LOCALITY MAP

Compartment 42

State Forest: North Brooman No: 837

Southern IFOA - South Coast

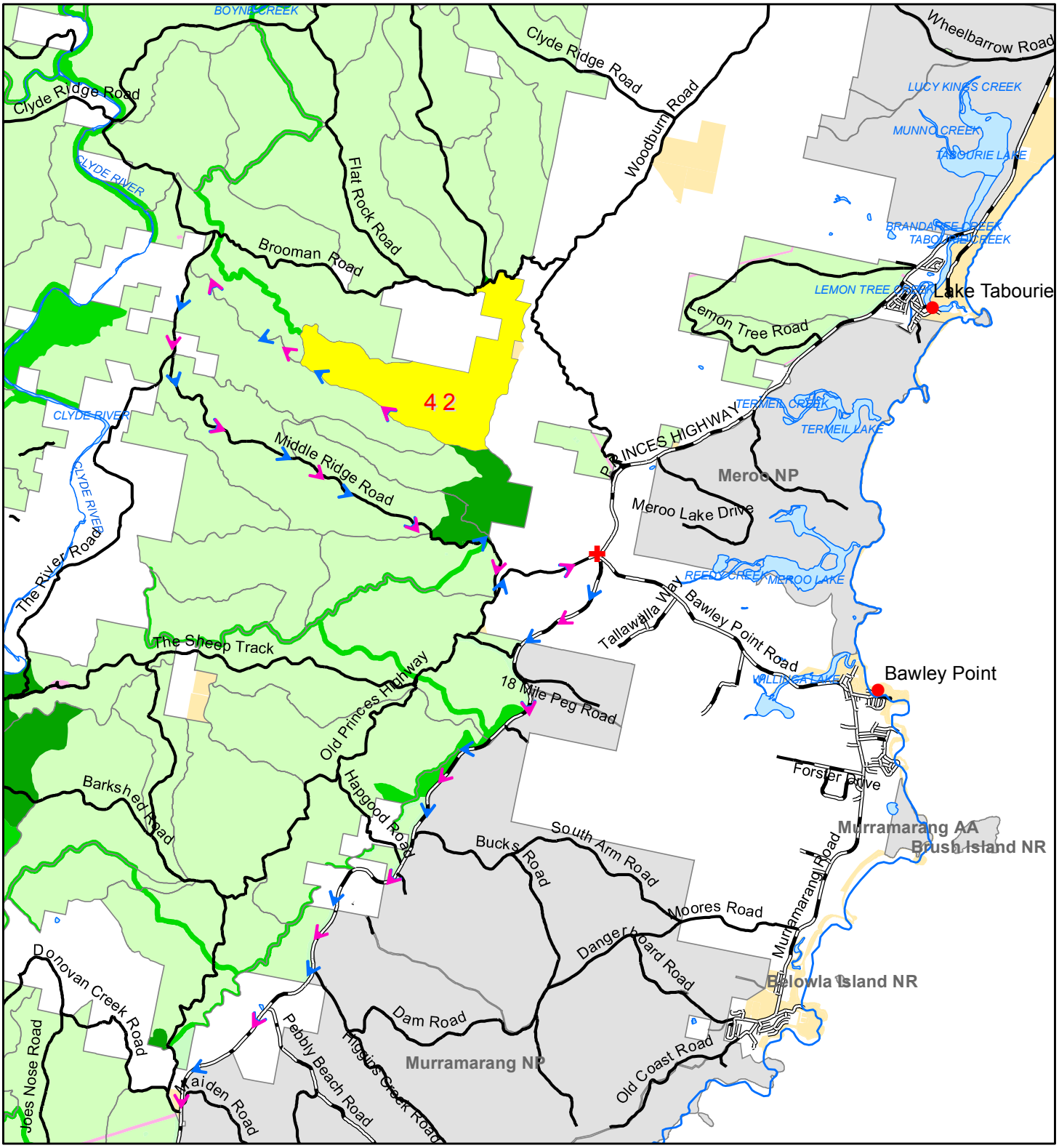
Scale: 1:100,000

Forestry Corporation

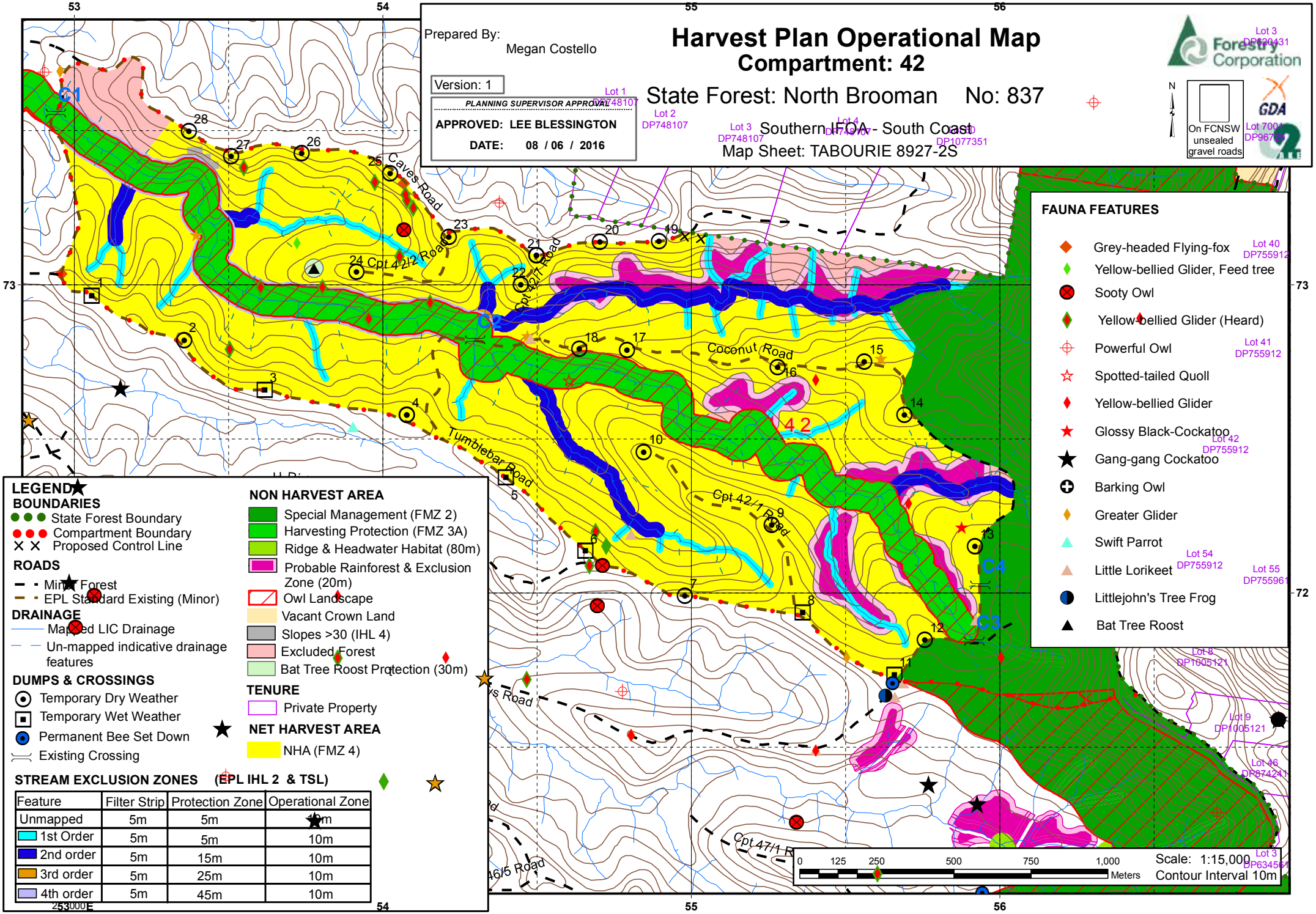
N

SPEED LIMIT 60 On FCNSW unsealed gravel roads

GDA



- Towns & Localities
- Sealed Road
- Major Forest Road
- Minor Forest Road
- Major Rivers
- State Forest
- Planning Unit
- Vacant Crown Land
- Freehold
- Non Forest
- Formal Reserve
- Informal Reserve
- National Parks
- Water
- Emergency Meeting Point & Helicopter Landing Site
- Evacuation Route
- Haulage Route



Prepared By:
Megan Costello
Version: 1
PLANNING SUPERVISOR APPROVAL
APPROVED: LEE BLESSINGTON
DATE: 08 / 06 / 2016
Harvest Plan Operational Map
Compartment: 42
State Forest: North Brooman No: 837
Southern IFOA - South Coast
Map Sheet: TABOURIE 8927-2S
Forestry Corporation
GDA
On FCNSW unsealed gravel roads
FAUNA FEATURES
Grey-headed Flying-fox
Yellow-bellied Glider, Feed tree
Sooty Owl
Yellow-bellied Glider (Heard)
Powerful Owl
Spotted-tailed Quoll
Yellow-bellied Glider
Glossy Black-Cockatoo
Gang-gang Cockatoo
Barking Owl
Greater Glider
Swift Parrot
Little Lorikeet
Littlejohn's Tree Frog
Bat Tree Roost
Caves Road
Cpt 42/2 Road
Cpt 42/1 Road
Coconut Road
Tumblebar Road
Cpt 47/1 Road
42
LEGEND
BOUNDARIES
State Forest Boundary
Compartment Boundary
Proposed Control Line
ROADS
Minor Forest
EPL Standard Existing (Minor)
DRAINAGE
Mapped LIC Drainage
Un-mapped indicative drainage features
DUMPS & CROSSINGS
Temporary Dry Weather
Temporary Wet Weather
Permanent Bee Set Down
Existing Crossing
NON HARVEST AREA
Special Management (FMZ 2)
Harvesting Protection (FMZ 3A)
Ridge & Headwater Habitat (80m)
Probable Rainforest & Exclusion Zone (20m)
Owl Landscape
Vacant Crown Land
Slopes >30 (IHL 4)
Excluded Forest
Bat Tree Roost Protection (30m)
TENURE
Private Property
NET HARVEST AREA
NHA (FMZ 4)
STREAM EXCLUSION ZONES (EPL IHL 2 & TSL)
Feature | Filter Strip | Protection Zone | Operational Zone
Unmapped | 5m | 5m | 10m
1st Order | 5m | 5m | 10m
2nd order | 5m | 15m | 10m
3rd order | 5m | 25m | 10m
4th order | 5m | 45m | 10m
0 125 250 500 750 1,000 Meters
Scale: 1:15,000
Contour Interval 10m

Prepared By:
Megan Costello

Version: 1

Harvest Plan Forest Type Map
Compartment: 42

State Forest: North Brooman No: 837

Southern IFOA - South Coast

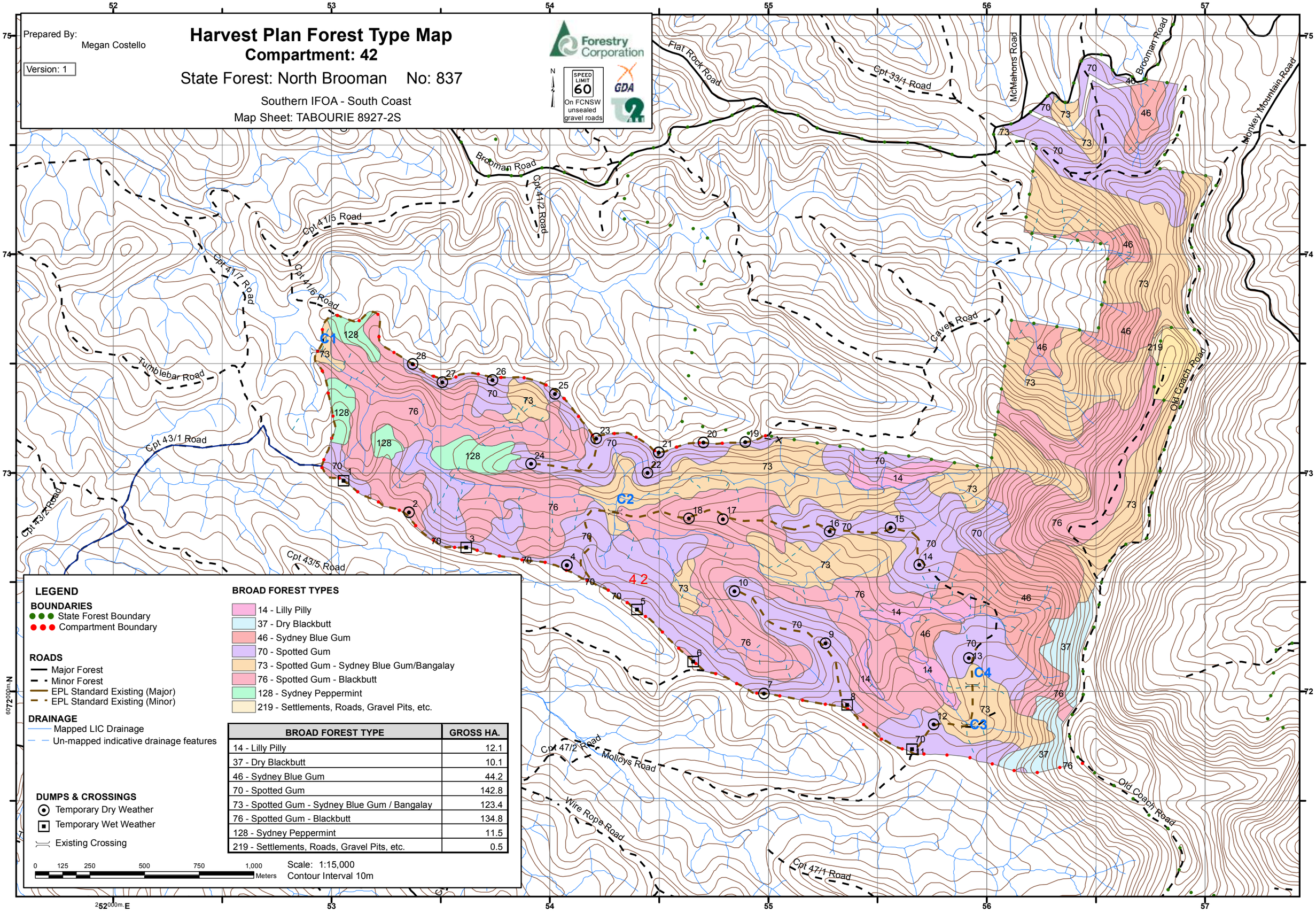
Map Sheet: TABOURIE 8927-2S

Forestry Corporation

N

SPEED LIMIT 60 On FCNSW unsealed gravel roads

GDA



LEGEND

BOUNDARIES
- State Forest Boundary
- Compartment Boundary

ROADS
- Major Forest
- Minor Forest
- EPL Standard Existing (Major)
- EPL Standard Existing (Minor)

DRAINAGE
- Mapped LIC Drainage
- Un-mapped indicative drainage features

DUMPS & CROSSINGS
- Temporary Dry Weather
- Temporary Wet Weather
- Existing Crossing

BROAD FOREST TYPES
- 14 - Lilly Pilly
- 37 - Dry Blackbutt
- 46 - Sydney Blue Gum
- 70 - Spotted Gum
- 73 - Spotted Gum - Sydney Blue Gum/Bangalay
- 76 - Spotted Gum - Blackbutt
- 128 - Sydney Peppermint
- 219 - Settlements, Roads, Gravel Pits, etc.

BROAD FOREST TYPE	GROSS HA.
14 - Lilly Pilly	12.1
37 - Dry Blackbutt	10.1
46 - Sydney Blue Gum	44.2
70 - Spotted Gum	142.8
73 - Spotted Gum - Sydney Blue Gum / Bangalay	123.4
76 - Spotted Gum - Blackbutt	134.8
128 - Sydney Peppermint	11.5
219 - Settlements, Roads, Gravel Pits, etc.	0.5

0 125 250 500 750 1,000 Meters

Scale: 1:15,000
Contour Interval 10m

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HARDWOOD FORESTS- SOUTHERN IFOA
SOUTH COAST HARVESTING PLAN

North Brooman State Forest – Compartment 42

Certification

This plan has been prepared in accordance with the Integrated Forestry Operations Approval issued under the Forestry and National Park Estate Act 1998. The Harvest Plan Standard Conditions for Hardwood Forest Operations in South Coast apply to this operation.

Prepared By: Harvest Planner	Megan Costello	Approved By: Operations Planning Manager	Lee Blessington
Signature	Megan Costello	Signature	Lee Blessington
Date	08/06/2016	Date	08/06/2016

Note: Approval includes the Harvest Plan Operational Map (HPOM) with the corresponding approval date displayed on the map, verifying final approved version.

Other maps included with this plan are Locality, Forest Type, and Cultural Heritage (limited distribution).

Description of Proposal

Harvesting of Hardwood forest

Harvesting of Hardwood forest, using Single Tree Selection Silviculture subject to the Southern IFOA requirements will be undertaken within this planning unit. **Timber harvesting and road construction will not be licensed under the EPL.**

The primary product of the harvesting is high quality large sawlogs (quota logs), small high quality sawlogs, veneer logs, girders, poles & piles where timber markets are available. Parts of felled logs that do not meet high quality log specifications are segregated and graded into other classifications such as salvage sawlogs, pulp logs & miscellaneous timbers e.g. split & round posts, firewood, mining timbers & craftwood. The availability of miscellaneous timbers depends mainly on forest types, log defectiveness & market conditions at the time of harvesting.

Clause 22 – Integrated Forestry Operations Approval (IFOA) Consideration

All relevant factors have been reviewed taking into account the volume and monetary value of each forest product to supply Term Agreement Holders. The harvesting operation also complies with Clause 22 of the IFOA.

Attachment 1: Site Safety Plan prescribes safety requirements and Medical Emergency Evacuation Plan for this harvesting operation.

Attachment 2: Roading plan prescribes roading requirements for this harvesting operation.

Abbreviations used in this plan

FT = Forest Technician, HC= Harvesting Coordinator, PtS= Protection Supervisor, HS = Harvesting Supervisor, RC = Roading Coordinator, IFOA = Integrated Forestry Operations Approval.

Area Identification and Yield Estimates

State Forest	Compartment	IFOA Region	Management Area	Certification
North Brooman	42	Southern	Batemans Bay	AFS 604224 AS4708:2013

	Cpt
Plan Compartment ID	**42**
Gross Area (ha)	488.6
Net Harvestable Area (ha)	182
Harvest Area (ha)	174
Poles, Piles, Veneer & Girders	30 m^3
Quota Logs (HQL)	1,385 m^3
High Quality Small	488 m^3
Salvage	392 m^3
Pulp E1	1,400 t
Firewood/Misc	750 t

Note: The yield estimates in the table above are derived from the Plan of Operations.

Slope Classes (percent of harvest area)

Slope Class	Cpt 42 % of harvest area
0-15º	56.5%
15-20 º	27.5%
20-25 º	12.9%
25-30 º	2.9%
> 30 º	0.2%

ATTACHMENT 1: SITE SAFETY PLAN

Worksite Information	
Is this Declared Hunting Area: No	Comments: A permanent hunting exclusion zone exists in North Brooman State Forest
Have Exclusion Zone signs been erected or checked prior to starting work daily.	N/A
Comments:	
Description of Work to be undertaken on site: - Refer to description of proposal above.	

Site Supervisor	
Name:	Contact number:

Communication		
Radio channel number	VHF:	UHF
Other (e.g. hand signals):		

Traffic management (describe) e.g. Signage, Road closure, Traffic control

This plan identifies haulage from the compartment will be west via Tumblebar Road turning left onto Brooman Road (Shire Owned 100km/hr road) turning left onto Middle Ridge Road (FCNSW Owned) turning right onto the Old Princes highway (Shire Controlled Road becoming FCNSW Owned) turning left onto Boardinghouse Road (FCNSW Owned) and turning right onto the Princes Highway (RMS Controlled Road).

The following haulage restrictions on haulage routes must apply:

- In order to cause minimal disruption to the residences along the Shire controlled section of the Old Princes Highway, trucks may travel to the compartments (empty) via Princes Highway (from Termeil), turning west onto The Old Princes Highway then right (north-west) onto Middle Ridge Road. However when hauling from the compartments, loaded trucks must not travel east along Old Princes Highway to the Princes Highway/Termeil.

Consideration of sight distances at Intersections

The intersection of Boardinghouse Road and Princes Highway has been assessed as having a sight distance of >250m on northern approach and 220m on southern approach. The southern approach already has truck warning signage installed. Additional signage or a Road Occupancy Licence is not required at this intersection.

The intersection of Middle Ridge and The Old Princes Highway roads has been assessed as not achieving a minimum of 120m sight distance on both approaches. Permanent signage in accordance with "TCP195_ Middle Ridge Old Princes Hwy Intersection" is erected at this intersection. No additional signage is required.
The intersection of Tumblebar Road and Brooman Road does not meet the minimum sight distance for a 100km/hr road for vehicles travelling along Brooman Road in either a northerly or southerly direction. Therefore prior to haulage commencing, a suitably qualified person must implement "TCP_195_BroomanRd/Tumblebar Road_Cpt43" (attached to this harvest plan) at this intersection.

Road intersections outside the control of FCNSW are not covered by this plan or any FCNSW Traffic Control Plan. Haulage contractors must abide by NSW road laws and standard operating procedures in relation to haulage routes outside the control of FCNSW.

Dust, noise and school bus routes

Dust and noise – Where log haulage routes pass close to rural housing along natural surface/gravel roads dust and noise must be minimised to the greatest extent practicable. Trucks should reduce speed, restrict use to daylight hours and minimise the use of engine brakes through these areas.

School bus route - School buses run up and back along Woodstock Road and Woodburn Road to the intersection of Woodburn Road and Clyde Ridge Road (where there is a drop off/pick up point) between the hours of 7:30am to 8:30 am and 3:30pm to 4:30pm. On weekdays, to the greatest extent practicable, log haulage should avoid school bus times on the above roads.

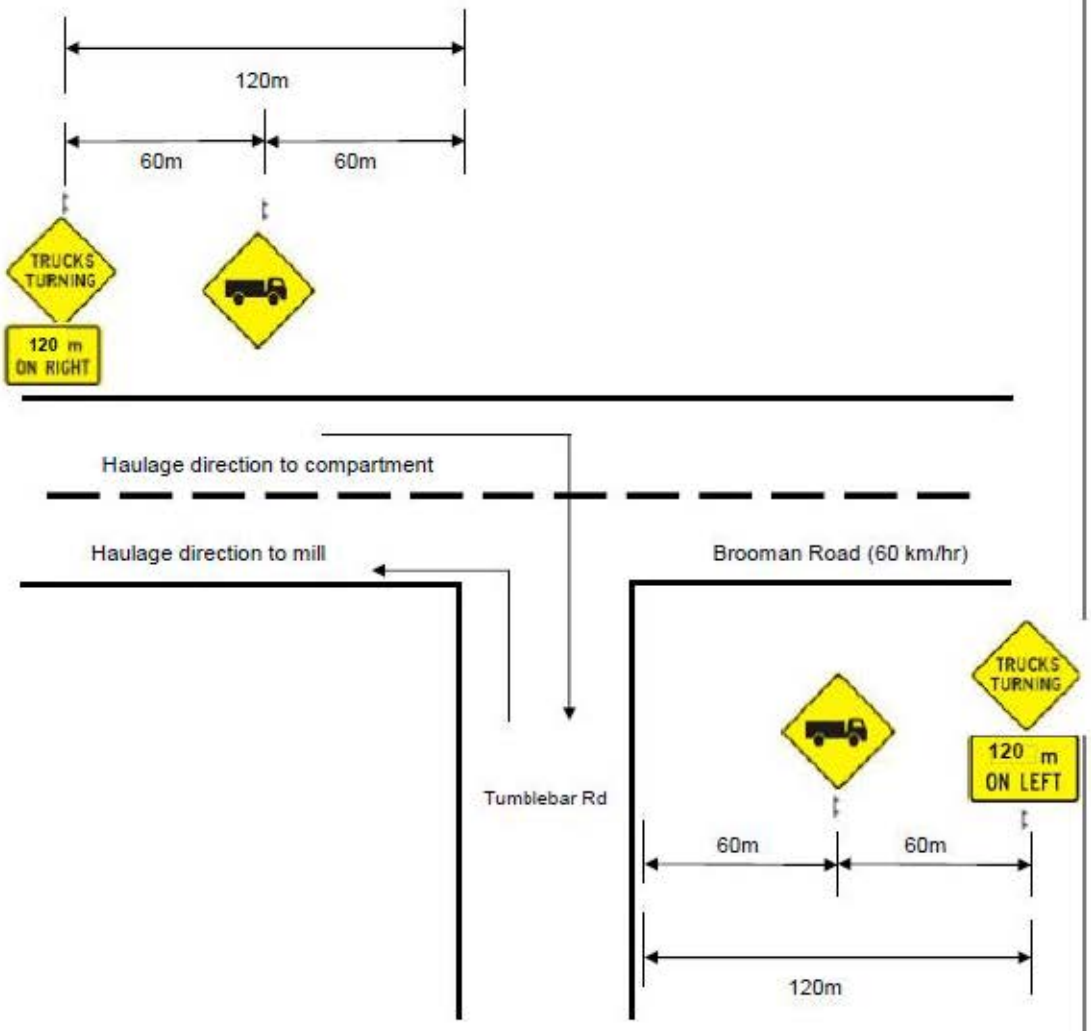
Name of on-site safety first aider/s

Location of first aid kit

SITE HAZARD & RISK ASSESSMENT NO.	CONTROL	WHO	IMPLEMENTED
1. Vehicle collision at adjoining roads of various traffic levels	Warning signs at FCNSW intersections, road closure on FCNSW roads. Implement Traffic Control plans (where specified in this harvest plan). 60km/hr speed limit on all State Forest gravel roads unless otherwise signposted. Compliance with FCNSW lights on policy.		
2. Hazardous or dead trees	**Refer to FCNSW WHS procedure 4.26.** Assess area within two tree lengths of work site. Assess risk, mark any Distinctly Dangerous Trees with the symbol **Ø** & if necessary remove hazard or move work site. Use machinery to assist with hazard removal if possible **Contractor is responsible for implementing control strategies during harvesting.**		
3. Overhead hazards associated with dumps	**Refer to FCNSW WHS procedure 4.26.** Assess overhead hazard within two tree lengths of the dump. Assess risk, & if necessary remove hazard or relocate dump site. **Contractor is responsible for implementing control strategies during harvesting.**		
4. Dust from passing vehicles along dirt haulage routes	Restrict speed to minimise dust generation, slow down when passing vehicles. Turn on driving and hazard lights to increase visibility.		
5. Trucks colliding with oncoming school buses on Woodstock and Woodburn Roads	School buses run up and back along Woodstock Road and Woodburn Road to the intersection of Woodburn Road and Clyde Ridge Road (where there is a drop off/pick up point) between the hours of 7:30am to 8:30 am and 3:30pm to 4:30pm. On weekdays, to the greatest extent practicable, log haulage should avoid school bus times on the above roads.		
6.			

- **All** visitors, contractors and employees **must** be fully **inducted** onto the worksite by the workplace supervisor e.g. the Principal Contractor or the Forestry Corporation supervisor. This must be recorded on the attached induction sheet.
- Relevant **Safe Work Procedures** are available and understood for the type of work to be undertaken.
- A **Risk and Hazard Assessment Worksheet** must be completed if site specific hazards are identified that are not covered by a **Safe Work Procedure**. The top (pink sheet) is to be attached to this site safety plan.
- Operators in training must be supervised by the site supervisor.
- All appropriate Personal Protective Equipment (PPE) must be worn on the worksite at all times

Forestry Corporation TCP_195_BroomanRd/Tumblebar Rd_Cpt43: Intersection of Tumblebar Rd (FCNSW owned) with Brooman Road (Shoalhaven Shire Council owned)
Modified from RTA Traffic Control at Work Site TCP 195)



Notes:

① Log Haulage - Intersection of Tumblebar Road with Brooman Road (60km/hr). Sight distance restricted to <120m on both approaches to Intersection.

LONG TERM USE
ADT < 1500, <20 Truck Movements, Sight Distance Restricted
Prepared by Kate Halton, Red Card Certifcate No. 5192033076 on 29/05/2013

MEDICAL EMERGENCY EVACUATION PLAN

Nearest reliable mobile phone reception (describe location)			
Next G Network: Good	GSM: Telstra	Satellite: N/A	
GPS Lat/Long: -35° 27' 19.94"E/ 150° 16' 40.13"S	MGA: 252949E 6073031N	Datum: GDA 94	Zone: 56
Location description: Higher points on Tumblebar Road			
Emergency meeting point for ambulance / police (refer to attached locality map)			
GPS Lat/Long: 35° 29' 7.98"E / 150° 20' 20.21"S	MGA: 258589E 6069854	Datum: GDA 94	Zone: 56
Location description: Termeil Shop opposite the intersection of Bawley Point Road and Princes Highway			
Helicopter landing place (refer to attached locality map)			
GPS Lat/Long: 35° 29' 5.31"E / 150° 20' 20.18"S			
Location description: Paddock to the north of Termeil Shop opposite the intersection of Bawley Point Road and Princes Highway			

Procedures to obtain ambulance assistance	
1. Dial 000 2. If there is no mobile coverage, dial 112 (which will work on any mobile phone system). 3. If no response on 112: • use a radio link (TARA, be discrete with personal information) • move to an area with mobile coverage • find a landline • use another network (e.g. a contractor's VHF radio)	Contact nearest Forestry Corporation office on: Channel: 236 Telephone: 1300 880 548 Give details of the situation and ask for a 000 call to be placed.

000 operator question:	Response:
1. Police, Fire, Ambulance?	NSW Ambulance,
2. Suburb?	State Forest name: North Brooman Nearest town or locality: Termeil Nearest ambulance station: Batemans Bay
3. Address?	Intersection of Bawley Point Road and Princes Highway
4. Nearest road junction/cross street?	Intersection of Bawley Point Road and Princes Highway
5. Local government area?	Shoalhaven
6. Nature of the problem?	Describe the accident, number and condition of casualties
7. Where is the accident?	Refer to safety meeting point above
Directions to navigate from nearest ambulance station to the emergency meeting point. From Batemans Bay head North on the Princes Highway travel approx. 33km to intersection with Bawley Point Road (on right). Park at the Termeil shop on the left.	
8. 4WD ambulance required N	CB radio channel to use:
9. Injuries?	Give detailed information about the condition of the casualty (do not mention names over radio system)
10. Your name and call back number:	

Silviculture and Harvesting Prescriptions

Year	TSI	HR Burning	Wildfires	Logging
1939	**X**	**X**	**X**	√
1944	**X**	**X**	√	**X**
1949	**X**	**X**	**X**	√
1951	**X**	**X**	√	**X**
1954	**X**	**X**	√	√
1961	√	**X**	**X**	**X**
1962	√	**X**	**X**	**X**
1964	√	**X**	**X**	√
1966	√	**X**	**X**	**X**
1968	**X**	**X**	√	**X**
1970	**X**	**X**	**X**	√
1980	**X**	**X**	√	**X**
1990	**X**	**X**	√	**X**
1991	**X**	**X**	√	**X**
1994	**X**	**X**	√	**X**
1998	**X**	**X**	**X**	√
1999	**X**	√	**X**	**X**
2001	√	**X**	**X**	**X**
2003	**X**	√	**X**	**X**
2008	**X**	√	**X**	**X**

Ö - applies, **X** – not applicable

Compartment	Resource Unit	No. of Sweeps	BA Average (m^2/ha)	BA Range (m^2/ha)
42	1	14	12	4-22

Silvicultural Planning

Single Tree Selection

The STS tract for IFOA purposes includes the 174 ha harvest area (resource units 1) of Compartment 42 as indicated on the HPOM. The STS tract is a predominantly mixed aged forest and will be harvested under heavy single tree selection (STS) regime. The objective within the STS tract for this operation is to remove 45% of the basal area to create canopy openings for regeneration, whilst retaining and minimising damage to young regenerating stems, seed trees, habitat and recruitment trees.

Resource unit 2 (6 ha) is an area dominated by yertchuk and will be excluded from harvesting.

Resource unit 3 (3 ha) is a predominantly mature forest that will be excluded from harvesting due to access constraints.

It is envisaged that the next harvesting operation in this compartment would be on average 30 years time.

Single Tree Selection (STS) must remove no more than 45% of the basal area (BA), while retaining a minimum BA of 10m^2 per hectare within the tract.

Resource Unit (Refer to HPOM for detail)	Species Composition	Stand Structure and Condition
1	Overstorey dominated by spotted gum (*Corymbia maculata*). Other species include blackbutt (*Eucalyptus pilularis*), blue gum (*Eucalyptus globulus*), yellow stringybark (*Eucalyptus muelleriana*) grey ironbark (*E. paniculata*) turpentine (*Syncarpia glomulifera*) and bloodwood (*Corymbia gummifera*)	Uneven-aged forest, highly variable over short distances. Isolated clumps of mature to over-mature trees associated with gully lines and/or steep inaccessible terrain. Over-mature individuals scattered throughout the compartment. Regrowth predominantly associated with ridges. Stand contains commercially mature trees.

Harvesting Prescription

Resource Unit (Refer to HPOM for detail)	% of Harvest Area	Silvicultural Treatment
1	100%	STS heavy: • Retain and protect from harvesting/fire damage: -poles/advanced growth (<40cm DBHOB) with good form and vigour, -habitat and recruitment trees as per TSL, • Retained trees should be evenly spaced throughout the resource unit. • Ensure no more than 45% of the BA within the resource unit is removed, while retaining a minimum BA of 10m^2 per hectare within the tract. • All other products should be removed markets permitting. If this objective cannot be achieved the following options should be considered: -reject tree felling (HC must first obtain approval from HS), -defer harvesting until ideal market conditions prevail, -consider harvesting under a light or medium STS regime.

Note: The area of each silvicultural treatment must be mapped and recorded in the Post logging information section of this plan.

Special Requirements

Noxious Weeds/Disease/Pests Hygiene Requirements

Compartment 42 is within Shoalhaven Shire Council which is a designated red zone for Myrtle Rust. In order to prevent the spread of Myrtle Rust all harvesting machinery, equipment and vehicles heading west from Shoalhaven Shire Council or south into Victoria must be inspected for vegetation containing Myrtle Rust. If present, the vegetation must be removed from the harvesting machinery, equipment or vehicle prior to leaving the compartment.

Research Plots

Any inventory plots located during the harvesting operation are to be treated the same as the surrounding area.

Road Works

Within the compartment boundary only roads that are shown on the HPOM as EPL standard or sealed may be used for haulage.

Private Property

Private property occurs adjacent to the northern and the western boundary of the compartment, as indicated on the HPOM. Private property owners have been notified of the scheduled harvesting and post-harvest burning. The table below lists neighbours who adjoin Compartment 42:

Name	Lot/DP Number (s)	Postal Address	Contact number (& email if available)	Was harvest plan notification letter returned to sender?
	Lot 50 DP 1077351			No
	Lot 3 DP 748107			No
	Lots 42 & 54 DP 755912			No
	Lots 40 & 41 DP 755912			No
	Lot 3 DP 620431			Yes
	Lot 8 DP 1005121			No
	Lot 25 DP 755912			No
	Lot 115 DP 755972			No
	Lot 51 DP 1077351			No
	Lot 4 DP 748107			No

- No harvest disturbance is permitted on private property.
- Harvesting debris must not be left within five metres of the boundary fence lines.

- Any damage to fences must be repaired by the contractor.
- Access roads must be maintained free of debris and in a trafficable state.

Occupation Permits

Apiary

6 apiary sites provided in the table below are located within the planning unit. Contact details are available from the Batemans Bay office.

Name	Site Number	Contact number
	28.36	
	28.35 29.35	
	30.35	
	29.34 30.34	

- The HC must provide the apiary permittees with at least two weeks advance notice when bee boxes need to be removed or relocated.
- Permanent apiary set down sites are located adjacent to dump 11 (see HPOM), must be levelled and free of debris at the completion of logging.

Forest Management Zoning

FMZ 2 -Special Protection, FMZ 3A Harvesting Excluded, and FMZ 4- General Management (normal harvesting prescriptions apply) occur within the compartment. Refer to HPOM for more detail.

FMZ 3A -– Logging operations are restricted as per condition 18(b) of the IFOA. Refer to Harvest Plan Standard Conditions for Hardwood Forest Operations in South Coast for detail of what logging operations are permitted in this zone.

FMZ 2, 3A – Prescribed burning is only permitted in these areas where fire does not conflict with underlying protection zones e.g. rainforest, cultural heritage etc. (Refer to cultural heritage flora and fauna sections of this plan and the standard harvest plan conditions for more detail).

IFOA Required Approval of Forestry Activities

Operations Planning Manager approvals have been obtained for road re-opening, routine road maintenance and log haulage in FMZ 2 and 3A and their locations are indicated on the HPOM by FMZ approved crossings C1, C2, C3 and C4. No other crossings of these features are approved. Forestry Operations within the plan area must minimise impacts to the exclusion zones and meet the requirements of the EPL and General Exclusion Zones in section of this plan.

Construction or re-opening of roads or snig tracks may occur with prior approval in the following exclusion zones:

- Operations Planning Manager approval required for Stream Exclusion Zones or Rainforest.

During the harvesting operation the HC must identify any crossings required in these exclusion zones and contact the Planner to obtain required approvals.

Cultural Heritage

Cultural Heritage - All relevant representatives have been consulted &/or inspected Compartment 42.

Flora and Fauna

Species adequately covered by general prescriptions:
The following species have been recorded in or around the compartments and are adequately covered by the general prescriptions. No further protection measures are required for these species:

Sooty Owl (*Tyto tenebricosa***), Glossy Black-Cockatoo** *(Calyptorhynchus lathami)*, **Eastern False Pipistrelle** *(Falsistrellus tasmaniensis)*, **Grey-headed Flying Fox** *(Pteropus poliocephalus)*, **Little Lorikeet** (*Glossopsitta pusilla)* and, **Gang Gang Cockatoo** (*Callocephalon fimbriatum*).

.

Tree Retention

Zone	Hollow bearing Trees/ha	Recruitment Trees /ha	Protection of Retained Trees	Dead Standing Trees (only if safe)	Significant Food Resource*
Regrowth	**Up to 5**	**1 for every tree retained under 5.6d**	Ö	Ö	Ö
TSL condition	5.6d	5.6e	5.6h	5.6f	5.6 g

Ö - Condition applies
*1 Yellow Bellied Glider sap feed tree occurs within compartment 42 at the location shown in the table below. Note all of these are within the excluded forest area.

Species	Feature	Zone	GDA Easting	GDA Northing	Comments
Yellow-bellied Glider	Feed tree	56	253722	6073135	Marked with orange tape

General exclusion zones

General exclusions as listed below are shown on the HPOM.

Feature/Condition	TSL cond'n	Occurs within Planning Unit
Rainforest	5.4	Has been assessed as a risk that Warm Temperate/Cool Temperate/Depauperate (Dry) may occur in the field. May require further investigation#.
Riparian Protection Zones	5.7	Yes
Ridge & Headwater Habitat	5.8	Yes
Wetlands	5.9	Has been assessed & is unlikely to occur in the field. May require further investigation#.
Heath and Scrub	5.10	Has been assessed & is unlikely to occur in the field. May require further investigation#.
Rocky Outcrops and Cliffs	5.11	Has been assessed & is unlikely to occur in the field. May require further investigation#.
Endangered Ecological Community	NA	Has been assessed & is unlikely to occur in the field. May require further investigation#. **Harvesting, harvesting machinery and post harvest burning must be excluded from all areas of EEC.**

#FT/HC will continue to conduct on the ground mark-up & searches and report back to foresters/ecologists any features requiring further investigation.

General Threatened Flora and Fauna Prescriptions

Feature	**Records in Cpt 42**	**Licence conditions under the TSC Act**
Threatened Frog General Protection Measures	No	5.12
Bird Nest and Roost Site Protection	No	5.13
Tree Bat Roost Protection	Yes Tree marked in field with orange tape 30m exclusion zone must be marked by FT	5.14.1
Subterranean Roost Protection	No	5.14.2
Protection of flying-fox Camps	No	5.14.3
Burning	Net planned area	5.16

Feature	Records in Cpt 42	Licence conditions under the TSC Act
Ground Habitat Protection	Net planned area	5.17

Species & Site-Specific Threatened Flora and Fauna Prescriptions

The following species have been recorded within or nearby the area and the associated prescriptions must be implemented:

Threatened species and habitat features within trigger distance	Records in Cpt 42	Licence conditions under the TSC Act or relevant Site-specific prescription
Littlejohn's Tree Frog *Litoria littlejohni*	No	6.2B
Powerful Owl *Ninox strenua,* **Barking Owl** *Ninox connivens*	Yes No	6.4 *Owl Landscape Exclusion Zones occur in compartment 42*
Swift Parrot *Lathamus discolor*	No	6.5
Spotted tailed Quoll *Dasyurus maculatus*	Yes	6.10
Squirrel Glider *Petaurus norfolcensis*	No	6.12
Yellow-bellied Glider *Petaurus australis*	Yes	6.13
Golden-tipped Bat *Kerivoula papuensis*	No	6.14

Fisheries Licence Conditions

Compartment 42 contains Class 2 Aquatic Habitat as defined by the Southern IFOA Fisheries Licence. Therefore the conditions of the fisheries licence are triggered for this operation.

Unmapped drainage lines must not be harvested within the compartment.

Riparian Exclusion Zones, Buffer Zones and Special Operational Zones must be established as per condition 7A.1 – 7A.3 of the Fisheries Licence. Operations within these zones must comply with restrictions detailed in conditions 7A.4 – 7A.10.

If a need for "in-stream works" within Class 2 Aquatic Habitat is identified during the operation (additional to any works already described within the harvest plan) the HC must inform the Planner immediately. "In-stream works" are defined as *any activity being carried out within the incised channel or, where there is no defined bank, between the apparent edges of the watercourse.*

All "in-stream works" within Class 2 Aquatic Habitat must comply within condition 8 of the Fisheries Licence.

Soils and Water Protection

Refer to EPL Booklet & Standard Plan Conditions

Spatially Corrected LIC Drainage

Spatially corrected LIC drainage has been built using LiDAR derived drainage in compartments 42. Protection zones and filter strips have been rebuilt based on spatially correct LIC drainage and an additional mean stream bed width included for each stream order. Stream based Owl Landscape and FMZ 3A have been rebuilt based on spatially corrected LIC drainage (mean stream width is not built in to these exclusions).The FT or Harvest Contractor may use the HPOM and GPS mapping to locate exclusion boundaries or traditional measure and mark up methods. If GPS mapping is being used to locate boundaries, as a minimum the FT must mark with flagging tape all unmapped and 1st order drainage features.

Site-specific EPL Conditions

Elements	Conditions
Unmapped Drainage Lines	EPL applies: refer to drainage feature protection below.
Drainage Feature Protection	See HPOM for widths
Inherent Hazard Class	2
Dispersible Soils	No
Seasonality Harvesting Exclusions	No
Seasonality Burning Exclusions	No
Log Dumps	Refer relevant conditions for IHL
Snig Tracks	Refer relevant conditions for IHL
Roads	See Schedule 5 of EPL Booklet
Slope limits for harvesting	Refer to Schedule 4B.3 of EPL

Drainage Feature Protection

Filter strips (EPL), Protection Zones (EPL), Operational Zones (EPL), Exclusion Zones (FL), Buffer Zones (FL), Special Operational Zones (FL), Protection Zones -hard (TSL) and Protection Zones -soft (TSL) must be retained along all drainage lines, prescribed streams and watercourses within the net planned area of the compartments at minimum widths as stated in the Table below.

Table 1: Minimum filter strip, protection zone and operational zone widths for mapped and unmapped drainage lines, prescribed streams and watercourses in hardwood forests in Inherent Hazard Level 2 (metres – measured along the ground surface)

Stream Order	EPL Filter Strip FL Exclusion Zone TSL Protection (hard)	EPL Protection Zone FL Buffer Zone TSL Protection (soft)	EPL Operational Zone FL Special Operational Zone	Drainage Feature Protection: FT/HC marking instruction
Unmapped	**5**	**5**	**10**	**10m (Pink)**
1st order	**5**	**5**	**10**	**10m (Pink)**
2nd order	**5**	**15**	**10**	**20m (Pink)**
3rd order	**5**	**25**	**10**	**30m (Pink)**
4th order +	**5**	**45**	**10**	**50m (Pink)**

Log Dump Location

28 log dumps are indicated on the HPOM. Field location of log dumps must utilise the most level site available consistent with the location indicated on the HPOM.

Inherent hazard level 2 Conditions 26, 27, 28, 30, 31 and 33 of Schedule 4 of the EPL must apply.

Drainage Feature Crossings

Four road crossings (C1, C2, C3, and C4) are approved for use on drainage features. (Refer to HPOM). Road crossing details are contained in Attachment 2 of this Plan.

Mass Movement

Compartment 42 is not in an area identified as having a potential for mass movement. No specific prescriptions relating to mass movement/snigging are required.

Suitability of existing log dams and gully stuffers

There are no known log dams or gully stuffers on snig track or road crossings in the compartments.

Condition 47 of Schedule 4 of the EPL must apply.

Post Log Burning Control Lines

To assist the post log burning crews prevent fire from entering areas to be excluded from burning, control line construction must be undertaken concurrently with harvesting. Where possible snig tracks patterns should be designed to double as control lines. Control lines must be located as close as reasonably practical to the feature to be excluded from burning. The HC must assess the areas harvested, snig track network and existing roads to determine if there are sufficient control lines in

place and where required instruct the contractor to construct additional mineral earth control lines to supplement these. The HC must record instances where it was not possible to construct a suitable control line close to the feature to be excluded and recommend harvest areas which should be excluded from the post log burning operation due to inadequate control lines.

The table below lists critical boundaries in compartment 42. Where possible design snig track patterns so they double as bare earth containment lines as close as possible to these boundaries. Where this is not practical, HC must instruct contractor to construct a bare earth break (drained as per EPL snig track conditions) as close as possible to the critical boundary.

Critical boundary	**Completed** **Yes /No**
Private Property east of dump 19	

Pre-Operational Briefing

I acknowledge that I have received a copy of the Harvesting Plan for Compartment 42 in North Brooman 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 HS or his/her delegate.

Position	Name	Signature	Date

Post Harvest Mapping Features Confirmation Checklist

Feature	Planning Updates	Reason (Error/New)	GIS update tool completed?	Harvesting Updates	Comments
Soil Regolith	No				
Mapped Drainage	No				
Rainforest	No				
Rocky outcrops	No				
Wetlands	No				
Cultural Heritage	No				
Existing Roads	Yes	Missing	Yes		
New Roads	**No**				
Heath	No				
Powerlines etc	No				
Other					

HC Feature Usage Record

Dates of commencement and cessation of logging

Date of commencement of logging:_____

Date of cessation of logging: _____

DUMP USAGE RECORD

- Record the commencement and completion of harvesting at each dump
- Record the occurrence of temporary stopping of harvesting at each dump.

Dump number	Start date	Finish date	*Track drainage completed within 2 days (yes/no)	Date of temporary cessation	**Temporary track drainage completed within 5 days (yes/no)	Date resumed

*At completion of snig track/dump, track drainage must be completed within **2** days unless soil is saturated.

*At temporary cessation of snig track use, track drainage must be completed within **5** days unless soil is saturated.

Situations where drainage could not be completed due to saturated soils must be recorded in HC/FT Notes.

HC/FT Notes

Date	Event	Signed

HC/FT Notes (continued)

Date	Event	Signed

HC/FT Notes (continued)

Date	Event	Signed

HC/FT Notes (continued)

Date	Event	Signed

HC/FT Notes (continued)

Date	Event	Signed

Clearance Certificate

COMPARTMENT: 42, NORTH BROOMAN STATE FOREST

To .....HC

I request approval for me to move my logging crew and all associated machinery from the above-mentioned area to the next compartment in accordance with Section 3.5 of the Forest Practices Code.

I certify that:

(a) all permanent roads, trails and mitre drains have been cleared of harvesting debris;
(b) butt damage to retained trees has been kept to acceptable limits;
(c) all trees marked for removal have been felled;
(d) utilisation limits have been satisfactorily met;
(e) stump heights conform to requirements;
(f) all hanging trees have been felled and brought down;
(g) all log dumpsites have been satisfactorily restored as required;
(h) harvesting debris is not accumulated around retained trees;
(i) all accumulated litter has been disposed of properly;
(j) all filter and buffer strip requirements have been complied with;
(k) all snig track, extraction track and temporary logging road drainage has been installed satisfactorily and other required rehabilitation work has been completed;
(l) all necessary repairs to damaged roads, signs, fences and other structures have been carried out.
(m) _____ **(insert quantity) rubber flaps have been recovered in a satisfactory condition and reported to Roading Coordinator for collection.**
(n) all machinery, equipment and vehicles have been checked and are free of noxious weeds, diseases and pests.

I believe that I have met all my obligations under the conditions of the Contractors Licence, the EPL and TSL which apply to the compartment just completed, as stated in this Harvesting Plan.
Signature.....Name.....…….....Date .....
Contractor

As a result of inspections of the logging operations made in accordance with this Harvesting Plan, I am satisfied that, to the best of my knowledge, the contractor responsible for this harvesting operation has satisfactorily completed all work and approval is given for her/him to remove her/his machinery and equipment and leave the area/commence operations in another compartment.

This clearance does not release the contractor from any obligation to undertake any remedial work if subsequent deficiencies are shown to result from inadequate practices during the harvesting operation, which are found during any inspections of the area made within 12 months of the date of this post-harvesting inspection.

Last inspection was made on .....(Date)

Signed .....(Date).....
HC

Post Logging Information

Record any circumstances of significance relating to the harvesting of this compartment. Please draw or include any annotations on the attached operation scale map.

Summary of silvicultural treatment

Treatment type	Area (ha) subject to treatment (HC estimate)	Number of AGS gaps created	Comments
Australian Group Selection			
Single Tree Selection			
Thinning/Spacing			
Post Harvest Silviculture			

Actual area harvested (record on attached HPOM) Give reasons for harvestable areas that were not harvested (e.g. Too steep, defective timber). Make reference to map.

Post Logging Basal Area sweeps

Sample point	GPS (GDA 94)	Pre-harvest (B) BA m^2/ha	Post-harvest(A) BA m^2/ha	Difference (D) (B – A) m^2/ha	% BA removed D/B x100	Comments
1	E N					
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
Total averages						

Comply with maximum STS BA removal of 45% or Thinning BA removal of 60% Y/N

Possible next cut (tick appropriate boxes)

Main product type	Anticipated volume		
	H	M	L
Girders			
Veneer			
Poles/piles			
Quota			
Smalls/Thinnings			
Salvage			
Pulpwood/chipwood			

Time to next harvest	
0 to 5 years	
5 to 10 years	
10 to 20 years	
20 to 30 years	
30 plus years	

ATTACHMENT 2 ROADING PLAN

Summary of Roading Requirements

Feature	Details	Works Required
Existing roads to be used.	10,283m /6	Yes
New roads to be constructed	-	NA
Existing crossings used	4	Yes
New crossings to be constructed	-	NA
Length of road >10°	66m	NA
Borrow pits and gravel pits	0	NA
Mass movement prescriptions apply	No	NA
Dispersible soil conditions apply	No	NA
Seasonality provisions apply	No	NA

Note: Maintenance works not completed by Roading Coordinator must be recorded and passed onto the HC for completion during harvesting and documentation.

The start and finish dates of all maintenance and construction must be recorded on the individual roading sheets along with other relevant changes or explanations.

All rubber flaps on minor forest roads must be removed and replaced with trafficable rollover banks on completion of operation.

CHECKLIST OF WORKS REQUIRED ON ROADS & CROSSINGS

Road/Crossing Name	Works Required	Date Started	Date finished	Signature
Tumblebar Road (length = 3,124m)	Reshape road & maintain existing drainage structures, install new drainage as required and to meet EPL standard; Spacing of drainage on this road was not assessed by the planner; Clearing as required (**except through Cultural Heritage exclusion zones**). Lift blade when machine traverses the exclusions. Blue flagging tape on approaches to the exclusion zones mark points where blades should be lifted and then lowered **RC/HC Comments:**			
Caves Road (length = 3,094m)	Reshape road & maintain existing drainage structures, install new drainage as required and to meet EPL standard; Spacing of drainage on this road was			

	not assessed by the planner; **RC/HC Comments:**			
Coconut Road (length = 2,773m)	Clear vegetation up to 3m either side. Reshape road & maintain existing drainage structures, install new drainage as required and to meet EPL standard; Spacing of drainage on this road was not assessed by the planner; Section of Coconut Road between dumps 13 and 14 is not licensed. **RC/HC Comments:**			
Cpt 42/1 Road (length = 786m)	Clear vegetation up to 3m either side. Reshape road & maintain existing drainage structures, install new drainage as required and to meet EPL standard; Spacing of drainage on this road was not assessed by the planner; **RC/HC Comments:**			
Cpt 42/2 Road (length = 397m)	Clear vegetation up to 3m either side. Reshape road & maintain existing drainage structures, install new drainage as required and to meet EPL standard; Spacing of drainage on this road was not assessed by the planner; **RC/HC Comments:**			
Cpt 42/7 Road (length = 109m)	Clear vegetation up to 3m either side. Reshape road & maintain existing drainage structures, install new drainage as required and to meet EPL standard; Spacing of drainage on this road was			

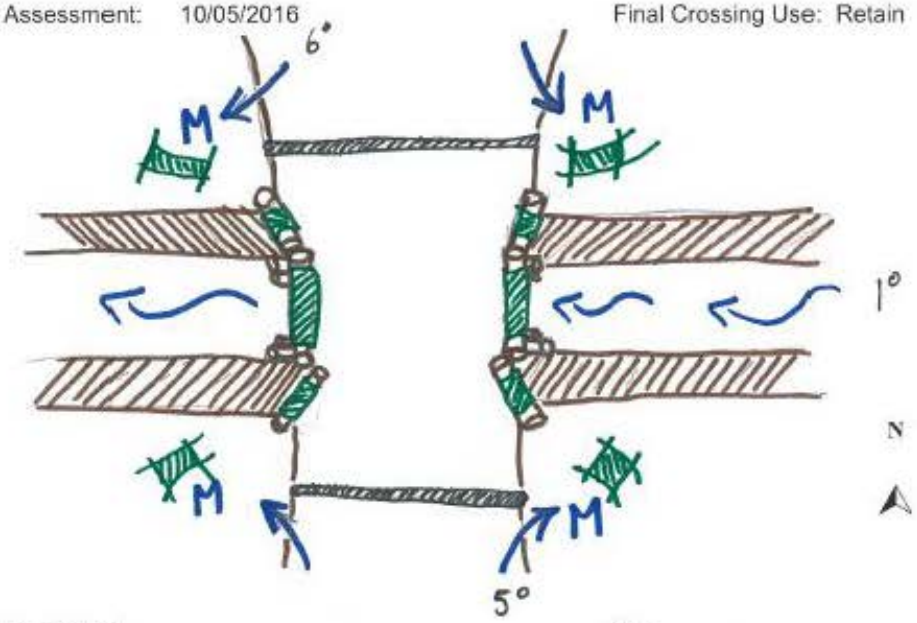
	not assessed by the planner; **RC/HC Comments:**			
C1 E 252946 N 6073560	Refer to Crossing Form in Appendix **RC/HC Comments:**			
C2 E 254309 N 6072817	Refer to Crossing Form in Appendix and recommendations from DPI Fisheries; also attached. **RC/HC Comments:**			
C3 E 255915 N 6071848	Reshape road approaches and maintain existing 450mm culvert and mitre drains. Install new drains as required and to meet EPL specification. Apply gravel to crossing surface to form sealed, crowned running surface. **RC/HC Comments:**			
C4 E 255939 N 6072021	Reshape road approaches and maintain existing 550mm culvert and mitre drains. Install new drains as required and to meet EPL specification. Apply gravel to crossing surface to form sealed, crowned running surface. **RC/HC Comments:**			

Cpt: 42 Date: 31/05/2016 E 252946 N 6073560 photo Y
CROSSING NAME: C1 DL (mapped DL)
Waterway Classification: Fish Passage Class 2-Moderate Fish
Fisheries Licence Aquatic Habitat: Class 2

Assessors Name: Megan Costello **Crossing Type:** Existing Bridge

Features	Works (As per EPL Schedule 5)	Plant/Materials
Structure	Stable at time of assessment? Y Requires installation of kerb and wing logs. Blade off material on top of deck to level out ruts and replace with gravel.	2 x kerb logs 4x wing logs geotextile Grader forwarder
Bed and Banks	Stable at time of assessment? Y	NA.
Erosion and Sediment Control	Re-instate mitre drains and install rubber flaps for drainage between 5 & 30m. Install sediment traps as required.	2x rubber flaps
Disposal of excess spoil	Outside Stream Exclusion Zone.	
Soil Stabilisation within 20m	NA.	NA.
Road drainage within 5-30m • Type • outlet control • table drain checking devices	Mitre drains and rubber flaps Sediment traps and vegetation Hay bales as required.	Sediment traps Hay bales

Date of Assessment: 10/05/2016 Final Crossing Use: Retain



Date Work Started: _____

Date Work Finished: _____

Soil stabilisation must be completed within 5 days

Record implementation date here: _____

Key

→Ru	Rubber strip
→M	Mitre drain
xxx	Roadside clearing
→Ro	Rollover drain
ψ	Sill Log
ooooo	Rock
ψ	Seeding
∇	Sediment control
∴	Gravel

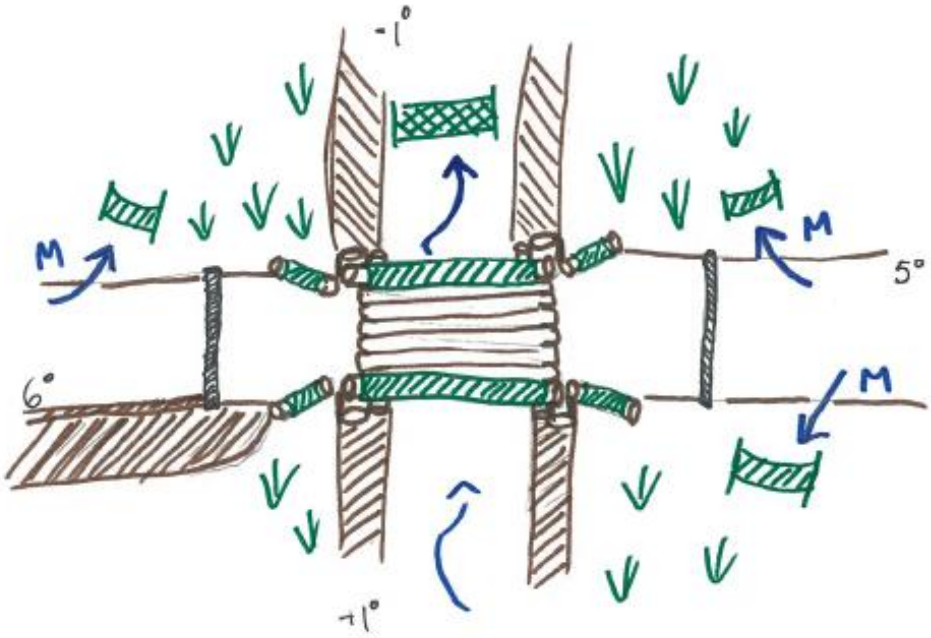
Cpt: 42 Date: 31/05/2016 E 254309 N 6072817 photo Y
CROSSING NAME: C2 DL (mapped DL)
Waterway Classification: Fish Passage Class 2-Moderate Fish
Fisheries Licence Aquatic Habitat: Class 2

Assessors Name: Megan Costello **Crossing Type:** Existing Bridge

Features	Works (As per EPL Schedule 5)	Plant/Materials
Structure	No longer stable – remove deck and stringers. Maintain existing bed logs to reduce disturbance to stream banks. Install 1 new bed log either side of crossing behind the existing logs to support the new deck. Geotextile to be placed over the stringers. Soil to be backfilled and compacted over geotextile. Install kerb logs to hold fill material. Install wing logs on both approaches to direct traffic and water.	2 x bed logs (11m in length) 12-14 new stringers (10m in length) 2 x kerb logs 4x wing logs geotextile excavator labour
Bed and Banks	Stable at time of assessment? Y	NA.
Erosion and Sediment Control	Install silt barriers downstream of crossing during construction. Re-instate mitre drains and install rubber flaps for drainage between 5 & 30m. Install sediment traps as required.	2x rubber flaps
Disposal of excess spoil	Ensure all deck materials and spoil are disposed outside of the Stream Exclusion Zone. Flatten spoil and seed.	seed
Soil Stabilisation within 20m	NA.	NA.
Road drainage within 5-30m • Type • outlet control • table drain checking devices	Mitre drains and rubber flaps Sediment traps and vegetation Hay bales as required.	2 x rubber strips Sediment traps Hay bales

Date of Assessment: 10/05/2016

Final Crossing Use: Retain



N

Date Work Started: _____

Date Work Finished: _____

Soil stabilisation must be completed within 5 days

Record implementation date here: _____

Key

→Ru	Rubber strip
→M	Mitre drain
xxx	Roadside clearing
→Ro	Rollover drain
ψ	Sill Log
○○○○○	Rock
ψ	Seeding
∇	Sediment control
∴	Gravel

Megan Costello

From: Jillian Reynolds <jillian.reynolds@dpi.nsw.gov.au>
Sent: Wednesday, 1 June 2016 10:59 AM
To: Megan Costello
Cc: Allan Lugg; Troy Northey; Sampson Hollywood
Subject: Concurrence for bridge upgrades in Key Fish Habitat - North Brooman State Forest

Hi Megan,

Thank you for your notification of works.

DPI Fisheries has no objections to the works being carried out as desribed provided that:

For crossing C2, as much earth and gravel as possible is to removed from the bridge deck prior to removal to prevent spoil from entering the stream.

Environmental safeguards (eg silt curtains, sediment fences, booms etc.) are to be installed to ensure that there is no escape of turbid plumes into the adjacent aquatic environment.

Damage to existing native riparian vegetation is to be avoided or minimised and any damage caused is to be restored.

Split rock used in for the bridge deck is to be clean and fee of loose sediment.

Machinery is not to enter or work from the waterway.

DPI Fisheries (1800 043 536) is to be immediately notified of any fish kills in the vicinity of the works. in such cases, all works other than emergency response procedures are to cease until the issue rectified and written approval to proceed is provided by DPI Fisheries.

If you have any queries please do not hesitate to contact me.

Regards,

Jillian

Jillian Reynolds | Regional Assessment Officer
NSW Department of Primary Industries | Aquatic Ecosystems
4 Woollamia Road | PO Box 97 | Huskisson NSW 2540
T: 02 4428 3406 | M: 0429 918 575 | F: 02 4441 8961 | E: jillian.reynolds@dpi.nsw.gov.au
W: www.dpi.nsw.gov.au/fisheries

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