none"> • Type • Outlet control • silt control in table and mitre drains 	<ul style="list-style-type: none"> Retain existing vegetation, ensure >5m from outlet to line Retain existing vegetation 	

Future of Crossing: Temporary



Date Started: _____
 Date Finished: _____
 Soil stabilisation must be completed within 5 days
 Record implementation date here: _____

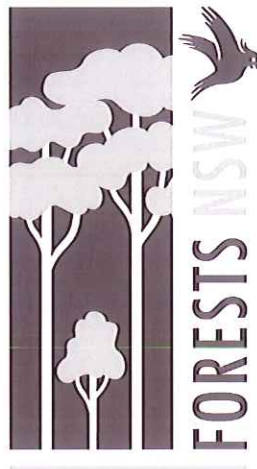
ROAD WORKS PLAN

Ingalba and Bails Road

Compartments 479

Ingalba State Forest

North East Region



Prepared by: Planner

Endorsed by: Works Program Supervisor

Approved by: ^ARegional Manager

Signature

Signature

Signature

Date:

Date:

Date:

Note: Roadworks Plan to be submitted with Harvest Plan documentation – or Due Dilligence checklist, UDL checklist and ecologist endorsement.

GENERAL INFORMATION FOR MAINTENANCE/CONSTRUCTION CREW

Compartment 479 - Ingalba and Bails Road

Ingalba State Forest

1 Description of Proposal

Road Name	Length of maintenance (km)	Road Standard	Activities Proposed
Ingalba Range Road	3080m	Haulage Permanent,	Maintenance grade
Bails Road	3800m	Haulage Permanent,	Maintenance Grade and curve widening
Crossing H		Haulage Permanent,	Place Gravel/Rock as appropriate to repair

See attached operational map for road locations and details.

2 Need for the proposal

The proposal is required to service approximately 12 ha of plantation clearfell operations.

3 Financial Analysis

- The estimated total cost of the proposed road works is approximately \$5,000.
- The net revenue from this proposal will be gained by marketing of wood products from harvesting operations, estimated at \$50,000
- A full breakdown of the costs and revenue estimates are on file in the North East Region office.

5 Alternatives

The alternative of hauling north on Chapmans Bridge Road was investigated. This required replacement of a bridge estimated at \$20,000.

6 Risk Analysis

The compartments are scheduled for harvest in 2007 and operations have commenced

7 Specifications/Legal Conditions

- This operation is not licenced under the EPL
- All roadworks must comply with Schedule 5 of the EPL unless otherwise specified

8 Special Conditions

Feature	Conditions
Threatened Species Licence	No special conditions – retain trees marked for retention under Harvest Plan U_479 (native)
Seasonality	No
Road construction, upgrading, realignment, widening on slopes >30 degrees	None Authorised

ROAD CATERGORIES

Permanent – a road that forms (or is likely to form) part of our permanent road and fire trail network and receive regular periodic maintenance.

Temporary – a road that will not form part of the permanent road network, will be upgraded periodically as harvesting, fire or other management needs dictate, but otherwise will not receive maintenance and will be allowed to grow over.

Closed – Roads that may or may not be used during the harvesting operation, that for some particular reason (eg safety hazard, high risk of water pollution from unstable crossings, neighbour issues etc) needs to be permanently baulked off and allowed to revegetate.

ROAD UPGRADING, RE-ALIGNMENT, WIDENING,RE-OPENING,ROAD MAINTENANCE

ROAD NAME: Bails Road

Length of Maintenance:2200m; start at Chapmans Bridge Rd and finish at Ingalba Range Road

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none">• Clear regrowth/shrubs/debris.• Repair surface wash and reform surface• Crown/outfall pavement.• Widen road for truck use to standard design formation width 4.2m (pavement width 3m) – 0-500m. Curve widening in accordance with Summary of Geometric Requirements for the Design of Roads (1991)	
Roadside & Batters	<ul style="list-style-type: none">• Remove dangerous trees/stags.• Remove overhanging trees/shrubs.	
Drainage	<ul style="list-style-type: none">• Open existing mitres/table drains where required.• Install additional rollover/spoon drains with channel/belt drains on steeper grades (>3°) all at EPL spacings where road cannot be crowned and mitred.	

Future of Road: Permanent

Date Started: _____

Date Finished: _____

ROAD NAME: Ingalba Range Road

Length of Maintenance: 1600m; start at Bails Rd and finish at Chapmans Bridge Road

Features	Works	Plant/Materials
Pavement	<ul style="list-style-type: none">• Clear regrowth/shrubs/debris.• Repair surface wash and reform surface• Crown/outfall pavement.	
Roadside & Batters	<ul style="list-style-type: none">• Remove dangerous trees/stags.• Remove overhanging trees/shrubs.	
Drainage	<ul style="list-style-type: none">• Open existing mitres/table drains where required.• Install additional rollover/spoon drains with channel/belt drains on steeper grades (>3°) all at EPL spacings where road cannot be crowned and mitred.	

Future of Road: Permanent

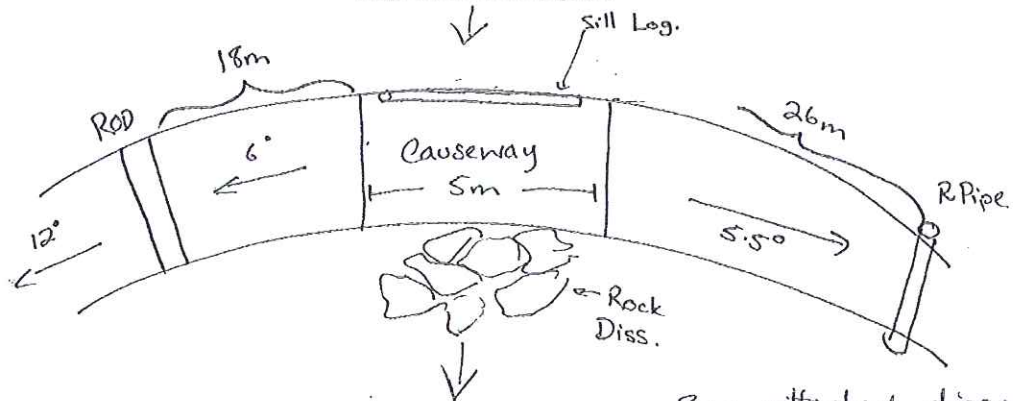
Date Started: _____

Date Finished: _____

MAINTENANCE AND CONSTRUCTION REQUIREMENTS FOR ROAD/DRAINAGE FEATURE CROSSINGS

Crossing Identification and Road Name	Crossing J, Ingalba Range Road	
Drainage Feature Type and Stream Order	4 th Order Drainage Line	
Permanent/Intermittent Stream (*18)	Permanent	
Existing Crossing Type	Causeway (*11/11)	
Description of existing crossing structure and approaches, compliance and stability during haulage operations	Rock causeway with existing rock dissipator - approaches gravelled to 15m on both sides	
Crossing Type Required	Nil required – existing structure stable	
Is disturbance >3m required during maintenance/construction	No (*13)	
Type of pavement to be used over crossing structure and approaches to ensure stability (*14/17)	Gravel and Crushed rock	
Nature and extent of reshaping of stream bed and banks required (*16/15)	Nil Required	
Practice to stabilise soil within 20m of drainage crossing (*115/12)	Retain existing vegetation, import gravel for road surfaces, retain existing dissipator	
practice to stabilise bed and banks on outlets and inlets (*17/16)	Inlet stable, reinstall silt log if required. Outlet stable – no further work required.	
Recommended location and/or practices to dispose of excess fill (*111/18)	N/A	
Temporary drainage required during construction (If yes specify) (*19)	No	
Causeways: practice to protect Bed and Banks (*119/16)	Install siltmesh as a temporary measure during any works. Retain existing vegetation. Gravel approaches and bed.	
Approaches (*15/13)	Upstream on Left	Upstream on Right
type of drains required and distance from feature	Existing (Relief pipe 26m)	Existing (ROD 18m)
outlet control on these drains	Natural vegetation	Existing vegetation >10m
silt control in table and mitre drains	N/A	N/A
Recommended practices to prevent water pollution if approach cannot be drained within 5-30m (*110/17)	N/A	N/A

Diagram of Works Proposed



See attached diagram for works needed.

Date Started: _____

Date Finished: _____

Soils Stabilisation must be implemented within five days. Record implementation date here:

() EPL Schedule 2

Considerations