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SPECIAL SUPPLEMENT

New South Wales

Native Vegetation Amendment (Private Native Forestry) Regulation 2007

under the

Native Vegetation Act 2003

Her Excellency the Governor, with the advice of the Executive Council, has made the following Regulation under the *Native Vegetation Act 2003*.

PHILIP KOPERBERG, M.P.,
Minister for Climate Change, Environment and Water

Explanatory note

The object of this Regulation is to make special provision for the clearing of native vegetation for the purposes of private native forestry in accordance with a code of practice approved by the Minister.

This Regulation is made under the *Native Vegetation Act 2003*, including sections 11, 32 and 51 (the general regulation-making power).

Native Vegetation Amendment (Private Native Forestry) Regulation 2007

under the

Native Vegetation Act 2003

1 Name of Regulation

This Regulation is the *Native Vegetation Amendment (Private Native Forestry) Regulation 2007*.

2 Commencement

This Regulation commences on 1 August 2007.

3 Amendment of Native Vegetation Regulation 2005

The *Native Vegetation Regulation 2005* is amended as set out in Schedule 1.

Schedule 1 Amendments

(Clause 3)

[1] Clause 3 Definitions

Insert in alphabetical order in clause 3 (1):

private native forestry means the management of native vegetation on privately owned land for the purpose of obtaining, on a sustainable basis, timber products (including sawlogs, veneer logs, poles, girders, piles and pulp logs).

private native forestry PVP means a PVP that provides for the clearing of native vegetation as part of private native forestry.

[2] Clause 6A

Insert after clause 6:

6A Limitation on granting of development consent

Development consent for broadscale clearing on any land is not to be granted under the new Act if the land is subject to a private native forestry PVP.

[3] Clause 9 Content of PVPs

Insert "or subclause (2A) in the case of a private native forestry PVP" after "continuing use PVP" in clause 9 (1).

[4] Clause 9 (2A)

Insert after clause 9 (2):

(2A) A private native forestry PVP is not required to include the material referred to in subclause (1) (d) (ii), (f) or (h).

[5] Clause 12 Information about PVPs and development consents

Insert after clause 12 (5):

(6) Subclauses (1) (b) and (c), (2) and (3) do not apply in relation to a private native forestry PNF.

[6] Clause 12A

Insert after clause 12:

12A Limitation on approval of PVPs

A PVP that provides for broadscale clearing is not to be approved under Part 4 of the Act in relation to any land if the land is subject to a private native forestry PVP.

[7] Clause 23A

Insert after clause 23:

23A Restrictions on RAMAs when clearing for private native forestry purposes

(1) Despite any other provision of the Act or this Regulation, the following activities do not comprise routine agricultural management activities on land that is being cleared for the purposes of private native forestry:

(a) the construction of farm roads,

(b) obtaining timber for use in the construction of rural infrastructure.

(2) Without limiting subclause (1), the activities that comprise a routine agricultural management activity under section 11 (1) (a) of the Act are limited, in the case of land that is being cleared for the purposes of private native forestry, to the operation or maintenance of the following types of rural infrastructure only:

(a) permanent boundary and internal fences,

(b) roads and tracks,

(c) stockyards,

(d) windmills and bores,

(e) buildings (whether habitable or non-habitable),

(f) ground tanks,

(g) pumps,

(h) tanks,

(i) water points,

(j) dams.

[8] Clause 24A

Insert before clause 24 (in Part 5):

24A Part does not apply to clearing for private native forestry purposes under PVP

This Part does not apply in relation to the clearing of native vegetation for the purposes of private native forestry if the clearing is carried out in accordance with a PVP.

Note. See Part 5A for clearing for private native forestry purposes under a PVP.

[9] Part 5A

Insert after Part 5:

Part 5A Clearing under PVP for purposes of private native forestry

29A PNF code of practice

In this Part:

PNF code of practice means the document called *Private Native Forestry Code of Practice* that makes provision for the clearing of native vegetation for the purposes of private native forestry, being the document:

(a) approved by the Minister, and

(b) as in force and as published in the Gazette on 1 August 2007.

29B Clearing under PVP in accordance with PNF code of practice

(1) Broadscale clearing for the purposes of private native forestry is, for the purposes of the Act, taken to be clearing that will improve or maintain environmental outcomes if it is carried out in accordance with the PNF code of practice.

(2) An application for approval of a private native forestry PVP that proposes broadscale clearing is not to be granted by the Minister unless the PVP:

(a) adopts the PNF code of practice, and

(b) provides for the clearing to be carried out in accordance with the PNF code of practice.

(3) This clause is subject to any variation approved by the Minister under clause 29C.

(4) This clause does not apply in relation to the clearing of native vegetation with development consent.

29C Special provisions for minor variation

(1) This clause only applies in relation to a private native forestry PVP that has been approved by the Minister if the area of the restricted area under the PVP is greater than 10% of the net harvestable area under the PVP.

(2) The Minister may approve of a variation of the PNF code of practice in its application to a private native forestry PVP if an accredited expert certifies that:

(a) the variation is minor, and

(b) the variation does not apply to a critical environmental area, and

(c) any clearing carried out in accordance with the proposed variation will improve or maintain environmental outcomes, and

(d) strict adherence to the PNF code of practice is in the particular case unreasonable and unnecessary.

(3) In certifying for the purposes of this clause that clearing will improve or maintain environmental outcomes, an accredited expert must:

(a) provide reasons for the opinions of the accredited expert, and

(b) comply with any assessment protocols approved by the Minister and the Minister for Primary Industries.

(4) If the Minister approves of a variation of the PNF code of practice in its application to a private native forestry PVP, the Minister must:

(a) approve of the PVP being modified in accordance with the variation, and

(b) make publicly available the reports of the accredited expert in relation to the variation.

(5) In this clause:

accredited expert means a person accredited by the Minister as an expert for the purposes of this clause, being accreditation on the basis of criteria approved by the Minister and the Minister for Primary Industries.

critical environmental area, in relation to a private native forestry PVP, means any of the following areas to which the PVP applies:

(a) riparian exclusion zones,

(b) old growth forest,

(c) rainforest,

(d) steep land (that is, land with a slope greater than 30 degrees),

(e) an endangered ecological community or vulnerable ecological community within the meaning of the *Threatened Species Conservation Act 1995*,

(f) canopy openings (as determined in accordance with the PNF code of practice).

net harvestable area, in relation to a private native forestry PVP, means the total area in which broadscale clearing is proposed to be carried out under the PVP, and does not include any restricted area.

restricted area, in relation to a private native forestry PVP, means that part of the area to which the PVP applies (other than any critical environmental area) that is not permitted to be cleared under the PNF code of practice.

29D Procedure for amendment of PNF code of practice

(1) The following applies for the purposes of any amendment of the PNF code of practice:

(a) the Minister is not to make an amendment that relates to the protection of habitat or biodiversity without the concurrence of the Minister for Primary Industries,

(b) an amendment is to be published in the Gazette,

(c) an amendment does not take effect until the definition of ***PNF code of practice*** in clause 29A is amended to give effect to the amendment.

(2) Subclause (1) does not apply in relation to any variation of the PNF code of practice that is approved by the Minister under clause 29C.

[10] Clause 30 Former Act not to apply to State protected land

Insert "and clause 40A" after "except as provided by this clause" in clause 30 (1).

[11] Clause 40A

Insert after clause 40:

40A Exemption of clearing authorised under existing authorities (State protected land)

(1) Any clearing of native vegetation authorised under an existing authority is taken to be clearing that is exempt from any requirement under section 12 of the new Act that the clearing be in accordance with a development consent or a PVP.

(2) If the existing authority concerned has a specified expiry date, this clause ceases to have effect in relation to the exempt clearing:

(a) on that expiry date, or

(b) if the existing authority otherwise ceases to be in force, or

(c) if the land on which the clearing is authorised becomes land to which a PVP applies,

whichever first occurs.

(3) If the existing authority concerned does not have a specified expiry date, this clause ceases to have effect in relation to the exempt clearing:

(a) if the existing authority ceases to be in force, or

(b) if the land on which the clearing is authorised becomes land to which a PVP applies, or

(c) on 1 October 2008,

whichever first occurs.

(4) In this clause:

existing authority means an authority issued under section 21D of the *Soil Conservation Act 1938* and in force immediately before 1 January 1998.

[12] Clauses 41 and 41A

Omit clause 41. Insert instead:

41 Existing private native forestry—clearing under SEPP 46 exemptions

(1) If the clearing of native vegetation for a purpose described in paragraph (i) of Schedule 3 to SEPP 46 was being carried out on land immediately before 1 August 2007, the clearing continues to be clearing that the new Act does not apply to, but only until:

(a) 1 November 2007 in the case of land in northern NSW (unless it is land referred to in paragraph (c) or (d)), or

(b) 1 December 2007 in the case of land in southern NSW (unless it is land referred to in paragraph (c) or (d)), or

(c) 1 January 2008 in the case of land comprising a river red gum forest, or

(d) 1 February 2008 in the case of land comprising a cypress forest or a western hardwood forest,

and only if the landholder notifies the Director-General, on or before 31 August 2007 in the manner approved by the Director-General, that the clearing is being carried out.

(2) In this clause:

cypress forest means a forest dominated by white cypress pine (*Callitris glaucophylla*), being a forest in which at least 80% of the stand basal area comprises trees of that species.

northern NSW means the part of the State north of the Sydney Latitude.

river red gum forest means a forest dominated by *Eucalyptus camaldulensis*, being a forest that is consistent with the description of Forest Type 199 (River Red Gum) set out in the document called *State Forests of NSW Research Note 17*.

SEPP 46 means *State Environmental Planning Policy No 46—Protection and Management of Native Vegetation* as in force immediately before its repeal by the former Act.

southern NSW means the part of the State south of the Sydney Latitude.

Sydney Latitude means Latitude 33° 52′ 02.71 S.

western hardwood forest means a forest that is consistent with the description of any of the Forest Types 99, 103, 104, 124, 171–178, 180–185, 203–210 and 213 set out in the document called *State Forests of NSW Research Note 17*.

(3) For the purposes of the definition of ***cypress forest*** in subclause (2):

basal area means the cross-sectional area of a tree measured at 1.3 metres above the ground and over bark.

stand means an aggregation of trees sufficiently uniform in composition and condition within one (but not more than one) broad forest type, or defined by natural or artificial boundaries, to be regarded as a unit for silvicultural or management purposes.

stand basal area means the sum of the basal areas of all trees within a stand that have a diameter of more than 10 centimetres measured at 1.3 metres above the ground and over bark.

41A Development consents and pending applications under former Act to clear State protected land for private native forestry purposes

(1) Any development consent for clearing State protected land for the purposes of private native forestry granted in accordance with the former Act after its repeal is taken to be a development consent granted in accordance with the new Act.

Note. Up until 1 August 2007, clearing for private native forestry purposes on State protected land was subject to the provisions of the former Act as if that Act had not been repealed on 1 December 2005.

(2) An application for development consent under the former Act to clear State protected land for the purposes of private native forestry that was made before (but not determined by) 1 August 2007 is not to be granted.

Native Vegetation Amendment (Private Native Forestry) Regulation 2007

For the purposes of clause 29 A of the *Native Vegetation Amendment (Private Native Forestry) Regulation 2007* the *Private Native Forestry Code of Practice* is the following document:

A. Private Native Forestry Code of Practice for Northern NSW
B. Private Native Forestry Code of Practice for Southern NSW
C. Private Native Forestry Code of Practice for the Red River Gum Forests
D. Private Native Forestry Code of Practice for Cypress and Western Hardwood Forests

A

Private Native Forestry Code of Practice

Private Native Forestry Code of Practice for Northern NSW

Department of **Environment & Climate Change** NSW

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Introduction

The object of this Private Native Forestry Code of Practice (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.

Northern NSW means that part of the State north of the Sydney Latitude. Sydney Latitude means latitude 33^0 52' 02.71 S.

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 the Environment, Climate Change and Water.

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

(3) For the purpose of preparing a PVP, the Department of Environment and Climate Change (DECC) will provide available digital information on 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 be consistent with the provisions of this Code.

(3) All forest operations must comply with the Forest Operation Plan and the requirements of the Listed Species Ecological Prescriptions for North Coast and Northern Tablelands Forests, which are set out in the Appendix to this Code.

(4) The landowner and any other persons carrying out forest operations must read, sign and date the Forest Operation Plan.

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

(6) 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 species, populations or endangered ecological communities listed under the schedules of the *Threatened Species Conservation Act 1995*

(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.

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

(8) 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.

(9) 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 with 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) 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 the stand basal area below the limits specified in Table A.

(2) The **minimum** stand basal areas in Table A are to be calculated in accordance with the guidelines prepared by Department of Environment and Climate Change.

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
Tablelands ash	12 m^2/ha	16 m^2/ha
Spotted gum	12 m^2/ha	16 m^2/ha
North coast dry mixed hardwood	12 m^2/ha	16 m^2/ha
North coast moist mixed hardwood	12 m^2/ha	16 m^2/ha
North coast flooded gum	12 m^2/ha	18 m^2/ha
North coast blackbutt	14 m^2/ha	18 m^2/ha

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.

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

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 guidelines prepared by Department of Environment and Climate Change. The method for measuring plots for sampling and measuring stocking is 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 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%
Spotted gum	60%	70%
North coast dry mixed hardwood	50%	60%
North coast moist mixed hardwood	55%	65%
North coast flooded gum	55%	65%
North coast blackbutt	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 Environment, Climate Change and Water.

(3) Rainforest will be identified according to the protocol approved by the Minister for Environment, Climate Change and Water.

Table C: Requirements for protecting landscape features

Landscape feature	Operational conditions
Endangered ecological communities listed in the *Threatened Species Conservation Act 1995*	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*	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*	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: • existing roads may be maintained • existing snig tracks may be used.
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: • existing roads and tracks may be maintained; • 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 50 metres of a known burial site. • Forest operations must not occur within 20 metres of an Aboriginal scarred or carved tree. • Forest operations must not occur 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.
Heritage site as listed under the *Heritage Act 1977*	• 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. • Harvesting machinery must not enter the area. • Existing roads may be maintained. • New roads must not be constructed.
Dispersible and highly erodible soils	• Existing roads may be maintained. • Drainage feature crossings must be armoured with erosion resistant material.

Landscape feature	Operational conditions
	• Road batters and table drains must be stabilised using erosion resistant material, vegetation or slash. • Log landings must be stabilised using erosion resistant material, vegetation or slash at the completion of forestry operations. • 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 should 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 should 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. • 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. • Where the total number of hollow bearing trees is less than 10 trees per 2 hectares, additional recruitment trees are to be retained to bring the total number of retained hollow bearing and recruitment trees up to 20 trees per 2 hectares. • 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. • A minimum of 6 feed trees per 2 hectares should be retained where available. • All feed trees that have marks or 'V' notches from sap feeding mammals must be retained. • All roost, nest or food resource trees must be retained.

Table E List of feed trees

White mahogany – *Eucalyptus acmenoides, E. umbra, E. carnea*	Spotted gum species – *Corymbia* spp.
Ironbark species – *E. ancophila, E. tetrapleura, E. ophitica*	Mountain gum – *E. dalrympleana*
Swamp mahogany – *E. robusta*	Manna gum – *E. viminalis*
Forest red gum – *E. tereticornis*	Needlebark stringybark – *E. planchoniana*
Bloodwood species – *Corymbia* spp.	Tindale's stringybark – *E. tindaliae*
Craven grey box – *E. largeana,*	Red stringybark – *E. macrorhyncha*
Yellow box – *E. melliodora*	Fuzzy box – *E. conica*
White box – *E. albens*	Red ironbark – *E. fibrosa*
Grey ironbark – *E. paniculata, E. siderophloia, E. placita, E. fusiformis*	Mugga ironbark - *E. sideroxylon*
Grey box - *E. molucanna*	Caley's ironbark – *E. caleyi*
Narrow-leaved ironbark – *E. crebra*	Rudder's box – *E. rudderi*
Ferguson's ironbark – *E. fergusonii*	Steel box – *E. rummeryi*

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 section 4.2

(b) plants of the genus *Xanthorrhoea* (grass trees), genus *Allocasuarina* (forest oak), 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, and within the distance specified of, drainage features, as listed in Table F.

Table F: Riparian exclusion and riparian buffer zones

For an explanation of stream order, see Figure 3 in the Appendix

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

(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.

Note: Basal area measurement will be in accordance with the guidelines prepared by Department of Environment and Climate Change.

(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 3 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, and 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 to 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 groundcover similar to groundcover in the surrounding area is artificially reinstated.

(11) Harvesting machinery must not enter riparian exclusion zones, riparian buffer zones, or machinery exclusion zones other than in accordance with this section and sections 4.4(2), 4.4(7) 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 are 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 being operated 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 on 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 more 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 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 suitable for traffic.

(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% or 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 at designated crossings.

(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) The 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
>10 to ≤15	40
>16 to ≤20	25
>20 to ≤25	20
>25 to ≤28	15

(16) On 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, and

(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) Forest operations involving machinery disturbance must not occur within the Northern Rivers Catchment Management Authority area as follows:

(a) during the months of December, January, February and March

(b) where the annual Rainfall Erosivity is equal to, or greater than, 6000

(c) where groundslopes are equal to, or greater than, 20 degrees.

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

(4) 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. 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 catchments administered by Catchment Management Authorities (CMAs) shown in Figure 1 below.

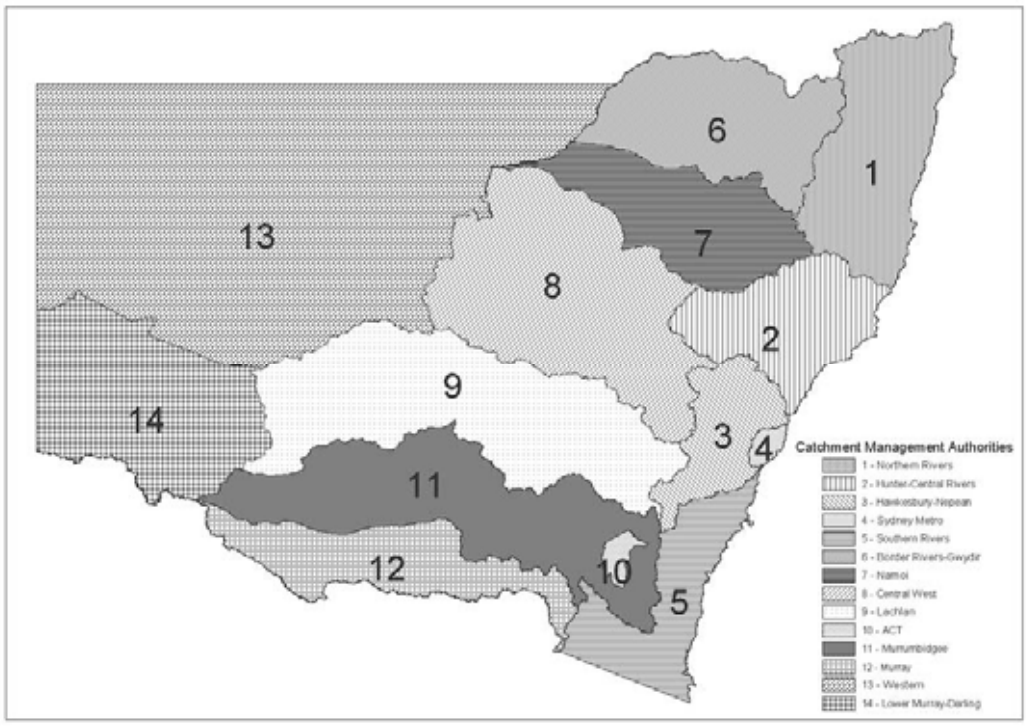

Figure 1: Catchment Management Authority (CMA) areas where prescriptions for some threatened species may vary

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.

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.

Amphibians

Green and golden bell frog (*Litoria aurea*)

CMAs for application of prescription
Hawkesbury–Nepean, Hunter–Central Rivers, Northern 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 edge of water and is also active at night.

Pouched frog (*Assa darlingtoni*)

CMAs for application of prescription
This prescription applies only to the Northern Rivers CMA areas in the northern half of the Bellingen local government area, and the southern section of Clarence Valley local government area (generally south of Dundurrabin) in north-east NSW, as shown in Figure 2.

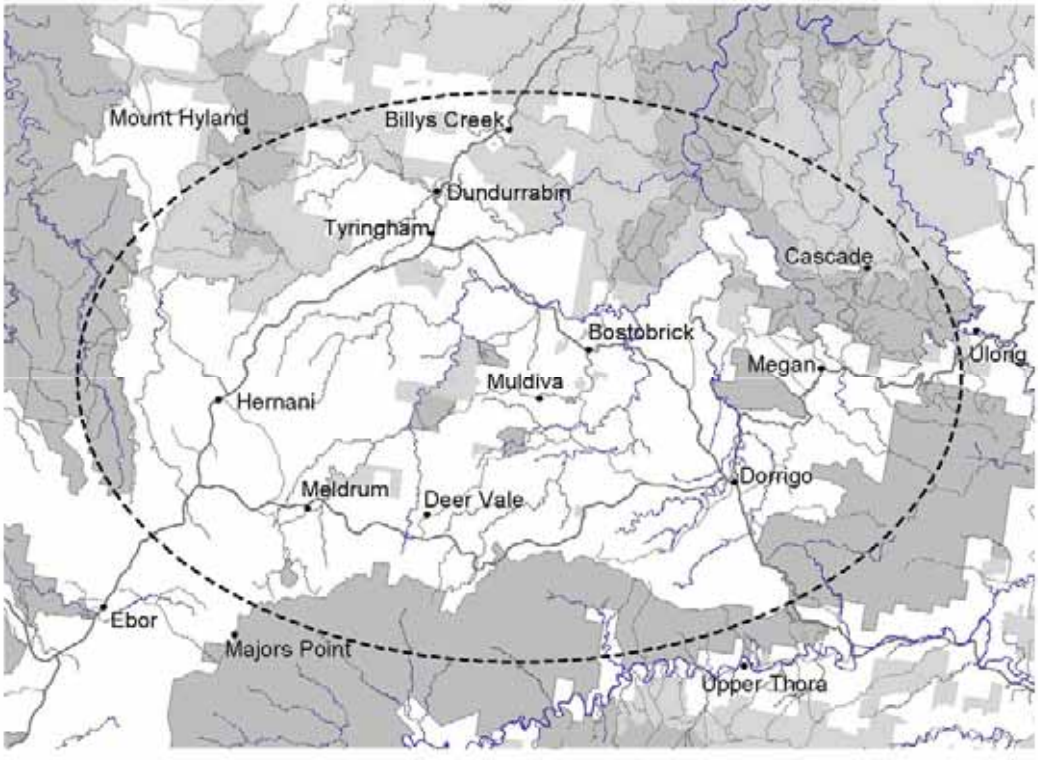

Figure 2: Area for application of pouched frog prescription

Prescription
Where there is a record of a pouched frog within the 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.

Additional information
The pouched frog lives in cool, moist rainforest with trees such as Antarctic beech, or in moist eucalypt forest in mountainous areas. It lives mostly above 800 metres above sea level, and spends most of its time in damp leaf litter, or under rocks and rotten logs.

Giant burrowing frog (*Heleioporous australiacus*)

CMAs for application of prescription
Hawkesbury-Nepean, Hunter-Central Rivers and Sydney Metro.

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.

Giant barred frog (*Mixophyes iterates*), Fleay's frog (*Mixophyes fleayi*) and stuttering frog (*Mixophyes balbus*)

CMAs for application of prescription
Giant barred frog*:* Hawkesbury–Nepean, Hunter–Central Rivers and Northern Rivers.
Fleay's frog*:* Northern Rivers
Stuttering frog: Hawkesbury–Nepean, Hunter–Central Rivers, Northern Rivers and Sydney Metro.

Prescription
Where there is a record of a giant barred frog, Fleay's frog or 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, and first-, second- and third-order and above streams – see Figure 3) within 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:
Giant barred frog – streamside vegetation, mostly in subtropical and cool temperate rainforests, but also in wet sclerophyll forest.
Fleay's frog – streamside vegetation mostly in subtropical and cool temperate rainforests.
Stuttering frog – forest communities ranging from heaths (tea-tree) in dry upland forests to closed forests including wet sclerophyll forest and rainforest.

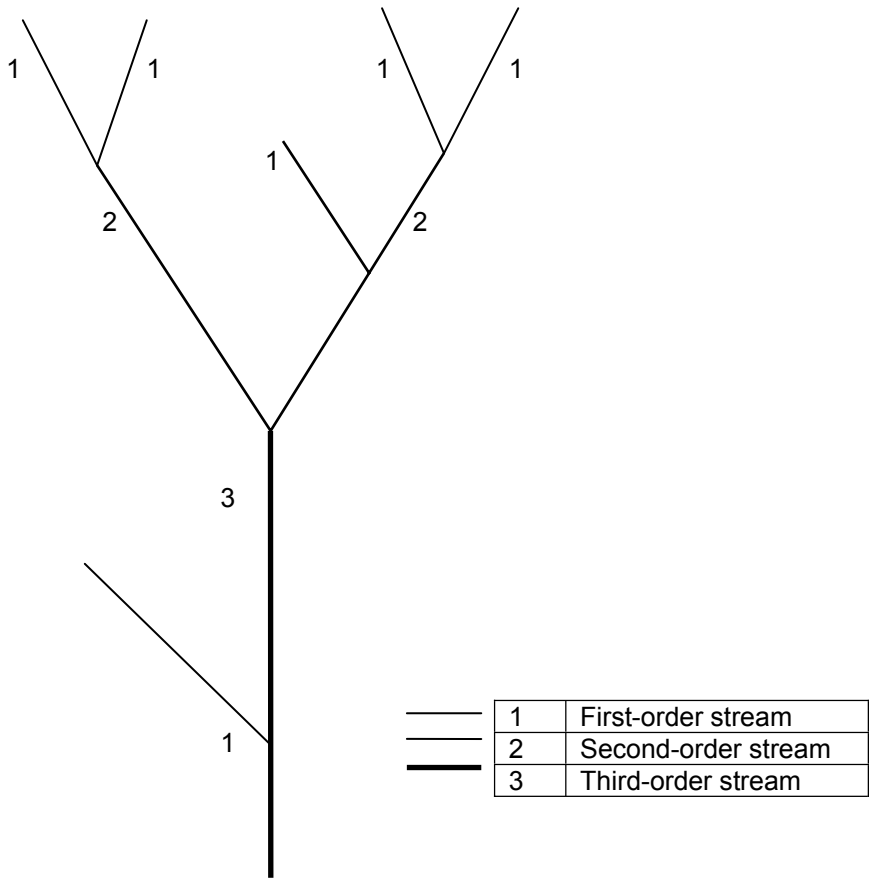

Figure 3: Schematic diagram of stream order (after Strahler 1964)

Philoria species: Loveridge's frog (*Philoria loveridgei), P. pughi*, and mountain frog (*P. kundagungan)*

CMAs for application of prescription
Border Rivers–Gwydir and Northern Rivers.

Prescription
Where there is a record of any of the species of *Philoria* within 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.

Mammals

Black-striped wallaby (*Macropus dorsalis*)

CMAs for application of prescription
Border Rivers–Gwydir, Namoi and Northern Rivers.

Prescription
Where there is a black-striped wallaby 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) only single-tree selection and thinning operations can occur (i.e. no canopy openings)

(ii) no post-harvesting burning can occur

(iii) disturbance to understorey trees and shrubs, ground logs, rocks and litter must be minimised.

Additional information
Potential black-striped wallaby habitat is characterised by dense woody or shrubby vegetation within three metres of the ground. This dense vegetation must occur near a more open, grassy area to provide suitable feeding habitat.
Habitat is common on north-west slopes associated with dense vegetation, including brigalow, ooline and semi-evergreen vine thicket.
On the north coast, habitat is often associated with dry rainforest but can also be moist eucalypt forest with a rainforest understorey or a dense shrub layer.

Brush-tailed phascogale (*Phascogale tapoatafa*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Northern Rivers and Sydney Metro.

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-hectare) 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
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi, Northern Rivers and Sydney Metro.

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-hectare) 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-hectare) 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.

Hastings River mouse (*Pseudomys oralis*)

CMAs for application of prescription
Hunter-Central Rivers and Northern Rivers.

Prescription
Where there is a Hastings River mouse record within the area of forest operations or within 200 metres of the area of forest operations, the following must apply:

(a) An exclusion zone with a 200-metre radius (about 12.5 hectare) must be identified, centred on the location of the record, within which the following additional 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 any seepage areas within or adjacent to the exclusion zone, as well as to ground logs, rocks and litter, must be minimised.

Additional information
Potential Hastings River mouse habitat includes a variety of dry open forest types with dense, low ground cover and a diverse mixture of ferns, grass, sedges and herbs. Access to seepage zones, creeks and gullies is important, as is permanent shelter such as rocky outcrops. Habitat is usually found at elevations between 500 and 1100 metres.

Spotted-tailed quoll (*Dasyurus maculatus*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi, Northern Rivers and Sydney Metro.

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
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi, Northern Rivers and Sydney Metro.

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 a 20-hectare radius) 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.

Yellow bellied glider (*Petaurus australis*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi, Northern Rivers and Sydney Metro.

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 be 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-nosed potoroo (*Potorous tridactylus*)

CMAs for application of prescription
Northern Rivers

Prescription
Where there is a record of a long-nosed potoroo in an area of forest operations:

(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
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi, Northern Rivers and Sydney Metro.

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 5) 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 Area 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 1 below), the following must apply:

- (i) 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
- (ii) 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
- (iii) damage to retained trees must be minimised by directional falling techniques
- (iv) 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 1). 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.

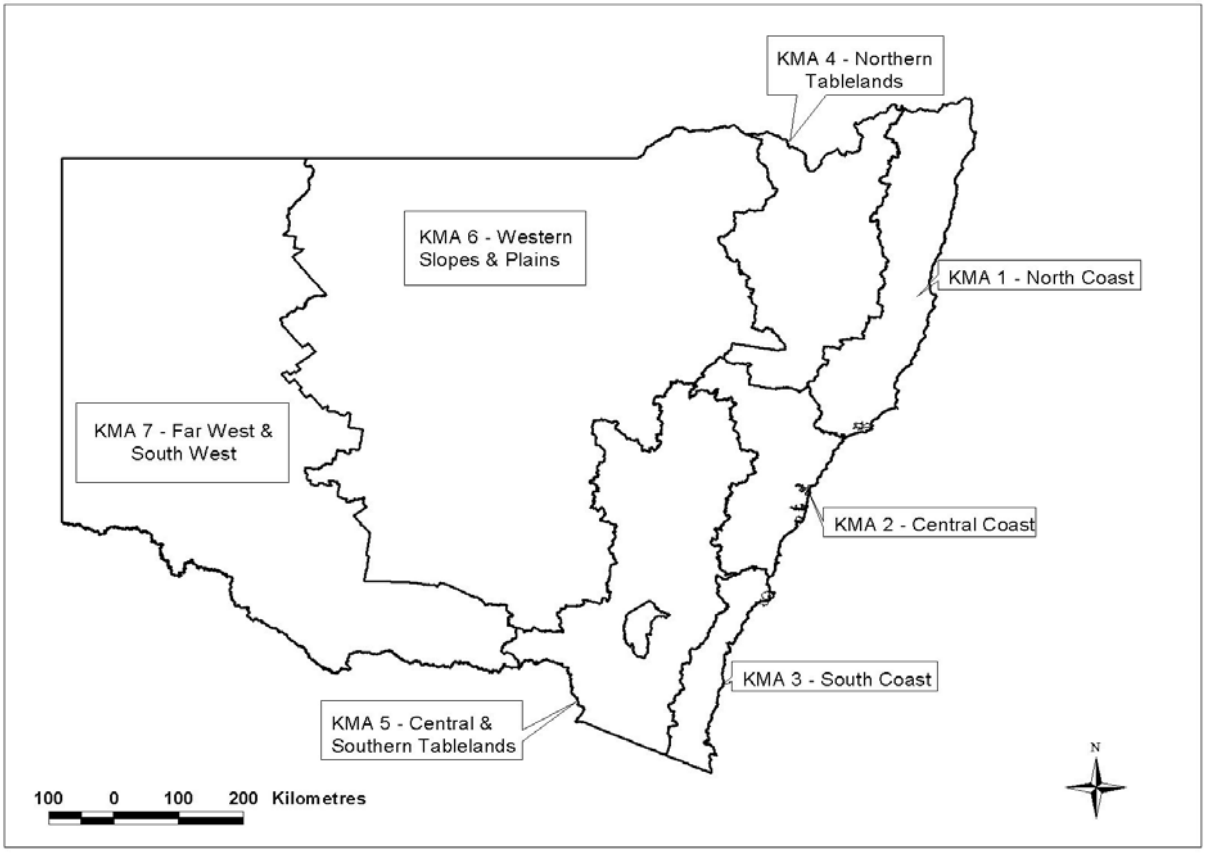

Figure 4: Koala Management Areas in NSW (from Draft State Koala Recovery Plan)

Table I: List of primary and secondary koala food trees

A list of koala food trees for Koala Management Areas in the Northern PNF Code areas.

Koala food tree species		**Koala management area**			
Common name	**Scientific name**	**1**	**2**	**4**	**5**
PRIMARY TREE SPECIES					
Cabbage gum	*E. amplifolia*	X	X	X	
Orange gum	*E. bancrofti*	X			
Tallowwood	*E. microcorys*	X	X		
Parramatta red gum	*E. parramattensis*	X	X		
Swamp mahogany	*E. robusta*	X	X		
Forest red gum	*E. tereticornis*	X	X	X	
Ribbon gum	*E. viminalis*		X	X	X
SECONDARY TREE SPECIES					
Narrow-leaved peppermint	*E. acaciiformis*			X	
White box	*E. albens*			X	X
Tenterfield woolybutt	*E. banksii*			X	
Blue box	*E. baueriana*		X		
Eurabbie	*E. bicostata*			X	X
Grey gum	*E. biturbinata*	X			
Blakely's red gum	*E. blakelyi*			X	X
Coast grey box	*E. bosistoana*		X		
Apple-topped box	*E. bridgesiana*			X	X
Broad-leaved sally	*E. camphora*		X	X	X
Large-fruited grey gum	*E. canaliculata*	X			
Argyle apple	*E. cinerea*				X
Fuzzy box	*E. conica*		X	X	

Yertchuk	*E. consideniana*		X		
Monkey gum	*E. cypellocarpa*		X		
Mountain gum	*E. dalrympleana*			X	X
Tumbledown gum	*E. dealbata*			X	X
Dwyer's red gum	*E. dwyeri*		X	X	
Slaty red gum	*E. glaucina*	X	X		
Bundy	*E. goniocalyx*		X	X	X
N/A	*E. interstans*			X	
Craven grey box	*E. largeana*	X	X		
Woolybutt	*E. longifolia*		X		
Maiden's gum	*E. maidenii*		X		X
Moonbi apple box	*E. malacoxylon*			X	
Brittle gum	*E. mannifera*		X	X	X
Yellow box	*E. melliodora*			X	X
Brittle gum	*E. michaeliana*		X	X	
Western grey box	*E. microcarpa*		X		
Grey box	*E. moluccana*	X	X	X	
Narrow-leaved black peppermint	*E. nichollii*			X	
Large-flowered bundy	*E. nortonii*			X	X
Mountain mahogany	*E. notabilis*	X	X	X	
New England peppermint	*E. nova-anglica*			X	
Swamp gum	*E. ovata*		X		
Snow gum	*E. pauciflora*			X	X
Red box	*E. polyanthemos*			X	X
Orange gum	*E. prava*			X	
Brittle gum	*E. praecox*		X	X	
Small-fruited grey gum	*E. propinqua*	X			
Grey gum	*E. punctata*		X		
White-topped box	*E. quadrangulata*	X	X	X	
Red mahogany	*E. resinifera*	X	X		
N/A	*E. retinens*			X	
Candlebark	*E. rubida*			X	
Rudder's box	*E. rudderi*	X	X		
Steel box	*E. rummeryi*	X			
Large-fruited red mahogany	*E. scias*		X		
Narrow-leaved red gum	*E. seeana*	X			
N/A	*E. volcanica*			X	

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

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter-Central Rivers, Namoi, Northern 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.

Common blossom-bat (*Syconycteris australis*)

CMAs for application of prescription
Hunter–Central Rivers and Northern Rivers.

Prescription
In areas of common blossom-bat potential habitat (i.e. wet sclerophyll and swamp sclerophyll forest within 30 kilometres of the coast), at least 75% of mature individuals of each species of coast banksia (*Banksia integrifolia),* broad-leaved paperbark (*Melaleuca quinquenervia),* silky oak *(Grevillea robusta)*, white bottlebrush (*Callistemon viminalis)* and swamp mahogany (*Eucalyptus robusta*) in the net harvest area must be protected from damage from forest operations activities. During forest operations activities, the potential for damage to these trees must be minimised by utilising techniques of directional felling.

Additional information
The common blossom-bat feeds on winter-flowering species such as the species listed in the above paragraph.

Golden-tipped bat (*Kerivoula papuensis*)

CMAs for application of prescription
Border Rivers–Gwydir, Hawkesbury–Nepean, Hunter–Central Rivers and Northern 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 tellow-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
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Northern Rivers and Sydney Metro.

Prescription
Where there is a record of large-footed myotis in an area of forest operations, or 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, storm-water 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, Hunter–Central Rivers and Sydney Metro.

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 hectare) 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 26 trees with visible hollows with openings greater than 10 centimetres must be retained where available

  (ii) 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, Hunter–Central Rivers and Sydney Metro.

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 hectare) must be identified centred on the location of the record.

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

(i) all termite mounds must be protected from any disturbance

(ii) disturbance to understorey trees and shrubs, and in particular, ground logs and rock outcrops and ledges must be minimised

(iii) 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 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.

White-crowned snake (*Cacophis harriettae*)

CMAs for application of prescription
Northern Rivers.

Prescription
Where there is a record of a white-crowned snake in an area of forest operations, or within 30 metres of the boundary of the area of forest operations, an exclusion zone with at least a 30-metre radius must be implemented around the location of the record.

Additional information
Distribution: The snake has a patchy distribution in NSW from Forster to the Queensland border, west to Urbenville.
Macrohabitat: The snake has been recorded in a range of habitats: wet sclerophyll, heathlands, open forest, woodland, dry eucalypt forest, coastal stringybark forest, rainforest and wet sclerophyll forest. Low elevation sclerophyll forests are favoured in northern NSW.
Microhabitat: The snake shelters during the day under logs, leaf litter and rocks.

Pale-headed snake (*Hoplocephalus bitorquatus*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi and Northern Rivers.

Prescription
Where there is a record of the pale-headed snake 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 at least a 100-metre radius must be implemented around the location of the record.

(b) If forest operations are being conducted during the months of May, June, July, August or September, an additional 200 metre-wide buffer zone must be implemented around the exclusion zone. Within this buffer zone, the following must apply:

(i) a minimum of 26 trees with visible hollows with openings greater than 10 centimetres must be retained where available

(ii) all stags must be retained where it is safe to do so

(iii) during forest operations, the potential for damage to these trees must be minimised by utilising techniques of directional felling.

Additional information
Distribution: The snake has a patchy distribution from north-eastern NSW to north Queensland. It is found in NSW on both sides of the Great Dividing Ranges as far south as Tuggerah.
Macrohabitat: The snake is mainly found in dry eucalypt forests and woodlands and occasionally in rainforest or moist eucalypt forest.
***Microhabitat*:** The snake shelters during the day between loose bark and tree trunks, or in hollow trunks and limbs of dead trees, especially near watercourses.

Birds

Rufous scrub-bird (*Atrichornis rufescens*)

CMAs for application of prescription
Hunter–Central Rivers and Northern Rivers.

Prescription
If there is a record of a rufous scrub-bird in an area of forest operations or within 300 metres of the boundary of an area of forest operations, the following must apply:

(a) An exclusion zone must be implemented which encompasses all rufous scrub-bird microhabitat (as defined below) within 300 metres of the location of the record.

(b) An additional exclusion zone of at least 20 metres-wide must be implemented around all microhabitat referred to above.

Additional information
Distribution: Rufous scrub-birds occur in rainforest and wet sclerophyll forest at higher elevations. There are considered to be five major habitat refuges: Barrington Tops, Werrikimbe–Mt Boss, New England–Killiekrankie Mountain, Gibraltar Range and Border Ranges.
Microhabitat: Potential rufous scrub-bird habitat is defined as areas of rainforest and wet sclerophyll forest that are one hectare or greater in size, and contain extremely dense cover between 2 and 50 centimetres above the ground, and moderate cover between 50 and 100 centimetres above the ground. The cover may consist of both living and non-living plant material. These areas generally have a moist ground level microclimate and abundant leaf litter.

Albert's lyrebird (*Menura alberti*)

CMAs for application of prescription
Northern Rivers.

Prescription
Where there is an Albert's lyrebird record within 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 at least 20 metres-wide must be implemented on both sides of all first-order streams (see Figure 3) within 300 metres of the location of the record.

(b) An exclusion zone at least 30 metres-wide must be implemented on both sides of all second-order streams (see Figure 3) within 300 metres of the location of the record.

(c) The width of these 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.

(d) Logging and snigging are prohibited in these exclusion zones (road construction and road re-opening are permitted only where there is no other practical means of access).

Additional information
Habitat: The bird lives in mixed rainforest and wet open forest, which is frequently dominated by brush box. In winter, birds commonly forage in moist forest on ridges between wetter forests.

Marbled frogmouth (*Podargus ocellatus*)

CMAs for application of prescription
Northern Rivers.

Prescription
Where there is a record of a marbled frogmouth within an area of forest operations or within 30 metres of the boundary of the area of forest operations, the following must apply:

(a) An exclusion zone at least 20 metres-wide must be implemented on both sides of all first-order streams (see Figure 3) in the area to be logged.

(b) An exclusion zone at least 30 metres-wide must be implemented on both sides of all second-order streams (see Figure 3) in the area to be logged.

(c) The width of these 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.

(d) Logging and snigging are prohibited in these exclusion zones (road construction and road re-opening are permitted only where there is no other practical means of access).

Additional information
Habitat: The bird lives in mixed rainforest and wet open forest.

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

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi, Northern Rivers and Sydney Metro.

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 barking owl, of the area of forest operations, the following prescriptions apply:

(a) Buffer zones with a 1000-metre radius (about 300 hectare) for the powerful owl, masked owl or sooty owl and 500-metre radius (about 78 hectare) 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:

  (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.

(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
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi, Northern Rivers and Sydney Metro.

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 2) 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.

Table J: List of eucalypt feed trees
'Eucalypt feed tree' means mature or late mature individuals of any of the following eucalypt species:

White mahogany – *Eucalyptus acmenoides, E. umbra, E. carnea*	Spotted gum species – *Corymbia* spp.
Ironbark species – *E. ancophila, E. tetrapleura, E. ophitica*	Mountain gum – *E. dalrympleana*
Swamp mahogany – *E. robusta*	Manna gum – *E. viminalis*
Forest red gum – *E. tereticornis*	Needlebark stringybark – *E. planchoniana*
Bloodwood species – *Corymbia* spp.	Tindale's stringybark – *E. tindaliae*
Craven grey box – *E. largeana*	Red stringybark – *E. macrorhyncha*
Yellow box – *E. melliodora*	Fuzzy box – *E. conica*
White box – *E. albens*	Red ironbark – *E. fibrosa*
Grey ironbark – *E. paniculata, E. siderophloia, E. placita, E. fusiformis*	Mugga ironbark – *E. sideroxylon*
Grey box – *E. molucanna*	Caley's ironbark – *E. caleyi*
Narrow leaved ironbark – *E. crebra*	Rudder's box – *E. rudderi*
Ferguson's ironbark – *E. fergusonii*	Steel box – *E. rummeryi*

Swift parrot (Lathamus discolor)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Hawkesbury–Nepean, Hunter–Central Rivers, Namoi, Northern Rivers and Sydney Metro.

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 2) 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*)

Eastern bristlebird (*Dasyornis brachypterus*)

CMAs for application of prescription
Northern Rivers.

These birds are very rare, with fewer than 40 individuals known in northern NSW. The area for the application of the prescription is shown in Figure 5 below.

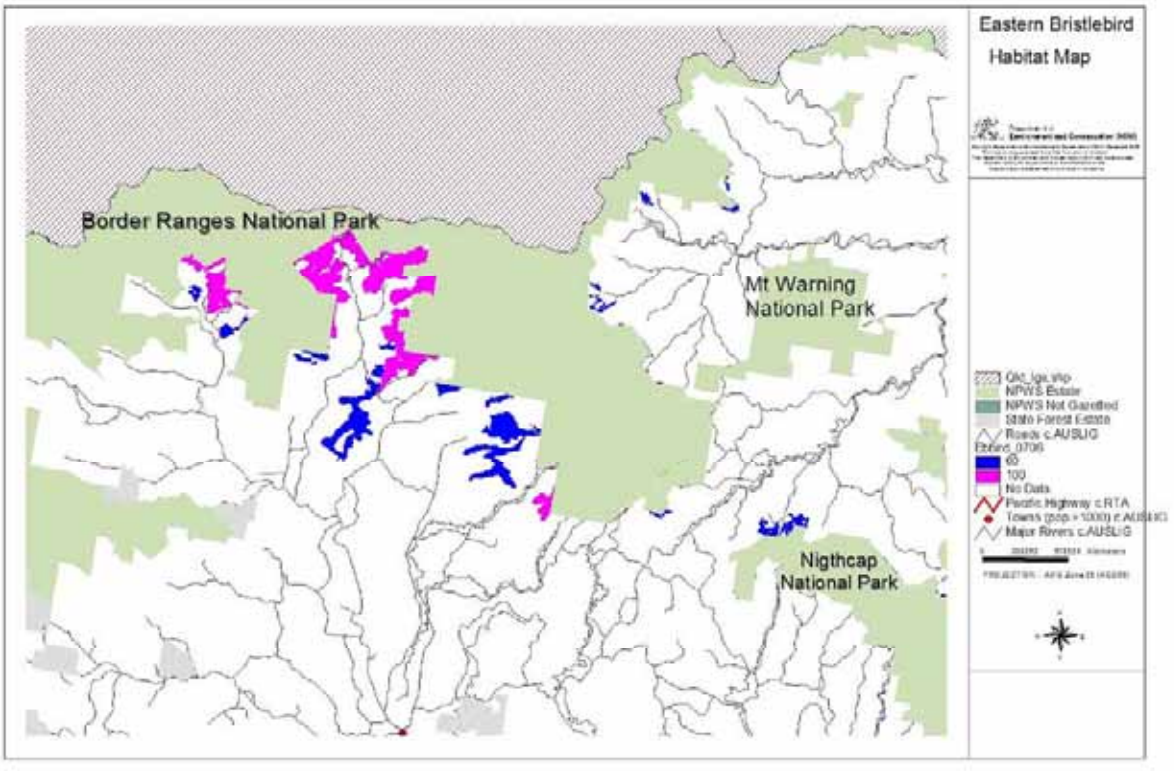

Figure 5: Area of eastern bristlebird prescription application

Prescription
Where there is an eastern bristlebird record, the following must apply:

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

(b) Additionally, a 150-metre buffer must be identified around the exclusion zone, and within this buffer zone the following prescriptions must be implemented:

(i) no forestry operation can be undertaken within the breeding season between 1 August and 1 February in any year

(ii) disturbance to understorey trees and shrubs, and in particular, ground cover and litter, must be minimised

(iii) no post-harvesting burning is permitted.

Additional information
Eastern bristlebird habitat is characterised by dense, low vegetation including open woodland and open forest (montane open forest) with tussocky grass understorey; all these vegetation types are fireprone. The age of the habitat since fires (fire-age) is of paramount importance to this species.

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 containing seed cones, is to be minimised.

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

Red-tailed black-cockatoo (*Calyptorhynchus banksii)*

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Namoi and Northern Rivers.

Prescription
No forest operations are permitted within a 50-metre radius of all red-tailed black-cockatoo nests.

Additional information
Red-tailed black-cockatoos nest in tree hollows, usually in larger, mature trees. Nest locations are indicative of where a bird is seen entering a hollow. Nesting season is from March to August.
Red-tailed black-cockatoos are found in a wide variety of habitats. In coastal north-east NSW they have been recorded in dry open forest and areas of mixed rainforest/eucalypt forest.

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 K: 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 area
B	*Acacia acrionastes*	Pindari wattle	Border Rivers-Gwydir
H	*Acacia bynoeana*	Bynoe's wattle	Hawkesbury-Nepean, Hunter-Central Rivers, Sydney Metro
D	*Acacia courtii*	North Brother wattle	Northern Rivers
H	*Acacia flocktoniae*	Flockton wattle	Hawkesbury-Nepean
B	*Acacia macnuttiana*	MacNutt's wattle	Border Rivers-Gwydir, Northern Rivers
B	*Acacia pubescens*	Downy wattle	Hawkesbury-Nepean, Hunter-Central Rivers, Sydney Metro
B	*Acacia pubifolia*	Velvet wattle	Border Rivers-Gwydir, Namoi, Northern Rivers
B	*Acacia pycnostachya*	Bolivia wattle	Border Rivers-Gwydir
G	*Acacia ruppii*	Rupp's wattle	Northern Rivers
F	*Acalypha eremorum*	Acalypha	Northern Rivers
G	*Allocasuarina simulans*	Nabiac casuarina	Hunter-Central Rivers, Northern Rivers
G	*Almaleea cambagei*	Torrington pea	Border Rivers-Gwydir, Northern Rivers
G	*Amorphospermum whitei*	Rusty plum	Northern Rivers
A	*Amyema plicatula*	Formerly known as *A. scandens*	Northern Rivers
A	*Angiopteris evecta*	Giant fern	Northern Rivers
B	*Angophora exul*	Gibraltar rock apple	Border Rivers-Gwydir
B	*Angophora inopina*	Charmhaven apple	Hunter-Central Rivers
G	*Angophora robur*	Sandstone rough-barked apple	Northern Rivers
B	*Arthraxon hispidus*	Hairy jointgrass	Border Rivers-Gwydir, Northern Rivers
A	*Arthropteris palisotii*	Lesser creeping fern	Northern Rivers
B	*Asperula asthenes*	Trailing woodruff	Hunter-Central Rivers, Northern Rivers
D	*Asterolasia elegans*	Asterolasia elegans	Hawkesbury-Nepean

A	*Austromyrtus fragrantissima*	Sweet myrtle	Northern Rivers
A	*Baloghia marmorata*	Jointed baloghia	Northern Rivers
H	*Bertya ingramii*	Narrow-leaved bertya	Northern Rivers
A	*Bertya* sp. *Cobar-Coolabah*	Coolabah bertya	Namoi, Northern Rivers, Western
B	*Boronia granitica*	Granite boronia	Border Rivers-Gwydir
G	*Boronia umbellata*	Orara boronia	Northern Rivers
A	*Bosistoa transversa*	Yellow satinheart	Northern Rivers
A	*Cadellia pentastylis*	Ooline	Border Rivers-Gwydir, Namoi
B	*Caesia parviflora* var. *minor*	Small pale grass-lily	Hawkesbury-Nepean, Murrumbidgee, Northern Rivers, Sydney Metro
H	*Caladenia tessellate*	Tessellated spider orchid	Hawkesbury-Nepean, Hunter-Central Rivers, Sydney Metro
B	*Callitris baileyi*	Bailey's cypress pine	Northern Rivers
D	*Callitris oblonga*	Pygmy cypress pine	Northern Rivers
E	*Calophanoides hygrophiloides*	Native justicia	Northern Rivers
A	*Choricarpia subargentea*	Giant ironwood	Northern Rivers
G	*Corchorus cunninghamii*	Native jute	Northern Rivers
D	*Corokia whiteana*	Corokia– rhyolite	Northern Rivers
G	*Cryptostylis hunteriana*	Leafless tongue orchid – southern populations	Hawkesbury-Nepean, Hunter-Central Rivers, Northern Rivers
H	*Cymbidium canaliculatum* (Protected Native Plant Schedule 13 NP & W Act)	Tiger orchid	Northern Rivers, Hunter-Central Rivers, Border Rivers-Gwydir, Namoi
G	*Cynanchum elegans*	White-flowered wax plant	Hawkesbury-Nepean, Hunter-Central Rivers, Northern Rivers, Sydney Metro
B	*Cyperus aquatilis*	Water nutgrass	Northern Rivers
A	*Davidsonia jerseyana*	Davidson's plum	Northern Rivers
A	*Davidsonia johnsonii*	Smooth Davidson's plum	Northern Rivers
B	*Dendrocnide moroides*	Gympie stinger	Northern Rivers
E	*Desmodium acanthocladum*	Thorny pea	Northern Rivers
H	*Dichanthium setosum*	Bluegrass	Border Rivers-Gwydir, Namoi, Northern Rivers
G	*Diospyros mabacea*	Red-fruited ebony	Northern Rivers
G	*Diospyros major* var. *ebenus forma australiensis*	Shiny-leaved ebony	Northern Rivers
A	*Diploglottis campbellii*	Small-leafed tamarind	Northern Rivers
G	*Dipodium atropurpureum (PNP)*	Dipodium atropurpureum	Northern Rivers, Hunter-Central Rivers, Border River-Gwydir, Namoi
G	*Dipodium pulchellum (PNP)*	Dipodium pulchellum	Northern Rivers, Hunter-Central Rivers, Border Rivers-Gwydir, Namoi
B	*Diuris disposita*	Willawarrin doubletail	Northern Rivers
B	*Diuris pedunculata*	Small snake orchid	Border Rivers-Gwydir, Central West, Hunter-Central Rivers, Namoi, Northern Rivers,
D	*Diuris praecox*	Rough double tail	Hunter-Central Rivers, Sydney Metro
E	*Doryanthes palmeri* (PNP)	Giant spear lily	Northern Rivers
B	*Drynaria rigidula*	Basket fern	Northern Rivers
A	*Elaeocarpus* sp. *'Rocky Creek'*	Minyon quandong	Northern Rivers

A	*Endiandra floydii*	Crystal Creek walnut	Northern Rivers
C	*Endiandra hayesii*	Rusty rose walnut	Northern Rivers
A	*Endiandra muelleri subsp. bracteata*	Green-leaved rose walnut	Northern Rivers
E	*Eriostemon myoporoides ssp. conduplicatus (PNP)*	Long-leaf wax flower	Border Rivers-Gwydir, Namoi, Northern Rivers
D	*Eucalyptus caleyi subsp. ovendenii*	Ovenden's ironbark	Border Rivers-Gwydir
D	*Eucalyptus camfieldii*	Camfield's stringybark	Hawkesbury-Nepean, Hunter-Central Rivers, Sydney Metro
G	*Eucalyptus camphora subsp. relicta*	Warra broad-leaved sally	Northern Rivers
B	*Eucalyptus fracta*	Broken back ironbark	Hunter-Central Rivers
B	*Eucalyptus glaucina,* southern population	Slaty red gum	Hunter-Central Rivers
G	*Eucalyptus glaucina,* northern population	Slaty red gum	Northern Rivers
F	*Eucalyptus mckieana*	McKie's stringybark	Border Rivers-Gwydir, Namoi
B	*Eucalyptus nicholii*	Narrow-leaved black peppermint	Border Rivers-Gwydir, Namoi, Northern Rivers
B	*Eucalyptus parramattensis* subsp. *decadens*	Eucalyptus parramattensis subsp. decadens	Hunter-Central Rivers
G	*Eucalyptus pulverulenta*	Silver-leafed gum	Central West, Hawkesbury-Nepean, Murrumbidgee
B	*Eucalyptus pumila*	Pokolbn mallee	Hunter-Central Rivers
F	*Eucalyptus robertsonii subsp. hemisphaerica*	Robertson's peppermint	Central West
B	*Eucalyptus rubida subsp. barbigerorum*	Blackbutt candlebark	Border Rivers-Gwydir, Northern Rivers
E	*Eucalyptus tetrapleura*	Square-fruited ironbark	Northern Rivers
B	*Euphrasia bella*	Pretty eyebright	Northern Rivers
A	*Floydia praealta*	Ball nut	Northern Rivers
C	*Fontainea australis*	Southern fontainea	Northern Rivers
A	*Fontainea oraria*	Coastal fontainea	Northern Rivers
G	*Gastrodia sesamoides (Protected Native Plant Schedule 13 NP & W Act)*	Cinnamon bells, Potato orchid	Northern Rivers, Hunter-Central Rivers, Border Rivers-Gwydir, Namoi, Hawkesbury-Nepean
E	*Goodenia macbarronii*	McBarron's goodenia	Border Rivers-Gwydir, Central West, Hunter-Central Rivers, Namoi, Northern Rivers
D	*Grevillea banyabba*	Banyabba grevillea	Northern Rivers
D	*Grevillea beadleana*	Beadle's grevillea	Border Rivers-Gwydir, Northern Rivers
G	*Grevillea evansiana*	Evans grevillea	Central West, Hawkesbury-Nepean
D	*Grevillea guthrieana*	Guthrie's grevillea – Carrai metapopulation	Hunter-Central Rivers, Northern Rivers
B	*Grevillea masonii*	Mason's grevillea	Northern Rivers
G	*Grevillea mollis*	Soft grevillea	Northern Rivers
A	*Grevillea obtusiflora* spp. *obtusiflora*	Grevillea obtusiflora	Central West
G	*Grevillea parviflora* ssp. *parviflora*	Small-flower grevillea	Hawkesbury-Nepean, Hunter-Central Rivers, Sydney Metro
G	*Grevillea quadricauda*	Four-tailed grevillea	Northern Rivers
E	*Grevillea rhizomatosa*	Gibraltar grevillea	Northern Rivers
D	*Grevillea scortechinii subsp. sarmentosa*	Backwater grevillea	Northern Rivers
D	*Grevillea shiressii*	Grevillea shiressii	Hawkesbury-Nepean
E	*Hakea archaeoides*	Big Nellie hakea	Hunter-Central Rivers, Northern

			Rivers
B	*Hakea fraseri*	Gorge hakea	Northern Rivers
G	*Haloragis exalata* subsp. *exalata*	Square raspwort	Hunter-Central Rivers
B	*Hedyotis galioides*	Sweet false galium	Northern Rivers
D	*Hibbertia hexandra*	Tree guinea flower	Northern Rivers
G	*Hibbertia marginata*	Bordered guinea flower	Northern Rivers
B	*Hicksbeachia pinnatifolia*	Red boppel nut	Northern Rivers
G	*Homoranthus lunatus*	Crescent-leaved homoranthus	Border Rivers-Gwydir, Northern Rivers
G	*Homoranthus prolixus*	Granite homoranthus	Border Rivers-Gwydir, Central West, Namoi, Northern Rivers
A	*Hypolepis elegans*	Hypolepis elegans	Northern Rivers
B	*Knoxia sumatrensis*	Knoxia sumatrensis	Northern Rivers
D	*Lasiopetalum longistamineum*	Lasiopetalum longistamineum	Hunter-Central Rivers
A	*Lepidium hyssopifolium*	Aromatic peppercress	Central West, Northern Rivers
A	*Lepidium peregrinum*	Wandering peppercress	Border Rivers-Gwydir
B	*Leucopogon confertus*	Torrington beard-heath	Border Rivers-Gwydir
B	*Lindsaea brachypoda*	Short-footed screw fern	Northern Rivers
A	*Lindsaea fraseri*	Fraser's screw fern	Northern Rivers
A	*Lindsaea incisa*	Slender screw fern	Northern Rivers
E	*Macrozamia johnsonii*	Johnson's cycad	Northern Rivers
B	*Marsdenia longiloba*	Slender marsdenia	Northern Rivers
G	*Melaleuca biconvexa*	Biconvex paperbark	Hawkesbury-Nepean, Hunter-Central Rivers, Northern Rivers
D	*Melaleuca tamariscina* subsp. *irbyana*	Weeping paperbark	Northern Rivers
B	*Melichrus hirsutus*	Hairy melichrus	Northern Rivers
A	*Melichrus* sp. *'Gibberagee'*	Narrow-leaf melichrus	Northern Rivers
A	*Micromelum minutum*	Micromelum minutum	Northern Rivers
F	*Monotaxis macrophylla*	Large-leafed monotaxis	Border Rivers/-Gwydir, Central West, Lachlan, Northern Rivers
A	*Muellerina myrtifolia*	Myrtle-leaf mistletoe	Northern Rivers
A	*Myriophyllum implicatum*	Myriophyllum implicatum	Northern Rivers, Hunter-Central Rivers, Border Rivers-Gwydir, Namoi
A	*Ochrosia moorei*	Southern ochrosia	Northern Rivers
G	*Olax angulata*	Square-stemmed olax	Northern Rivers
B	*Olearia cordata*	Olearia cordata	Hawkesbury-Nepean, Hunter-Central Rivers
E	*Olearia flocktoniae*	Dorrigo daisy bush	Northern Rivers
A	*Owenia cepiodora*	Onion cedar	Northern Rivers
G	*Parsonsia dorrigoensis*	Milky silkpod	Northern Rivers
G	*Persicaria elatior*	Tall knotweed	Hawkesbury-Nepean, Hunter-Central Rivers, Northern Rivers
B	*Phaius australis*	Southern swamp orchid	Northern Rivers
B	*Phaius tankervilleae*	Lady Tankerville's swamp orchid	Northern Rivers
B	*Phebalium glandulosum subsp. eglandulosum*	Rusty desert phebalium	Border Rivers-Gwydir
B	*Picris evae*	Hawkweed	Border Rivers-Gwydir, Northern Rivers
G	*Pimelea venosa*	Bolivia Hill pimelea	Border Rivers-Gwydir
D	*Plectranthus nitidus*	Nightcap plectranthus	Northern Rivers
D	*Polygala linariifolia*	Native milkwort	Border Rivers-Gwydir, Northern Rivers

B	*Pomaderris brunnea*	Brown pomaderris	Hawkesbury-Nepean, Hunter-Central Rivers, Northern Rivers
B	*Pomaderris queenslandica*	Scant pomaderris	Border Rivers-Gwydir, Central West, Hunter-Central Rivers, Namoi, Northern Rivers
A	*Prostanthera askania*	Cut-leaf mint-bush	Hawkesbury-Nepean, Hunter-Central Rivers
F	*Prostanthera densa*	Villous mint-bush	Hunter-Central Rivers, Sydney Metro
A	*Prostanthera junonis*	Somersby mint-bush	Hawkesbury-Nepean, Hunter-Central Rivers, Sydney Metro
D	*Prostanthera staurophylla*	Torrington mint-bush	Border Rivers-Gwydir, Northern Rivers
B	*Pseudanthus ovalifolius*	Oval-leafed pseudanthus	Border Rivers-Gwydir
B	*Pterostylis cucullata*	Leafy greenhood	Hunter-Central Rivers
G	*Pterostylis gibbosa*	Illawarra greenhood	Hunter-Central Rivers
D	*Quassia* sp. *'Moonee Creek'*	Moonee quassia	Northern Rivers
A	*Randia moorei*	Spiny gardenia	Northern Rivers
H	*Restio longipes*	Restio longipes	Hawkesbury-Nepean, Hunter-Central Rivers
H	*Rulingia prostrata*	Dwarf kerrawang	Hawkesbury-Nepean, Hunter-Central Rivers
B	*Rutidosis heterogama*	Heath wrinklewort	Border Rivers-Gwydir, Hunter-Central Rivers, Northern Rivers
B	*Sarcochilus fitzgeraldii*	Ravine orchid	Northern Rivers
B	*Sarcochilus hartmannii*	Hartman's sarcochilus	Northern Rivers
A	*Sauropus albiflorus* subsp. *microcladus*	Brush sauropus	Northern Rivers
G	*Senna acclinis*	Rainforest cassia	Hawkesbury-Nepean, Hunter-Central Rivers, Northern Rivers
A	*Sophora fraseri*	Brush sophora	Northern Rivers
D	*Styphelia perileuca*	Montane green five-corners	Hunter-Central Rivers, Northern Rivers
A	*Syzygium hodgkinsoniae*	Red lilly pilly	Northern Rivers
A	*Syzygium moorei*	Durobby	Northern Rivers
G	*Syzygium paniculatum*	Magenta lilly pilly	Hawkesbury-Nepean, Hunter-Central Rivers, Northern Rivers, Sydney Metro
A	*Tarenna cameronii*	Cameron's tarenna	Northern Rivers
D	*Tasmannia glaucifolia*	Fragrant pepperbush	Hunter-Central Rivers, Northern Rivers
G	*Tasmannia purpurascens*	Broad-leaved pepperbush	Hunter-Central Rivers, Namoi
D	*Tetratheca glandulosa*	Tetratheca glandulosa	Hawkesbury-Nepean, Hunter-Central Rivers, Sydney Metro
D	*Tetratheca juncea*	Black-eyed susan	Hunter-Central Rivers, Sydney Metro
G	*Thesium australe*	Austral toadflax	Border Rivers-Gwydir, Hawkesbury- Nepean, Hunter-Central Rivers, Namoi, Northern Rivers
D	*Tinospora smilacina*	Tinospora vine	Northern Rivers
D	*Tinospora tinosporoides*	Arrow-head vine	Northern Rivers
B	*Triplarina imbricata*	Creek triplarina	Northern Rivers
A	*Tylophora woollsii*	Cryptic forest twiner	Northern Rivers
F	*Velleia perfoliata*	Velleia perfoliata	Hawkesbury-Nepean, Hunter-Central Rivers

H	*Zieria floydii*	Floyd's zieria	Northern Rivers
D	*Zieria involucrata*	Zieria involucrata	Hawkesbury-Nepean

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 of 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 of 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.

C. Threatened flora: 50-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 of at least 50 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 50-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.

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 of 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 utilising techniques of directional felling.

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: • evidence of active erosion or deposition, e.g. gravel, pebble, rock, sand bed, scour hole or nick point • an incised channel of more than 30 centimetres deep with clearly defined bed and banks • 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 for all Code except the River Red Gum Forests Code where it is Tables A or C) where forest operations are prohibited, unless otherwise allowed under this Code.

Extraction track	A track constructed for use by forwarding machinery.
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.
Timber products	Commercial timber products removed from or felled within the forest, including sawlogs, veneer logs, poles, girders, piles and pulp logs.
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: • timber felling, snigging and extraction • 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. • Trees with nests of colonial-nesting water birds (groups of stick-nests).
Old growth	Ecologically mature forest where the effects of disturbance are now negligible. This includes an area of forest greater than 5 hectares where: • 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) • 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

	• the effects of unnatural disturbance are now negligible. 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 8: • plants of the *Xanthorrhoea* (grass trees), *Allocasuarina* (forest oak (except bull oak (*Allocasuarina luehmannii*)) and *Banksia* genuses • 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.
Rainfall erosivity	A measure of the ability of rainfall to cause erosion at any location. It is directly related to the likelihood of high intensity storms and can be used to predict times of the year when erosion risk is greatest.
Rainforest	Rainforest is tree-dominated vegetation where the tree stratum (over 3 metres in height) which has the greatest crown cover has rainforest species making up 50% or more of the crown cover, except where non rainforest emergent species (including brushbox and turpentine) occur and exceed 30% or more of the upper stratum crown cover Rainforest includes all areas of rainforest mappable at a 1:25000 scale. Rainforest also includes areas exceeding 0.5 hectares occurring as isolated clumps or lineal strips of rainforest trees.
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
River Red Gum Forests	A forest dominated by *Eucalyptus camaldulensis* consistent with description of Forest Type 199 (River Red Gum) in State Forests of NSW, Research Note 17.
Riparian exclusion zones	Those areas within the distance specified of drainage features 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 with 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.
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.
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.
Wetlands	As defined in the *Native Vegetation Act 2003*.

B

Private Native Forestry Code of Practice

Private Native Forestry Code of Practice for Southern NSW

Department of **Environment & Climate Change** NSW

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Introduction

The object of this Private Native Forestry Code of Practice (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 the part of the State south of the Sydney latitude. Sydney latitude means latitude 330 52' 02.71 S.

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 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 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; and
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 any provision 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 be 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 Appendix A to this Code.

(3) The landowner and any other persons 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 species, populations or endangered ecological communities listed under the schedules of the Threatened Species Conservation Act 1995

(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 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 are to be calculated in accordance with the guidelines prepared by Department of Environment and Climate Change.

Table A: Minimum stand basal area retention 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
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; and

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

(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.

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 guidelines prepared by Department of Environment and Climate Change.

(5) A landowner must comply with any requirements of the Director General 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%
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.

The method for measuring plots for sampling and measuring stocking is 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*.

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.

(3) Rainforest will be identified according to the protocol approved by the Minister for Climate Change, Environment and Water.

Table C: Requirements for protecting landscape features

Landscape feature	**Operational conditions**
Endangered ecological communities listed in the *Threatened Species Conservation Act 1995*	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*	Forest operations must not result in any harm to an animal that is of, or is part of an endangered population, or result in the picking of any plant that is of, or is part of an endangered population, except that: • existing roads may be maintained.
Vulnerable ecological communities listed in the *Threatened Species Conservation Act 1995*	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: • existing roads may be maintained • existing snig tracks may be used.
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: • existing roads and tracks may be maintained; • 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 50 metres of a known burial site. • Forest operations must not occur within 20 metres of an Aboriginal scarred or carved tree. • Forest operations must not occur 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.
Heritage site as listed under the *Heritage Act 1977*	• 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. • Harvesting machinery must not enter the area. • Existing roads may be maintained. • New roads must not be constructed.
Dispersible and highly erodible soils	• Existing roads may be maintained. • Drainage feature crossings must be armoured with erosion resistant material. • Road batters and table drains must be stabilised using erosion resistant material, vegetation or slash. • Log landings must be stabilised using erosion resistant material, vegetation or slash at the completion of forestry operations. • 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) A hollow bearing tree, recruitment tree, food resource tree, roost tree and nest tree 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 should 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. • 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. • Where the total number of hollow bearing trees is less than 10 trees per 2 hectares, additional recruitment trees are to be retained to bring the total number of retained hollow bearing and recruitment trees up to 20 trees per 2 hectares. • 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. • A minimum of 6 feed trees per 2 hectares should be retained where available. • All feed trees that have marks or 'V' notches from sap feeding mammals must be retained.

Trees that must be retained
• All roost, nest or food resource trees must be retained.

Table E: List of 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; and

(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 section 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, and within the distance specified of, drainage features as listed in Table F.

Table F: Riparian exclusion and riparian buffer zones

For an explanation of stream order see Figure 2 in the Appendix

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

Drainage feature	Riparian exclusion zone distance from drainage feature	Riparian buffer zone distance beyond riparian exclusion zone
Prescribed stream	20 metres	15 metres

(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; and

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

Note: Basal area measurement will be in accordance with the guidelines prepared by the Department of Environment and Climate Change.

(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.

(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 shall 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, and 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 section and sections 4.5 (2), 4.5(7) 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; and

(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 on 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 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% or 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 other code conditions.

(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; and

(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; and

(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,

(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. 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 catchments administered by Catchment Management Authorities (CMAs) shown in Figure 1 below.

General conditions

For all threatened species prescriptions, the following applies:

1. 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
2. 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
3. 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.

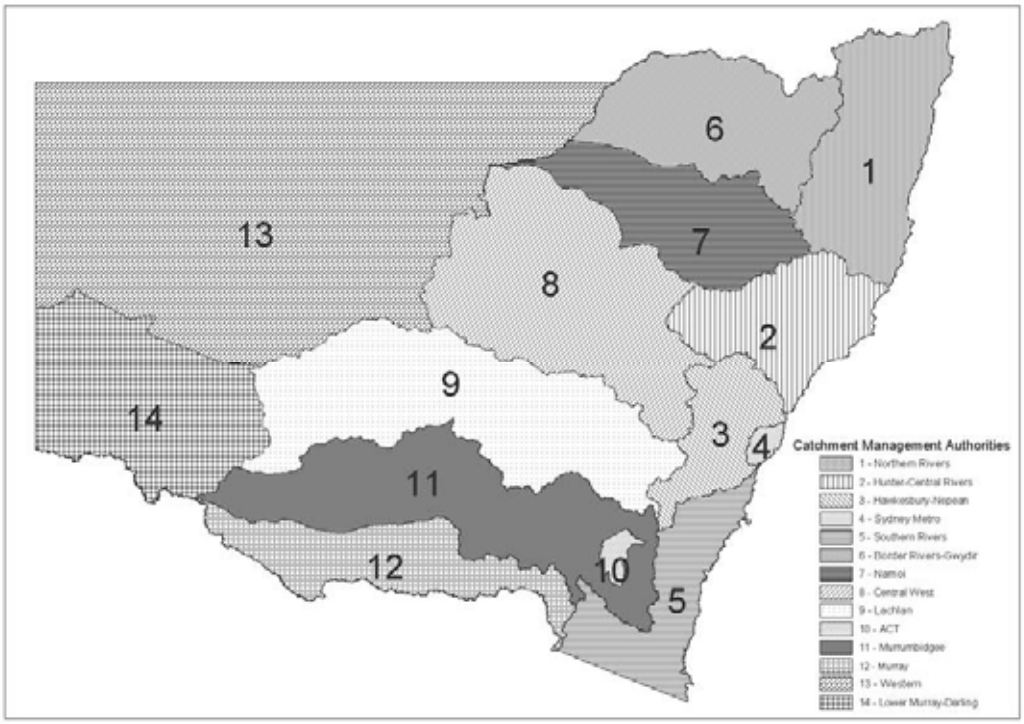

Figure 1 – Catchment Management Authority (CMA) areas where prescriptions for some threatened species may vary

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 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) within 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: **Stuttering frog** – forest communities ranging from heaths (tea-tree) in dry upland forests to closed forests including wet sclerophyll forest and rainforest.

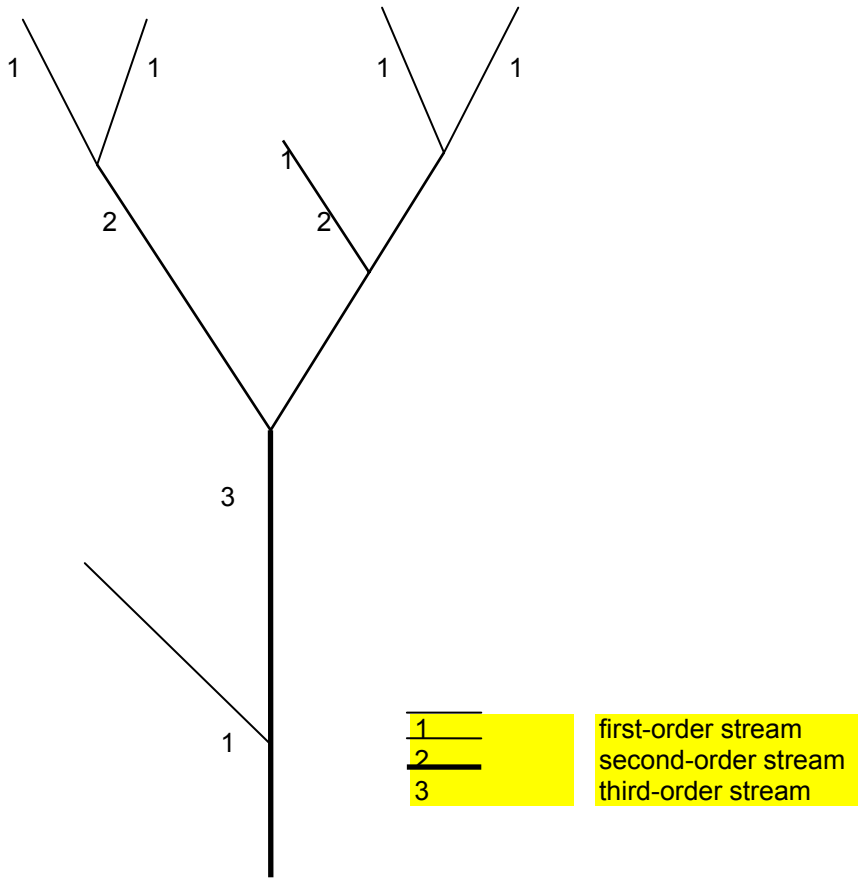

Figure 2 – Schematic diagram of stream order (after Strahler 1964)

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 below.

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.

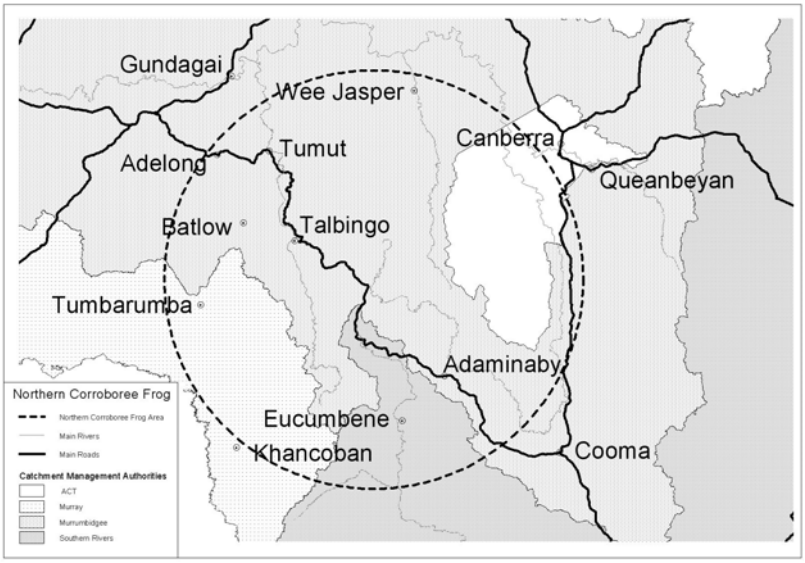

Figure 3 - Area for application of Northern corroboree frog prescription

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 hectare) 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 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, rocks and litter must be minimised
- 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-hectare) 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-hectare) of the exclusion zone, a buffer zone must be identified within which the following additional prescriptions must be implemented:

- only single-tree selection and thinning operations can occur (i.e. no canopy openings)
- no post-harvest burning is permitted
- a minimum of 26 trees with visible hollows must be retained where available
- 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 area 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 hectare) must be identified, centred on the location of the record or records.

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 (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 (about 12.5-hectare) exclusion zone must be identified, centred on the record.

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

- no forest operations, or removal of understorey plants or groundcover, are permitted
- no post-harvesting burning is permitted
- disturbance to understorey trees and shrubs, ground logs, 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 be 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 (about a 12.5-hectare) exclusion zone must be identified, centred on the record.

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

- no forest operations, or removal of understorey plants or groundcover, are permitted
- no post-harvest burning is permitted
- 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:

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 where 20 or more koala faecal pellets (scats) are found beneath any tree (or one or more koala faecal pellets in Koala Management Areas 3and 5) this tree must be retained and an exclusion zone of 20 metres (50 metres in Koala Management Areas 3 and 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 1 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 falling 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 1). 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.

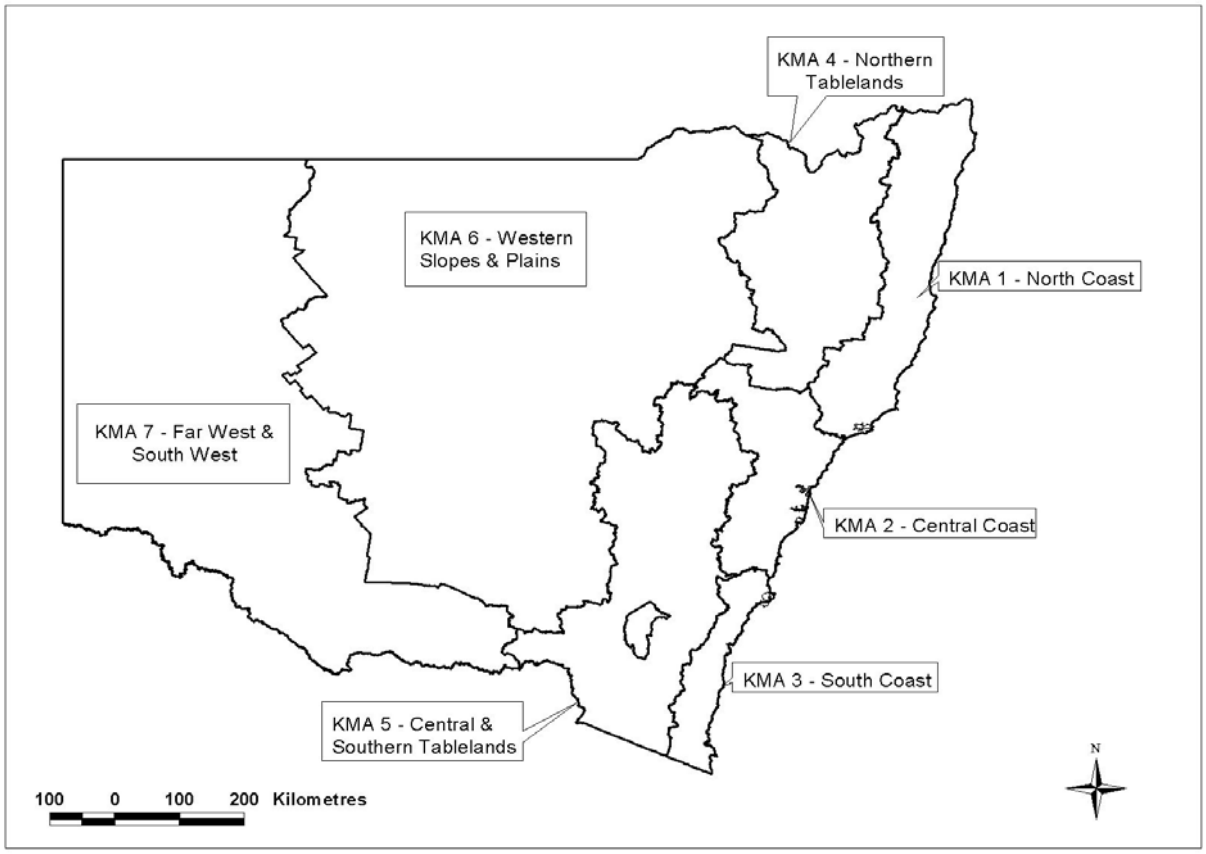

Figure 4 – Koala Management Areas in NSW (from Draft State Koala Recovery Plan)

Table I: List of primary and secondary koala food trees

A list of koala food trees for 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 2) 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 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, storm-water 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 hectare) 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 a200-metre radius (about 12.5 hectare) 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 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 barking owl, of the area of forest operations, the following prescriptions apply:

a. Buffer zones with a1000-metre radius (about 300 hectare) for the powerful owl, masked owl or sooty owl and 500-metre radius (about 78 hectare) 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, 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 species 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. 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, 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 containing seed cones, is to be minimised.

c. Any she-oaks with evidence of foraging by glossy black-cockatoos (i.e. chewed seed cones under the tree) are to 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 area
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	*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 ssp. 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 of 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 of 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.

C. Threatened flora: 50-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 of at least 50 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 50-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.)

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 of 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 utilising techniques of directional felling.

(**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: • evidence of active erosion or deposition – e.g. gravel, pebble, rock, sand bed, scour hole or nick point • an incised channel of more than 30 centimetres deep with clearly defined bed and banks • 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.
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	All clearing resulting from activities associated with forest management

operations	including harvesting operations, construction and maintenance of roads and tracks, and prescribed burning for regeneration.
Timber products	Commercial timber products removed from or felled within the forest, including sawlogs, veneer logs, poles, girders, piles and pulp logs.
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: • timber felling, snigging and extraction • 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. • Trees with nests of colonial-nesting water birds (groups of stick-nests).
Old growth	Ecologically mature forest where the effects of disturbance are now negligible. This includes an area of forest greater than 5 hectares where: • 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) • 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 • the effects of unnatural disturbance are now negligible. 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 8:

- plants of the Xanthorrhoea (grass trees), Allocasuarina (forest oak (except bull oak (Allocasuarina luehmannii)) and Banksia genuses
- 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.
Rainfall erosivity	A measure of the ability of rainfall to cause erosion at any location. It is directly related to the likelihood of high intensity storms and can be used to predict times of the year when erosion risk is greatest.
Rainforest	Rainforest is tree-dominated vegetation where the tree stratum (over 3 metres in height) which has the greatest crown cover has rainforest species making up 50% or more of the crown cover, except where non rainforest emergent species (including brushbox and turpentine) occur and exceed 30% or more of the upper stratum crown cover Rainforest includes all areas of rainforest mappable at a 1:25000 scale. Rainforest also includes areas exceeding 0.5 hectares occurring as isolated clumps or lineal strips of rainforest trees.
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
River Red Gum Forests	A forest dominated by *Eucalyptus camaldulensis* consistent with description of Forest Type 199 (River Red Gum) in State Forests of NSW, Research Note 17.
Riparian exclusion zones	Those areas within the distance specified of drainage features 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 with 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.
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.
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.
Wetlands	As defined in the *Native Vegetation Act* 2003.

C

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

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Introduction

The object of this Private Native Forestry Code of Practice (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.

River Red Gum Forests means forests dominated by *Eucalyptus camaldulensis,* being forests that are consistent with the description of Forest Type 199 (River Red Gum) set out in the document called *State Forests of NSW, Research Note 17*.

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 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 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 any provision 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 A) and any drainage features (as identified in Table C).

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 be consistent with the provisions of this Code and the requirements of the Listed Species Ecological Prescriptions for River Red Gum Forests, which are set out in the Appendix to this Code.

(3) The landowner and any other persons 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 or other forest operations will occur
  - (ii) recorded locations of any species, populations or endangered ecological communities listed under the schedules of the *Threatened Species Conservation Act 1995*
  - (iii) the location of landscape features as listed in Table A, and drainage features as listed in Table C
  - (iv) the indicative location of existing and proposed roads and drainage feature crossings
  - (v) the indicative location of log landings and portable mill sites.
- (b) A written component that provides:
  - (i) details of ownership of the land
  - (ii) a description of the forest (including its disturbance history and current condition)
  - (iii) the estimated stand height and basal area for each stand in the area
  - (iv) details of forest access, including any necessary construction, upgrading or maintenance of forest roads and perennial stream crossings
  - (v) details of harvesting and 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 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 the stand basal area below 12 m^2/ha. Ideally, single tree selection and thinning should aim to space trees according to the formula ¼ diameter at breast height over bark (cm)*100.

(2) The **minimum** stand basal areas are to be calculated in accordance with the guidelines prepared by Department of Environment and Climate Change.

Note: This provision:

(1) uses stand basal area as a simple tool to determine disturbance thresholds

(2) 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; and

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

(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 Codes of Practice for Private Native Forestry* prepared by Department of Environment and Climate Change.

3.3 Regeneration and stocking

(1) A minimum stand stocking, as determined by the percentage of stocked plots, of 60% within canopy openings and 70% elsewhere in the forest, must be achieved within 36 months of a regeneration event.

(2) In this clause, **regeneration event** is the second period of inundation following 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 clause 3.3 (1).

(4) The percentage of stocked plots is to be measured in accordance with the guidelines prepared by Department of Environment and Climate Change.

(5) A landowner must comply with any requirements of the Director General for the purpose of regenerating or re-establishing the forest, if the minimum percentage of stocked plots has not been reached within 36 months following a regeneration event.

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.

The method for measuring plots for sampling and measuring stocking is found in the Department of Environment and Climate Change's *Private Native Forestry Codes of Practice Guideline No. 1: Guidelines for assessing regeneration and stocking*.

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 A.

(2) Old growth will be identified according to the protocol approved by the Minister for Climate Change, Environment and Water.

Table A: Requirements for protecting landscape features

Landscape feature	Operational conditions
Endangered ecological communities listed in the *Threatened Species Conservation Act 1995*	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*	Forest operations must not result in any harm to an animal that is of, or is part of an endangered population, or result in the picking of any plant that is of, or is part of an endangered population, except that: • existing roads may be maintained.
Vulnerable ecological communities listed in the *Threatened Species Conservation Act 1995*	Forest operations must not occur in vulnerable ecological communities, 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 other than wetlands comprise a River Red Gum broad forest type or within 20 metres of any wetland, except that: • existing roads may be maintained.
Disused mineshafts (excluding open pits less than 3 metres deep)	Forest operations must not occur within 10 metres of disused mineshafts, except that: • existing roads may be maintained.
Aboriginal object or place as defined in the *National Parks and Wildlife Act 1974*	• Forest operations must not occur within 50 metres of a known burial site. • Forest operations must not occur within 20 metres of an Aboriginal scarred or carved tree. • Forest operations must not occur 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.
Heritage site as listed under the *Heritage Act 1977*	Forest operations must not occur within 10 metres of a listed heritage site.

4.2 Protection of habitat and biodiversity

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

(2) A hollow bearing tree, recruitment tree, food resource tree, roost tree and nest tree 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 B), 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 should 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 **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.

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

(i) trees with nests or roosts of any species of raptor including barking owls

(ii) trees which support maternity bat roosts

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

(iv) River Red Gum broad forest type trees with a diameter at breast height over bark of 125 centimetres or larger

(v) trees containing nests of colonial-nesting water birds (groups of stick-nests).

Table B: Minimum standards for tree retention

Trees that must be retained
• 5 hollow-bearing trees per hectare, within 20–50 metres of any permanent watercourse, water bodies or major wetlands, must be retained. • 2 hollow-bearing trees per hectare in all other areas, must be retained. • One recruitment tree from the next cohort must be retained for every hollow-bearing tree retained. • Where the total number of hollow-bearing trees is less than 10 trees per hectare within 20–50 metres of any permanent water course, water bodies or major wetlands or 4 per hectare elsewhere, additional recruitment trees must be retained to bring the total number of trees retained up to 10 and 4 per hectare respectively. • Additional recruitment trees above the number kept for the hollow-bearing trees can be kept within the riparian buffer zone. • All roost or nest or food resource trees must be retained. • Clumps of habitat trees must be retained in River Red Gum broad forests where they constitute rookeries for water bird species such as herons, cormorants, spoonbills and egrets.

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; and

(b) machinery operations must not harm protected trees; and

(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 section 4.2

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

(c) *Acacia salicina* (Cooba), *Exocarpos strictus* (dwarf cherry) and *Eucalyptus microcarpa* (grey box)

(d) 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, and within the distance specified of, drainage features as listed in Table C.

Table C: Riparian exclusion and riparian buffer zones

Drainage feature	Riparian Exclusion Zone distance from drainage feature	Riparian Buffer Zone, distance beyond exclusion zone
Any drainage feature with an incised channel	5 metres	Nil
Prescribed Streams	20 metres	25 metres

(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 C. Limited forest operations may occur within riparian buffer zones subject to the following limitations:

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

(b) all hollow-bearing trees are retained

(c) only 30% of the pre-harvest basal area can be removed in any ten-year period and the minimum basal area limit of 12 m^2/ha is maintained within the riparian buffer zone

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

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

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

Note: Basal area measurement will be in accordance with the guidelines prepared by the Department of Environment and Climate Change.

(3) The distance specified in Table C must be measured from the mean water level of the Prescribed Stream and away from the stream. For other drainage features with an incised channel, the distance must be measured away from the edge of the incised channel.

(4) 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.

(5) 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.

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

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

(8) 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.

(9) New roads may be constructed and old roads re-opened within riparian buffer and 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.

(10) Machinery must not operate in drainage depressions or flood runners when the soil is saturated.

(11) 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 to facilitate outfall drainage.

(4) Clearing for road construction must be to the minimum extent necessary.

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

(6) Roads must be maintained according to Table D below.

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

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

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

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

(11) 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.

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

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

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

Table D: Maximum distance that water may travel along road surfaces, table drains and snig tracks

Road or snig track grade (degrees)	Maximum distance (metres)
0 to ≤ 1	250
> 1 to ≤ 2	200
> 2 to ≤ 3	150
> 3 to ≤ 4	125
> 4 to ≤ 5	100
> 5 to ≤ 6	90
> 6 to ≤ 7	80
> 7 to ≤ 8	70

Road or snig track grade (degrees)	Maximum distance (metres)
> 8 to ≤ 9	65
> 9 to ≤ 10	60

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, 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) 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 D.

(3) 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.

(4) 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 D.

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

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

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.

(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 in flood runners or drainage depressions.

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

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

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

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

(6) Vegetation and debris from log landings and portable mill sites must not be deposited in an exclusion zone, buffer zone or flood runner.

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

(8) 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.

(9) On completion of operations, log landings and portable mill sites must be drained and reshaped to safely disperse runoff onto surrounding vegetation.

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

(4) 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 to ensuring that the track is adequately drained.

(5) Snig tracks and extraction tracks must not encroach on exclusion zones or riparian buffer zones except designated crossings and where permitted by other code conditions.

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

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

(a) retain existing groundcover using walkover techniques

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

(c) construct or maintain the track with outfall drainage

(d) construct track drainage structures.

(8) On completion of operations, the following measures must be implemented where practicable: snig tracks and extraction tracks must be reshaped; all earth windrows, wheel ruts, and log furrows must be removed; and recoverable topsoil must be spread back over the track.

(9) 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.

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

5.2.2 Snig track and extraction track crossings on drainage

(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. 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. 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 has 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 catchments administered by Catchment Management Authorities (CMAs) shown in Figure 1 on t he next page.

General conditions

For all threatened species prescriptions, the following applies:

(1) 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

(2) 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

(3) 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.

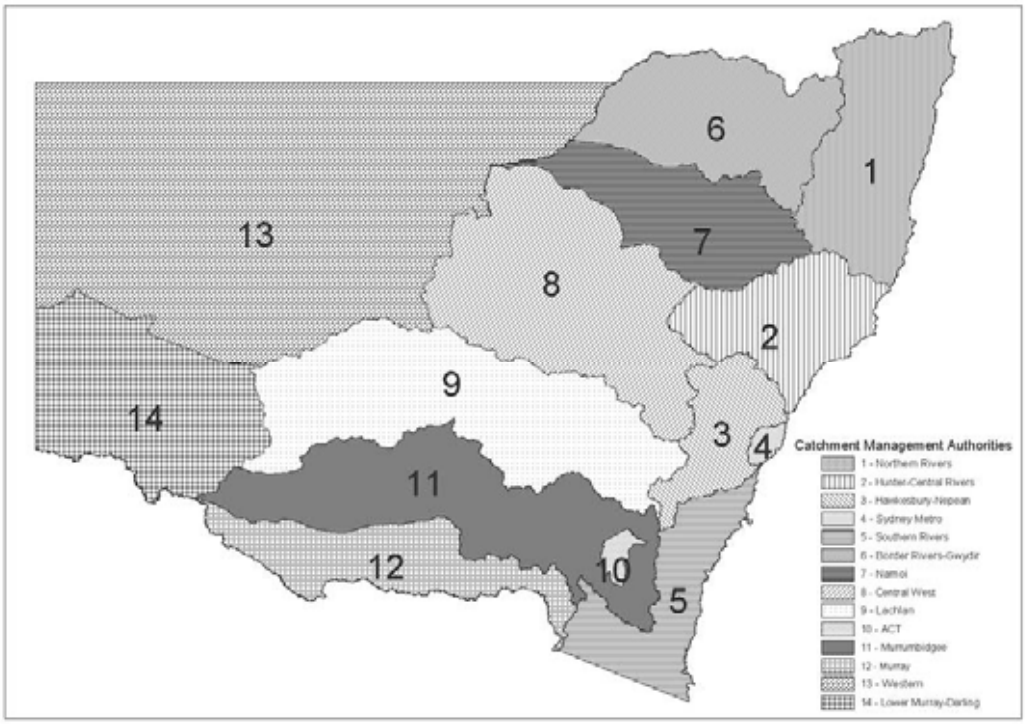

Figure 1 – Catchment Management Authority (CMA) areas where prescriptions for some threatened species may vary

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.

Mammals

Squirrel glider (*Petaurus norfolcensis*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Murray, Murrumbidgee and Namoi.

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 hectare) 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.

Koala (*Phascolarctos cinereus*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Murray, Murrumbidgee and Namoi.

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 2) 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 where one or more koala faecal pellets in Koala Management Area 5) this tree must be retained and an exclusion zone of metres 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 1 below), the following must apply:

  (i) 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

  (ii) 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

  (iii) damage to retained trees must be minimised by directional falling techniques

  (iv) 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 E). 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.

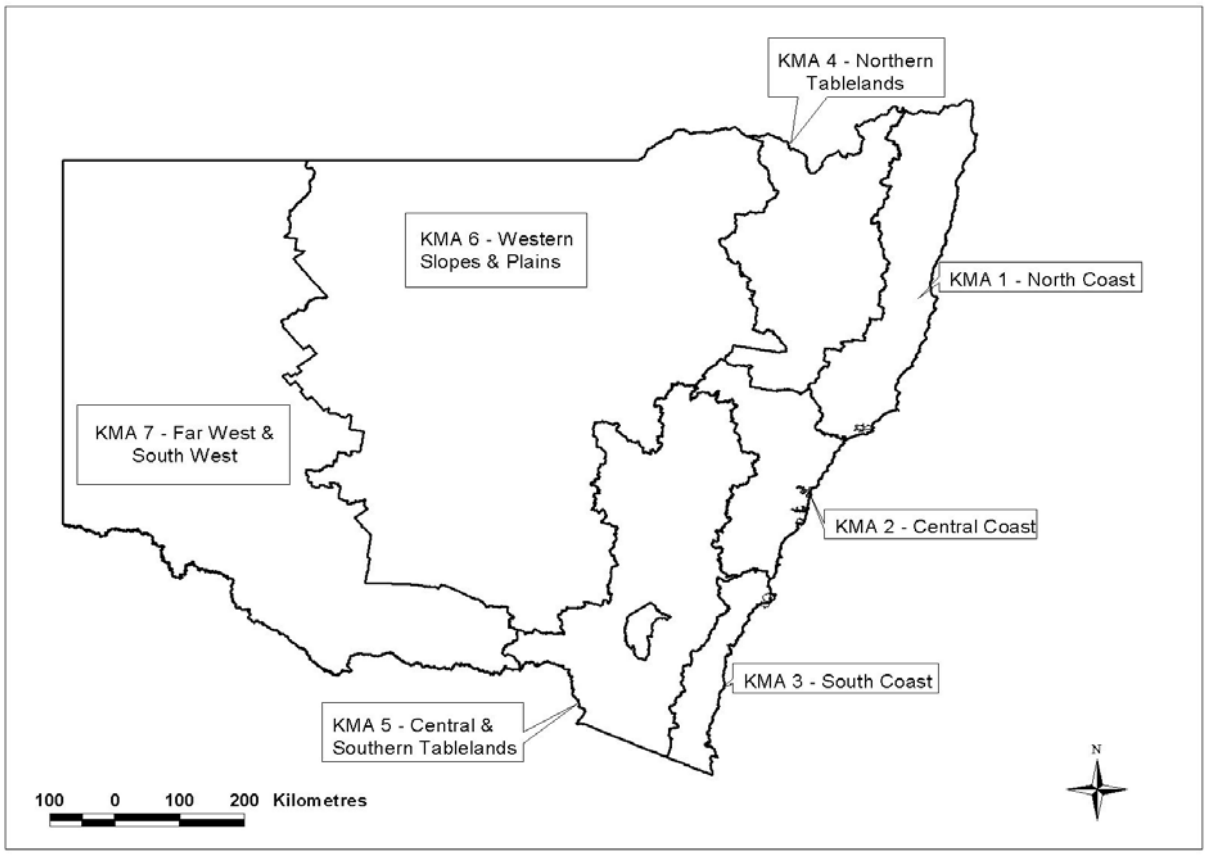

Figure 2 – Koala Management Areas in NSW (from Draft State Koala Recovery Plan)

Table E: List of primary and secondary koala food trees
A list of koala food trees for each Koala Management Area in the River Red Gum forests.

Koala food free species		**Koala management area**		
Common name	**Scientific name**	**5**	**6**	**7**
PRIMARY TREE SPECIES				
River red gum	*E. camaldulensis*		X	X
Coolabah	*E. coolabah*		X	X
Ribbon gum	*E. viminalis*	X		
SECONDARY TREE SPECIES				
White box	*E. albens*	X	X	
Eurabbie	*E. bicostata*	X		
Blakely's red gum	*E. blakelyi*	X	X	X
Apple-topped Box	*E. bridgesiana*	X	X	
Broad-leaved sally	*E. camphora*	X		
Dirty gum	*E. chloroclada*		X	
Argyle apple	*E. cinerea*	X		
Fuzzy box	*E. Conica*		X	
Mountain gum	*E. dalrympleana*	X		
Tumbledown gum	*E. dealbata*	X	X	
Dwyer's red gum	*E. dwyeri*		X	
Bundy	*E. goniocalyx*	X		
Black box	*E. largiflorens*		X	X
Maiden's gum	*E. maidenii*	X		
Brittle gum	*E. mannifera*	X		
Yellow box	*E. melliodora*	X	X	X

Western grey box	*E. microcarpa*		X	X
Mallee red gum	*E. nandewarica*		X	
Large-flowered bundy	*E. nortonii*	X		
Snow gum	*E. pauciflora*	X		
Pilliga box	*E. pilligaensis*		X	
Red box	*E. polyanthemos*	X	X	
Bimble box	*E. populnea*		X	X
Orange gum	*E. prava*		X	
N/A	*E. vicina*		X	
N/A	*E. volcanica*		X	

Large-footed myotis (*Myotis adversus*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Murray and Murrumbidgee

Prescription
Where there is a record of large-footed myotis in an area of forest operations, or 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, storm-water 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.

Birds

Masked owl (*Tyto novaehollandiae*) and barking owl (*Ninox connivens*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Lower Murray–Darling, Murray, Murrumbidgee and Namoi.

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

Roost trees (trees where a masked 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 masked owl or 250 metres for barking owl, of the area of forest operations, the following prescriptions apply:

(a) Buffer zones with a1000-metre radius (about 300 hectare) for the masked owl and 500-metre radius (about 78 hectare) 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:

  (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.

(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.

Swift parrot (*Lathamus discolor*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Lower Murray–Darling, Murray, Murrumbidgee and Namoi.

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 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*)

Regent parrot (*Polytelis anthopeplus monarchoides*)

CMAs for application of prescription
Lower Murray-Darling and Murray.

Prescription
There should be no harvesting of mallee within the areas shown on the following map (see Figure 3):

(a) within 20 kilometres of the Lower Wakool River defined as downstream of the junction of the Edward and Wakool Rivers, with the eastern boundary line being drawn perpendicular to the river at that point

(b) within 20 kilometres of the Murray River.

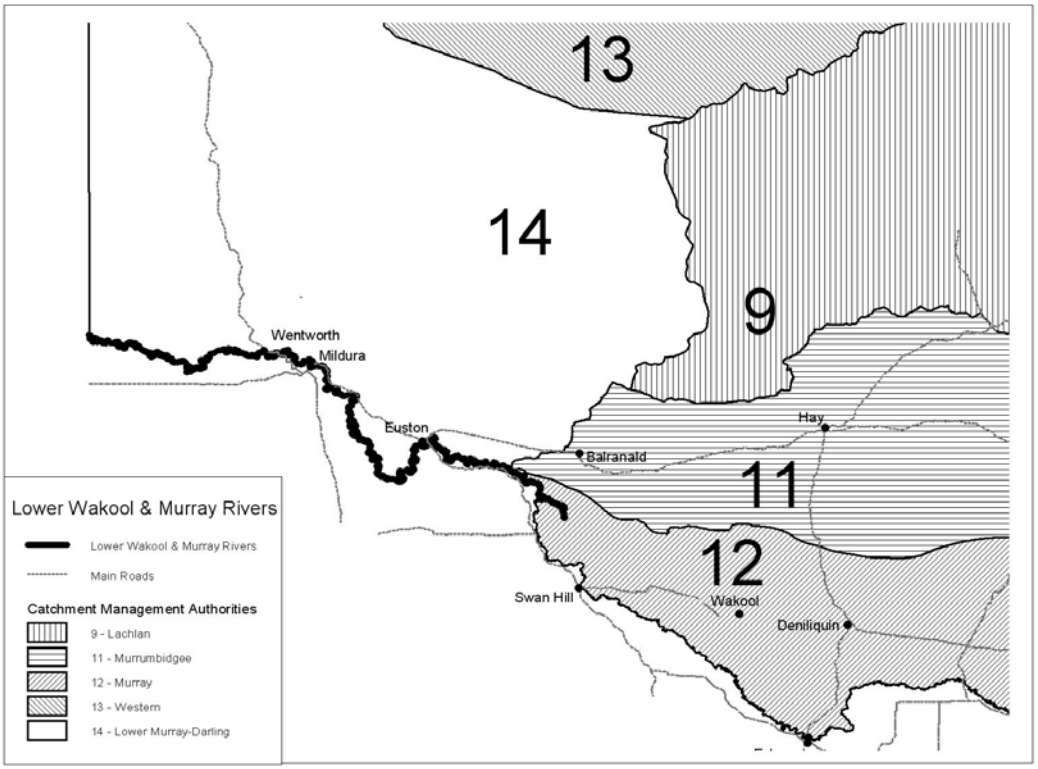

Figure 3: Area for application of regent parrot prescription

Mallee within this zone can only be harvested by obtaining development consent under the *Native Vegetation Act 2003* for non-Crown Timbered Lands.

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, grey. Nesting season is August through to January.

Red-tailed black-cockatoo (*Calyptorhynchus banksii)*

CMAs for application of prescription
Border Rivers-/Gwydir, Central West, Lower Murray/-Darling, Namoi and, Western

Prescription
No forest operations are permitted within a 50-metre radius of all red-tailed black-cockatoo nests.

Additional information
Red-tailed black-cockatoos nest in tree hollows usually in larger, mature trees. Nest locations are indicative of where a bird is seen entering a hollow. Nesting season is from March to August.
Red-tailed black-cockatoos are found in a wide variety of habitats. In coastal north-east NSW they have been recorded in dry open forest and areas of mixed rainforest/eucalypt forest.

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 F: 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	*Amphibromus fluitans*	Floating swamp wallaby-grass	Murray, Murrumbidgee

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.
Clumps of habitat trees forming rookeries for waterbirds	A group of adjoining trees, together with a 20-metre surrounding buffer, in which there are multiple stick nests comprising the breeding rookeries of colonial waterbirds such as herons, cormorants, spoonbills or egrets. Nests usually comprise platforms of sticks, often near each other. They are usually found in trees in or near water bodies such as swamps. Such breeding rookeries can contain hundreds of nests and birds, and are often revisited annually.
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
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: • evidence of active erosion or deposition – e.g. gravel, pebble, rock, sand bed, scour hole or nick point • an incised channel of more than 30 centimetres deep with clearly defined bed and banks • 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 A or C where forest operations are prohibited, unless otherwise allowed under this Code.
Extraction track	A track constructed for use by forwarding machinery.
Flood runner	A natural depression that carries the initial flood flows before complete inundation occurs.
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: • timber felling, snigging and extraction • construction and maintenance of log landings, snig tracks and extraction tracks.
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, and within 10 metres of the top edge of, the bank of any unmapped drainage line.
Nest trees	• Trees with nests or roosts of any species of raptor including powerful owls, barking owls, sooty owls and masked owls. • Trees with nests of colonial-nesting water birds (groups of stick-nests).
Old growth	Ecologically mature forest where the effects of disturbance are now negligible. This includes an area of forest greater than 5 hectares where: • 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) • 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 • the effects of unnatural disturbance are now negligible. 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 8: • plants of the *Xanthorrhoea* (grass trees), *Allocasuarina* (forest oak (except bull oak (*Allocasuarina luehmannii*)) and *Banksia* genuses • For the River Red Gum Forests, *Acacia salicina* (cooba), *Exocarpos strictus* (dwarf cherry) and *Eucalyptus microcarpa* (grey box) • 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.
Rainfall erosivity	A measure of the ability of rainfall to cause erosion at any location. It is directly related to the likelihood of high intensity storms and can be used to predict times of the year when erosion risk is greatest.
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
River Red Gum Forests	A forest dominated by *Eucalyptus camaldulensis* consistent with description of Forest Type 199 (River Red Gum) in State Forests of NSW, Research Note 17.
Riparian exclusion zones	Those areas within, and within the distance specified of, drainage features as listed in Table C 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.
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.
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.
Wetlands	As defined in the *Native Vegetation Act* 2003.

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Private Native Forestry Code of Practice

Private Native Forestry Code of Practice for Cypress and Western Hardwood Forests

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Introduction

The object of this Private Native Forestry Code of Practice (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.

Cypress Forests mean forests dominated by white cypress pine (*Callitris glaucophylla*), being forests in which at least 80% of the stand basal area comprises trees of that species.

Western Hardwood Forests mean forests that are consistent with the description of any of the Forest Types 99, 103, 104, 124, 171–178, 180–185, 203–210 and 213 set out in the document called *State Forests of NSW Research Note 17*.

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 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 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 any provision 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 be consistent with the provisions of this Code and the requirements of the Listed Species Ecological Prescriptions for Cypress and Western Hardwood Forests , which are set out in the Appendix to this Code.

(3) The landowner and any other persons 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 or other forest operations will occur

(ii) recorded locations of any species, populations or endangered ecological communities listed under the schedules of the *Threatened Species Conservation Act 1995*

(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 either Western Hardwood forest type, Cypress broad forest type or mixed forest types.

(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 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 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 Cypress pine

3.1.1 Non-commercial thinning

(1) Non-commercial thinning may be applied to regrowth which is usually about 4–6 m tall. It is essential to free regeneration that is in a state of 'lock-up'. Stands should be thinned to a spacing of about 6 metres x 6 metres (280 stems/hectare).

(2) The stems to be retained should be the:

- largest and tallest stems
- straightest stems
- stems with smaller limbs
- stems without double leaders or bends in the upper crown
- stems that have not been damaged.

3.1.2 Commercial thinning

(1) Commercial thinning may be undertaken when trees spaced 6 metres apart have reached a commercial size. Residual basal area should be about 6–8 m^2 per hectare. Non-commercial trees that are not required for habitat retention may be felled to waste to achieve this basal area.

(2) The largest stems (in height and diameter) with the best form (straightest) should be selected for retention.

3.1.3 Oldest age class harvest (release operation)

(1) Final harvesting of the largest age class may be undertaken when there is a regenerating age class about 4–6 m high beneath the overstorey.

(2) All trees in the older age class not required for habitat retention may be removed.

(3) Damage to the younger age class should be minimised as far as practicable.

3.2 Western hardwoods

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

(2) The **minimum** stand basal areas in Table A are to be calculated in accordance with the approved guidelines.

Table A: Minimum stand basal area retention for single tree selection and thinning operations

Broad forest type	Stand height < 25 metres	Stand height ≥ 25 metres
Cypress	6 m^2/ha	6 m^2/ha
Western Hardwood	8 m^2/ha	12 m^2/ha

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.

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.

3.3 Regeneration and stocking

(1) A landowner must ensure that the minimum stand stocking (as determined by the percentage of stocked plots specified in Table B) has been reached within 36 months of a regeneration event.

(2) In this clause, **regeneration event** is:

(a) a harvesting or thinning operation for Western Hardwoods, or

(b) the second successive wet summer following a harvesting or thinning operation for Cypress Pine Forests.

(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 guidelines prepared by Department of Environment and Climate Change.

(5) A landowner must comply with any reasonable requirements of the Director General for the purpose of regenerating or re-establishing the forest, if the minimum percentage of stocked plots has not been reached within 36 months of a regeneration event.

Table B: Minimum percentage of stocked plots

Broad forest type	Minimum percentage of stocked plots
Cypress	80%
Western Hardwood	55%

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.

The method for measuring plots for sampling and measuring stocking is 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*.

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 Environment, Climate Change and Water.

Table C: Requirements for protecting landscape features

Landscape feature	Operational conditions
Endangered ecological communities listed in the *Threatened Species Conservation Act 1995*	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*	Forest operations must not result in any harm to an animal that is of, or is part of an endangered population, or result in the picking of any plant that is of, or is part of an endangered population, except that: • existing roads may be maintained.
Vulnerable ecological communities listed in the *Threatened Species Conservation Act 1995*	Forest operations must not occur in vulnerable ecological communities, 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: • existing roads may be maintained • existing snig tracks may be used.
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.
Aboriginal object or place as defined in the *National Parks and Wildlife Act 1974*	• Forest operations must not occur within 50 metres of a known burial site. • Forest operations must not occur within 20 metres of an Aboriginal scarred or carved tree. • Forest operations must not occur 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.
Heritage site as listed under the *Heritage Act 1977*	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. • Harvesting machinery must not enter the area. • Existing roads may be maintained. • New roads must not be constructed.
Dispersible and highly erodible soils	• Existing roads may be maintained. • Drainage feature crossings must be armoured with erosion resistant material. • Road batters and table drains must be stabilised using erosion resistant material, vegetation or slash. • Log landings must be stabilised using erosion resistant material, vegetation or slash at the completion of forestry operations. • 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) A hollow bearing tree, recruitment tree, food resource tree, roost tree and nest tree 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 should 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) an **Old Grey** is a late-mature/over-mature cypress tree that has regenerated before the 1890s, has bark that is bleached to a characteristic light grey colour, and is weathered to a smoother surface texture than is typical of younger trees.

(f) **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 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

Broad forest types	Trees that must be retained
Cypress	• All Old Greys, and 2 hollow-bearing eucalypt trees per hectare, where available. • One recruitment tree of the same species from the next cohort must be retained for every Old Grey and hollow-bearing tree retained. • Where the total Old Grey and cypress recruitment trees are less than 5 trees per hectare, additional recruitment trees are to be retained to bring the number up to 5 per hectare. • Where the total hollow bearing eucalypt and eucalypt recruitment trees are less than 4 trees per hectare, additional recruitment trees are to be retained to bring the number up to 4 per hectare. • All roost, nest or food resource trees.
Western Hardwood	• All Old Greys. • 20 mature healthy eucalypt trees, from the oldest age classes per 5 hectares. Preference must be given to hollow-bearing trees where available. • One recruitment tree must be retained for every hollow-bearing tree retained up to a maximum of 10 recruitment

Broad forest types	Trees that must be retained
	trees per 5 hectares. Retained recruitment trees can be counted towards meeting the 20 mature healthy trees per 5 hectares. • All roost, nest or food resource trees.

Table E: List of feed trees

CMAs: Border Rivers–Gwydir, Namoi	
Forest red gum - *Eucalyptus. tereticornis*	Red stringybark - *E. macrorhyncha*
Narrow-leaved ironbark – , *E. crebra*	White box - *E. albens*
Ferguson's ironbark - *E. fergusonii*	Yellow box - *E. melliodora*
Caley's ironbark - *E. caleyi,*	Fuzzy box - *E. conica*
Grey ironbark - *E. paniculata*	Grey box - *E. molucanna,* ,
Mugga ironbark - *E. sideroxylon*	Bloodwood species - Corymbia spp
Red ironbark - , *E. fibrosa*	
CMAs: Central West, Lachlan, Murrumbidgee, Murray, Lower Murray–Darling and Western	
Grey ironbark – E. *paniculata,*	White stringybark - *E. globoidea*
Eurabbie - *E. bicostata*	Red stringybark - *E. macrorhyncha*
Forest red gum - *E. tereticornis*	

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; and

(b) machinery operations must not harm protected trees; and

(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 section 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, and within the distance specified of, drainage features as listed in Table F.

(2) 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.

(3) 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.

Table F: Riparian exclusion and riparian buffer zones

Drainage feature	Riparian exclusion zone distance from drainage feature
Mapped first-order streams	10 metres
Mapped second-order streams	20 metres
Mapped third-order streams	30 metres
Mapped fourth-order streams	40 metres
Mapped fifth-order and higher streams	50 metres

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

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

(6) Where a tree is felled into the riparian buffer zone, the crown must not be removed from the riparian buffer zone and the machinery used to retrieve the log must not enter the riparian buffer zone.

(7) Rubber-tyred machinery using walkover technique may operate in machinery exclusion zones. All other machinery must not enter unless allowed to by this Code.

(8) In this clause, machinery exclusion zones are areas within, and within 10 metres of, the top edge of the bank of any unmapped drainage line.

(9) 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.

(10) 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 (7), 4.5 (11) and 5.

(11) 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; and

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

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

(d) any other necessary permits have been obtained**.**

(12) 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.

(13) 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..

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

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 on 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, and tree stumps or other woody debris must not be used to provide fill for road construction.

(7) 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.

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

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

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

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

(12) 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.

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

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

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

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

(17) 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, table drains, snig and extraction tracks

Road grade (degrees)	Maximum distance (metres)
0 to ≤ 3	175
> 4 to ≤ 5	100
> 6- to ≤ 8	80
> 9 to ≤ 10	60
> 10 ≤ 15	40
> 15 ≤ 20	25
> 20 ≤ 25	20

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% or 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 40 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 construction, upgrading, or maintenance, within 40 metres of either side of the crossing. These areas do not include the road surface, road drainage structures or cut batters.

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 of 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 closer than 40 metres where possible but a least 10 metres from a riparian 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 buffer zones except at designated crossings.

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

(10) The grade of snig tracks must not exceed 25 degrees.

(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 effected 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 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 G. 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.

(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; and

(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 G.

(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 40 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. 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 has 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 catchments administered by Catchment Management Authorities (CMAs) shown in Figure 1 below.

General conditions

For all threatened species prescriptions, the following applies:

(1) 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

(2) 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

(3) 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.

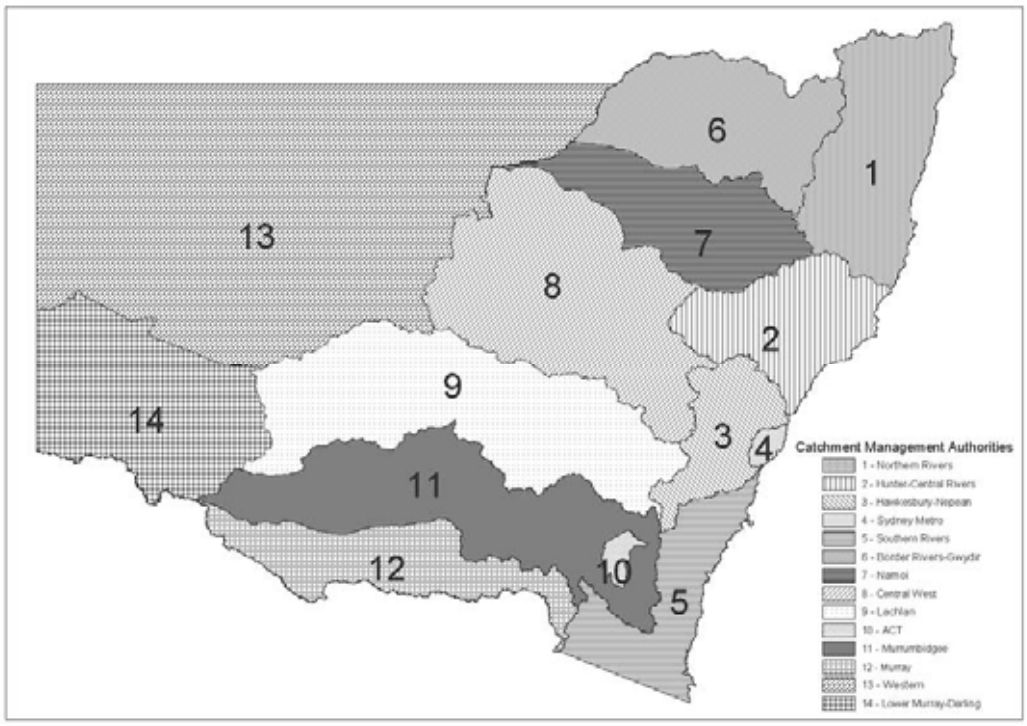

Figure 1: Catchment Management Authority (CMA) areas where prescriptions for some threatened species may vary

Mammals

Black-striped wallaby (*Macropus dorsalis*)

CMAs for application of prescription
Border Rivers–Gwydir and Namoi.

Prescription
Where there is a black-striped wallaby 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) only single-tree selection and thinning operations can occur (i.e. no canopy openings)
- (ii) no post-harvesting burning can occur
- (iii) disturbance to understorey trees and shrubs, ground logs, rocks and litter must be minimised.

Additional information
Potential black-striped wallaby habitat is characterised by dense woody or shrubby vegetation within three metres of the ground. This dense vegetation must occur near a more open, grassy area to provide suitable feeding habitat.
Habitat is common on north-west slopes associated with dense vegetation, including brigalow, ooline and semi-evergreen vine thicket.
On the north coast, habitat is often associated with dry rainforest but can also be moist eucalypt forest with a rainforest understorey or a dense shrub layer.

Brush-tailed phascogale (*Phascogale tapoatafa*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Murray and Murrumbidgee.

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 hectare) 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

Border Rivers-Gwydir, Central West, Lachlan, Murray, Murrumbidgee and Namoi

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 hectare) 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-hectare) 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
Border Rivers–Gwydir, Central West, Lachlan, Lower Murray–Darling, Murray, Murrumbidgee and Namoi.

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 area 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
Border Rivers–Gwydir, Central West, Lachlan, Murray, Murrumbidgee and Namoi.

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 hectare) 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.

Yellow bellied glider (*Petaurus australis*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Murray, Murrumbidgee and Namoi.

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 be 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.

Koala (*Phascolarctos cinereus*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Murray, Murrumbidgee and Namoi.

Note: Koala populations are generally sparse or of low density in the Western Koala Management Areas (Koala Management Areas 6 and 7; see Figure 2) 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 one or more koala faecal pellets (scats), must be retained and an exclusion zone of 50 metres 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 H), the following must apply:

(i) 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

(ii) 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

(iii) damage to retained trees must be minimised by directional falling techniques

(iv) 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 H). 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.

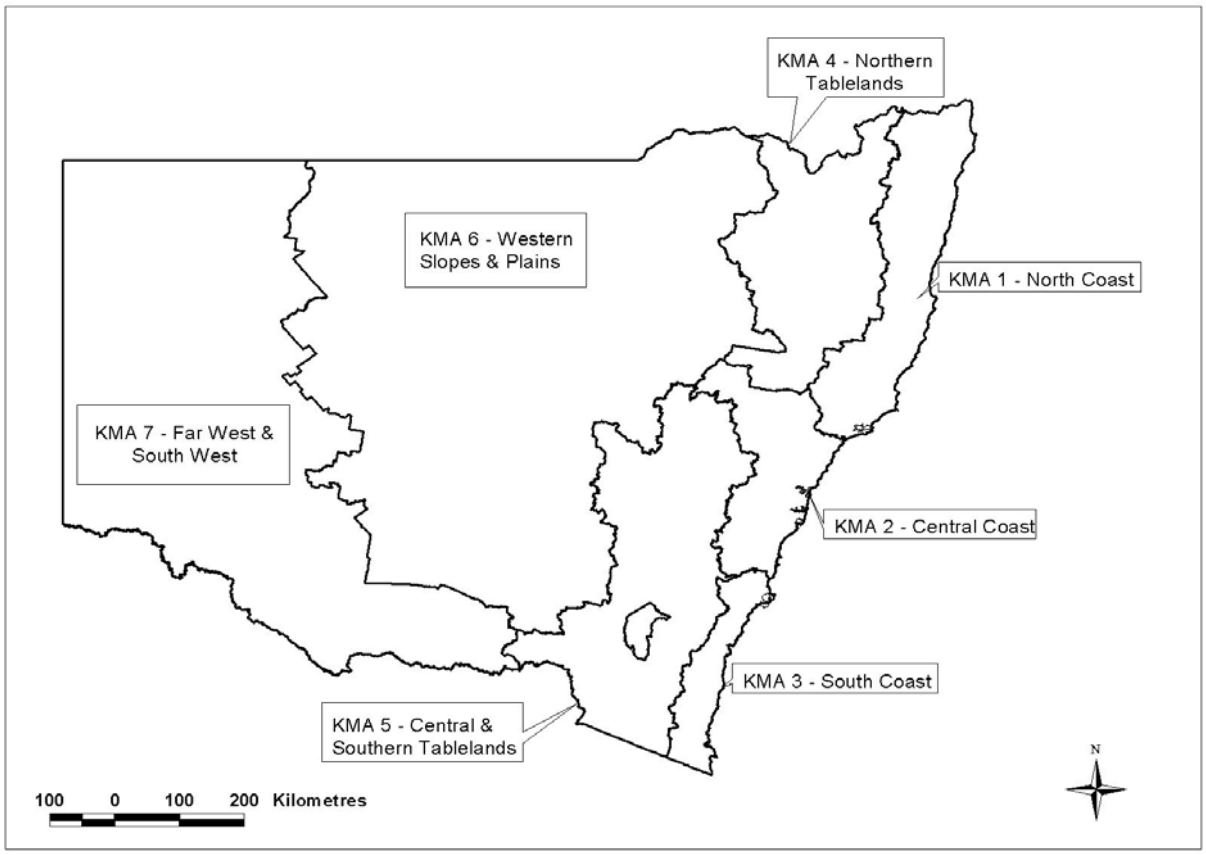

Figure 2: Koala Management Areas in NSW (from Draft State Koala Recovery Plan)

Table H: List of primary and secondary koala food trees
A list of koala food trees for each Cypress and Western Hardwood forest.

Koala food tree species		Koala Management Area			
Common name	**Scientific name**	**4**	**5**	**6**	**7**
PRIMARY TREE SPECIES					
Cabbage gum	E. *amplifolia*	X			
River red gum	*E. camaldulensis*			X	X
Coolabah	*E. coolabah*			X	X
Forest red gum	*E. tereticornis*	X			
Ribbon gum	*E. viminalis*	X	X		
SECONDARY TREE SPECIES					
Narrow-leaved peppermint	*E. acaciiformis*	X			
White box	*E. albens*	X	X	X	
Tenterfield woolybutt	*E. banksii*	X			
Eurabble	*E. bicostata*	X	X		
Blakely's red gum	*E. blakelyi*	X	X	X	X
Apple-topped box	*E. bridgesiana*	X	X	X	
Broad-leaved sally	*E. camphora*	X	X		
Dirty gum	*E. chloroclada*			X	
Argyle apple	*E. cinerea*		X		
Fuzzy box	*E. Conica*	X		X	
Mountain gum	*E. dalrympleana*	X	X		
Tumbledown gum	*E. dealbata*	X	X	X	
Dwyer's red gum	*E. dwyeri*	X		X	
Bundy	*E. goniocalyx*	X	X		
N/A	*E. interstans*	X			
Black box	*E. largiflorens*			X	X
Maiden's gum	*E. maidenii*		X		
Moonbi apple box	*E. malacoxylon*	X			
Brittle gum	*E. mannifera*	X	X		
Yellow box	*E. melliodora*	X	X	X	X
Brittle gum	*E. michaeliana*	X			
Western grey box	*E. microcarpa*			X	X
Grey box	*E. moluccana*	X			
Mallee red gum	*E. nandewarica*			X	
Narrow-leaved Black peppermint	*E. nichollii*	X			
Large-flowered bundy	*E. nortonii*	X	X		
Mountain mahogany	*E. notabilis*	X			
New England peppermint	*E. nova-anglica*	X			
Snow gum	*E. pauciflora*	X	X		
Pilliga box	*E. pilligaensis*			X	
Red box	*E. polyanthemos*	X	X	X	
Bimble box	*E. populnea*			X	X
Orange gum	*E. prava*	X		X	
Brittle gum	*E. praecox*	X			
White-topped box	*E. quadrangulata*	X			
N/A	*E. retinens*	X			
Candlebark	*E. rubida*	X			
N/A	*E. vicina*			X	
N/A	*E. volcanica*	X		X	

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

CMAs for application of prescription
Border Rivers–Gwydir, Central West and Namoi.

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.

Large-footed myotis (*Myotis adversus*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Murray and Murrumbidgee.

Prescription
Where there is a record of large-footed myotis in an area of forest operations, or 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, storm-water 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.

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 hectare) 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 26 trees with visible hollows with openings greater than 10 centimetres must be retained where available

(ii) 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, Lachlan, Murray and Murrumbidgee.

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 hectare) must be identified centred on the location of the record.

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

(i) all termite mounds must be protected from any disturbance

(ii) disturbance to understorey trees and shrubs, and in particular, ground logs and rock outcrops and ledges must be minimised

(iii) no post-harvesting 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 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.

Pale-headed snake (*Hoplocephalus bitorquatus*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West and Namoi.

Prescription
Where there is a record of the pale-headed snake 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 at least a 100-metre radius must be implemented around the location of the record.

(b) If forest operations are being conducted during the months of May, June, July, August or September, an additional 200 metres-wide buffer zone must be implemented around the exclusion zone. Within this buffer zone, the following must apply:

(i) a minimum of 26 trees with visible hollows with openings greater than 10 centimetres must be retained where available

(ii) all stags must be retained where it is safe to do so

(iii) during forest operations, the potential for damage to these trees must be minimised by utilising techniques of directional felling.

Additional information
Distribution: The snake has a patchy distribution from north-eastern NSW to north Queensland. It is found in NSW on both sides of the Great Dividing Ranges as far south as Tuggerah.
Macrohabitat: The snake is mainly found in dry eucalypt forests and woodlands and occasionally in rainforest or moist eucalypt forest.
Microhabitat: The snake shelters during the day between loose bark and tree trunks, or in hollow trunks and limbs of dead trees, especially near watercourses.

Birds

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

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Lower Murray–Darling, Murray, Murrumbidgee and Namoi.

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

Roost trees (trees where a powerful, masked 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 or masked owl or 250 metres for barking owl, of the area of forest operations, the following prescriptions apply:

(a) Buffer zones with a 1000-metre radius (about 300 hectare) for the powerful owl or masked owl and 500-metre radius (about 78 hectare) 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:

(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.

(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
Border Rivers–Gwydir, Central West, Lachlan, Lower Murray–Darling, Murray, Murrumbidgee and Namoi.

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 sheoak. Regent honeyeaters inhabit woodlands that support a significantly high abundance and species 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. Birds are also occasionally seen on the south coast.

Swift parrot (*Lathamus discolor*)

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lachlan, Lower Murray–Darling, Murray, Murrumbidgee, and Namoi.

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*)

Regent parrot (*Polytelis anthopeplus monarchoides*)

CMAs for application of prescription
Lower Murray–Darling and Murray.

Prescription
There should be no harvesting of mallee within the areas shown on the following map (see Figure 3).

(a) within 20 kilometres of the Lower Wakool River defined as downstream of the junction of the Edward and Wakool Rivers, with the eastern boundary line being drawn perpendicular to the river at that point

(b) within 20 kilometres of the Murray River.

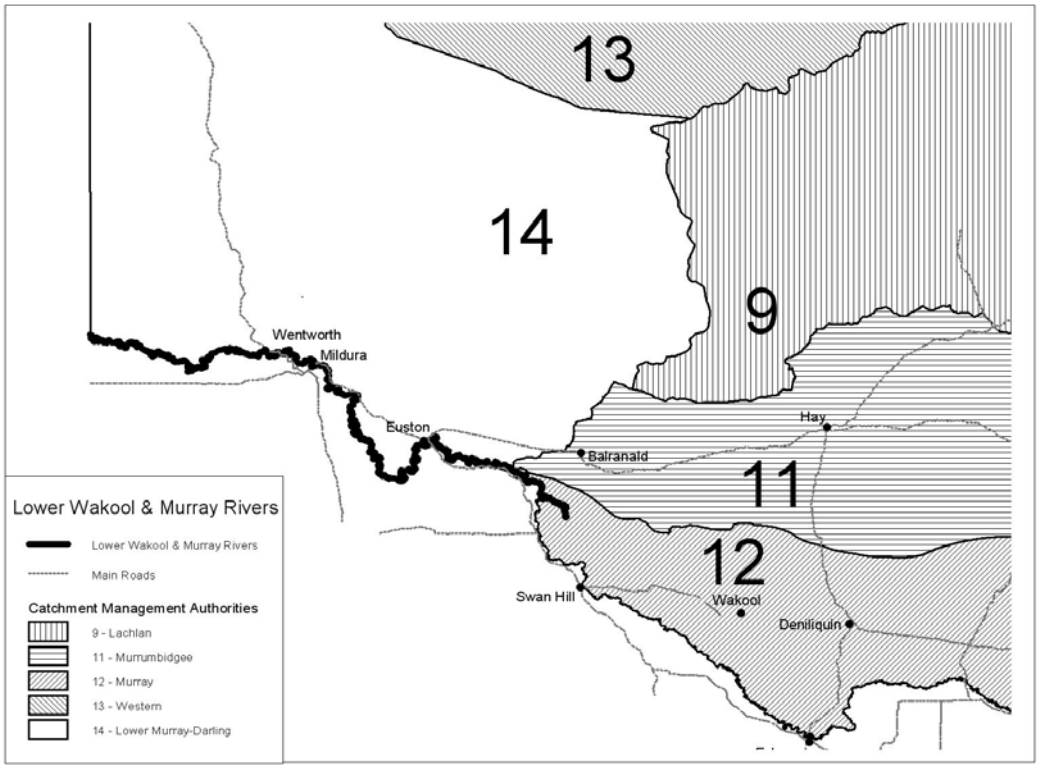

Figure 3: Area for application of regent parrot prescription

Mallee within this zone can only be harvested by obtaining development consent under the *Native Vegetation Act 2003* for non-Crown Timbered Lands.

Black-eared miner (*Manorina flavigula melanotis*)

CMAs for application of prescription

Lower Murray-Darling

Prescription

High conservation value mallee must not be harvested. High conservation mallee is defined as mallee with:

(a) stems higher than 20 centimetres measured 20 centimetres above the ground

(b) stems with hollows, cracks or fissures more than 5 centimetres wide

(c) stems on dune crests.

Malleefowl (*Leipoa ocellata*)

CMAs for application of prescription

Central West, Lachlan, Lower Murray–Darling, Murrumbidgee, Namoi and Western.

Prescription

There must be no forest operations within a 100-metre radius exclusion zone around all malleefowl ground nests.

Additonal information
Malleefowl nests comprise large mounds of ground litter (dry leaves, twigs and bark) covered with sand and dirt. They may be 2–5 metres wide and up to 1.5 metres high. Egg-laying occurs from September to April.

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, 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 containing seed cones, is to be minimised.

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

Red-tailed black-cockatoo (*Calyptorhynchus banksii)*

CMAs for application of prescription
Border Rivers–Gwydir, Central West, Lower Murray–Darling, Namoi and Western

Prescription
No forest operations are permitted within a 50-metre radius of all red-tailed black-cockatoo nests.

Additional information
Red-tailed black-cockatoos nest in tree hollows usually in larger, mature trees. Nest locations are indicative of where a bird is seen entering a hollow. Nesting season is from March to August.
Red-tailed black-cockatoos are found in a wide variety of habitats. In coastal north-east NSW they have been recorded in dry open forest and areas of mixed rainforest/eucalypt forest.

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 I: 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 area
A	*Bertya sp. Cobar–Coolabah*	Coolabah bertya	Namoi, Western
B	*Boronia granitica*	Granite boronia	Border Rivers-Gwydir
A	*Cadellia pentastylis*	Ooline	Border Rivers-Gwydir, Namoi
H	*Cymbidium canaliculatum* (Protected Native Plant Schedule 13 NP & W Act)	Tiger orchid	Border Rivers-Gwydir, Namoi, Western
H	*Dichanthium setosum*	Bluegrass	Border Rivers-Gwydir, Namoi
D	*Eucalyptus caleyi subsp. ovendenii*	Ovenden's ironbark	Border Rivers-Gwydir
E	*Goodenia macbarronii*	McBarron's goodenia	Border Rivers-Gwydir, Central West, Lachlan, Murray, Namoi, Western
B	*Picris evae*	Hawkweed	Border Rivers-Gwydir
H	*Pilularia novae-hollandiae*	Austral pillwort	Lachlan, Murray, Murrumbidgee
B	*Pomaderris queenslandica*	Scant pomaderris	Border Rivers-Gwydir, Central West, Namoi
B	*Rutidosis heterogama*	Heath wrinklewort	Border Rivers-Gwydir,
G	*Thesium australe*	Austral toadflax	Border Rivers-Gwydir, Murray, Murrumbidgee, Namoi

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 of 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 of 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 of 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 utilising techniques of directional felling.

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.

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: • evidence of active erosion or deposition – e.g. gravel, pebble, rock, sand bed, scour hole or nick point • an incised channel of more than 30 centimetres deep with clearly defined bed and banks • 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/or 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.
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.
Timber products	Commercial timber products removed from or felled within the forest, including sawlogs, veneer logs, poles, girders, piles and pulp logs.
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: • timber felling, snigging and extraction • 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, and 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, and masked owls. • Trees with nests of colonial-nesting water birds (groups of stick-nests).
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: • 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) • the age (growth) structure of the stand measured as relative crown cover consists of less than 10% regeneration and advance growth, and greater than 10% in the late to over-mature (senescent) growth stage; and • Where the effects of unnatural disturbance are now negligible. 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.
Protected trees	Trees required to be retained under clause 8: • plants of the *Xanthorrhoea* (grass trees), *Allocasuarina* (forest oak (except bull oak (*Allocasuarina luehmannii*)) and *Banksia* genuses • 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, and within the distance specified of drainage features 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 with 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, 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.
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.
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.
Wetlands	As defined in the *Native Vegetation Act* 2003.

Threatened Species Conservation Act 1995

Order to include private native forestry in the biodiversity certification of the native vegetation reform package

I, Phil Koperberg, Minister for Climate Change, Environment and Water, amend the order conferring biodiversity certification on the native vegetation reform package published in the Gazette on 25 November 2005 by including private native forestry in the certification of the native vegetation reform package for the purposes of the *Threatened Species Conservation Act 1995*.

The ***native vegetation reform package*** is the package of reforms comprising the following:

(a) the *Native Vegetation Act 2003* and the regulations under that Act,

(b) State-wide standards and targets for natural resource management issues recommended under the *Natural Resources Commission Act 2003* and adopted by the Government,

(c) catchment action plans under the *Catchment Management Authorities Act 2003*,

(d) protocols and guidelines adopted or made under the regulations under the *Native Vegetation Act 2003*, the *Catchment Management Authorities Act 2003* and the *Natural Resources Commission Act 2003*,

as in force from time to time.

Private native forestry means the management of native vegetation on privately owned land for the purpose of obtaining, on a sustainable basis, timber products (including sawlogs, veneer logs, poles, girders, piles and pulp logs) as defined in Clause 3 (1) of the Native Vegetation Regulation 2005.

This order is made under section 126C of the *Threatened Species Conservation Act 1995* and section 42 of the *Interpretation Act 1987*.

This order is to take effect on and from 1 August 2007.

PHIL KOPERBERG, M.P.,
Minister for Climate Change, Environment and Water

Signed at Sydney, this 1st day of August 2007.

Note: On 25 November 2005, an order conferring biodiversity certification on the native vegetation reform package which excluded private native forestry from the certification was published in the Gazette. With effect from 1 August 2007, that order is being amended to include private native forestry in the certification.

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