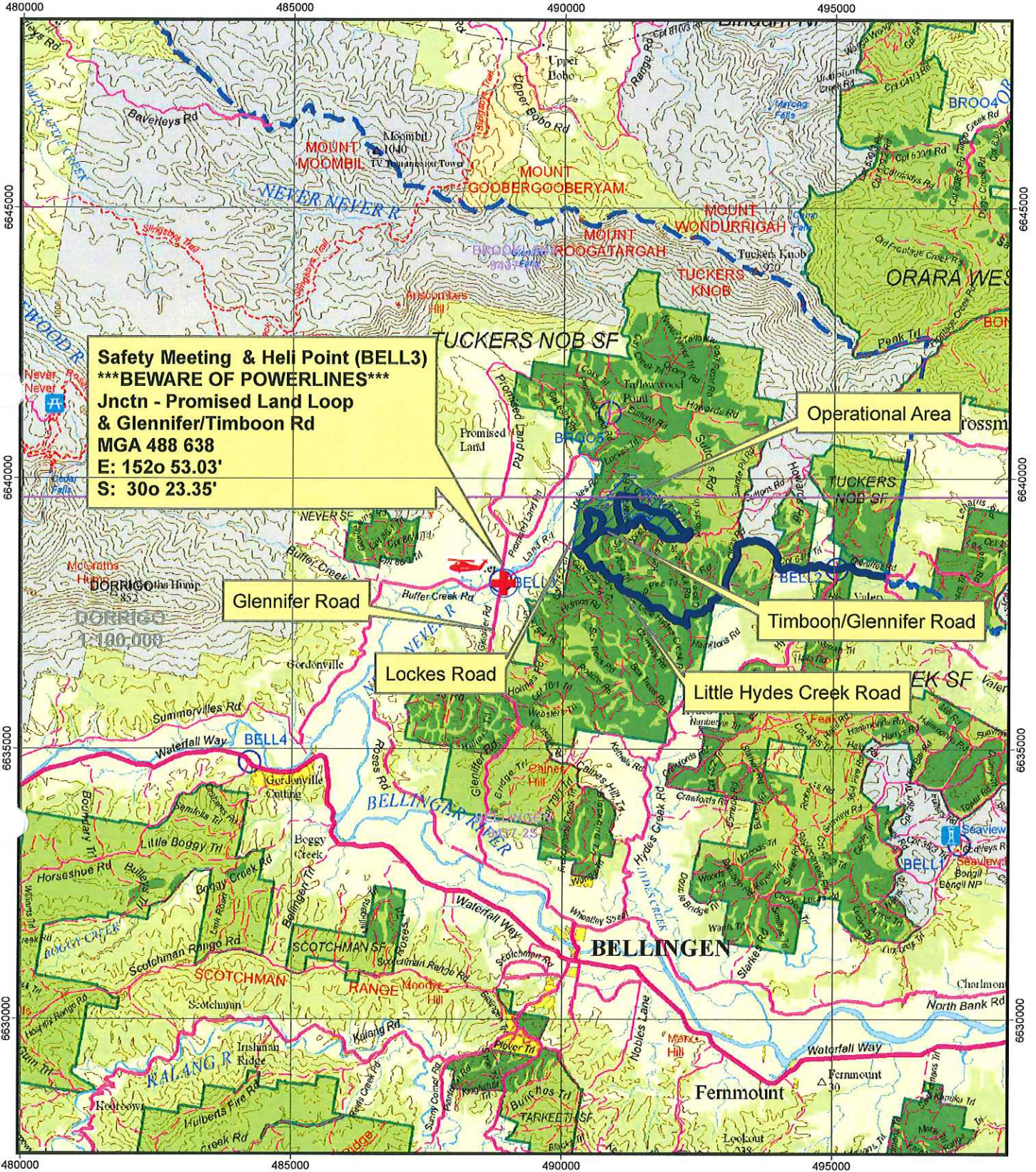




Map Sheets:
 1:25,000 - Bellingen - 9437-2S
 1:25,000 - Brooklana - 9437-2N
 1:100,000 - Dorrigo - 9437
 Scale: 1:100,000

North East Region - Urunga MA
 Locality Map
Compartment 69
 Tuckers Knob State Forest



Safety Meeting & Heli Point (BELL3)
*****BEWARE OF POWERLINES*****
Jctn - Promised Land Loop
& Glennifer/Timboon Rd
MGA 488 638
E: 152o 53.03'
S: 30o 23.35'

Glennifer Road

Lockes Road

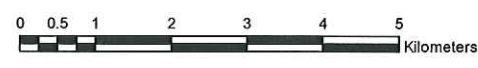
Operational Area

Timboon/Glennifer Road

Little Hydes Creek Road

MAP FEATURES

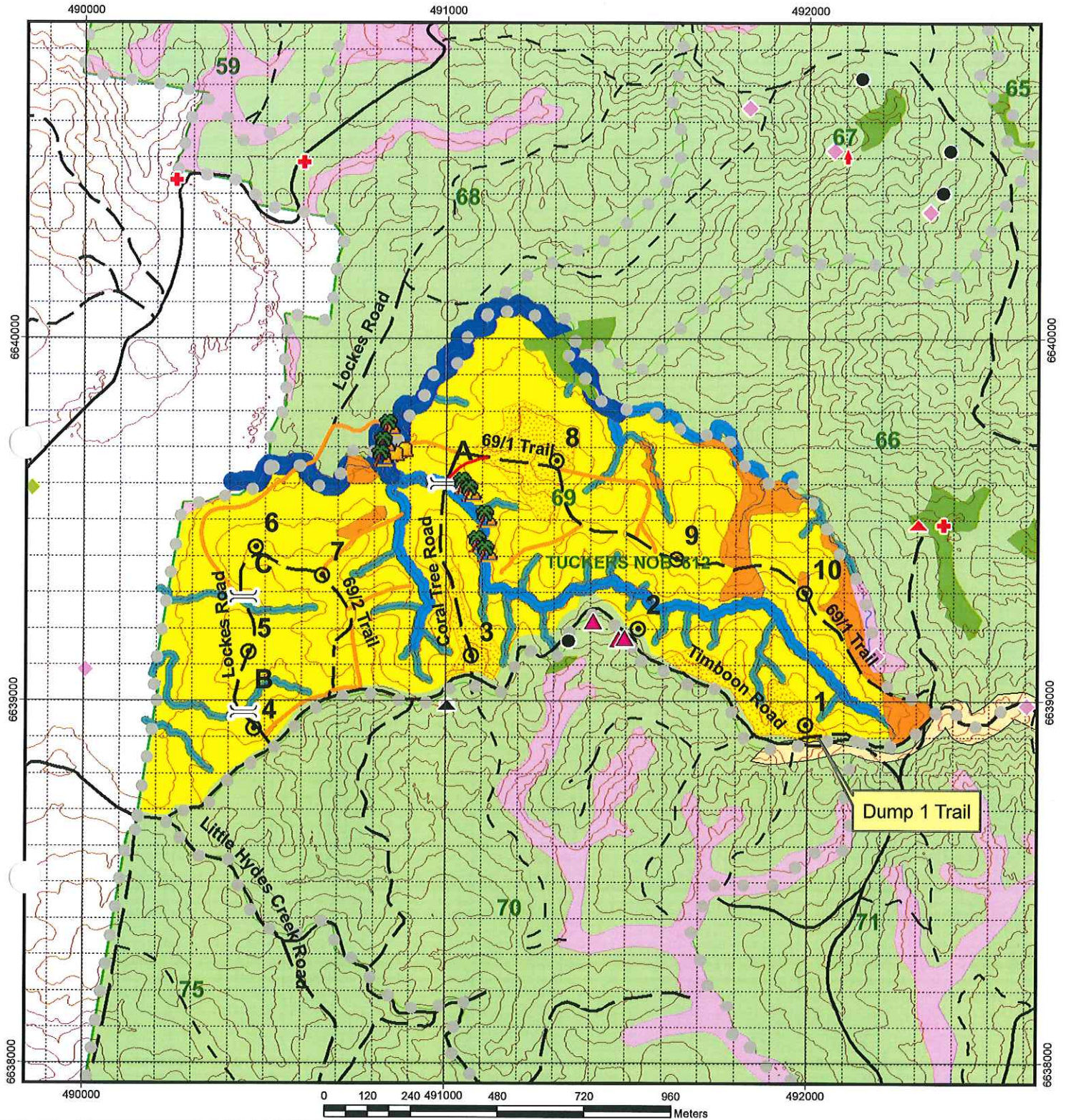
- Subject Area
- Emergency Meeting Point (Safety Point)
- Helicopter Landing Point
- State Forest
- 1:25000 Map Sheet
- 1:100000 Map Sheet
- National Park Estate
- Haulage_Route



Prepared by...Bob Aspden
 Date: 22.3.2012

N Map Sheets:
 1:25,000 - Bellingen - 9437-2S
 1:25,000 - Brooklana - 9437-2N
 1:100,000 - Dorrigo - 9437
 Scale 1:15,000

North East Region - Urunga MA
 Harvest Plan Operational Map
Compartment 69
 Tuckers Knob State Forest

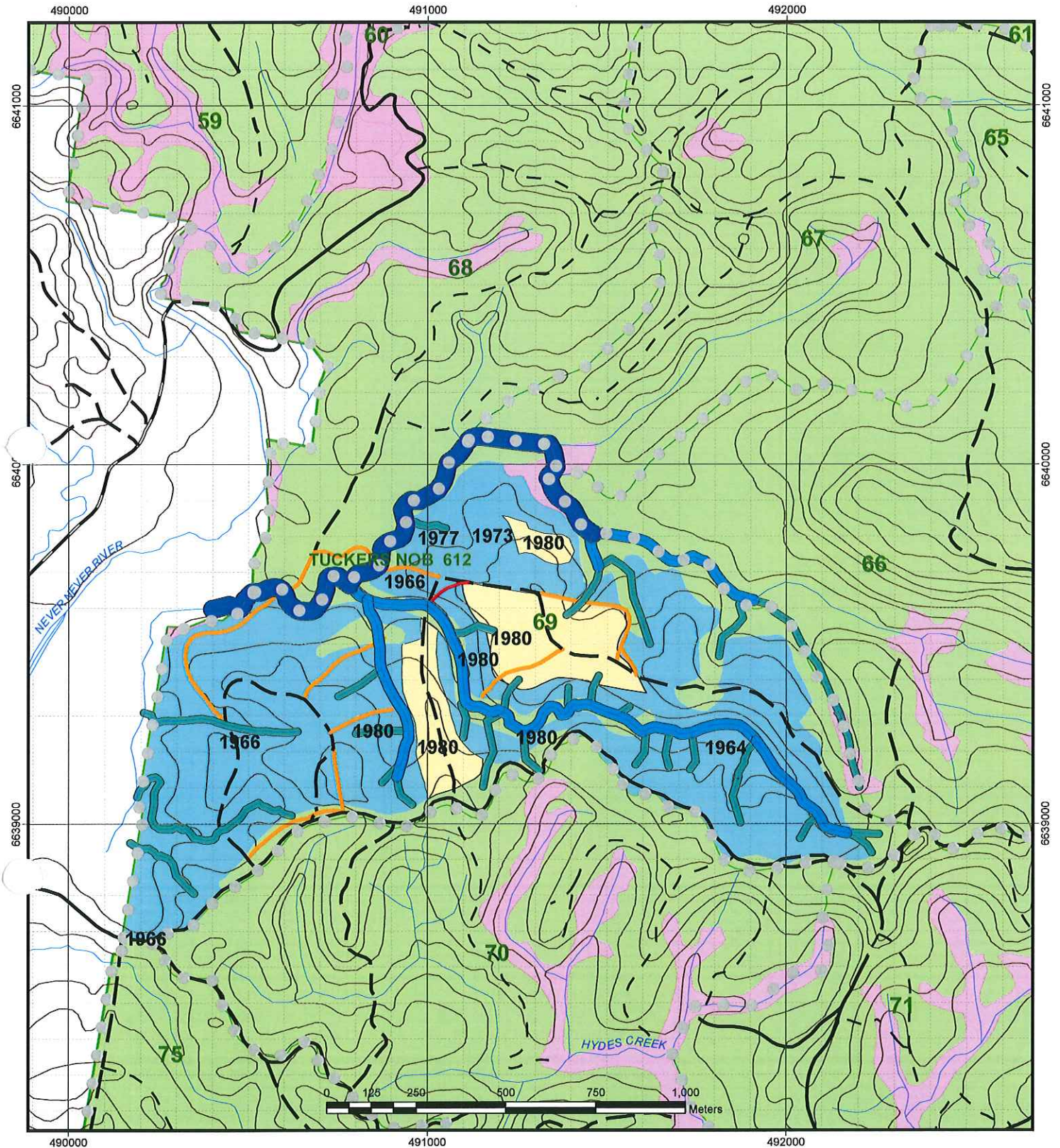


<p>MAP FEATURES</p> <ul style="list-style-type: none"> State Forest Boundary Compartments Boundary 1 Km Grid 10 / 100 m Contour State Forest National Park Estate Slopes > 30 degrees Aboriginal Sites Non Aboriginal Heritage Crossing Dump/Turnaround <p>Ringwood & Bopple-Nut locations</p> <ul style="list-style-type: none"> Anetholea anisata (Ringwood) Hicksbeachia pinnatifolia (Bopple-Nut) 	<p>ROADS</p> <ul style="list-style-type: none"> All Weather, Unsealed Dry Weather, Unsealed 4WD Track Non Haulage Roads New Construction 	<p>HARVESTING PRESCRIPTIONS</p> <ul style="list-style-type: none"> Harvest Area Harvest Area (Indicative Wet Weather Area) <p>RIPARIAN BUFFER ZONES</p> <ul style="list-style-type: none"> 1st Order (10m either side) 2nd Order (15m either side) 3rd Order (25m either side) 	<p>HARVESTING EXCLUSIONS</p> <ul style="list-style-type: none"> Special Management Zone (FMZ 3A - Rainforest) Special Mngt Zone - Visual (FMZ 3B) Mapped Rainforest Other State Forest (FMZ 4) Non-Plantation Forest
--	---	--	---

North East Region - Urunga MA
Compartment 69
Forest Type Map
 Tuckers Knob State Forest



Scale 1:15,000



MAP FEATURES

- State Forest Boundary
- Compartments Boundary
- 1 Km Grid
- 10 / 100 m Contour

ROADS

- Sealed
- All Weather, Unsealed
- Dry Weather, Unsealed
- 4WD Track
- New Construction
- Non Haulage Roads
- Roads not to be used
- Forwarder use only

Forest Type (Plantation Species)

- Flooded Gum
- Blackbutt

Exclusions

- Rainforest - Crafti - RN17
- State Forest



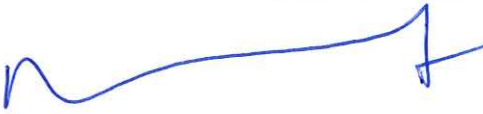
OPERATIONAL HARVESTING PLAN PLANTATION CLEARFELL


Region	North East
Management Area	Urunga
State Forest	Tuckers Knob
Compartments	69
Harvest plan No.	HP_3899
Harvest Plan Name	U_69

Plan Certification

Harvest planner		Date: 6/6/13
Bob Aspden		

Harvest planning Manager		Date:
Steve Pickering		

Acting Regional Planning Manager		Date: 06/06/13
<i>M. HOWAT</i> Dean Kearney		

Regional Manager		Date: 26/6/13
Craig Busby		

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HARVESTING DETAILS

1. Area Identification

Region	North East
Management Area	Urunga
State Forest	Tuckers Knob
Compartment/s	69

Cpt	Gross Area (ha)	Net Area (ha)	Pricing Area	Op Type	Avg. Yield (contract)	Avg. Removal (contract)
69	159	129	Urunga Costal	Clearfall	120	0.3

2. Description of Proposal

Integrated harvesting of Plantation Areas

Clearfelling of 1964/66/73/80 age class Flooded Gum (*E.grandis*) ~ 85% and some Blackbutt (*E.pilularis*) ~15% plantation

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

- **Age Class:** 1964/66/73/80
- **Species/Area:** Flooded Gum ~ 110 ha
Blackbutt ~ 19 ha
- **Stand Health:** Flooded Gum – Varying quality from moderate to poor (most stems are expected to exhibit internal defect in the form of pithy heart). Some of the Flooded Gum has not been thinned.
Blackbutt – Varying quality from excellent to poor. Some of the Blackbutt has not been thinned.

4.2 Silvicultural History and Product Types

The majority of the area of existing plantation has had a delayed thinning (1996). Much of the 1980 age class has not been thinned. Areas that have been thinned have a basal area of approximately 15-20m². There is a mixture of good and poor form within the plantation.

Harvesting at this time should produce poles from the areas of Blackbutt, however the Flooded Gum is expected to show a large proportion of defect and hence a small proportion of high quality sawlogs and a high proportion of low quality sawlogs and pulp grade material.

4.3 Silvicultural Objectives and Prescriptions

Clearfall and re-establish with local native species within 12-18months.

The harvesting operation is planned to be conducted to provide visual amenity along Timboon Road.

5. Legal Conditions

The area to be harvested is an authorised plantation under the provisions of the Plantations and Reafforestation Act (1999) (Registration no. GR0706P).

As such, the operation must comply with:

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

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)

6. Special Conditions

6.1 Rainforest and potential Lowland Rainforest Endangered Ecological Communities (EEC's)

Rainforest has been mapped within the compartments and is to be excluded from harvesting activities. Areas of unmapped rainforest are to be identified and excluded from harvesting activities as described in the Forests NSW Forest Practices Circular 2005/02. Unmapped rainforest found within the operational area is likely to be classified as Lowland Rainforest Endangered Ecological Community (EEC). The SFO is to consult with the Regional Ecologist if suspected EEC is thought to occur within the operational area (as per the EEC field identification guide – North East Region).

6.2 Non-harvest areas

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

- Areas of non-plantation vegetation (i.e. native) are shown on the HPOM are non-harvest areas.
- Harvesting disturbance is not permitted in non-harvest areas except as authorised under this plan.
- Limited harvesting activities may take place within the first 5m of all riparian zones as outlined in section 10.2.
- No harvesting or other disturbance may take place within 20m of 3rd order (or greater) drainage lines, wetlands or rivers. No machinery may enter this area and no trees are to be removed.

6.3 Boundaries

- For boundary locations refer to the operational map.
- Where there is uncertainty as to the location of any critical boundary, advice must be sought from North East Region Resources Unit.

6.3.1 Private Property

The western boundary of the harvest area adjoins private property. The boundary is fenced and a survey sketch is held on file.

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

6.3.2 Other Critical Boundaries

The harvest area adjoins the Timboon Road Reserve (see Operational Map). The Reserve contains

native forest and other vegetation and must not be disturbed. These areas must be identified, marked and excluded from harvesting disturbance. The reserve is to be measured 10m from the centreline of the road in use.

6.4 Wet Weather Operational Area

Areas on the operational map have been identified as indicative wet weather harvesting areas.

6.5 Public Recreational Use

Valery Trails Equestrian Centre sometimes rides through the area. Valery Trails must be notified of forest closures prior to commencing harvesting.

Areas adjacent to the harvesting area and within the vicinity of the harvest area are frequently used by locals for recreation. All roads leading into the operational area must be closed during harvesting. Operators must remain alert to the potential presence of members of the public.

6.6 Haulage Route – Closed Roads

The main haulage route is along Timboon/Glennifer Road via Little Hydes Creek Road. The section of Timboon Road from the intersection with Little Hydes Creek road east to the intersection with Alford's Trail and the entire length of Little Hydes Creek Road have B-double gazettal. The Harvesting Team Leader must ensure close all non-gazetted forest roads are closed to the public during haulage operations utilising B-double trucks. See attached regional directive on the use of B-Double Log Trucks on State Forest.

6.7 Flora & Fauna

6.7.1 Giant-Barred Frog (*Mixophyes iterates*) & Stuttering Frog (*Mixophyes balbus*)

These species may occur within the operational area. The descriptions and diagrams of the species (see attached appendix) are to be used by the SFO and operators to search for any individuals within the operational area. If individuals are identified during operational activities – the Harvesting Team Leader must be notified immediately. Operations in the vicinity of the specimen must be ceased until the Regional Ecologist has determined conditions under which operations can continue without impacting on known populations.

6.7.2 Additional Species Prescription:

- **Anetholea anisata** (Aniseed Myrtle, Ringwood) and **Hicksbeachia pinnatifolia** (Red Bopple Nut)
- Mature specimens of *Anetholea anisata* (also referred to as *Backhousia anisata* or *Syzygium anisatum*) and *Hicksbeachia pinnatifolia* are to be protected where practicable (see attached description in appendix). See operational map for known locations.
- **Bell Miners** The SFO is to record the location and extent of any Bell Miners detected during harvesting operations

7. Forest Management Zoning And Approvals

Forest Management Zones

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

- **Zone 3A (Special Management Zones)** Shown as deep green on the operational map. These areas protect rainforest, are not available for harvesting and are to be excluded from all harvesting activities.
- **Zone 3B (Visual Protection Zone)** Areas in adjacent compartments designated for visual protection are indicated on the HPOM.
- **Zone 4 (General Management – Other State Forest)** is native forest and is not available for harvest under this plan.
- **Zone 5 (Native Species Plantation)** Shown as yellow on the operational map. The areas are available for harvesting in this operation – follow silvicultural prescriptions as outlined in section 4.

8. Cultural Heritage

8.1 Aboriginal Cultural Heritage

There are no known Aboriginal sites or other heritage items in the compartments. The Local Aboriginal Land Council has been consulted in regard to the proposed harvesting and the Regional Aboriginal Cultural Heritage Officer has inspected the compartments. No issues were identified at the inspection.

8.2 Non Aboriginal Cultural Heritage

No sites of non aboriginal cultural heritage were identified in these compartments.

9. Soils and Water

	Compartment 69
Inherent hazard level	2
Dispersible Soils	No
Seasonality	No

Wet Weather Controls

- Prescribed wet weather areas as per the P & R Code (see Section 6.6) are to be preferentially used during wet periods of the operation.

Conditions 14.1-14.5 of Forests NSW’s Forest Practices Code Part 1 – Timber harvesting in Forests NSW Plantations apply.

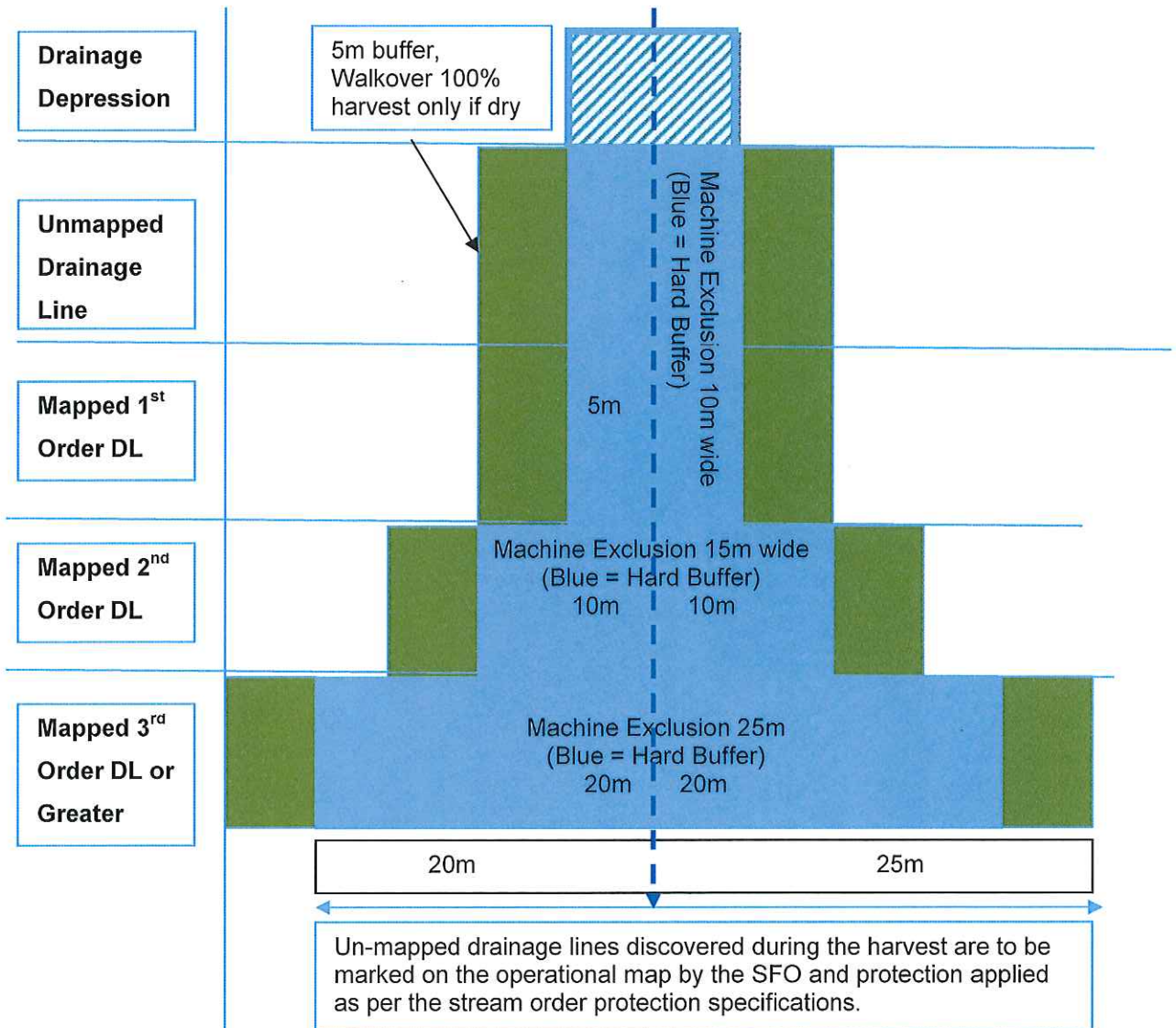
- Automatic Closures apply to forwarders and loaders when water is running on extraction tracks
- Automatic closures apply to loaders when there is run-off from the landing surface
- Automatic closures apply to the use of natural surface roads when there is runoff from the road.
- Machinery must not exceed acceptable rutting limits (see Condition 14.4 and condition 50 of the P&R Code)
- Harvesting is only permitted to continue within drainage feature protection areas if the top 200mm of soil is dry enough to avoid soil erosion.

10. Drainage features

Drainage feature protection

- The Operational Map indicates known mapped drainage features and widths of protective measures. Un-mapped drainage lines discovered during the harvest are to be marked on the operational map by the SFO and protection applied as per table below.
- (**note:** some of the drainage features indicated on the Operational Map with buffer zones may, at the time of marking, be determined as depressions.
- The minimum buffer zone width for each side of drainage features is shown below.

Stream Order	Buffer Zones each side of drainage feature – Green areas (Machine exclusion)	Total Exclusion (No Disturbance) each side of drainage feature (Hard Buffer)
Drainage Depression	5 (if wet)	0
Unmapped drainage lines	10	5
1st order	10	5
2nd order	15	10
3 rd order or greater	25	20



Operational Conditions For Drainage Features

- Harvesting within buffer zones must comply with conditions 16, 63(a) of the Plantations and Reafforestation (Code) Regulation 2001.
- Harvesting within the first 5m of a buffer zone of a depression can only occur when:
The person carrying out the harvesting operation is satisfied that the top 200mm of soil is dry enough to allow operations without risk of soil erosion to the edge of the drainage feature.

11. Tree Marking - STANDARD MARKINGS/SYMBOLS

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 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 (as per Schedule 5 of the Non-IFOA EPL). 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).
- Harvesting machinery may cross drainage lines at authorised crossings as per conditions Conditions 57 to 83 of Schedule 4 of the EPL (Snig tracks - crossings). The SFO must give authorisation prior to crossing drainage lines.
- Crossings must be drained using drainage structures within 5-30m either side of the crossing
- Wetlands must not be crossed under any circumstances.

Road Maintenance/Road Construction– See Roadworks Plan**13. Log Dumps****Location**

- Log dumps and landings that require construction must be located outside buffer zones and areas of native vegetation except where otherwise approved.
- Log stockpile areas within native forest areas must be approved by the Regional Manager prior to establishment and should be located so as to minimise disturbance to understorey elements.
- Log stockpile sites (no construction required) are permitted along all sections of road within the plantation area unless marked as 'No Loading Permitted' zones on the Harvest Plan Operational Map.
- Dumps 1 and 2 must not be located within the road reserve along Timboon Road (10m either side of road centre).

Treatment

- Conditions 17.2 – 17.4 of the Forest Practices Code (FPC) 2005 must apply.
- Debris accumulated during processing at log dumps and landings must be located outside the boundary of buffer zones. Even distribution of slash and debris across running tracks is required. This will alleviate ground compaction and reduce exposure of soil to erosion and run-off.
- If any area used as a log dump or landing for harvesting operations ceases to be so used for more that one week, measures to minimise soil erosion must be put in place.

14. Extraction Tracks

Conditions 9.1-9.4 and 14.1 - 14.4 of the FPC (Forest Practices Code 2005) apply.

14.2 Walkover extraction:

Walkover extraction to be used where practicable

Soil erosion from tracks must be minimised by:

- Retaining groundcover using slash and leaf litter. Slash must be placed evenly across the track to divert water.
- Special attention must be paid to the placement of slash over ground area of any concentrated machinery movement. Such areas will include the exits of extraction tracks onto roads, at the intersection of running tracks in the harvest area and at log landings.
- Using natural cross-fall drainage.
- Forwarders must use either the road or road verge when forwarding to Dumps 1 or 4 within the native forest.
- The construction of new forwarder tracks must not involve side cuts of greater than 2m
- Drainage structures must be constructed if concentrated water flow occurs for distances exceeding those in the following table.

14.3 Extraction track drainage:

Maximum distance of water flow or potential water flow along snig tracks or extraction tracks (metres measured along the ground surface).

Track grade (degrees)	Maximum distance (m)
0-5	100
5-10	60
10-15	40
15-20	25
20-25	20
25-30	15

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

Compartment 69

Cpt 69	Op Type	Net Area (ha):
Blackbutt	CF	19
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)
Poles (BB only)	5	75
Veneer	1	15
HQL	28	420
HQS	38	570
E-logs	8	120
Salvage grade 1	40	600
Salvage grade 2	10	150
Pulpwood	40	600
TOTAL	170	2,550

Cpt 69	Op Type	Net Area (ha):
Flooded Gum	CF	110
Products	Volume/ha (m ³ /ha)	Total Volume (m ³)
Poles (BB only)	0	0
Veneer	0	0
HQL	12	1344
HQS	10	1120
E-logs	8	896
Salvage grade 1	65	7280
Salvage grade 2	25	2800
Pulpwood	50	5600
TOTAL	170	19,040

EEC field identification guide North East Region

Version 2. This version last revised 27 September 2011

This guide should be used in conjunction with maps of indicative occurrence of EECs held in the corporate geodatabase (GISO).

Specific field guides have been prepared only for those EECs which are predicted to occupy at least 5 ha of State forest zoned as FMZ 4. Specific FNSW field guides have not been developed for:

- EECs unknown and unlikely to occur in SF.
- EECs already wholly covered by exclusion of forestry activities by existing conditions in IFOAs or TSLs.
- EECs predicted to occupy less than 5 ha of FMZ 4.

Table 1 is intended to include all EECs which are known to occur, or which may occur, in areas of FMZ 4 in State forest in North East Region. Table 2 comprises all other EECs which occur, or may occur, in State forest, but which either are wholly covered by existing conditions under the IFOA/TSL, or are wholly within FMZ exclusions. Table 3 comprises all other EECs which occur in the general vicinity of State forests but which are not known to occur, and are very unlikely to occur, in State forest. These tables indicate the availability of indicative maps and the availability of a specific FNSW field guide and should be consulted before checking guides for individual EECs. Tables 1 and 2 also provide indicative canopy species for EECs for which no field guide is provided but which may occur to a limited extent in SF. In these cases, if any of the listed species are present in an area mapped as indicative EEC, either the mapped area should be managed as if it were EEC, or the Regional Ecologist should be consulted to determine whether the area is EEC. When using the keys, if you do not proceed to the final step, but the step at which you stop has not allowed you to determine whether the area is EEC, you should treat the area as EEC unless advised otherwise by the Regional ecologist.

General comments on minimum area or patch size

EEC determinations under NSW TSCA do not specify any minimum area. It seems reasonable to assume that for most treed EECs, the minimum practical size is the area occupied by at least one tree, but in most cases stands of at least a few trees should be assessed. Where stands of relatively uniform vegetation composition or physical environment are evident, with discernable boundaries, these should form the basis of the assessment of whether an area is EEC, regardless of their size. For example, there may be a marked change in slope, or a clear change in canopy composition, to define a stand for assessment. Where more gradual changes occur, the definition of the ecological community boundary will be more difficult and the thresholds provided in the key for a particular EEC should be used as a guide. For example, if the threshold is dominance of the canopy by a particular tree species, and the abundance of the species gradually changes over an area, then the boundary should be considered to be approximately where the abundance of the species decreases to the extent that it is no longer dominant. Where there is uncertainty about where the boundary should be placed, a precautionary approach should be used to ensure that all areas which may be EEC according to the guide are included within the EEC boundary.

Forestry activities must be excluded from any area identified as EEC, regardless of size. In some cases, for practical management purposes, this may require that activities be excluded from an area

which may include substantial patches of non-EEC. For example, where an EEC occurs in a complex small-scale mosaic with non-EEC, it may be more practical to exclude the whole mosaic than manage individual patches.

Management

Forestry activities (logging, roading, road maintenance if it extends beyond the road prism, harvest of firewood, miscellaneous forest products operations and grazing) must be excluded from areas of EEC identified by this guide. Hazard reduction burning should also be excluded from areas of EEC. However, where exclusion of HR burning conflicts with FNSW community obligations, such that there is a high risk of FNSW liability for personal or property damage, burning may be conducted in an EEC to the extent required to minimise the risk of liability. In any case, this should conform with Bushfire code guidelines for the minimum fire interval for the EEC (if listed in the code) or for the Vegetation Formation to which the EEC belongs (if the EEC is not specifically listed in the code).

If a stand keys to several EECs

In some cases, the difference between two or more EECs may not be clear from the determinations. Also, since the field guide keys are simplified, you may find that you can assess a stand as more than one EEC. In this case, the most important point is that the stand is an EEC, but it doesn't matter for most FNSW purposes which one it is. If a stand keys to two or more different EECs which have different minimum fire intervals in the Bushfire code guidelines, the longest of the alternatives should be chosen.

Definitions

These definitions refer to the use of the terms in the following guide. In general use, most of these terms are not used in a consistent way and definitions given here may vary from those used elsewhere for the same term.

- Canopy** This term is used in its broadest sense, to refer to the uppermost vegetation in a stand. In forests or woodlands, it refers to the tallest tree stratum plus occasional trees which are noticeably taller than most of the surrounding vegetation (often known as emergents) and also trees which occur below taller trees (otherwise considered part of the sub-canopy) if the crowns intermingle substantially. The canopy does not include vegetation which is directly below taller vegetation and separate from it. In recently logged or partially cleared stands, or other stands with complex structure, it refers to the uppermost vegetation regardless of varying height, which may include parts of several strata. For example, in a recently logged stand, eucalypt regrowth in a gap is part of the canopy. The delineation of the canopy in a complex or multi-layered stand is often a matter of subjective judgement. If in doubt, the canopy should be considered in a broader rather than narrower sense.
- Crown cover** The percentage of the stand area which is occupied by the vertical projection of crowns (usually tree crowns) by using the crown perimeters and assuming crowns are fully opaque within the perimeters.
- Dominant** Applied to the overstorey (or canopy) at the stand level or to species within a single vegetation stratum at the stratum level. Dominant refers to the species which has the highest foliage cover. If applied to two or more species, it refers to the group of species which collectively have greater foliage cover than all other species combined (i.e. foliage cover greater than 50%).
- Foliage cover** The percentage of the stand area which is occupied by the vertical projection of the foliage and live branches.
- Headwater** All first and second order streams, as derived from current FNSW GIS drainage layer or 1:25 000 topographic maps.
- Overstorey** For this guide, used synonymously with canopy.

Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions

(This version last edited 5 September 2011)

Summary of major features

To be this EEC, a site must have all of the following features:

- **Altitude less than 600 m; and**
- **Canopy with no more than scattered eucalypt emergents; and**
- **At least five species of rainforest canopy trees; and**
- **Brush box contributes no more than 50% of canopy cover.**

Note that this key is very much simplified and does not consider floristic composition of rainforest trees. It will thus result in some areas which are not this EEC being identified as EEC. Where it is important that a more refined assessment is made, you should consult the Regional Ecologist.

KEY

Note: If you do not proceed to the final step, but the step at which you stop has not allowed you to determine whether the area is EEC, you should treat the area as EEC unless advised otherwise by the Regional Ecologist.

1. Is the altitude less than 600 m?

If answer is yes, go to step 2.

If answer is no, the area is **not this EEC**.

2. Does the canopy contain at least five species of rainforest trees? Rainforest tree species exclude all eucalypts (*Angophora*, *Corymbia* or *Eucalyptus* spp.), turpentine (*Syncarpia glomulifera*), sheoaks (*Allocasuarina* and *Casuarina* spp.), paperbarks and bottlebrushes (*Callistemon* and *Melaleuca* spp.) and most wattles (*Acacia* spp.), except that green wattle (*Acacia irrorata*) and blackwood (*A. melanoxylon*) count to the total even though the former is not normally considered a rainforest tree. Note that where you cannot distinguish the tree species, the counts should apply to the number of trees (ie assume they are all different).

If answer is yes, go to step 3.

If answer is no, the area is **not this EEC**.

3. Is the spacing between adjacent trees of at least 60 cm diameter, of any eucalypts (*Angophora*, *Corymbia* or *Eucalyptus*) or turpentine (*Syncarpia glomulifera*), less than 45 m? If there are no trees of 60 cm or greater diameter, answer no.

If answer is yes, the area is **not this EEC**.

If answer is no, go to step 4.

4. Do eucalypts (*Angophora*, *Corymbia* or *Eucalyptus*) and turpentine (*Syncarpia glomulifera*), either individually or combined, contribute more than 5% of the total canopy cover? Where the canopy is obscured from ground view by dense lower vegetation, the assessment should be based only on what can be seen of the eucalypt/turpentine

component, but assuming that any other obscured part of the canopy is present, so that the estimated proportion is the minimum possible.

If answer is yes, the area is **not this EEC**.

If answer is no, go to step 5.

5. Does brush box (*Lophostemon confertus*) contribute greater than 50% of the total canopy cover? Where the canopy is obscured from ground view by dense lower vegetation, the assessment should be based only on what can be seen of the brush box component, but assuming that any other obscured part of the canopy is present, so that the estimated proportion is the minimum possible.

If answer is yes, the area is **not this EEC**.

If answer is no, the area is **Lowland rainforest EEC**.



Photo by: F. Lemckert

SIZE: 115 mm long²⁹⁷.

IDENTIFICATION FEATURES: Dark olive to black above, with a broad lateral band of dark spots or mottling dividing dark dorsal from white ventral surface. Limbs with dark crossbars which are as wide as the paler interspaces. Hind side of thighs black with black and yellow marbling²⁹⁵. Upper part of iris pale silvery-white to pale gold. Two joints of fourth toe free of web²⁹⁷. The call is a deep, guttural grunt.

HABITAT: Wet sclerophyll forest and rainforest, including Antarctic Beech forest. Usually found close to permanent running water⁹².

BROAD DISTRIBUTION: In varying abundance throughout the region, with numerous records north west of Coffs Harbour and in the Hawkesbury sandstone formation south of Newcastle³⁰¹.

BEHAVIOUR: Males call from the banks of creeks and streams. The eggs are laid on horizontal and vertical surfaces of the bank and the tadpoles fall into the water. Tadpoles take more than 12 months to reach metamorphosis²⁹⁵. Breeding is in late spring and early summer.

CONFUSING SPECIES: All *Mixophyes* species, and Fletcher's Frog (*Lechriodus fletcheri*). The Giant Barred Frog is distinguished from *L. fletcheri* by the lack of skin ridges and more extensive webbing⁹², and is unique amongst *Mixophyes* spp. as adults have a mainly gold iris, and usually well-spotted sides.



Giant-barred Frog (*Mixophyes iteratus*)



Photo by: K. Griffiths/Nature Focus

OTHER COMMON NAMES: Southern Barred Frog²⁹⁵.

SIZE: Large, with females larger than the males⁷² measuring up to 80 mm in length²⁹⁵.

IDENTIFICATION FEATURES: Yellow-grey above and white below. There is a dark brown horizontal vertebral stripe, with irregular edges, starting between the eyes, and sometimes this

band is broken into a series of blotches. The dark dorsal surface merges on the sides with the white of the belly. There are dark, poorly defined bands on the limbs and no conspicuous black spots or blotches on the sides⁷². The upper half of the iris usually pale blue in adults. The call is a short “op..op..op” and an “a.a.a.ah”⁹².

HABITAT: Along the banks of mountain streams that flow through dense, wet mountain forests, rainforest, Antarctic Beech (*Nothofagus* spp.) or wet sclerophyll forest. Also occurs in drier forests, such as those in the Dorrigo area²⁹⁵.

BROAD DISTRIBUTION: Most frequently recorded between Bulahdelah and Dorrigo⁹⁴.

BEHAVIOUR: In the breeding season adults are based around second- and third-order streams. Both males and females roam from streams and can be seen by spotlighting on roads⁹⁴. Egg-laying occurs in shallow depressions made by females in shallow sections of the stream²⁹⁵. Calling can be heard from spring to mid-autumn.

CONFUSING SPECIES: Fletcher’s Frog (*Lechriodus fletcheri*), Great Barred Frog (*Mixophyes fasciolatus*), Giant Barred Frog (*M. iteratus*), and Fleay’s Frog (*M. fleayi*) (which has a different range). Distinguished by broader more diffuse bands on legs and the presence of blotches on the upper lip. *M. fasciolatus* has an all pale upper lip, and *M. fleayi* has spots on its sides.

***Mixophyes balbus* (Stuttering Frog)**

Description: A Large terrestrial frog, measuring up to 80mm. length, females are larger than males. *Mixophyes balbus* are yellow-grey above and white below. Starting at the head are a series of dark brown horizontal vertebral stripes with irregular edges and sometimes the band are broken into blotches. The limbs have dark poorly defined bands but no conspicuous blotches on the sides. The upper half of the iris is blue in adults (Cogger, 1999).

Known Habitat: *Mixophyes balbus* are often associated with streams that flow through closed mountain forests, but it is also considered to occur in dry forests in frequently. This species is associated with permanent rocky streams at higher altitudes. Individuals can be found basking on or sheltering under rocks in or next to the stream. The vegetation type is not known to be important (Amphibia Web, 2004).

Breeding/behaviour: During amplexus between September to April the frogs are stream based; laying eggs in shallow riffles. Females may wander from the streams even at this time (Tanton 1996). Outside breeding season individuals of both sexes may roam widely through the forest, especially in wet conditions (Lemckert & Morse 1999 in Amphibia Web, 2004).

Feeding/Foraging: invertebrates and other small frogs (Cogger 1999).



Stuttering Frog (*Mixophyes balbus*)

NEW SOUTH WALES FLORA ONLINE

*Anetholea anisata* (Vickery) Peter G. WilsonFamily **Myrtaceae**

Common name: Ringwood, Aniseed Tree, Aniseed Myrtle

Anetholea anisata (Vickery) Peter G. Wilson **APNI***

Synonyms: *Backhousia anisata* Vickery **APNI***
Syzygium anisatum (Vickery) Craven & Biffin **APNI***

Description: Medium-sized to large tree with somewhat soft and corky bark; young branchlets glabrous.

Leaves lanceolate to elliptic, 5–12.5 cm long, 1–2.5 cm wide, apex acuminate, base attenuate, margins undulate, glabrous, upper surface glossy, lower surface dull and paler; lateral veins numerous, prominent, intramarginal close to margin; oil glands large, numerous, distinct, crushed leaves with an aniseed smell; petiole 5–6 mm long.

Flowers white. Hypanthium glabrous. Sepals 1–1.5 mm long. Petals c. 3 mm long. Stamens c. 5 mm long.

Fruit c. 5 mm long; summit flat, level with the hypanthium.

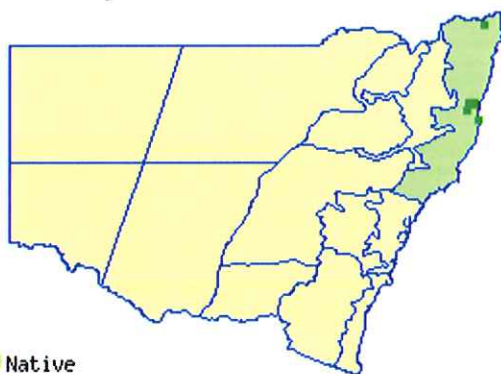


Other photo
Photo T.M. Tame

Flowering: Oct.–Nov.

Distribution and occurrence: Grows in subtropical rainforest, often along streams or on lower slopes; confined to the Nambucca and Bellinger Valleys; rare.
NSW subdivisions: NC

Threatened species: ROTAP: 2RCa



AVH map***

Craven & Biffin (2005) transferred this species to *Syzygium*. This transfer seems premature given the present lack of detailed knowledge of embryology in the tribe Syzygieae.

Text by Peter G. Wilson
Taxon concept: Flora of NSW 2 (1991); updated 2006.

APNI* Provides a link to the Australian Plant Name Index (hosted by the [Australian National Botanic Gardens](#)) for comprehensive bibliographic data
*******The AVH map option provides a detailed interactive Australia wide distribution map drawn from collections held by all major Australian herbaria participating in the [Australian Virtual Herbarium](#) project.

This page URL:

<http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Anetholea~anisata>

NEW SOUTH WALES FLORA ONLINE



Anetholea anisata (Vickery) Peter G.Wilson Myrtaceae
Photo T.M. Tame ©The Royal Botanic Gardens & Domain Trust

This page URL:

<http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&photo=30&file=35/191/Anetholea%20anisata1%20cult.JPG>



You are here: [Home](#) > [Threatened species](#) > [Search for threatened species](#)

Red Boppel Nut - profile

Scientific name: *Hicksbeachia pinnatifolia*

Conservation status in NSW: [Vulnerable](#)

Commonwealth status: [Vulnerable](#)

Profile last updated: 07 Sep 2012

Description

Red Boppel Nut is a small tree to 10 m tall, often with several unbranched stems rising from the rootstock. The leaves are leathery and compound, each 40 – 100 cm long, deeply lobed, or with many leaflets and a winged central spine. The lobes or leaflets have prickly toothed margins and the veins are prominent on both sides. A loose spike of many spidery-flowers, 15 – 35 cm long, arises directly from the trunk from ground level upwards. The flowers are purplish brown with a strong, sickly scent. Bright red fleshy fruits, 2 – 4 cm long, follow the flowers.

Distribution

Coastal areas of north-east NSW from the Nambucca Valley north to south-east Queensland.

Habitat and ecology

- Subtropical rainforest, moist eucalypt forest and Brush Box forest.

Regional distribution and habitat

Click on a region below to view detailed distribution, habitat and vegetation information.

- [Northern Rivers](#)

Threats

- Clearing of rainforest habitat for development or agriculture.
- Invasion of habitat by introduced weeds, particularly Lantana and exotic vines.
- Fire.
- Collection of seed for horticulture.

Recovery strategies

Priority actions are the specific, practical things that must be done to recover a threatened species, population or ecological community. The Office of Environment and Heritage has identified [22 priority actions](#) to help recover the Red Boppel Nut in New South Wales.

Activities to assist this species

- Protect rainforest, moist eucalypt forest and Brush Box forest from fire.
- Control introduced weeds
- Protect remnant subtropical rainforest habitat.
- Initiate and support projects to rehabilitate remnant habitat and regenerate rainforest.

Information sources

- NSW National Parks and Wildlife Service (2002) Threatened Species of the Upper North Coast of NSW: Flora. (NSW NPWS, Coffs Harbour)

Images



Indicative distribution



The areas shown in pink and purple are the sub-regions where the species or community is known or predicted to occur. They may not occur throughout the sub-region but may be restricted to certain areas. ([click here](#) to see geographic restrictions). The information presented in this map is only indicative and may contain errors and omissions.





FORESTS NEW SOUTH WALES – NORTH EAST REGION
ROAD WORKS PLAN

Tuckers Knob State Forest; Compartment 69

Certification

Prepared By: Harvest Planner	Bob Aspden	Approved By: Regional Manager	Craig Busby
Signature		Signature	
Date	6/6/13.	Date	20/6/13

1. Objectives

Roadworks are required to service plantation forest harvesting operations within the above compartments. These compartments are scheduled for harvest in 2013.

The operational map shows the location of the proposed works.

Attachments: **Financial Analysis Spreadsheet** gives full details of costs, benefits, material & plant requirements

2. Specifications and Legal Conditions

This operation must comply with:

- Standard Harvest Plan Conditions for Plantation Forest Operations in North East Region
- Licence Conditions issued by Forests NSW under the Forestry Act (1916)
- Technical Guidance Notes for Roadworks.
- State Forests of NSW Forest Practices Code - Part 1 Timber Harvesting in Forests NSW Plantations 2005 and Forest Practices Code Part 4 Forest Roads and Fire Trails (February 1999).
- Plantations and Reafforestation Act (1999)
- Plantations and Reafforestation (Code) Regulation (2001), subject to the conditions described in Attachment 1 of the Authorisation for the timber plantation.

3. Special Conditions

Feature	Conditions
Threatened Species	<i>Mixophyes iterates</i> (Giant Barred Frog) and <i>Mixophyes balbus</i> (Stuttering Frog) occur within 2km of the operational area. The included description and diagrams of this species (see attached) are to be used by SFO and operators to identify any individuals within the operational area. If individuals are identified during operational activities – the harvesting forester must be notified immediately. The operations must be halted until the Regional Ecologist has determined the extent of the population and determined conditions under which operations can continue without impacting on known populations.
Safety Issues (includes hazards, public use of roads)	Yes – Timboon Road is regularly used by members of the public. Operators must remain aware of other road users at all times. - See Hazard Assessment in the Site Safety Pack

4. General Conditions

Remove trees in accordance with FNSW Safety Standard 1.3.9; and

Remove vegetation within 3m of the road prism **only where required** to maintain safe sight distance and passage of trucks.

Note: Clearing is generally permitted within 3m of the road prism for all roads. Ground disturbance and tree debris may impact outside this 3m either side of the road prism as is required to effect clearing within 3m of the road prism. Conditions 5, 6 and 47 Schedule 5 of the EPL must apply.

5. Works Schedule

See attached worksheets

Authorised Works

Road Name: Lockes Road **Road Category:** Permanent **Road Length** 450m from the intersection of Timboon Road to the intersection with 69/2 Trail

	WORKS	REQUIR ED	INSTRUCTIONS/SITE SPECIFIC CONDITIONS
Site Info	Works on >30° slopes	<input type="checkbox"/>	
	Mass movement conditions	<input type="checkbox"/>	
	Dispersible Soils Conditions	<input type="checkbox"/>	
Pavement	Widening	<input type="checkbox"/>	
	Minor Realignment	<input type="checkbox"/>	
	Re-opening	<input type="checkbox"/>	
	Remove vegetation / debris	<input checked="" type="checkbox"/>	
	Repair surface	<input checked="" type="checkbox"/>	
	Crown / Crossfall	<input checked="" type="checkbox"/>	
	Gravel	<input type="checkbox"/>	
Roadside & Batters	Remove trees >20 cm dbhob	<input checked="" type="checkbox"/>	Remove Dangerous trees/stags only
	Remove trees <20 cm dbhob	<input checked="" type="checkbox"/>	Clearing outside the road prism exceeding 3m must comply with condition 5 Schedule 5 of the EPL. See Section 4 page 3.
	Repair/upgrade of Batters	<input type="checkbox"/>	
Drainage	Culverts	<input type="checkbox"/>	
	Mitre Drains	<input checked="" type="checkbox"/>	Clean
	ROD / Spoon	<input checked="" type="checkbox"/>	Maintain
	Belts/Channels	<input type="checkbox"/>	
	Drop Downs	<input type="checkbox"/>	
	Silt Trapping	<input type="checkbox"/>	

1. **Start Date:**

Finish Date:

Date	Event	Initial

ROADING PLAN – Tuckers Knob State Forest, Compartment 69

Road Name: Coral Tree Road **Road Category:** Temporary **Road Length** 500m from the intersection of Timboon Road to 30m north of crossing A (Then construction to junction with 69/1 Trail

	WORKS	REQUIREMENT	INSTRUCTIONS/SITE SPECIFIC CONDITIONS
Site Info	Works on >30° slopes	<input type="checkbox"/>	
	Mass movement conditions	<input type="checkbox"/>	
	Dispersible Soils Conditions	<input type="checkbox"/>	
Pavement	Widening	<input type="checkbox"/>	
	Minor Realignment	<input checked="" type="checkbox"/>	See Following page - construction
	Re-opening	<input type="checkbox"/>	
	Remove vegetation / debris	<input checked="" type="checkbox"/>	
	Repair surface	<input checked="" type="checkbox"/>	
	Crown / Crossfall	<input checked="" type="checkbox"/>	
	Gravel	<input checked="" type="checkbox"/>	3 x loads gravel (20/40) on steep section north of crossing A
Roadside & Batters	Remove trees >20 cm dbhob	<input checked="" type="checkbox"/>	Remove Dangerous trees/stags only
	Remove trees <20 cm dbhob	<input checked="" type="checkbox"/>	Clearing outside the road prism exceeding 3m must comply with condition 5 Schedule 5 of the EPL. See Section 4 page 3.
	Repair/upgrade of Batters	<input type="checkbox"/>	
Drainage	Culverts	<input type="checkbox"/>	
	Mitre Drains	<input checked="" type="checkbox"/>	Clean
	ROD / Spoon	<input checked="" type="checkbox"/>	
	Belts/Channels	<input checked="" type="checkbox"/>	Where required for EPL Spacing
	Drop Downs	<input type="checkbox"/>	
	Silt Trapping	<input type="checkbox"/>	

1. Start Date:

Finish Date:

Date	Event	Initial

ROAD CONSTRUCTION

Road Name: Coral Tree Road **Road Category:** Permanent

Road Length: 150m from the intersection of 69/1 Trail to crossing A

EPA Documentation Requirements	
Road Classification	Permanent
Surveyed by	Ray Schumacher
Survey Date	15/3/2012
Maximum Ground Slope	17 degrees
Cut and Fill Batters	Maximum Height 1.5m – Maximum Length 150m
Proximity of road to nearest drainage feature	30m
Specifications	
Width of prism	8m
Formation width	4.2
Pavement width	3 m
Road side clearing width	3 m
Max Grade	8 degrees
Angle of cut batter	1: ¾ (standard)
Angle of fill batter	1:1.5
Gravelling	No
Drainage	
Type	Rubber Flaps/Rollovers and Mitre at bottom
Drop Downs	Geo textile
Silt Fencing	No
Soil Stabilisation	
Requirements	Compact fill batters >1m and grass seed, hay
Soil Stabilisation Inspection	Fortnightly or after storm event until stable

1. Start Date:

Finish Date:

Date	Event	Initial

ROADING PLAN – Tuckers Knob State Forest, Compartment 69

Road Name: Alfords Trail **Road Category:** Temporary **Road Length** 60m from the intersection of Timboon Road to the intersection with 69/1 trail

	WORKS	REQUIREMENT	INSTRUCTIONS/SITE SPECIFIC CONDITIONS
Site Info	Works on >30° slopes	<input type="checkbox"/>	
	Mass movement conditions	<input type="checkbox"/>	
	Dispersible Soils Conditions	<input type="checkbox"/>	
Pavement	Widening	<input type="checkbox"/>	
	Minor Realignment	<input type="checkbox"/>	
	Re-opening	<input type="checkbox"/>	
	Remove vegetation / debris	<input checked="" type="checkbox"/>	
	Repair surface	<input checked="" type="checkbox"/>	
	Crown / Crossfall	<input checked="" type="checkbox"/>	
	Gravel	<input type="checkbox"/>	
Roadside & Batters	Remove trees >20 cm dbhob	<input checked="" type="checkbox"/>	Remove Dangerous trees/stags only
	Remove trees <20 cm dbhob	<input checked="" type="checkbox"/>	Clearing outside the road prism exceeding 3m must comply with condition 5 Schedule 5 of the EPL. See Section 4 page 3.
	Repair/upgrade of Batters	<input type="checkbox"/>	
Drainage	Culverts	<input type="checkbox"/>	
	Mitre Drains	<input checked="" type="checkbox"/>	Clean
	ROD / Spoon	<input type="checkbox"/>	
	Belts/Channels	<input checked="" type="checkbox"/>	Where required for EPL Spacing
	Drop Downs	<input type="checkbox"/>	
	Silt Trapping	<input type="checkbox"/>	

2. Start Date:

Finish Date:

Date	Event	Initial

ROADING PLAN – Tuckers Knob State Forest, Compartment 69

Road Name: 69/2 Trail Trail **Road Category:** Temporary **Road Length** 700m from the intersection of Timboon Road to the intersection with Lockes Road

	WORKS	REQUIREMENT	INSTRUCTIONS/SITE SPECIFIC CONDITIONS
Site Info	Works on >30° slopes	<input type="checkbox"/>	
	Mass movement conditions	<input type="checkbox"/>	
	Dispersible Soils Conditions	<input type="checkbox"/>	
Pavement	Widening	<input type="checkbox"/>	
	Minor Realignment	<input type="checkbox"/>	
	Re-opening	<input type="checkbox"/>	
	Remove vegetation / debris	<input checked="" type="checkbox"/>	
	Repair surface	<input checked="" type="checkbox"/>	
	Crown / Crossfall	<input checked="" type="checkbox"/>	
	Gravel	<input checked="" type="checkbox"/>	4 loads small rock on depression/soak near intersection with Timboon. Also 2 x load gravel on steep hill north of depression/soak
Roadside & Batters	Remove trees >20 cm dbhob	<input checked="" type="checkbox"/>	Remove Dangerous trees/stags only
	Remove trees <20 cm dbhob	<input checked="" type="checkbox"/>	Clearing outside the road prism exceeding 3m must comply with condition 5 Schedule 5 of the EPL. See Section 4 page 3.
	Repair/upgrade of Batters	<input type="checkbox"/>	
Drainage	Culverts	<input type="checkbox"/>	
	Mitre Drains	<input checked="" type="checkbox"/>	Clean
	ROD / Spoon	<input checked="" type="checkbox"/>	
	Belts/Channels	<input checked="" type="checkbox"/>	Where required for EPL Spacing
	Drop Downs	<input type="checkbox"/>	
	Silt Trapping	<input type="checkbox"/>	

1. Start Date:

Finish Date:

Date	Event	Initial

ROADING PLAN – Tuckers Knob State Forest, Compartment 69

Road Name: 69/1 Trail **Road Category:** Temporary **Road Length** 1700m from the intersection of Alford's Trail to the intersection with Coral Tree Road

	WORKS	REQUIREMENT	INSTRUCTIONS/SITE SPECIFIC CONDITIONS
Site Info	Works on >30° slopes	<input type="checkbox"/>	
	Mass movement conditions	<input type="checkbox"/>	
	Dispersible Soils Conditions	<input type="checkbox"/>	
Pavement	Widening	<input type="checkbox"/>	
	Minor Realignment	<input type="checkbox"/>	
	Re-opening	<input type="checkbox"/>	
	Remove vegetation / debris	<input checked="" type="checkbox"/>	
	Repair surface	<input checked="" type="checkbox"/>	
	Crown / Crossfall	<input checked="" type="checkbox"/>	
	Gravel	<input checked="" type="checkbox"/>	3 x load gravel on steep eastern section
Roadside & Batters	Remove trees >20 cm dbhob	<input checked="" type="checkbox"/>	Remove Dangerous trees/stags only
	Remove trees <20 cm dbhob	<input checked="" type="checkbox"/>	Clearing outside the road prism exceeding 3m must comply with condition 5 Schedule 5 of the EPL. See Section 4 page 3.
	Repair/upgrade of Batters	<input type="checkbox"/>	
Drainage	Culverts	<input type="checkbox"/>	
	Mitre Drains	<input checked="" type="checkbox"/>	Clean
	ROD / Spoon	<input checked="" type="checkbox"/>	4 x ROD
	Belts/Channels	<input checked="" type="checkbox"/>	Where required for EPL Spacing – replace ROD near eastern end (steep section)
	Drop Downs	<input type="checkbox"/>	
	Silt Trapping	<input type="checkbox"/>	

1. Start Date:

Finish Date:

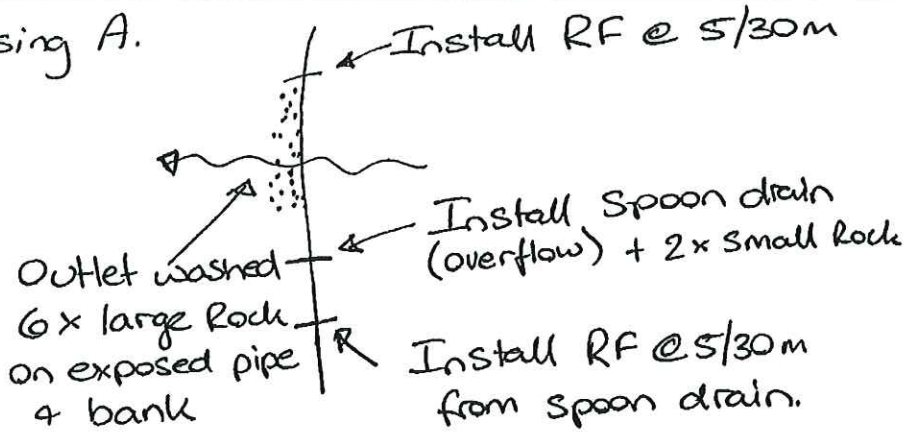
Date	Event	Initial

CROSSING WORKS

Crossing Name: **A** – 259/1 Trail.

Crossing Type	Existing / New	Future of Crossing	Drainage Feature Type	Stream Permanency
Pipe (900)	Existing	Permanent	2 nd Order DL	Intermittent
Crossing		Approaches & Road Drainage		
Reshaping Bed & Banks	Nil	Approach Works	Crown road & MD's and install spoon drain (overflow) + 2 x RF	
Pavement/structure	Natural surface +2 loads of small rock on spoon drain + install 2 x guideposts.	5-30m Upstream left	RF	
Disposal of spoil	NA	5-30m Upstream right	Spoon Drain + RF	
Inlet/Outlet	6 x load of large rock on outlet side over exposed pipe & bank	Practices where no 5-30m	NA	
Soil Stabilisation within 20m	Nil	Outlet control	Existing Vege or use Silt Trapping e.g. siltmesh, haybale or siltpond if <5m vege	
Soil erosion/sediment control	Existing Vege + rock (No works required)	Table drain silt control	Nil	

Crossing A.



Start Date: Finish Date: Soil Stabilisation Date (must be within 5 days):

Date	Event	Initial

