EPA AUDIT REPORT – WILD CATTLE CREEK STATE FOREST, COMPARTMENTS 553, 569 – 571

Auditee:	FORESTRY CORPORATION OF NSW (FCNSW)
Audited State Forest & Cpts:	WILD CATTLE CREEK STATE FOREST, COMPARTMENTS 553, 569 - 571
Region:	Upper North-east Integrated Forestry Operations Approval (IFOA)
Date/Audit timing:	13 April 2015. Audit debrief with FCNSW staff held on 15 April 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 tree • Rainforest • Koala protection measures **Physical scope**: This audit was limited to the physical boundaries of compartments 553, 569 - 571. **Temporal scope**: The audit period adopted for assessment of compliance with operational conditions was on the days of the audit inspections (13 April 2015).
Audit criteria:	5.6 (d)(e)(h) Hollow bearing and recruitment tree retention, selection and protection 5.1 (f) Marking of exclusion and buffer zones 5.2.2 Koala mark-up searches
Summary of Operations	Operation commencement date: 16 December 2014 Stand age: Regrowth Zone Silvicultural practice: Compartments 553, 569-571 • Mixed age Blackbutt (16% NHA) – Heavy STS, expected removal of basal area 75% • Mixed aged mixed species (64% NHA) – Single tree selection, expected removal of basal area 35% • Mixed aged mixed species (20% NHA) – offset, expected removal of basal area 0%

1. Audit Findings – Overview

The EPA identified 3 non-compliances and 18 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
	Rainforest mark-up	1	0	0	0
Koala	**Identification/search**	1	0	1	0
	Koala protection	2	0	0	0
Hollow bearing and recruitment trees	**H Retention**	0	1	0	0
	H Selection	2	1	0	0
	R Retention	1	0	0	0
	R Selection	3	1	0	0
	H&R Protection	6	0	0	0
	H&R Mark-up	2	0	0	0
	TOTAL	**18**	**3**	**1**	**0**

2. Audit Recommendations

Condition No.	Number of non-compliances (and sample)	Action Details	Non-compliance Code	Target/Action Date
5.6 (d) I Hollow-bearing tree retention	1/1	Hollow bearing tree retention An action plan must be developed and implemented to ensure hollow-bearing trees are retained in the landscape.	Yellow	September 2015
5.6 (d) iii Hollow bearing tree selection	1/3	Hollow bearing tree selection An action plan must be developed and implemented to ensure hollow-bearing trees are retained belonging to a cohort of trees with the largest dbhob.	Yellow	September 2015
5.6 (e) Recruitment tree selection	1/4	Recruitment tree selection An action plan must be developed and implemented to ensure that recruitment trees are selected having as many of the characteristics listed in TSL condition 5.6e and consistent the requirements of the R tree definition.	Yellow	September 2015
Total	**3**			

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.

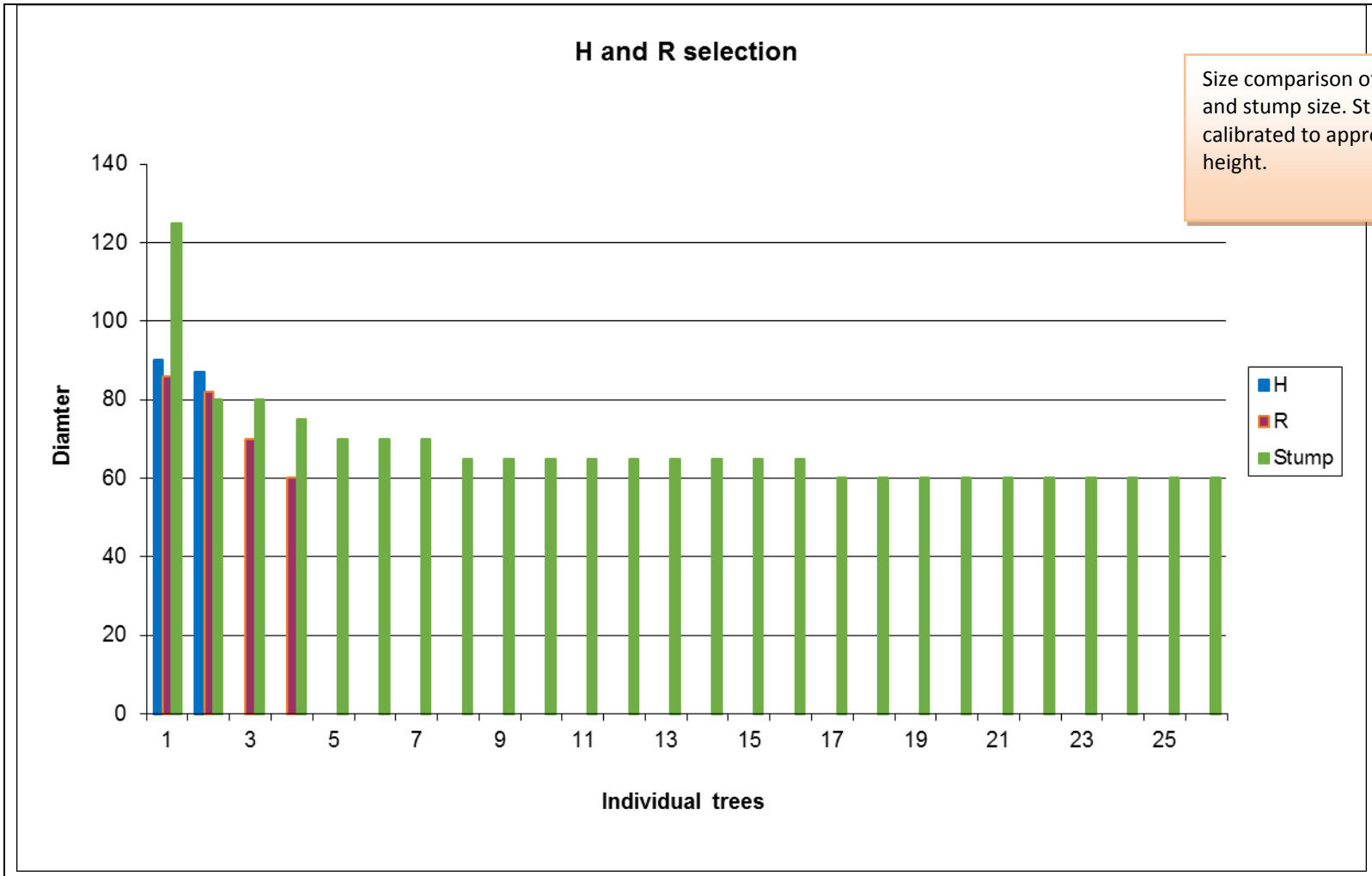
4. List of Attachments

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

ATTACHMENT 1 - EPA AUDIT FINDINGS TABLE - WILD CATTLE CREEK STATE FOREST COMPARTMENT 553, 569, 570, 571

Assessment of Compliance with Upper North East Integrated Forestry Operations Approval – Threatened Species Licence and Environment Protection Licence

CONDITIONS RELATED TO HOLLOW BEARING TREES (REGROWTH ZONE) – RETENTION			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.6(d): Within the 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 of hollow-bearing trees is not available all hollow-bearing trees within the net logging area must be retained.	No Code yellow	1/1 (1ha assessed)	An action plan must be developed and implemented to ensure hollow-bearing trees are retained in the landscape.
Comment and Evidence			
EPA found FCNSW did not comply with this condition in the area assessed. The EPA sampled one hectare of harvested forest west of log dump 1. Within the area assessed the EPA recorded two (2) marked hollow-bearing trees. Within this area the EPA also recorded stump diameter. The EPA recorded one stump diameter of 130cm at a stump height of 110cm. The EPA considers this tree was likely hollow-bearing at the time it was harvested considering the context of other hollow bearing resources recorded in the assessed area. For example 80cm+ hollow bearing trees recorded by the EPA consisted of hollows. Based on the balance of probabilities and literature the EPA considered that not all hollow-bearing trees within the area assessed were retained. Average retention of hollow bearing trees was considered 4H/ha, below the minimum 5H/ha required.			



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 TREES (REGROWTH ZONE) – SELECTION

Condition No. and Detail	Compliant? Yes/No/Not determined/Not applicable	Number of non-compliance and (sample size)	Action required by licensee
5.6 d iii. Hollow-bearing trees 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.	No Code orange	1/3 (3 potential H trees in 1ha assessed area)	An action plan must be developed and implemented to ensure hollow-bearing trees are retained belonging to a cohort of trees with the largest dbhob.

Comment and Evidence

EPA found FCNSW did not comply with this condition in the assessed areas. The EPA assessed one hectare of harvest forest west of log dump 1. In this area the EPA recorded two marked hollow-bearing trees and one large stump which likely contained hollows.

Tree Characteristics Observations

Retained Tree Sizes: The EPA compared retained (marked and candidate) hollow-bearing trees dbhob with stump diameters in the area assessed. The marked hollow-bearing trees were generally belonging to a cohort of trees with the largest dbhob with the exception of one tree felled which was 130cm DBH at stump height of 110cm. (see graph above). This tree belonged to the cohort of trees with the largest DBHOB.

Crown Development Observations: EPA officers observed that all retained (marked and candidate) H trees displayed good crown developed and were not supressed in the area assessed.

Butt Damage Observations: The EPA did not observe any sign of butt damage on the trees assessed.

Range of Species Retained: EPA officers observed that the majority of marked H trees representative of the forest types within assessed areas.

Location of H trees in NHA: EPA officers observed that marked H trees and candidate H trees were scattered across the area assessed.

Table 1 Hollow bearing characteristics area 1- selection quality

	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	Sydney Blue Gum	87	Dominant	Over mature	No	No	No	No
Marked H	Sydney Blue Gum	90	Dominant	Mature	No	No	No	No

Further observations

The EPA also assessed 0.96 hectares in front of harvesting operations (pre harvest). The EPA observed four marked H trees and two marked R trees in this area. Selection requirements could not be determined in this area as dbhob of marked and unmarked trees was not assessed to determine whether trees selected were from the largest cohort.

Table 2 Hollow bearing characteristics area 2- selection quality

	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	Tallowwood	-	Dominant	Late mature	No	N/A	N/A	N/A
Marked H	Blackbutt	-	Dominant	Late mature	No	N/A	N/A	N/A
Marked H	Blackbutt	-	Dominant	Late mature	No	N/A	N/A	N/A
Marked H	Tallowwood	-	Dominant	Late mature	No	N/A	N/A	N/A

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 RECRUITMENT TREES (REGROWTH ZONE) – RETENTION			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.6e Within the Regrowth Zone, for each hollow-bearing tree retained in (d) above, a recruitment tree must be retained. Recruitment trees must be selected with the objective of retaining trees having as many of the following characteristics as possible: i. belong to a cohort of trees with the largest dbhob, ii. located such that they result in retained trees being evenly scattered throughout the net logging area iii. good crown development, iv. minimal butt damage, v. represent the range of hollow-bearing species that occur in the area.	Yes	0/1 (1 ha assessed)	NA
The EPA found FCNSW complied with this condition in the assessed area. The EPA sampled one hectare of harvested forest west of log dump 1. The EPA observed and recorded four (4) marked recruitment trees and two (2) candidate recruitment trees. As only two H trees were marked the number of R trees protected met the requirements of this condition. **Further observation** The EPA assessed 0.96 hectares in front of harvesting operations, north of log dump 1. The EPA observed four marked H trees and two marked R trees in this area. In this area an additional two R trees are required to be retained to meet the retention requirements in this area. No non-compliance recorded as this area had not been harvested at the time of assessment.			

CONDITIONS RELATED TO RECRUITMENT TREES (REGROWTH ZONE) – SELECTION			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.6e Within the Regrowth Zone, for each hollow-bearing tree retained in (d) above, a recruitment tree must be retained. Recruitment trees must be selected with the objective of retaining trees having as many of the following characteristics as possible: i. belong to a cohort of trees with the largest dbhob, ii. located such that they result in retained trees being evenly scattered throughout the net logging area iii. good crown development,	No Code yellow	1/4	An action plan must be developed and implemented to ensure that recruitment trees are selected having as many of the characteristics listed in TSL condition 5.6e and consistent the requirements of the R tree definition.

iv. minimal butt damage, v. represent the range of hollow-bearing species that occur in the area.			

Comment and Evidence – R tree Retention and Selection

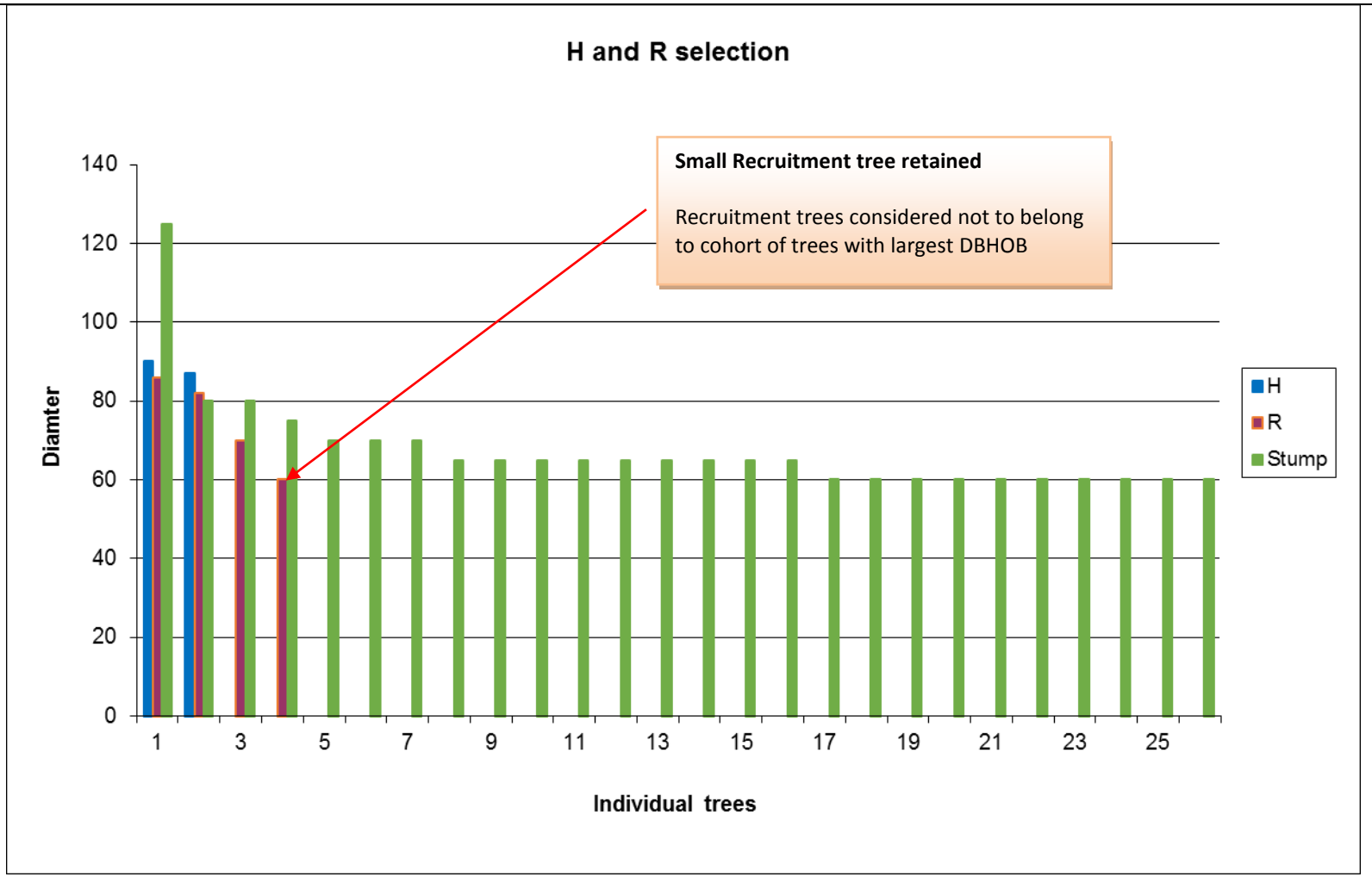
The EPA found FCNSW did not comply with this condition in the assessed area as one marked recruitment tree was not of the largest cohort.

The EPA assessed one hectare of harvest forest west of log dump 1. The EPA identified one marked tree that did not belong to a cohort of trees with the largest dbhob (see graph below). These two R trees were considered not belonging to a cohort of trees with the largest DBHOB. The EPA also highlights that one tree felled which was 130cm diameter at stump height of 110cm. It was considered that this tree was felled belonging to belonging to a cohort of trees with the largest dbhob. The EPA also observed one of these trees to be suppressed; this tree did not illustrate good crown development.

Table 3 EPA Assessment area 2 – R trees – selection quality

	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 R	Blackbutt	86	Dominant	Mature	No	No	No	No
Marked R	Sydney Blue Gum	70	Co-dominant	Mature	No	No	No	No
Marked R	Blackbutt	82	Dominant	Mature	No	No	No	No
Marked R	Blackbutt	60	Suppressed	Early mature	Yes	No	No	No


Marked R tree 60cm dbhob


H and R selection
Small Recruitment tree retained
Recruitment trees considered not to belong to cohort of trees with largest DBHOB
Diamter
140
120
100
80
60
40
20
0
1
3
5
7
9
11
13
15
17
19
21
23
25
Individual trees
H
R
Stump

Further observation – Recruitment tree selection ahead of harvesting operations

The EPA also assessed 0.96 hectares in front of harvesting operations north of log dump 1. The EPA observed two marked R trees in this area. The EPA observed that one marked R tree did not belong to the cohort of trees with the largest dbhob. The EPA observed a more suitable candidate within 20 metres of the marked R tree. The EPA could not determine compliance in this area as size class comparisons were not recorded across the whole area assessed.

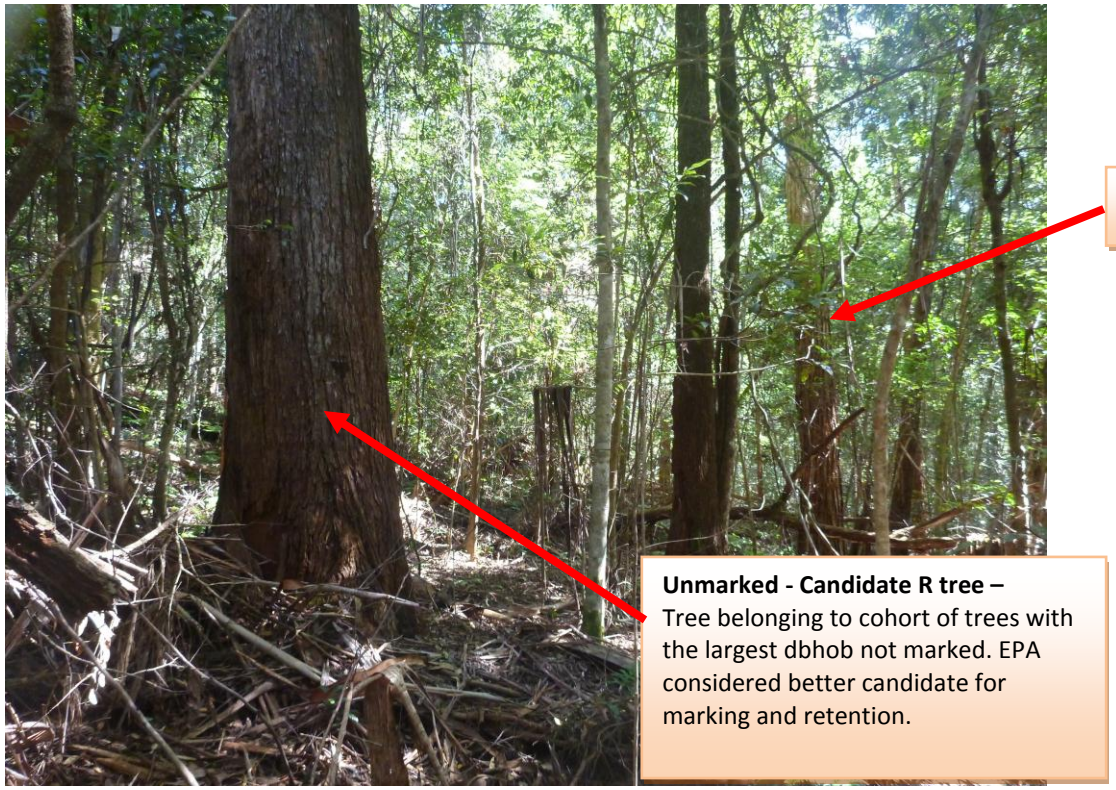


Table 4 R trees – selection quality

	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 R	Tallowwood	-	Sub-dominant	Early mature	No	N/A	N/A	N/A
Marked R	Tallowwood	-	Dominant	Mature	No	N/A	N/A	N/A

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))*

Tree Maturity:

Selection of future hollow bearing resources (recruitment trees) which are not mature/ late mature and selecting trees that at early mature/regrowth may jeopardise the long term continued availability of hollow bearing resource within the forest, as there may be substantial 'time lags' between the availability of hollow resources, for example where a H tree dies and falls over a recruitment tree may still have a further 50-100 years before it develops hollows. Conversely selecting trees which are mature/late mature will ensure that there is minimal risk of time lags and as such a continued availability of hollow resources, which are so critical to arboreal fauna. Significant research states that's the presence, abundance and size of hollows are positively correlated with tree basal diameter, which is an index of age. Therefore older larger trees (Mature/late mature) are more likely to develop hollows sooner and ensure no time lags within the harvested forest.

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

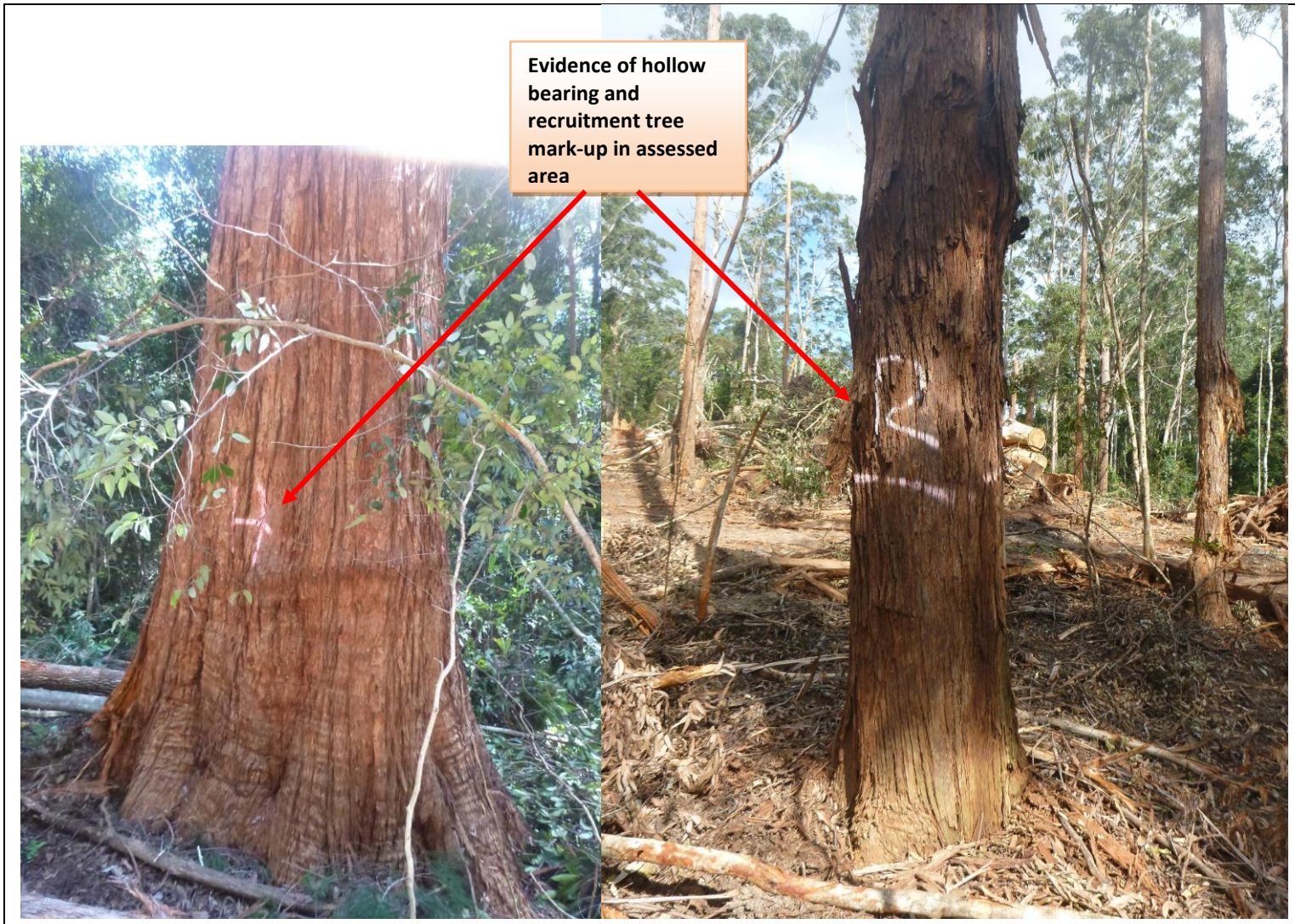
Condition No. and Detail	Compliant? Yes/No/Not determined/Not applicable	Number of non-compliance and (sample size)	Action required by licensee
5.6h) Protection of retained trees i. When conducting specified forestry activities and post-logging burning, damage to trees retained under conditions 5.6 (a), 5.6 (b), 5.6 (c), 5.6 (d), 5.6 I 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.	Yes	0/6 (6 trees in 1ha assessed area)	NA
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.	Yes	0/6 (6 trees in 1ha assessed area)	NA

Comment and Evidence

The EPA determined that FCNSW was compliant with the requirements of this condition.
No damage was observed against any marked hollow bearing or recruitment trees. Furthermore, no debris greater than one metre was recorded within five metres.

	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	Sydney Blue Gum	87	Dominant	Over mature	No	No	No	No
Marked H	Sydney Blue Gum	90	Dominant	Mature	No	No	No	No
Marked R	Blackbutt	86	Dominant	Mature	No	No	No	No
Marked R	Sydney Blue Gum	70	Co-dominant	Mature	No	No	No	No
Marked R	Blackbutt	82	Dominant	Mature	No	No	No	No
Marked R	Blackbutt	60	Suppressed	Early mature	No	No	No	No

CONDITIONS RELATED TO HOLLOW BEARING & RECRUITMENT TREES (REGROWTH ZONE) – MARKING			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Action required by licensee**
5.6 h) Protection 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 of NHA assessed)	NA
Comment and Evidence			
EPA found that FCNSW complied with this condition in the assessed area. The EPA assessed two areas for mark-up of retained trees. 1) The EPA assessed 0.96 hectares in front of harvesting operations, north of log dump 1. The EPA observed four marked H trees and two marked R trees in this area. 2) The EPA assessed one hectare of harvest forest west of log dump 1. In this area the EPA observed mark-up of two H trees and four R trees.			


Evidence of hollow bearing and recruitment tree mark-up in assessed area

CONDITIONS RELATED TO KOALA PROTECTION – KOALA MARK UP			
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**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.	Yes	0/1	NA
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.	Not determined	NA	NA
Comment and Evidence			
5.2.2–a - EPA found that FCNSW was compliant with this condition in the assessed area but did not determine compliance with how koala search was done. EPA assessed 0.96ha ahead of the active operations north of log dump one. EPA officers observed that hollow bearing, recruitment trees, koala primary browse trees and exclusion zone boundaries had been marked up to the furthest extent from harvesting which complied with the TSL requirements of 300m ahead. 5.2.2–b - EPA officers inspected the base of marked and unmarked primary, secondary and incidental browse trees for evidence of compartment mark-up searches for koala. No koala scats were located. EPA officers observed that leaf litter and ground debris had not been disturbed. EPA officers were not able to determine if individual trees was inspected thoroughly as per the TSL requirements.			

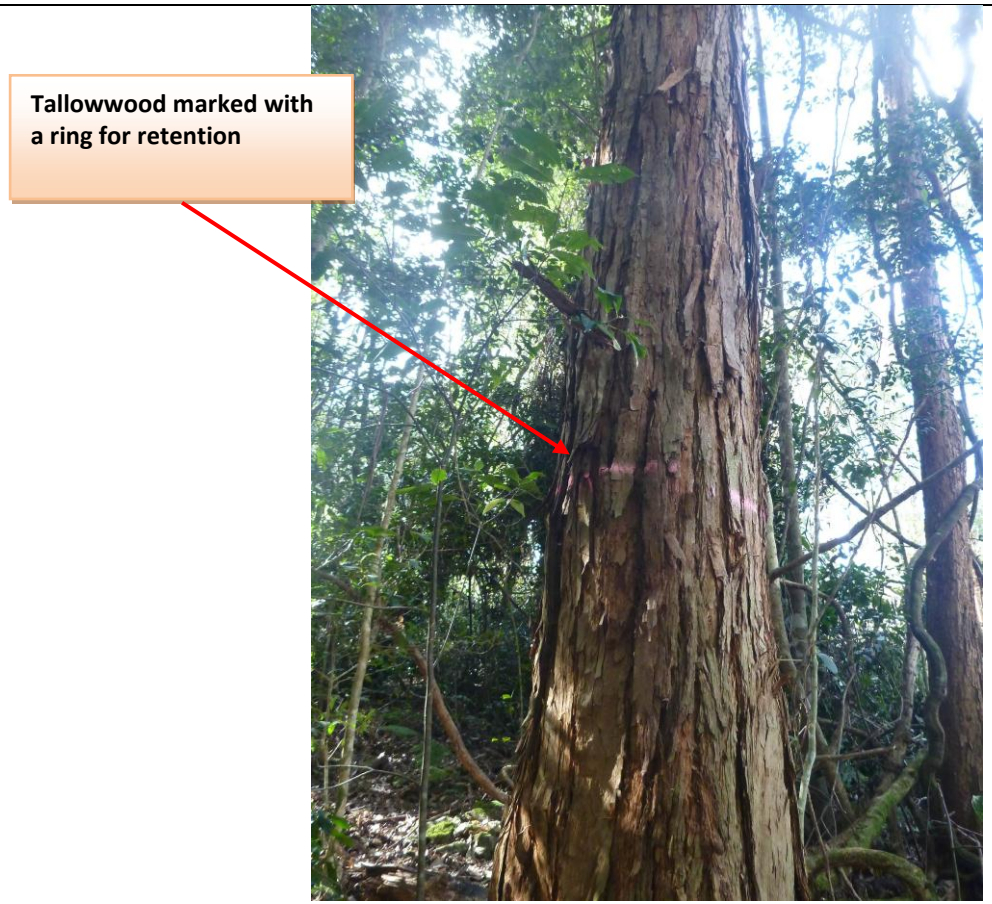
CONDITIONS RELATED TO KOALA PROTECTION – FEED TREE RETENTION AND KOALA HIGH USE				
Condition No. and Detail	**Compliant? Yes/No/Not determined/Not applicable**	**Number of non-compliance and (sample size)**	**Why it is important & Risk Ranking Code Explanation**	**Action required by licensee**
6.14a) The following must apply wherever Koala mark-up searches have identified Koala high use areas or Koala intermediate use areas: ii. In Koala intermediate use areas, per two hectares of net logging area ten primary browse trees must be retained where available. These trees must be marked for retention. Within intermediate use compartments, Australian Group Selection silvicultural techniques are prohibited in preferred forest types.	Yes	0/2 (2 areas assessed 1.96 ha)	NA	NA

Comment and Evidence

The EPA determined that FCNSW was compliant with this condition in the area assessed.

The EPA assessed two areas for mark-up of retained trees.

1) EPA assessed 0.96ha ahead of the active operations north of log dump one. EPA officers observed 11 tallowwood trees marked for retention. This meets the requirements of this condition.
2) The EPA assessed one hectare of harvested forest west of log dump 1. In this area the EPA observed 0 marked koala primary browse trees. The EPA did not observe any stumps or standing primary koala feed trees in the area assessed. Therefore browse food trees were not available in this area.

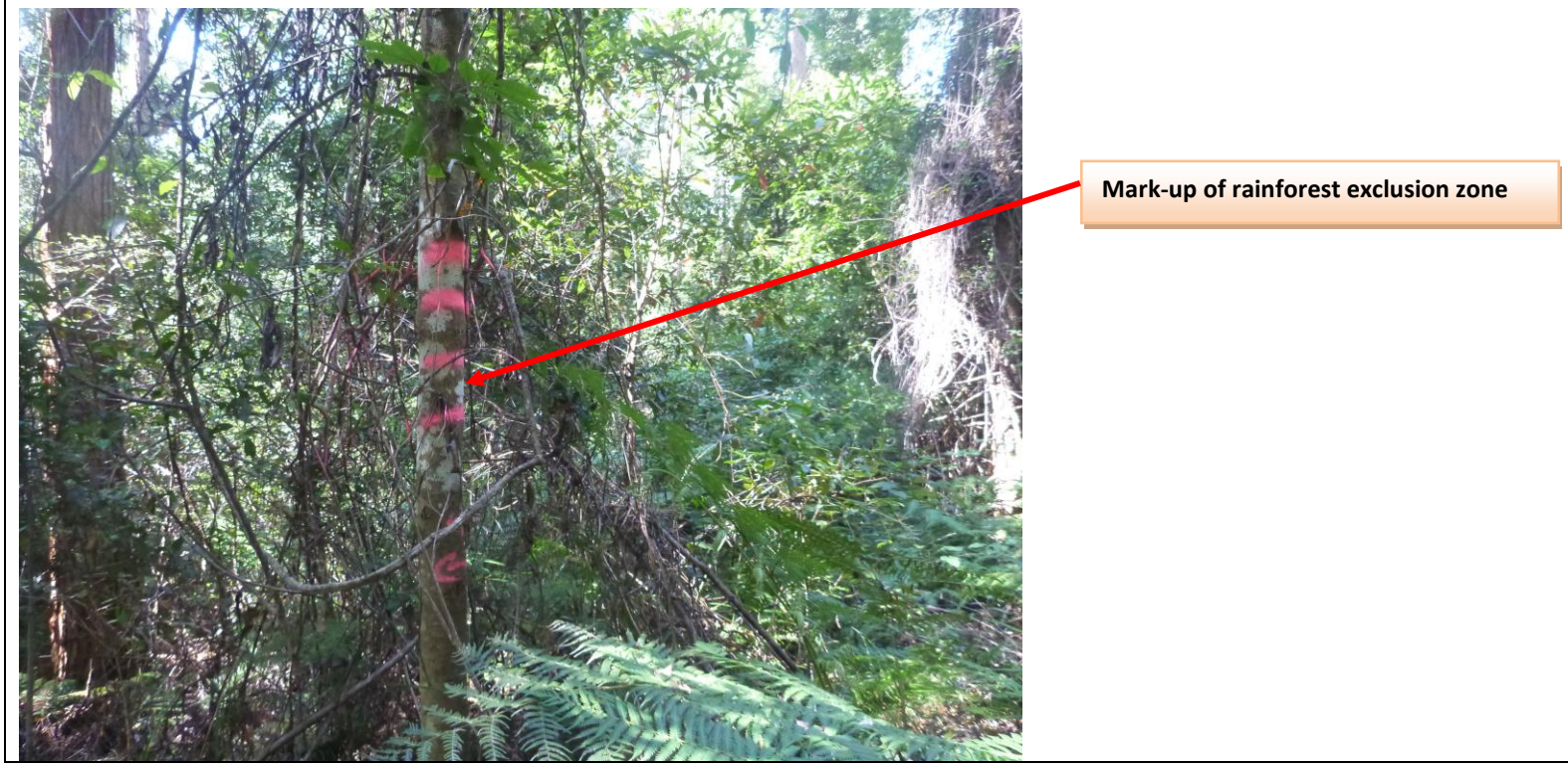


Marked Koala primary browse tree.

CONDITIONS RELATED TO RAINFOREST AND RAINFOREST 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 (40m boundary)	NA

Comment and Evidence

EPA found FCNSW complied with this condition in the assessed area.
The EPA assessed one 40 m section of rainforest exclusion zone boundary, ahead of operations north of log dump 1, compartment 569. Rainforest exclusion zone boundaries field marking was observed and recorded in the area assessed.



FURTHER OBSERVATIONS TABLE

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

Relevant Condition	Details of matter	Recommendation
Environment Protection Licence Schedule 4 Condition 6	The EPA observed an unmapped drainage feature west of log dump 1. The drainage feature was marked and protected from specified forestry activities. This operation was not licenced under the EPL retaining this area was Best Management Practice and not a legal requirement.  	Continue best practice management in forestry operations

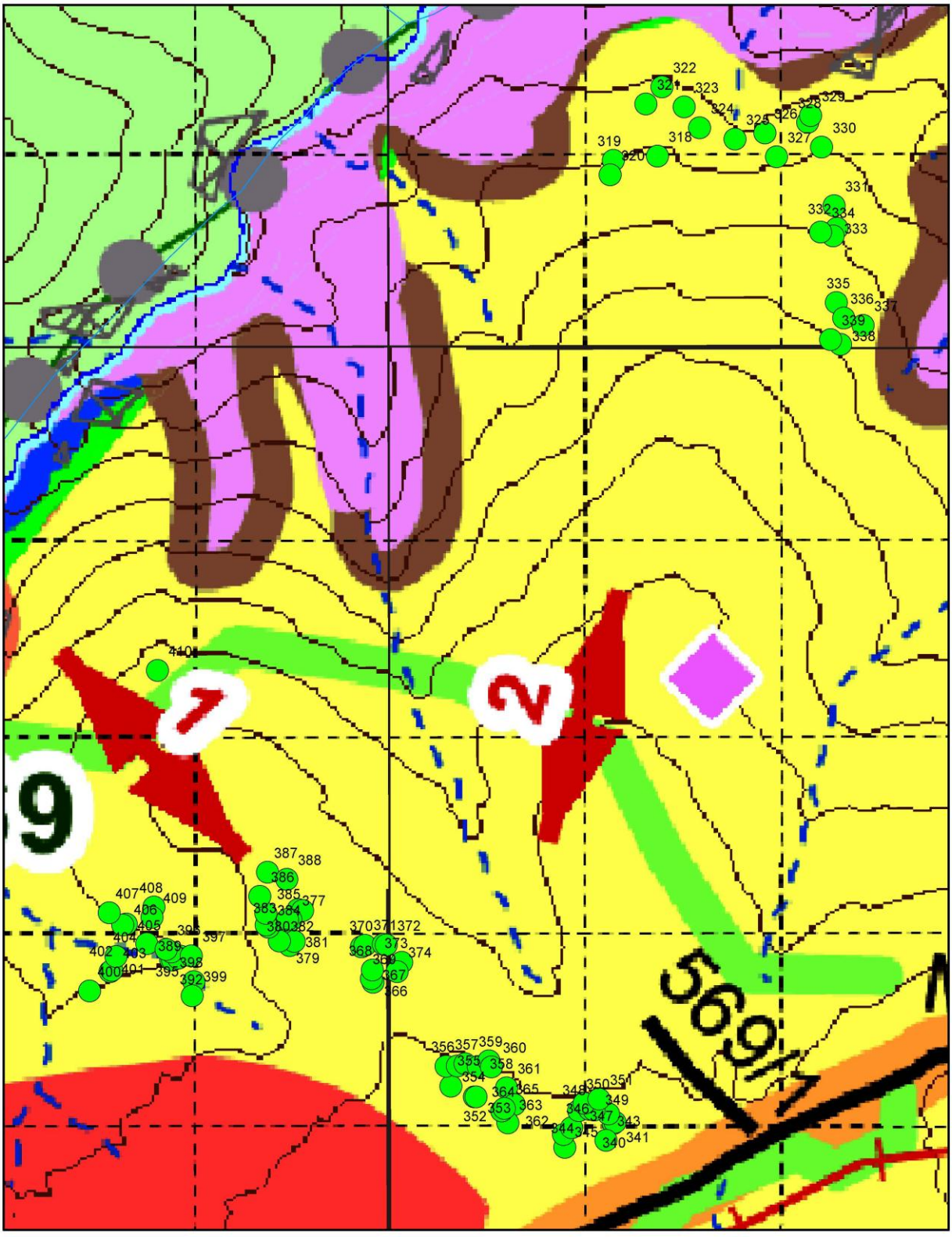
EPA Audit Locations

EPA Waypoint Identifier	Easting	Northing	Description
300 m ahead of operations			
318	480138	6656097	Tallowwood tree marked with ring, no evidence of searching, no scats
319	480116	6656095	Tallowwood marked H tree
320	480114	6656087	Rainforest boundary mark-up 4 bars
321	480132	6656124	Tallowwood tree marked with ring, no evidence of searching, no scats
322	480140	6656132	Rainforest boundary mark-up 4 bars
323	480152	6656122	Tallowwood tree marked with ring, no evidence of searching, no scats
324	480160	6656111	2 x unmarked tallowwoods
325	480178	6656106	Tallowwood tree marked with ring, no evidence of searching, no scats
326	480193	6656109	Tallowwood tree marked with ring, no evidence of searching, no scats
327	480199	6656097	2 x Tallowwood tree marked with ring, no evidence of searching, no scats
328	480215	6656114	Rainforest boundary mark-up 4 bars
329	480217	6656118	Tallowwood tree marked with ring, no evidence of searching, no scats
330	480222	6656101	Tallowwood tree marked with ring, no evidence of searching, no scats
331	480229	6656072	Blackbutt marked H tree
332	480230	6656060	Blackbutt marked H tree
333	480228	6656056	Candidate R tree not marked
334	480222	6656058	Marked R tree (not best selection)
335	480230	6656022	Tallowwood tree marked with ring, no evidence of searching, no scats
336	480234	6656014	Tallowwood tree marked with ring, no evidence of searching, no scats
337	480244	6656010	Rainforest boundary mark-up 4 bars
338	480232	6656000	Tallowwood marked H tree
339	480227	6656003	Tallowwood marked R tree
H & R assessment plots			
Plot 1			
340	480116	6655601	Marked ring tree
341	480116	6655602	Stump
342	480113	6655606	Stump
343	480112	6655593	Stump
344	480091	6655589	Marked H tree (dbh 90cm)
345	480090	6655596	Stump
346	480094	6655599	Stump
347	480098	6655608	Candidate R tree

348	480103	6655608	Stump
349	480106	6655608	Stump (plot 1 centre)
350	480101	6655612	Stump
351	480108	6655614	Stump
Plot 2			
352	480044	6655615	Stump (plot 2 centre)
353	480045	6655615	Stump
354	480032	6655620	Stump
355	480030	6655631	Stump
356	480036	6655631	Stump
357	480040	6655632	Stump
358	480046	6655630	Stump
359	480052	6655633	Ring tree
360	480053	6655630	Stump
361	480061	6655619	Stump
362	480065	6655611	Stump
363	480061	6655602	R tree (dbh 82)
364	480058	6655608	Stump
365	480060	6655609	Stump
Plot 3			
366	479992	6655674	Stump
367	479992	6655675	Marked H tree (dbh 87)
368	479992	6655680	Stump
369	479986	6655692	Marked R tree (dbh 86)
370	479988	6655693	Stump
371	479998	6655693	Stump
372	479999	6655693	Marked R tree (dbh 70)
373	480007	6655684	Stump
374	480005	6655679	Stump (plot centre point)
Plot 4			
375	479954	6655711	Stump (plot centre point)
376	479956	6655710	Marked R tree (dbh 60)
377	479950	6655706	Stump
378	479949	6655706	Stump
379	479947	6655695	Stump
380	479950	6655692	Stump
381	479952	6655695	Stump
382	479944	6655695	Stump
383	479939	6655702	Candidate H tree
384	479938	6655703	Stump
385	479938	6655709	Stump
386	479934	6655718	Stump
387	479938	6655730	Stump (diameter 130cm at 1.1m cut height)
388	479948	6655726	Stump
Plot 5			
389	479876	6655693	Stump (plot centre point)

390	479888	6655689	Stump
391	479889	6655685	Stump
392	479890	6655685	Stump
393	479894	6655687	Stump
394	479893	6655686	Stump
395	479889	6655689	Stump
396	479886	6655690	Stump
397	479899	6655687	Stump
398	479901	6655674	Stump
399	479900	6655667	Stump
400	479847	6655669	Harvest boundary
401	479858	6655679	-
402	479859	6655680	-
403	479859	6655680	-
404	479861	6655687	-
405	479866	6655703	2 bar mark-up
406	479864	6655703	2 bar mark-up
407	479857	6655709	2 bar mark-up
408	479880	6655712	2 bar mark-up
409	479879	6655707	2 bar mark-up
410	479882	6655833	-

Wild Cattle Creek EPA Waypoints



Legend

Waypoints_14-APR-15

ACTION PLAN – WILD CATTLE CREEK STATE FOREST, 553, 569 – 571

Condition No.	Number of non-compliances (and sample)	Action Details	Non-compliance Code	Target/Action Date
5.6 (d) I Hollow-bearing tree retention	1/1	An action plan must be developed and implemented to ensure hollow-bearing trees are retained in the landscape.	Yellow	September 2015
5.6 (d) iii Hollow bearing tree selection	1/3	An action plan must be developed and implemented to ensure hollow-bearing trees are retained belonging to a cohort of trees with the largest dbhob.	Yellow	September 2015
5.6 (e) Recruitment tree selection	1/4	An action plan must be developed and implemented to ensure that recruitment trees are selected having as many of the characteristics listed in TSL condition 5.6e and consistent the requirements of the R tree definition.	Yellow	September 2015
Total	**3**			

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 SUBMISSIONS FORM – WILD CATTLE CREEK STATE FOREST, COMPARTMENTS 553, 569 - 571

Condition No. / Page No.	EPA draft finding / risk categorisation	Location – description, GPS	FCNSW submission	EPA response to FCNSW submission	EPA final finding & risk categorisation
5.6(d) / Page 1	Non-compliant / Code Yellow	Near EPA Identifier 387 (479938 / 6655730) Plots west of dump 1	**FCNSW has collected evidence which indicates the 130cm diameter harvested stump identified by the EPA as "likely hollow bearing" did not contain hollows. It is unclear how the EPA can determine a code yellow non-compliance without appropriate evidence. FCNSW requests the final EPA report records this condition as compliant.** FCNSW inspected the 130cm blackbutt stump (EPA identifier 387) on the 10th June 2015. FCNSW matched the stump with the most likely head based on species, size and location. The visible sections of the tree head did not contain any hollows. Also, FCNSW inventory data indicates there is less than a 40% chance that a high quality 125cm DBH blackbutt will have a hollow. FCNSW believes it is not appropriate for the EPA to make a code yellow non-compliance finding without considering obvious field evidence (i.e. tree head). While FCNSW didn't inspect the candidate habitat trees identified by the EPA, given their size and growth stage they are also unlikely to contain hollows. Given the EPA has no evidence that the tree contained any hollows, FCNSW requests that subjective speculation is removed from the final report. For example, comments like "EPA considered this tree was likely hollow bearing and based on the balance of	The EPA considered Forestry Corporation's submissions. The EPA assessed compliance against the licence conditions. In this case where the tree in question is no longer standing many of the attributes of the tree can not be assessed, with the exception of stump diameter. The EPA therefore uses this attribute as an indicator of hollows, which has been supported in scientific literature and documented under the 'Why is it important' section of the audit report. In this case the measured stump diameter of 130cm at 110cm stump height was substantially larger than any other standing tree or stump in the assessed one hectare area. For this reason the EPA considers the tree to be likely hollow-bearing based on the balance of probabilities. No change to EPAs findings.	Non-compliant Code yellow

			probabilities and literature the EPA considered that not all hollow bearing trees within the area assessed were retained" should be removed from the report. As this forest is within the 'regrowth zone' and habitat trees are only required to be retained where they exist the sentence "Average retention of hollow bearing trees was considered 4H/ha, below the minimum 5H/ha required" should also be amended. As FCNSW's habitat tree selection was compliant an action plan is not required.		
5.6 (d) iii. / Page 4	Non-compliant / Code Orange	Near EPA Identifier 387 (479938 / 6655730)	**FCNSW has collected evidence which indicates the 130cm diameter harvested stump identified by the EPA as "likely hollow bearing" did not contain hollows. It is unclear how the EPA can determine a code orange non-compliance without appropriate evidence. FCNSW requests the final EPA report records this condition as compliant.** FCNSW inspected the 130cm blackbutt stump (EPA identifier 387) on the 10th June 2015. FCNSW matched the stump with the most likely head based on species, size and location. The visible sections of the tree head did not contain any hollows. Also, FCNSW inventory data indicates there is less than a 40% chance that a high quality 125cm DBH blackbutt will have a hollow. FCNSW believes it is not appropriate for the EPA to make a code orange non-compliance finding without considering obvious field evidence (i.e. tree head). As FCNSW's habitat tree selection was compliant an action plan is not required.	The EPA considered Forestry Corporation's submissions. The EPA assessed compliance against the licence conditions. In this case where the tree in question is no longer standing many of the attributes of the tree can not be assessed, with the exception of stump diameter. The EPA therefore uses this attribute as an indicator of hollows, which has been supported in scientific literature and documented under the 'Why is it important' section of the audit report. In this case the measured stump diameter of 130cm at 110cm stump height was substantially larger than any other standing tree or stump in the assessed one hectare area. For this reason the EPA considers the tree to be likely hollow-bearing based on the balance of probabilities. No change to EPAs findings.	Non-compliant Code orange
5.6 (e) / Page 6	Non-compliant / Code Yellow	Near EPA Identifier 387	**FCNSW considers that the EPA's evidence and FCNSW's evidence demonstrate that (1)**	The EPA considered Forestry Corporation's submissions.	Non-compliant Code yellow

		(479938 / 6655730) Near EPA Identifier 376 (479956 / 6655710)	**recruitment trees were selected from the cohort of trees with the largest DBHOB and (2) selected recruitment trees meet the definition of a recruitment tree. FCNSW requests the final EPA report records this condition as compliant.** FCNSW considers the EPA's data demonstrates that retained recruitment trees and the majority of the 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(e) 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 inspected the alleged suppressed 60cm DBHOB blackbutt recruitment tree (EPA identifier 376) on the 10th June 2015. FCNSW collected evidence which indicates the tree was not suppressed and exhibits a small but well balanced crown (this is also illustrated in a picture of the tree on page 7 of the EPA's draft audit report). While the term 'suppressed' is not defined in the Threatened Species Licence, Australian and international literature commonly define 'suppressed' or 'overtopped' as trees with crowns entirely below the general level of the crown cover, receiving no direct light either from above or from the side (See Florence, 1996 or Smith et al. 1996). While it is difficult to assign the tree into a specific crown category following harvest, the trees status is likely to be between Co-dominent and Intertermediate (See Figure 1). FCNSW also believes the tree has excellent potential for future growth and development into a habitat tree.	The EPA considers a dbhob of 60cm to be of a smaller cohort of a stump with a calibrated dbhob of 80cm. The EPA assesses all characteristics of the selected trees. The EPA considered the tree determined to be non-compliant as having limited crown development compared to other blackbutts observed across the NHA and early mature. The EPA amended its finding to 1 non-compliant tree from a sample size of 4 recruitment trees due to an administrative error. There was no change to the yellow risk rating.	

			FCNSW believes selection of recruitment trees was compliant and an action plan is not required.		

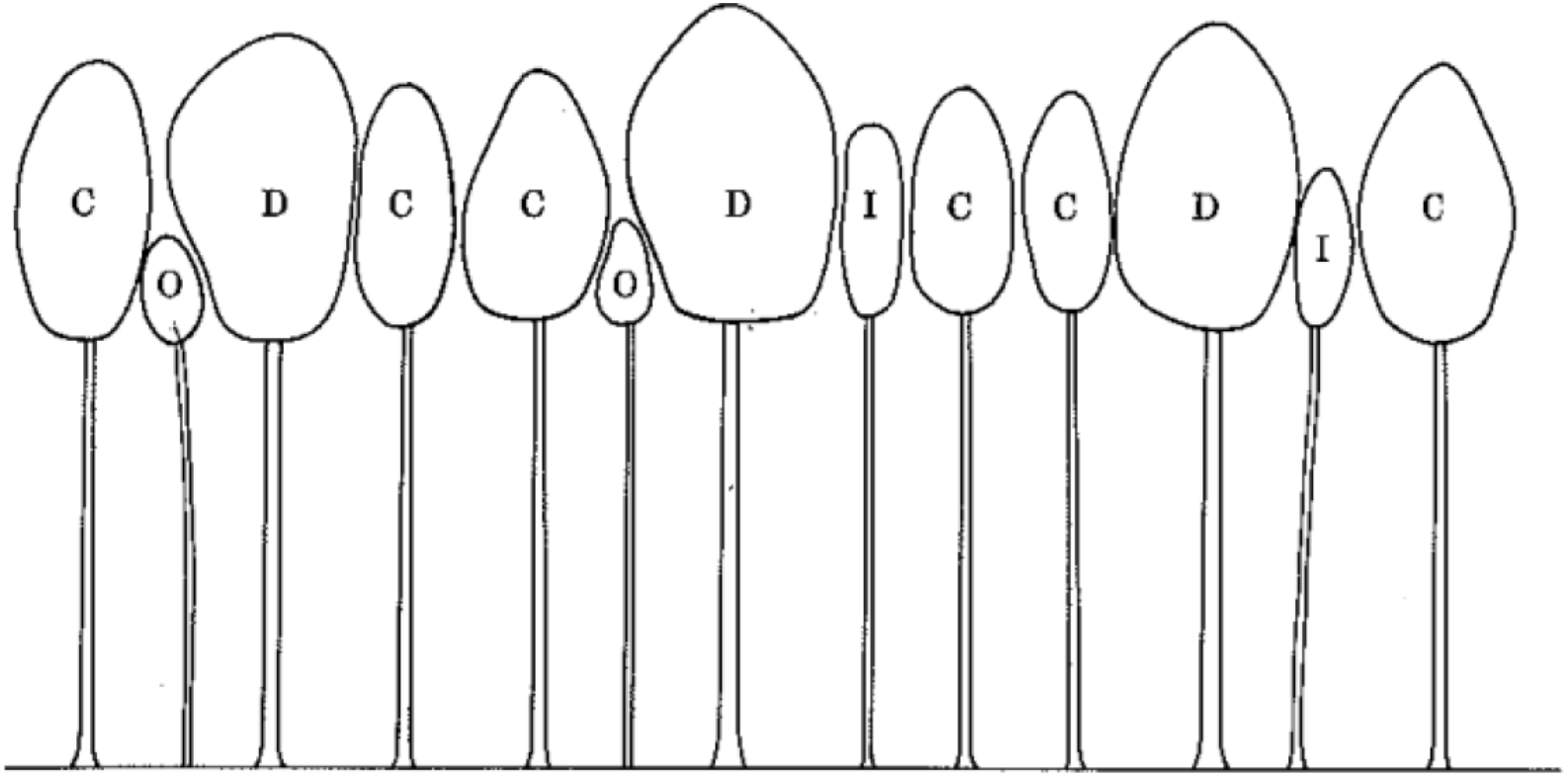


Figure 1. Illustration of tree crown classification into four classes (adapted from Smith *et al.* 1996).

References:

Florence, R.G. (1996). *Ecology and silviculture of eucalypt forests*. CSIRO Publishing, Collingwood, 413p.

Smith, D.M., Larson, B.C., Kelty, M.C., Ashton, P.M.S. (1996). *The practice of silviculture: applied forest ecology*. 9th edition. John Wiley and Sons, New York, 537p.