# Private Native Forestry Code of Practice for Southern NSW

Department of **Environment & Climate Change** NSW

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**Tables and figures**

# Introduction

The object of this Private Native Forestry Code of Practice (the 'Code') is to ensure the supply of timber products from privately owned forests at a regular rate that can be maintained indefinitely for present and future generations while at the same time maintaining non-wood values at or above target levels considered necessary by society for the prevention of environmental harm and the provision of environmental services for the common good.

'Southern NSW' means that part of the state south of the latitude of Sydney: $33^0$ 52' 02.71 S. These Code prescriptions apply to all forests except those forests that meet the definitions of either River Red Gum Forests or Cypress and Western Hardwood Forests.

## Assessment of broadscale clearing for private native forestry

Under the Code, broadscale clearing for the purpose of private native forestry improves or maintains environmental outcomes if:

- it complies with the requirements of this Code
- any area cleared in accordance with the Code is allowed to regenerate and is not subsequently cleared, except where otherwise permitted by this Code.

**Note:** A landowner may seek development consent to undertake private native forestry (PNF) outside the provisions of the Code under the *Native Vegetation Act 2003* (NV Act).

## Minor variation of Code

If, when preparing a Forest Operation Plan under the Code, the projected impact on the net harvestable area is greater than 10%, a landholder can request an accredited expert to examine the Forest Operation Plan and determine if it is appropriate to modify the environmental prescriptions of the Code in a specified manner.

A private native forestry Property Vegetation Plan (PVP) may modify in a specified manner the environmental prescriptions of the Code if an accredited officer is satisfied that:

(1) the variation of the environmental prescriptions is minor

(2) the proposed clearing will improve or maintain environmental outcomes

(3) strict adherence to the Code is in the particular case unreasonable and unnecessary.

# The Code

## 1. Property Vegetation Plans

(1) Before any forestry operations commence on private land, a Property Vegetation Plan (PVP) under the NV Act must be approved by the Minister for Climate Change, Environment and Water.

(2) Forest operations under an approved PVP must be conducted in accordance with all provisions of this Code.

(3) For the purpose of preparing a PVP, the Department of Environment and Climate Change (DECC) will provide available digital information of landscape features (as identified in Table C) and any drainage features (as identified in Table F).

## 2. Forest operation planning and management

### 2.1 Forest Operation Plan

(1) A Forest Operation Plan must be prepared before forest operations commence.

(2) A Forest Operation Plan must be in an approved form and consistent with the provisions of this Code and the requirements of the Listed Species Ecological Prescriptions for Southern NSW Forests, which are set out in the Appendix to this Code.

(3) The landowner and anyone else carrying out forest operations must read, sign and date the Forest Operation Plan.

(4) A copy of the Forest Operation Plan must be available on-site when forest operations are occurring.

(5) A Forest Operation Plan must contain the following:

(a) A map (or maps) showing:

(i) the location and boundaries of the area in which harvesting and/or other forest operations will occur

(ii) recorded locations of any populations or endangered ecological communities listed under the schedules of the *Threatened Species Conservation Act 1995* and species in the Listed Species Ecological Prescriptions for Southern NSW Forests, which are set out in the Appendix to this Code

(iii) the location of landscape features as listed in Table C and drainage features as listed in Table F

(iv) the indicative location of existing and proposed roads and drainage feature crossings

(v) the indicative location of log landings and portable mill sites

(vi) the classification of the forest area into one or more of the broad forest types listed in Table A; and

(b) A written component that provides:

(i) details of ownership of the land

(ii) a description of the broad forest types (including overstorey species composition, disturbance history and current condition of the forest)

(iii) the estimated stand height and basal area for each broad forest type

(iv) details of forest access, including any necessary construction, upgrading or maintenance of forest roads and drainage feature crossings

(v) details of harvesting and/or other proposed forest operations

(vi) details of flora and fauna management actions

(vii) details of tree marking activities (where applicable)

(viii) details of activities to promote regeneration

(ix) details of relevant silvicultural treatments that may be carried out as part of the Forest Operation Plan.

(6) The landowner may amend the Forest Operation Plan at any time, except for matters referred to in clause 2.1(5)(b)(iii). Any amendments to either the map or the written component must be noted on the Forest Operation Plan.

(7) The landowner must retain each Forest Operation Plan, including any amendments, for the life of the PVP or for three years after completion of the harvesting operations for which it was prepared, whichever is the later date.

(8) The landowner must provide the Forest Operation Plan, including any amendments, to an authorised officer from the Department of Environment and Climate Change if requested to do so.

## 2.2 Reporting

(1) The landowner must lodge a report to the Department of Environment and Climate Change by 31 March each year if:

(a) forest operations have been carried out on the land to which the PVP applies in the previous calendar year, or

(b) if in the current calendar year:

(i) it is intended to carry out forest operations in the next 12 months, or

(ii) forest operations have been carried out.

(2) If forest operations have been carried out on the land to which the PVP applies in the previous calendar year, the report must specify:

(a) the approximate volumes of the timber products harvested

(b) the approximate number of hectares on which forest operations occurred

(c) the silvicultural treatments that were applied during that period.

# 3. Silvicultural operations

## 3.1 Single tree selection and thinning

(1) Single tree selection and thinning operations must not reduce stand basal area below the limits specified in Table A.

(2) The **minimum** stand basal areas in Table A must be calculated in accordance with the *Silvicultural Guidelines for the Code of Practice for Private Native Forestry* prepared by Department of Environment and Climate Change and available at www.environment.nsw.gov.au/pnf.

**Table A: Minimum stand basal areas for single tree selection and thinning operations**

| Broad forest type | Stand height (< 25 metres) | Stand height (≥ 25 metres) |
|---|---|---|
| Tablelands hardwood | 12 $m^2$/ha | 16 $m^2$/ha |

| Broad forest type | Stand height (< 25 metres) | Stand height (≥ 25 metres) |
|---|---|---|
| Tablelands ash | 12 $m^2$/ha | 16 $m^2$/ha |
| South coast ash/stringybark | 12 $m^2$/ha | 18 $m^2$/ha |
| Spotted gum | 12 $m^2$/ha | 16 $m^2$/ha |

**Note**: This provision:
- uses stand basal area as a simple tool to determine disturbance thresholds
- establishes harvesting limits to both maintain forest biodiversity values and manage forests while considering appropriate silvicultural practices.

## 3.2 Australian Group Selection

(1) Harvest operations that result in canopy openings must conform with the following requirements:

(a) the sum of canopy openings must at no time exceed 20% of the net harvestable area

(b) the maximum width of a canopy opening must not exceed twice the stand height

(c) the minimum distance between canopy openings must not be less than twice the stand height.

(2) A **canopy opening** is an area greater than 0.1 hectares in size, measured between canopy perimeters, where any vegetation remaining within the opening is less than one-half of the stand height.

**Note:** For the purposes of selecting an appropriate silvicultural management regime, reference should be made to the *Silvicultural Guidelines for the Code of Practice for Private Native Forestry* prepared by Department of Environment and Climate Change and available at www.environment.nsw.gov.au/pnf.

## 3.3 Regeneration and stocking

(1) The minimum stand stocking (as determined by the percentage of stocked plots specified in Table B) must be achieved within 24 months of a regeneration event.

(2) In this clause, **regeneration event** is a harvesting or thinning operation.

(3) A harvesting operation must not occur in a previously harvested area until stocking levels meet the minimum stocked plot requirements in Table B.

(4) The percentage of stocked plots is to be measured in accordance with the method for measuring plots for sampling and measuring stocking found in the Department of Environment and Climate Change's *Private Native Forestry Code of Practice Guideline No. 1: Guidelines for assessing regeneration and stocking*.

(5) A landowner must comply with any requirements of the Director General of DECC for the purpose of regenerating or re-establishing the forest, if the minimum percentage of stocked plots has not been reached within a period of 24 months following a regeneration event.

**Table B: Minimum percentage of stocked plots**

| Broad forest type | Within canopy openings | Elsewhere in the forest |
|---|---|---|
| Tablelands hardwood | 50% | 60% |
| Tablelands ash | 55% | 65% |
| South coast ash/stringybark | 60% | 70% |

| Broad forest type | Within canopy openings | Elsewhere in the forest |
|---|---|---|
| Spotted gum | 60% | 70% |

**Note:** Stocking is a measure of the occurrence and distribution of trees of any age throughout the forest. The simplest way to assess whether a forest is adequately stocked is to sample the level of stocking by measuring a number of plots. Plots will be found to be either stocked or unstocked. The percentage of stocked plots reflects the adequacy of stocking within the forest. Where stocking is found to be inadequate, regeneration will be required to meet the stocking requirements.

# 4. Protection of the environment

## 4.1 Protection of landscape features of environmental and cultural significance

(1) Forest operations in and adjacent to specified landscape features must comply with the requirements in Table C.

(2) Old growth will be identified according to the protocol approved by the Minister for Climate Change, Environment and Water, available at www.environment.nsw.gov.au/pnf.

(3) Rainforest will be identified according to the protocol approved by the Minister for Climate Change, Environment and Water, available at www.environment.nsw.gov.au/pnf.

**Table C: Requirements for protecting landscape features**

| Landscape feature | Operational conditions |
|---|---|
| Endangered ecological communities listed in the *Threatened Species Conservation Act 1995* at the date the private native forestry PVP is approved by the Minister | Forest operations may only occur in endangered ecological communities as part of an approved Ecological Harvesting Plan approved by the Director General of the Department of Environment and Climate Change, except that existing roads may be maintained. |
| Endangered populations listed in the *Threatened Species Conservation Act 1995* at the date the private native forestry PVP is approved by the Minister | Forest operations must not result in any harm to an animal that is part of an endangered population, or result in the picking of any plant that is part of an endangered population, except that existing roads may be maintained. |
| Vulnerable ecological communities listed in the *Threatened Species Conservation Act 1995* at the date the private native forestry PVP is approved by the Minister | Forest operations must not occur in vulnerable ecological communities, except that existing roads may be maintained. |
| Rainforest | Forest operations must not occur within rainforest, except that existing roads may be maintained. |
| Old growth forest | Forest operations must not occur within old growth forest, except that existing roads may be maintained. |
| Wetlands | Forest operations must not occur in any wetland or within 20 metres of any wetland, except that existing roads may be maintained. |
| Heathland | Forest operations must not occur in any heathland or within 20 metres of heathland, except that existing roads may be maintained. |
| Rocky outcrops | Forest operations must not occur on any rocky outcrop or within 20 metres of a rocky outcrop, except that:<br>• existing roads may be maintained<br>• existing snig tracks may be used. |

| Landscape feature | Operational conditions |
|---|---|
| Cliffs, caves, tunnels and disused mineshafts (excluding open pits less than 3 metres deep) | Forest operations must not occur within 10 metres of cliffs, caves, tunnels or disused mineshafts, except that existing roads may be maintained. |
| Steep slopes | Forest operations must not occur on slopes greater than 30 degrees, except that:<br>• existing roads and tracks may be maintained<br>• new roads and tracks may be constructed subject to conditions in clause 5.1(18) of the Code. |
| Aboriginal object or place as defined in the *National Parks and Wildlife Act 1974* | Forest operations must not occur within:<br>• within 50 metres of a known burial site<br>• within 20 metres of an Aboriginal scarred or carved tree<br>• within 10 metres of a known Aboriginal object or place (this requirement does not apply to Aboriginal objects or places that may lawfully be destroyed). |
| Areas containing items identified as heritage items in an environmental planning instrument | Forest operations must not occur within 10 metres of a listed heritage site. |
| Areas of existing mass movement | Harvesting operations which create canopy openings must not occur within the area.<br>Harvesting machinery must not enter the area.<br>Existing roads may be maintained.<br>New roads must not be constructed. |
| Dispersible and highly erodible soils | Existing roads may be maintained.<br>Drainage feature crossings must be armoured with erosion-resistant material.<br>Road batters and table drains must be stabilised using erosion-resistant material, vegetation or slash.<br>Log landings must be stabilised using erosion-resistant material, vegetation or slash at the completion of forestry operations.<br>Measures must be taken to immediately stabilise any erosion of roads or snig tracks |

## 4.2 Protection of habitat and biodiversity

(1) Habitat trees must be retained in accordance with Table D.

(2) Hollow bearing trees, recruitment trees, food resource trees, roost trees and nest trees are defined as habitat trees retained for the purposes of this Code.

(3) An individual tree may satisfy more than one condition in the tree retention standards (see Table D), if it has the appropriate characteristics.

(4) Retained habitat trees should, where possible, represent the range of species in mature and late mature growth stages.

(5) Habitat trees should, where possible, be evenly distributed throughout the area of harvesting operations and within the net logging area. Preference shall be given to trees with well developed spreading crowns and minimal butt damage.

(6) For the purpose of this clause:

(a) A **hollow bearing tree** is a dominant or co-dominant living tree, where the trunk or limbs contain hollows, holes or cavities. Such hollows may not always be visible from the ground but may be apparent from the presence of deformities such as protuberances or broken limbs, or places where the head of the tree has broken off. If there are more than the minimum required number of habitat trees, preference shall be given to the largest. Trees that pose a health or safety risk

may be removed and, where possible, substituted with other hollow bearing trees, and if not possible, by recruitment trees.

(b) **Dead standing** trees cannot be counted as hollow bearing trees.

(c) A **feed tree** is a tree that provides a source of nectar or other food for wildlife and is listed in Table E.

(d) A **recruitment tree** is a large vigorous tree capable of developing hollows to provide habitat for wildlife. Preference must be given to trees from the next cohort to that of retained hollow bearing trees.

(e) **Roost, nest and food resource trees** are defined as:

(i) trees with nests or roosts of any species of raptor, including powerful owls, barking owls, sooty owls and masked owls

(ii) trees which support maternity bat roosts

(iii) trees with recent V-notch incisions or other incisions made by a yellow-bellied glider or squirrel glider. Recent incisions are incisions less than two years old as evidenced by the fact the incision has not closed.

**Table D: Minimum standards for tree retention**

| Trees that must be retained |
|---|
| • 10 hollow bearing trees per 2 hectares, where available.<br>• One recruitment tree from the next cohort and representing the range of species in the forest before forest operations commenced must be retained for every hollow bearing tree.<br>• Where the total number of hollow bearing trees is less than 10 trees per 2 hectares, additional recruitment trees must be retained to bring the total number of retained hollow bearing and recruitment trees up to 20 trees per 2 hectares.<br>• Up to half of all required recruitment trees can be located in a riparian buffer zone where the subject 2-hectare area is within 200 metres of, and partly includes, that riparian buffer zone.<br>• A minimum of 6 feed trees per 2 hectares should be retained where available.<br>• All feed trees that have marks or 'V' notches from sap-feeding mammals must be retained.<br>• All roost, nest or food resource trees must be retained. |

**Table E: Feed trees**

| | |
|---|---|
| Ironbark – *Eucalyptus tricarpa* | Swamp mahogany – *E. robusta* |
| Grey ironbark – E. *paniculata* | Yellow stringybark – *E. muelleriana* |
| River peppermint – *E. elata* | Black sallee – *E. stellulata* |
| Mountain grey gum – *E. cypellocarpa* | Swamp gum – *E. ovata* |
| Maiden's gum – *E. maidenii* | Red bloodwood – *Corymbia gummifera* |
| Forest red gum - *E. tereticornis* | Spotted gum – *C. maculata* |
| Mountain gum – *E. dalrympleana* | Blue-leaved stringybark – *E. agglomerata* |
| Manna gum – *E.viminalis* | Red stringybark – *E. macrorhyncha* |
| Snow gum – *E. pauciflora* | Alpine ash – *E. delegatensis* |
| White stringybark – *E. globoidea* | Eurabbie – *E. bicostata* |

## 4.3 Minimising damage to retained trees and native vegetation

(1) As far as practicable, forestry operations must not damage protected trees.

(2) Without detracting from subclause (1):

(a) debris must not be heaped around protected trees

(b) machinery operations must not harm protected trees

(c) directional felling techniques must be employed to avoid (as far as is practicable) damage to protected trees.

(3) In this clause **protected trees** are defined as:

(a) trees required to be retained under clause 4.2

(b) plants of the genus *Xanthorrhoea* (grass trees), genus *Allocasuarina* (forest oak) (except bull oak (*Allocasuarina luehmannii*)), and genus *Banksia*

(c) other trees that are required to be retained by this Code.

## 4.4 Drainage feature protection

(1) Forest operations must not occur in riparian exclusion zones, other than in accordance with this clause, and except where otherwise allowed by this Code. For the purpose of this clause, riparian exclusion zones are defined as those areas within the distances specified for 'Drainage feature' as listed in Table F.

**Table F: Riparian exclusion and riparian buffer zones**

| Drainage feature | Riparian exclusion zone distance from drainage feature | Riparian buffer zone distance beyond riparian exclusion zone |
|---|---|---|
| Mapped first-order streams | 5 metres | 10 metres |
| Mapped second-order streams | 5 metres | 20 metres |
| Mapped third-order or higher streams | 5 metres | 30 metres |
| Prescribed Streams | 20 metres | 15 metres |

For an explanation of stream order, see Figure 2 in the Appendix to this Code.

(2) Riparian buffer zones extend from the boundary of the riparian exclusion zone outwards away from the drainage feature for the distance specified in Table F. Limited forest operations may occur within riparian buffer zones subject to the following limitations:

(a) snig track construction is limited to the construction of one ridge line or spur snig track per ridge or spur

(b) machinery, using walkover techniques, may extract logs from any area within a riparian buffer zone

(c) all rainforest species and all hollow bearing trees are retained

(d) only 30% of the pre-harvest basal area can be removed in any ten-year period and the minimum basal area limit for the broad forest type set out in Table A is maintained within the riparian buffer zone

(e) felling is directed away from the drainage line/riparian exclusion zone

(f) any furrows resulting from log removal are treated to prevent concentration of water flow

(g) clearing and disturbance within the riparian buffer zone is minimised.

(3) For the purposes of Table F, stream order is determined according to the Strahler System, using the largest scale topographic map available for that area and as published by the NSW Government. See Figure 2 in the Appendix for more information.

(4) The distance specified in Table F must be measured from the top edge of each bank and away from the incised channel or, where there is no defined bank, from the edge of the channel of each specified drainage feature.

(5) Where harvesting is occurring adjacent to riparian buffer zones, all tree felling should employ directional felling to minimise as far as practicable disturbance to vegetation within the riparian buffer zone.

(6) Where a tree cannot be felled into the area outside the riparian buffer zone using directional felling, it may be felled into the riparian buffer zone provided that not more than 6 trees within any distance of 200 metres along the boundary of the riparian buffer zone enter the riparian buffer zone.

(7) Where a tree is felled into the riparian buffer zone, the crown must not be removed from the riparian buffer zone.

(8) Machinery exclusion zones must be applied to all unmapped drainage lines. For the purposes of this clause, machinery exclusion zones are areas within 10 metres of, the top edge of the bank of any unmapped drainage line.

(9) Machinery using walkover techniques may operate in machinery exclusion zones. All other machinery must not enter machinery exclusion zones unless otherwise allowed by this Code.

(10) Trees may be felled within machinery exclusion zones provided:

(a) felling is directed away from the drainage line

(b) any furrows resulting from log removal are treated to prevent concentration of water flow

(c) groundcover (including grasses, herbs and forest litter) is retained or artificially reinstated, similar to the surrounding area.

(11) Harvesting machinery must not enter riparian exclusion zones, riparian buffer zones, or machinery exclusion zones other than in accordance with this clause and clauses 4.4(2), 4.4(9) and 5.

(12) New roads may be constructed and old roads re-opened within riparian exclusion zones, riparian buffer zones and machinery exclusion zones provided that:

(a) the road is identified on the Forest Operation Plan

(b) the road prism crosses the riparian zones at right angles or as close to right angles as is practicable

(c) clearing and disturbance within the exclusion zone is minimised

(d) any other necessary permits have been obtained.

(13) If trees are accidentally felled into riparian exclusion zones, they may be removed from those zones if they contain a saleable log, provided that the crown is cut off the log at the boundary of the riparian exclusion zone and left where it has fallen, and that the log is recovered without any machinery operation on the ground within the riparian exclusion zone. Such removal must result in minimal disturbance to the bed and banks of the drainage feature.

(14) Trees may be felled within unmapped drainage depressions, and machinery may enter unmapped drainage depressions. However disturbance must be minimised by:

(a) using walkover techniques wherever possible

(b) preventing skewing of machinery tracks as much as possible

(c) operating with the blade up at all times (except during crossing construction)

(d) not snigging along drainage depressions.

(15) Machinery must not operate in drainage depressions when the soil is saturated.

(16) Australian Group Selection logging system must not be used within:

(a) any riparian exclusion zone

(b) any riparian buffer zone

(c) any machinery exclusion zone.

# 5. Construction and maintenance of forest infrastructure

## 5.1 Construction and maintenance of roads

(1) Clearing of native vegetation for the purpose of roads, drainage structures, log landings, mill sites, snig tracks or extraction tracks must not occur except in accordance with this Code, and the clearing must be limited to the minimum extent necessary.

(2) Construction of new roads and drainage feature crossings should be minimised as far as practicable, consistent with the requirements for management, harvesting and fire control in the Property Vegetation Plan area.

(3) As far as practicable, roads must be located on ridgetops or just off the crest of the ridge to facilitate outfall drainage.

(4) Clearing for road construction must be to the minimum extent necessary and should not be more than 3 metres from the outside edges of batters or table drains. If it is necessary to clear a wider area, a minimum of 70% groundcover must be established on all the cleared area beyond the road formation within one month of the date of construction.

(5) Trees and other debris must not be stacked in landscape features referred to in Table C or riparian exclusion zones or riparian buffer zones referred to in Table F.

(6) Any fill batter must be stabilised.

(7) Tree stumps or other woody debris must not be used to provide fill for road construction.

(8) New roads must be constructed, upgraded and maintained with a maximum grade of 10 degrees. The maximum grade may be increased to 15 degrees where it would result in an improved environmental outcome or to avoid difficult ground conditions. The Forest Operation Plan must be noted.

(9) Roads must be maintained according to Table G.

(10) Roads must be maintained to ensure that road surfaces remain stable and drainage systems and sediment controls remain functional.

(11) Soil exposure on road verges must be kept to a minimum.

(12) Roads that are not required for ongoing property management must be stabilised, drained and allowed to revegetate.

(13) Haulage must not be undertaken over any section of road where the surface has broken down, as evidenced by rutting greater than 150 millimetres deep for any distance exceeding 20 metres.

(14) Haulage on natural surface roads must cease when there is runoff from the road surface, except for trucks that have already been loaded or partially loaded. These trucks can travel to their intended destination.

(15) Where existing roads are overgrown and require re-opening, the clearing width must be minimised to the extent required to make the road trafficable.

(16) As far as practicable, grass cover must be maintained, and disturbance to existing drainage structures must be minimised.

(17) Blading-off of roads must not occur.

(18) Sections of new roads may be constructed on ground slopes exceeding 25 degrees only if:

(a) there is no practical alternate route available, and

(b) the sections are designed by a suitably qualified person using currently acceptable engineering standards to ensure stability.

**Table G: Maximum distance that water may travel along road surfaces and table drains**

| Road grade (degrees) | Maximum distance (metres) |
|---|---|
| 0 to ≤ 3 | 150 |
| > 3 to ≤ 5 | 100 |
| > 5 to ≤ 10 | 60 |
| > 10 to ≤ 15 | 40 |
| > 15 to ≤ 20 | 30 |

### 5.1.1 Road drainage

(1) All reasonable steps must be taken to minimise soil erosion from roads. Accordingly, at least one of the following measures must be adopted, as appropriate in the circumstances:

(a) maintain vegetative cover (that is, plant material, living or dead) that protects the soil surface from erosion

(b) establish a grass cover using a sterile seed or native grass seed, where available

(c) crossfall-drain the road or track with outfall or infall drainage (preferably with the outward or inward slope being between 4% and 6%), or by shaping the road to a crown so water drains to both of its sides

(d) construct drainage structures to convey water away from the road formation (for example, cross drains, mitre drains or relief culverts).

(2) Any drainage structure must be designed to convey the peak flow from a 1-in-5-year storm event.

(3) Drainage structures must be established on a road if concentrated water flow on the road surface or table drains is likely to occur for distances exceeding the relevant spacing, as shown in Table G.

(4) Earth windrows resulting from road construction and upgrading operations must be removed from the shoulders of all roads unless they are specifically constructed to prevent erosion of fill batters or where infall drainage is used.

(5) Earth windrows from road maintenance must be cut through at regular intervals to ensure that water flow on road surfaces does not exceed the distances specified in Table G.

(6) Rollover banks must have a minimum effective bank height of 15 centimetres (consolidated). Spoon drains must have a minimum effective depth of 15 centimetres.

(7) Drainage structures must divert water onto a stable surface and must be kept free of debris that may impede flow of water.

(8) A drop-down structure and dissipater must be installed where drains divert water over an exposed fill batter more than 1 metre high.

### 5.1.2 Roads crossing drainage features

(1) Drainage feature crossings must be stable causeways, culverts or bridges. Existing gully stuffers may be used if they are stable, but new crossings of these types must not be constructed.

(2) Crossings must be designed, constructed and maintained to minimise disturbance to the passage of fish and other aquatic fauna. They must be located and constructed to cause minimum disturbance to stream banks, stream beds and natural flows. The base of the crossing must be made of erosion-resistant material such as rock, concrete or heavy timber and must conform to the natural level of the stream bed.

(3) Crossings must be constructed as close as practicable to right angles to the water flow unless an angled approach reduces soil and ground disturbance.

(4) Disturbance to the bed and banks of the drainage feature during crossing construction or maintenance must be minimised. Disturbed areas must be reshaped and stabilised as soon as possible following crossing construction or maintenance.

(5) Any approaches to a crossing over a drainage line must be drained, using a drainage structure, within 5 to 30 metres of the crossing. (Where this is impracticable, a drainage structure must be constructed as near as practicable to the crossing.)

(6) Permanent drainage crossing structures must be designed to convey a 1-in-5-year storm event and withstand a 1-in-10-year storm event. Bridges must be designed and constructed so the natural stream flow is not restricted and erosion is minimised.

(7) The surface of any crossing and the approaches on both sides of it must be made of stable material that is unlikely to be displaced during normal use of the crossing or approach or by any flood up to and including peak flow of a 1-in-10-year storm event.

(8) 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.

(9) Construction equipment must minimise disturbance or damage to the watercourse bed and banks. Fill and construction material must not be placed into watercourses, and surplus fill must be located outside the drainage feature exclusion zone. Stream banks and bridge embankments must be protected to minimise erosion.

(10) Soil stabilisation must be undertaken in all areas disturbed by crossing construction, upgrading or maintenance.

## 5.2 Log landings, portable mill sites and snig tracks

(1) Wherever practicable, log landings and portable mill sites must be located on ridge-tops or spurs.

(2) Log landings and portable mill sites must be no larger than the minimum size necessary for efficient operations.

(3) If topsoil is removed, it must be stockpiled and respread at completion of harvesting operations.

(4) Log landings and portable mill sites must be located and constructed as far as practicable to allow effective crossfall drainage during harvesting operations.

(5) Log landings and portable mill sites must not be located nearer than 10 metres to an exclusion zone or riparian buffer zone.

(6) Runoff from log landings and portable mill sites must not be directly discharged into a drainage feature.

(7) Vegetation and debris from log landings and portable mill sites must not be deposited in an exclusion zone or riparian buffer zone.

(8) Woody waste and debris on log landings and portable mill sites must not be stacked against retained trees.

(9) Bark accumulated on log landings, and sawdust on mill sites, must be progressively dispersed away from the site during harvesting operations to prevent significant accumulations.

(10) On completion of operations, log landings and portable mill sites must be drained and reshaped to safely disperse runoff onto surrounding vegetation, and topsoil must be respread evenly over the landing.

### 5.2.1 Snig tracks and extraction tracks

(1) Snig track or extraction track construction must be minimised and, as far as practicable, walkover extraction must be used and slash retained on snig and extraction tracks.

(2) Soil disturbance and exposure on snig and extraction tracks must be minimised.

(3) As far as practicable, snig tracks from previous operations must be used.

(4) Old snig tracks or extraction tracks must not be used if they are incised and cannot be drained.

(5) In re-opening old snig tracks and extraction tracks, the use of blades should be restricted to the removal of obstructions such as understorey vegetation, logs/tree heads and surface rock, and ensuring that the track is adequately drained.

(6) Wherever practicable, snigging and timber extraction must be uphill.

(7) Snig tracks and extraction tracks must be located where they can be drained effectively, and should be located where there is sufficient natural crossfall to remove runoff from the track surface.

(8) Snig tracks and extraction tracks must not encroach on exclusion zones or riparian buffer zones except designated crossings and where permitted by clause 4.4(2).

(9) Blading-off of snig tracks and extraction tracks must not occur.

(10) The grade of snig tracks must not exceed 25 degrees, except in the following circumstances:

(a) It will result in a better environmental outcome than construction and/or use of a side cut snig track to access the same area using a snig track of less than 25 degrees.

(b) The Forest Operation Plan is noted.

(c) The snig track can be effectively drained.

(d) Maximum grade is 28 degrees.

(e) The maximum combined length of the snig track exceeding 25 degrees, commencing from the serviced log landing, is not greater than 75 metres.

(11) Where downhill snigging is necessary, snig tracks and extraction tracks must enter the log landing from beside or below. Where this is not possible, a drainage structure must be installed at the entrance to the log landing at the end of each day's operations.

(12) Drainage must be incorporated as soon as practicable at the completion of operations on each extraction track or snig track, and in any event within two days, unless the soil is saturated.

(13) Temporary drainage must be installed on any snig or extraction track that will not be used for a period of five days or more.

(14) Track drainage structures must be located, constructed and maintained to divert water onto a stable surface which can handle concentrated water flow, and which provides for efficient sediment trapping.

(15) Snig tracks and extraction tracks must be located and constructed to ensure that water running along the track surface does not flow for longer than the distances specified in Table H. This could be achieved by one of the following techniques or a combination:

(a) retain the existing groundcover using walkover techniques

(b) retain or cover the track surface with slash and harvesting debris

(c) construct outfall drainage or maintain the track's outfall drainage

(d) construct track drainage structures.

**Table H: Maximum distance that water may run along snig and extraction tracks**

| Track grade (degrees) | Maximum distance (metres) |
|---|---|
| 0 to ≤ 5 | 100 |
| > 5 to ≤ 10 | 60 |

| Track grade (degrees) | Maximum distance (metres) |
|---|---|
| > 10 to ≤ 15 | 40 |
| > 16 to ≤ 20 | 25 |
| > 20 to ≤ 25 | 20 |
| > 25 to ≤ 28 | 15 |

(16) Upon completion of operations, the following measures must be implemented:

(a) where practicable, snig tracks and extraction tracks must be reshaped, all earth windrows, wheel ruts, and log furrows removed, and recoverable topsoil spread back over the track

(b) crossfall drainage must be reinstated on snig tracks or, where this is not sufficient to divert runoff from the track, crossbanks must be installed consistent with the spacings in Table H.

(17) Crossbanks must be constructed to have a minimum effective height of 35 centimetres unconsolidated, or 25 centimetres consolidated, and as a guide should not be greater than 50 centimetres in height.

(18) Crossbanks must not be constructed of bark or woody debris.

### 5.2.2 Snig track and extraction track crossings on drainage features

(1) The location of log landings and snig/extraction tracks must be planned to minimise the number of crossings required.

(2) Snig track and extraction track crossings must be stable causeways (including natural surface causeways), culverts or bridges. Existing gully stuffers may only be used if they are stable. New crossings of this type must not be constructed.

(3) Machinery must not cross a drainage feature which is running water or when the soil is saturated, unless by means of a stable crossing.

(4) Approaches to crossings must be as close as possible to right angles to the flow of water.

(5) A crossbank must be installed on each approach, between 5 and 20 metres from the drainage feature crossing. The distance must be measured from the top of the bank of the incised channel or, where there is no defined bank, from the edge of the channel or centre of the depression. The drainage structure must divert water onto a stable surface. If such a surface is not available, sediment control measures must be used to prevent sediment entering the drainage feature.

(6) Disturbance to the bed and banks of the drainage feature must be minimised, and any spoil must be removed from the drainage feature.

(7) All areas disturbed during crossing construction and use, including approaches, must be rehabilitated following completion of use. Rehabilitation includes the reshaping of the crossing to conform as closely as possible to the original ground surface. If groundcover is not likely to recover naturally, sowing with a suitable sterile seed or endemic native seed/fertiliser mix must be undertaken to establish effective groundcover.

### 5.2.3 Wet weather limitations for snigging, log landing and portable mill operations

(1) Harvesting operations must not occur when:

(a) there is runoff from the snig track surface, or

(b) soils are saturated, or

(c) soil is rutted to a depth of more than 200 millimetres below the track surface over a 20-metre section or longer.

(2) Forwarders, excavators and truck-mounted loaders may be used as stationary loaders when there is runoff from the log landing.

(3) All other machinery on the log landing must remain stationary when there is runoff from the log landing surface, unless the log landing is constructed of gravel or other stable material.

# Appendix:
# Listed species ecological prescriptions

## Introduction

These prescriptions must be applied within the forest operations area where there is a **known record** or **site evidence** of a threatened species. A known record is a sighting or record of the species in the NSW Wildlife Atlas available at www.wildlifeatlas.nationalparks.nsw.gov.au. Site evidence is a sign a species has visited or regularly uses a site, and includes observations of, for example, faecal pellets or scats, chewed seed cones or a nest, or evidence that the site has been used as a latrine.

A list of threatened species under the *Threatened Species Conservation Act 1995* and species profiles for each species can be viewed on the Department of Environment and Climate Change (DECC) website at www.threatenedspecies.environment.nsw.gov.au.

The prescriptions set out below assist in the protection of threatened species, and include:

(1) additional widths to stream exclusion zones

(2) exclusion zones around locations of threatened species records

(3) additional tree retention requirements around locations of threatened species records.

Exclusion zones and buffer zones requiring additional tree retention requirements must be applied within the Property Vegetation Plan (PVP) area subject to the Forest Operation Plan.

Wildlife Atlas records that trigger these prescriptions are those less than 20 years old which have a reliability level of 1 to 5. Records in an adjoining protected area of public land (for example, in State Forests or National Parks) can be ignored if it can be demonstrated that the species has been protected and the conditions of the relevant Threatened Species Licence or Integrated Forestry Operation Agreement have been met.

Some species prescriptions vary according to the region in which they occur. Unless otherwise stated, the regions referred to in the prescriptions are based on the catchments administered by Catchment Management Authorities (CMAs) shown in Figure 1.

## General conditions

For all threatened species prescriptions, the following applies:

- Where a retained eucalypt tree (as required by these prescriptions) also meets the requirements of a habitat tree, the eucalypt tree may be counted as a habitat tree.
- Where other exclusion zones form part of the habitat area required for threatened species prescriptions, the exclusion zones may count towards the area of habitat required to be retained.
- Buffer and exclusion zones are to be marked in the field where they adjoin the area, subject to forest operations. This marking has to be visible while forestry operations are occurring.

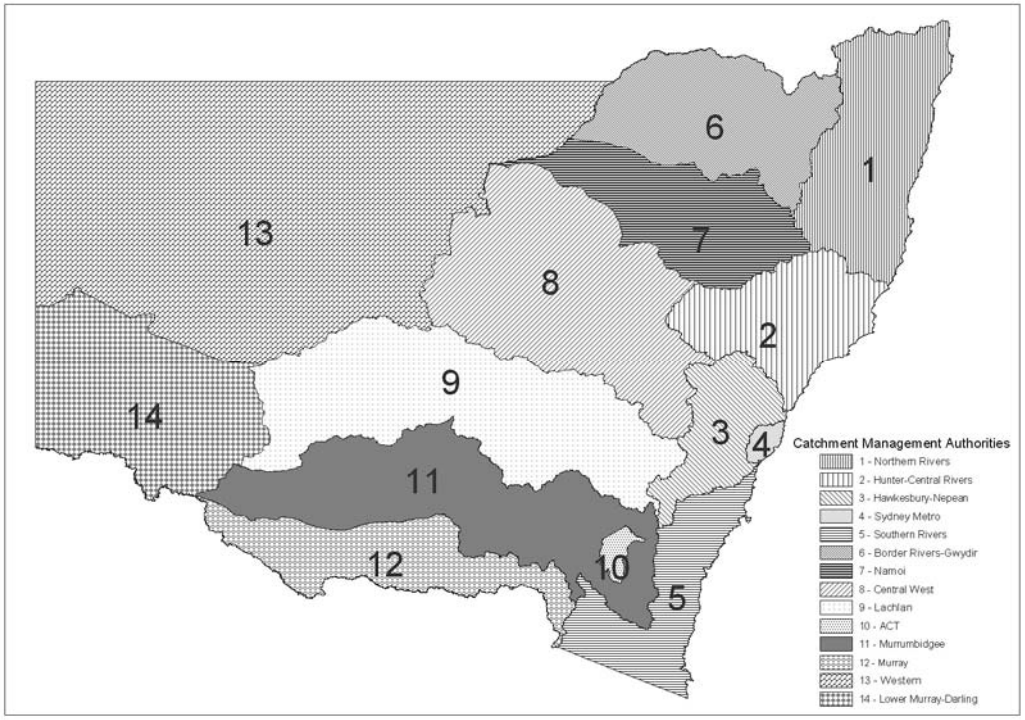


**Figure 1 – Catchment Management Authority (CMA) areas where prescriptions for some threatened species may vary**

Further information about individual threatened species may be sourced from DECC. The DECC website provides species profiles and additional information. Visit www.environment.nsw.gov.au and www.threatenedspecies.environment.nsw.gov.au.

# Amphibians

## Green and golden bell frog (*Litoria aurea*)

**CMAs for application of prescription**
Central West, Murrumbidgee, Southern Rivers and Sydney Metro

**Prescription**

(a) Where there is a record of a green and golden bell frog in an area of forest operations or within 50 metres of the boundary of the area of forest operations, an exclusion zone with at least a 50-metre radius must be implemented around the location of the record.

(b) In addition, where the record is associated with a wetland or dam, a 20-metre-wide exclusion zone must be implemented around the wetland or dam.

(c) The exclusion zone around wetlands must be measured from the edge of the current saturated area, or from the outer edge of where the vegetation type indicates a wetter micro-environment than the surrounding country, whichever is larger.

(d) The exclusion zone around dams must be measured from the top water level.

**Additional information**
***Distribution***: The frog occurs from Byron Bay along the east coast of NSW, to the Australian Capital Territory, and into east Gippsland, Victoria. Records often occur within 20–30 kilometres of the coast but may also occur west of this area.

***Macrohabitat*:** The frog is found in shallow, still or slow-moving water (both ephemeral and permanent) with a sand substrate and emergent vegetation, especially bullrushes. It is often found in locations with a sunny aspect.
***Microhabitat*:** The frog shelters under ground debris. It basks during daytime on emergent vegetation or near the edge of water and is also active at night.

## Giant burrowing frog (*Heleioporous australiacus*)

**CMAs for application of prescription**
Southern Rivers

**Prescription**
Where there is a record of a giant burrowing frog in an area of forest operations or within 300 metres of the boundary of the area of forest operations, the following must apply:

(a) An exclusion zone with a 300-metre radius must be identified, centred on the location of the record.

(b) No post-harvest burns must occur in the exclusion zone.

**Additional information**
The giant burrowing frog occurs from the NSW Central Coast to eastern Victoria, but is most common in Sydney sandstone environments. It has been found from the coast to the Great Dividing Range. It lives in heath, woodland and open forest with sandy soils, and will travel several hundred metres to creeks to breed.

## Stuttering frog (*Mixophyes balbus*)

**CMAs for application of prescription**
Hawkesbury–Nepean and Southern Rivers

**Prescription**
Where there is a record of a stuttering frog in an area of forest operations or within 200 metres outside the boundary of the area of forest operations, the following must apply:

a. A 30-metre wide exclusion zone must be implemented on both sides of all streams (including Prescribed Streams, first-, second- and third-order and above streams – see Figure 2) in the forest operations area, within 200 metres of the location of the record.

b. The width of the exclusion zone must be measured from the top of the bank of the incised channel or, where there is no defined bank, from the edge of the channel.

**Additional information**
**Habitat**: Forest communities ranging from heaths (tea-tree) in dry upland forests to closed forests, including wet sclerophyll forest and rainforest.

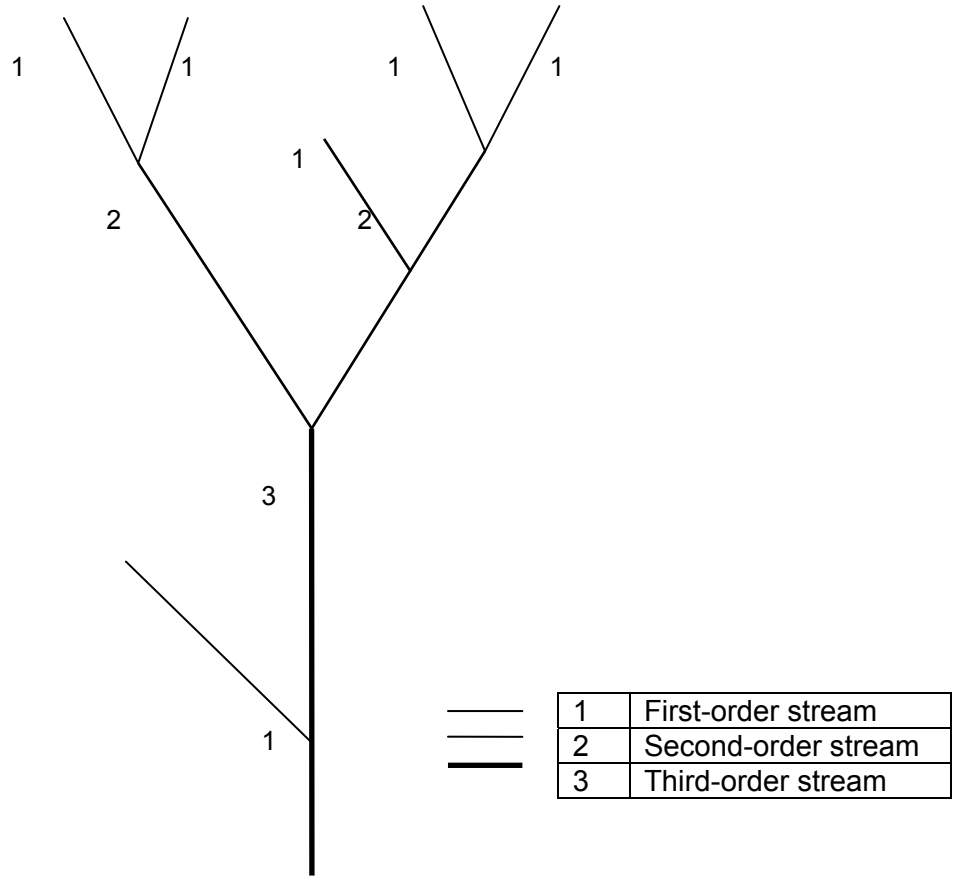


**Figure 2: Schematic diagram of stream order** (after Strahler, AN 1964, 'Quantitative geomorphology of drainage basins and channel networks' in Chow, VT (ed.), *Handbook of applied Hydrology*, New York, McGraw-Hill, section 4-11)

## Northern corroboree frog (*Pseudophryne pengilley*)

### CMAs for application of prescription

Murrumbidgee, Murray (East of Tumbarumba and north of Khancoban) and Southern Rivers (north of Eucumbene). For information on the more specific area of distribution, refer to Figure 3.

#### Prescription

a. A 30-metre exclusion zone must be established around all bogs, soaks and seepages. The exclusion zone must be measured from the outer edge of the bog, soak or seepage. Where the bog, soak or seepage is fringed by tea-tree, the exclusion zone must be measured from the outer edge of the tea-tree.

b. All bogs, soaks and seepages that are protected by this prescription must be clearly recorded on the Forest Operation Plan map.

c. The width of exclusion areas must be measured from greatest extent of the bog, soak or seepage.

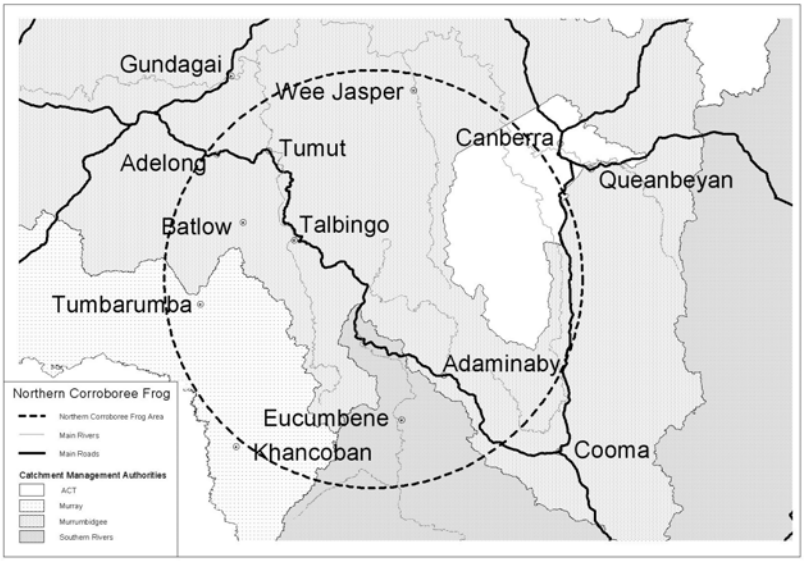


**Figure 3: Area of application of northern corroboree frog prescription**

# Mammals

## Brush-tailed phascogale (*Phascogale tapoatafa*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers
**Prescription**
Where there is a brush-tailed phascogale record within the area of forest operations, the following must apply:

(a) A buffer zone with a 500-metre radius (about 78 hectares) must be identified, centred on the location of the record.

(b) Within this buffer zone, the following additional prescriptions must be implemented:

- (i) A minimum of 15 trees per 2 hectares with visible hollows must be retained where available.
- (ii) A recruitment tree must be retained for each hollow bearing tree retained. Where the total number of hollow bearing trees and recruitment trees is less than 30 trees per 2 hectares, additional recruitment trees must be retained to bring the number up to 30 trees per 2 hectares.
- (iii) Disturbance to understorey trees and shrubs, ground logs, rocks and litter must be minimised.
- (iv) Trees to be retained as above should be late-mature, over-mature or senescent rough-barked trees where available.

(c) Where there are records of den or roost sites, these must be contained within the buffer zones and these trees be protected.

**Additional information**
Potential brush-tailed phascogale habitat is dry sclerophyll open forest or woodland with a generally open understorey, preferably containing large trees with rough bark and hollows to provide optimal foraging and denning habitat.

## Eastern pygmy-possum (*Cercartetus nanus*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers

**Prescription**
Where there is an eastern pygmy-possum record within the area of forest operations, the following must apply:

(a) An exclusion zone with a 50-metre radius (about 0.8 hectares) must be identified, centred on the location of the record, with no forest operations or removal of understorey plants permitted.

(b) Within a 100-metre radius (about 3.5 hectares) of the exclusion zone, a buffer zone must be identified within which the following additional prescriptions must be implemented:

  (i) Only single-tree selection and thinning operations can occur (i.e. no canopy openings).

  (ii) No post-harvest burning is permitted.

  (iii) A minimum of 26 trees with visible hollows must be retained where available.

  (iv) Disturbance to understorey trees and shrubs (particularly banksias, bottlebrush and acacias), ground logs, rocks and litter must be minimised.

**Additional information**
Potential eastern pygmy-possum habitat is found in a broad range of habitats including rainforest, sclerophyll (including box–ironbark) forest, woodland and heath. In most areas, woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest.

## Spotted-tailed quoll (*Dasyurus maculatus*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers

**Prescription**
Where there is a record of a spotted-tailed quoll den site, maternal den or latrine site within the area of forest operations, the following must apply:

(a) An exclusion zone with a 200-metre radius (about 12.5 hectares), centred on the location of the record, must be implemented around a spotted-tailed quoll maternal den site or latrine site. This exclusion area must be linked to riparian exclusion zones or riparian buffer zones where practicable.

(b) An exclusion zone with a 100-metre radius (about 3.5 hectares), centred on the location of the record, must be implemented around spotted-tailed quoll permanent den sites. This exclusion zone must be linked to riparian exclusion zones or riparian buffer zones where practicable.

(c) Areas of riparian exclusion and protection zone must not be counted towards exclusion zones for the spotted-tailed quoll.

## Squirrel glider (*Petaurus norfolcensis*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers

**Prescription**
Where there is a squirrel glider record in an area of forest operations or within 125 metres of the boundary of the area of forest operations (unless specified otherwise in this condition), the following must apply:

(a) A buffer zone with a 250-metre radius (about 20 hectares) must be identified, centred on the location of the record or records.

(b) Within this buffer zone, the following additional prescriptions must be implemented:

(i) A minimum of 15 trees per 2 hectares with visible hollows must be retained where available.

(ii) A recruitment tree must be retained for each hollow bearing tree retained. Where the total number of hollow bearing trees and recruitment trees is less than 30 trees per 2 hectares, additional recruitment trees must be retained to bring the number up to 30 trees per 2 hectares.

(iii) Disturbance to understorey trees and shrubs (particularly banksias and acacias), ground logs, rocks and litter must be minimised.

(c) Where there are records of dens or roosts, these must be contained within buffer zones encompassing suitable habitat.

(d) Where there are more than two squirrel glider records closer than 250 metres apart within the forest operation area, advice on the location of the buffer area must be sought from DECC before commencing forest operations.

**Additional information**
Squirrel glider habitat is generally dry eucalypt forest and woodland. In coastal areas, potential habitat is blackbutt, bloodwood and ironbark forest with a heathy understorey. In the absence of these forest types, areas of mature or old growth forest must be retained.

## Southern brown bandicoot (eastern) (*Isoodon obesulus*)

**CMAs for application of prescription**
Hawkesbury–Nepean and Southern Rivers

**Prescription**
Where there is a southern brown bandicoot (eastern) record, the following must apply:

a. A 200-metre-radius exclusion zone (about 12.5 hectares) must be identified, centred on the record.

b. Within this exclusion zone, the following additional prescriptions must be implemented:
(i) No forest operations, or removal of understorey plants or groundcover, are permitted.
(ii) No post-harvesting burning is permitted.
(iii) Disturbance to understorey trees and shrubs, ground logs, and rocks and litter must be minimised.

**Additional information**
Potential habitat for the southern brown bandicoot is generally heath or open forest with a heathy understorey on sandy or friable soils. Bandicoots eat various ground-dwelling invertebrates and the fruit-bodies of hypogeous (underground-fruiting) fungi. Their searches for food often create distinctive conical holes in the soil.

## Yellow-bellied glider (*Petaurus australis*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee, Namoi and Southern Rivers

**Prescription**

(a) An exclusion zone with a 50-metre radius must be implemented around trees used as dens by yellow-bellied gliders (trees with moderate to large hollows).

(b) All yellow-bellied glider sap feed trees must be retained and marked for retention. A sap feed tree is a tree with recent V-notch incisions or other incisions made by a yellow-bellied glider. Recent incisions are incisions less than two years old as proven by the incision not having closed.

(c) Within a 100-metre radius of each retained yellow-bellied glider sap feed tree, observation or den site record, 15 feed trees must be retained (not counting existing yellow-bellied glider sap feed trees). The 15 retained feed trees must have good crown development and should have minimal butt damage and should not be suppressed. Mature and late mature trees must be retained as feed trees where these are available.

(d) The feed trees retained as above must be of the same species as the identified sap feed tree or identified den tree, or should be trees that shed their bark in long strips, e.g. species from blue, flooded, grey, red and white gum groups.

(e) The retained feed trees must be marked for retention.

**Additional information**
Yellow-bellied gliders occur in tall mature eucalypt forest, generally in areas with high rainfall and nutrient-rich soils. Forest type preferences vary with latitude and elevation: mixed coastal forests to dry escarpment forests in the north, and moist coastal gullies and creek flats to tall montane forests in the south. The gliders feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. They extract sap by incising or biting into the trunks and branches of favoured food trees, often leaving a distinctive 'V'-shaped scar.

## Long-footed potoroo (*Potorous longipes*)

**CMAs for application of prescription**
Southern Rivers

**Prescription**
Where there is a long-footed potoroo record in an area of forest operations, the following must apply:

a. A 200-metre-radius exclusion zone (about a 12.5 hectares) must be identified, centred on the record.

b. Within this exclusion zone, the following prescriptions must be implemented:

   (i) No forest operations, or removal of understorey plants or groundcover, are permitted.

   (ii) No post-harvest burning is permitted.

   (iii) Disturbance to ground logs, rocks and litter must be minimised.

**Additional information**
Potential habitat for the long-footed potoroo includes moist forests from montane wet sclerophyll forests over 1000 metres in altitude to lowland forests at 150 metres in altitude. Moist soil throughout the year is an essential component of habitat, allowing the potoroo's primary food source, the fruit-bodies of hypogeous (underground fruiting) fungi, to persist.

## Long-nosed potoroo (*Potorous tridactylus*)

**CMAs for application of prescription**
Southern Rivers

**Prescription**
Where there is a record of a long-nosed potoroo in an area of forest operations, the following must apply:

(a) Forestry operations must be excluded from a 5-metre radius buffer around 12 retained trees per 2 hectares. These 12 trees can include trees retained under other prescriptions.

(b) No post-harvest burning is permitted within or adjacent to the 5-metre radius buffers identified in point (a) above.

**Additional information**
The long-nosed potoroo inhabits coastal heaths, and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also common. The fruit-bodies of hypogeous (underground-fruiting) fungi are a large component of the diet of the long-nosed potoroo.

## Koala (*Phascolarctos cinereus*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers

**Note**: Koala populations are generally sparse or of low density in the South Coast, Central and Southern Tablelands and Western Koala Management Areas (Koala Management Areas 3, 5, 6 and 7; see Figure 4) and, as a result, scats are rarely encountered. Therefore, recording of any scat or a sighting of a koala in these areas should be considered significant.

**Prescription**

(a) Forest operations are not permitted within any area identified as 'core koala habitat' within the meaning of *State Environmental Planning Policy No. 44 – Koala Habitat Protection*.

(b) Any tree containing a koala or any tree beneath which 20 or more koala faecal pellets (scats) are found (or one or more koala faecal pellets in Koala Management Areas 3 and 5) must be retained, and an exclusion zone of 20 metres (50 metres in Koala Management Area 5) must be implemented around each retained tree.

(c) Where there is a record of a koala within an area of forest operations or within 500 metres of an area of forest operations or a koala faecal pellet (scat) is found beneath the canopy of any primary or secondary koala food tree (see Table I below), the following must apply:

- A minimum of 10 primary koala food trees and 5 secondary koala food trees must be retained per hectare of net harvesting area (not including other exclusion or buffer zones), where available.
- These trees should preferably be spread evenly across the net harvesting area, have leafy, broad crowns and be in a range of size classes with a minimum of 30 centimetres diameter at breast height over bark.
- Damage to retained trees must be minimised by directional felling techniques.
- Post-harvest burns must minimise damage to the trunks and foliage of retained trees.

**Additional information**
Generally, koala habitat comprises eucalypt forest and woodland containing primary and secondary food trees (see Table I). Koala droppings (faecal pellets or scats) are relatively distinctive, being cylindrical and pit-shaped. Colour varies between green–yellow to yellow–brown. Scats can remain under trees on or within the leaf litter for periods of several weeks to months. For further information on the identification of koala pellets or scats, contact DECC or refer to the DECC website – www.environment.nsw.gov.au.

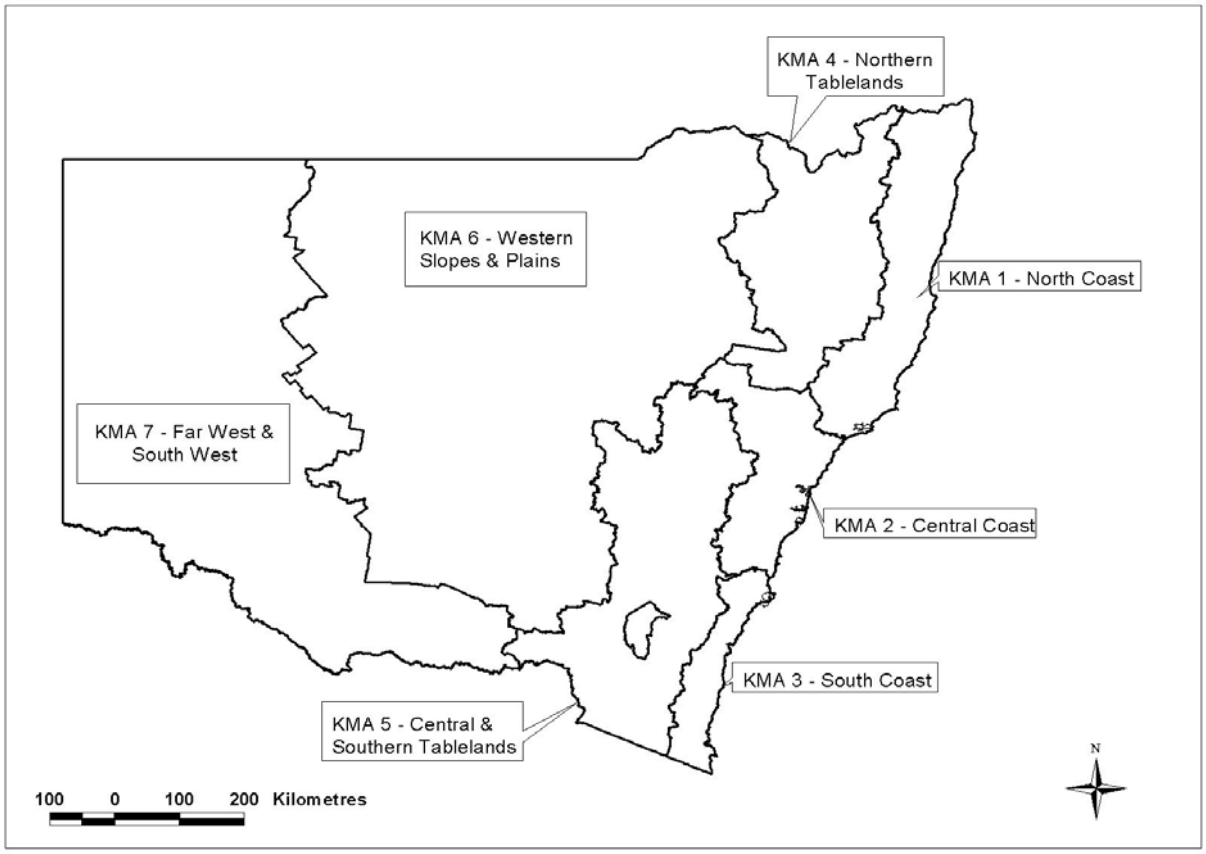


**Figure 4: Koala Management Areas in NSW (from Draft State Koala Recovery Plan)**

## Table I: Primary and secondary koala food treesfor each Koala Management Area in the Southern NSW Code

| Koala food tree species | | Koala Management Area | | |
|---|---|---|---|---|
| **Common name** | **Scientific name** | **2** | **3** | **5** |
| **Primary tree species** | | | | |
| Cabbage gum | *E. amplifolia* | X | | |
| Tallowwood | *E. microcorys* | X | | |
| Parramatta red gum | *E. parramattensis* | X | | |
| Swamp mahogany | *E. robusta* | X | | |
| Forest red gum | *E. tereticornis* | X | X | |
| Ribbon gum | *E. viminalis* | X | X | X |
| **Secondary tree species** | | | | |
| White box | *E. albens* | | | X |
| Blue box | *E. baueriana* | X | X | |
| Eurabble | *E. bicostata* | | | X |
| Blakely's red gum | *E. blakelyi* | | | X |
| Coast grey box | *E. bosistoana* | X | X | |
| Apple-topped box | *E. bridgesiana* | | X | X |
| Broad-leaved sally | *E. camphora* | X | | X |
| Argyle apple | *E. cinerea* | | | X |
| Fuzzy box | *E. conica* | X | | |
| Yertchuk | *E. consideniana* | X | X | |
| Monkey gum | *E. cypellocarpa** | X | X | |
| Mountain gum | *E. dalrympleana* | | | X |
| Tumbledown gum | *E. dealbata* | | | X |
| Dwyer's red gum | *E. dwyeri* | X | | |
| Slaty red gum | *E. glaucina* | X | | |
| Bundy | *E. goniocalyx* | X | | X |
| Craven grey box | *E. largeana* | X | | |
| Woolybutt | *E. longifolia* | X | X | |
| Maiden's gum | *E. maidenii* | X | X | X |
| Brittle gum | *E. mannifera* | X | X | X |
| Yellow box | *E. melliodora* | | | X |
| Brittle gum | *E. michaeliana* | X | | |
| Western grey box | *E. microcarpa* | X | | |
| Grey box | *E. moluccana* | X | | |
| Large-flowered bundy | *E. nortonii* | | | X |
| Mountain mahogany | *E. notabilis* | X | | |
| Swamp gum | *E. ovata* | X | X | |
| Snow gum | *E. pauciflora* | | X | X |
| Red box | *E. polyanthemos* | | X | X |
| Brittle gum | *E. praecox* | X | | |
| Bastard eurabbie | *E. pseudoglobulus* | | X | |
| Grey gum | *E. punctata* | X | | |
| White-topped box | *E. quadrangulata* | X | | |
| Red mahogany | *E. resinifera* | X | | |
| Candlebark | *E. rubida* | | X | |
| Rudder's box | *E. rudderi* | X | | |
| Large-fruited red mahogany | *E. scias* | X | | |

## Grey-headed flying-fox (*Pteropus poliocephalus*) and black flying-fox (*Pteropus alecto*) camps

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Southern Rivers and Sydney Metro

**Prescription**
Forest operations and any associated activities must be excluded within a flying-fox camp, and within a 50-metre exclusion zone around any camp which contains grey-headed or black flying-foxes.

**Additional information**
Flying-foxes congregate (roost) in large numbers known as 'camps'. These areas are typically within 20 kilometres of known food sources, and 'camp' localities vary over different seasons depending on regional food availability. Camps are often located in riparian vegetation such as rainforest remnants, swamp forest (paperbarks) or casuarina forests. They are often used annually. Camps are extremely important for day-time roosting and socialising and are used as maternity sites for rearing young.

## Golden-tipped bat (*Kerivoula papuensis*)

**CMAs for application of prescription**
Hawkesbury–Nepean and Southern Rivers

**Prescription**
Where there is a record of a golden-tipped bat within the area of forest operations or within 200 metres of the boundary of the area of forest operations, the following must apply:

(a) Exclusion zones with at least a 30-metre radius must be implemented on both sides of all Prescribed Streams, first-order, second-order and third-order streams (see Figure 3) within 200 metres of the location of the record. Other standard riparian exclusion zones apply within this area.

(b) The width of exclusion zones must be measured from the top of the bank of the incised channel or, where there is no defined bank, from the edge of the channel.

**Additional information**
Habitat for the golden-tipped bat is in rainforest and adjacent sclerophyll forest. The bats roost in abandoned hanging yellow-throated scrubwren and brown gerygone (brown warbler) nests located in rainforest gullies on small first-order and second-order streams.
They will fly up to two kilometres from roosts to forage in rainforest and sclerophyll forest on upper slopes. The species is a specialist feeder on small web-building spiders.

## Large-footed myotis (*Myotis adversus*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers

**Prescription**
Where there is a record of large-footed myotis in an area of forest operations or within 100 metres of the boundary of the area of forest operations, the following must apply:

(a) An exclusion zone with a 30-metre radius must be implemented on all dams and permanent water bodies. Permanent water bodies include lakes, lagoons or any other permanent collection of still water that is not impounded by an artificial structure. The exclusion zone must be measured from the top of the high bank of the permanent water body.

(b) An exclusion zone with a 30-metre radius must be implemented on all permanent streams within 100 metres of the location of the record.

(c) The width of exclusion zones must be measured from the top of the bank of the incised channel or, where there is no defined bank, from the edge of the channel.

**Additional information**
Large-footed myotis generally roost in groups of 10–15 close to water in caves, mine shafts, hollow bearing trees, stormwater channels, buildings, under bridges and in dense foliage. They forage over streams and pools, catching insects and small fish by raking their feet across the water's surface.

# Reptiles

## Broad-headed snake (*Hoplocephalus bungaroides*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean and Southern Rivers

**Prescription**
Where there is a broad-headed snake record in the area of forest operations, the following must apply:

(a) A buffer zone with a 100-metre radius (about 3 hectares) must be identified, centred on the location of the record.

(b) Within this buffer zone, the following additional prescriptions must be implemented:

- A minimum of 26 trees with visible hollows with openings greater than 10 centimetres must be retained where available.
- Disturbance to understorey trees and shrubs, ground logs and, in particular, rock outcrops and ledges must be minimised.

**Additional information**
Potential habitat for the broad-headed snake is largely confined to Triassic sandstones, including the Hawkesbury, Narellan and Shoalhaven formations on the coast and in the ranges, in an area within approximately 250 kilometres of Sydney. The snake shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring, and shelters in hollows in large trees within 200 metres of escarpments in summer.

## Rosenberg's goanna (*Varanus rosenbergi*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers

**Prescription**
Where there is a Rosenberg's goanna record in the area of forest operations, the following must apply:

(a) A buffer zone with a 200-metre radius (about 12.5 hectares) must be identified, centred on the location of the record.

(b) Within this buffer zone, the following additional prescriptions must be implemented:

- All termite mounds must be protected from any disturbance.
- Disturbance to understorey trees and shrubs and, in particular, ground logs and rock outcrops and ledges must be minimised.

- No post-harvest burning is permitted.

**Additional information**
Rosenberg's goanna occurs on Sydney sandstone in Wollemi National Park north-west of Sydney, in the Goulburn and ACT regions and near Cooma in the south. There are records from the south-west slopes near Khancoban and the Tooma River. It is found in heath, open forest and woodland. This species nests in termite mounds, which are a critical component of its habitat.

# Birds

## Powerful owl (*Ninox strenua*), masked owl (*Tyto novaehollandiae*), sooty owl (*Tyto tenebricosa*) and barking owl (*Ninox connivens*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers

**Prescription**
Nest trees (trees with hollows containing a nest of a powerful, masked, sooty or barking owl) must be retained and protected by a 60-metre exclusion zone.

Roost trees (trees where a powerful, masked, sooty or barking owl have been observed roosting or signs of roosting are observed) must be retained and protected by a 50-metre exclusion zone.

Where there is a record within the area of forest operations or within 500 metres of the area of forest operations for the powerful owl, masked owl or sooty owl or 250 metres for the barking owl, the following prescriptions apply:

(a) Buffer zones with a 1000-metre radius (about 300 hectares) for the powerful owl, masked owl or sooty owl and 500-metre radius (about 78 hectares) for the barking owl must be identified, centred on the location of the record or records. The radius of the buffer zone must be measured from the location of the record. Where there is more than one record, the radius of the buffer zone must be measured from a point equidistant from most records, where possible.

(b) Within this buffer zone, the following additional prescriptions must be implemented:

- A minimum of 15 trees per 2 hectares with visible hollows must be retained where available.
- A recruitment tree must be retained for each hollow bearing tree retained. Where the total number of hollow bearing trees and recruitment trees is less than 30 trees per 2 hectares, additional recruitment trees must be retained to bring the number up to 30 trees per 2 hectares.
- Disturbance to understorey trees and shrubs, ground logs, and rocks and litter must be minimised.

(c) Where there are records of nests or roosts, these must be contained within buffer zones encompassing suitable habitat.

(d) Where there are more than two owl records consecutively less than 1000 metres apart but collectively spreading over an area greater than 1000 metres in any direction, advice on the location of the buffer area must be sought from DECC.

**Additional information**
Potential owl habitat comprises rainforest, wet and dry sclerophyll forest, and woodland.

## Regent honeyeater (*Xanthomyza Phrygia*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers

**Prescription**
Where there is a record of a regent honeyeater in an area of forest operations, the following must apply:

(a) At least ten eucalypt feed trees (refer to Table E) must be retained within every two hectares of the net harvest area. These must be marked for retention. Where retained eucalypt feed trees also meet the requirements of habitat or recruitment trees, the retained eucalypt feed trees can be counted as habitat or recruitment trees.

(b) Where a regent honeyeater is observed feeding, the tree in which it is feeding must be retained.

(c) Trees containing regent honeyeater nests must be retained, with a 20-metre radius exclusion zone around them.

**Additional information**
This species inhabits dry open forest and woodland, particularly box–ironbark woodland and riparian forests of river she-oak. Regent honeyeaters inhabit woodlands that support a significantly high abundance and richness of bird species. These woodlands have many mature trees and mistletoes and high canopy cover. The bird also forages in winter-flowering coastal swamp mahogany and spotted gum forests on the central coast and the upper north coast. These birds are also occasionally seen on the south coast.

## Swift parrot (*Lathamus discolor*)

**CMAs for application of prescription**
Central West, Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee and Southern Rivers

**Prescription**
Where there is a record of a swift parrot in an area of forest operations, the following must apply:

(a) At least ten eucalypt feed trees (refer to Table E) must be retained within every two hectares of the net harvest area. These must be marked for retention. Where retained eucalypt feed trees also meet the requirements of habitat or recruitment trees, the retained eucalypt feed trees can be counted as habitat or recruitment trees.

(b) Where a swift parrot is observed feeding, the tree in which it is feeding must be retained.

**Additional information**
Swift parrots migrate to the Australian south-east mainland between March and October. On the mainland, they occur where eucalypts are flowering profusely or where there are abundant lerps (from sap-sucking bugs). Favoured feed trees include winter-flowering species such as swamp mahogany (*Eucalyptus robusta*), spotted gum (*Corymbia maculata*), red bloodwood (*C. gummifera*), mugga ironbark (*E. sideroxylon*) and white box (*E. albens*). Commonly used lerp-infested trees include grey box (*E. microcarpa*), grey box (*E. moluccana*) and blackbutt (*E. pilularis*).

## Bush stone-curlew (*Burhinus grallarius*)

**CMAs for application of prescription**
All
**Prescription**

No forest operations are permitted within a 50-metre radius of all bush stone-curlew ground nests.

**Additional information**
Bush stone-curlew nests are found in areas of dry, grassy open forest or woodland and are a small scrape on bare ground, often near a bush or tree or beside a fallen limb. Eggs are stone-coloured, blotched dark brown and grey. Nesting season is August through to January.

## Glossy black-cockatoo (*Calyptorhynchus lathami*)

**CMAs for application of prescription**
All except for Lower Murray–Darling

**Prescription**

(a) There must be a 50-metre-radius exclusion zone around all glossy black-cockatoo nests, within which no forest operations may occur.

(b) Within a 200-metre radius of any location of a glossy black-cockatoo record, damage to stands of she-oaks (*Allocasuarina* and *Casuarina* spp.) containing trees more than 3 metres in height and seed cones must be minimised.

(c) Any she-oaks with evidence of foraging by glossy black-cockatoos (i.e. chewed seed cones under the tree) must be protected.

**Additional information**
Glossy black-cockatoos nest in tree hollows usually in larger, mature trees. Nest locations are indicative of where a glossy black-cockatoo is seen entering a hollow. Nesting season is from March to August.
The presence of she-oaks (*Allocasuarina* and *Casuarina* spp.*)* is a key indicator of likely feeding habitat. Mature trees with hollows are required for nesting.

## Osprey (*Pandion haliaetus*)

**CMAs for application of prescription**
All except for Lower Murray–Darling and Western

**Prescription**
No forest operations are permitted within a 100-metre radius of all osprey nests.

**Additional information**
Ospreys have a large stick nest (up to 2 metres wide) usually in tall, dead or occasionally live trees, often in an exposed position close to lakes, rivers or the ocean. Nesting season is from June to October.

## Square-tailed kite (*Lophoictinia isura*)

**CMAs for application of prescription**
All

**Prescription**
No forest operations are permitted within a 100-metre radius of all square-tailed kite nests.

**Additional information**
Square-tailed kites have a large stick nest usually between 60 and 100 centimetres in diameter, and some 12–26 metres above the ground, generally in a eucalypt. Nesting season is from July to November.

## Turquoise parrot (*Neophema pulchella*)

**CMAs for application of prescription**
All except for Lower Murray–Darling and Western

**Prescription**
No forest operations are permitted within a 30-metre radius of all turquoise parrot nests.

**Additional information**
Turquoise parrots occur mainly west of the escarpment on the tablelands and western slopes, but are occasionally found more widely through most of eastern NSW in open woodlands, dry sclerophyll forest and adjacent grasslands. Nests range from 1–20 metres above the ground. They are in hollows in small trees, often dead eucalypts, or in holes or stumps, fence posts or even logs lying on the ground. Nesting season is from August to December and from April to May.

# Threatened flora – specific prescriptions

**Table J: Conditions applying to flora species**

(Note: Numbers in first column relate to conditions listed below this table.)

| Condition | Scientific name | Common name | Catchment Management Authority |
|---|---|---|---|
| H | *Acacia bynoeana* | Bynoe's wattle | Hawkesbury–Nepean, Southern Rivers |
| H | *Acacia georgensis* | Bega wattle | Southern Rivers |
| G | *Ammobium craspedioides* | Yass daisy | Lachlan, Murrumbidgee |
| A | *Arthropteris palisotii* | Lesser creeping fern | Southern Rivers |
| G | *Bossiaea oligosperma* | Few-seeded bossiaea | Hawkesbury–Nepean, Southern Rivers |
| H | *Caladenia concolor* | Crimson spider orchid | Murray, Murrumbidgee |
| H | *Caladenia tessellata* | Tessellated spider orchid | Hawkesbury–Nepean, Southern Rivers |
| D | *Callitris oblonga* | Pygmy cypress pine | Southern Rivers |
| G | *Callitris oblonga* ssp. *Corangensis* | *Callitris oblonga* ssp. *corangensis* | Southern Rivers, Murrumbidgee, Hawkesbury–Nepean |
| H | *Calotis glandulosa* | Mauve burr-daisy | Central West, Murrumbidgee, Southern Rivers |
| H | *Correa baeuerlenii* | Chef's cap correa | Southern Rivers |
| G | *Cryptostylis hunteriana* | Leafless tongue orchid – southern populations | Hawkesbury–Nepean, Southern Rivers |
| G | *Cynanchum elegans* | White-flowered wax plant | Hawkesbury–Nepean, Southern |

| | | | |
|---|---|---|---|
| | | | Rivers |
| G | *Daphnandra* sp. *C* | Illawarra socketwood | Southern Rivers |
| G | *Dillwynia glaucula* | Michelago parrot-pea | Murrumbidgee, Southern Rivers |
| H | *Discaria nitida* | Leafy anchor plant | Murrumbidgee, Southern Rivers |
| H | *Diuris aequalis* | Doubletail buttercup | Hawkesbury–Nepean, Lachlan, Murrumbidgee, Southern Rivers |
| B | *Diuris pedunculata* | Small snake orchid | Central West, Murrumbidgee, Southern Rivers |
| H | *Eucalyptus kartzoffiana* | Araluen gum | Southern Rivers |
| H | *Eucalyptus langleyi* | Albatross mallee | Southern Rivers |
| G | *Eucalyptus parvula* | Small-leaved gum | Murrumbidgee, Southern Rivers |
| G | *Eucalyptus pulverulenta* | Silver-leafed gum | Central West, Hawkesbury–Nepean, Murrumbidgee, Southern Rivers |
| A | *Eucalyptus recurva* | Mongarlowe mallee | Southern Rivers |
| F | *Eucalyptus robertsonii* subsp. *hemisphaerica* | Robertson's peppermint | Central West, Lachlan |
| G | *Eucalyptus saxatilis* | Suggan buggan mallee | Southern Rivers |
| H | *Eucalyptus sturgissiana* | Ettrema mallee | Southern Rivers |
| B | *Euphrasia collina* subsp. *Muelleri* | Mueller's eyebright | Murrumbidgee, Southern Rivers |
| F | *Euphrasia scabra* | Rough eyebright | Central West, Hawkesbury–Nepean, Murrumbidgee, Southern Rivers |
| G | *Gastrodia sesamoides* (Protected Native Plant Schedule 13 NP&W Act) | Cinnamon bells, potato orchid | Lachlan, Murrumbidgee, Murray, Hawkesbury–Nepean |
| H | *Genoplesium vernale* | Genoplesium vernale | Southern Rivers |
| E | *Goodenia macbarronii* | McBarron's goodenia | Central West, Lachlan, Murray |
| G | *Grevillea iaspicula* | Wee Jasper grevillea | Murrumbidgee |
| G | *Grevillea parviflora* subsp. *Parviflora* | Small-flower grevillea | Hawkesbury–Nepean, Southern Rivers |
| G | *Grevillea wilkinsonii* | Tumut grevillea | Murrumbidgee |
| G | *Haloragis exalata* subsp. *exalata* | Square raspwort | Murray, Southern Rivers |
| H | *Irenepharsus magicus* | Elusive cress | Murray |
| H | *Irenepharsus trypherus* | Illawarra Irene | Southern Rivers |
| A | *Lepidium hyssopifolium* | Aromatic peppercress | Central West, Lachlan, Murrumbidgee |
| H | *Leptospermum thompsonii* | Monga tea tree | Southern Rivers |
| G | *Melaleuca biconvexa* | Biconvex paperbark | Hawkesbury–Nepean, Southern Rivers |
| F | *Monotaxis macrophylla* | Large-leafed monotaxis | Central West, Lachlan, Southern Rivers |
| G | *Monotoca rotundifolia* | Trailing monotoca | Murrumbidgee, Southern Rivers |
| G | *Persicaria elatior* | Tall knotweed | Hawkesbury–Nepean, Southern Rivers |
| G | *Persoonia glaucescens* | Mittagong geebung | Hawkesbury–Nepean, Southern Rivers |
| H | *Phyllota humifusa* | Dwarf phyllota | Hawkesbury–Nepean |
| H | *Pilularia novae-hollandiae* | Austral pillwort | Hawkesbury–Nepean, Lachlan, Murray, Murrumbidgee |
| G | *Pimelea spicata* | Spiked rice-flower | Hawkesbury–Nepean |
| G | *Plinthanthesis rodwayi* | Budawangs wallaby grass | Southern Rivers |
| B | *Pomaderris brunnea* | Brown pomaderris | Hawkesbury-Nepean |
| G | *Pomaderris cotoneaster* | Cotoneaster pomaderris | Murrumbidgee, Southern Rivers |
| G | *Pomaderris elachophylla* | Lacy pomaderris | Southern Rivers |
| G | *Pomaderris pallida* | Pale pomoderris | Murrumbidgee, Southern Rivers |
| H | *Pomaderris parrisiae* | Parris' pomaderris | Southern Rivers |

| | | | |
|---|---|---|---|
| F | *Prostanthera densa* | Villous mint-bush | Southern Rivers |
| B | *Pseudanthus ovalifolius* | Oval-leafed pseudanthus | Southern Rivers |
| G | *Pterostylis gibbosa* | Illawarra greenhood | Hunter–Central Rivers, Southern Rivers |
| H | *Pultenaea parrisiae* subsp. *parrisiae* | Parris' bush-pea | Southern Rivers |
| H | *Restio longipes* | Restio longipes | Southern Rivers, Hawkesbury–Nepean |
| H | *Rulingia prostrata* | Dwarf kerrawang | Hawkesbury–Nepean, Southern Rivers |
| H | *Rutidosis leiolepis* | Monaro golden daisy | Murrumbidgee, Southern Rivers |
| H | *Rutidosis leptorrhynchoides* | Button wrinklewort | Murrumbidgee |
| G | *Senna acclinis* | Rainforest cassia | Hawkesbury–Nepean |
| G | *Syzygium paniculatum* | Magenta lilly pilly | Hawkesbury–Nepean, Southern Rivers |
| G | *Thesium australe* | Austral toadflax | Hawkesbury–Nepean, Murray, Murrumbidgee, Southern Rivers |
| H | *Triplarina nowraensis* | Nowra heath myrtle | Southern Rivers |
| H | *Zieria adenophora* | Araluen zieria | Southern Rivers |
| H | *Zieria baeuerlenii* | Bomaderry zieria | Southern Rivers |
| H | *Zieria citriodora* | Lemon zieria | Murrumbidgee |
| H | *Zieria granulata* | Illawarra zieria | Central West, Southern Rivers |
| H | *Zieria murphyi* | Velvet zieria | Central West, Hawkesbury–Nepean, Southern Rivers |
| H | *Zieria tuberculata* | Warty zieria | Southern Rivers |

## A. Threatened flora: 50-metre exclusion zone, all individuals

Where there is a record of a species to which this condition applies:

a. An exclusion zone with at least a 50-metre radius must be implemented around all individuals.

b. An exclusion zone at least 50 metres wide must be implemented around all groups of individuals. A group is defined as more than one individual located less than 20 metres apart.

## B. Threatened and protected flora: 20-metre exclusion zones, all individuals

Where there is a record of a species to which this condition applies:

a. An exclusion zone with at least a 20-metre radius must be implemented around all individuals.

b. An exclusion zone at least 20 metres wide must be implemented around all groups of individuals. A group is defined as more than one individual located less than 20 metres apart.

## D. Threatened and protected flora: 20-metre exclusion zone, 90% of individuals

Where there is a record of a species to which this condition applies:

a. An exclusion zone or exclusion zones at least 20 metres wide must be implemented around 90% of individuals.

b. The exclusion zone or exclusion zones must include areas where the density of individuals is greatest.

**Note**: Where there are few individuals within the forest operations area and the individuals are widely dispersed within the area, an exclusion zone with at least a 20-metre radius must be implemented around at least 90% of individuals. Where there are a large number of

individuals within the forest operations area and they occur in groups, the exclusion zone or exclusion zones may be positioned around the group or groups. A group is defined as more than one individual, located less than 20 metres apart.

## E. Threatened and protected flora: protection of 90% of individuals

Where there is a record of a species to which this condition applies:

a. A minimum of 90% of individuals must be protected from specified forestry activities. During forest operations, the potential for damage to these plants must be minimised by the use of directional felling techniques.

**Note**: Where there are few individuals within the forest operations area and the individuals are widely dispersed within the area, at least 90% of individuals must be protected from specified forestry activities. Where there are a large number of individuals within the forest operations area and they occur in groups, the group or groups should be protected**.** A group is defined as more than one individual located less than 20 metres apart.

## F. Exclusion of specified forestry activities from 100% of individuals with a 10-metre exclusion zone and a further 10-metre buffer

Where there is a record of a species to which this condition applies:

a. An exclusion zone with a 10-metre radius must be implemented around all individuals.

b. An additional buffer zone 10 metres wide must be implemented around all exclusion zones. Limited operations (snigging and selective tree removal) may be conducted in the buffer zone.

## G. Exclusion of specified forestry activities from 100% of individuals and no buffer

Individuals of the threatened species or protected native plants to which this condition applies must not be picked in the course of carrying out specified forestry activities.

## H. Damage to individuals avoided

Damage to individuals of the species to which this condition applies should be avoided to the greatest extent practicable.

# Glossary

Expressions that are defined in the *Native Vegetation Act 2003* and Native Vegetation Regulation 2005 have the same meanings in this Code as the meanings given to them in that Act and Regulation, unless they are otherwise defined in this Code. All other expressions are defined as in this glossary.

| | |
|---|---|
| **Accidentally felled** | A tree is accidentally felled into any area of land only if it is apparent that techniques of directional felling were used in an attempt to fell the tree away from the area. Despite the above, a tree is not accidentally felled into an area if the person responsible knew or could reasonably have been expected to know that the tree would fall into the area. |
| **Australian Group Selection** | A silvicultural technique that creates canopy openings for the purpose of stimulating regeneration in certain forest types. |
| **Batter** | An earth slope formed from fill material (fill batter) or cut into the natural hillside (cut batter) during road construction. |
| **Diameter at breast height over bark (dbhob)** | The diameter of a tree measured at 1.3 metres above the ground. Measurements are made over the bark and horizontal to the trunk. |
| **Directional felling** | The felling of a tree so it falls in a pre-determined direction. |
| **Dispersible soil** | A structurally unstable soil which readily disperses into its constituent particles (clay, silt, sand) in water. |
| **Drainage depression** | A shallow depression with smoothly concave cross-section that conveys runoff only during or immediately after periods of heavy rainfall. |
| **Drainage feature** | A drainage depression, drainage line, river or watercourse. |
| **Drainage line** | A channel down which surface water naturally concentrates and flows. Drainage lines exhibit one or more of the following features which distinguish them from drainage depressions:<br>• evidence of active erosion or deposition, e.g. gravel, pebble, rock, sand bed, scour hole or nick point<br>• an incised channel more than 30 centimetres deep with clearly defined bed and banks<br>• a permanent flow. |
| **Drainage structure** | A structure designed to convey water away from a road, track or area of soil disturbance. |
| **Earth windrow** | A mound of soil material or gravel on the edge of a road or snig track formed by the spillage from the edge of a blade or similar machine during earthmoving operations. |
| **Ecological logging regime** | The use of logging (commercial and non-commercial) to rehabilitate or regenerate an ecological community. The primary goal is ecological improvements and commercial logging provides an economic incentive for the forest owner to undertake the works. Also known as ecological silvicultural logging. |
| **Exclusion zone** | Means an area of land (within a specified distance of landscape features identified in Tables C or F) where forest operations are prohibited, unless otherwise allowed under this Code. |
| **Extraction track** | A track constructed for use by forwarding machinery. |

| | |
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| **Food resource trees** | Trees with recent V-notch incisions or other incisions made by a yellow-bellied glider or squirrel glider. Recent incisions are incisions less than two years old as evidenced by the fact the incision has not closed. |
| **Forest operations** | All clearing resulting from activities associated with forest management including harvesting operations, construction and maintenance of roads and tracks, and prescribed burning for regeneration. |
| **Girders** | High quality logs used in a round or flat faced form to support a deck such as a bridge or wharf or as large end section, heart-free, sawn timber suitable for heavy construction. |
| **Gross forest area** | The total area of forest defined in a Property Vegetation Plan. |
| **Gully stuffer** | A drainage feature crossing formed by filling the drainage feature with trees, debris, spoil, soil, rock or other material to the level of the road or track. |
| **Habitat tree** | A tree retained for habitat purposes under this Code. |
| **Harvesting operations** | Harvesting operations include:<br>• timber felling, snigging and extraction<br>• construction and maintenance of log landings, snig tracks and extraction tracks. |
| **Heathland** | Areas dominated (covers more than 50% of the area) by shrubs generally less than 2 metres tall at maturity. |
| **Highly erodible soil** | A soil where the particles are readily detached and transported by erosive forces. The presence of these soils may be identified by evidence of existing erosion (gully or rill erosion), or by commonly known problem soil types, e.g. some coarse-grained granites. |
| **Incised channel** | A channel more than 30 centimetres deep with clearly defined bed and banks. |
| **Inundation** | Flooding of the forested area by water overflowing the banks of a river. |
| **Log landing** | An area (usually cleared) where timber products are assembled for processing and sorting before being loaded onto a truck. |
| **Machinery exclusion zone** | Land within 10 metres of the top edge of the bank of any unmapped drainage line. |
| **Mass movement** | The downslope movement of greater than 10 cubic metres of soil, where gravity is the primary force or where no transporting medium such as wind, flowing water or ice is involved. |
| **Nest trees** | • Trees with nests or roosts of any species of raptor, including powerful owls, barking owls, sooty owls and masked owls.<br>• Trees with nests of colonial-nesting water birds (groups of stick-nests). |
| **Net harvestable area** | The area under the private native forestry PVP where harvesting is permitted in accordance with the Code. |
| **Old grey** | A late-mature/over-mature cypress tree that regenerated before the 1890s and which has bark that is bleached to a characteristic light grey colour and that is weathered to a smoother surface texture than is typical of younger trees. |

| | |
|---|---|
| **Old growth** | Ecologically mature forest where the effects of disturbance are now negligible. This includes an area of forest greater than 5 hectares where:<br>• the overstorey is in late to over-mature growth stage with the presence of relatively large old trees (many containing hollows and often with the presence of dieback or dead branches in the crown)<br>• the age (growth) structure of the stand measured as relative crown cover consists of less than 10% of regeneration and advance growth and more than 10% of late to over-mature (senescent) growth<br>• the effects of unnatural disturbance are now negligible.<br>Old growth woodlands west of the Great Dividing Range, while comprising a characteristic canopy of late to over-mature trees (many with hollows), may comprise a woodland structure with less diverse or often shrubby understorey and a groundcover of grasses and herbs. |
| **Portable mill site** | A site where a portable mill (easily movable milling equipment) operates. |
| **Posts** | Term generally used to describe posts in round or split form used for fencing. |
| **Prescribed Stream** | Stream listed in the Major Rivers database of the Assessment Methodology database Department of Environment and Climate Change webpage. |
| **Protected trees** | Trees required to be retained under clause 4.3(3):<br>• trees required to be retained under section 4.2<br>• plants of the genus *Xanthorrhoea* (grass trees), genus *Allocasuarina* (forest oak) and genus *Banksia*<br>• other trees that are required to be retained by this Code. |
| **Pulp logs** | Logs cut and prepared primarily to produce wood pulp for the manufacture of reconstituted products including paper and panel board. |
| **Recovery plan** | As defined in the *Threatened Species Conservation Act 1995*. |
| **Recruitment tree** | A tree capable of developing hollows to provide habitat for wildlife and which comes from the next smaller cohort than habitat trees. |
| **Riparian exclusion zones** | Those areas within the distances specified for 'Drainage feature' as listed in Table F where forest operations are not permitted, unless otherwise allowed by this Code. |
| **Road** | Any route used for vehicular access to, and the transport of logs from, the point of loading (log landing) within the forest area. |
| **Road prism** | That part of the road from the inflexion point at the toe of the fill batter to the inflexion point at the top edge of the cut batter. Where there is no cut or fill batter as part of the road, the road prism is to be taken from the outside edge of the table drain on either side of the road. |
| **Rocky outcrops and cliffs** | A 'rocky outcrop' has an area of 0.2 hectares or larger, where 70% or more of the surface is composed of exposed boulders of more than 0.6 of a metre in diameter. 'Cliff' means a rocky slope steeper than 70 degrees and more than three metres high. |
| **Rollover bank** | A crossbank constructed with a smooth cross-section and gentle batters, which is well-compacted to provide permanent vehicular trafficability. |
| **Roost trees** | Trees with nests or roosts of any species of raptor, including powerful owls, barking owls, sooty owls and masked owls, and trees which support maternity bat roosts. |
| **Sawlog** | Log of a species suitable for processing through a sawmill into solid timber products. |

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| **Silvicultural operations** | The activities associated with the management of trees within a forest for the purpose of meeting sustainable long-term productivity objectives, including thinning, single tree selection and creation of canopy openings. |
| **Single tree selection** | A harvesting operation where the trees harvested are either single trees or small groups of trees. For the purposes of this Code, single tree selection operations will not create canopy openings. |
| **Snig track** | A track used by snigging or skidding equipment. |
| **Spoon drain** | A drain with a semi-circular cross-section, which has no associated ridge of soil. Its capacity is solely defined by the excavated channel dimensions. |
| **Stand height** | Mean height of the dominant trees in the stand. Measurement of stand height must conform to methods described in approved guidelines. |
| **Stocking level** | A measure of the frequency of occurrence of tree stems assessed as being capable of growing to canopy level. Measurement of stocking levels must conform with methods described in approved guidelines. |
| **Thinning** | A silvicultural practice where some trees are removed in order to increase the growth rates of retained trees. |
| **Timber products** | Commercial timber products removed from or felled within the forest, including sawlogs, veneer logs, poles, girders, piles and pulp logs. |
| **Veneer log** | High quality logs that are rotary peeled or sliced to produce sheets of veneer. |
| **Walkover techniques** | Timber extraction or snigging without removing or unduly disturbing the existing natural groundcover, i.e. where no snig track construction involving soil disturbance is required. |
| **Wet summer** | Summer with above average rainfall persisting through the summer period. |
| **Wetland** | Includes any shallow body of water (such as a marsh, billabong, swamp or sedgeland) that is:<br>• inundated cyclically, intermittently or permanently with water, and<br>• vegetated with wetland plant communities. |