

Forest Operation Plan Guidelines

Private Native Forestry Code of Practice for the River Red Gum Forests

These Guidelines accompany the Forest Operation Plan (FOP) template for the *Private Native Forestry Code of Practice for the River Red Gum Forests* (the Code).

- Read these guidelines in conjunction with the FOP template. They provide background information, instructions, tips and examples to help you to complete your FOP, including marking up your FOP map.
- Numbering of sections in these Guidelines, and in the FOP template, correlates with the numbering in the Code.
- Contact your local Private Native Forestry Officer or call the Local Land Services (LLS) on 1300 778 080 if you have any questions about what you have to do, or if you would like help completing the FOP.

Best practice tips

These Guidelines also include ‘Best practice tips’. These are included to help you carry out the forest operations, but the actions they recommend are not compulsory.

Amendments to the FOP

If you need to amend the FOP after it has been completed, record the changes on the front cover. If necessary, you should also mark up changes in the relevant section of the FOP.

Date of amendment	What needs to be added or changed?	Which section of the FOP does this apply to?
<i>20 June 2016</i>	<i>New log dump and additional road construction at the eastern end of Road 2.</i>	<i>sections 5.1 and 5.2</i>
<i>22 June 2016</i>	<i>Bush stone-curlew nest identified along western boundary.</i>	<i>section 4.2</i>
<i>24 June 2016</i>	<i>Changed crossing No. 2 from a culvert to a causeway. Crushed rock brought in to ensure stability.</i>	<i>page 17</i>

Terms used in the FOP

'Code' is the *Private Native Forestry Code of Practice for the River Red Gum Forests*.

'You' is the landowner. As the landowner:

- You are the person who holds the approval for the Private Native Forestry Property Vegetation Plan (PNF PVP) covering the landholding.
- You are responsible for ensuring that a FOP is prepared before starting any forest operations.
- You are responsible for making sure that all forest operations comply with the Code.

'**Forest operation**' means all clearing resulting from activities associated with forest management including harvesting operations, construction and maintenance of roads and tracks, and prescribed burning for regeneration.

For other definitions refer to the Code glossary.

Abbreviations

AGS	Australian Group Selection
DBHOB	diameter at breast height over bark
FOP	Forest Operation Plan
LLS	Local Land Services
PNF	Private native forestry
PVP	Property vegetation plan

Contents

Background information	4
Before you start ...	4
About your FOP	4
Why do you need a FOP?	5
What do you have to do with the FOP?	5
What if your plans change after you've started?	6
Field work summary	6
Guidelines for completing your FOP	9
FOP map checklist	9
1 Property Vegetation Plan	9
2 Forest operation planning and management	9
2.1 Landowner's details	9
2.2 Property details	9
2.3 Forest condition	10
2.4 History of forest disturbance	11
3 Silvicultural operations	12
3.1 Forest operations	12
3.2 Harvesting technique	12
3.3 Timber products to be harvested	12
3.4 Harvesting methods and equipment	12
3.5 Stand heights and stand basal areas	13
3.6 Regeneration and stocking	14
4 Protection of the environment	14
4.1 Protection of landscape features of environmental and cultural significance	14
4.2 Protection of habitat and biodiversity	15
4.3 Minimising damage to retained trees and native vegetation	16
4.4 Drainage feature protection	16
5 Construction and maintenance of forest infrastructure	17
5.1 Construction and maintenance of roads (and crossings)	18
5.2 Log landings, portable mill sites and snig tracks	26
Appendix: Listed species	26
Management actions for listed species	27
Tree marking checklist	28
FOP sign off	28

Background information

Before you start ...

Before you start any forest operations, you will need:

A current PNF PVP agreement, approved by the LLS. If you don't have a current PVP, or have not yet begun the PVP application process, please contact the LLS before continuing any further.

Before you start working on your FOP you will need:

- A copy of the *Private Native Forestry Code of Practice for the River Red Gum Forests*. You will need to refer to the Code to complete the FOP.
- A FOP base map – supplied by the LLS. If you don't have a copy of the FOP base map contact the LLS.
- A list of threatened species (if any) that have been recorded within ten kilometres of your PVP area (the LLS provides this list as part of the PVP application process). If you don't have this list contact the LLS.
- The LLS also recommends that you refer to the publication *Silvicultural Guidelines – Private Native Forestry Code of Practice*, available free from the LLS. This is available from your local LLS office, or online at www.lls.nsw.gov.au/sustainable-land-management/private-native-forestry, or you can obtain a copy by phoning LLS (toll free) on 1300 778 080.

About your FOP

The landowner, and all others who will be carrying out forest operations, must read, sign and date a FOP before the operations begin. The FOP must be available on site during the forest operations covered by the plan.

The template provided for your FOP sets out what you have to write down about the operations you are proposing to carry out. You also have to add information to the FOP base map provided by the LLS to show details about the proposed forest operations and the area they will cover.

Together, the completed template and the map make up your FOP.

Why do you need a FOP?

The FOP is a legal requirement.

A FOP, completed before forest operations begin, is a legal requirement under the Code. Another person may prepare the FOP for you, but you must read it, check it is complete and sign it to indicate your approval.

The FOP can help you to comply with the Code.

All forest operations must comply with the Code. Completing this FOP before you start work will help you, and anyone carrying out the site work, to comply with the Code's provisions.

The FOP can help you brief your Contractor.

If forest operations on your land will be carried out by a Contractor, you are responsible for making sure the Contractor complies with the Code. The Contractor, and anyone else carrying out the forest operations, has to read and sign the FOP before any work begins. You are responsible for making sure the Contractor (and their staff) understands that by signing the FOP they are legally bound to comply with the FOP and the Code. This can help you to have control over any forest operations that are carried out on your land.

The FOP can help you maintain your forest assets.

There are two key measures that will sustain your forest:

- keeping harvesting to a sustainable level, and
- making sure there is adequate regeneration.

The Code sets out the minimum requirements for harvesting and regeneration. The measurements you are required to take in order to complete the FOP will help you to maintain your forest so that it remains a productive and viable asset over the long term. The Code's requirements are just the minimum – you can add requirements or conditions to your FOP that are in addition to the Code. These may include specific requirements you would like the Contractor to adhere to.

What do you have to do with the FOP?

Keep the FOP on site.

You, and anyone carrying out the work, must have a copy of the FOP on site at all times while the work is being carried out.

Keep the FOP after the work has been completed.

You have to keep the FOP for three years after the work has been completed, or for the life of your PNF PVP agreement – whichever is the later date.

Give the FOP to the LLS when requested.

You will need to give the FOP to the LLS when requested. For example, this could be during an audit of your forest operations. The LLS may ask to see the FOP at any time during the period you are required to keep it.

What if your plans change after you've started?

Once work begins on site you may find that you need to change your plans. If the forest operations set out in the FOP change at any time, you are required to amend the FOP to show the changes. You can provide a brief description in the space provided on the FOP front cover, or a more detailed description elsewhere on the FOP, or mark the change on the FOP map.

Field work summary

You will need to conduct the following field work to obtain site information in order to complete the FOP. This list is a summary of the field tasks only – read the remainder of the FOP template and these Guidelines before you start the field work because they contain further information about what is required.

Silviculture

[Refer to the Code section 3.](#)

- Determine the forest condition. (See page 10 of these Guidelines.)
- Estimate the stand height.*
- Estimate the stand basal area.*
- Measure the average diameter at breast height over bark (DBHOB).
- Identify products to be obtained during the forest operations.

* Refer to page 13 of these Guidelines – 'Stand heights and stand basal areas' – before you take these measurements.

Habitat and biodiversity

[Refer to the Code section 4.](#)

- Identify whether any of the landscape features listed in the Code Table A are present in the FOP area. Some of them may already be shown on the FOP base map. Identify and map the location of the features that are not already shown on the map (such as wetlands).
- Identify the location of any roost, nest and food resource trees – as set out in the Code section 4.
- Identify the presence of additional protected trees: *Xanthorrhoea* (grass trees), *Banksia*, *Acacia salicina* (Cooba), *Exocarpos strictus* (dwarf cherry), *Eucalyptus microcarpa* (grey box) and *Allocasuarina* (forest oak) – except *Allocasuarina luehmannii* (bull oak).
- Identify trees equal to and greater than 125 cm DBHOB.

Drainage features

[Refer to the Code section 4.4.](#)

- Determine how the riparian exclusion and buffer zones around mapped drainage features will be identified in the field.
- Determine whether there are any unmapped drainage lines (see definition in the Code glossary). You need to know this because the Code section 4.4 contains specific requirements for unmapped drainage lines.

Roads

[Refer to the Code section 5.1.](#)

- Inspect existing roads to be used during the operations to determine whether upgrading or maintenance works are required to comply with the Code.
- Mark the location of the existing roads on the FOP map.
- Determine a suitable location for any new roads to be constructed during the operations.
- Mark the location of proposed new roads on the FOP map.
- It is advisable to mark the new road line in the field.
- As far as practicable:
 - Minimise the need to construct new roads.
 - Locate new roads in areas to assist outfall drainage.
 - Minimise the clearing width where an existing road is overgrown.

Drainage feature crossings

[Refer to the Code section 5.1.2.](#)

- Inspect existing drainage feature crossings that will be used during the operations to determine whether upgrading works are required to comply with the Code. All crossings must be stable structures.
- Existing 'gully stuffer' comply with the Code if they are stable. Refer to the Code glossary for a definition of a 'gully stuffer'. New gully stuffer must not be constructed.
- Mark the location of the existing crossings on the FOP map.
- Minimise the need to construct new drainage feature crossings.
- Determine a suitable location for any new drainage feature crossings to be constructed during the operations.
- Mark the location of the new crossings on the FOP map.

Best practice tip

Take care with the drainage of road approaches to crossings. This is an important issue because poor drainage can cause sediment pollution of drainage features.

Log landings and portable mill sites

[Refer to the Code section 5.2.](#)

- Determine the appropriate location of log dumps and portable mill sites, if required. Note: Log dumps and portable mill sites are not to be located in flood runners or drainage depressions.
- Mark the location of all log dumps and portable mill sites on the FOP map.

Best practice tip

Select log dumps and portable mill sites so they are located:

- at least 10 m from an exclusion zone or a riparian buffer zone.
- away from flood runners or drainage depressions.

Threatened species

- Identify the presence of site evidence of threatened species listed in the Code Appendix. You should be particularly aware of site evidence for those species on the list provided by the LLS that have been recorded within 10 kilometres of your property.
- Mark the location of site evidence and identify species on the FOP map.

Recommended field equipment

You are likely to need the following equipment to carry out the field work:

- Binoculars (for viewing animal habitat sites high up in trees)
- Tree marking tape or paint
- Diameter tape
- Relascope or dendrometer (for measuring stand basal area)
- Global Positioning System (GPS) to help identify the location of features in the field
- Clinometer (for measuring the ground slope, road grade and tree height)
- 30–50m tape measure
- Field note book (for recording site data).

Recommended field guidelines

The LLS recommends you use the following guidelines when carrying out the field work:

- *PNF Code of Practice Guideline No. 2: Protocol for re-evaluating old growth forest on private property*
- *PNF Code of Practice Guideline No. 4: Techniques for measuring stand height*
- *PNF Code of Practice Guideline No. 5: Techniques for measuring stand basal area*
- *Routine agricultural management activities on private native forestry land (factsheet)*
- *Silvicultural Guidelines - Private Native Forestry Code of Practice*
- *PNF Field Guide for the River Red Gum Forests.*

Copies of these guidelines are free of charge and can be downloaded from the LLS website at www.lls.nsw.gov.au/sustainable-land-management/private-native-forestry or you can obtain a copy by phoning the LLS (toll free) on 1300 778 080.

Guidelines for completing your FOP

FOP map checklist

When marking up the map use the symbols provided on the map, or create your own symbols.

- The '**FOP area**' is the area in which the proposed forest operations will be carried out.
- For information about **known record sites** of listed threatened species see page 26 of these Guidelines.
- If you are unsure about whether there are **Aboriginal objects or places** within the FOP area, contact your local LLS office.
- If you are unsure about whether there are **listed heritage sites** within the FOP area, contact your local council.

1 Property Vegetation Plan

Your PNF PVP number is shown on the Private Native Forestry Property Vegetation Plan Agreement issued to you by the LLS.

2 Forest operation planning and management

2.1 Landowner's details

If there is more than one landowner, include the contact details of the primary landowner, i.e. the landowner who will be most involved with the proposed forest operations.

2.2 Property details

The property's Deposited Plan (DP) and Lot numbers can be found on your Property Vegetation Plan Agreement. There may be many Lot numbers with the same DP number. Add extra pages if necessary.

2.3 Forest condition

You are required to take field measurements to complete this section of the FOP. Not **all** your site measurements and calculations have to be recorded in the FOP. The specific information that you must record in order to comply with the Code is set out in the FOP template.

Forest condition

Describe the current (i.e. pre-harvest) condition of the forest in the FOP area using the descriptions below. Use the symbols below (Y, UG, UP, M and OG) to identify the forest condition:

- Y Young even-aged:** Stands of young trees of a similar age having established within a short period of each other (e.g. in response to a fire). Small differences in age may not be of any practical significance and can be ignored.
- UG Uneven-aged, with good quality re-growth and growth potential.** Stands of trees with an intermixture of species and ages with no obvious boundaries separating them, plus good quality regrowth trees that have good growth potential for future sawlog production.
- UP Uneven-aged poorer quality with an aged canopy, little regrowth and low growth potential.** Stands of trees with an intermixture of species and ages with no obvious boundaries separating them but with poor quality trees with little to no growth potential and little regrowth.
- M Mature, even-aged, with a cross-section of merchantable trees.** Even-aged stand with little to no regrowth.
- OG Old growth.** Mature forest where the effects of disturbance are now negligible. For a full definition of old growth forest refer to the Code glossary.

For more information about how to describe forest condition refer to the LLS *Silvicultural Guidelines – Private Native Forestry Code of Practice*.

2.4 History of forest disturbance

Use the table to briefly describe what you know about how the forest has been disturbed in the past. Use the time intervals given in the table or add your own time intervals. You may need to list only one event or there may be several events that have had an impact on the forest condition.

Harvesting history

Provide a brief description of previous harvesting operations including information about products taken and harvesting intensity. Use the following categories to describe harvesting intensity:

Light	Light selective harvesting or thinning that removed only a small proportion of the stand basal area – 30% or less.
Moderate	Selective harvesting that removed about 30% to 60% of the stand basal area, including a cross-section of trees in all merchantable size ranges, but left semi-mature to mature trees to grow on.
Heavy	Harvesting that removed most if not all merchantable trees or greater than 60% of the stand basal area.

Fire history

Include both fuel reduction fires and bushfires. Use the following categories to describe fire intensity:

Light	A mild prescribed or controlled burn, or very low intensity bushfire, that burnt groundcover, had a minor impact on undergrowth and little or no impact on regeneration.
Moderate	A bushfire that burnt groundcover and undergrowth but only resulted in mild scorching of regeneration and little or no damage to the canopy and sub-canopy.
Severe	A bushfire that destroyed groundcover and most or all of the undergrowth and regeneration, and resulted in severe crown-scorching that damaged or killed trees in the canopy and sub-canopy.

Grazing history

Provide a brief description of the grazing history, if known. For example, the grazing history might be:

'Former grazing land returned to forest in the late 1960s' or
'Lightly grazed in winter months every year'.

Other types of disturbance

Describe any other types of disturbance that have affected the current condition of the forest, e.g. ringbarking or weed control.

3 Silvicultural operations

The next few sections of the FOP template relate to harvesting. If your forest operations do not involve harvesting, go to section 4 of the FOP template. The following sections are self-explanatory.

3.1 Forest operations

Tick the appropriate boxes to indicate which activities will be carried out, etc. You may need to tick more than one box to answer each question.

3.2 Harvesting technique

Best practice tip

Before determining silvicultural practices for your harvesting activities, and for information about single tree selection, thinning and Australian Group Selection (AGS), it may be useful to refer to the LLS *Silvicultural Guidelines – Private Native Forestry Code of Practice*. These Guidelines provide advice on the best silvicultural practices for various forest types in various conditions.

3.3 Timber products to be harvested

Add any other products that will be harvested if they are not listed here.

3.4 Harvesting methods and equipment

Add any other equipment or methods that will be used if they are not listed here.

3.5 Stand heights and stand basal areas

Refer to the Code sections 3.1 and 3.2.

Harvesting limits

This section of the FOP relates to harvesting limits. To comply with the Code you need to measure and record stand height and basal area **for each stand** within the FOP area. For a definition of 'stand' see the LLS *Silvicultural Guidelines – Private Native Forestry Code of Practice* or the *PNF Code of Practice Guideline No. 5: Techniques for measuring stand basal area*.

In the Code:

- Harvesting limits for single tree selection and thinning are governed by stand basal area.
- Harvesting limits for Australian Group Selection are governed by the size and proximity of canopy openings in relation to stand height.

Why set harvesting limits?

Harvesting limits are about maintaining the value of your asset. Working within the harvesting limits is one of the best ways of ensuring that your forest stays healthy and continues to be productive over the long term – providing there is adequate regeneration.

Field measurements

Not **all** your site measurements and calculations have to be recorded. The specific information that you must record in order to comply with the Code is set out in the FOP template.

Stand height

For each forest stand in the FOP area, measure the stand height using the methods described in *Private Native Forestry Code of Practice Guideline No. 4: Techniques for measuring stand height*.

Harvesting limits for Australian Group Selection are governed by the size and proximity of canopy openings in relation to stand height.

Stand height is the average height of the dominant trees in the stand, which can be determined by averaging the height of the five tallest trees within the stand.

Estimated stand basal area

For each forest stand in the FOP area, estimate the **pre-harvest** stand basal area using methods described in *Private Native Forestry Code of Practice Guideline No. 5: Techniques for measuring stand basal area*.

Minimum stand basal area

The minimum stand basal area for single tree selection and thinning operations in river red gum forests is 12m²/ha. If you want to set a higher minimum basal area you can do this in the FOP.

For how to measure stand basal area see *Private Native Forestry Code of Practice Guideline No. 5: Techniques for measuring stand basal area*.

3.6 Regeneration and stocking

Refer to the Code section 3.3.

Adequate levels of regeneration are determined by minimum stocking levels. The Code sets the minimum stand stocking levels which must be achieved within 36 months of a regeneration event, as defined by the Code (the second period of inundation following a harvesting or thinning operation).

If additional regeneration activities are likely to be required, describe the activities you will carry out to promote regeneration. (Refer to the LLS *Silvicultural Guidelines – Private Native Forestry Code of Practice* for advice.)

4 Protection of the environment

4.1 Protection of landscape features of environmental and cultural significance

Refer to the Code section 4.1.

Certain landscape features must be protected in accordance with the Code section 4.1. For a definition of each of these features refer to the Code Table A and the Code glossary.

For a description of wetlands, refer to section 4 of the *PNF Field Guide for the River Red Gum Forests*.

Indicate which landscape features are present in the FOP area. Tick all that apply.

Mark these landscape features on the FOP map if they are not already shown.

An indication of the likely location of some of these features may be shown on the first sketch map the LLS sent you as part of the PVP application process.

Best practice tip: Indicating landscape features or zones around them – on site

Use tree marking symbols (see the ‘Tree marking checklist’ at the end of the FOP template) to mark the location of these landscape features on site, or the location of the required exclusion and buffer zones around these landscape features.

Aboriginal objects and places

Aboriginal objects and places must not be harmed when carrying out forestry and other activities. Aboriginal objects include physical objects, such as stone tools, scarred trees, material deposited on the land (e.g. middens) and ancestral remains. Aboriginal places are those areas that are considered of such special significance that they are declared and offered special protection. Landowners need to ensure they have taken the following steps to determine whether an Aboriginal object or place exists on their land:

- Check the Aboriginal Heritage Information System (AHIMS) database – this can be done online at: www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm or contact an LLS PNF Officer for an application.

- Undertake a property inspection and keep a written record such as a checklist – an example of a checklist is available from your LLS PNF Officer.

If an Aboriginal object is found or is likely to be present then notify an LLS PNF officer and complete an AHIMS recording form.

Avoid destroying, defacing, damaging or moving an Aboriginal object. If an activity is likely to cause harm, then buffers will need to be applied around the object in accordance with the Code. If buffers cannot be applied, an Aboriginal Heritage Impact Permit (AHIP) is required (speak to your LLS PNF Officer).

If, after following the above procedures, a PNF PVP is issued and an Aboriginal object is subsequently found, you need to determine whether an AHIP is required or whether buffers should be applied. For further information about legal requirements see:

www.environment.nsw.gov.au/resources/cultureheritage/NPWAct/10701npwfacts1.pdf

4.2 Protection of habitat and biodiversity

Refer to the Code section 4.2.

Certain trees must be retained to protect fauna (animals and birds) in the FOP area. This section of the FOP needs to describe how you will indicate on site which trees must be retained.

The template sets out two options here: using tree marking, or using another method. You can tick one or both of these options. If you opt to use a method other than tree marking, you need to describe what that method is.

Before you decide which trees must be retained, refer to the definitions and conditions set out in the Code section 4.2. Which trees to retain depends on the type of tree (e.g. hollow bearing, recruitment, roost, nest or food resource tree, collectively referred to as habitat trees) and also depends on retaining a certain number of trees within a specified area.

Hollow bearing and recruitment trees

Refer to the Code Table B.

Table B specifies how many hollow bearing and recruitment trees must be retained within the FOP area. If there are not enough hollow bearing trees, extra recruitment trees from the 'next cohort' (see below) must be retained to comply with the Code Table B.

Clumps of habitat trees must be retained in river red gum forests where they constitute rookeries for water birds.

What is the 'next cohort'?

Recruitment trees are trees which will become the next generation of hollow bearing trees. Some of the recruitment trees that must be retained have to be 'from the next cohort'. In the Code Table B, 'cohort' refers to groups of trees according to their age. Of all the habitat trees in any area, the hollow bearing trees are likely to be in the oldest age group. Recruitment trees 'from the next cohort' will be those from the second oldest age group, i.e. those most likely to provide the next batch of hollow bearing trees.

Roost, nest and food resource trees

Refer to the Code Table B

Check the definitions of roost, nest and food resource trees set out in the Code section 4.2.

- All trees that have marks or V-notches from sap-feeding mammals must be retained.
- All roost, nest and food resource trees must be retained.

Best practice tip: Tree marking

Use tree marking symbols (see the ‘Tree marking checklist’ at the end of the FOP template) to mark trees that must be retained.

You could also use this section of the FOP to record who is responsible for identifying and indicating which trees will be retained, e.g. whether this is the responsibility of the Landowner or the Contractor.

4.3 Minimising damage to retained trees and native vegetation

[Refer to the Code section 4.3.](#)

Check the definition of ‘protected trees’ in the Code section 4.3. All trees that have to be retained (as set out in the Code section 4.2) are defined as ‘protected trees’.

In addition, there are other genera and species that are defined as ‘protected trees’. Indicate whether the protected trees listed in section 4.3 are present in the FOP area. Tick all that apply.

Indicate how protected trees will be shown on site.

Describe the management actions that will be used to minimise damage to protected trees.

4.4 Drainage feature protection

[Refer to the Code section 4.4.](#)

Drainage features (also referred to in the Code as streams or prescribed streams) must be protected in accordance with the Code section 4.4. You are required to protect drainage features by establishing riparian exclusion zones and riparian buffer zones. Zone widths are set out in the Code Table C. Forest operations must not occur in riparian exclusion zones except for the purpose of crossing drainage features.

The FOP base map issued by the LLS shows the location of prescribed streams and drainage features. These natural flow channels are marked on topographic maps published by the NSW Government. Prescribed streams are generally the more major rivers and tributaries.

If they are not already shown, mark on the FOP map any drainage features with an incised channel.

Why protect drainage features?

Protecting drainage features protects the value of your asset. It prevents soil erosion and maintains water quality and biodiversity values – and this is one of the most important things you can do to keep your land, your forest and waterways in good condition for the long term.

5 Construction and maintenance of forest infrastructure

[Refer to the Code section 5.](#)

Infrastructure used in the forest operations must comply with the Code section 5.

If you haven't already done so, mark the following infrastructure features on the FOP map:

- Roads – the indicative locations of any new and existing roads that will be used in the forest operations
- Drainage feature crossings – the indicative locations of any new and existing drainage feature crossings (e.g. bridges, causeways, culverts or existing gully stuffers) that will be used in the forest operations.

Completing the tables

Use the tables in the FOP template to record how new and existing infrastructure will be constructed or upgraded so that it complies with the Code.

The information you set out in the tables should be sufficient to provide clear operational instructions for Contractors and other field operators.

Names and numbers used in the tables should correlate with the names and numbers used on the FOP map.

Provide further information on extra pages if necessary.

The following sample tables include tips about what the Code requires and typical examples of the type of information you might record in this section of the FOP:

5.1 Construction and maintenance of roads (and crossings)

Refer to the Code section 5.1.

New roads

New roads must be constructed in accordance with the Code section 5.1. All proposed new roads must be included in the table. More than one new road can be listed in each column of the table provided that the management prescriptions are the same for these roads.

- Explanatory notes are highlighted.
- Examples of typical answers or sample text are shown in *italics*.

New roads		
New road name or number: Allocate a name or number for each road	<i>NR1, NR3, NR4</i>	<i>NR2</i>
Will clearing be required?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, describe the clearing required:	<i>The new road line will be cleared to a width of 6 m. Debris will not be stockpiled within the REZ or RBZ.</i>	
How will groundcover be established over cleared areas? Generally groundcover will naturally regenerate on cleared areas provided the topsoil layer remains intact. If it is not likely that groundcover will establish naturally, state how groundcover will be established.	<input type="checkbox"/> Groundcover will be established through natural regeneration. <input checked="" type="checkbox"/> Groundcover will be established as follows: <i>The cleared areas above the road line will be revegetated with native seed.</i>	<input type="checkbox"/> Groundcover will be established through natural regeneration. <input type="checkbox"/> Groundcover will be established as follows:
If required, how will fill or cut batters be stabilised? Cut and fill batters will generally not require stabilising if they are constructed with an adequate grade. Fill batters will need adequate compaction during construction to ensure structural stability, and may require surface stabilisation to prevent erosion. If there is a steep side slope or soils are highly erodible, stabilisation works may be required.	<i>A log will be placed at the toe of the fill batter to contain the earth fill for a length of 10 m on the western side of NR1.</i>	

New roads		
New road name or number: Allocate a name or number for each road	<i>NR1, NR3, NR4</i>	<i>NR2</i>
<p>How will soil erosion on roads be prevented?</p> <p>Minimising the length of water flow along roads is essential to prevent sediment pollution of streams. The Code Table D specifies the maximum distance that water may travel along road surfaces and table drains. State here how you propose to minimise water flow by ticking the appropriate box. Unless the road surface remains vegetated, constructed drains or effective outfall will be required. As outfall generally does not remain effective with heavy traffic flow, regular maintenance will be required.</p> <p>Properly maintained roads reduce soil erosion and water pollution. When roads are regularly used in dry weather, the surface becomes powdery and breaks down into bulldust. If there is no rain to bed down this bulldust, it is recommended to be periodically sprayed with water to reduce the chance of soil entering drainage features.</p>	<input type="checkbox"/> Maintaining vegetation cover <input type="checkbox"/> Establishing grass cover <input type="checkbox"/> Crossfall, crowning or shaping <input type="checkbox"/> Drainage structure <input checked="" type="checkbox"/> Wetting of soil	<input type="checkbox"/> Maintaining vegetation cover <input type="checkbox"/> Establishing grass cover <input type="checkbox"/> Crossfall, crowning or shaping <input type="checkbox"/> Drainage structure <input type="checkbox"/> Wetting of soil
<p>How will drainage be provided (e.g. what types of drainage structures will be used)?</p> <p>Examples include a rollover crossbank, spoon drain, rubber flap drain, or 'C' channel.</p>	<i>Rollover banks will be constructed to protect the drainage feature.</i>	

New roads		
New road name or number: Allocate a name or number for each road	<i>NR1, NR3, NR4</i>	<i>NR2</i>
Will the road be stabilised and allowed to revegetate after this forest operation? 'Yes' indicates that the road will be allowed to revegetate to minimise sediment loss.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

Existing roads

Existing roads that will be used in the forest operations must be upgraded and maintained in accordance with the Code section 5.1. All existing roads that will be used in the proposed forest operations must be included in the table. More than one existing road can be listed in each column of the table provided that the management prescriptions are the same for these roads.

Existing roads		
Existing road name or number: Allocate a name or number for each road	<i>ER1</i>	<i>ER2</i>
Will clearing be required? If clearing of regrowth is required ensure the clearing is minimal.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, describe the clearing required:	<i>Regrowth clearing is required along this road. The cleared debris will not be stockpiled within the 20 m exclusion zone; debris will be burnt post-harvest.</i>	
How will groundcover be established over cleared areas? Generally groundcover will naturally regenerate on cleared areas provided the topsoil layer remains intact. If it is not likely that groundcover will establish naturally, state how groundcover will be established.	<input type="checkbox"/> Groundcover will be established through natural regeneration. <input checked="" type="checkbox"/> Groundcover will be established as follows: <i>The cleared areas above the road line will be revegetated with native seed.</i>	<input type="checkbox"/> Groundcover will be established through natural regeneration. <input type="checkbox"/> Groundcover will be established as follows:
How will soil erosion on roads be prevented?	<input type="checkbox"/> Maintaining vegetation cover <input type="checkbox"/> Establishing grass cover <input type="checkbox"/> Crossfall, crowning or shaping <input type="checkbox"/> Drainage structure <input checked="" type="checkbox"/> Wetting of soil	<input type="checkbox"/> Maintaining vegetation cover <input type="checkbox"/> Establishing grass cover <input type="checkbox"/> Crossfall, crowning or shaping <input type="checkbox"/> Drainage structure <input type="checkbox"/> Wetting of soil
Is the road surface shaped for infall or outfall or is it crowned?	<input type="checkbox"/> Infall <input checked="" type="checkbox"/> Outfall <input type="checkbox"/> Crowned	<input type="checkbox"/> Infall <input type="checkbox"/> Outfall <input checked="" type="checkbox"/> Crowned

Existing roads		
Existing road name or number: Allocate a name or number for each road	ER1	ER2
Does the current (pre-harvest) road condition comply with the Code? Inspect each road line to ensure the roads comply with the Code.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
If not, what maintenance or upgrading work will be carried out to bring the road up to the Code standard? Describe the upgrading or maintenance work required.	<i>The road has no drainage and is rutting. The road surface will be reshaped and drainage structures constructed.</i>	
Is the existing drainage up to standard with the Code?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
How will drainage be provided (e.g. what types of drainage structures will be used)? Examples include a rollover crossbank, spoon drain, rubber flap drain, or 'C' channel.	<i>Rollover banks will be constructed.</i>	
Are fill and cut batters currently stable? Cut and fill batters will generally be stable along existing roads provided cut batters are not undercut and excessive earth material is not deposited on fill batters.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
If they are not stable, what work will be carried out to stabilise them?		
Will the road be stabilised and allowed to revegetate after this forest operation? 'Yes' indicates that the road will be allowed to revegetate to minimise sediment loss.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

New drainage feature crossings (e.g. bridges, causeways or culverts)

Refer to the Code section 5.1.2.

New drainage feature crossings must be constructed in accordance with the Code section 5.1.2.

All proposed new drainage feature crossings must be included in the table.

Note: Forestry operations on the floodplain may require additional approvals to undertake earthworks (such as importing and exporting soils for drainage feature crossing construction). Contact the LLS or your local council to discuss additional approvals which may be required.

The type of structure required depends on whether the stream flow is permanent or intermittent. If the flow is permanent, a bridge or culvert will generally be required which must be designed to convey a 1-in-5-year storm event and withstand a 1-in-10-year storm event. The crossing must also minimise disturbance to the passage of fish and other aquatic animals.

New drainage feature crossings		
New crossing name or number: Allocate a name or number for each new crossing	<i>NC1</i>	<i>NC2</i>
What type of structure will be used (e.g. bridge, causeway, culvert)? Stream crossings must be stable causeways, culverts or bridges. Existing 'gully stuffer' may be used if they are stable but new gully stuffer crossings must not be constructed. Refer to the Code Glossary for the definition of a 'gully stuffer'.	<i>Causeway</i>	
What material will be used for the base or surface of the crossing? Describe what stable material will form the base of the crossing surface. Causeways must be constructed of stable, non-soil material such as crushed gravel, rock, bitumen, concrete, logs or other stable material that is unlikely to produce water turbidity.	<i>Crushed rock</i>	

New drainage feature crossings		
New crossing name or number: Allocate a name or number for each new crossing	NC1	NC2
<p>What construction work will be carried out to build the crossing? Briefly describe the works required to construct the crossing.</p>	<p><i>Debris will be relocated from the crossing in the preparation for installing the causeway and crushed rock. There will be no impediment to water flow during the construction of the crossing.</i></p>	
<p>What sediment and erosion control works will be carried out? Describe the sediment and erosion control works you will carry out to prevent sediment pollution of the stream.</p>	<p><i>Exposed fill batters within the crossing will be hay mulched to aid revegetation. All loose soil material and debris will be removed from the crossing area.</i></p>	
<p>How will road drainage on the crossing approaches be provided? Drainage of the road approaches is an important issue because poor drainage can lead to sediment pollution of streams. Describe what drainage structures will be required.</p>	<p><i>Rollover crossbanks will be constructed on both approaches within 30 m of the crossing.</i></p>	

Existing drainage feature crossings

Existing drainage feature crossings that will be used in the forest operations must be upgraded and maintained in accordance with the Code section 5.1.2. All existing drainage feature crossings that will be used in the proposed forest operations must be included in the table.

Existing drainage feature crossings		
Existing crossing name or number: Allocate a name or number for each existing crossing	<i>ECI</i>	
What type of structure will be used (e.g. bridge, causeway, culvert)? Examples include causeway, culvert, bridge or gully stuffer. Existing gully stuffer may be used if they are stable.	<i>Existing gully stuffer</i>	
Does the crossing comply with the Code?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
If not, what maintenance or upgrading work will be carried out to bring the crossing up to the Code standard?	<i>The existing gully stuffer is not stable and is impeding flow in the drainage line. A new culvert crossing will be constructed.</i>	
What sediment and erosion control works will be carried out? Describe the control works that will be required to prevent sediment pollution of the stream.	<i>All exposed soil outside the road line and within 20 m of the crossing will be covered with forest debris or seed-free hay.</i>	
How will road drainage on the crossing approaches be provided? Drainage of the road approaches is an important issue with stream crossings because poor drainage can lead to sediment pollution of streams. Describe what drainage structures will be required.	<i>Rollover crossbanks will be constructed on both approaches within 30 m of the crossing.</i>	

5.2 Log landings, portable mill sites and snig tracks

[Refer to the Code section 5.2.](#)

Log dumps, portable mill sites and snig tracks must be used and maintained in accordance with the Code section 5.2.

If you haven't already done so, mark on the FOP map all log dumps and portable mill sites that will be used in the forest operations.

Appendix: Listed species

[Refer to the Code Appendix: Listed species ecological prescriptions.](#)

Many of the standard conditions within the Code provide general protection for threatened species. For some threatened species you will need to apply additional prescriptions.

Those species that are considered to be potentially under threat from native forest harvesting are referred to as 'listed' species. For information about what you must do to further protect these listed species refer to the Code Appendix: 'Listed species ecological prescriptions' and make sure you understand the rules that apply to protect each of these species.

What are you expected to know?

There are two different ways of knowing about the presence of a listed species that you have to be aware of:

- 1 There may be what is called a **known record** of a listed species on or near your land. This means the name and location of a threatened species of plant or animal has been verified and recorded on the Office of Environment and Heritage (OEH) database. The LLS will have notified you if there is a known record of any listed species on your land, or within one kilometre of your land, as part of the PVP application process.
- 2 There may be **site evidence** of a listed species on your land. This means you may actually see a threatened plant or animal or find evidence, such as droppings or a nest, which indicates the presence of a threatened species. As part of the PVP application process, the LLS will have sent you information about listed species known to be found within 10 kilometres of your land – to help emphasise the need to search for site evidence of those species. These provisions apply to plants as well as animals.

If you find site evidence of any listed species while forest operations are being carried out, you need to make sure the Code provisions to protect the listed species will be complied with. You may need to amend the FOP. Check with the LLS if you are not sure what to do.

You must apply the additional threatened species prescriptions if there is a **known record** or **site evidence** of that species within the FOP area.

Management actions for listed species

The FOP base map shows the location of all known records of listed species located within your PVP area, or within one kilometre of this area. These locations are referred to as ‘**record sites**’. Due to a requirement of the OEH Wildlife Atlas Licence Agreement, these species will not be named – only the record site location will be shown. The species must not be named in your FOP plan. However, listed species identified through site evidence may be named in your FOP plan, including being named on the map.

Use the table to provide details about how listed species within the FOP area will be protected. Provide further information on extra pages if necessary.

- Explanatory notes are highlighted.
- Examples of typical answers or sample text are shown in *italics*.

Management actions for listed species		
Threatened plant or animal:	Record site 1:	Record site 2:
<p>Does an exclusion zone apply to this species? If so, what is the exclusion zone?</p> <p>Does an exclusion zone apply? If so, state the width that applies.</p>	<p><i>50 m radius exclusion zone, measured from the record site.</i></p>	
<p>For plants, what % of individuals will be protected by the exclusion zone?</p> <p>Is the threatened species a plant? If so, state what % of the plant population this exclusion zone applies to.</p>	<p><i>n.a.</i></p>	
<p>Does a buffer zone apply to this species? If so, what is the buffer zone?</p> <p>Does a buffer apply? If so, state the width that applies.</p>	<p><i>100 m radius buffer zone, measured from the record site.</i></p>	
<p>Do extra tree retention measures apply to this species? If so, what are the extra retention measures?</p> <p>If extra habitat trees are required to be retained within the buffer zone, specify the number of trees here.</p>	<p><i>Within the buffer zone, min. 15 trees with visible hollows per 2 ha must be retained, plus 1 recruitment tree per hollow bearing tree retained. Must be min. 30 trees retained (hollow or recruitment) per 2 ha.</i></p>	

Management actions for listed species		
Threatened plant or animal:	Record site 1:	Record site 2:
<p>If exclusion or buffer zones apply, how have they been marked in the field?</p> <p>Exclusion or buffer zones have to be marked in the field: see the Code Appendix, General conditions.</p>	<p><i>Zone indicated by trees marked with pink spray paint, which must be retained.</i></p>	
<p>Will other management actions be carried out? If so, what are they?</p> <p>If the Code requires additional management actions, list them here.</p>	<p><i>Disturbance to understorey trees and shrubs, ground logs, rocks and litter must be minimised.</i></p>	

Best practice tips: Tree marking

- Use tree marking symbols (see the ‘Tree marking checklist’ at the end of the FOP template) to mark buffer zones and exclusion zones for listed species on site.
- You could use this listed species table as a checklist for the site marking that is required – see the Code Appendix General conditions.

Tree marking checklist

Indicate any field markings that will be used to mark trees on site. Add any other markings that will be used if they are not listed here.

FOP sign off

Read this section of the FOP carefully and make sure that all the required signatures and other details are completed before work begins on site. This sign off applies to all new crew members working on site, including truck drivers for example.

OEH 2011/0453

First published 2013; Reprinted with minor amendments June 2016