



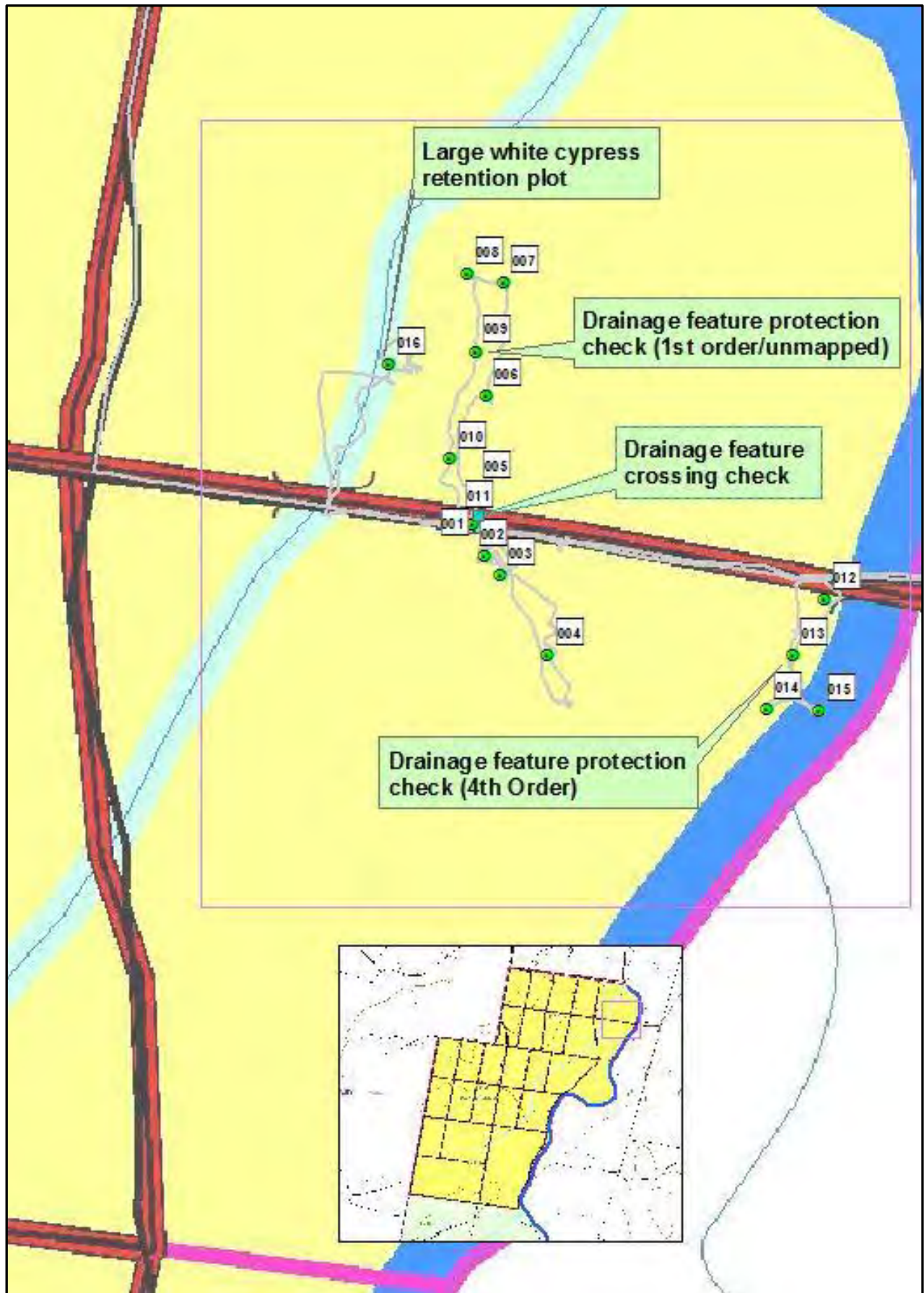
## EPA AUDIT REPORT – CROWN FOREST JACKS CREEK, COMPARTMENT 700

<b>Auditee:</b>	Forestry Corporation NSW
<b>Audit scope:</b>	Jacks Creek State Forest, Compartment 700. The field audit took 0.5 days to complete.
<b>Region:</b>	Western
<b>Date/Audit timing:</b>	18 August 2016
<b>Justification of audit:</b>	Post-harvest audit focussing on EPA compliance priority areas
<b>Audit objectives:</b>	<ol style="list-style-type: none"> <li>1. Determine compliance with Brigalow-Nandewar Region IFOA conditions</li> <li>2. Communicate compliance and non-compliances to FCNSW.</li> <li>3. Outline requirements for any necessary follow-up action.</li> </ol>
<b>Audit criteria:</b>	<ul style="list-style-type: none"> <li>• <b>Large White Cypress Retention</b> - Clause 198 (1) and Clause 198.</li> <li>• <b>Drainage Feature Protection</b> - Clause 113 (1) and Clause 189(2).</li> <li>• <b>Drainage Feature Crossings</b> - Clause 336.</li> </ul>
<b>Summary of Operations</b>	<p>White cypress sawlogs, ironbark sawlogs and green and dry residue will be harvested under regulation of the Integrated Forest Operations Approval for Brigalow-Nandewar Region (B-N IFOA). The operation will use mainly mechanical harvesting and processing to produce logs and forward them to dumps. The logs will be removed from the forest by truck.</p> <p>Natural regeneration is planned. No after-harvest burning or planting is proposed.</p> <p>No construction, reopening or upgrading of roads or bush tracks is proposed. Existing roads and tracks will be maintained in accordance with the <u>Standard Harvest Plan Conditions for Native Forest Operations in Western Region Brigalow-Nandewar</u>.</p>

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## AREAS ASSESSED



**Map 1:** Location of audit checks in Jacks Creek State Forest, Compartment 700 on 18/8/16. GPS waypoints are shown as green dots and tracks are shown as a grey line.

## **AUDIT FINDINGS - OVERVIEW**

A summary of EPAs findings are shown in the table below.

IFOA condition	Non-compliances	Compliances	Not Determined
Clause 198 (1) - Large white cypress retention		1	
Clause 198 (2) - Large white cypress retention		1	
Clause 113(1) - Drainage feature Protection		2	
Clause 189 (2) – Drainage protection areas (Drainage features)		2	
Clause 336 – Drainage feature crossings	1		

## **AUDIT RECOMMENDATIONS**

Action Details	Non-compliance Code*	Target/Action Date
Stabilise drainage feature crossing surface.	Code Yellow: the likelihood of environmental harm is less likely. The level of environmental impact is low to moderate.	Immediate

## AUDIT FINDINGS - FIELD COMPONENT

### 1. Large White Cypress Retention

This part of the audit focussed on retention of large white cypress trees. For the purposes of this audit, the following requirements apply:

- **Clause 198 (1)** – *In white cypress logging operations, **at least six large white cypress trees** must be retained, within the net mapped operation area, in each hectare of land surrounding a stump of any white cypress tree that is felled.*
- **Clause 198 (2)** - *Only living trees may be selected in relation to Clause 198(1) above. If possible, the trees selected for retention must have a dbhob of more than 550 mm. If there are not enough trees of 550mm dbhob or more surrounding the trees felled or proposed to be felled **and** within the net mapped operation area, then trees are to be selected from the cohort of healthy, mature trees with the next largest diameters at breast height over bark to make up the shortfall.*

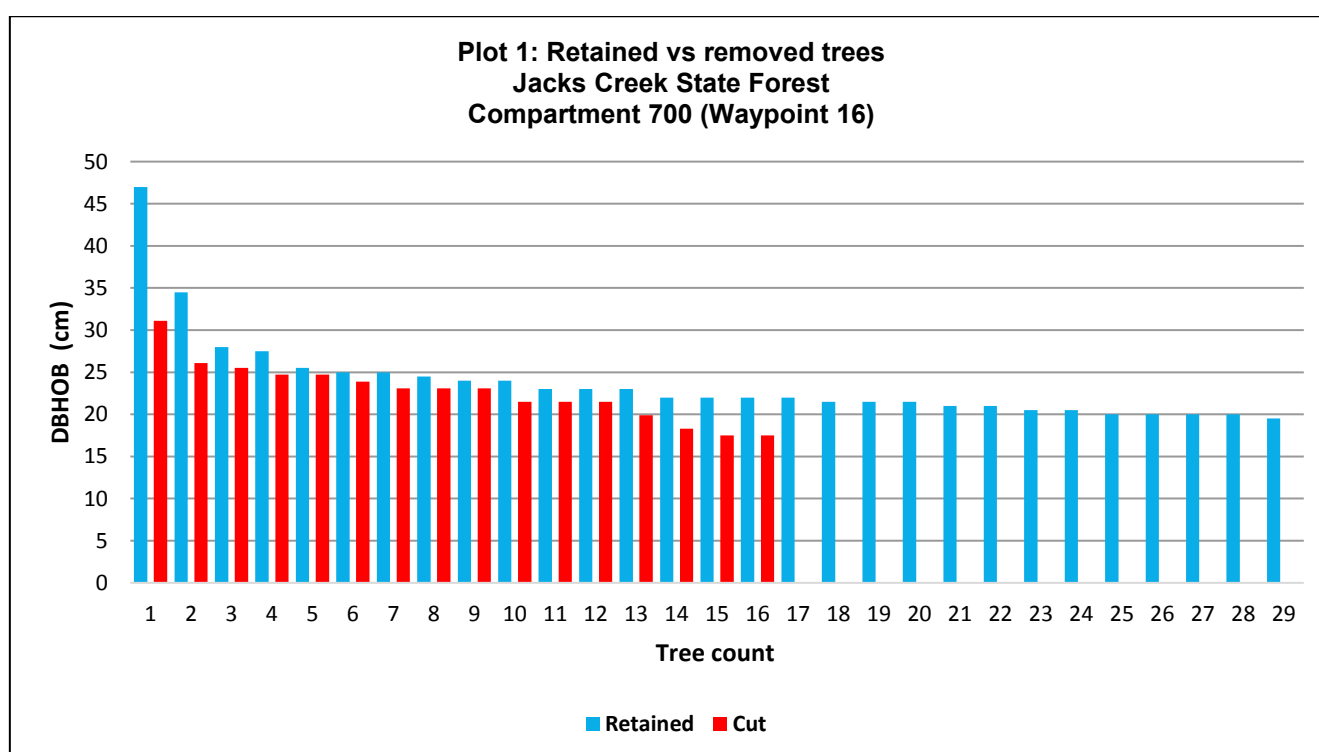
#### *Comment and Evidence*

EPA found that conditions were **compliant** in the area assessed.

This finding is based on an assessment of a one hectare plot (Map 1, Figure 1 and Table 3 Appendix). EPA Officers measured all larger diameter retained white cypress trees and all larger white cypress stumps within the one hectare plot. Plot results relating to stumps were compared to the Schedule 6 – White Cypress Stump to DBHOB lookup table, and 1cm was subtracted from the derived diameter for each stump as specified.

There were no trees more than 550mm DBHOB in the plots. Plot results indicate that the six largest retained cypress trees were live, healthy mature trees from the cohort of trees with the largest diameter as can be seen in Figure 1 below.

The EPA recorded one compliance.



**Figure 1. Large white cypress retention plot results (Plot 1, Jacks Creek State Forest 18/8/16)**



**Photo 100, Wpt 16** - View from centre of plot 1, looking north.



**Photo 101, Wpt 16** - View from centre of plot 1, looking east.



**Photo 102, Wpt 16** - View from centre of plot 1, looking south.



**Photo 103, Wpt 16** - View from centre of plot 1, looking west.

## Other Observations

No species other than white cypress were harvested from within the plot. Various Ironbark (including one more than 50cm dbhob), gum and small Bull Oak were scattered throughout the plot.

## 2. Drainage Feature Protection

This part of the audit focussed on the drainage feature protection requirements of the Brigalow-Nandewar IFOA. For the purposes of the audit, the following requirements apply:

- **Clause 113 (1)** – Specifies that logging operations must not be carried out in a Drainage Protection Area (including Drainage Feature Protection Zones). Note: Clause 107 specifies the width of drainage feature protection zones as follows:

### *Drainage feature protection zones*

<i>Drainage feature</i>	<i>Distance</i>
<i>Unmapped drainage line</i>	<i>5 metres</i>
<i>1<sup>st</sup> order mapped drainage line or mapped drainage depression</i>	<i>10 metres</i>
<i>2<sup>nd</sup> order mapped drainage line or mapped drainage depression</i>	<i>20 metres</i>
<i>3<sup>rd</sup> order mapped drainage line or mapped drainage depression</i>	<i>30 metres</i>
<i>4<sup>th</sup> order mapped drainage line or mapped drainage depression</i>	<i>40 metres</i>
<i>5<sup>th</sup> order or greater mapped drainage line or mapped drainage depression</i>	<i>50 metres</i>

- **Clause 189 (2)** - A forestry operation that comes within 50 metres of a drainage protection area must be “marked up”, prior to operations in that area.

## Comment and Evidence

EPA found that these conditions were **compliant** in the area assessed.

This finding is based on an assessment of two drainage features shown in Map 1, at the front of this report.

One drainage feature was a drainage depression re-mapped by FCNSW. A FMZ 3A drainage feature had been mapped 80-150 metres to the west, however FCNSW advised that field inspections revealed there was no drainage feature in the mapped location. This was confirmed by the EPA during the inspection. FCNSW had identified the drainage depression location using a combination of field identification and LiDAR imagery (Refer to Map 2 below). The drainage feature was considered to correspond with the feature on the FMZ layer. Accordingly, the drainage depression has been treated as a mapped 1<sup>st</sup> order drainage depression. The drainage feature protection zone was marked up without any incursions.

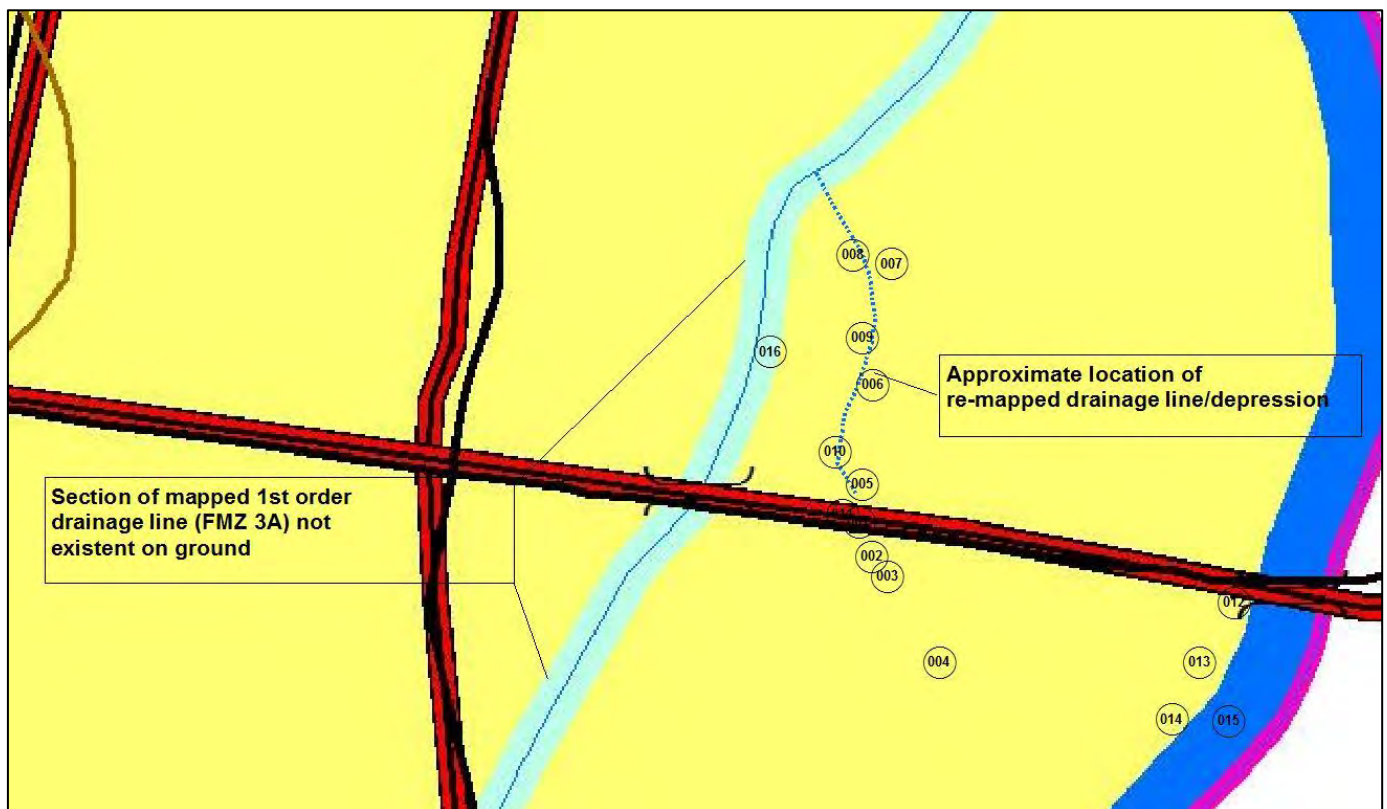
The other drainage feature was a 4<sup>th</sup> order drainage line (FMZ 3A) located on the eastern boundary of the compartment. The drainage feature protection zone was marked up without any incursions.

The EPA recorded two compliances each for Clause 113 (1) and Clause 189 (2).

Findings are summarised in Table 1 below.

**Table 1: EPA Assessment of Drainage Feature Protection Zones**

Location	Stream Order/Type	Length of boundary assessed by EPA	Field Marking Present	Field marking correct to drainage feature	Specified Forestry Activities within Assessed area
WPT's 5-11	Mapped drainage depression - 1 <sup>st</sup> order drainage feature. (10 metre protection). Re-mapped by FCNSW	520 metres (260 metres either side of drainage feature).	Yes. Three bar marking with white paint on trees.	Yes. 10 metres or more.	No incursions detected
WPT's 12-14	4 <sup>th</sup> order drainage feature. (40 metre protection)	130 metres	Yes. Three bar marking with white paint on trees.	Yes. 40 metres or more.	No incursions detected



**Map 2:** Locations of re-mapped drainage feature (blue dotted line) and section of non-existent FMZ 3A drainage line in Jacks Creek State Forest compartment 700. GPS waypoints are shown as black circles.



**Photo 92, Wpt 8** – Drainage Feature Protection Zone (eastern side of drainage feature) marked with 3 white bars, 12 metres from centre of drainage depression. No incursions. Logging operations to within 5 metres of marked trees.



**Photo 94, Wpt 10** - Drainage Feature Protection Zone (western side of drainage feature) marked with 3 white bars, 11 metres from centre of drainage depression. No incursions. Logging operations approximately 25 metres from marked trees.



**Photo 96, Wpt 12** - 4<sup>th</sup> Order (FMZ 3A) drainage feature protection zone marked with 3 white bars, 40 metres from the drainage feature. No incursions. Logging operations approximately 5 metres from marked trees.



**Photo 99, Wpt 15** – 4<sup>th</sup> Order (FMZ 3A) drainage feature.

### 3. Drainage Feature Crossings

This part of the audit focussed on road drainage feature crossing provisions in the Brigalow-Nandewar IFOA. For the purposes of the audit, the following requirements apply:

- **Clause 336** - *A crossing of a drainage feature by a road may be used in a forestry operation only if:*
  - (a) *it is a stable structure (bridge, culvert crossing or causeway) and*
  - (b) *its pavement is a stable natural surface or an erosion resistant material.*

#### *Comment and Evidence*

The EPA found that FCNSW was **not compliant** with the above conditions in the area assessed. This finding is based on an assessment of a drainage feature crossing shown in Map 1, at the front of this report. EPA officers assessed the crossing for stability. It was a natural surface drainage depression crossing located at the head of the unmapped drainage feature. The drainage depression was not evident on the upstream side of the crossing but commenced on the immediate downstream side. The EPA consider the crossing to be within the drainage depression. There were wheel ruts up to 20cm deep for a distance of approximately 10 metres on the crossing surface. The wheel ruts were muddy, indicating the road had been used when the road surface was saturated. The EPA consider the crossing to be unstable.

The EPA recorded one non-compliance for the crossing.



**Photo 75, Wpt 1** – Unstable natural surface crossing of drainage depression. View from centre of crossing looking west.



**Photo 77, Wpt 1** –View looking downstream from drainage depression crossing. Head of drainage depression.



**Photo 78, Wpt 1** – View looking upstream of drainage depression crossing. No drainage depression present.

## **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.

	<b>Likelihood of Environmental Harm Occurring</b>			
		<b>Certain</b>	<b>Likely</b>	<b>Less Likely</b>
<b>Level of Environmental Impact</b>	<b>High</b>	<b>Code Red</b>	<b>Code Red</b>	<b>Code Orange</b>
	<b>Moderate</b>	<b>Code Red</b>	<b>Code Orange</b>	<b>Code Yellow</b>
	<b>Low</b>	<b>Code Orange</b>	<b>Code Yellow</b>	<b>Code Yellow</b>

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.

## **APPENDIX: DATA TABLES AND FIGURES**

**Table 2: GPS waypoints recorded in Jacks Creek State Forest, compartment 700 during the audit undertaken on 18/8/2016**

<b>Jacks Creeks State Forest, Compartment 700 - Audit Waypoints 18/8/2016</b>				
<b>Waypoint</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Easting</b>	<b>Northing</b>
001	-30.412295	149.779631	6631123.270	767025.290
002	-30.412605	149.779753	6631089.225	767036.169
003	-30.41279	149.779896	6631069.100	767049.408
004	-30.413568	149.780364	6630984.100	767092.262
005	-30.411951	149.779662	6631161.505	767029.206
006	-30.411044	149.779758	6631262.355	767040.904
007	-30.409948	149.779932	6631384.379	767060.613
008	-30.409866	149.779582	6631392.515	767027.200
009	-30.410618	149.779661	6631309.333	767032.743
010	-30.411656	149.779418	6631193.553	767006.561
011	-30.412225	149.779481	6631130.623	767011.065
012	-30.413027	149.783045	6631051.433	767351.385
013	-30.413568	149.782729	6630990.571	767319.541
014	-30.414089	149.782478	6630932.105	767293.998
015	-30.4141	149.782995	6630932.299	767343.652
016	-30.410748	149.778825	6631292.627	766952.046

**Table3: Large white cypress retention plot data (Plot 1, Wpt 16) recorded in compartment 174 Jacks Creek State Forest, during the audit on 18/8/2016. This table displays the data used to determine compliance with large white cypress retention requirements of the Brigalow-Nandewar IFOA.**

Retained Trees		Stumps	
Tree no.	Retained trees DBHOB (cm)	Stump No.	Stump DBHOB (cm)
1	24.5	1	21.5
2	20	2	24.7
3	24	3	23.9
4	47	4	31.1
5	27.5	5	19.9
6	25	6	17.5
7	20.5	7	23.1
8	19.5	8	26.1
9	23	9	23.1
10	21.5	10	23.1
11	21	11	17.5
12	23	12	18.3
13	21.5	13	21.5
14	25.5	14	24.7
15	22	15	21.5
16	20	16	25.5
17	20		
18	23		
19	21		
20	20.5		
21	24		
22	22		
23	21.5		
24	20		
25	25		
26	22		
27	34.5		
28	28		
29	22		



**ATTACHMENT 5: JACKS CREEK STATE FOREST, COMPARTMENT 700 - AUDITEE SUBMISSIONS FORM**

<b>Condition / Audit finding reference / page No.</b>	<b>EPA draft finding / risk categorisation</b>	<b>Location – description, GPS</b>	<b>FCNSW evidence submission</b>	<b>EPA final finding / risk categorisation</b>	<b>EPA response to FCNSW submission</b>
Clause 198 (1) - Large white cypress retention	Compliant		FCNSW did not comment on draft audit finding.	Compliant	N/A
Clause 198 (2) - Large white cypress retention	Compliant		FCNSW did not comment on draft audit finding.	Compliant	N/A
Clause 336 – Drainage feature crossings	Not compliant – Code Yellow: the likelihood of environmental harm is less likely. The level of environmental impact is low to moderate.	Wpt 1	Since the audit inspection 18/8/2016, FCNSW have undertaken armouring of the crossing to improve its stability and the crossing is now compliant with clauses 331 and 336 of the BN IFOA.	Not compliant – Code Yellow: the likelihood of environmental harm is less likely. The level of environmental impact is low to moderate.	The EPA notes that works to improve crossing stability and make it compliant with the Brigalow-Nandewar Region IFOA have been undertaken.  The EPA upholds its audit finding.
Clause 113(1) - Drainage feature protection	Compliant		FCNSW did not comment on draft audit finding.	Compliant	N/A
Clause 189 (2) – Drainage protection areas (Drainage features)	Compliant		FCNSW did not comment on draft audit finding.	Compliant	N/A