

Master Specification

Part PR-LS-C12

Tree Hollow Relocation and Habitat Creation

September 2024



Government of South Australia
Department for Infrastructure
and Transport

Build.
Move.
Connect.

Document Information

Document Information	
K Net Number:	14386910
Document Version:	1
Document Date:	30/09/2024

Document Amendment Record

Version	Change Description	Date
0	Initial issue	31/08/2023
1	Updated cover page	30/09/2024

Document Management

This document is the property of the Department and contains information that is confidential to the Department. It must not be copied or reproduced in any way without the written consent of the Department. This is a controlled document and it will be updated and reissued as approved changes are made.

Contents

Contents	3
PR-LS-C12 Tree Hollow Relocation and Habitat Creation	4
1 General	4
2 Documentation	4
3 Tree hollow inspection	4
4 Tree hollow harvesting and relocation	5
5 Maintenance	7
6 Hold Points	7
7 Appendix 1: Hollow requirements for particular species	8

PR-LS-C12 Tree Hollow Relocation and Habitat Creation

1 General

- a) This Master Specification Part specifies the requirements for tree hollow inspection, relocation, and habitat creation, including:
 - i) the documentation requirements, as set out in section 2;
 - ii) the tree hollow inspection requirements, as set out in section 3;
 - iii) the tree hollow harvesting and relocation requirements, as set out in section 4;
 - iv) the maintenance requirements, as set out in section 5; and
 - v) the Hold Point requirements, as set out in section 6.
- b) Tree hollow inspection, relocation, and habitat creation must comply with the Reference Documents, including the Department EHTM Attachment 5A - Fauna Impact Assessment Guidelines (available from: <https://dit.sa.gov.au/standards/manuals>).

2 Documentation

2.1 Tree hollow relocation report

- a) A tree hollow relocation report must be prepared by the Contractor in accordance with section 3.2.
- b) The Contractor must undertake tree hollow relocation, habitat creation and maintenance in accordance with the tree hollow relocation report.

2.2 Quality Management Records

In addition to the requirements of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable), the Quality Management Records must include:

- a) the spatial location of installed hollows, in accordance with section 5b); and
- b) records of site inspections as set out in section 5d)ii).

3 Tree hollow inspection

3.1 General

- a) Prior to undertaking a vegetation clearance or pruning activity, the Contractor must undertake a fauna inspection of tree hollows within the trees impacted by the Works and Temporary Works.
- b) Where available, the Contractor must refer to the Project’s vegetation survey data sheet for initial tree hollow inspection information.
- c) The person undertaking the fauna inspection must be a suitably qualified ecologist or native wildlife management specialist.
- d) If any fauna species are found on Site and need to be relocated, a suitably qualified specialist must be contacted to provide advice on the relocation of animals or treatment of injured animals. This suitably qualified specialist may be the person nominated in section 3.1c), a veterinarian, or a representative from Fauna Rescue SA or the RSPCA.
- e) A veterinarian must be engaged to treat injured fauna.

3.2 Tree hollow relocation report

- a) Following the tree hollow inspections undertaken in accordance with section 3.1, the Contractor must prepare a tree hollow relocation report, guided by the vegetation survey and fauna inspection, and including the following information:
 - i) fauna species and locations observed (include vegetation survey tree numbers);
 - ii) tree hollows identified for relocation (include vegetation survey tree numbers);
 - iii) the proposed tree hollow harvesting methods for the hollows identified;
 - iv) hollows to be created or relocated including:
 - A. end of a natural tree hollow;
 - B. section of a natural tree hollow;
 - C. natural hollows;
 - D. entire trees with hollows; and
 - E. manufactured hollows and nesting boxes, including the details and specifications of the proposed manufactured hollows and nesting boxes;
 - v) details of the tree hollows for the targeted fauna species in accordance with Appendix 1: Hollow requirements for particular species;
 - vi) proposed sites for tree hollow relocation including:
 - A. arboreal;
 - B. terrestrial; and
 - C. hollow orientation;
 - vii) proposed equipment and methods for tree hollow relocation, including details of the proposed arrangements for retention or stockpiling of entire trees identified for relocation as required by section 4.1.5;
 - viii) methods of tree hollow attachment; and
 - ix) tree hollow maintenance requirements.
- b) The tree hollow relocation report required in section 3.2a) must be prepared in consultation with a suitably qualified ecologist or native wildlife management specialist.
- c) The tree hollow relocation report required in section 3.2a) must be submitted to the Principal, which will constitute a **Hold Point**. The Contractor must not create or relocate any tree hollows until this Hold Point has been released.
- d) The tree hollow relocation report must be submitted as part of the Construction Documentation following release of the Hold Point.

4 Tree hollow harvesting and relocation

4.1 Hollow type

4.1.1 General

The Contractor must comply with the requirements in this section 4.1 for the hollow types as specified in the tree hollow relocation report.

4.1.2 End of a natural tree hollow

Where the opening at the end of a natural tree hollow is used as the aperture:

- a) the length of the hollow must be a minimum of 400 mm and a maximum of 1000 mm long, unless the targeted species is the Yellow-tailed Black Cockatoo which requires a hollow length of 2400 mm;
- b) the cut end of the hollow must be capped using a galvanised, perforated end plate, and fixed with 8 g x 30 mm self-drilling galvanised timber screws at 150 mm centres; and
- c) nesting material, such as leaf litter that would naturally fall into hollows, must be placed inside the hollow to a depth of 200 mm.

4.1.3 Section of a natural tree hollow

Where a section of a natural tree hollow is used as the aperture:

- a) a section of hollow branch that has both ends cut may have one or both ends capped as specified in the tree hollow relocation report;
- b) where both ends of a hollow branch are capped, an aperture must be drilled or a slit formed at the top of the limb, depending on which species is targeted;
- c) the length of the hollow must be a minimum of 400 mm and a maximum of 1000 mm long, unless the targeted species is the Yellow-tailed Black Cockatoo which requires a hollow length of 2400 mm;
- d) the top cut ends of the hollow must be capped using a galvanised end plate and fixed with 8 g x 30 mm self-drilling galvanised timber screws at 150 mm centres; and
- e) the bottom cut end of the hollow must be capped using a galvanised, perforated end plate, and fixed with 8 g x 30 mm self-drilling galvanised timber screws at 150 mm centres.

4.1.4 Natural hollows

- a) Where a natural tree hollow is identified for relocation, the tree hollow will need no modification prior to relocation, i.e. the saw cut will be made after the extent of the hollow.
- b) The length of the natural tree hollow must be a minimum of 400 mm and a maximum of 1000 mm long, unless the targeted species is the Yellow-tailed Black Cockatoo which requires a hollow length of 2400 mm.

4.1.5 Entire trees with hollows

Where entire trees with hollows are identified for relocation:

- a) the tree must be retained or stockpiled in the location specified in the tree hollow relocation report until a suitable site has been selected; and
- b) the tree must be handled with care so as not to diminish its habitat value.

4.1.6 Manufactured hollows and nesting boxes

Manufactured hollows and nesting boxes must be appropriate for the species encountered.

4.2 Hollow relocation sites

- a) When relocating tree hollows for arboreal fauna:
 - i) the tree hollow relocation report must identify suitable host trees for the relocation of hollows;
 - ii) the host trees must be mature, in good health, and must be part of a vegetated area conducive to habitat development;
 - iii) the host trees must have sufficient height and branch structure to enable positioning hollows in positions that conform to the hollow requirements specified in Appendix 1: Hollow requirements for particular species;
 - iv) no more than 2 hollows must be placed in one tree;

- v) hollows must be mounted vertically, or as close as possible to their original orientation;
 - vi) hollows must be mounted a minimum of 5 m from ground level or at a similar height and angle to where it was in the original tree; and
 - vii) the aperture must be faced away from prevailing weather to reduce entry of rain.
- b) When relocating tree hollows for terrestrial fauna:
- i) the tree hollow relocation report must identify designated locations for hollows on the ground in areas that are targeted for terrestrial fauna habitat creation; and
 - ii) the hollows must be placed in locations where they will not smother native vegetation or present a hazard to persons or property.

5 Maintenance

- a) The Contractor must maintain the hollows in accordance with the tree hollow relocation report.
- b) The location of installed hollows must be recorded spatially and provided as part of the Quality Management Records.
- c) The Contractor must maintain the hollows for the duration of the Landscape Maintenance Period, including site inspections at 6-monthly intervals.
- d) At each site inspection undertaken in accordance with section 5c), the Contractor must:
 - i) check each installed hollow for safety, including refastening, re-orientation, tightening of fixings, and re-fixing of end caps if necessary; and
 - ii) record all activities and provide a copy of the records to the Principal after the inspection as part of the Quality Management Records.
- e) Where installed hollows are occupied by fauna, the Contractor must avoid disturbing the fauna during site inspections.
- f) The Contractor must include a record of hollows that are, or have been, occupied by fauna in the site inspection records provided to Principal in accordance with section 5d)ii).
- g) The Contractor must provide a program of maintenance to the Principal at the end of the maintenance period suggesting the requirements for the ongoing maintenance of the tree hollow.

6 Hold Points

Table PR-LS-C12 6-1 details the review period or notification period, and type (documentation or construction quality) for each Hold Point referred to in this Master Specification Part.

Table PR-LS-C12 6-1 Hold Points

Section reference	Hold Point	Documentation or construction quality	Review period or notification period
3.2c)	Provision of tree hollow relocation report	Documentation	5 Business Days review

7 Appendix 1: Hollow requirements for particular species

Table PR-LS-C12 7-1 Hollow requirements for particular species

Species	Interior diameter	Depth or length	Entrance diameter	Vertical or horizontal	Height off ground	Breeding season	Reference
Large hollows: 150 to 200 mm							
Black Cockatoo, Red-Tailed	300 mm	870-1000 mm	160 x 200 mm	V	>7 m	Varied	Grant (1997)
Black Cockatoo, Glossy	300 mm	870-1000 mm	160 x 200 mm	V	>7 m	Mar-Aug	Pedler (1996)
Black Cockatoo, Yellow-tailed	300-400 mm	600-2400 mm					
Boobook, Southern	-	-	150 mm	H	-	Sept-Nov	Trainor (1995)
Cockatoo, Sulphur-crested	300 mm	1000 mm	150 mm	V	>7 m	Aug-Jan	Trainor (1995)
Corella, Little	300 mm	1000 mm	150 mm	V	>7 m	Jun-Oct	Trainor (1995)
Corella, Long-billed	300 mm	1000 mm	150 mm	V	>7 m	Aug-Dec	Trainor (1995)
Kookaburra, Laughing	150-300 mm	>400 mm	80-120 mm	H	5-10 m	Sept-Jan	Elliott (1994)
Owl, Barn	400 mm	750 mm	150 mm (open)	H	5 m	Autumn-Spring	Adams (1980) and Trainor (1995)
Shrike - thrush, Grey	150 x 300 mm	150-300 mm	90-150 mm (open)	H	>2-5 m	Jul-Feb	BFNC (n.d.) and Elliott (1994)
Swallow, Welcome	130 mm	-	Open	H	3 m	Aug-Dec	Adams (1980)
Medium hollows: 50 to 150 mm							
Brush-tail Possum	210-320 mm	400 mm	100-150 mm	V	4-8 m	Autumn	RSPCA (n.d.) and MZES (n.d.)
Duck, Australian Wood	200 mm	500 mm	120 mm	V	>1.5-2 m	Sept-Nov	Trainor (1995)
Duck, Pacific Black	450 x 300 mm	-	120 mm	-	>1.5-2 m	Jul-Oct	Elliott (1994)
Galah	200 mm	650 mm	120 mm	V	6 m	Aug-Nov	Adams (1980)
Glider, Squirrel	-	-	60 mm	-	-	May-Dec	Trainor (1995)
Kestrel, Nankeen	400 mm	750 mm	100 mm	V	5 m	Aug-Nov	Adams (1980)
Kingfisher, Sacred	130 mm	600-900 mm	75 mm	H	5-10 m	Sep-Mar	Adams (1980)
Lorikeet, Rainbow	130 mm	800 mm	80-100 mm	V-H 45° angle	>5 m	Aug-Jan	Grant (1997)

Species	Interior diameter	Depth or length	Entrance diameter	Vertical or horizontal	Height off ground	Breeding season	Reference
Lorikeet spp.	120 mm	600 mm	60 mm	H	5 m	Aug-Jan	Adams (1980)
Owlet-nightjar, Australian	150 mm	300 mm	50-80 mm	V	>5 m	Sep-Dec	Adams (1980) and Elliot (1994)
Parrot, Red-rumped	100-150 mm	400-600 mm	70-120 mm	V/H	5 m	Aug-Jan	Adams (1980) and Elliot (1994)
Ringtail-Possum sp.	250 mm	350-400 mm	60-90 mm	V	4-8 m	Apr-Nov	Trainor (1995) and MZES (n.d.)
Rosella spp.	120-180 mm	>400 mm	70-120 mm	V/H	5 m	Aug-Jan	Elliot (1994) and MZES (n.d.)
Rosella, Crimson	150-200 mm	350-800 mm	75-100 mm	V/H	5-6 m	Sep-Jan	Adams (1980)
Rosella, Eastern	135-240 mm	350-800 mm	60-100 mm	V/H	5-6 m	Aug-Jan	Adams (1980)
Teal, Chesnut	200-450 mm	450-750 mm	80-120 mm	V	1.5 m	Sep-Dec	Adams (1980) and Elliot (1994)
Teal, Grey	400-450 mm	450-750 mm	80-120 mm	V	1.5 m	All year	Adams (1980) and Elliot (1994)
Treecreeper spp.	90-150 mm	100-400 mm	50-80 mm	V	-	-	Elliot (1994)
Treecreeper, White-throated	75-100 mm	300-400 mm	50 - 70 mm	V	5 m	Aug-Jan	Adams (1980)