EPA AUDIT REPORT – MOOGEM STATE FOREST, COMPARTMENTS 7- 12

Auditee:	FORESTRY CORPORATION OF NSW (FCNSW)
Audited State Forest & Cpts:	MOOGEM STATE FOREST, COMPARTMENTS 7 - 12
Region:	Upper North-east Integrated Forestry Operations Approval (IFOA)
Date/Audit timing:	14 May 2015. Audit debrief with FCNSW staff held on 15 May 2015.
Type of audit:	Compliance
Purpose of audit:	Report on the level of compliance with conditions and environmental performance in line EPA compliance priorities.
Audit objectives:	1. Assess compliance against audit criteria that reflect EPA compliance priorities. 2. Assess and categorise risk of identified non-compliance or appropriate further observations. 3. Request action plans against key audit findings so that auditee can use risk categorisation to inform timeliness and level of risk reduction control 4. Promote continuous improvement of the environmental performance of forestry operations.
Audit scope:	• Hollow-bearing and recruitment trees prescriptions (non-regrowth zone) retention, selection, protection & mark-up • Koala identification searches • Compartment mark-up surveys • Threatened species planning • Threatened species protection (Hasting River Mouse) • Ridge & headwater protection and mark-up • High conservation value old growth protection and mark-up • Riparian protection • Rocky outcrop protection and mark-up **Physical scope**: This audit was limited to the physical boundaries of compartments 7-12. **Temporal scope**: The audit period adopted for assessment of compliance with operational conditions was on the day of the audit inspections (14 May 2015).
Audit criteria:	**Hollow bearing and Recruitment tree prescriptions** • *Conditions 5.6 (a)(b) (h) Non -regrowth **retention, selection, protection & mark-up*** • *Condition 6.9 (d) Greater glider density >1 8 hollow-bearing trees/ ha retained* **Koala identification** • *Condition 5.2.2. Koala mark-up searches* **Threatened Species exclusion zones** • *Hastings river-mouse – Condition 6.13 – **protection*** **Ridge & headwater**

	• *Conditions 5.8) -* ***protection*** **High Conservation Value Old Growth** • *Condition 5.3* ***- protection*** **Rocky Outcrops** • *Condition 5.11* ***- protection*** **Exclusion zone mark-up for EZ and buffer zones within scope of audit** • *5.1 Operational requirements* **Riparian habitat – protection** • *Conditions 5.7 -* ***protection*** **<u>DESKTOP AUDIT CRITERIA</u>** **Planning documentation** • *Condition 7 General survey requirements* • *Condition 8 Prelogging and pre-roading surveys*
Summary of Operations	Operation commencement date: 3 June 2013 Stand age: Non-regrowth Zone Silvicultural practice: • Mixed age, mixed species, moist types (5% NHA) – Heavy single tree selection, expected removal of basal area 45% • Mixed age, mixed species, dry types (95% NHA) –Single tree selection, expected removal of basal area 35%

1. Audit Findings – Overview

The EPA identified 9 non-compliances and 58 compliances with the IFOA and POEO Act, including determinations of further observations. A summary of EPAs findings are in the table below. Full details and evidence of audit findings can be found in the **Audit Findings Table** in **Attachment 1** including further observations made from the audit.

EPA Compliance Priority 14/15	Audit Scope	Compliant	Non-compliant	Not Determined	Not Applicable
Exclusion Zones	Rocky outcrop protection	2	0	0	0
	Rocky outcrop mark-up	1	0	0	0
	HCVOG protection	1	0	0	0
	HCVOG mark-up	1	1	0	0
	Ridge & Headwater protection	1	0	0	0
	Ridge & Headwater mark-up	1	0	0	0
	Riparian habitat protection	2	0	0	0
	Threatened species protection	2	0	0	0
	Threatened species mark-up	1	0	0	0
	Threatened species planning	22	1	0	0
Koala	Identification/search	1	0	1	0
Hollow bearing and recruitment trees	H Retention	2	0	0	0
	H Selection	8	0	0	0
	R Retention	1	0	0	0
	R Selection	1	4	0	0
	H&R Protection	9	2	0	0
	H&R Mark-up	2	0	0	0
Further observations	Unmapped drainage line protection	0	1	0	0
	TOTAL	**58**	**9**	**1**	**0**

2. Audit Recommendations

Condition No.	Number of non-compliances (and sample)	Action Details	Non-compliance Code	Target/Action Date
5.6c ii. Recruitment tree selection	4/5	**Recruitment tree selection** An action plan must be developed and implemented to ensure that recruitment trees are retained across the compartment having as many of the characteristics listed in TSL condition 5.6c ii and consistent the requirements of the R tree definition.	Orange	End of August 2015
5.6h) ii Protection of retained trees	2/13	**Protection of retained trees** An action plan must be developed to ensure retained trees are protected as required by this condition.	Yellow	End of September 2015
5.1F HCVOG mark-up	1/2	**HCVOG mark-up** An action plan is required to ensure exclusion zones are marked as required by this condition.	Yellow	End of September 2015
8.8.1 Targeted fauna surveys - general	1/13	**Threatened species planning** Develop an action plan to ensure modelled habitat is captured correctly for all required threatened species and administrative errors are reduced.	Blue – administrative non-compliance	End of September 2015
EPL Schedule 4 Condition 19 – Accidently felled trees	1/1	**Unmapped drainage line protection** An action plan must be developed and implemented to ensure that drainage feature protection measures are being correctly implemented in the field and systems are in place to ensure accidently felled trees are documented in all instances.	Yellow	End of September 2015
Total	9			

3. Audit Conclusions

This audit achieved its audit objective by determining compliance with the specified criteria of the audit. The EPA issued FCNSW with the draft audit findings and FCNSW submitted actions to mitigate the non-compliances (Attachment 3). The EPA will follow up on the outcomes of these audits to ensure levels of compliance are enhanced for criteria that relate to this audit.

4. List of Attachments

Attachment 1) Audit Findings Table
Attachment 2) EPA Risk Matrix for Non-compliances
Attachment 3) FCNSW Submission on draft audit findings

EPA AUDIT FINDINGS TABLE – MOOGEM STATE FOREST COMPARTMENT 7 - 12

Assessment of Compliance with Lower North East Integrated Forestry Operations Approval –

Threatened Species Licence and Environment Protection Licence

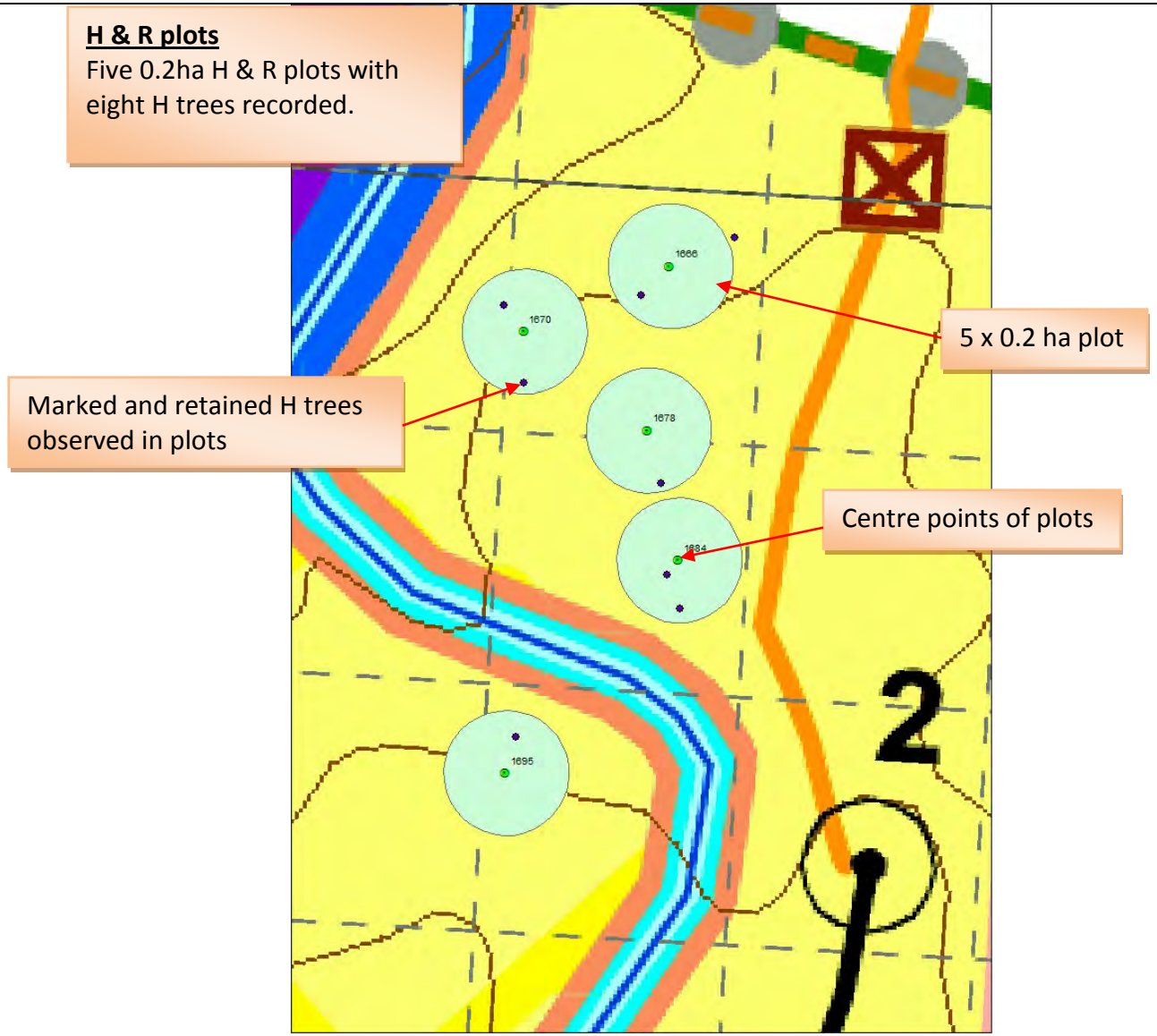
CONDITIONS RELATED TO HOLLOW BEARING TREES (NON-REGROWTH ZONE) – RETENTION				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important & Risk Ranking Code Explanation**	**Action required by licensee**
5.6(b): Within the Non-regrowth Zone the following requirements for retention of Hollow-bearing trees apply: i. A minimum of five hollow-bearing trees must be retained per hectare of net logging area. Where this density is not available, the existing hollow-bearing trees must be retained plus additional trees must be retained as hollow-bearing trees to meet the required rate. 6.9(d): Where information indicates that Greater Gliders occur at densities of more than one per hectare within any individual compartment (that is, a compartment identified by a compartment number and not a group of compartments) being planned for harvesting, and the compartment is within two kilometres of a Powerful Owl record, eight hollow-bearing trees per hectare must be retained within the net logging area of that compartment.	Yes Yes	0/1 (1ha areas assessed) 0/1	NA	NA
Comment and Evidence				

EPA found that FCNSW complied with this condition in the area assessed.
EPA Officers assessed one area throughout the net harvest area to the north-west of log dump 2. The total area assessed was 1.0 hectares. The total number of H trees retained was eight which met the requirement of these conditions. Refer to EPA Waypoints attached to report.

Table 1 EPA Plot Assessments – H trees

Location	Start EPA waypoint	End EPA waypoint	Transect	Area assessed	H trees marked	*Unmarked candidate H trees	Retention rate/ha
North-west of log dump 2	1666	1695	Fixed area assessed	1.0ha	8	0	8H/ha

*EPA officers considered trees retained to be candidate H trees only where they met the TSL criteria (despite not being marked).



Five 0.2ha H and R tree plots were undertaken to assess compliance with H&R retention, selection and marking requirements (Wpts 1666-1695). Note distances were measured in the field, GPS accuracy explains H tree outside of plot area.

CONDITIONS RELATED TO HOLLOW BEARING TREES (NON-REGROWTH ZONE) – SELECTION				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important & Risk Ranking Code Explanation**	**Action required by licensee**
5.6 b ii. In selecting hollow-bearing trees for retention, priority must be given to any hollow-bearing trees which exhibit evidence of occupancy by hollow-dependent fauna and trees which contain multiple hollows or hollows of various sizes. 5.6 b iii. The remaining hollow-bearing trees and any additional trees required to be retained to meet the retention rate under this condition must be selected with the objective of retaining trees having as many of the following characteristics as possible: - belonging to a cohort of trees with the largest dbhob, - good crown development, (Note: this does not restrict the selection of trees with broken limbs consistent with the hollow-bearing tree definition). - minimal butt damage, - represent the range of hollow-bearing species that occur in the area, - located such that they result in retained trees being evenly scattered throughout the net logging area.	Yes	0/8 (8 trees across 1ha area assessed)	NA	NA

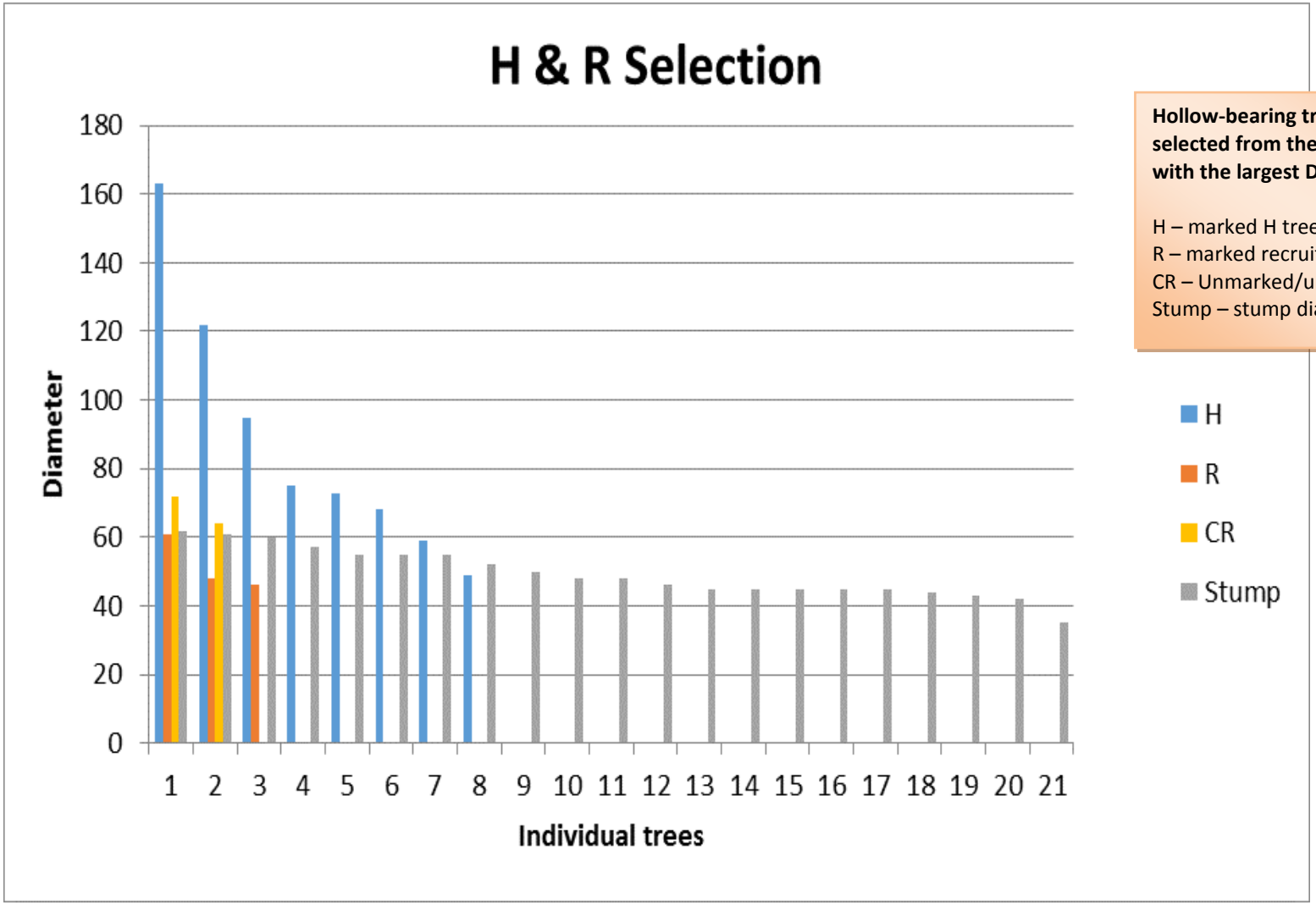
Comment and Evidence

EPA found that FCNSW selection of hollow-bearing trees in the area assessed were compliant with this condition.

The EPA determined that in the assessed area (1 ha) a minimum of 8 compliant H trees were required to be retained (i.e. minimum rate of 8H/ha). The EPA determined that 8 H trees marked and retained were all compliant with selection conditions. All H trees observed in the assessed area showed hollows and were generally of the largest cohort (figure 3).

	EPA Waypoint identifier	Tree Type	DBHOB (cm)	Crown development (Supressed?)	Tree growth stage (Jacobs)	Crown damage (operator)	Logging Debris >1m within 5m	Butt Damage	Ground disturbance (5 mtrs)
Marked H	1667	New England Stringybark	49	Dominant	Mature	no	no	no	no
Marked H	1669	New England Stringybark	68	Dominant	Late mature	no	no	no	no
Marked H	1673	New England Blackbutt	122	Dominant	Late mature	no	no	no	no
Marked H	1676	New England Stringybark	59	Dominant	Late mature	no	no	no	no
Marked H	1682	New England Stringybark	73	Dominant	Late mature	no	no	no	no
Marked H	1686	New England Stringybark	75	Dominant	Late mature	no	no	no	no

Marked H	1688	New England Stringybark	95	Dominant	Late mature	no	no	no	no
Marked H	1698	New England Stringybark	163	Dominant	Late mature	no	yes	no	no



Size cohort comparison of Hollow-bearing and recruitment trees with calibrated stump diameters.

H tree selection
H tree selected for retention in assessed area, 122cm DBHOB (waypoint 1673)

CONDITIONS RELATED TO RECRUITMENT TREES (NON-REGROWTH ZONE) – RETENTION				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important & Risk Ranking Code Explanation**	**Action required by licensee**
5.6c) Within the Non-regrowth Zone the following requirements for retention of Recruitment trees apply: i. A minimum of five recruitment trees must be retained per hectare of net logging area	Yes	0/1 (1ha assessed)	NA	NA

Comment and Evidence - R tree Retention

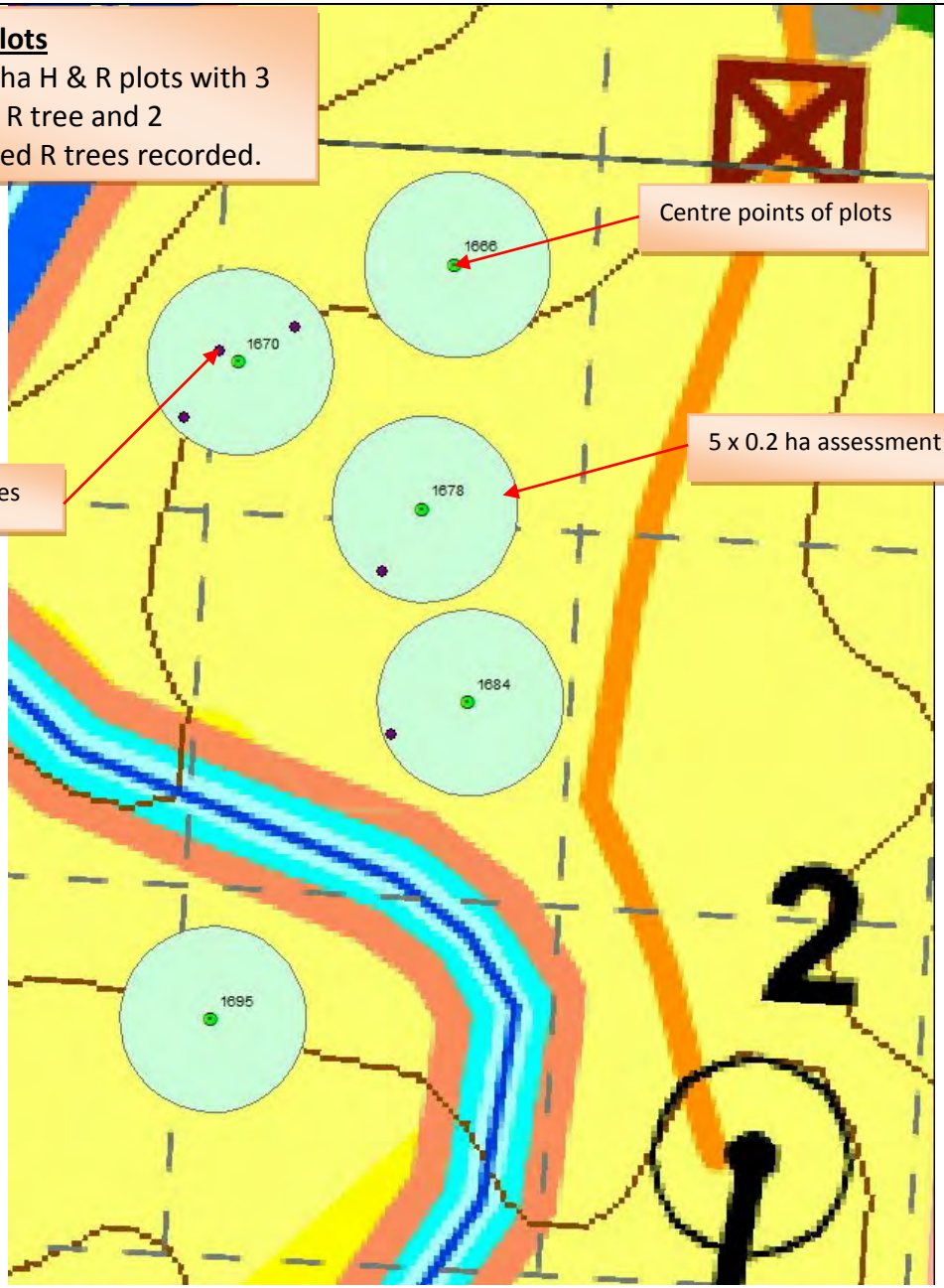
EPA found that FCNSW complied with this condition in the area assessed.
The EPA determined that in the assessed area (1 ha) north-west of log dump 2 a minimum of 5 compliant R trees were required to be retained. FCNSW retained 3 marked trees and 2 candidate (unmarked trees). The selection of these resources is addressed in the below criteria.

Table 2. EPA plot assessments R trees

Location	Start EPA waypoint	End EPA waypoint	Transect	Area assessed	R trees marked	*Unmarked candidate R trees	Retention rate/ha
North-west of log dump 2	1666	1695	Fixed area assessed	1.0ha	3	2	5R/ha

*EPA officers considered trees retained to be candidate H trees only where they met the TSL criteria (despite not being marked).

H & R plots
Five 0.2ha H & R plots with 3 marked R tree and 2 unmarked R trees recorded.



CONDITIONS RELATED TO RECRUITMENT TREES (NON-REGROWTH ZONE) – SELECTION				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important & Risk Ranking Code Explanation**	**Action required by licensee**
5.6c ii. Recruitment trees must be selected with the objective of retaining trees having as many of the following characteristics as possible: - belong to a cohort of trees with the largest dbhob, - located such that they result in retained trees being evenly scattered throughout the net logging area, - good crown development, - minimal butt damage, - represent the range of hollow-bearing species that occur in the area.	No Code Orange	4/5 (5 trees in 1ha area assessed)	A detailed description of importance is contained at the bottom of this criterion. This non-compliance has an orange risk category. The likelihood of environment harm is likely. The scale of harm is moderate (considering rate of incidence) and sensitivity of environment receptor is moderate.	An action plan must be developed and implemented to ensure that recruitment trees are retained across the compartment having as many of the characteristics listed in TSL condition 5.6c ii and consistent the requirements of the R tree definition.

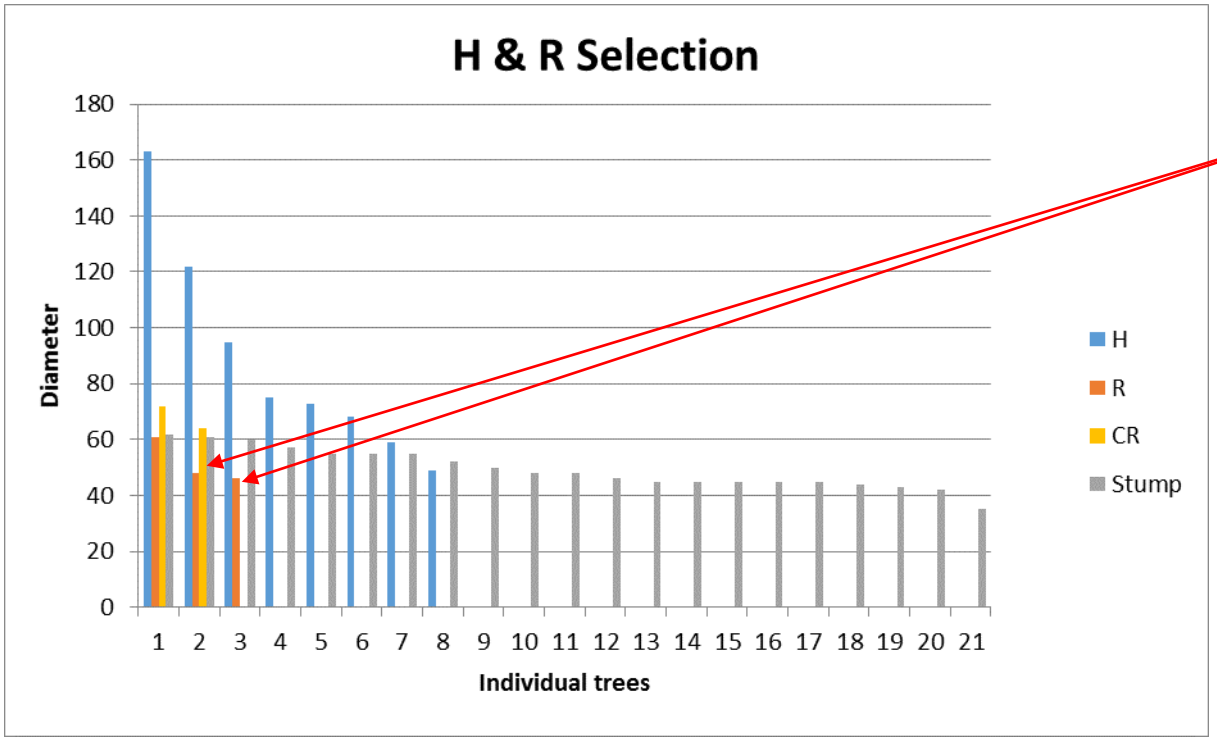
Comment and Evidence – R tree Selection

EPA found that FCNSW did not comply with this condition for four of the five trees assessed.

Despite FCNSW fulfilling its requirement with the retention rates (TSL 5.6ci), FCNSW failed to select the most appropriate trees available for selection. Three trees were selected (marked) for retention, two of these three trees were not selected based on the characteristics required by this condition:
Belong to a cohort of trees with the largest dbhob: Across the one hectare area assessed EPA officers found that at least two trees did not belong to a cohort of trees with the largest DBH (figure 5)(waypoints 1672, 1674).
Located such that they result in retained trees being evenly scattered throughout the net logging area: The EPA noted that R trees were not scattered evenly across the area assessed with three out of the five plots containing R trees (figure 4 above).
Good crown development: One tree was of an early mature growth stage. No trees were suppressed.
Minimal butt damage: Officers didn't find any instances of pre-harvest butt damage to retained trees.
Represent the range of hollow-bearing species that occur in the area – species represented the range of hollow bearing trees within the area

Two trees were retained and considered for retention rates as candidate R trees. These trees weren't selected but should have been selected. These two trees met the selection requirements of this condition and when not marked in the field are at risk of harvesting and not being protected from forestry activities. The two candidate R trees are therefore non-compliant as they were not selected as R trees. If a H & R tree is unmarked (candidate) and should have been selected then the EPA considers it as one non-compliance of TSL selection criteria for that tree.

	EPA Waypoint identifier	Tree Type	DBHOB (cm)	Crown development (Supressed?)	Tree growth stage (Jacobs)	Crown damage (operator)	Logging Debris >1m within 5m	Butt Damage	Ground disturbance (5 mtrs)	Compliant
Marked R	1679	New England Stringybark	61	Co -dom	Mature	no	no	no	no	yes
Marked R	1672	New England Stringybark	46	Dominant	Early mature	no	no	no	no	no
Marked R	1674	New England Stringybark	48	Dominant	Mature	no	yes	yes	No	no
Candidate R	1677	Bluegum	64	Dominant	Mature	no	no	no	no	no
Candidate R	1689	New England Stringybark	72	Dominant	Mature	no	no	no	no	no



Recruitment tree removed belonging to largest cohort
Two trees were removed from the largest cohort e.g. R tree 4 retained at 48cm DBHOB compared to a cut tree of 61cm calibrated diameter.

H – marked H tree
R – marked recruitment tree
CR – Unmarked/unselected R tree
Stump – stump diameter – 10cm

Figure 1. Size comparison of hollow-bearing, recruitment trees and cut stumps

Non-complaint marked R tree selected for retention in assessed area, 46cm DBHOB (waypoint 1672)

Non-complaint marked R tree selected for retention in assessed area, 48cm DBHOB (waypoint 1674)

WHY IS COMPLIANCE WITH THIS TSL CONDITION IMPORTANT?

Largest Size Cohort:

The presence, abundance and size of hollows are positively correlated with tree basal diameter, which is an index of age (Lindenmayer *et al.* 1991a, Bennett *et al.* 1994, Ross 1999, Soderquist 1999, Gibbons *et al.* 2000, Shelly 2005). Tree diameter at breast height (DBH) is, in turn, a strong predictor of occupancy by vertebrate fauna (Mackowski 1984, Saunders *et al.* 1982, Smith and Lindenmayer 1988, Gibbons *et al.* 2002, Kalcounis-Rüppell *et al.* 2006). The minimum size-class at which trees consistently (>50% of trees) contain hollows varies depending on the species and environmental conditions, yet is always skewed toward the larger, more mature trees. (Reference: *Loss of Hollow-bearing Trees - key threatening process determination - NSW Scientific Committee - final determination (2007))*

CONDITIONS RELATED TO HOLLOW BEARING & RECRUITMENT TREES (REGROWTH ZONE) – PROTECTION

Condition No. and Detail	Compliant? Yes/No/Not determined/Not applicable	Number of non-compliance and (sample size)	Why it is important	Action required by licensee
5.6h) Protection of retained trees i. When conducting specified forestry activities and post-logging burning, damage to trees retained under conditions 5.6 (a), 5.6 (b), 5.6 (c), 5.6 (d), 5.6 (e) and 5.6 (f) of this licence must be minimised to the greatest extent practicable. During harvesting operations, the potential for damage to these trees must be minimised by utilising techniques of directional felling. ii. In the course of conducting specified forestry activities, logging debris must not, to the greatest extent practicable, be allowed to accumulate within five metres of a retained hollow bearing tree, recruitment tree, stag, Allocasuarina with more than 30 crushed cones beneath, eucalypt feed tree, or Yellow-bellied Glider or Squirrel Glider sap feed tree. Logging debris within a five metres radius of retained trees must be removed or flattened to a height of less than one metre. Disturbance to ground and understorey must be minimised to the greatest extent practicable within this five metres radius. Habitat and recruitment trees must not be used as bumper trees during harvesting operations.	No Code Yellow	2/13 (13 trees assessed)	The protection of retained trees is important to ensure that their longevity in the landscape and the habitat qualities of these trees is not threatened.	An action plan must be developed to ensure retained trees are protected as required by this condition.

Comment and Evidence

EPA found that this condition was non-compliant in the area assessed. EPA observed two trees with logging debris.

	EPA Waypoint identifier	Tree Type	DBHOB (cm)	Crown damage (operator)	Logging Debris >1m within 5m	Butt Damage	Ground disturbance (5 mtrs)
Marked H	1667	New England Stringybark	49	no	no	no	no
Marked H	1669	New England Stringybark	68	no	no	no	no
Marked H	1673	New England Blackbutt	122	no	no	no	no
Marked H	1676	New England Stringybark	59	no	no	no	no
Marked H	1682	New England Stringybark	73	no	no	no	no
Marked H	1686	New England Stringybark	75	no	no	no	no
Marked H	1688	New England Stringybark	95	no	no	no	no
Marked H	1698	New England Stringybark	163	no	yes	no	no
Marked R	1679	New England Stringybark	61	no	no	no	no
Marked R	1672	New England Stringybark	46	no	no	no	no
Marked R	1674	New England Stringybark	48	no	yes	no	No

Candidate R	1677	Bluegum	64	no	no	no	no
Candidate R	1689	New England Stringybark	72	no	no	no	no

Protection of retained trees
Marked R tree with debris over 1m high within 5m (WP 1674)

Protection of retained trees
Marked H Tree with debris over 1m high within 5m (WP 1698)

CONDITIONS RELATED TO HOLLOW BEARING & RECRUITMENT TREES (NON-REGROWTH ZONE) – MARKING				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important**	**Action required by licensee**
5.6 h) Protection (marking) of retained trees iii. Retained trees referred to in conditions 5.6 (a) i., 5.6 (b) i., 5.6 (c) i., 5.6 (d) i., 5.6 (e) i., 5.6 (f) i., 5.6 (f) iii. and 5.6 (f) iv. of this licence must be marked for retention. The only exception to the marking of the retained trees can occur where the understorey consists of thick impenetrable lantana greater than one metre high or other impenetrable understorey. SFNSW must clearly document and justify such situations in harvest planning documentation either during pre-planning or as it becomes apparent during compartment mark-up.	Yes	0/2 (2 areas assessed)	NA	NA

Comment and Evidence

EPA found that FCNSW complied with this condition in the area assessed. The EPA observed mark-up of retained trees within the assessed area.

In addition, EPA officers field checked mark up 300 metres in front of logging operations east of log dump 16. 14 marked H & R trees were observed.

Hollow bearing and recruitment trees marked
Total of 11 hollow bearing and recruitment trees marked in 1 hectare area

Further observation

The EPA recorded four marked H & R trees on marked exclusion zone boundaries. The EPA does not consider exclusion zones are part of the net logging area as these trees will be retained within the exclusion zone. Hollow-bearing and recruitment trees must not be marked on exclusion zone boundaries.

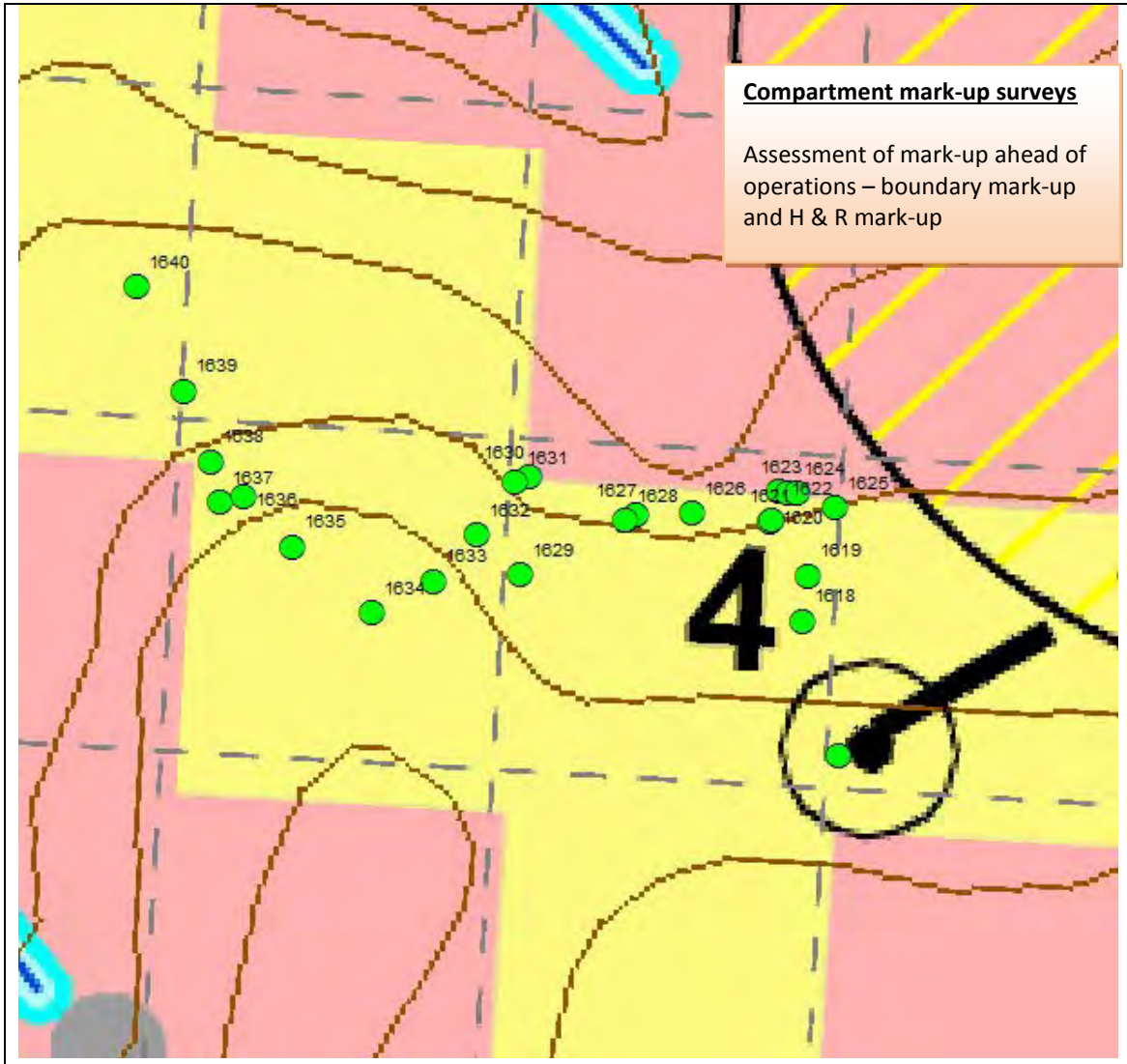
H & R mark-up	Exclusion boundary mark-up	EPA waypoint identifier	Comments
R mark-up	FMZ boundary mark-up (3 bar)	1641	Exclusion zone mark-up was marked on mapped boundary, not conservatively. Marked R tree is already protected within exclusion zone. Additional resources require protection within NHA.
R mark-up	HRM boundary mark-up (3 bar)	1646	Exclusion zone mark-up was marked on mapped boundary, not conservatively. Marked R tree is already protected within exclusion zone. Additional resources require protection within NHA.
R mark-up	HRM boundary mark-up (3 bar)	1650	Exclusion zone mark-up was marked on mapped boundary, not conservatively. Marked R tree is already protected within exclusion zone. Additional resources require protection within NHA.
H mark-up	Stream protection zone	1686	Stream mark-up conservative.

Poor practice

R tree marked on Hastings River Mouse exclusion zone boundary at waypoint 1646.

Marked R tree is already protected within exclusion zone. Additional R resources require protection within NHA to ensure the availability of hollow-bearing resources across the NHA.

CONDITIONS RELATED TO COMPARTMENT MARK-UPSURVEYS				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important & Risk Ranking Code Explanation**	**Action required by licensee**
5.2.2 Koala Mark-up Searches a) In compartments which contain preferred forest types, marking-up must be conducted at least 300 metres in advance of harvesting operations. b) During the marking up of the compartment, an adequately trained person must inspect trees at ten metres intervals. Primary browse trees must be inspected. In the event that there are no primary browse trees, secondary browse trees must be inspected. In the event that there are no primary browse trees or secondary browse trees, other trees and incidental browse trees must be inspected. Inspections must include thoroughly searching the ground for scats within at least one metre of the base of trees greater than 30 centimetres dbhob.	Yes Not determined	0/1 (1 area assessed)	NA	NA
Comment and Evidence				
EPA found that FCNSW complied with this condition in the area assessed, but not able to determine compliance with how koala searches were done. EPA officers assessed compartment mark-up searches ahead of the active operations north west of log dump 4. EPA officers observed that hollow bearing, recruitment trees and old growth exclusion zone boundary had been marked up to the furthest extent from harvesting which complied with the TSL requirements of 300m ahead of active operations. EPA officers were not able to determine if individual trees had been inspected for evidence of Koala activity as per the TSL requirements, as such 5.2.2b) was not determined.				


Compartment mark-up surveys
Assessment of mark-up ahead of operations – boundary mark-up and H & R mark-up
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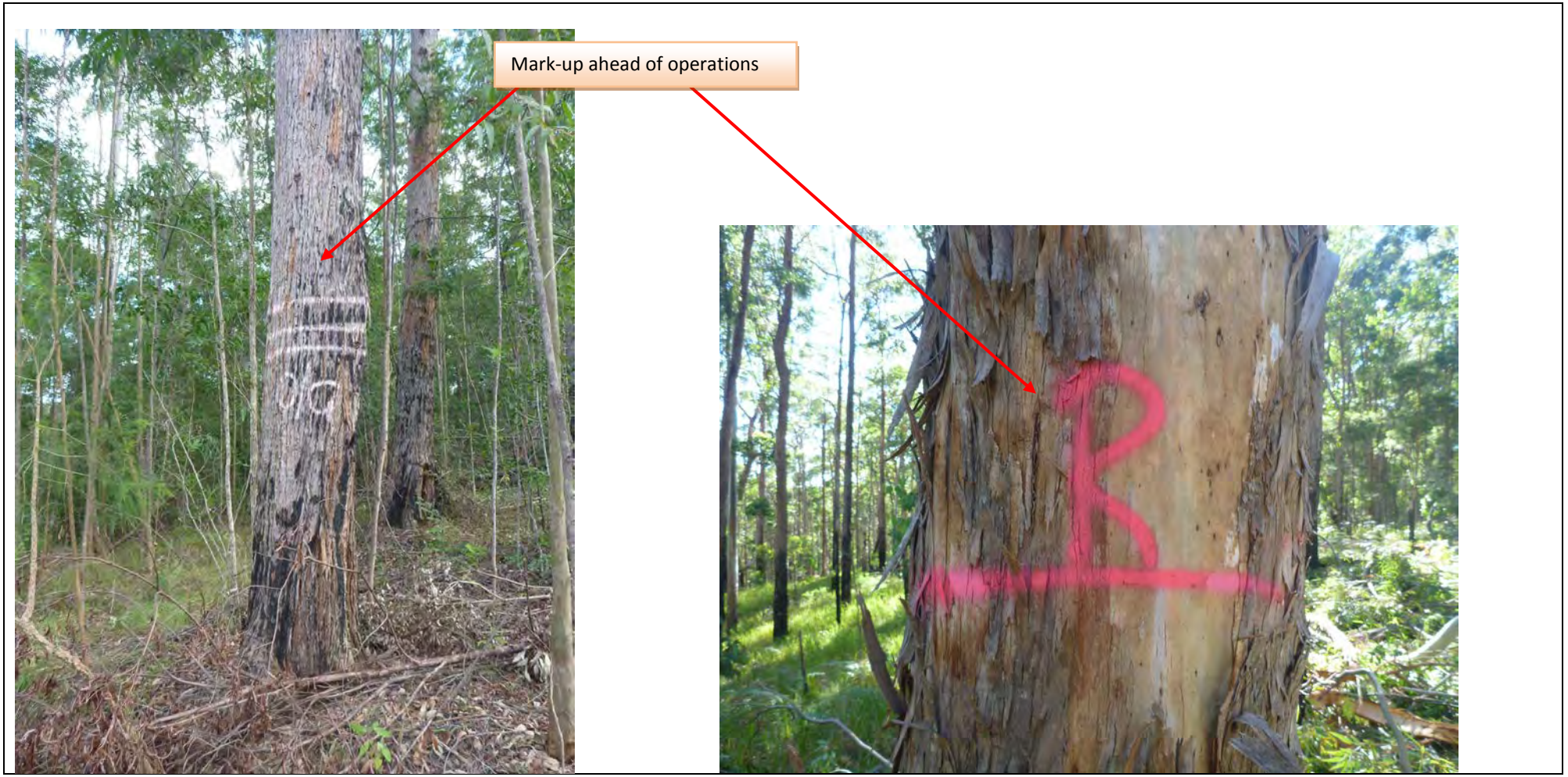
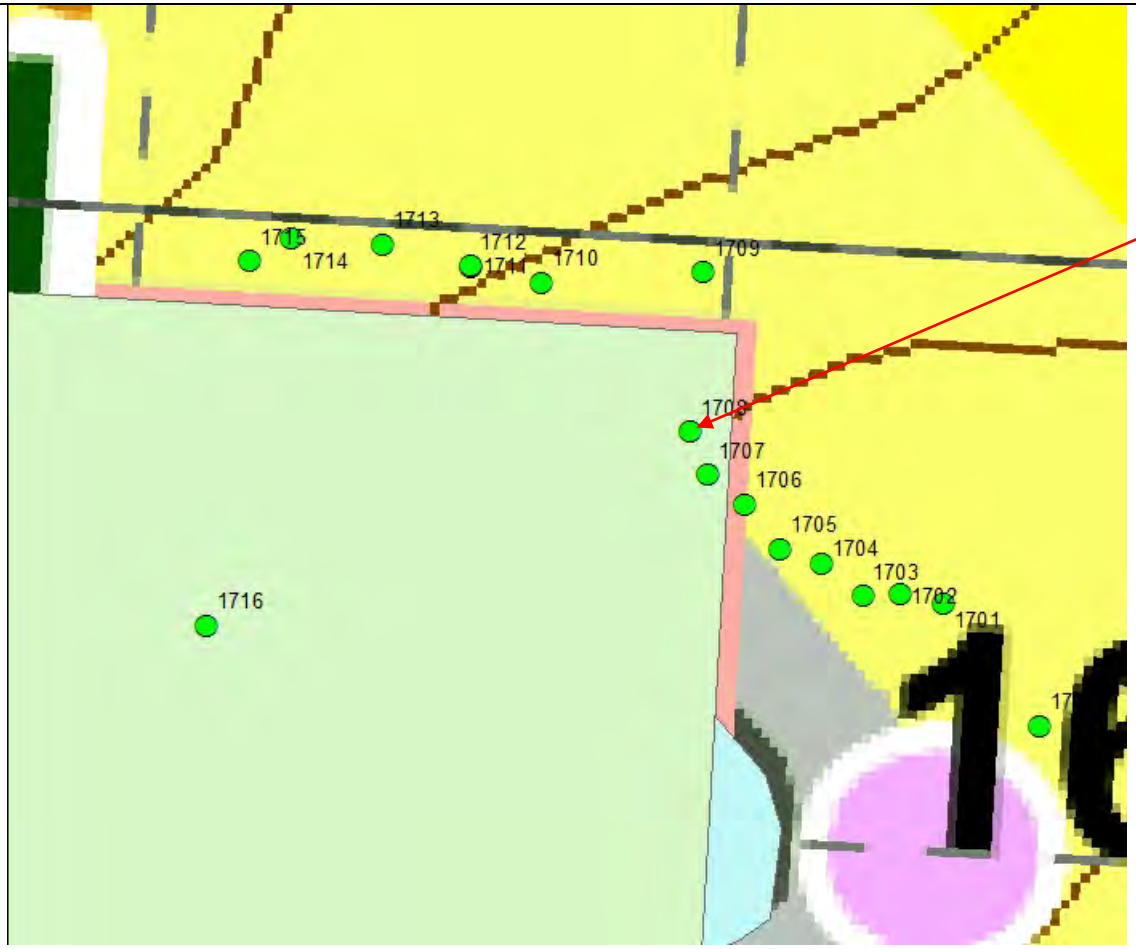

Mark-up ahead of operations

CONDITIONS RELATED TO HIGH CONSERVATION VALUE OLD GROWTH – PROTECTION				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important & Risk Ranking Code Explanation**	**Action required by licensee**
5.3 a)Specified forestry activities, except tree felling in accordance with condition 5.3 (b), road and snig track construction in accordance with condition 5.3 (i), and road re-opening, are prohibited within all areas of High Conservation Value Old Growth Forest.	Yes	0/1 (140m boundary assessed)	NA	NA

Comment and Evidence

EPA found that FCNSW complied with this condition in the area assessed. EPA officers inspcted one 140m boundary of High Conservation Vlaue Old Growth located adjacent to the rocky outcrop west of log dump 16 (see map below). No specified forestry activities were observed within the mapped exclusion zone.

CONDITIONS RELATED TO HIGH CONSERVATION VALUE OLD GROWTH – MARKING				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important & Risk Ranking Code Explanation**	**Action required by licensee**
5.1F All exclusion zone and buffer zone boundaries must be marked in the field, except where specified forestry activities will not come within 50 metres of such boundaries. The outer edge of lines shown on the map is considered to represent the boundary of the mapped feature when marking the feature in the field.	No Code yellow	1/2 (2 areas assessed)	Accurate mark-up of exclusion zones is important to ensure the exclusion zone is protected in its full extent to ensure the habitat qualities are maintained.	An action plan is required to ensure exclusion zones are marked as required by this condition.
Comment and Evidence				
EPA officers inspcted two locations of High Conservation Value Old Growth (HCVOG) for mark-up. Location one was assessed as non-compliant. HCVOG Location 1: EPA officers inspcted one 140m boundary of High Conservation Vlaue Old Growth located adjacent to the rocky outcrop west of log dump 16. In this area one marked tree (WP1708 marked as OG) were recorded up to 7m within the mapped boundary. No harvesting was observed in this area.				



HCVOG mark-up post-harvest
Mark-up of HCVOG within the exclusion zone boundary.

HCVOG Location 2: EPA inspected mark-up of HCVOG along a 100m boundary ahead of forestry operations north west of log dump 4 (waypoints 1621 – 1626, 1630 &1631). This area was marked as required by this condition.

HCVOG mark-up pre-harvest

Mark-up of HCVOG ahead of forestry operations

CONDITIONS RELATED TO ROCKY OUTCROPS AND EXCLUSION ZONES – PROTECTION			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.11 Rocky Outcrops and Cliffs a) Specified forestry activities are prohibited within areas of rocky outcrops and cliffs.	Yes	0/1	NA
a) In addition, exclusion zones of at least 20 metres wide must be implemented around all rocky outcrops more than 0.1 hectare (approx. 30 metres x 30 metres), and all cliffs.	Yes	0/1 (60m boundary assessed)	NA
Comment and Evidence			
EPA found that FCNSW complied with this condition in the area assessed. EPA officers assessed one location of Rock Outcrop west of Log Dump 16. The rocky outcrop was mostly contained in a HCVOG exclusion zone. The EPA assessed a 60m section of the mapped exclusion zone that occurred outside the HCVOG exclusion zone. The EPA observed no specified forestry activities in the outcrop area or the exclusion zone.			


Protection of rocky outcrop

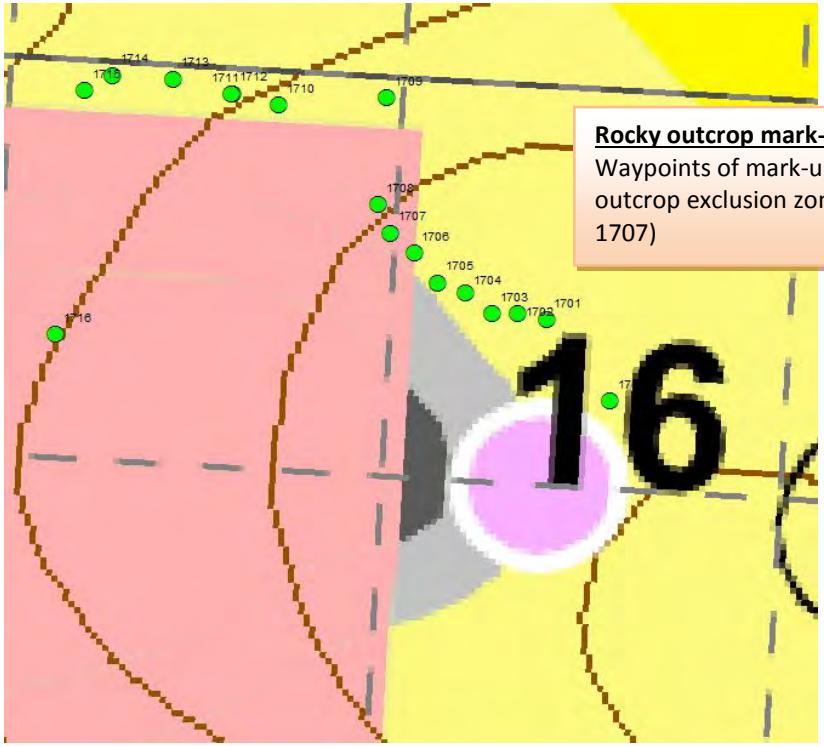
CONDITIONS RELATED TO ROCKY OUTCROP EXCLUSION ZONE – MARKING			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.1 F All exclusion zone and buffer zone boundaries must be marked in the field, except where specified forestry activities will not come within 50 metres of such boundaries. The outer edge of lines shown on the map is considered to represent the boundary of the mapped feature when marking the feature in the field.	Yes	0/1 (60m boundary assessed)	NA

Comment and Evidence

EPA found that FCNSW complied with this condition in the area assessed.

EPA officers assessed one location of Rock Outcrop west of Log Dump 16. The EPA observed the rocky outcrop exclusion zone was marked in the area assessed.

Mark-up of rocky outcrop

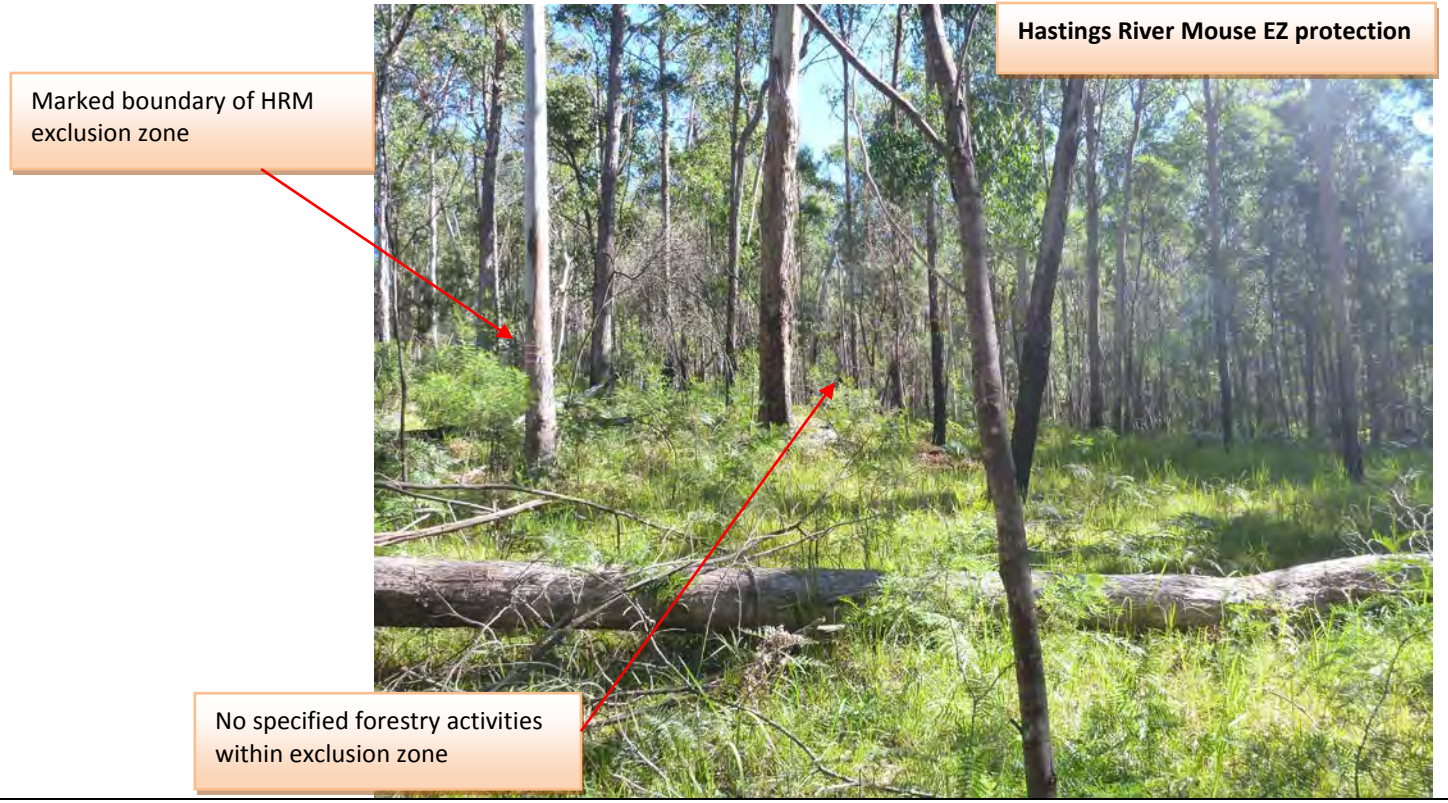


Rocky outcrop mark-up
Waypoints of mark-up of rocky outcrop exclusion zone (1701 – 1707)

CONDITIONS RELATED TO HASTINGS RIVER MOUSE EXCLUSION ZONE – PROTECTION			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.1ai) All specified forestry activities are prohibited in exclusion zones. 6.13 b) The felling of trees across the boundary of a Hastings River Mouse exclusion zone is prohibited except where no more than six trees containing timber logs are felled across the boundary in any 200m length of the boundary of Hastings River Mouse habitat or exclusion zone, whatever 200m length of boundary is considered.	Yes Yes	0/1 0/1 (85m boundary assessed)	NA NA

Comment and Evidence

EPA found that FCNSW complied with this condition in the area assessed. The EPA assessed one 85 m area of mapped HRM exclusion zone north-east of log dump 1 (waypoints 1644 – 1651) The EPA did not observe any specified forestry activities within the mapped exclusion zone.



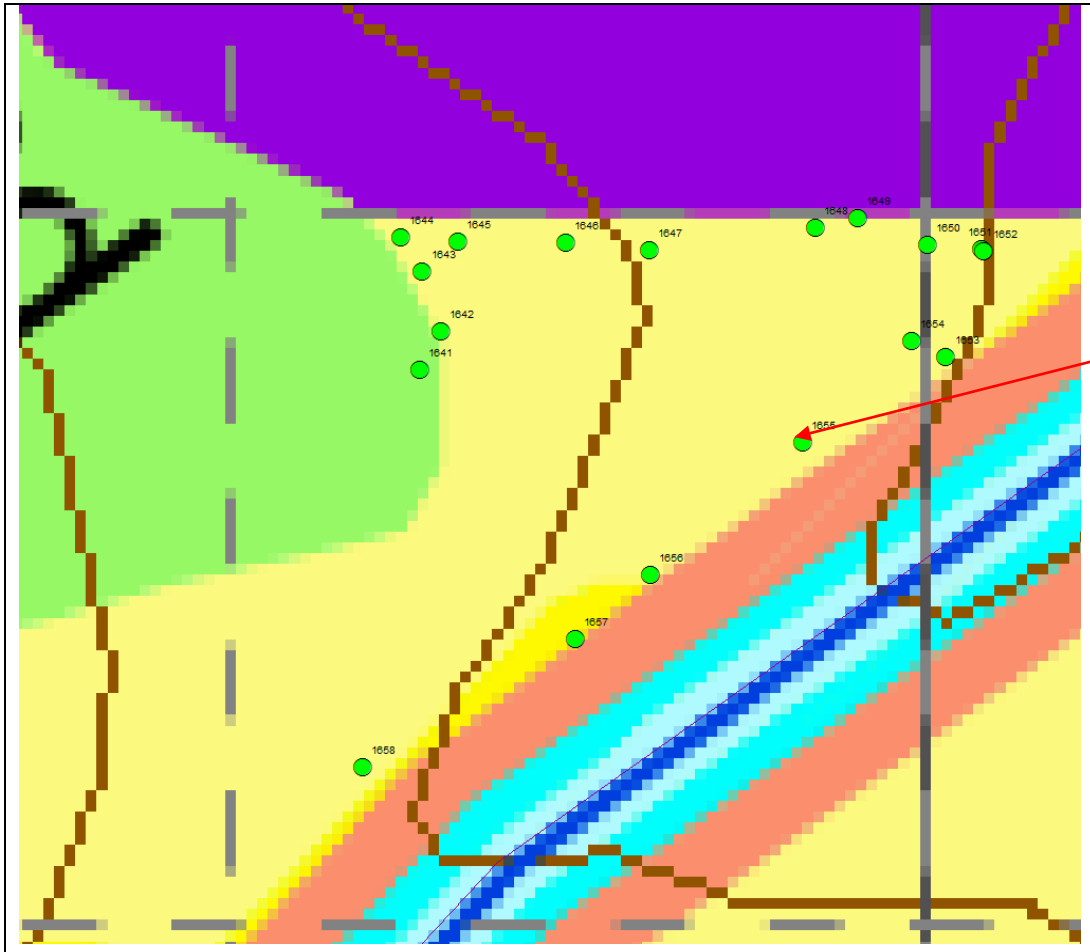
CONDITIONS RELATED TO HASTINGS RIVER MOUSE EXCLUSION ZONE – MARKING			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.1 F All exclusion zone and buffer zone boundaries must be marked in the field, except where specified forestry activities will not come within 50 metres of such boundaries. The outer edge of lines shown on the map is considered to represent the boundary of the mapped feature when marking the feature in the field.	Yes	0/1 (85m boundary assessed)	NA

Comment and Evidence

The EPA found FCNSW field mark-up of the HRM exclusion zone to be compliant.

The EPA assessed one 85 m area of mapped HRM exclusion zone north-east of log dump 1 (waypoints 1644 – 1651). The EPA observed mark-up on the mapped boundary of the exclusion zone.

CONDITIONS RELATED TO RIPARIAN HABITAT PROTECTION ZONES – PROTECTION				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important & Risk Ranking Code Explanation**	**Action required by licensee**
5.7 **Operations within protection zones (hard)** d) Specified forestry activities, except road and snig track construction in accordance with conditions 5.7 (r to u) and road re-opening, are prohibited within the protection zone (hard).	Yes	0/1	NA	NA
Operations within protection zones (soft) j) Specified forestry activities, except road and snig track construction in accordance with conditions 5.7 (r to u) and road re-opening, are prohibited within the protection zone (soft).	Yes	0/1 (170m boundary assessed)	NA	NA
Comment and Evidence				
EPA found that FCNSW complied with this condition in the area assessed. The EPA assessed 170 metres of riparian boundary of a 1st order stream north-east of log dump 1. The EPA did not observe any specified forestry activities in the hard and soft protection zone (waypoints 1653 – 1658).				

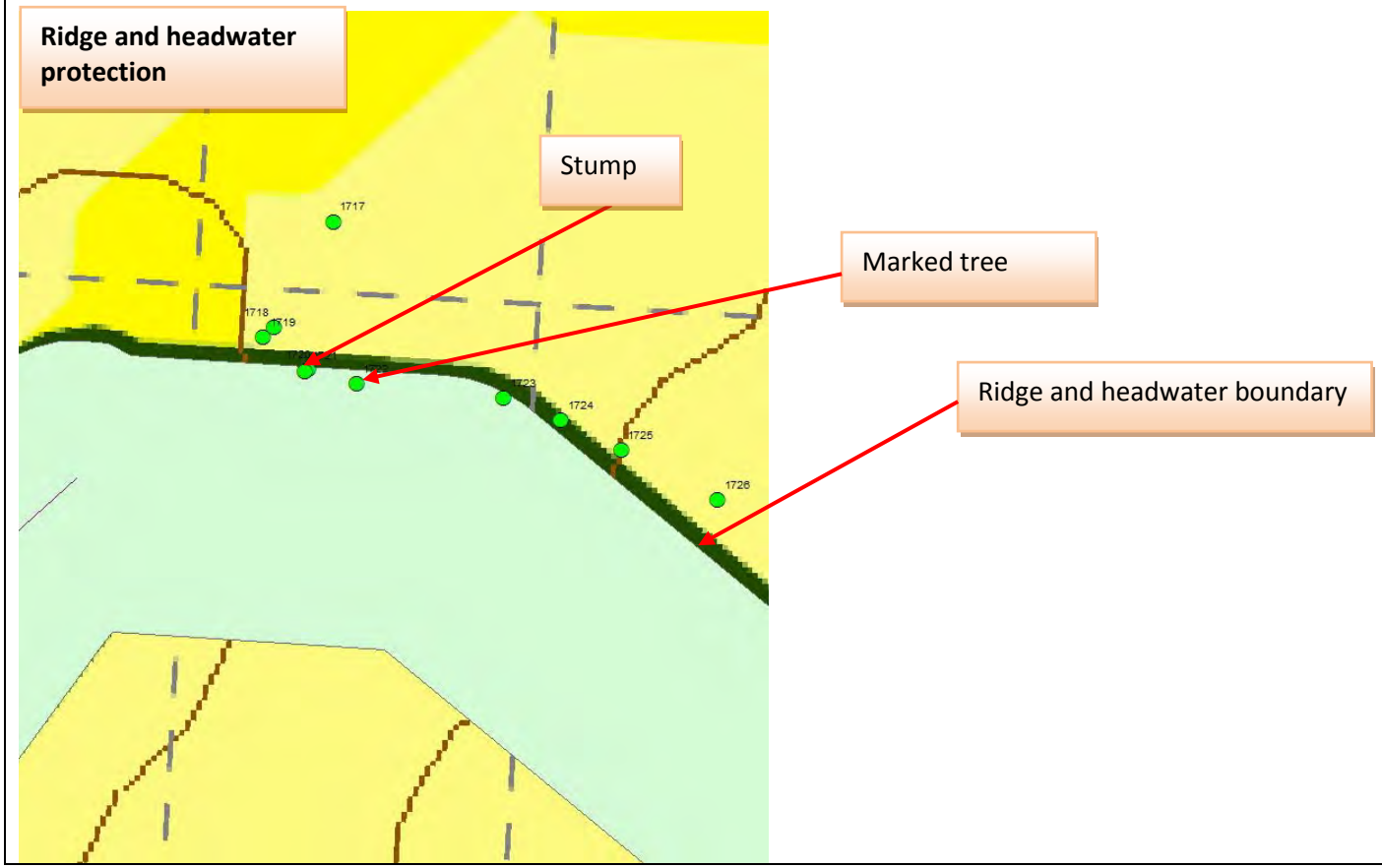


Riparian protection zones
Waypoints indicate edge of specified forestry activities outside protection zones

CONDITIONS RELATED TO RIDGE AND HEADWATER EXCLUSION ZONES – PROTECTION			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.1a (i) All specified forestry activities are prohibited in exclusion zones.	Yes	0/1 (150m boundary assessment)	NA

Comment and Evidence

EPA found that FCNSW complied with this condition in the area assessed. The EPA assessed one 150m section of Ridge and Headwater exclusion zone south of log dump 20. One stump was observed on the mapped boundary of the exclusion zone (wp 1720). No specified forestry activities were observed within the mapped boundary.



CONDITIONS RELATED TO RIDGE AND HEADWATER EXCLUSION ZONES – MARKING			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.1F All exclusion zone and buffer zone boundaries must be marked in the field, except where specified forestry activities will not come within 50 metres of such boundaries. The outer edge of lines shown on the map is considered to represent the boundary of the mapped feature when marking the feature in the field.	Yes	0/1 (150m boundary assessment)	NA
Comment and Evidence			
EPA found that FCNSW complied with this condition in the area assessed. The EPA assessed one 150m section of Ridge and Headwater exclusion zone south of log dump 20. This area was marked along the mapped boundary. One tree was marked slightly within the mapped boundary, 4 metres, (waypoint 1722) which may be attributed to the GPS accuracy of 9 metres at this location.			

CONDITIONS RELATED TO THREATENED SPECIES PLANNING			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
8.7 Conditions related to pre-logging and pre-roading compartment traverse	Yes	0/1	NA
Comment and Evidence			
EPA found that FCNSW complied with this condition in the compartments assessed. To assess this condition the EPA reviewed FCNSW planning documents including the pre-logging and pre-roading report and raw survey data sheets. FCNSW recorded 16 compartment traverse transects across compartments 7 -12 totalling 11,800m and 23:30hours, this exceeds the required licence distance of 10,020m but is less than the required time of 25:03hrs. All traverse routes and data was recorded as required.			

CONDITIONS RELATED TO THREATENED SPECIES PLANNING			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size) & why is it important**	**Action required by licensee**
8.8.1 Targeted fauna surveys - General	No Code blue	1/13 Determining what modelled habitat is available is important to ensure the correct targeted surveys are done prior to harvesting to ensure the impacts of the forestry operations on these species are minimised.	Develop an action plan to ensure modelled habitat is captured correctly for all required threatened species and administrative errors are reduced.

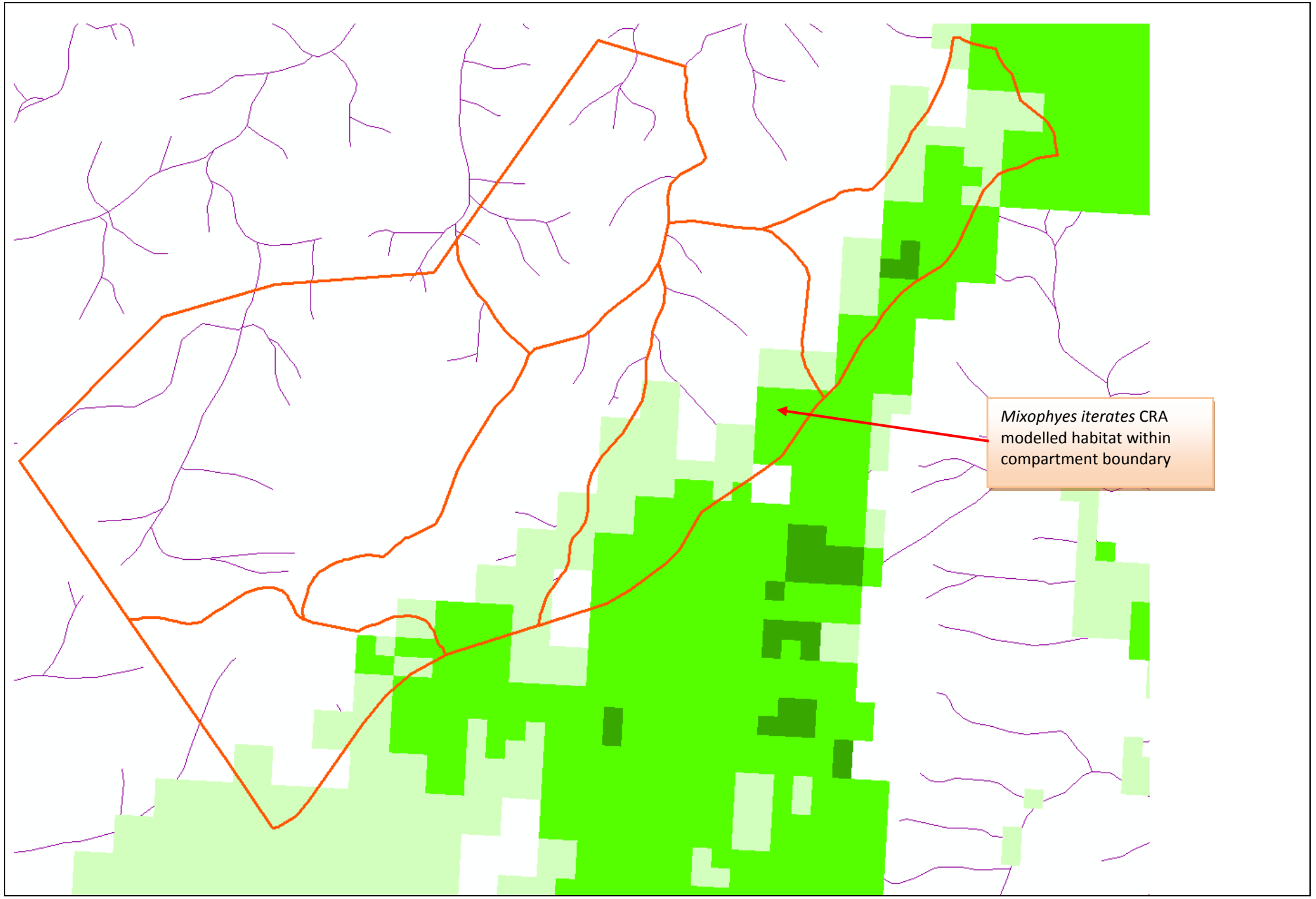
Comment and Evidence

The EPA assessed this condition as non-compliant in compartments 7 -12 as one riparian frog species, *Mixophyes iteratus* (the giant barred frog), was not listed as a species with known or potential habitat.

To assess this condition the EPA reviewed FCNSW planning documents including the pre-logging and pre-roading report and raw survey data sheets and compared the recorded data with modelled habitat (Habitat models CRA Northern NSW layer) of the listed threatened species under this condition. FCNSW listed the following species as having known habitat or CRA modelled habitat present with the compartments. *Mixophyes iteratus* (the giant barred frog) was not included in the list for target fauna surveys. The species included:

- *Mixophyes balbus*
- *Philoria pughi*
- Golden-tipped bat
- Hastings river mouse
- Squirrel glider
- Yellow-bellied glider
- Masked owl
- Powerful owl
- Red goshawk
- Regent honeyeater
- Rufous scrub bird
- Swift parrot

The EPA notes that targeted surveys for *Mixophyes iteratus* (the giant barred frog), were undertaken and therefore this non-compliance is considered to be administrative and does not risk harm to the species.


Mixophyes iterates CRA modelled habitat within compartment boundary

CONDITIONS RELATED TO THREATENED SPECIES PLANNING - FROGS			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
8.8.3 A & B Targeted fauna surveys – Riparian and non-riparian frog surveys	Yes	0/2 (1 RF survey 1 NRF survey)	Ensure frog surveys are conducted in optimal conditions as required by the licence i.e. after rain, during very light rain, or when rain is intermittent and during the preferred survey seasons.

Comment and Evidence

EPA found that FCNSW complied with this condition in the compartments assessed.

To assess this condition the EPA reviewed FCNSW planning documents including the pre-logging and pre-roading report and raw survey data sheets. Riparian frog surveys were required for *Mixophyes balbus* and *Mixophyes iteratus*, non-riparian frog surveys were required for *Philoria pughi*.

Riparian frog surveys: FCNSW reported that eight replicated riparian frog surveys were conducted with compartments 7-12, meeting the requirements of the licence. Surveys were reported to have occurred in the months of February and March 2013, which meets the required survey season of August – March however the preferred survey season for *Mixophyes iteratus* is October to February with six of the eight surveys were conducted in March. A total time of 8:30hrs was recorded which exceeded the required time of 2:30hrs. FCNSW recorded no evidence of rain within the last 24hours for all riparian frog surveys. The Licence requires all attempts to be made to survey for riparian frogs just after rain, during very light rain, or when rain is intermittent.

No targeted species were recorded in the survey.

Non-Riparian frog surveys: FCNSW reported that six non-riparian frog surveys were conducted with compartments 7-12 for a total of 3:45hrs, exceeding the requirements of the licence. Surveys were reported to have occurred in the months of November 2012 and January 2013, which meets the required survey season of August – March. The preferred survey season for *Philoria spp* is spring to early summer, no later than December, with two surveys conducted in January this was not the ideal survey season for *Philoria pughi*. FCNSW recorded no evidence of rain within the last 24hours for all non-riparian frog surveys. The Licence requires all attempts to be made to survey for riparian frogs just after rain, during very light rain, or when rain is intermittent.

No targeted species were recorded in the survey.

CONDITIONS RELATED TO THREATENED SPECIES PLANNING - BIRDS			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
8.8.4 C Targeted fauna surveys – Diurnal bird surveys – Rufous Scrub-bird & other diurnal birds	Yes	0/2 (1 RSB survey 1 DB survey)	NA

Comment and Evidence

EPA found that FCNSW complied with this condition in the compartments assessed.

To assess this condition the EPA reviewed FCNSW planning documents including the pre-logging and pre-roading report and raw survey data sheets. Diurnal bird surveys were required for the rufous scrub-bird, regent honey eater and swift parrot.

Rufous scrub-bird – FCNSW reports show that 12 Rufous scrub-bird surveys were undertaken with a total survey time of 4:45hrs, meeting the licence conditions. Surveys were conducted in the late afternoon in November 2012 and February 2013 meeting the survey time and season requirements. The locations of the survey sites maximised coverage of potential habitat area. No Rufous scrub-birds were recorded in the survey.

Other diurnal birds – In lieu of surveying for other diurnal birds FCNSW chose to implement Condition 7b of the TSL – *Pre-logging and pre-roading surveys are not required for the following species where SFNSW choose to implement the species prescription, as described below:*

viii. Swift parrot and regent honeyeater – At least 10 eucalypt feed trees must be retained within every two hectares of net logging area.

CONDITIONS RELATED TO THREATENED SPECIES PLANNING – OWLS & GLIDERS			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
8.8.5 Targeted fauna surveys – Nocturnal call playback	Yes	0/1	NA

Comment and Evidence

EPA found that FCNSW complied with this condition in the compartments assessed.

To assess this condition the EPA reviewed FCNSW planning documents including the pre-logging and pre-roading report and raw survey data sheets. Nocturnal call playback was required for the Masked Owl, Powerful Owl, squirrel glider and yellow-bellied glider.

Masked and powerful owls – In lieu of surveying for these owls FCNSW chose to implement Condition 7b of the TSL – *Pre-logging and pre-roading surveys are not required for the following species where SFNSW choose to implement the species prescription, as described below:*

v. Powerful owl, masked owl, barking owl – Implement the landscape approach as per condition 6.9.2 of the TSL.

Squirrel and yellow-bellied gliders – FCNSW reports show that 5 replicated nocturnal call playback surveys were undertaken with a total survey time of 6:45hrs, meeting the licence conditions. Playback sites were separated by greater than 1km. Windy and rainy periods were avoided.

Targeted species recorded:
2 Greater Gliders
2 Masked owls
0 Powerful owl
2 yellow-bellied gliders
0 squirrel gliders

CONDITIONS RELATED TO THREATENED SPECIES PLANNING – NOCTURNAL SPECIES			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
8.8.6 Targeted fauna surveys – Spotlight survey	Yes	0/1	NA

Comment and Evidence

EPA found that FCNSW complied with this condition in the compartments assessed.

To assess this condition the EPA reviewed FCNSW planning documents including the pre-logging and pre-roading report and raw survey data sheets. Spotlight surveys were required for the Masked Owl, Powerful Owl, squirrel glider, greater glider and yellow-bellied glider.

Masked and powerful owls – In lieu of surveying for these owls FCNSW chose to implement Condition 7b of the TSL – *Pre-logging and pre-roading surveys are not required for the following species where SFNSW choose to implement the species prescription, as described below:*
v. Powerful owl, masked owl, barking owl – Implement the landscape approach as per condition 6.9.2 of the TSL.

Squirrel, greater glider and yellow-bellied gliders – FCNSW reports show that five replicated spotlight transects were undertaken for 5250 metres with a total survey time of 6:55hrs, meeting the licence conditions. All transects were undertaken on foot by two observers. Windy and rainy conditions were avoided.

Targeted species recorded:
32 Greater Gliders
1 Masked owls
1 Powerful owl
0 yellow-bellied gliders
0 squirrel gliders

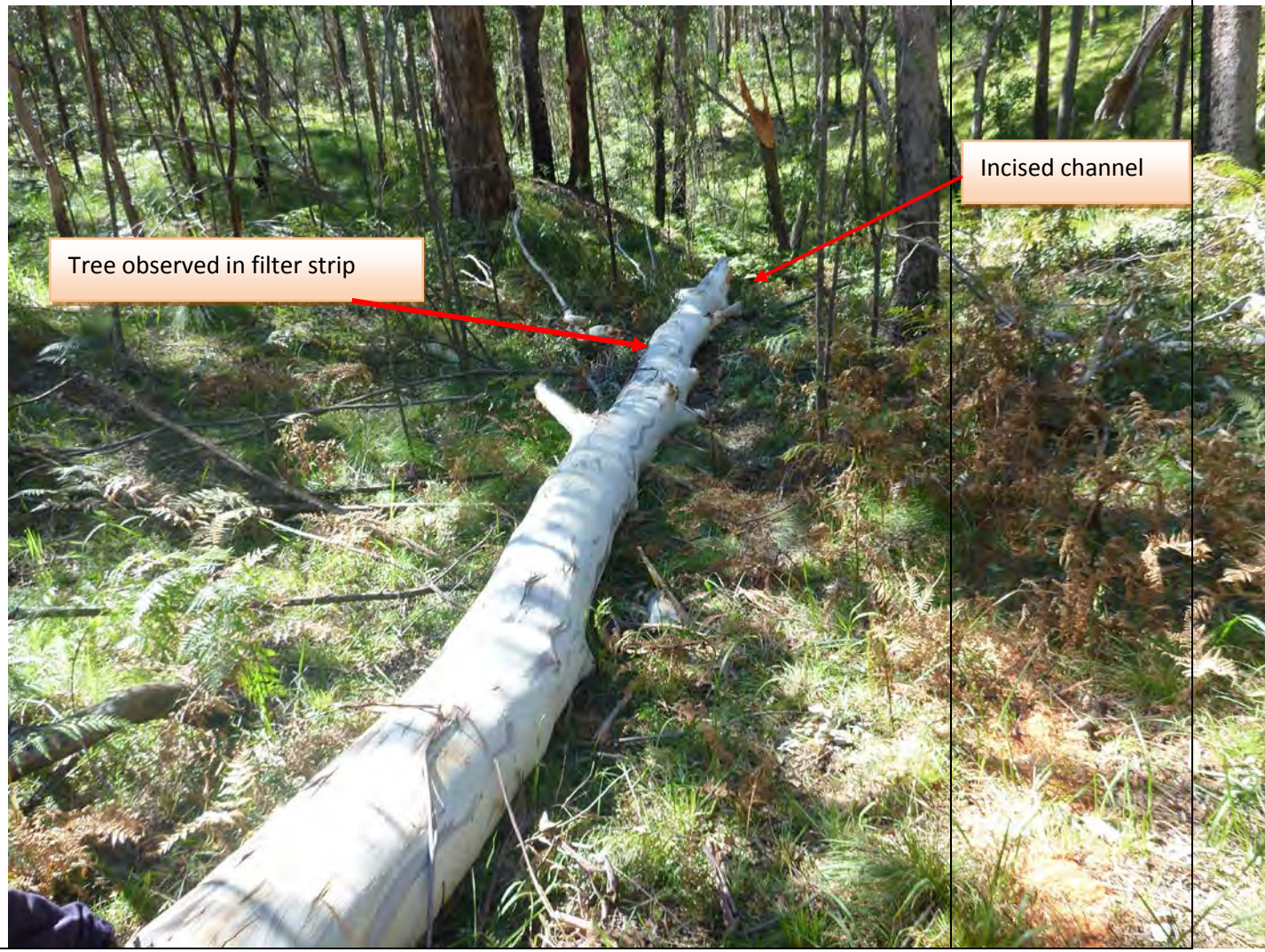
CONDITIONS RELATED TO THREATENED SPECIES PLANNING – HASTINGS RIVER MOUSE			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
8.8.9 A Targeted fauna surveys – Hastings River Mouse – Habitat suitability surveys 8.8.9 B Targeted fauna surveys – Hastings River Mouse – Targeted surveys	Yes	0/2	NA
Comment and Evidence			
EPA found that FCNSW complied with this condition in the compartments assessed. To assess this condition the EPA reviewed FCNSW planning documents including the pre-logging and pre-roading report and raw survey data sheets. Habitat suitability – FCNSW reports illustrate that the rapid assessment approach was undertaken as described in 8.8.9 A i) and the note following that condition. FCNSW documented this rapid assessment as required by this condition. 53 sites were assessed for habitat suitability with 16 sites identifying medium – high habitat suitability therefore triggering the requirement of 8.8.9 B. Targeted surveys – FCNSW reports show that 125 Elliot traps were set to survey the Hastings river mouse for over four nights. Transects were placed in suitable habitat to maximise capture. No Hastings river mouse were detected.			

CONDITIONS RELATED TO THREATENED SPECIES PLANNING – GOLDEN-TIPPED BAT			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
8.8.10 b Targeted fauna surveys – Golden-tipped bat *Kerivoula papuensis*	Compliant	0/1	NA
Comment and Evidence			
The EPA assessed this condition as compliant in compartments 7 -12. To assess this condition the EPA reviewed FCNSW planning documents including the pre-logging and pre-roading report and raw survey data sheets. FCNSW reports indicate that harps traps were used to survey for the Golden-tipped bat at 5 sites over two nights, as required by the licence. Harp traps were set as required within the required survey season. 2 Golden-tipped bats were recorded in the survey.			

FURTHER OBSERVATIONS TABLE

These are matters that were recorded during the field investigation but relate to conditions outside the audit scope

Relevant Condition	Number of non-compliances and sample	Risk Code	Details of matter	Recommendation
EPL Schedule 4 - Condition 19 Trees that have been accidentally felled into a filter strip may be removed from the filter strip. The crown must be left where it has fallen unless the tree is lifted out of the filter strip, or lifted and moved within the filter strip, using a mechanical harvester. 19A. Where a log is removed from a filter strip, the log furrow produced by this extraction must be: a) infilled with soil; or b) drained onto a stable surface capable of handling concentrated water flow. At least 70% ground cover must then be achieved within 5 days of the creation of the furrow. 19B. Seventy percent ground cover must be achieved on all disturbed soil surfaces in a filter strip within five days of the creation of the disturbance. This level of ground cover must not be achieved by the addition or spreading of gravel or rock. Note the following techniques, or a combination of them are examples of how 70% ground cover may be achieved: a. retain at least 70% existing ground cover; b. retain or respread slash and logging debris over at least 70% of the disturbed soil surface; or c. provide artificial ground cover in order to achieve 70% ground cover within the	1/1	Yellow	**Drainage line protection** This harvesting operation was not licenced by the EPL however FCNSW harvest plan for Moogem State Forest Compartment 7 -12 indicates that the EPL applies and no harvesting within unmapped drainage lines is permitted. The EPA observed an unmapped drainage line running east-west east of log dump 1. The EPL requires that filter strips, protection zones and operational zones be retained along all drainage lines. For unmapped drainage lines, a 5 metre filter strip and 5 metre protection zone is required. A "drainage line" is defined by the EPL as a channel down which surface water naturally concentrates and flows. Drainage lines exhibit one or a combination of the following features which distinguish them from drainage depressions: a) evidence of active erosion or deposition - e.g., gravel, pebble, rock, sand bed, scour hole, nick points; or b) an incised channel of more than 30 centimetres depth with defined bed and banks. The EPA determined that approximately 30 metres of the drainage feature met the definition of a drainage line and therefore required protection in this area. Within this area (at WP 1662) EPA measured an incised channel of 57cm depth with defined bed and banks. The EPA observed that within the 5 metre filter strip one tree had been felled along the filter strip towards the mapped stream. FCNSW draft audit findings submissions have documented that this tree was accidently felled into the filter strip. Photographic evidence of this was provided, showing the snapped trunk. Condition 19C requires documentation of the location and date on which the tree was accidently felled into the filter strip. This accidently felled tree has not been and therefore a non-compliance is given for this condition. The EPA notes that the tree was not removed from the filter strip and therefore remedial work was not required. See photos below.	An action plan must be developed and implemented to ensure that drainage feature protection measures are being correctly implemented in the field and systems are in place to ensure accidently felled trees are documented in all instances.

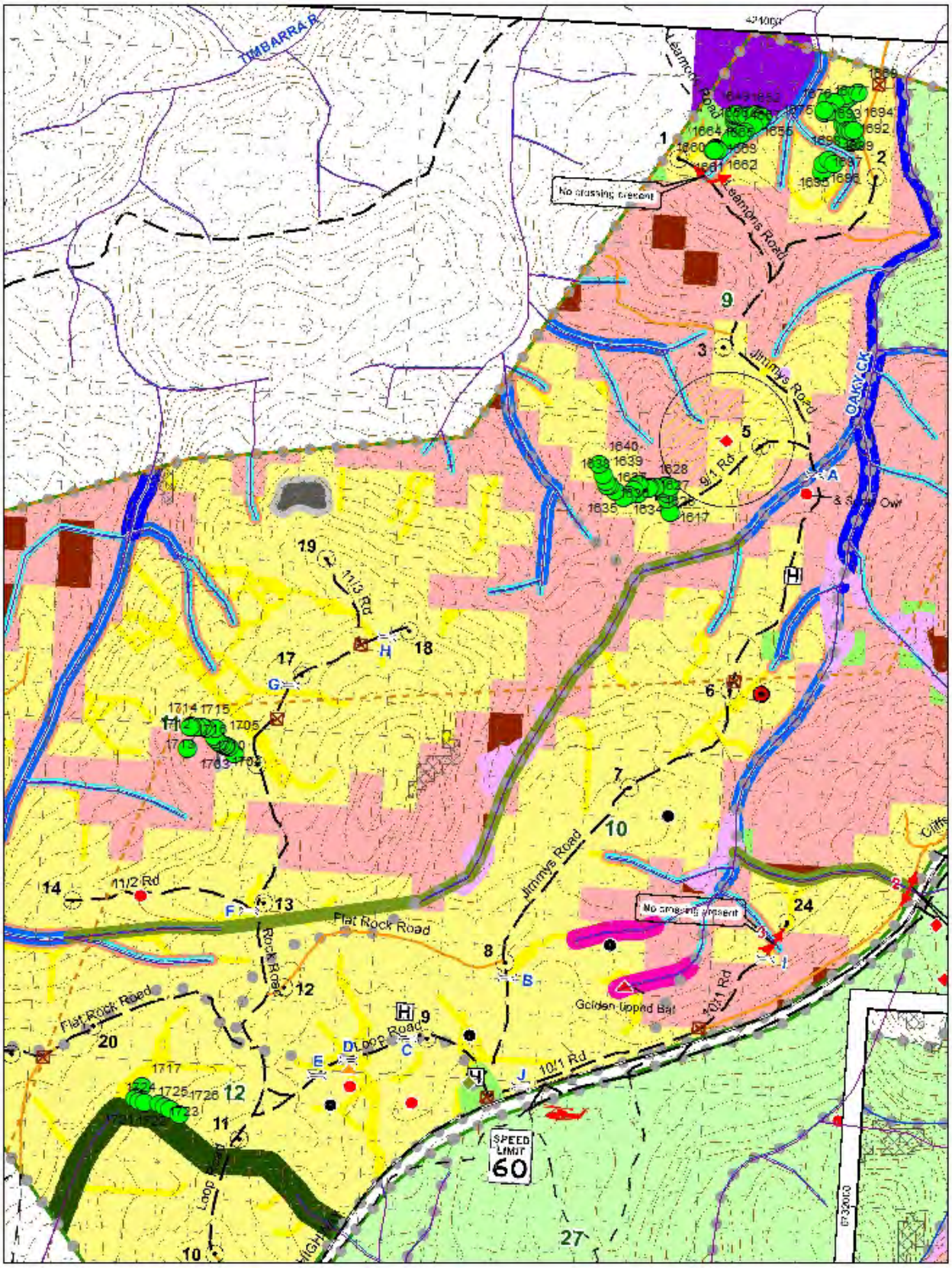
disturbed area using geotextile or erosion control mats) 19C. State Forests must document the location of and date on which the tree was accidentally felled into the filter strip and the date and type of remedial work completed to comply with 19A and 19B.			**<u>Why is it important?</u>** The protection of drainage features is important for a number of environmental reasons. These include: • reducing the potential for water pollution; • protection of habitat which may be used as riparian corridors for all species and protects the terrestrial ecosystem that supports the aquatic environment.  	

			 Incised channel (WP 1662) Tree head in filter strip	

ACTION PLAN – MOOGEM STATE FOREST, COMPARTMENTS 7 - 12

Condition No.	Number of non-compliances (and sample)	Action Details	Non-compliance Code	Target/Action Date
5.6c ii. Recruitment tree selection	4/5	**Recruitment tree selection** An action plan must be developed and implemented to ensure that recruitment trees are retained across the compartment having as many of the characteristics listed in TSL condition 5.6c ii and consistent the requirements of the R tree definition.	Orange	End of August 2015
5.6h) ii Protection of retained trees	2/13	**Protection of retained trees** An action plan must be developed to ensure retained trees are protected as required by this condition.	Yellow	End of September 2015
5.1F HCVOG mark-up	1/2	**HCVOG mark-up** An action plan is required to ensure exclusion zones are marked as required by this condition.	Yellow	End of September 2015
8.8.1 Targeted fauna surveys - general	1/13	**Threatened species planning** Develop an action plan to ensure modelled habitat is captured correctly for all required threatened species and administrative errors are reduced.	Blue – administrative non-compliance	End of September 2015
EPL Schedule 4 Condition 19 – Accidently felled trees	1/1	**Unmapped drainage line protection** An action plan must be developed and implemented to ensure that drainage feature protection measures are being correctly implemented in the field and systems are in place to ensure accidently felled trees are documented in all instances.	Yellow	End of September 2015
Total	9			

EPA Audit Locations 14 May 2015 Moogem SF



Legend

Waypoints_14-MAY-15

0 250 500 750 1,000 Meters

N

EPA Identifier	Easting	Northing
1617	423807	6730711
1618	423794	6730751
1619	423795	6730765
1620	423782	6730781
1621	423783	6730781
1622	423785	6730790
1623	423787	6730790
1624	423790	6730790
1625	423802	6730786
1626	423758	6730782
1627	423742	6730780
1628	423739	6730778
1629	423708	6730760
1630	423709	6730790
1631	423705	6730788
1632	423694	6730771
1633	423682	6730757
1634	423664	6730746
1635	423638	6730765
1636	423623	6730779
1637	423616	6730777
1638	423612	6730789
1639	423603	6730810
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1642	423934	6731884
1643	423931	6731892
1644	423928	6731897
1645	423936	6731897
1646	423952	6731896
1647	423964	6731895
1648	423987	6731898
1649	423993	6731900
1650	424003	6731896
1651	424011	6731895
1652	424011	6731895
1653	424006	6731880
1654	424001	6731882
1655	423985	6731868
1656	423964	6731850
1657	423953	6731840
1658	423923	6731822
1659	423881	6731795
1660	423882	6731793
1661	423871	6731788
1662	423883	6731793
1663	423883	6731793
1664	423886	6731790
1665	423877	6731786
1666	424266	6731970
1667	424255	6731958
1668	424257	6731970
1669	424291	6731983
1670	424209	6731941
1671	424209	6731942
1672	424203	6731944
1673	424201	6731951
1674	424223	6731951
1675	424194	6731917
1676	424210	6731921
1677	424195	6731925
1678	424261	6731904
1679	424251	6731887
1680	424253	6731882
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1683	424253	6731911
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1722	422352	6728878
1723	422395	6728876
1724	422412	6728871
1725	422430	6728863
1726	422458	6728850

ATTACHMENT 2 – RISK ASSESSMENT OF NON-COMPLIANCE

The significance of any non-compliances identified during the audit process are categorised. Following risk assessment of non-compliances, an escalating response relative to the seriousness of the non-compliance is determined to ensure the non-compliance is addressed by the enterprise.

The risk assessment of non-compliances involves assessment of the non-compliance against two criteria; the likelihood of environmental harm occurring and the level of environmental impact as a result of the non-compliance. After these assessments have been made, information is transferred into the risk analysis matrix below.

	Likelihood of Environmental Harm Occurring			
Level of Environmental Impact		**Certain**	**Likely**	**Less Likely**
	High	**Code Red**	**Code Red**	**Code Orange**
	Moderate	**Code Red**	**Code Orange**	**Code Yellow**
	Low	**Code Orange**	**Code Yellow**	**Code Yellow**

The assessment of the likelihood of environmental harm occurring and the level of environmental impact allows for the risk assessment of the non-compliance via a colour coding system. A red risk assessment for non-compliance denotes that the non-compliance is of considerable environmental significance and therefore must be dealt with as a matter of priority. An orange risk assessment for non-compliance is still a significant risk of harm to the environment however can be given a lower priority than a red risk assessment. A yellow risk assessment for non-compliance indicates that the non-compliance could receive a lower priority but must be addressed.

There are also a number of licence conditions that do not have a direct environmental significance, but are still important to the integrity of the regulatory system. These conditions relate to administrative, monitoring and reporting requirements. Non-compliance of these conditions is given a blue colour code.

The colour code is used as the basis for deciding on the priority of remedial action required by the licensee and the timeframe within which the non-compliance needs to be addressed. This information is presented in the action program alongside the target/action date for the noncompliance to be addressed.

While the risk assessment of non-compliances is used to prioritise actions to be taken, the EPA considers all non-compliances are important and licensees must ensure that all non-compliances are addressed as soon as possible.

ATTACHMENT 3 – AUDITEE SUBMISSION FORM ON DRAFT AUDIT FINDINGS

Condition No	EPA draft finding / risk categorisation	Location – description, GPS	FCNSW submission	EPA response to FCNSW submission	EPA final finding & risk categorisation
5.6 c) ii Recruitment tree selection	Non-compliant / Code Orange	North-west of dump 2	**FCNSW believes the EPA's Draft Audit Report lacks appropriate evidence for a code orange non-compliance finding. FCNSW also disagrees with the EPA's interpretation of Condition 5.6 c) ii. FCNSW requests that the final audit report records this condition as compliant.** FCNSW considers the EPA's data demonstrates that retained recruitment trees and the majority of harvested trees all belonged to the same cohort. Despite this, FCNSW selects recruitment trees to have as many of the characteristics outlined in condition 5.6(c) as possible. Belonging to a cohort of trees with the largest DBHOB is only one of the five characteristics listed in the Threatened Species Licence. FCNSW contends the EPA's methodology is not appropriate to determine if recruitment trees have been adequately scattered throughout the net logging area, specifically: <u>(1) Potential sampling bias</u> – the EPA's five 0.2 hectare plots were only separated by a maximum of 220 metres, with four plots clumped together with a maximum separation of less than 120 metres (See Figure 1). This is despite 473 hectares of net harvest area in compartments 7, 8, 9, 10, 11 and 12 Moogem State Forest. Plots centres have also been located on harvested stumps which introduces further sources of bias. Given the growth habits of eucalypts this practice reduces the likelihood of finding retained habitat and recruitment trees within a plot. For example, an 80cm blackbutt tree should have a crown radius of approximately 8.5m and the chance of identifying a suitable habitat or recruitment tree within its 'zone of influence' is reduced (i.e. competition).	The EPA has reviewed FCNSW's submissions to the draft audit findings regarding the selection of recruitment trees. The EPA assesses H & R tree selection in harvested and yet to be harvested areas (pre harvest and post-harvest). EPA considers marked H& R trees as well as stumps and live standing unmarked H & R trees against TSL selection criteria. EPA considers the presence or absence of field marking on trees as the measure for whether a tree is selected or not. If a tree is not marked in the field then it is not selected. *Marked H & R trees* - The EPA assesses marked live standing H & R trees against the H & R tree characteristics defined in the TSL. *Candidate H & R trees* - If a H & R tree is unmarked (candidate) and should have been selected then the EPA considers it as one non-compliance of TSL selection criteria for that tree. *Stumps* - The EPA considers stumps when assessing selection namely the size of stumps relative to the size of retained marked H & R trees (adjusted to account for taper). Tree size is a scientifically accepted guide to habitat potential as well as a key element of the TSL condition ("belonging to the cohort of trees with the largest DBHOB" (size)). When resources are dispersed across the landscape it is a reliable measure and the EPA uses relative size to assess against TSL selection criteria. *Scattering of retained trees* - The TSL requires that H & R trees are ***evenly*** scattered throughout the net harvest area. The EPA therefore considers whether	Non-compliant Code Orange

			(2) Sampling intensity – the EPA only established five 0.2 hectare plots, despite a total net harvest area of 473 hectares. Given the combination of small plots size and low plot numbers FCNSW is concerned that this sampling technique is unlikely to capture the high level of diversity within uneven age, mixed species native forests. The failure of the EPA's assessment methodology is clearly illustrated by FCNSW's retained tree data which demonstrates recruitment trees have been scattered across the net harvest area (See Figure 1). FCNSW has undertaken an assessment of the marked recruitment tree identified by the EPA as 'Early Mature' (EPA waypoint identifier 1672). FCNSW believes the tree should be classified as mature and would welcome a joint field inspection to discuss classification of eucalypt growth stages. FCNSW believes the selection of recruitment trees was compliant and an action plan is not required.	H & R trees were identified within the areas assessed as an indicator of this condition. No change to the EPAs audit findings.	
5.6h) Protection of retained trees	Non-compliant / Code Yellow	EPA waypoint identifier 1698 & 1674	**After investigation FCNSW believes that although technically there is logging debris >1 metre within 5 metres of the marked retained trees identified at EPA Waypoints WP 1698 & WP 1674, the debris present will not threaten the longevity of these trees in the landscape or the habitat qualities they provide**. EPA Waypoint: WP 1698 – Marked "Hollow-bearing Tree" (H) FCNSW does not agree with the EPA's assertion that there is 'debris stacked over 1m high within 5m' of this marked retained hollow-bearing tree. There appears to be no evidence of 'stack[ing]' of debris against marked retained trees at this location. FCNSW believes another tree has been fallen some 20 – 25	The EPA reviewed FCNSW's submission regarding the protection of retained trees. The protection criteria controls the longevity prospects of retained H & R trees. If a tree is counted for retention, then it is assessed for protection. Where logging debris is evident to be over 1 metre high within 5 metres of a retained tree a non-compliance will be recorded. The potential risk of the non-compliance is addressed through the EPAs compliance risk matrix. In this case the risk assessment was determined to be low (Code yellow) which reflects level of risk to the retained trees in the landscape. No change to audit findings.	Non-compliant Code Yellow

			metres from the marked retained hollow-bearing tree and fine branchlets and leaves are located to a height >1 metre within 5 metre of the marked retained hollow-bearing tree (see Figure 2). The tree that was fallen was directionally fallen away from a drainage feature. These branchlets and leaves are 'flash fuels' (i.e. little risk of causing damage to the retained tree in event of fire) and will likely decompose rapidly presenting a negligible risk to the longevity of the marked retained tree or the habitat qualities that it provides. FCNSW considers when the circumstances listed above are taken into consideration (i.e. directional falling, and the negligible risk to the longevity and habitat qualities provided by the retained hollow-bearing tree), that practicable measures have been undertaken to meet the intent of TSL Prescription 5.6h)ii). <u>EPA Waypoint: WP 1674 – Marked "Recruitment Tree" (R)</u> FCNSW disagrees with the EPA's assertion that there is 'debris stacked over 1m high within 5m' of this marked retained recruitment tree. There appears to be no evidence of 'stack[ing]' of debris against marked retained trees at this location. FCNSW believes that during harvest a machine has actively removed debris from adjacent to the marked retained recruitment tree (as demonstrated by the lack of harvesting debris present and minor scuffing at the base of the tree), whilst trying to minimise disturbance to the ground and understorey in a deliberate effort to comply with TSL Prescription 5.6h)ii) (see Figure 3). The debris to a height >1 metre within 5 metres of the marked retained recruitment tree is pushed up against an unmarked retained tree, impeding the ability of the machine to move the debris further from the marked retained tree (see Figure 4).		

			Further works using a machine at this location to clear more debris (i.e. to push the unmarked retained tree over or push the debris from another angle) would likely have resulted in greater damage to the marked retained tree or increased environmental impact through uprooting standing trees and/or exposing soil and damaging the integrity of the marked retained trees root system. The single solid length of wood located to a height >1 metre within 5 metres of the tree is both elevated and >3 metres from the marked retained tree. As such, FCNSW believes there is a negligible risk to the longevity of the marked retained tree or the habitat qualities that it provides. FCNSW considers that when the circumstances listed above are taken into consideration (i.e. the mechanical removal of debris immediately adjacent to the retained recruitment tree, and the negligible risk to the longevity and habitat qualities provided by the retained recruitment tree), that practicable measures have been undertaken to meet the intent of TSL Prescription 5.6h)ii). FCNSW believes that the scope and frequency of current internal environmental compliance audits undertaken in accordance with FCNSW's Forest Management System provide a comprehensive tool for managing the protection of TSL mandated retained trees, and as such an EPA-specified action plan is not required.		
5.1 f) Mark-up of HCVOG exclusion zone boundary	Non-compliant / Code Yellow	EPA waypoint identifier 1708 (422498 / 6729970)	**FCNSW acknowledges that one old growth boundary mark is located just within the mapped boundary. However, the surrounding boundary marking appears to be on the mapped boundary. The EPA states in the draft audit report that 'no harvesting was observed in this area' and this outcome would have been obvious to the experienced Forest Technician undertaking the mark-up. FCNSW believe the boundary was marked to be highly visible to machine operators knowing it was extremely unlikely that specific forest activities would occur in the**	The EPA has considered FCNSW's submissions on the draft audit findings regarding mark-up of HCVOG Exclusion Zones The EPA assessed compliance against the licence conditions. A non-compliance was observed in this case as the boundary was incorrectly marked. As the risk potential for this non-compliance was low a code yellow risk ranking was given.	Non-compliant Code Yellow

			immediate vicinity. FCNSW requests that the final audit report records this condition as compliant. FCNSW believes that the scope and frequency of current internal environmental compliance audits undertaken in accordance with FCNSW's Forest Management System provides a comprehensive tool for assessing boundary mark-up, and as such an EPA-specified action plan is not required.	No change to the audit findings, action plan required.	
8.8.1 Targeted fauna surveys	Non-compliant / Code Yellow	N/A	**FCNSW acknowledges that *Mixophyes iteratus* was not included in the list for target fauna surveys in the Pre-logging and Pre-roading Survey Report. However, targeted surveys for *Mixophyes iteratuss* were completed by FCNSW and the species was listed on FCNSW's survey requirement summary sheet. FCNSW requests that the final audit report records this condition as compliant.** FCNSW agrees with the EPA's comments in the draft audit report which states 'this non-compliance is considered to be administrative and does not risk harm to the species'. Therefore, FCNSW contends a code yellow non-compliance finding is not appropriate for a minor administrative oversight with no operational consequence. As the omission of the presence of *Mixophyes iteratus* modelled habitat from the pre-survey assessment table was a minor administrative oversight, resulting in no impact to the threatened species, FCNSW believes an EPA specified action plan is not required. However, FCNSW will be more aware of this issue with future targeted fauna survey planning.	The EPA has reviewed FCNSW's submissions on the draft audit findings regarding targeted fauna surveys. As previously stated in the draft audit findings, this non-compliance was administrative and did not risk harm to the species. The risk categorisation for this non-compliance will be changed to blue in the final audit report to reflect this. A blue risk categorisation is used for administrative non-compliances to reflect the nature of the non-compliance.	Non-compliant Code Blue
EPL Sch 4 Condition 18 Trees felled into filter strips	Non-compliant / Code Yellow	EPA waypoint identifier 1662	**FCNSW agrees that a tree head is located within the filter strip of an UMDL at EPA Waypoint 1662, however, FCNSW disagrees with the EPA's assertion that "one tree had been fallen along the filter strip towards the mapped stream." FCNSW contends that the tree head identified by the EPA was the result of an accidental incursion.**	The EPA has reviewed FCNSW's submissions on the draft audit findings regarding trees felled into filter strips. The evidence provided by FCNSW indicated that the tree in question accidentally fell into the filter strip. Accidentally fallen trees are required by the TLS to	EPL Sch 4 Condition 19C – Documentation of accidentally felled trees. Non-compliant

			FCNSW agrees that the UMDL identified by the EPA meets the definition set out in the UNE EPL. As such, FCNSW has afforded this unmapped drainage line the level of protection outlined in Schedule 4 of the UNE EPL for areas of Inherent Hazard Level 1 (i.e. 5 metre filter strip, 5 metre protection zone & 10 metre operational zone). When attempting to mechanically fall the tree away from the mapped and unmapped drainage line (identified by FCNSW/EPA), the tree appears to have split up the centre due to defective holding wood, and fallen in a direction almost 180 degrees from the intended direction of fall (see Figure 5). During a field investigation of the issue the harvesting machine operator stated he did not believe he had breached an unmapped drainage line and thought the tree had fallen into a drainage depression. This would appear to be a reasonable assumption given the operator was sitting in the cab of a harvesting machine approximately 20 metres away from the identified feature and the felled tree had knocked over shrubs which marked the boundary (See Figure 6). Therefore, the machine operator did not document the accidental incursion. FCNSW believes that the scope and frequency of current internal environmental compliance audits undertaken in accordance with FCNSW's Forest Management System provide a comprehensive tool for managing the protection of drainage lines, and as such an EPA-specified action plan is not required.	be documented (Condition 19C) *19C. State Forests must document the location of and date on which the tree was accidentally felled into the filter strip and the date and type of remedial work completed to comply with 19A and 19B.* FCNSW could not provide this documentation and therefore a non-compliance is given for Condition 19C.	Code yellow

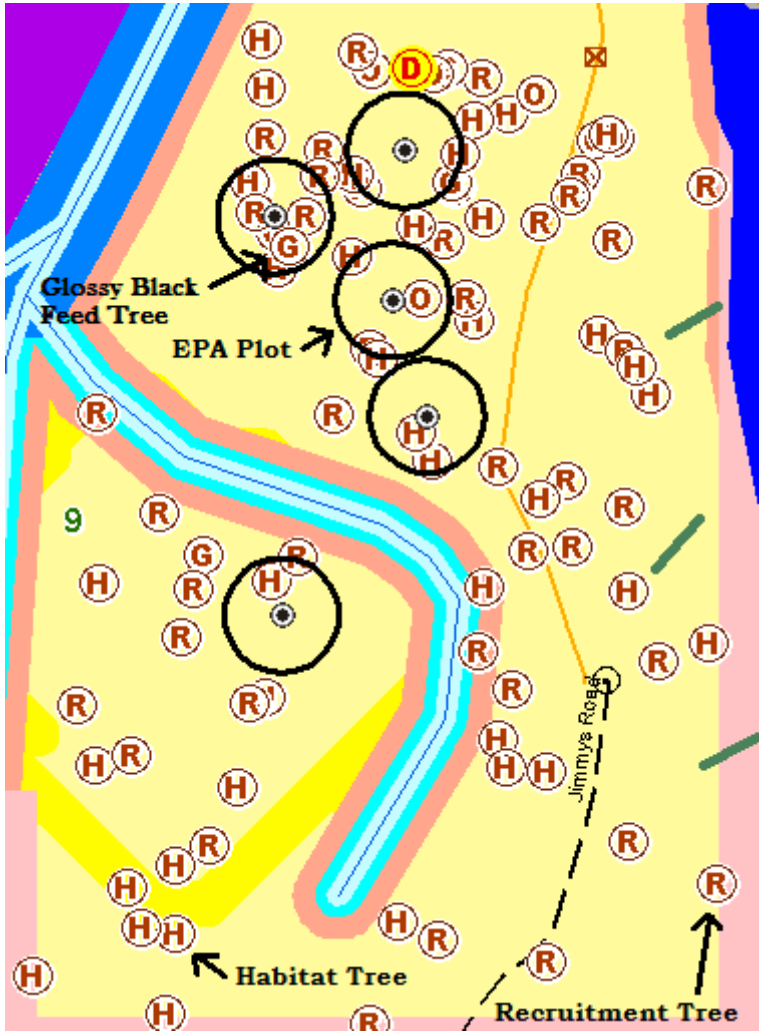

Figure 2. Map of a section of compartment 9 Moogem State Forest illustrating how retained trees are scattered across the net harvest area.

Figure 3. Marked retained hollow-bearing tree at EPA Waypoint WP 1698

Figure 4. Marked retained hollow-bearing tree at EPA Waypoint 1674

Figure 5. Marked retained hollow-bearing tree at EPA Waypoint 1674

Figure 6. Stump associated with tree head in unmapped drainage line filter strip at EPA Waypoint 1662

Figure 6. Boundary marks on shrubs, which identified an unmapped drainage line, were knocked over when a tree was accidental fell into the feature (near EPA Waypoint 1662)