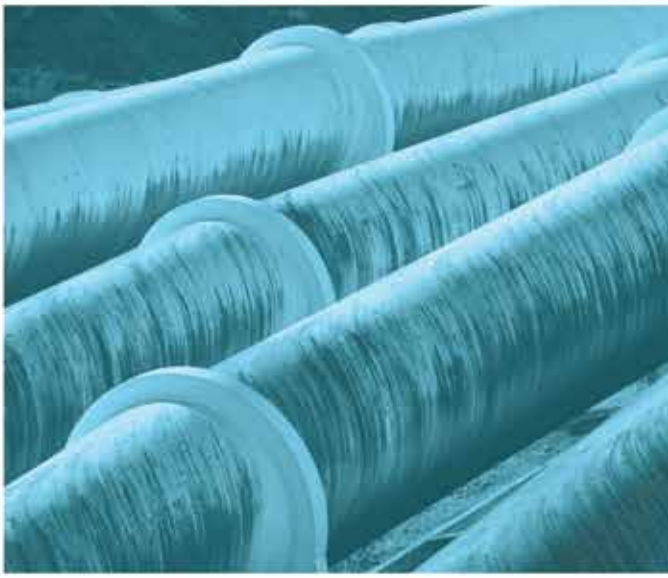



Biodiversity Offset Report - Modification 1
Response to Submissions

Prepared for Snowy Hydro Limited
October 2019

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T 03 9993 1905

PERTH
Level 6, 191 St Georges Terrace
Perth WA 6000

CANBERRA
PO Box 9148
Deakin ACT 2600

Biodiversity Offset Report – Modification 1 Response to Submissions

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Client

Snowy Hydro Limited

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Version

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Prepared by

Cassandra Kottaras
Ecology
1 October 2019

Approved by

Nathan Garvey
Associate Director
1 October 2019

Table of Contents

Appendices

Tables

Figures

1 Submissions received

EMM Consulting Pty Limited (EMM) received comments for Modification 1 to the Snowy Hydro 2.0 Exploratory Works on 19 July 2019 from the Biodiversity and Conservation Division (BCD) of the NSW Department of Planning, Industry and Environment (DPIE) and the NSW National Parks and Wildlife Service (NPWS). Key issues around biodiversity values, Smoky Mouse and the removal of dangerous trees are provided in Table 1.1, along with a response to each issue.

Table 1.1 Response to submissions

Submission	Response
Biodiversity BDC have reviewed the BDAR to support the modification. The credit calculation has been adjusted to account for areas where the clearing has been reduced. However, the calculation is based on a 4m wide road width. Does not appear to account for any cut and fill required on steep slopes. (See Key Issue 1). *Recommended action:* The road widths and laydown areas in steep areas are to be reconsidered and if it is necessary to widen the roads in sections, then the offsetting requirements are to be recalculated.	The access tracks required to these boreholes were shown in the Modification 1 Assessment Report figures and assessed in the impact assessment including biodiversity offset calculations. Access tracks to BH7201 and BH7212 are 12m wide and are expected to accommodate cut and fill requirements through steep slopes in these areas. No reconsideration is required.

Table 1.1 Response to submissions

Submission	Response
Smoky Mouse There will be an increase in impact within the Marica area on the Smoky mouse. There is no detail in the Biodiversity Management plan on how the vehicle speed limit will be maintained in the Smoky mouse habitat. *Recommended actions:* The draft Biodiversity Management Plan is to include extending the existing monitoring program for Smoky Mouse to the Marica area in consultation with B&C Division. Detail on how the speed limit will be maintained and enforced in the Smoky mouse habitat is to be provided. The BMP is to include monitoring and recording any fauna road deaths and detail on the adaptive response to any deaths.	Table 7.1 of the Biodiversity Development Assessment Report for Modification 1 states there will be a restriction on vehicle movements in the Marica area, with speeds limited to 20 km/h between dusk and dawn. The proposed night-time speed limits within Smoky Mouse habitat at the Marica geotechnical drill sites will be maintained through the use of a project In-vehicle Management System (IVMS). For improved safety an IVMS is used for all Exploratory Works construction vehicles. The IVMS enables remote monitoring of vehicles and their speeds and provides notifications to drivers when speed limits are exceeded. Specific limits can be set for specific roads and tracks, including access borehole tracks in the Marica area. It is expected that the IVMS will provide adequate control to enforce the night time speed limits within Smoky Mouse habitat. The existing Smoky Mouse monitoring program within the Biodiversity Management Plan (BMP, EMM 2019a) will be extended to include the Marica area (as per Section 7.2.1, EMM 2019b). The BMP will also include monitoring and recording of any fauna road deaths and details on the adaptive response to any deaths.

Table 1.1 Response to submissions

Submission	Response
Dangerous tree removal The BDAR and offset calculations do not include the 91 trees being cleared on Lobs Hole Road. Some of these trees are large and hollow bearing. *Recommended actions*: The offset calculation and the credit liability is to be adjusted to include the 91 trees. The financial amount payable in Condition 7 is to be adjusted accordingly. The offset strategy is to detail how the loss of hollow bearing trees will be offset on park. Clarification on the surveys for arboreal fauna and hollow dependent birds is to be provided including whether the 91 trees were assessed during the appropriate time for breeding habitat. Mapping and location of the 91 trees would assist in determining if the trees were surveyed. Where feasible, the impact of the removal of hollow bearing trees is to be mitigated by cutting out the section(s) of each removed tree with the large hollows and remounting them on suitable trees.	Each of the 91 trees have been mapped within the project area and associated vegetation zone, see Figure 2.1. Extensive and comprehensive biodiversity surveys have been undertaken for Snowy 2.0 between August 2017 and August 2019. This has included targeted arboreal mammal and hollow-dependent bird surveys along Lobs Hole Ravine Road. Surveys were undertaken during appropriate seasons, to meet the key life cycle requirements for candidate species (see EMM 2018). Further surveys have been completed between submission of the Exploratory Works BDAR (EMM 2018) and Modification 1. A summary of these surveys has been provided below in Section 2.2.1. Survey effort within these areas is provided in Figure 2.2. The 91 trees to be cleared along Lobs Hole Ravine Road will be offset through calculation of vegetation integrity scores of management zones, as set out in Section 3. Offsets required for the dangerous tree removal have been addressed in Section 3.2.1. A credit report is provided in Appendix E. Prior to the removal of the dangerous trees a pre-clearance survey will be undertaken, as per the commitments in the Exploratory Works BDAR (EMM 2018) and the Modification 1 BDAR. Staged clearing procedures will be implemented during the removal of the trees. Hollow bearing trees removed during vegetation clearing will be retained for use during rehabilitation works.

2 Stage 1: Biodiversity Assessment

Following public exhibition of the Modification 1 assessment report, feedback from government and community stakeholders, and design and construct contractors has been considered. Several project improvements have been identified and incorporated within the Modification 1 RTS. The key project improvements are:

- revision of the Exploratory Works disturbance footprint to include previously approved vegetation clearance;
- revision and clarification of road works in the boulder streams on Lobs Hole Ravine Road;
- additional laydown areas;
- additional geotechnical drilling sites; and
- justification for the Lobs Hole substation.

Further details for each of these project elements have been addressed in Section 3 of the Response to Submissions Report.

This section provides details of the proposed changes to the Modification 1 proposal and revised biodiversity and impact assessments based on these changes.

2.1 Native vegetation

2.1.1 Methods

i Detailed vegetation mapping

Please refer to Section 5.2.1 in EMM (2019b) for a detailed methodology for vegetation mapping and habitat assessment. This section outlines how plant community types (PCTs) were mapped and stratified for the Snowy 2.0 project, including Exploratory Works Modification 1.

Each of the 91 dangerous trees were mapped using the following data:

- waypoints of tree locations;
- a canopy height model developed using Light Detection and Ranging (LiDAR) data and hi-resolution aerial imagery;
- photographs of each tree to be removed; and
- tree attributes provided by Tree Survey Pty Ltd (Tree Survey 2018).

Tree canopies were drawn around visible canopies using the canopy height model. These footprints were included as a part of the vegetation zones the trees were mapped within.

ii Vegetation integrity assessment

Please refer to Section 5.2.2 of EMM (2019b) for detailed methodology of vegetation integrity assessment. As a result of recent design change being provided outside of the survey seasons, some vegetation integrity plots were not within the disturbance footprint. Vegetation integrity plots within the broader survey area were chosen for the

Modification 1 assessment. All plots used are part of the vegetation zones being impacted and are considered representative of the vegetation zones within the Modification 1 footprint.

Vegetation zones were split into management zones based on whether they occurred within the disturbance footprint (including the original footprint and additional areas) or dangerous tree removal area. Changes in vegetation integrity score (future vegetation integrity score) were calculated for each of these management zones based on the following:

- Disturbance – all scores were set to 0.
- Tree - the composition and structure scores for the tree growth form were set to zero, leaving scores for all other growth forms at the current score. Functional scores for large trees and stem size class were set to zero; all other function scores were not modified.

2.1.2 Results

i Plant community types

Site investigations, including determination of plant community types (PCTs) using the methods described in Section 5.2.1 in EMM (2019b), identified the presence of 13 PCTs within the disturbance footprint. The additional disturbance areas (including the removal of dangerous trees) arising from changes to the project boundary will result in additional impacts to 0.30 ha of native vegetation across two PCTs. Removal of dangerous trees will result in impacts to 1.13 ha of native vegetation across five PCTs.

The PCT, vegetation formation and vegetation class within Modification 1, including the original Modification 1 disturbance footprint and additional areas, are provided in Table 2.1.

Table 2.1 Plant community types mapped within the Modification 1 disturbance footprint

Plant community type	Vegetation formation	Vegetation class	Original area (ha) of disturbance footprint	Additional area (ha) of disturbance footprint	Dangerous tree removal area (ha)	Total area (ha) of disturbance footprint
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Dry Sclerophyll Forest (Shrubby sub-formation)	Southern Tableland Dry Sclerophyll Forests	0.11	-	-	0.11
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Wet Sclerophyll Forests (Grassy sub-formation)	Southern Tableland Wet Sclerophyll Forests	1.67	0.25	0.13	2.05
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Dry Sclerophyll Forests (Shrub/grass sub-formation)	Upper Riverina Dry Sclerophyll Forests	1.61	-	-	1.61

Table 2.1 Plant community types mapped within the Modification 1 disturbance footprint

Plant community type	Vegetation formation	Vegetation class	Original area (ha) of disturbance footprint	Additional area (ha) of disturbance footprint	Dangerous tree removal area (ha)	Total area (ha) of disturbance footprint
PCT 303 – Black Sally grassy low woodland in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion	Grassy Woodlands	Southern Tableland Grassy Woodlands	0.31	-	-	0.31
PCT 311 – Red Stringybark - Broad-leaved Peppermint - Nortons Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Dry Sclerophyll Forests (Shrub/grass sub-formation)	Upper Riverina Dry Sclerophyll Forests	0.09	-	-	0.09
PCT 643 – Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion	Alpine Complex	Alpine Heaths	0.01	0.05	-	0.06
PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Dry Sclerophyll Forests (Shrubby sub-formation)	Southern Tableland Dry Sclerophyll Forests	6.62	-	<0.01[1]	6.62
PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	Dry Sclerophyll Forests (Shrubby sub-formation)	Southern Tableland Dry Sclerophyll Forests	1.09	-	0.02	1.11
PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	Dry Sclerophyll Forests (Shrubby sub-formation)	Southern Tableland Dry Sclerophyll Forests	0.64	-	<0.01[1]	0.64
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Grassy Woodlands	Subalpine Woodlands	0.47	-	-	0.47
PCT 1196 – Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Grassy Woodlands	Subalpine Woodlands	0.61	-	0.98	1.59
PCT 1224 – Sub alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Grasslands	Temperate Montane Grasslands	0.15	-	-	0.15

Table 2.1 Plant community types mapped within the Modification 1 disturbance footprint

Plant community type	Vegetation formation	Vegetation class	Original area (ha) of disturbance footprint	Additional area (ha) of disturbance footprint	Dangerous tree removal area (ha)	Total area (ha) of disturbance footprint
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Grasslands	Temperate Montane Grasslands	<0.01[1]	-	-	<0.01[1]
TOTAL			**13.38**	**0.30**	**1.13**	**14.81**

Note: 1. The area of impact for this PCT is below 0.01 ha and is not discussed further below.

ii Vegetation zones

Each of the 13 PCTs identified within the revised disturbance footprint was stratified into vegetation zones based on broad condition state. This process identified 29 vegetation zones within the revised disturbance footprint, as outlined in Table 2.2.

Table 2.2 Vegetation zones mapped within the Modification 1 disturbance footprint

Plant community type	Condition	Original area (ha) of disturbance footprint	Additional area (ha) of disturbance footprint	Dangerous tree removal area (ha)	Total area (ha) of disturbance footprint
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Low	<0.01	-	-	<0.01
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Medium	0.01	-	-	0.01
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	High	0.10	-	-	0.1
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Derived grassland	<0.01	-	-	<0.01
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Poor	0.01	-	-	0.01
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Other	0.07	-	0.02	0.09
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Medium	0.33	-	0.01	0.34

Table 2.2 Vegetation zones mapped within the Modification 1 disturbance footprint

Plant community type	Condition	Original area (ha) of disturbance footprint	Additional area (ha) of disturbance footprint	Dangerous tree removal area (ha)	Total area (ha) of disturbance footprint
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	High	1.26	0.25	0.1	1.61
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Low	0.95	-	-	0.95
PCT 302 - Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Derived Grassland	0.32	-	-	0.32
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Poor	0.01	-	-	0.01
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Other	0.29	-	-	0.29
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Medium	0.01	-	-	0.01
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	High	0.03	-	-	0.03
PCT 303 – Black Sally grassy low woodland in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion	Other	0.31	-	-	0.31
PCT 311 – Red Stringybark - Broad-leaved Peppermint - Nortons Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Derived grassland	<0.01	-	-	<0.01
PCT 311 – Red Stringybark - Broad-leaved Peppermint - Nortons Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	High	0.09	-	-	0.09
PCT 643 – Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion	Low	0.01	0.05	-	0.06
PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Derived grassland	1.70	-	-	1.7

Table 2.2 Vegetation zones mapped within the Modification 1 disturbance footprint

Plant community type	Condition	Original area (ha) of disturbance footprint	Additional area (ha) of disturbance footprint	Dangerous tree removal area (ha)	Total area (ha) of disturbance footprint
PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Medium	<0.01	-	<0.01	<0.01
PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	High	4.92	-	<0.01	4.92
PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	1.09	-	0.02	1.11
PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	Derived grassland	0.06	-	-	0.06
PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	High	0.58	-	<0.01	0.58
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	High	0.47	-	-	0.47
PCT 1196 – Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Derived grassland	<0.01	-	-	<0.01
PCT 1196 – Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	0.61	-	0.98	1.59
PCT 1224 – Sub alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	High	0.15	-	-	0.15
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Low	<0.01	-	-	<0.01
TOTAL		**13.38**	**0.30**	**1.13**	**14.81**

Note: Vegetation zones with an area less than 0.01 ha were not inputted into the BAM calculator.

iii Vegetation integrity survey plots

Twenty-four vegetation integrity plots were used to calculate the vegetation integrity scores for each PCT (Table 2.3 and Figure 2.1). For the reasons outlined in Section 2.1.1ii 21 plots were located outside the disturbance footprint; however, all plots are considered representative of the vegetation zones within the disturbance footprint.

Table 2.3 Vegetation integrity survey plots

Plant community type	Condition	Area	Plot ID
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Medium	0.01	3076
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	High	0.1	190
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Poor	0.01	194
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Other	0.09	2119
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Medium	0.34	192
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	High	1.61	76
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Low	0.95	88
PCT 302 - Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Derived Grassland	0.32	1018
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Poor	0.01	1007
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Other	0.29	143
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Medium	0.01	108
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	High	0.03	97
PCT 303 – Black Sally grassy low woodland in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion	Other	0.31	201
PCT 311 – Red Stringybark - Broad-leaved Peppermint - Nortons Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	High	0.09	1015
PCT 643 – Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion	Low	0.06	173

Table 2.3 Vegetation integrity survey plots

Plant community type	Condition	Area	Plot ID
PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Derived grassland	1.7	3177
PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	High	4.92	2084 & 3005
PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	1.11	2166
PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	Derived grassland	0.06	218
PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	High	0.58	188
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	High	0.47	1043
PCT 1196 – Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	1.59	1019
PCT 1224 – Sub alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	High	0.15	164

iv Vegetation integrity score

The vegetation integrity score for each vegetation zone is provided in Table 2.4. Future vegetation integrity scores based on the management zones outlined in Section 2.1iv are provided in Table 3.1 below.

Table 2.4 Vegetation integrity scores for all vegetation zones within Modification 1 disturbance boundary

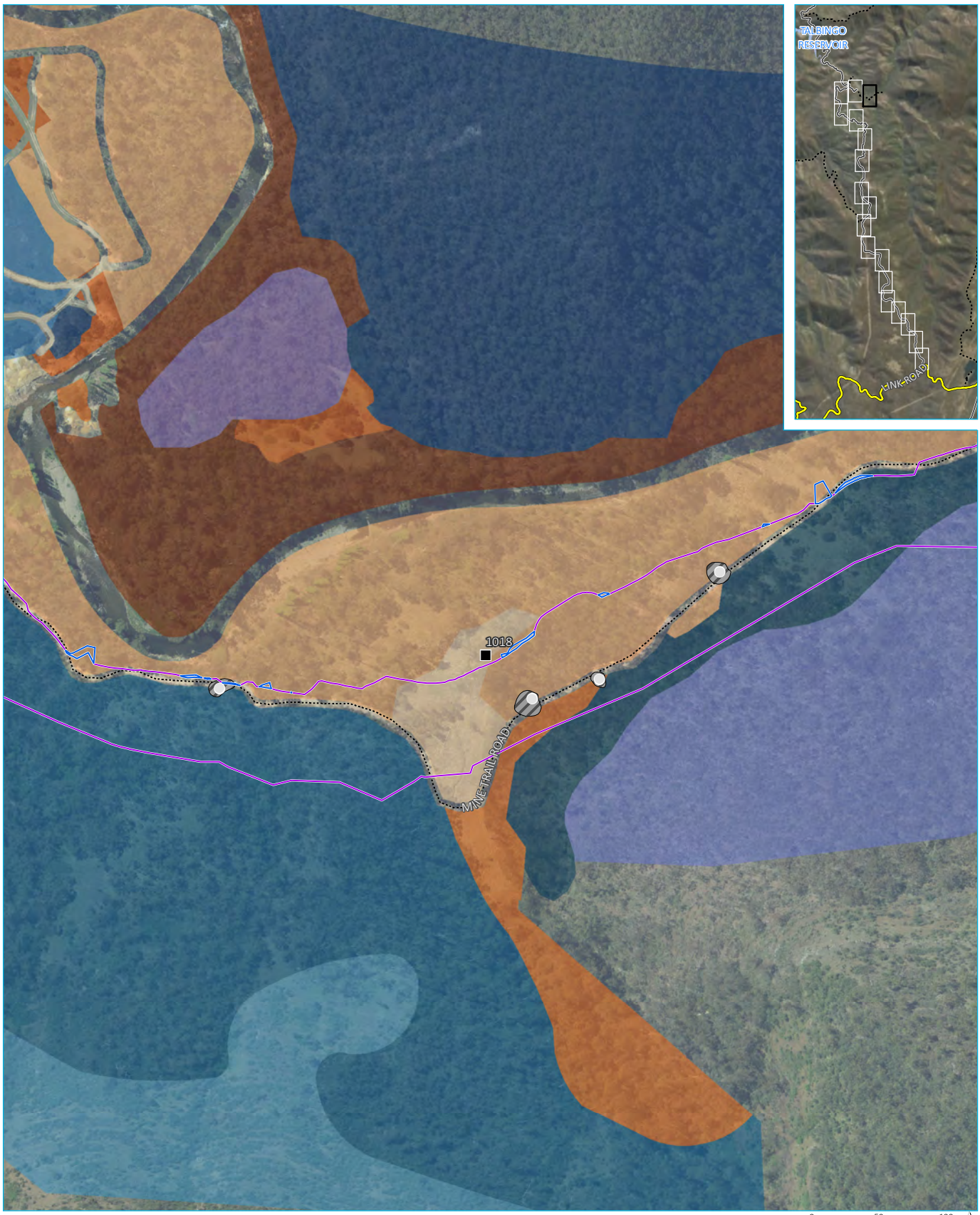
Plant community type	Condition	Vegetation integrity score
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Medium	71.9
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	High	55.3
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Poor	71.7
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Other	59.8
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	Medium	56

Table 2.4 Vegetation integrity scores for all vegetation zones within Modification 1 disturbance boundary

Plant community type	Condition	Vegetation integrity score
PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	High	49
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Low	21.2
PCT 302 - Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Derived Grassland	64
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Poor	26.6
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Other	68.3
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	Medium	65.9
PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	High	70.9
PCT 303 – Black Sally grassy low woodland in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion	Other	40.2
PCT 311 – Red Stringybark - Broad-leaved Peppermint - Nortons Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	High	60.9
PCT 643 – Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion	Low	13
PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Derived grassland	46.2
PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	High	64.3
PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	75.7
PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	Derived grassland	38.3
PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	High	63.6
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	High	47.2
PCT 1196 – Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	95.7

Table 2.4 Vegetation integrity scores for all vegetation zones within Modification 1 disturbance boundary

Plant community type	Condition	Vegetation integrity score
PCT 1224 – Sub alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	High	36.2



Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55

N

KEY

- Vehicular track
- Dangerous trees
- Plot location
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 285
- Medium

PCT 296
- High

- Low

PCT 302
- High
- Low
- Poor
- Other
- Derived grassland

PCT 729
- High
- Medium

- Poor

PCT 999
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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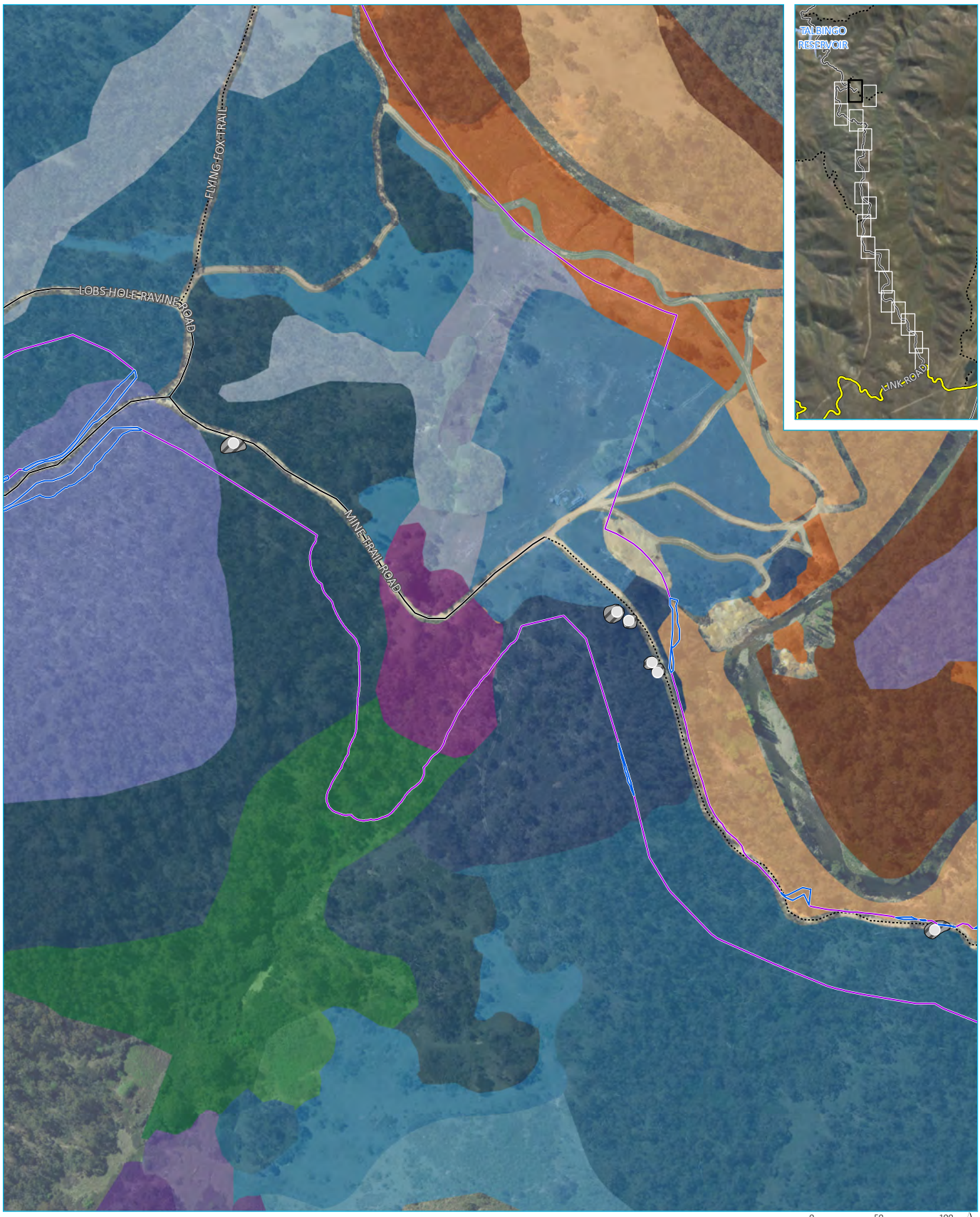

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Vehicular track
- Dangerous trees
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 299
- Medium
- Low

PCT 285
- High
- Medium
- Low
- Poor

PCT 296
- High
- Low
- Poor

PCT 300
- Medium
- Low

PCT 302
- High
- Medium
- Low
- Poor
- Other

PCT 729
- High
- Medium
- Low
- Poor

PCT 999
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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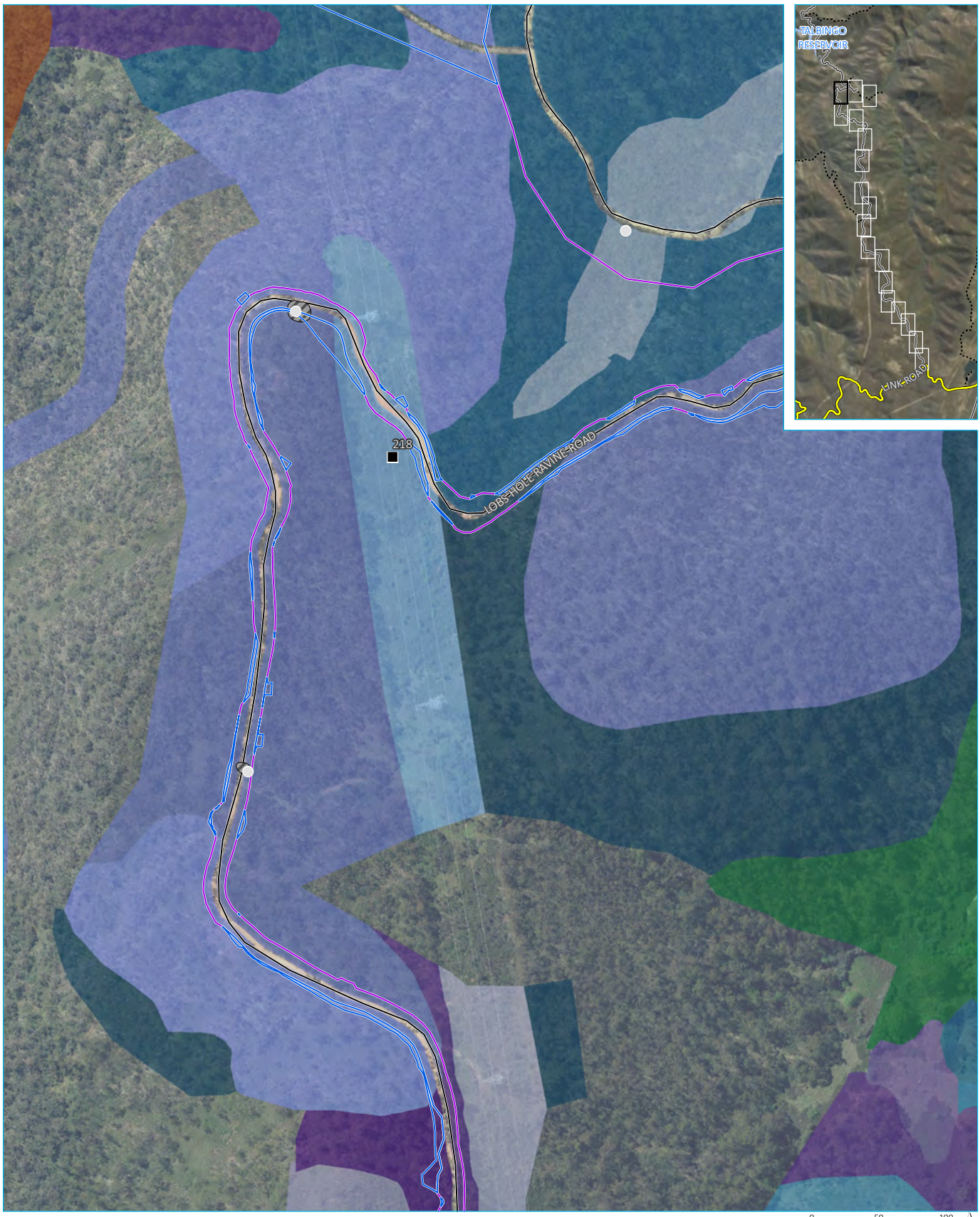

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Vehicular track
- Dangerous trees
- Plot location
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 299
- Medium
- Low

PCT 285
- Poor

PCT 300
- High
- Medium
- Low
- Other
- Derived grassland

PCT 302
- Medium

PCT 729
- High
- Medium
- Low
- Poor

PCT 999
- High
- Medium
- Derived grassland

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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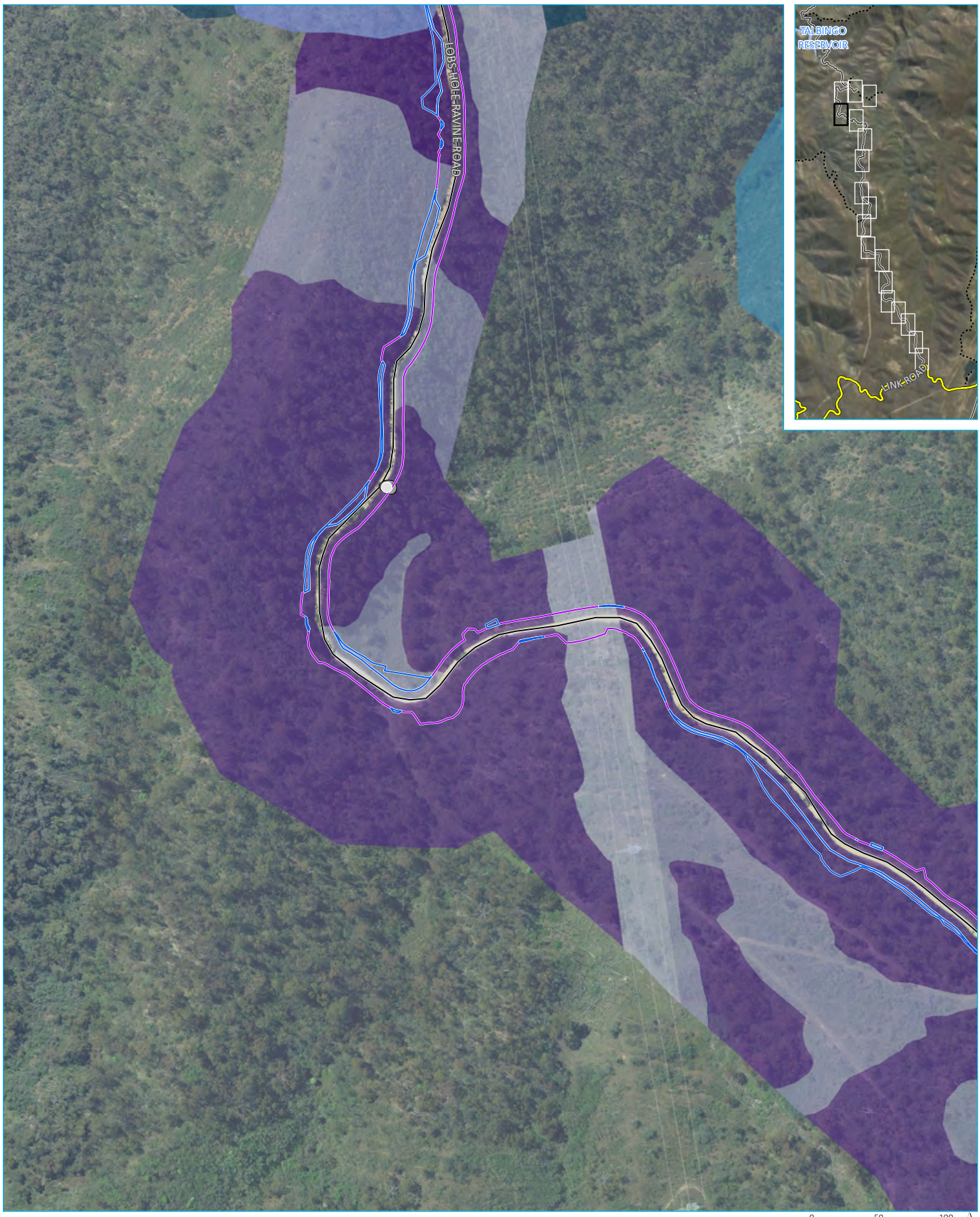

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KEY

- Local road
- Dangerous trees
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 300
- High
- Medium
- Low
- Other

- Derived grassland

PCT 729
- High
- Medium
- Low
- Poor

PCT 999
- Medium

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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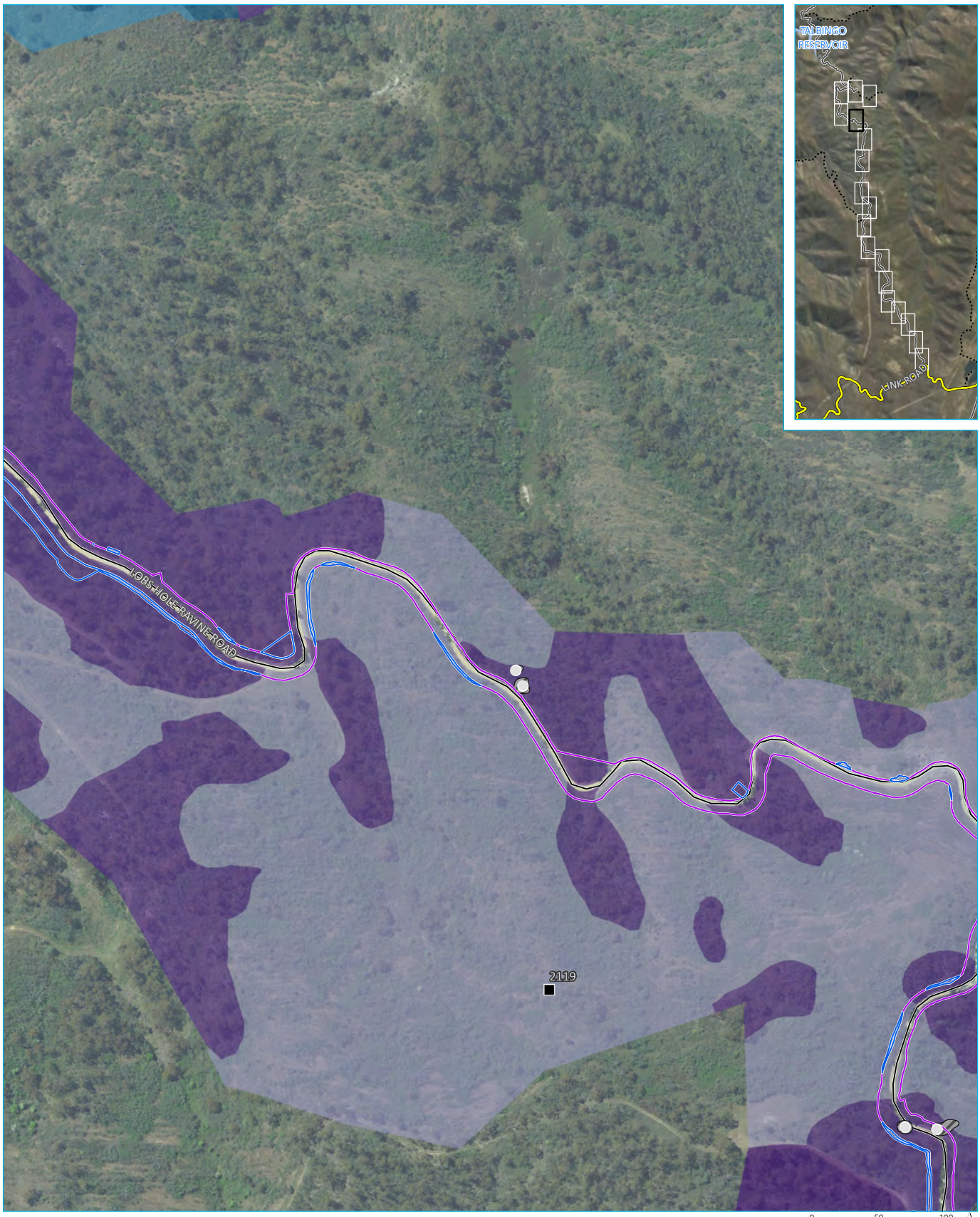

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55
N

KEY

- Local road
- Dangerous trees
- Plot location
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 300
- High
- Medium
- Other

PCT 729
- Medium
- Poor

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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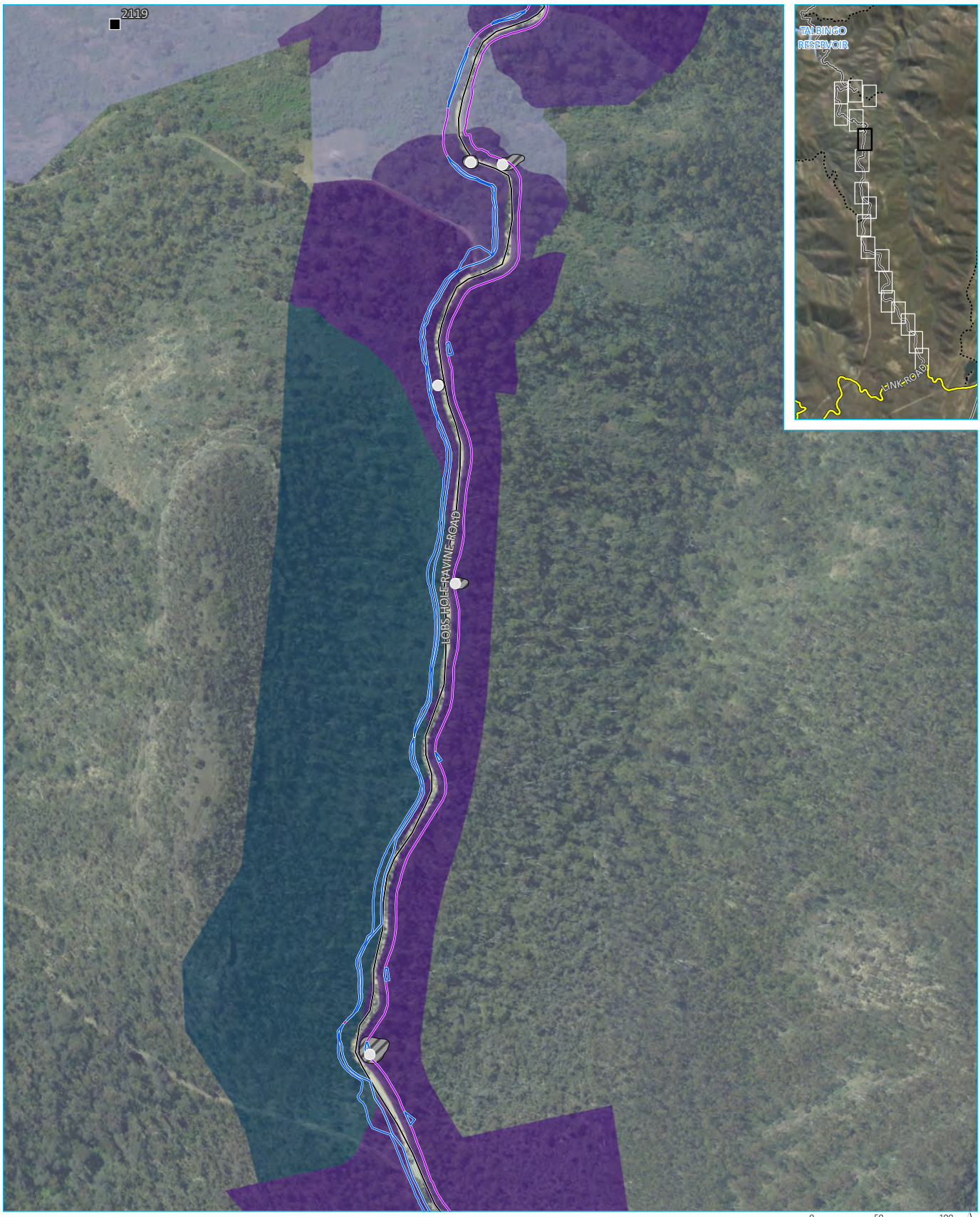

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Dangerous trees
- Plot location
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 300
- High
- Medium
- Other

PCT 729
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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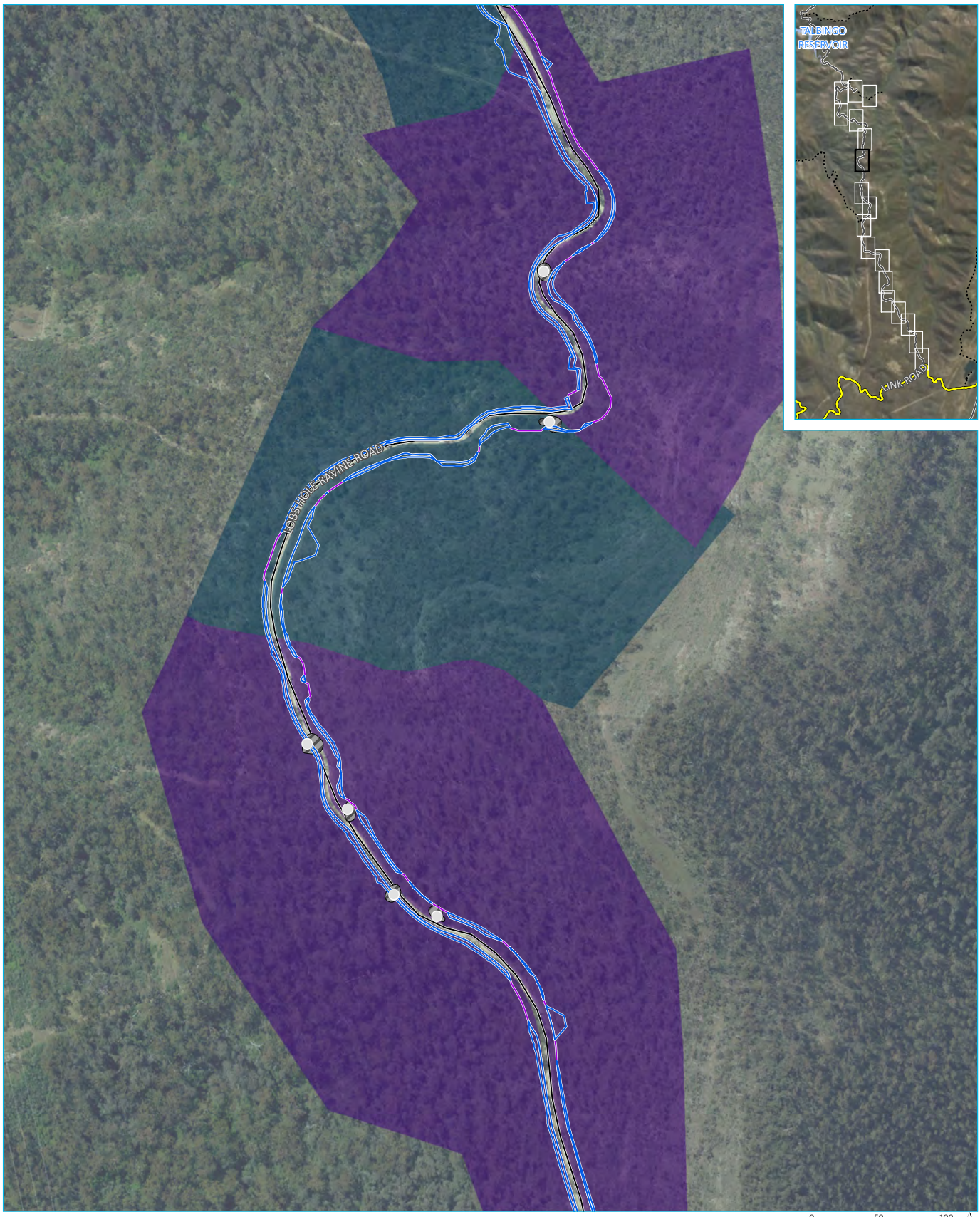

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Dangerous trees
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 300
- High

PCT 729
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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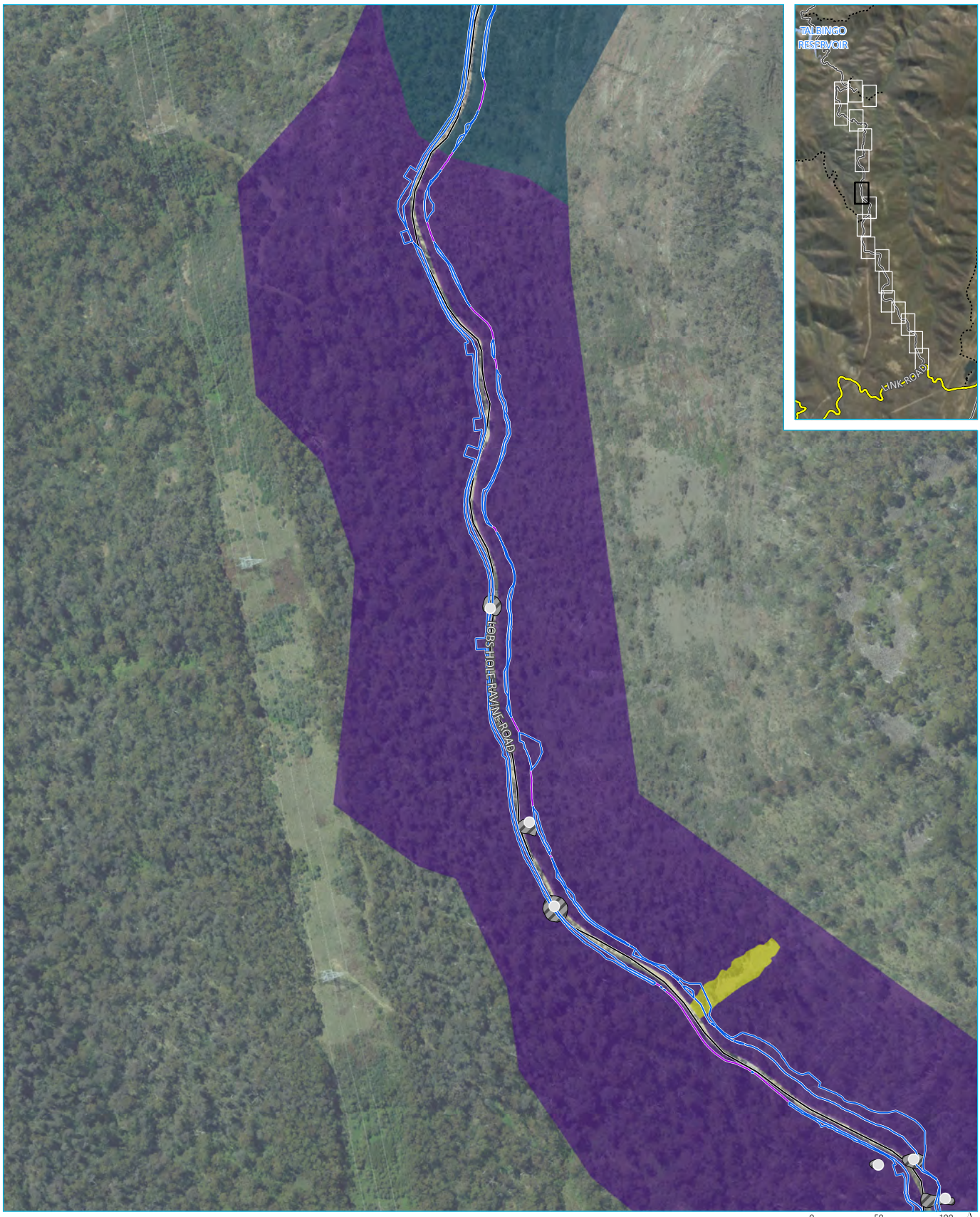

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KEY

- Local road
- Dangerous trees
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 300
- High

PCT 643
- Low

PCT 729
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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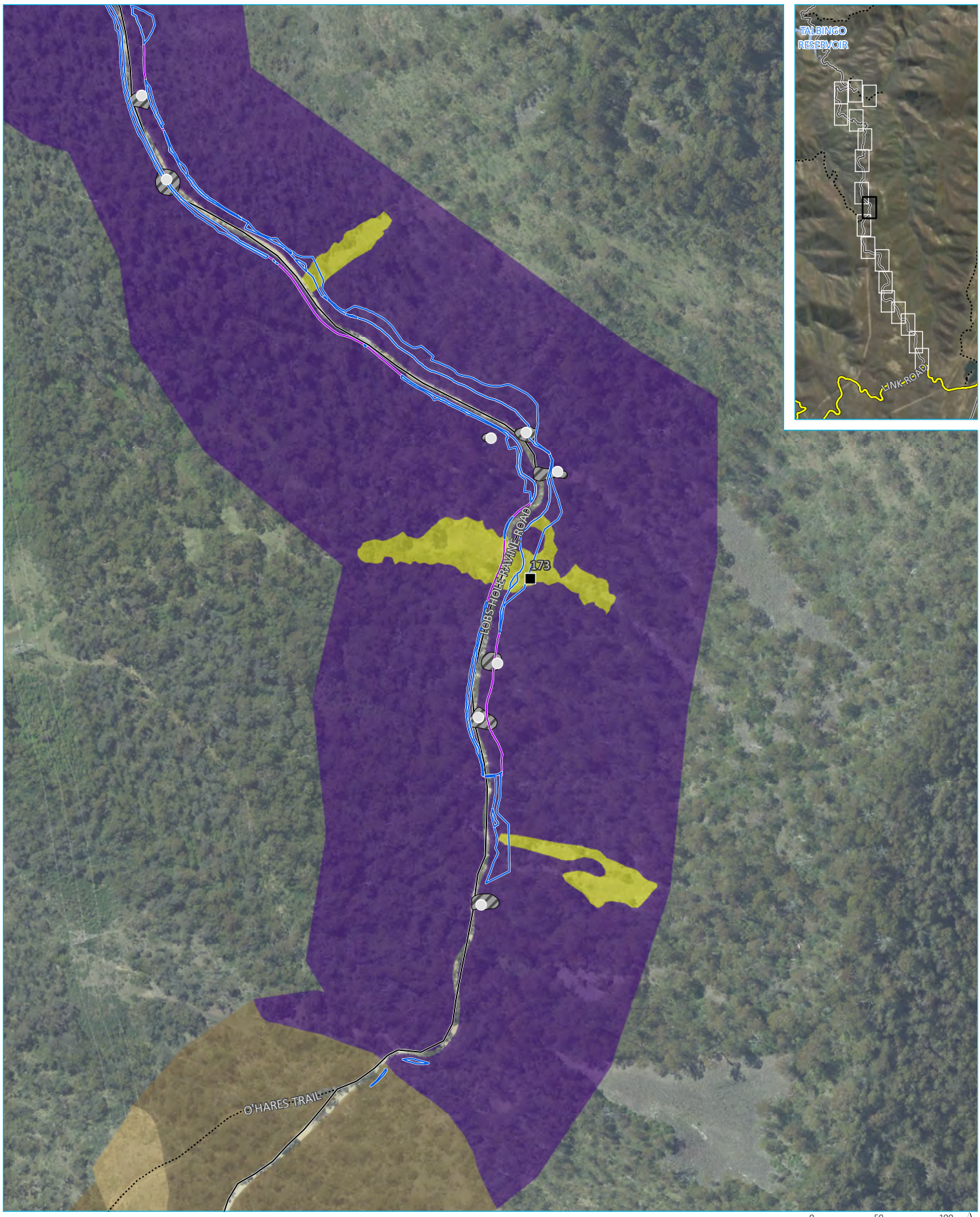

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KEY

- Local road
- Vehicular track
- Dangerous trees
- Plot location
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 300
- High

PCT 643
- Low

PCT 953
- High
- Derived grassland

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

Snowy 2.0
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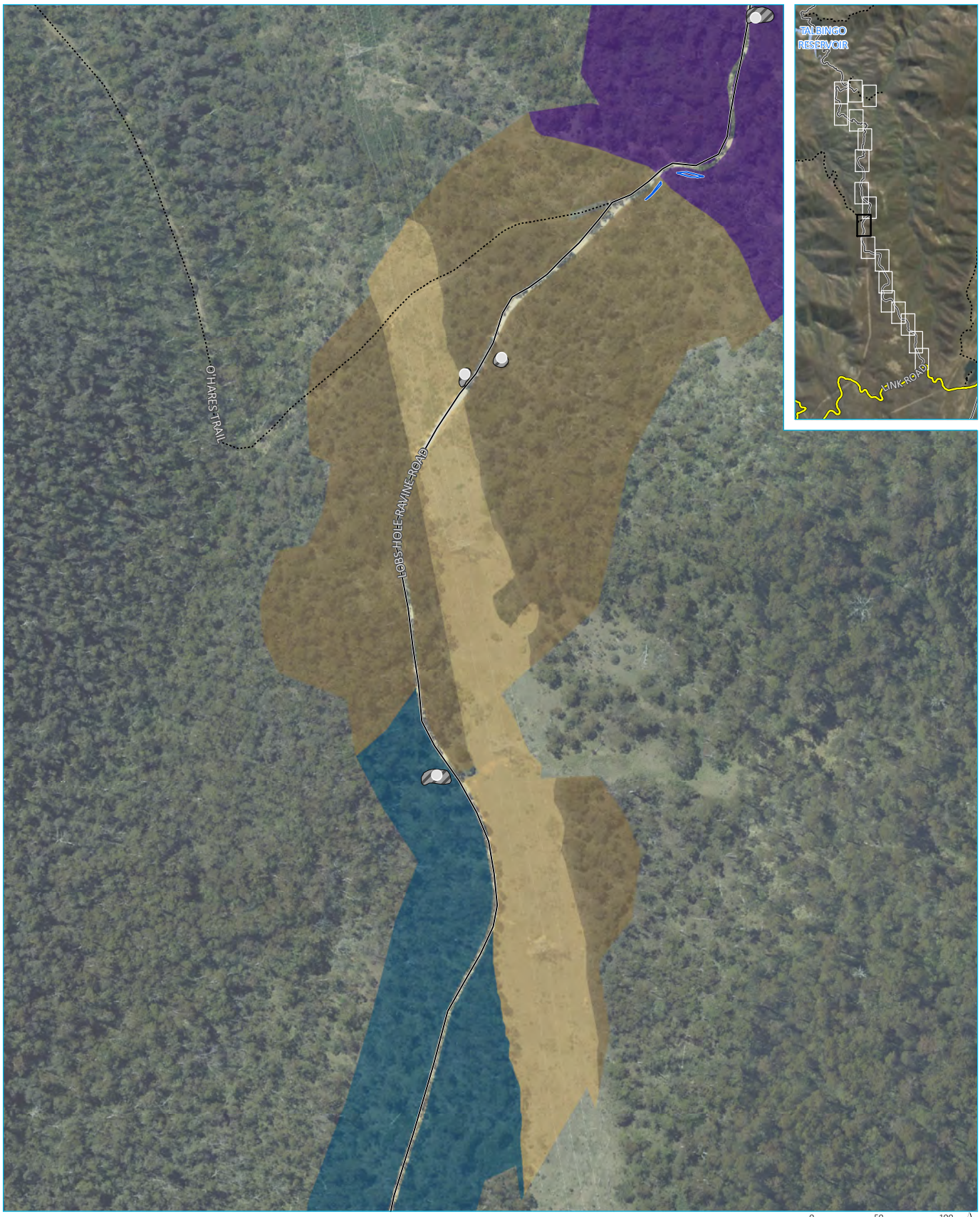

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KEY

- Local road
- Vehicular track
- Dangerous trees
- EW approved construction footprint (additional)
- Management zone

PCT 300
- High

PCT 643
- Low

PCT 953
- High
- Derived grassland

PCT 1196
- High
- Derived grassland

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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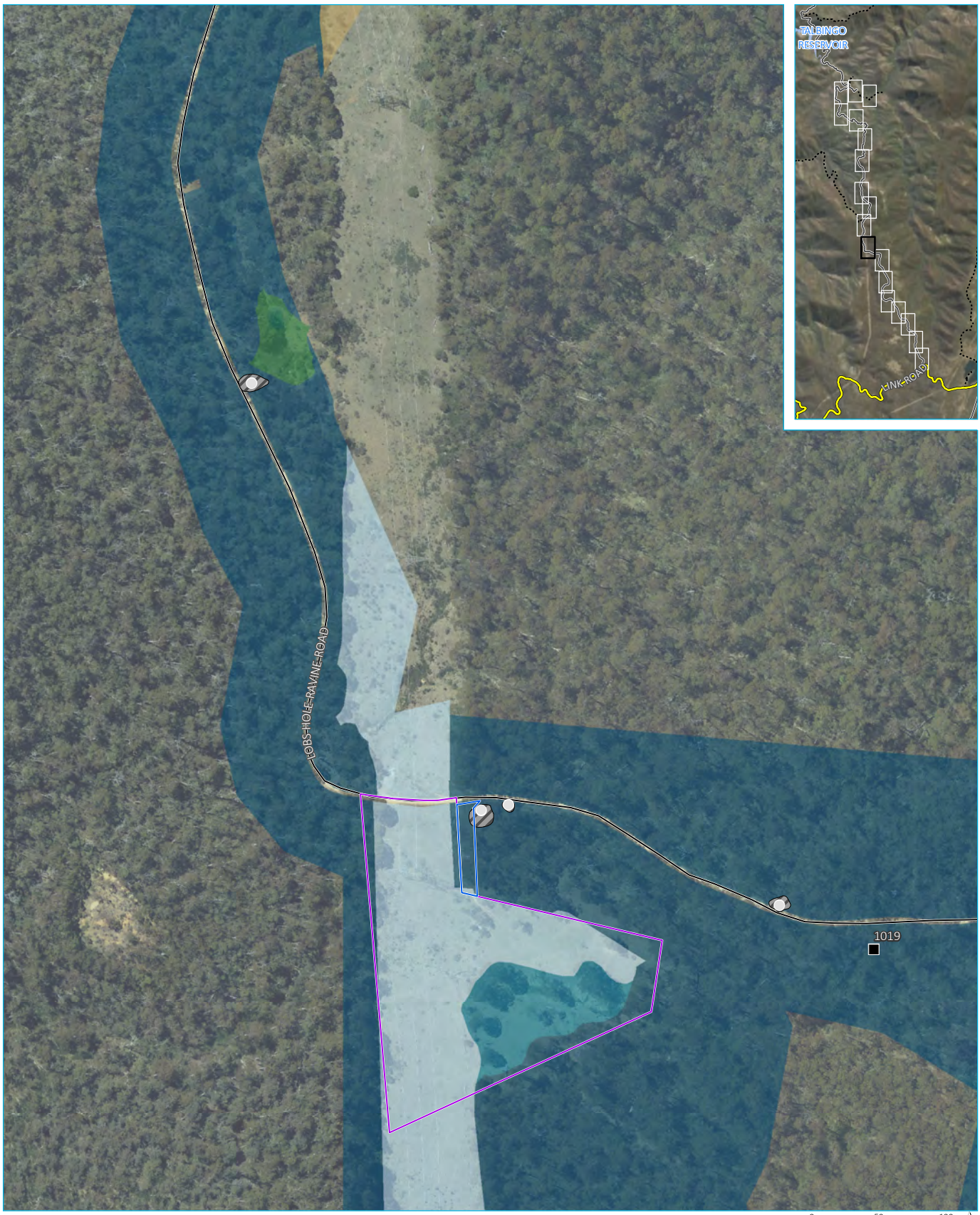

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KEY

- Local road
- Dangerous trees
- Plot location
- EW approved construction footprint (additional)
- EW approved construction footprint
- Management zone

PCT 303
- High

PCT 637
- High

PCT 953
- High
- Derived grassland

PCT 1196
- High
- Medium
- Derived grassland

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

Snowy 2.0
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Modification 1
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creating opportunities

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Dangerous trees
- Plot location
- Management zone

PCT 1196

- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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creating opportunities

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55

N

KEY

- Local road
- Dangerous trees
- Management zone

PCT 1196

- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
N

KEY

- Local road
- Dangerous trees
- Management zone

PCT 639
- High

PCT 638
- High

PCT 1196
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

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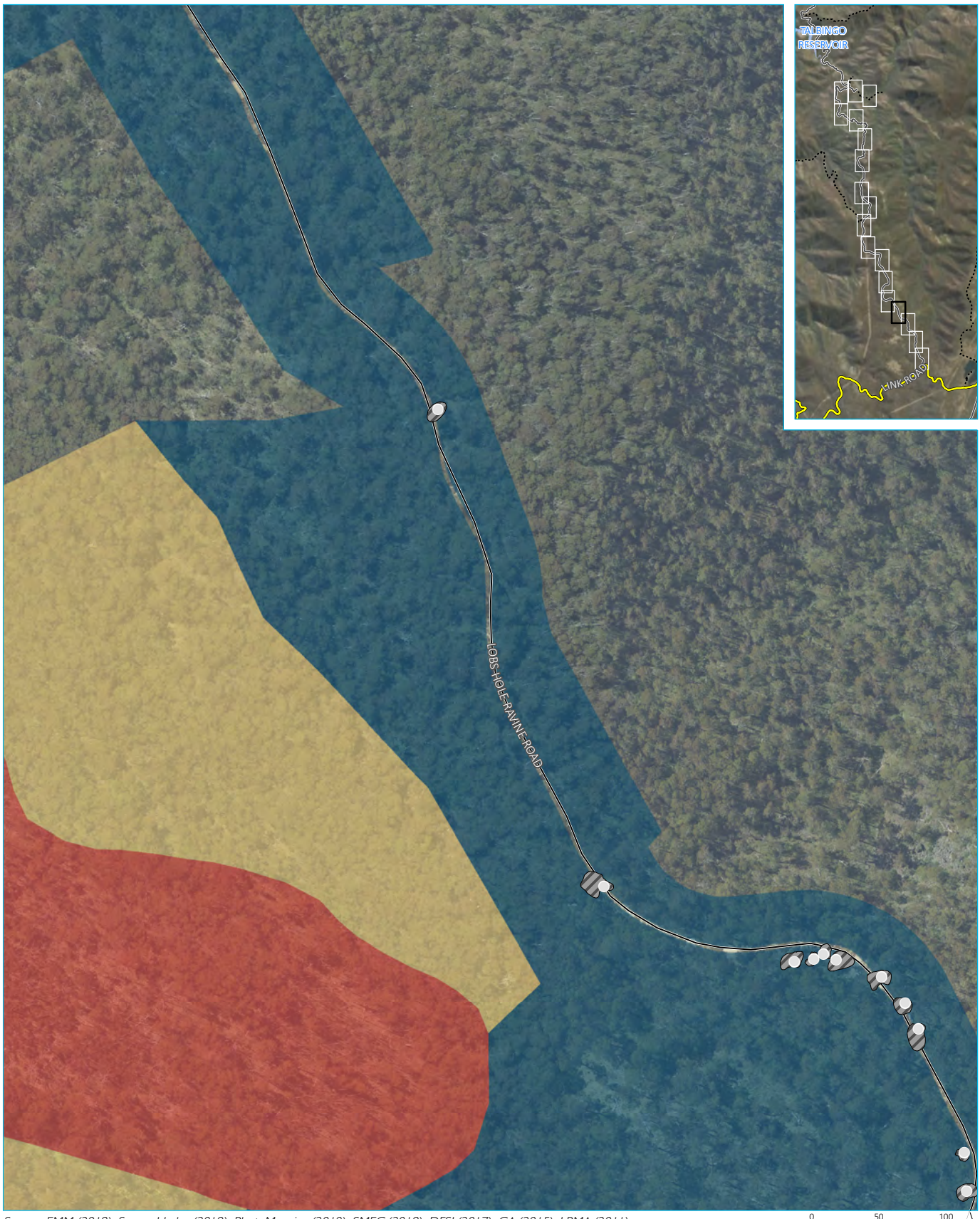

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KEY

- Local road
- Dangerous trees
- Management zone

PCT 639
- High

PCT 638
- High

PCT 1196
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

Snowy 2.0
Ecology RTS
Modification 1
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EMM
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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Dangerous trees
- Management zone

PCT 639
- High

PCT 638
- High

PCT 1196
- High

PCT 1224
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

Snowy 2.0
Ecology RTS
Modification 1
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snowy 2.0

EMM
creating opportunities

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
N

KEY

- Local road
- Dangerous trees
- Management zone

PCT 639
- High

PCT 638
- High

PCT 1196
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

Snowy 2.0
Ecology RTS
Modification 1
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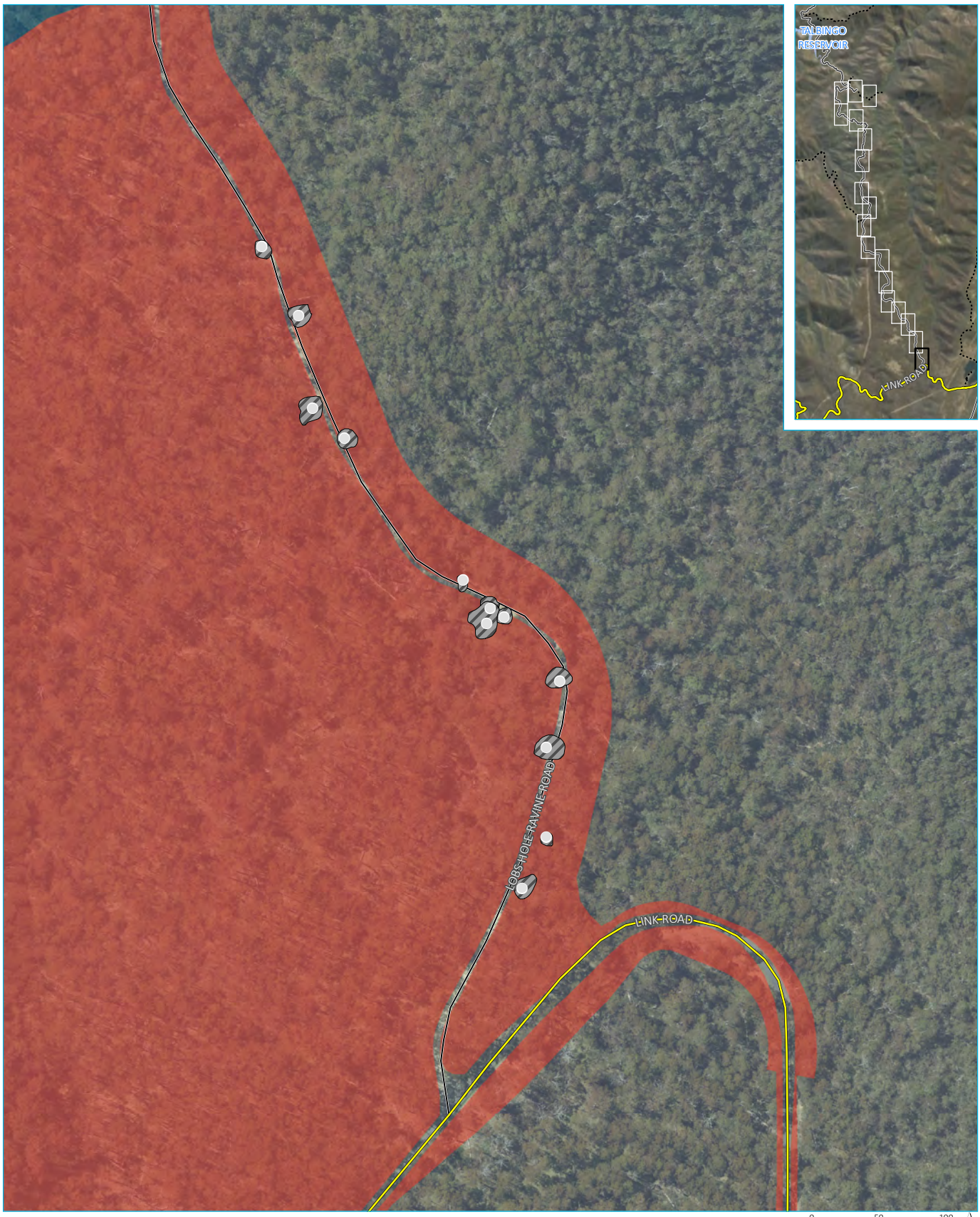

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55

N

KEY

- Main road
- Local road
- Dangerous trees
- Management zone

PCT 638
- High

PCT 1196
- High

Plant Community Type and vegetation zone mapping within the additional Modification 1 areas including plot locations

Snowy 2.0
Ecology RTS
Modification 1
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snowy 2.0

EMM creating opportunities

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2.2 Threatened species assessment, including for dangerous tree removal

2.2.1 Targeted fauna survey methods

Targeted fauna surveys were conducted within the survey area for Snowy 2.0 in accordance with various NSW (DECC 2004) and Commonwealth (DSEWPaC 2010, 2011) guidelines. This section provides a summary of surveys undertaken within Lobs Hole Ravine, including the dangerous trees.

i Diurnal birds

Bird surveys for diurnal birds were undertaken for five species listed under the BC Act and three additional migratory species listed under the EPBC Act. Targeted bird species included:

- Gang-gang Cockatoo (breeding habitat);
- breeding habitat for birds of prey, including:
  - Little Eagle;
  - Square-tailed Kite; and
  - White-bellied Sea-eagle;
- Latham's Snipe;
- Rufous Fantail; and
- Satin Flycatcher.

Bird survey methods and survey effort are outlined in Table 2.5.

Table 2.5 Methods and survey effort – diurnal birds

Method	Survey description	Survey effort
Transects and area searches	• Land based areas searches and transects. • Surveyors walked transect (access tracks) or area searches within a 1-3 ha area (other areas). • All calls and habitat features were investigated. • Birds observed or heard were recorded.	DEC (2004) has not resolved bird survey requirements. DSEWPaC (2010a) was reviewed and sympatric species survey efforts indicated a requirement for 10 hours over 5 days (2 hours per day) for sites less than 50 ha. No survey effort for larger sites is provided. A total of 29 bird surveys have been completed with a total of 67 people hours within the survey area between December 2017 and April 2019.
Targeted nest searches	Observers travelled across available habitat, seeking out habitat features including nest trees and hollows. Suitable nests or breeding hollows were marked and watched to determine if they are being used by the target species.	DEC (2004) has not resolved nest search requirements. DSEWPaC (2010a) was reviewed and sympatric species survey efforts indicated 8 hours over 4 days (2 hours per day) for sites less than 50 ha. Completed survey effort is outlined above within transects and area searches.

ii Nocturnal birds

Bird surveys for nocturnal birds were undertaken to identify breeding habitat for three forest owl species listed under the BC Act. Targeted bird species include:

- Barking Owl;
- Powerful Owl; and
- Masked Owl

Although breeding habitat is restricted within the modification project area, surveys were undertaken across all breeding and foraging habitat to determine if forest owls were active within the survey area. If found to be active surveys would focus on identifying breeding locations, if present. Nocturnal bird survey methods and survey effort are outlined in Table 2.6.

Table 2.6 Methods and survey effort – nocturnal birds

Method	Survey description	Survey effort
Call playback and spotlighting	DEC (2004) recommends call playback and spotlighting are undertaken to target these owl species. • Commence surveys with a 10-15 minute listening period. This will target the male and female calling back and forth to one another and is useful in identifying nesting trees. • This will be followed by spotlighting for 10 minutes in the immediate vicinity. • Call playback is then undertaken with the call of each target species played intermittently for a 5 minutes period followed by a 10 minute listening period. • Following call payback a further 10 minutes of spotlighting is undertaken. If forest owls were found to be present within the survey area, surveys would try to identify nesting sites by listening to roosting males calling to nesting females on dusk. Females calls would be triangulated and nest searches undertaken in identified areas over several nights.	DEC (2004) recommends at least 5 visits for the Powerful Owl and Barking Owl, 6 visits for the Sooty Owl and 8 visits for the Masked Owl. Sites should be separated by 1 km. Surveys have been completed at 24 sites within the survey area, with eight-night visits. Surveys were undertaken within May 2018 and June 2019.

iii Arboreal mammals

Arboreal mammal surveys were undertaken within the survey area to target four arboreal species listed under the EPBC Act and/or BC Act. Targeted arboreal mammal species include:

- Koala;
- Squirrel Glider;
- Brush-tailed Phascogale; and
- Greater Glider.

Arboreal mammal methods and survey effort is outlined in Table 2.7.

Table 2.7 Methods and survey effort – arboreal mammals

Method	Survey description	Survey effort
Trapping	Ten Elliot B or cage traps were placed at 2-4 m above the ground, 50 m apart in two parallel lines separated by 50 m: • Traps were baited with a mixture of peanut butter, rolled oats and honey. • A mixture of water and honey was sprayed on each tree trunk. • Traps were checked early in the morning and closed for the day. • Traps were re-opened and rebaited in the late afternoon. • Animals were temporarily marked to allow mark-recapture data to be collected. • Trapping was undertaken in conjunction with terrestrial mammal trapping where suitable habitat occurs.	DEC (2004) requires 24 trap nights over 3-4 consecutive days per 50 ha of stratification unit. Surveys were undertaken between December 2017 and April 2019 at 19 survey sites within the survey area, equating to 760 trap nights.
Spotlighting	DSEWPaC (2011) recommends two parallel 200 m transects per 5 ha site. No survey effort for larger sites is specified. In line with DSE (2011) and DEC (2004), a survey effort of two parallel 2,000 m transects per 100 ha site (half the survey effort, but over a larger area) was deemed suitable in consultation with OEH. Surveys included: • 2,000 m transects were undertaken by 2 observers (4,000 m total transect), with 25 m between transects. • Observers moved at a speed of 10 m per minute (i.e. 200 minutes for a 2,000 m transect). • All animals observed were recorded, including the distance of the animals from the observer.	DSEWPaC (2011) recommends two parallel transects per 5 ha site, while DEC (2004) recommends 2 transects per 200 ha of stratification unit. Given the size of the survey area and the fact that no species specific guidelines are available for the Greater Glider a survey effort of two 2,000 m transects per 100 ha stratification unit, repeated on two separate occasions, was deemed appropriate based on DSE (2011) and DEC (2004). Surveys were undertaken between December 2017 and June 2019, with 39 transects (2,000 m minimum distance) completed within the survey area, totalling 224,840m in length. Some transects were less than 2,000 m as they were sited in infrastructure areas where a 2,000m transect was not appropriate.

Table 2.7 Methods and survey effort – arboreal mammals

Method	Survey description	Survey effort
Regularised Grid Based (RGB) Spot Assessment Technique (SAT) (Koala)	The RGB SAT method requires application of a uniform assessment method across a broad area. A 350 m x 350 m grid was applied to the survey area to identify survey locations. At each grid point, the SAT (Phillips and Callaghan 2011) was undertaken, as follows: • Centre tree was located and marked with flagging tape. • The 29 nearest trees to the centre tree were also identified and marked. • Koala faecal pellets were searched for beneath each of the 30 trees within a distance of 100 cm. Initial inspections were checked in undisturbed ground surface, followed by a more thorough inspection involving disturbance of leaf litter and ground cover (if no faecal pellets were initially detected). • An average of approximately two person minutes per tree should be dedicated to the faecal pellet search. Activity levels can be interpreted using Table 2 from Phillips and Callaghan (2011).	Grid points located below 800 m and in proximity to and surrounding the survey area were included for survey. A total of 51 grid locations have been surveyed within the survey area.
Songmeters (Koala)	Following recent use of acoustic recorders to document calling by male Koalas (Law et al. 2018) Songmeters were deployed during the breeding season to record males bellowing: • Songmeters were set to record between dusk and dawn • Songmeters were deployed at sites separated by at least 3 km, over a mix of landscape positions (ridge, valley, gully and flat). • Songmeters were deployed at each site for a minimum of 7 nights. • Songmeter data was analysed by Dr Brad Law of the NSW Department of Primary Industry.	No survey effort has been determined for the use of Songmeters. Three Songmeters were placed out within the survey area for 62 nights.

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
N

KEY

- Dangerous tree
- Owl survey
- Koala Spot Assessment Technique (SAT)
- Watercourse/drainage line
- Vehicular track

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55

N

KEY

- Dangerous tree
- Owl survey
- Koala Spot Assessment Technique (SAT)
- Arboreal trapping
- Watercourse/drainage line
- Local road
- Vehicular track

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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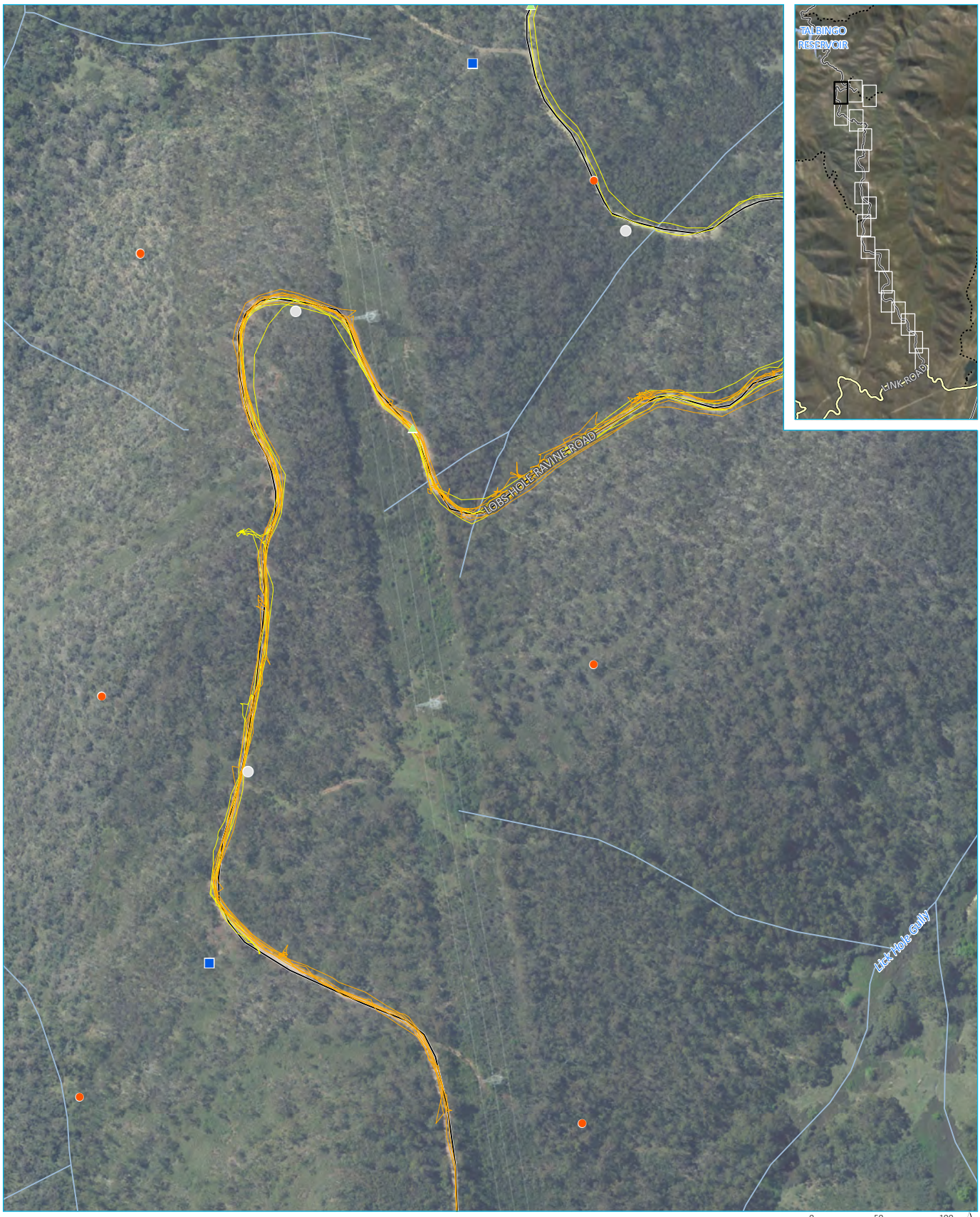

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
N

KEY

- Dangerous tree
- Owl survey
- Koala Spot Assessment Technique (SAT)
- Arboreal trapping
- Watercourse/drainage line
- Local road
- Vehicular track

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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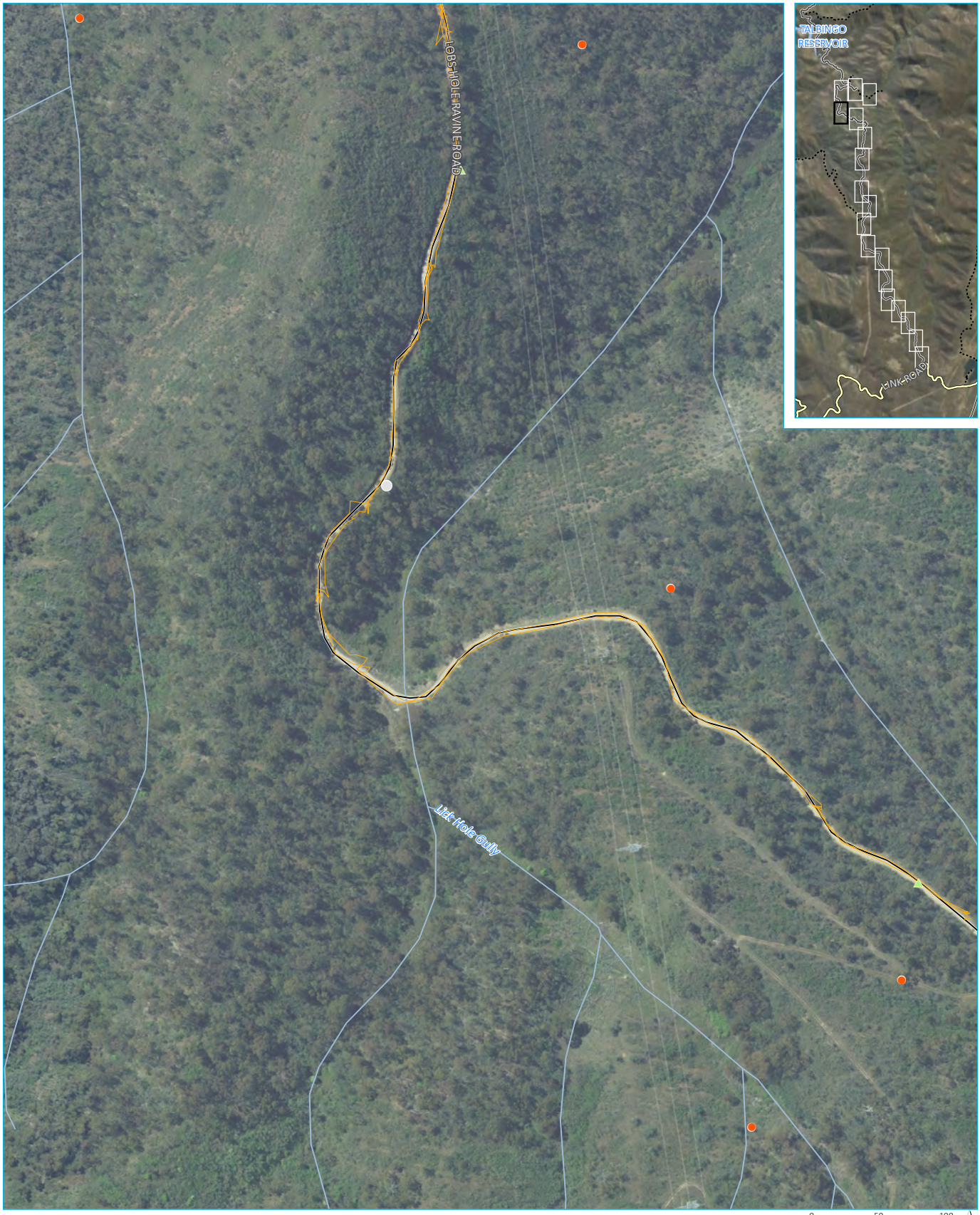

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55
N

KEY

- Dangerous tree
- Owl survey
- Koala Spot Assessment Technique (SAT)
- Watercourse/drainage line
- Local road
- Fauna survey transect
- Bird survey

Fauna survey locations

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
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KEY

- Dangerous tree
- Owl survey
- Koala Spot Assessment Technique (SAT)
- Watercourse/drainage line
- Local road
- Fauna survey transect
- Bird survey

Fauna survey locations

Snowy 2.0
Ecology RTS
Modification 1
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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55
N

KEY

- Dangerous tree
- Owl survey
- Koala Spot Assessment Technique (SAT)
- Watercourse/drainage line
- Local road
- Fauna survey transect
- Spotlighting

Fauna survey locations

Snowy 2.0
Ecology RTS
Modification 1
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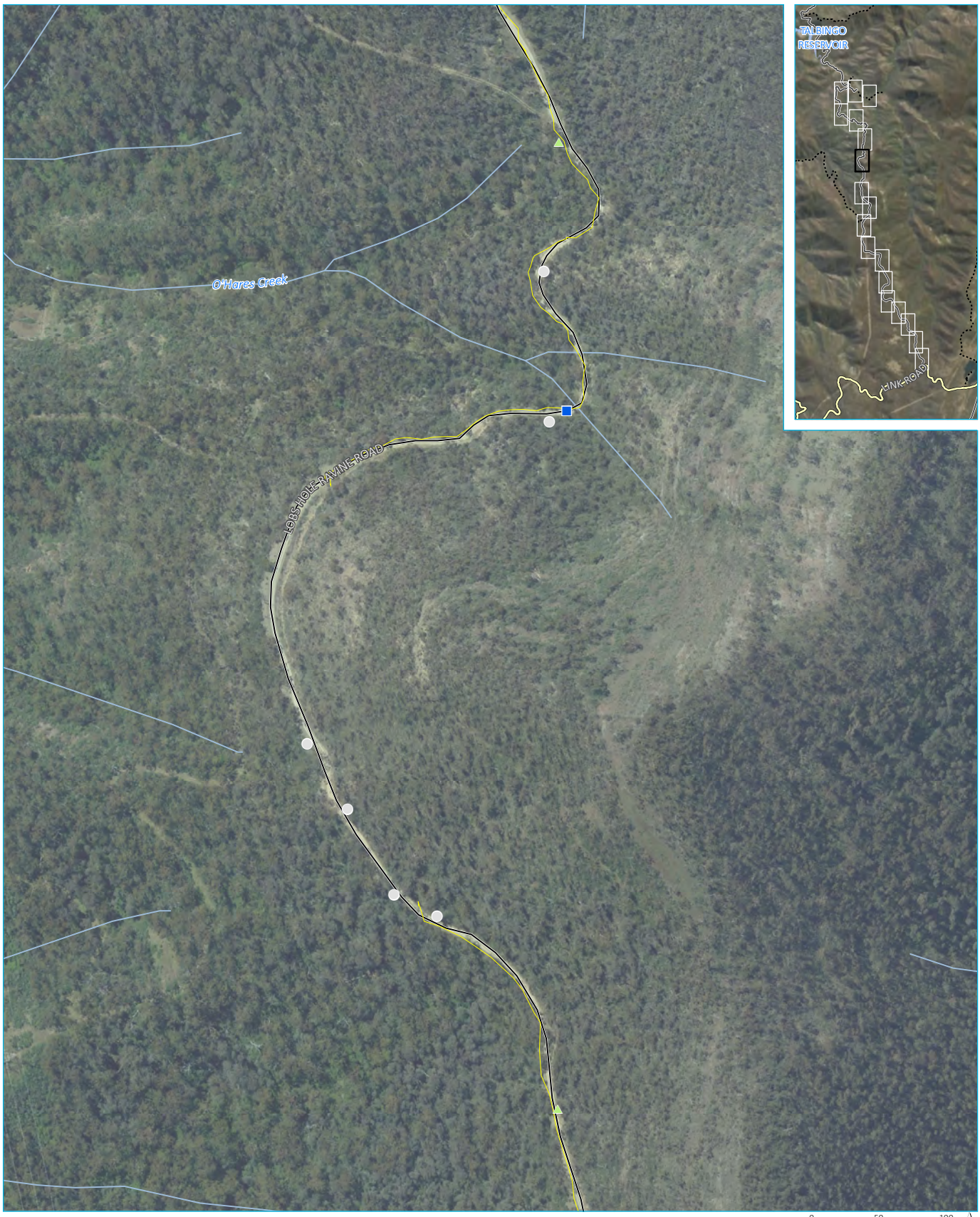

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55

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KEY

- Dangerous tree
- Owl survey
- Arboreal trapping
- Watercourse/drainage line
- Local road
- Fauna survey transect
- Spotlighting

Fauna survey locations

Snowy 2.0
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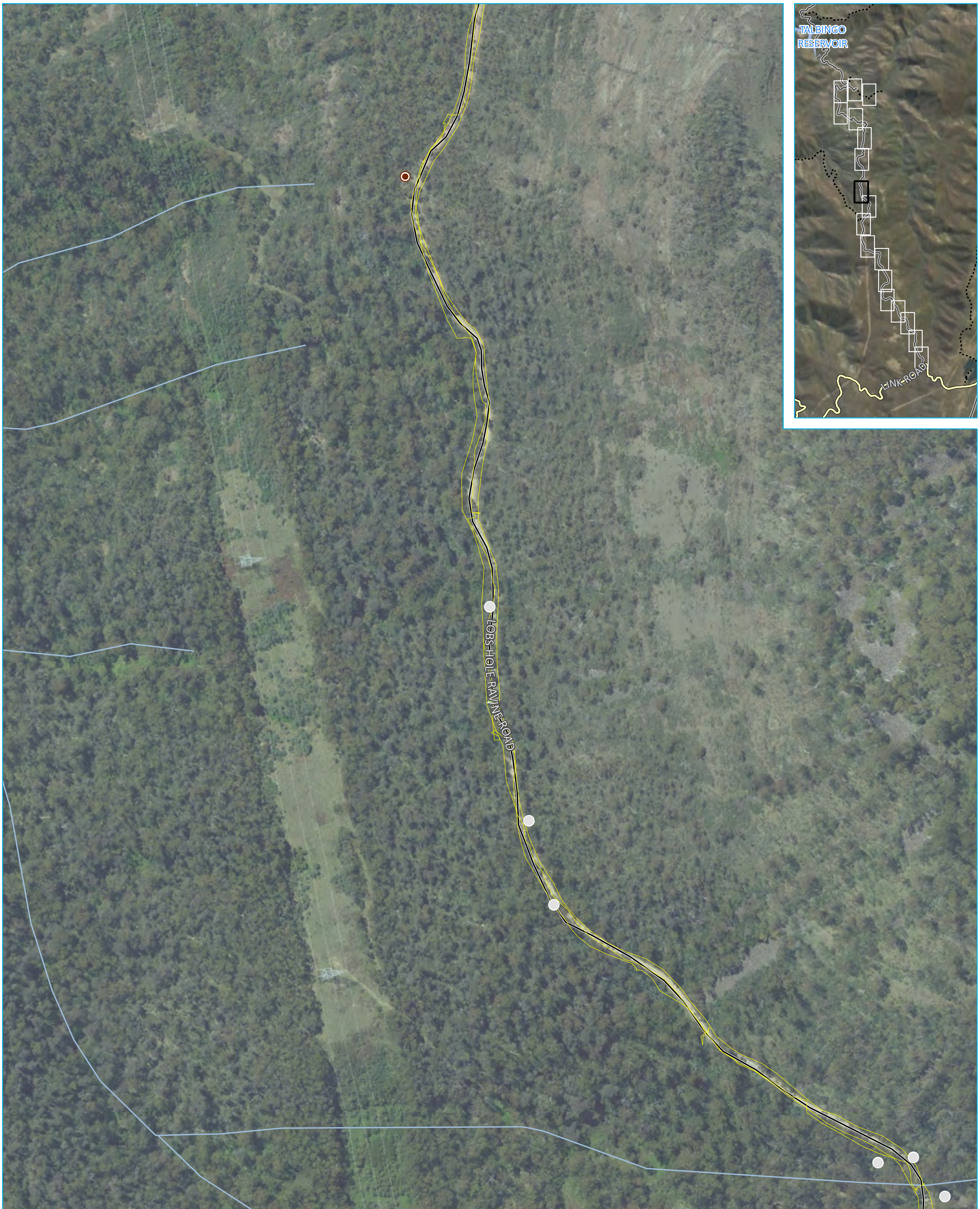

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Dangerous tree
- Owl survey
- Koala songmeter
- Watercourse/drainage line
- Local road

Fauna survey transect

- Spotlighting

Fauna survey locations

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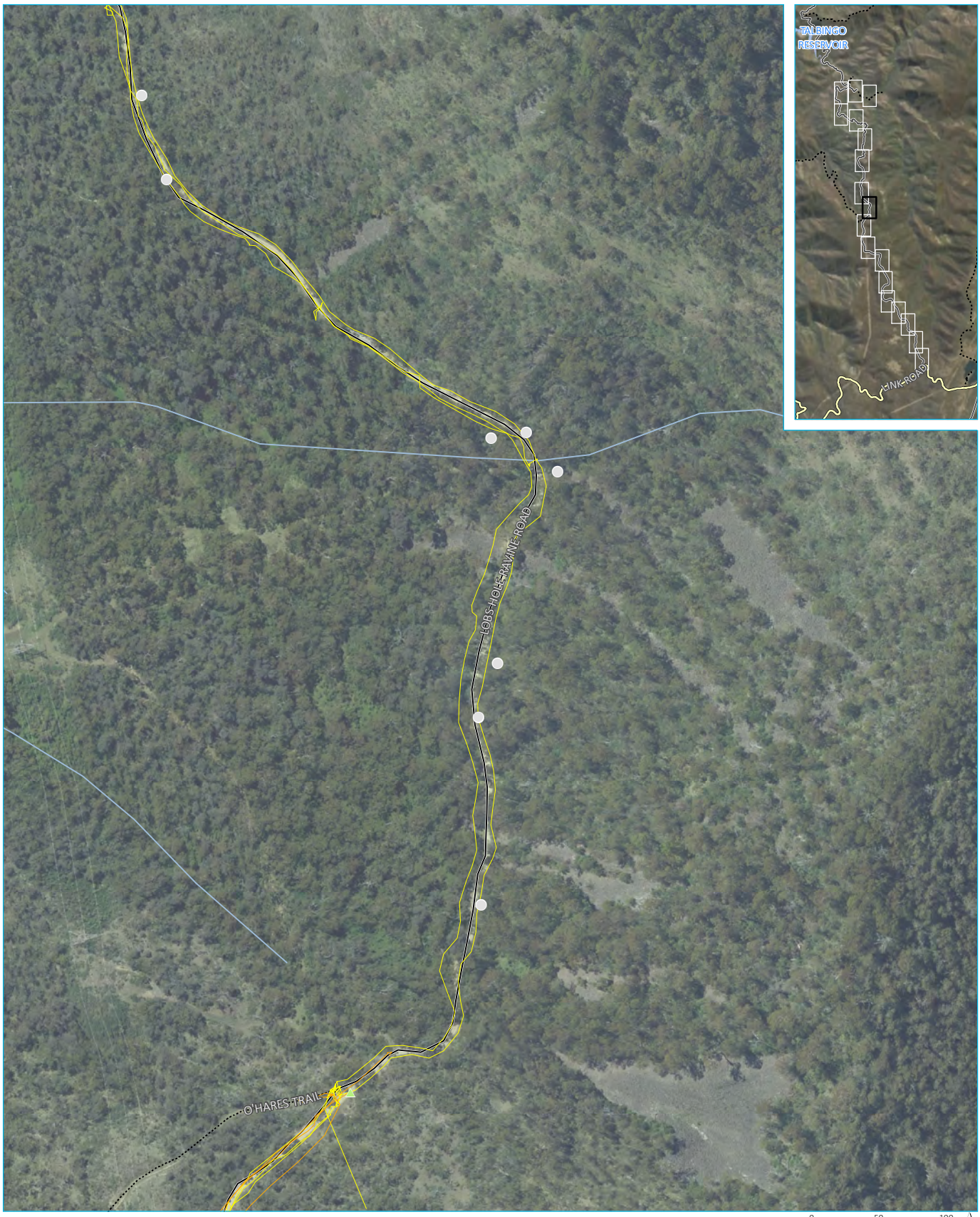

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55
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KEY

- Dangerous tree
- Owl survey
- Watercourse/drainage line
- Local road
- Vehicular track

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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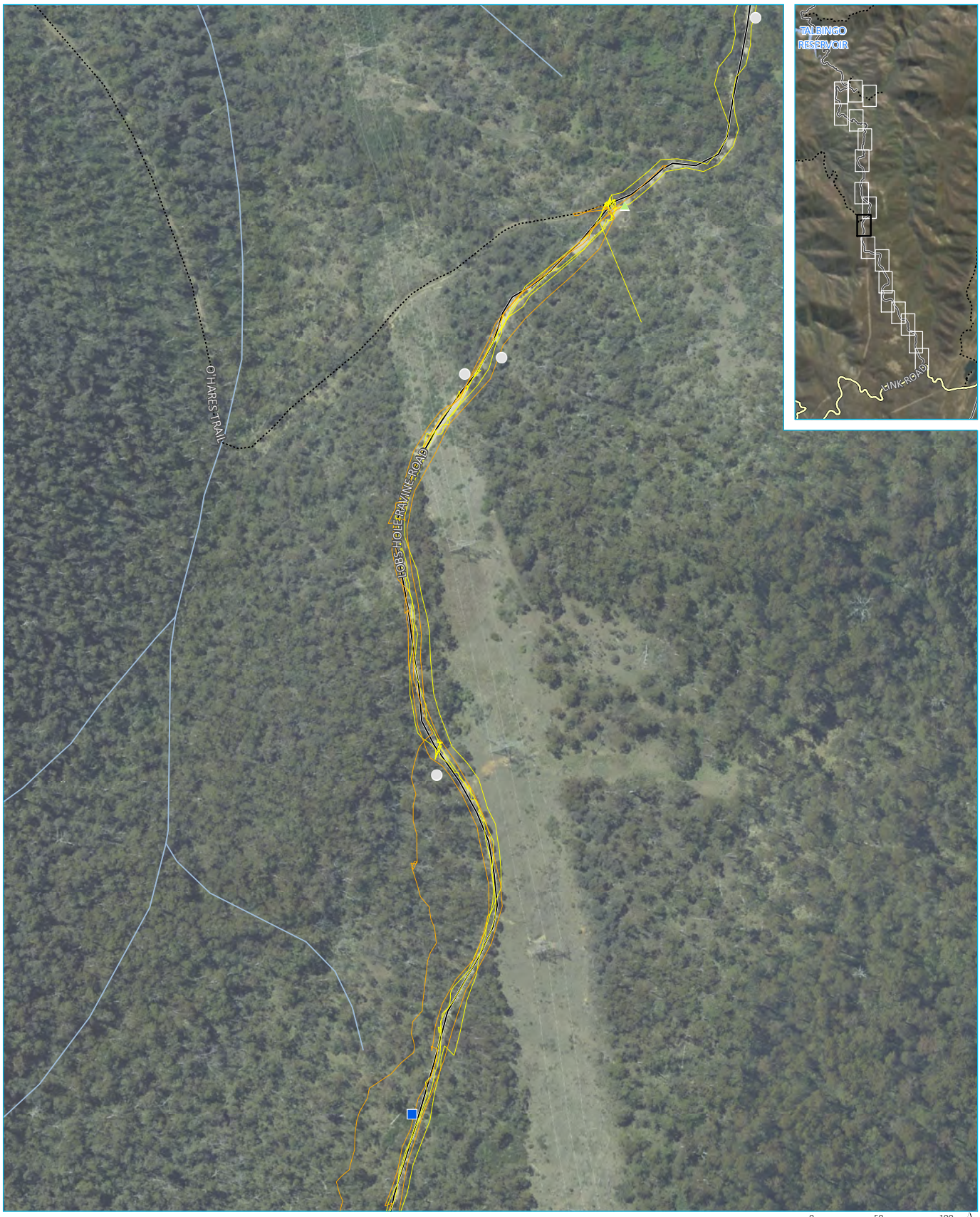

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55

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KEY

- Dangerous tree
- Owl survey
- Arboreal trapping
- Watercourse/drainage line
- Local road
- Vehicular track

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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Ecology RTS
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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Dangerous tree
- Owl survey
- Watercourse/drainage line
- Local road

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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Ecology RTS
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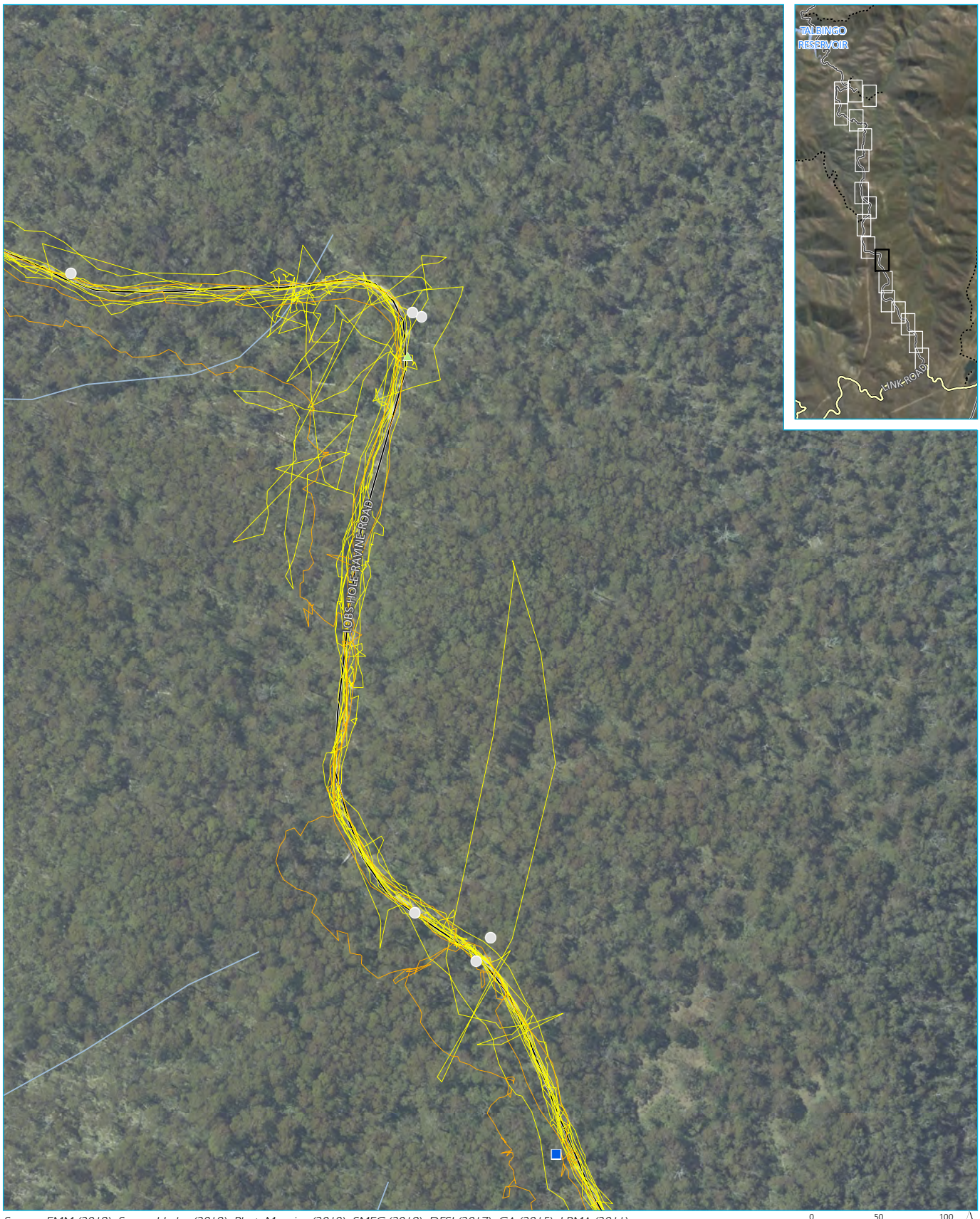

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Dangerous tree
- Owl survey
- Arboreal trapping
- Watercourse/drainage line
- Local road

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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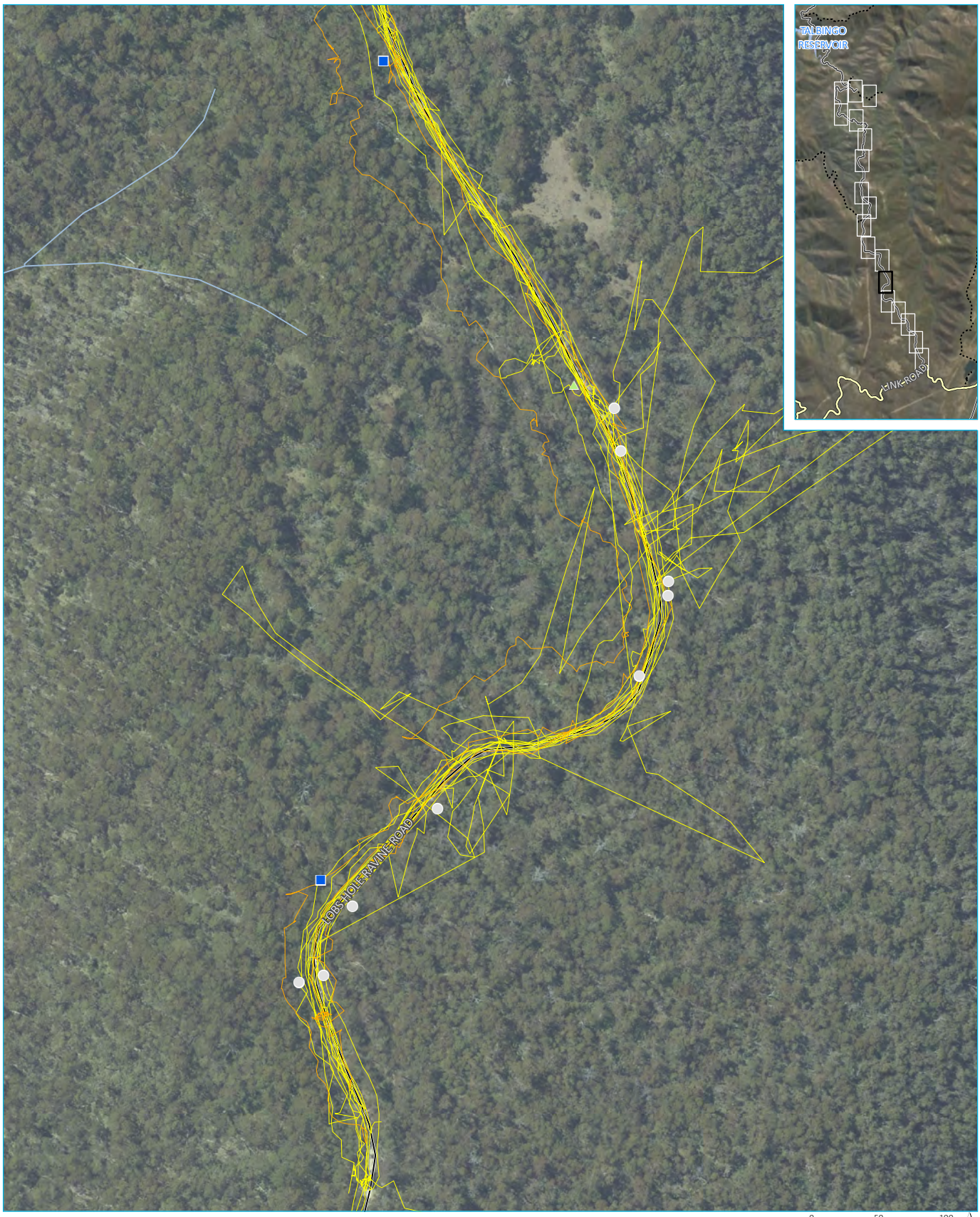

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
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KEY

- Dangerous tree
- Owl survey
- Arboreal trapping
- Watercourse/drainage line
- Local road

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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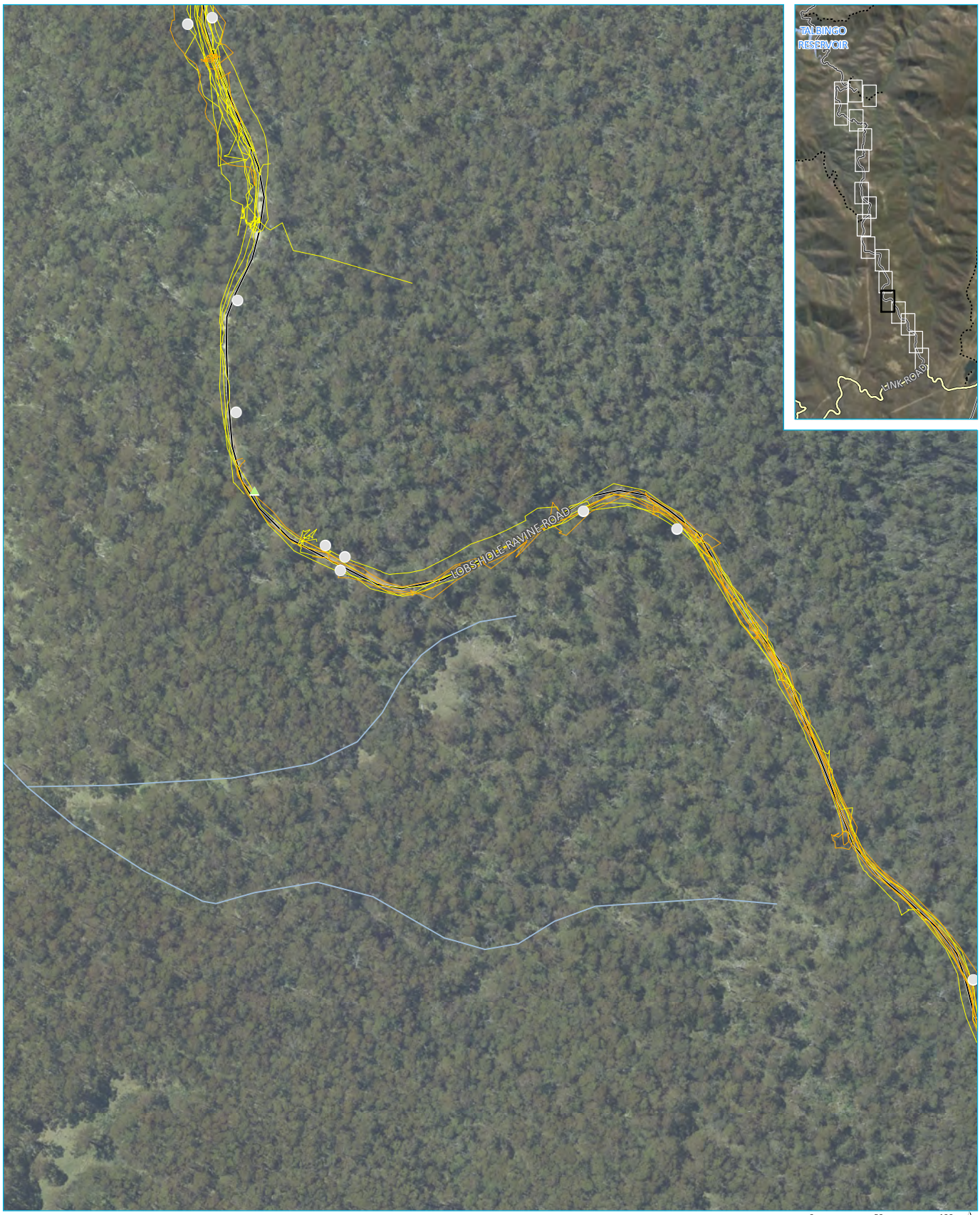

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Dangerous tree
- Owl survey
- Watercourse/drainage line
- Local road

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
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KEY

- Dangerous tree
- Owl survey
- Koala songmeter
- Arboreal trapping
- Watercourse/drainage line
- Local road

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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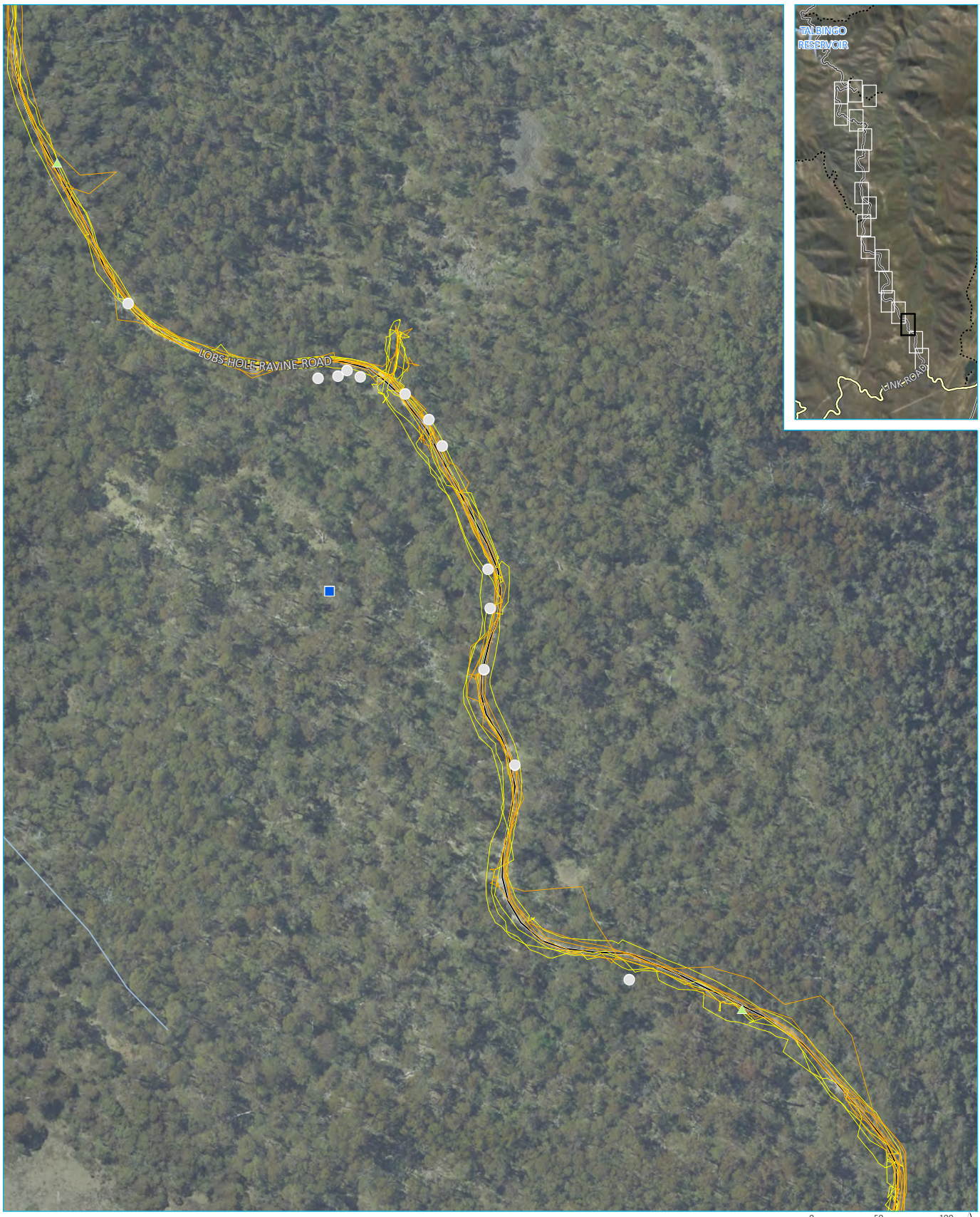

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KEY

- Dangerous tree
- Owl survey
- Arboreal trapping
- Watercourse/drainage line
- Local road

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Dangerous tree
- Owl survey
- Watercourse/drainage line
- Local road

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

Snowy 2.0
Ecology RTS
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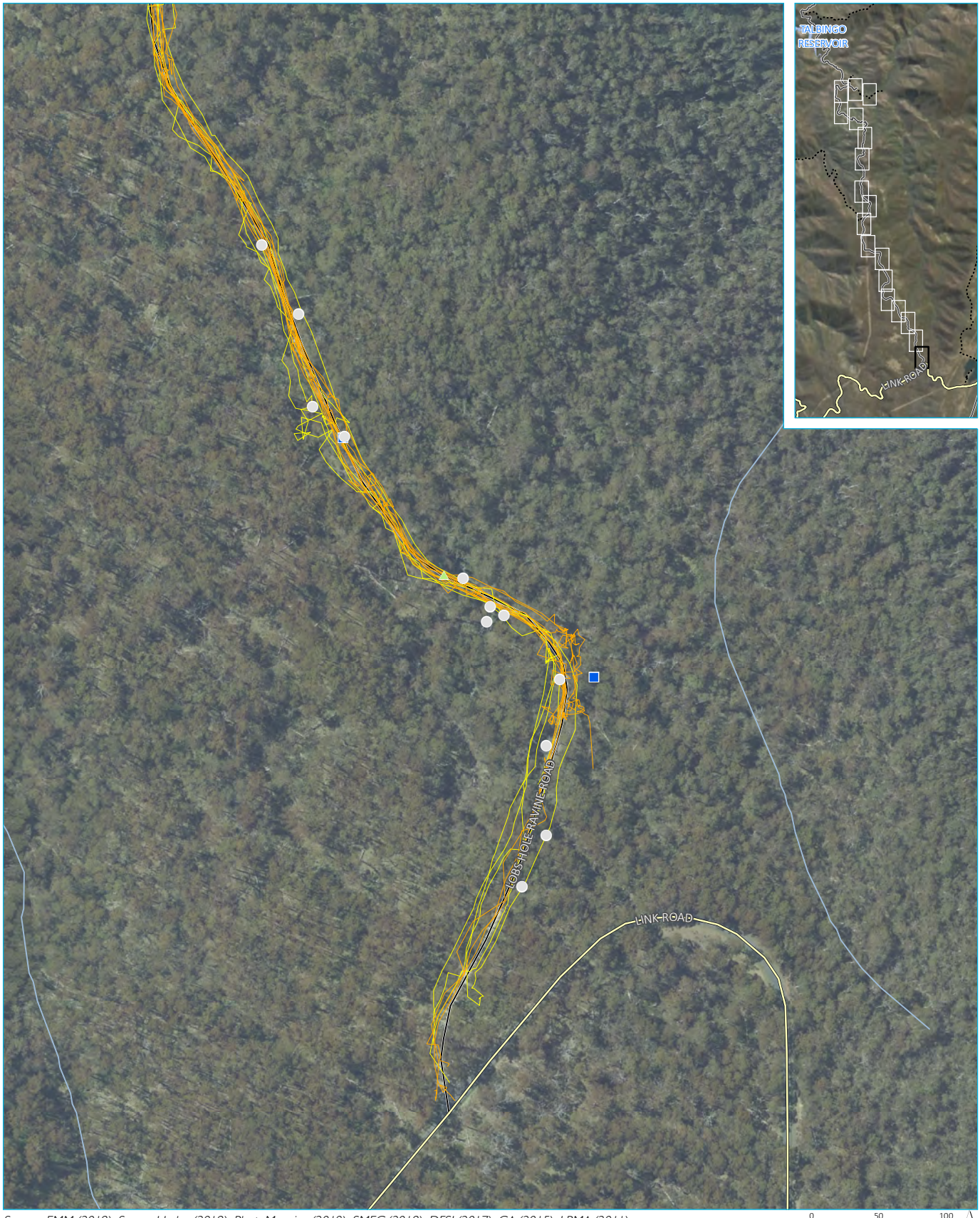

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55

N

KEY

- Dangerous tree
- Owl survey
- Arboreal trapping
- Watercourse/drainage line
- Main road
- Local road

Fauna survey transect

- Bird survey
- Spotlighting

Fauna survey locations

Snowy 2.0
Ecology RTS
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2.2.2 Targeted fauna survey results

Ten threatened fauna species have been recorded within or adjacent to the dangerous trees (Figure 2.3):

- seven threatened bird species:
  - Diamond Firetail (ecosystem credit species);
  - Dusky Woodswallow (ecosystem credit species);
  - Flame Robin (ecosystem credit species);
  - Gang-gang Cockatoo;
  - Masked Owl;
  - Olive Whistler (ecosystem credit species);
  - Scarlet Robin (ecosystem credit species);
- two threatened mammal species:
  - Eastern Pygmy-possum;
  - Smoky Mouse; and
- one threatened amphibian species:
  - Booroolong Frog.

i Diurnal birds

One target species, the Gang-gang Cockatoo, was recorded foraging within adjacent vegetation to the dangerous trees. The species was not recorded breeding or observing hollows within any dangerous trees identified for removal. Therefore, considering the species was recorded as an ecosystem credit species, no species polygon was developed for the Gang-gang Cockatoo.

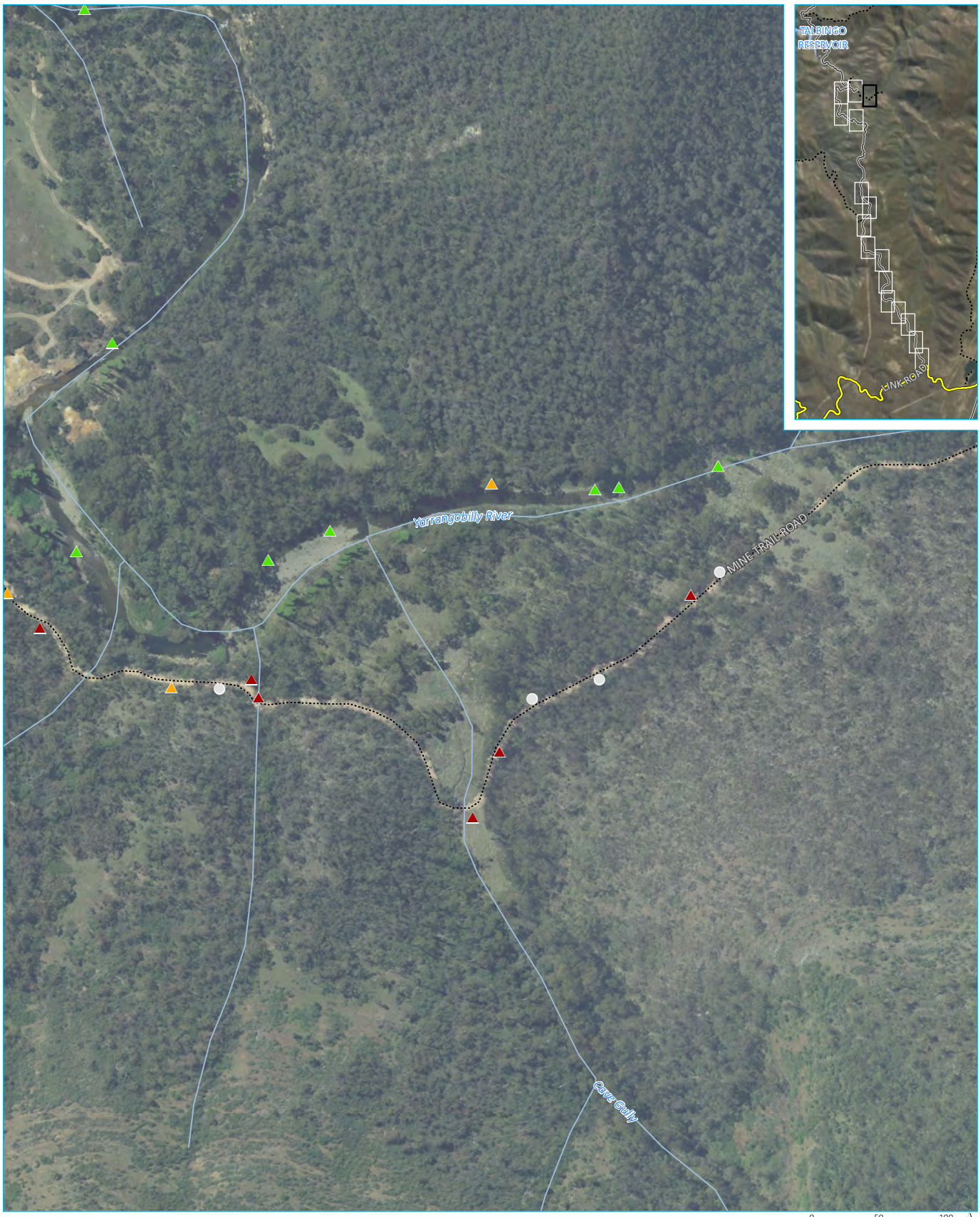
ii Nocturnal birds

One target species, the Masked Owl, was recorded within vegetation adjacent to the dangerous trees. This record was from the species being “called in” as a result of call playback. However, no nesting birds were identified during targeted surveys. Therefore, considering the species was only recorded as an ecosystem credit species, no species polygon was developed for the Masked Owl.

iii Arboreal mammals

No threatened arboreal mammals were recorded during targeted surveys.

Although there is some potential for these species to occur in low densities and/or utilise the dangerous trees on occasion, these species are not considered present for the purposes of this assessment. The Koala is rare in the KNP and was not observed during targeted surveys; therefore, it is considered unlikely to occur for the purposes of this assessment.



Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
N

KEY

- Vehicular track
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Booroolong Frog
- Dusky Woodswallow
- Gang-gang Cockatoo

Fauna survey results

Snowy 2.0
Ecology RTS
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EMM creating opportunities

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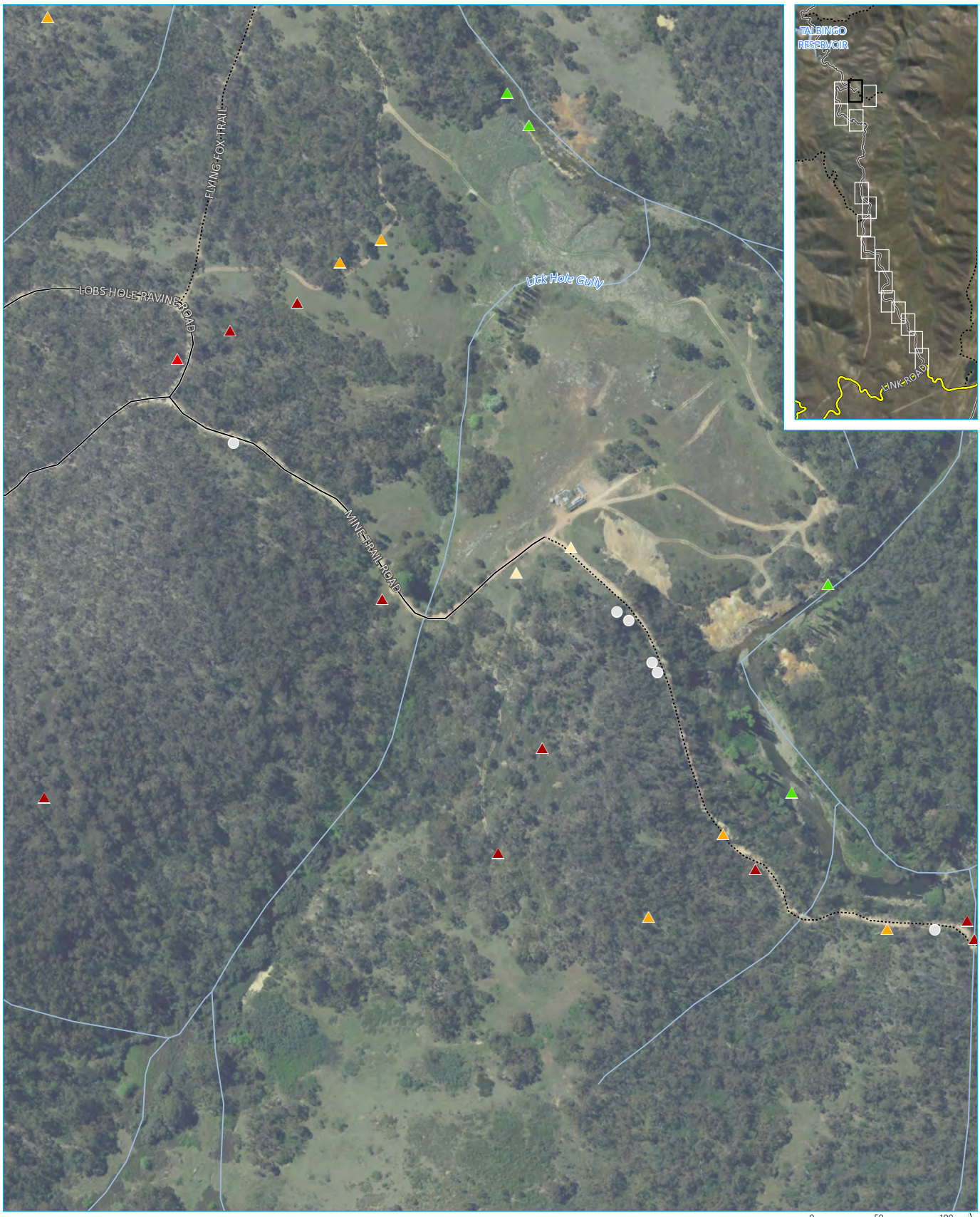

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
N

KEY

- Local road
- Vehicular track
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Booroolong Frog
- Diamond Firetail
- Dusky Woodswallow
- Flame Robin
- Gang-gang Cockatoo

Fauna survey results

Snowy 2.0
Ecology RTS
Modification 1
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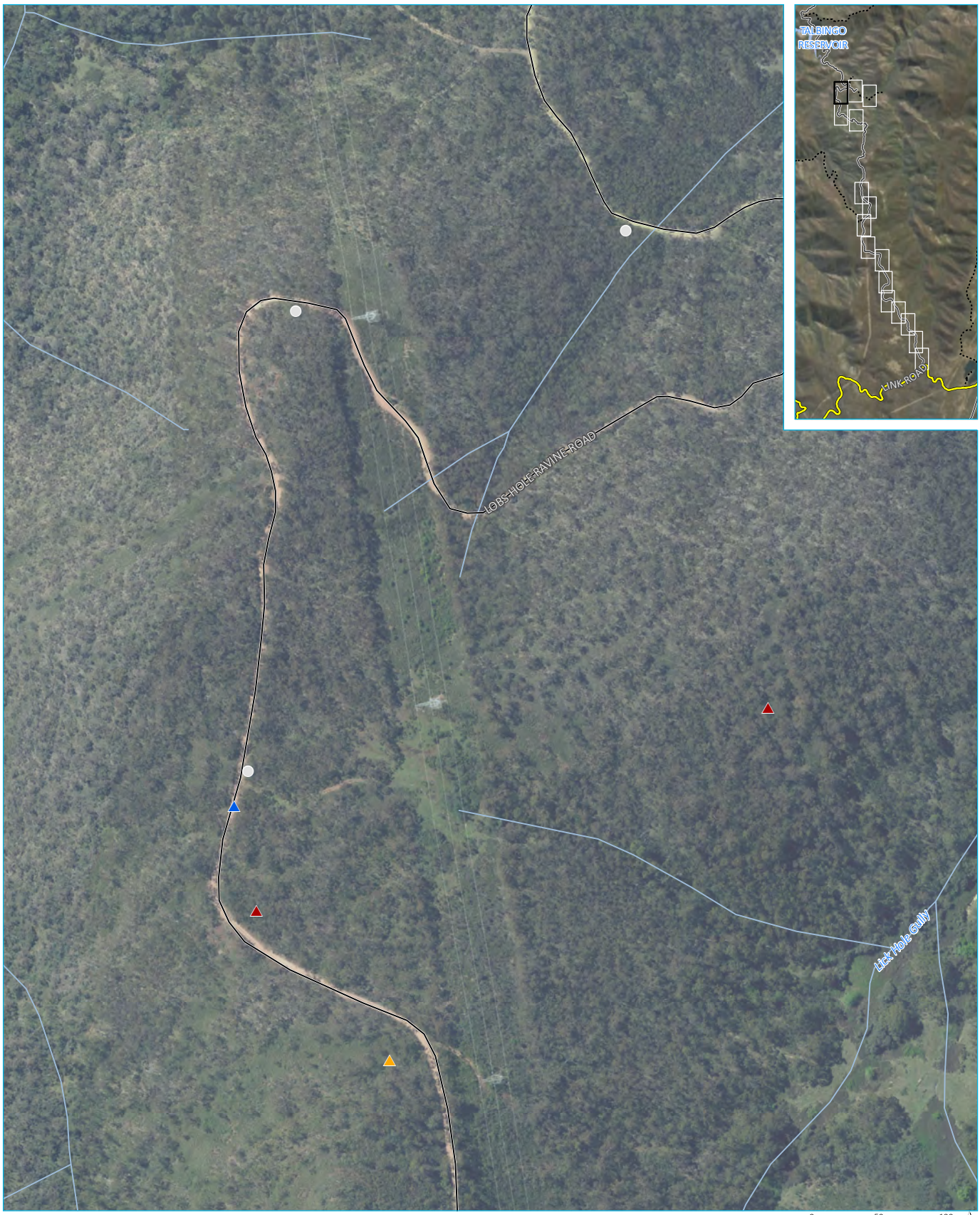

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
N

KEY

- Local road
- Vehicular track
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Dusky Woodswallow
- Flame Robin
- Gang-gang Cockatoo
- Scarlet Robin

Fauna survey results

Snowy 2.0
Ecology RTS
Modification 1
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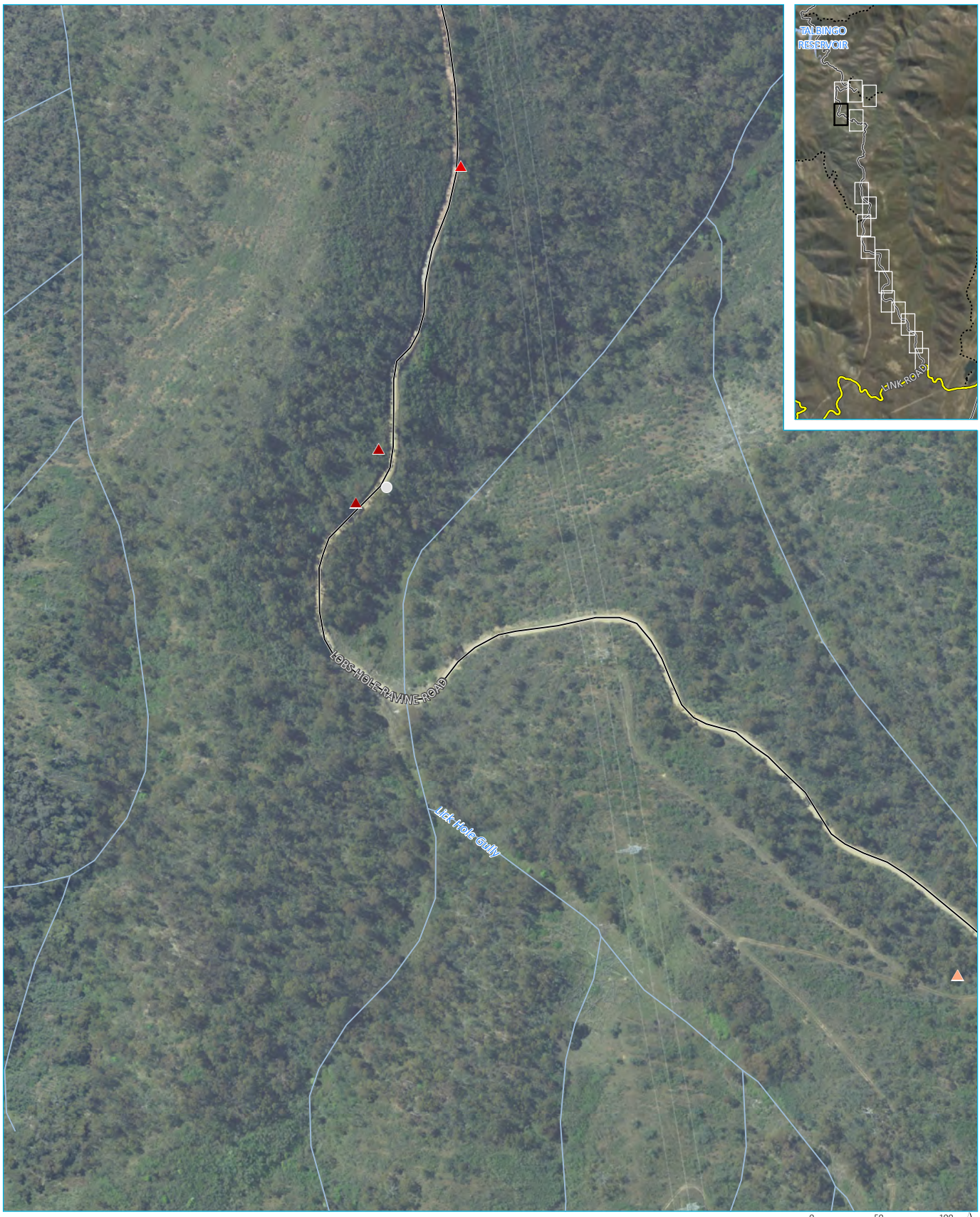
snowy 2.0

EMM creating opportunities



Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55
N

KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Eastern Pygmy-possum
- Flame Robin
- Gang-gang Cockatoo

Fauna survey results

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Ecology RTS
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EMM creating opportunities

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55

N

KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Eastern Pygmy-possum

Fauna survey results

Snowy 2.0
Ecology RTS
Modification 1
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snowy 2.0

EMM creating opportunities

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55

N

KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Dusky Woodswallow
- Gang-gang Cockatoo

Fauna survey results

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55

N

KEY

- Local road
- Vehicular track
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Gang-gang Cockatoo
- Smoky Mouse

Fauna survey results

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55

N

KEY

- Local road
- Vehicular track
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Dusky Woodswallow
- Eastern Pygmy-possum
- Gang-gang Cockatoo
- Smoky Mouse

Fauna survey results

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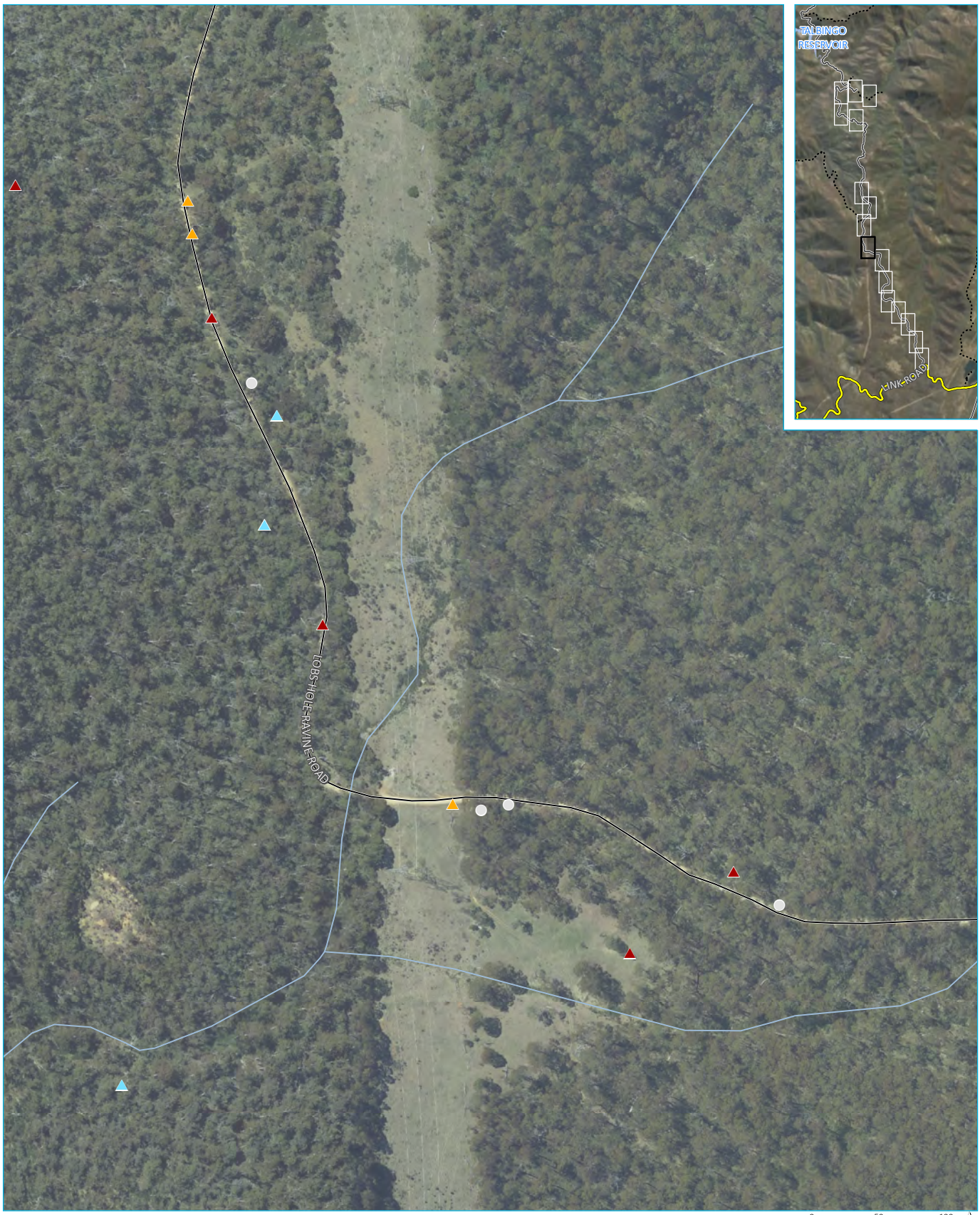

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55
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KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Dusky Woodswallow
- Gang-gang Cockatoo
- Smoky Mouse

Fauna survey results

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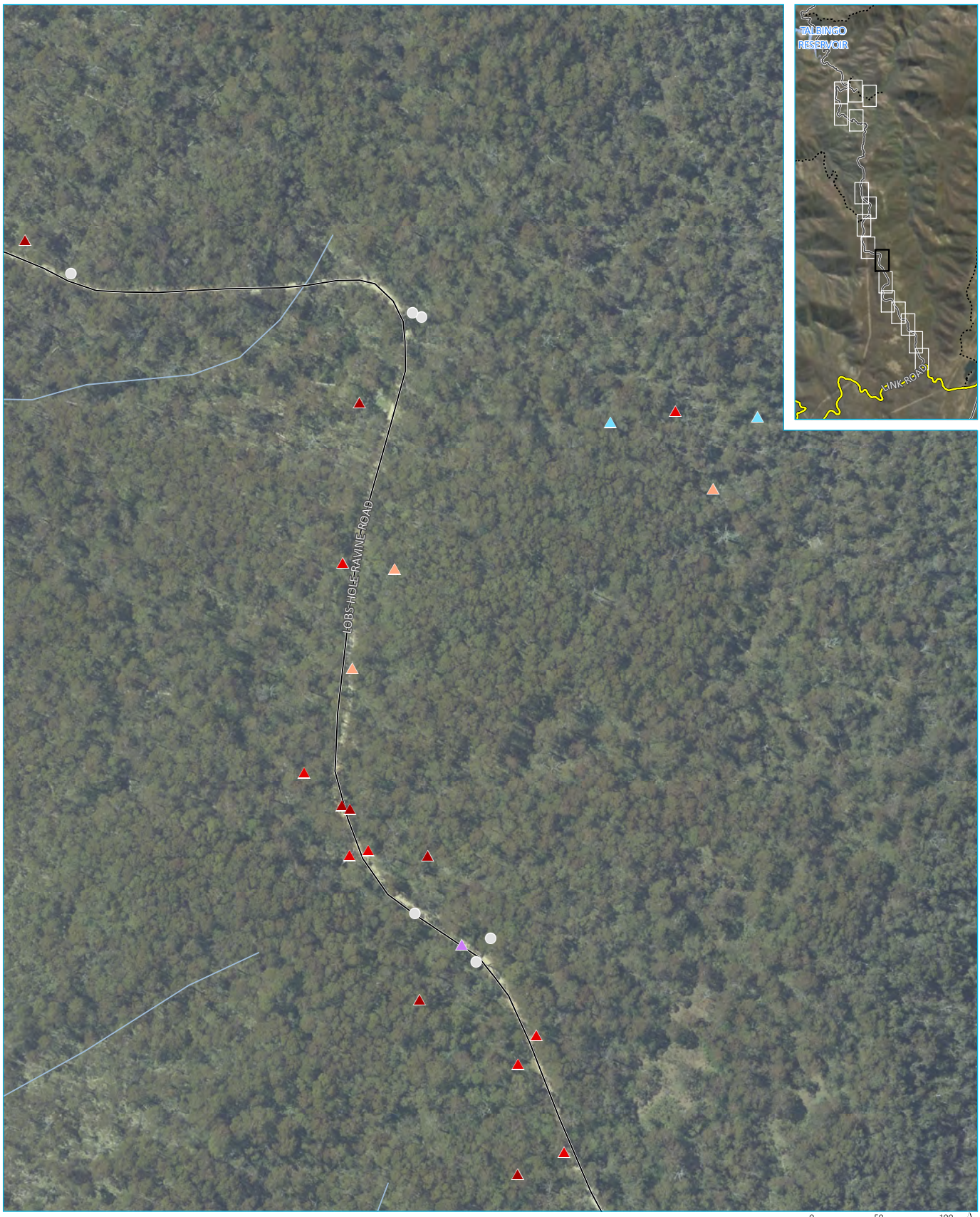

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Eastern Pygmy-possum
- Flame Robin
- Gang-gang Cockatoo
- Olive Whistler
- Smoky Mouse

Fauna survey results

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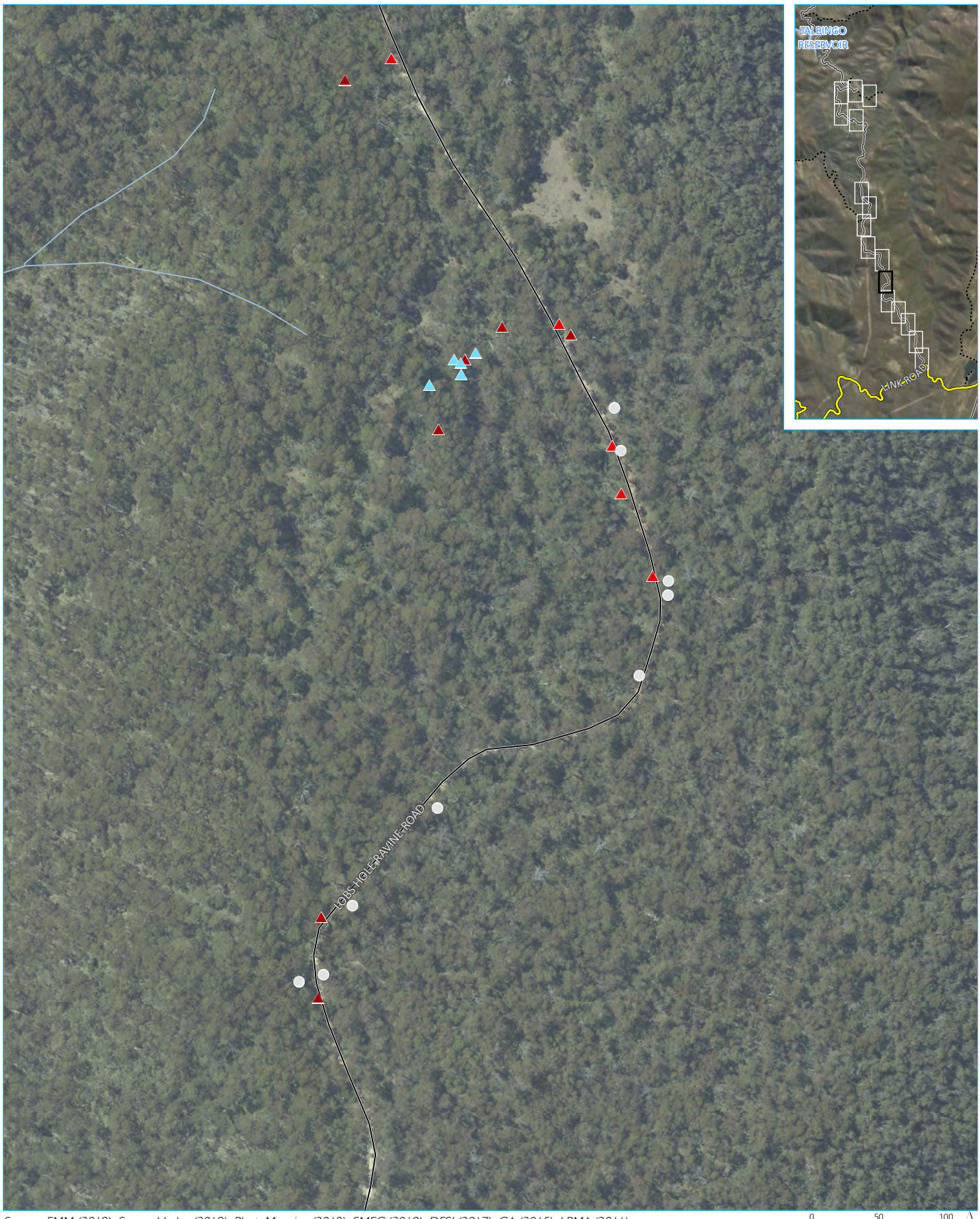

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55
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KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Flame Robin
- Gang-gang Cockatoo
- Smoky Mouse

Fauna survey results

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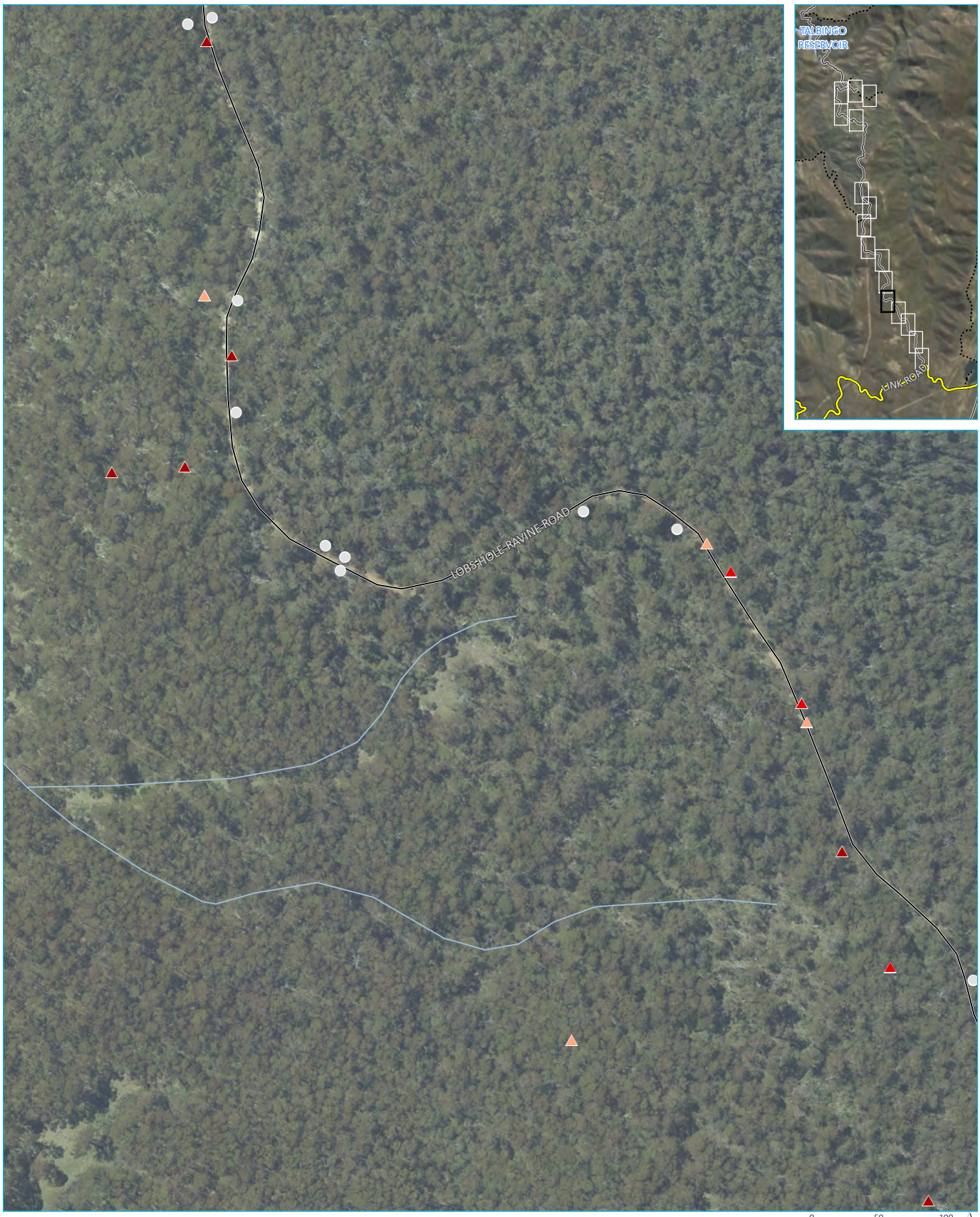

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Eastern Pygmy-possum
- Flame Robin
- Gang-gang Cockatoo

Fauna survey results

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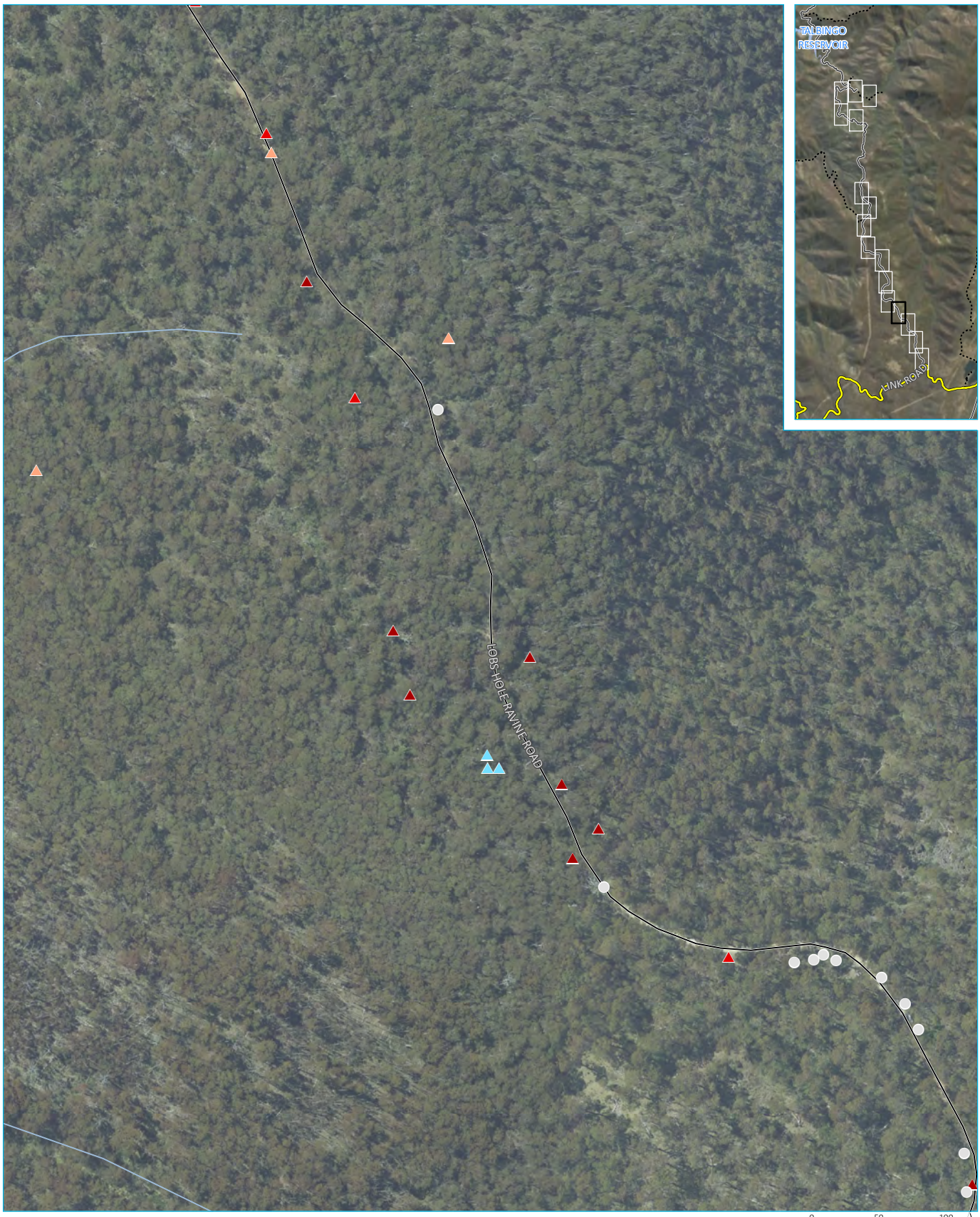

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Eastern Pygmy-possum
- Flame Robin
- Gang-gang Cockatoo
- Smoky Mouse

Fauna survey results

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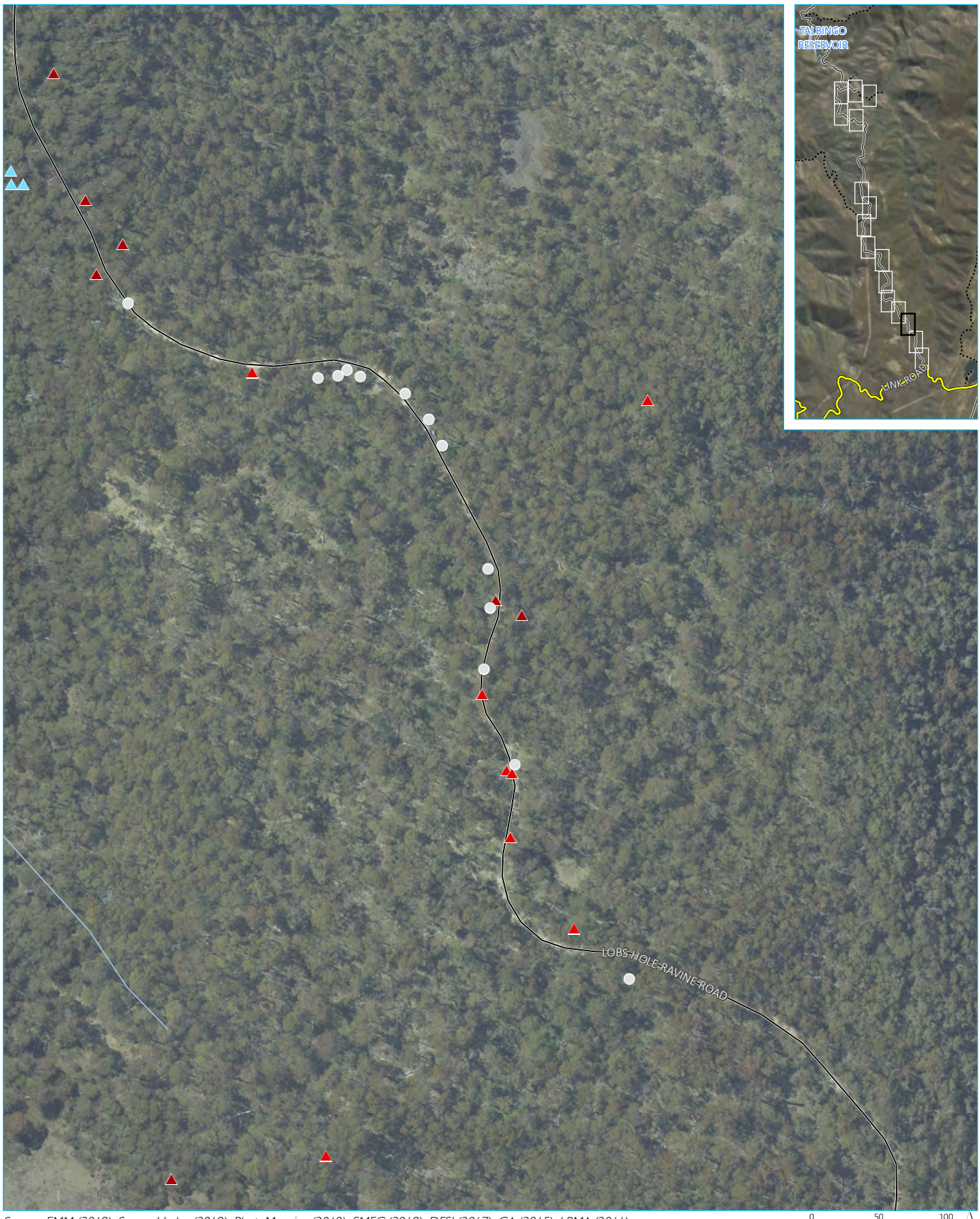

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Flame Robin
- Gang-gang Cockatoo
- Smoky Mouse

Fauna survey results

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
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N

KEY

- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Eastern Pygmy-possum
- Flame Robin
- Gang-gang Cockatoo

Fauna survey results

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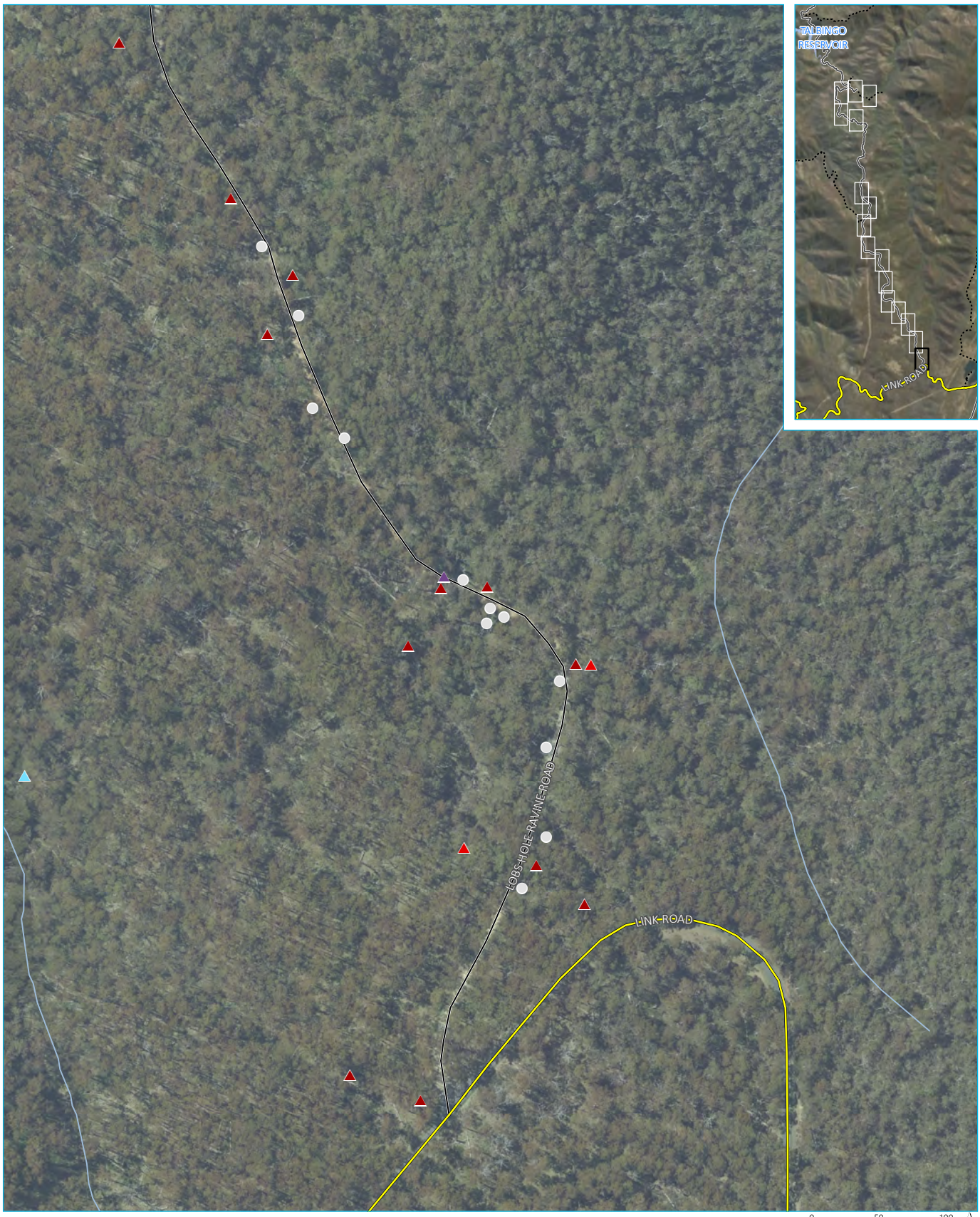

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 50 100 m
GDA 1994 MGA Zone 55

N

KEY

- Main road
- Local road
- Watercourse/drainage line
- Dangerous trees

Threatened fauna

- Flame Robin
- Gang-gang Cockatoo
- Masked Owl
- Smoky Mouse

Fauna survey results

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3 Stage 2: Impact Assessment

3.1 Measures to avoid, minimise and mitigate

Potential direct, indirect and prescribed impacts were addressed in the Modification 1 BDAR (EMM 2019b), as well as serious and irreversible impacts (SAII).

This section acknowledges the commitment to the mitigation measures outlined in EMM (2019b). The removal of dangerous trees will include pre-clearance surveys and staged clearing procedures involving qualified ecologists with relevant wildlife handling experience, as per the Exploratory Works. Additional mitigation measures will continue to be implemented for the Smoky Mouse as stated in EMM (2019b). Vehicle movements in the Marica area will be restricted, with speed limits of 20km/h between dusk and dawn. The proposed night-time speed limits within Smoky Mouse habitat in the Marica area will be maintained through the use of IVMS. As proposed in the BDAR (EMM 2019b), the Smoky Mouse monitoring program will be extended to include the Marica area.

3.2 Impacts requiring offsets

3.2.1 Impacts on native vegetation

A summary of ecosystem credits required for all vegetation zones, including changes in vegetation integrity score, are provided in Table 3.1. A total of 325 ecosystem credits are required to offset the residual impacts to 14.81 ha of native vegetation within the disturbance boundary of the Exploratory Works Modification 1. A credit report is provided in Appendix E.

Table 3.1 Summary of ecosystem credits required for impacts to all vegetation zones for Modification 1

Vegetation zone number	PCT	Vegetation zone	Area (ha)	Vegetation integrity score	Future vegetation integrity score	Change in vegetation integrity score	Credits required
1	PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	296_High	0.1	55.3	0	-55.3	2
2	PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	296_Medium	0.01	71.9	0	-71.9	1
3	PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	300_High	1.61	49	1.8	-47.2	29
4	PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	300_Medium	0.34	56	0.9	-55.1	7
5	PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	300_Other	0.09	59.8	8.6	-51.2	2
6	PCT 300 – Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	300_Poor	0.01	71.7	0	-71.7	1
7	PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	302_DNG	0.32	64	0	-64	9
8	PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	302_High	0.03	70.9	0	-70.9	1
9	PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	302_Low	0.95	21.2	0	-21.2	9

Table 3.1 Summary of ecosystem credits required for impacts to all vegetation zones for Modification 1

Vegetation zone number	PCT	Vegetation zone	Area (ha)	Vegetation integrity score	Future vegetation integrity score	Change in vegetation integrity score	Credits required
10	PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	302_Medium	0.01	65.9	0	-65.9	1
11	PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	302_Other	0.29	68.3	0	-68.3	9
12	PCT 302 – Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	302_Poor	0.01	26.6	0	-26.6	1
13	PCT 303 – Black Sally grassy low woodland in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion	303_Other	0.31	40.2	0	-40.2	8
14	PCT 311 – Red Stringybark - Broad-leaved Peppermint - Nortons Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	311_High	0.09	60.9	0	-60.9	2
16	PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	729_DNG	1.7	46.2	0	-46.2	29
17	PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	729_High	4.92	64.3	0	-64.3	119
18	PCT 999 – Norton’s Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	999_High	0.58	63.6	0	-63.6	14
19	PCT 999 – Norton’s Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	999_DNG	0.06	38.3	0	-38.3	1

Table 3.1 Summary of ecosystem credits required for impacts to all vegetation zones for Modification 1

Vegetation zone number	PCT	Vegetation zone	Area (ha)	Vegetation integrity score	Future vegetation integrity score	Change in vegetation integrity score	Credits required
20	PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	1191_High	0.47	47.2	0	-47.2	14
21	PCT 1196 – Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	1196_High	1.59	95.7	39.8	-55.9	33
22	PCT 1224 – Sub alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	1224_High	0.15	36.2	0	-36.2	2
23	PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	953_High	1.11	75.7	0.8	-74.9	31

3.2.2 Impacts on threatened species

A summary of the species credits required for all vegetation zones occupied by threatened species credit species, including changes in vegetation integrity score, are provided in Table 3.2. A total of 356 species credits are required to offset the residual impacts to 10.91 ha of threatened species credit species habitat of Modification 1. A credit report is provided in Appendix E.

Table 3.2 Summary of threatened species credits required for Modification 1

Species	Vegetation zone name	Area (ha)/individual (HL)	Habitat condition	Future habitat condition	Loss of habitat condition	Candidate SAII	Species credits
Eastern Pygmy-possum	296_High	0.1	55.3	0	-55.3	No	3
Eastern Pygmy-possum	300_High	1.51	49	1.8	-47.2	No	36
Eastern Pygmy-possum	300_Medium	0.33	56	0.9	-55.1	No	9
Eastern Pygmy-possum	300_Other	0.07	59.8	8.6	-51.2	No	2
Eastern Pygmy-possum	302_High	0.03	70.9	0	-70.9	No	1
Eastern Pygmy-possum	302_Other	0.29	68.3	0	-68.3	No	10
Eastern Pygmy-possum	311_High	0.09	60.9	0	-60.9	No	3
Eastern Pygmy-possum	729_High	4.92	64.3	0	-64.3	No	158
Eastern Pygmy-possum	999_High	0.58	63.6	0	-63.6	No	18
Eastern Pygmy-possum	1196_High	0.61	95.7	39.8	-55.9	No	17
Booroolong Frog	300_High	0.03	49	1.8	-47.2	No	1
Booroolong Frog	302_High	0.03	70.9	0	-70.9	No	1
Booroolong Frog	302_Low	0.16	21.2	0	-21.2	No	2
Booroolong Frog	302_Other	0.21	68.3	0	-68.3	No	7
Booroolong Frog	729_High	0.02	64.3	0	-64.3	No	1
Smoky Mouse	729_High	0.1	64.3	0	-64.3	Yes	5
Smoky Mouse	953_High	0.87	75.7	0.8	-74.9	Yes	49
Smoky Mouse	1196_High	0.6	95.7	39.8	-55.9	Yes	25
Slender Greenhood	1196_High	0.28	95.7	39.8	-55.9	No	8

3.3 Impacts not requiring offsets

One vegetation zone was found to be in degraded condition. In line with the requirements of Section 10.3 of the BAM (OEH 2017) impacts to the vegetation zones (Table 3.3) and threatened species credit species (Table 3.4) do not require offsets.

Additional areas not requiring assessment in accordance with Section 10.4 of the BAM (OEH 2017) include:

- existing roads;
- cleared and highly disturbed land; and
- watercourses.

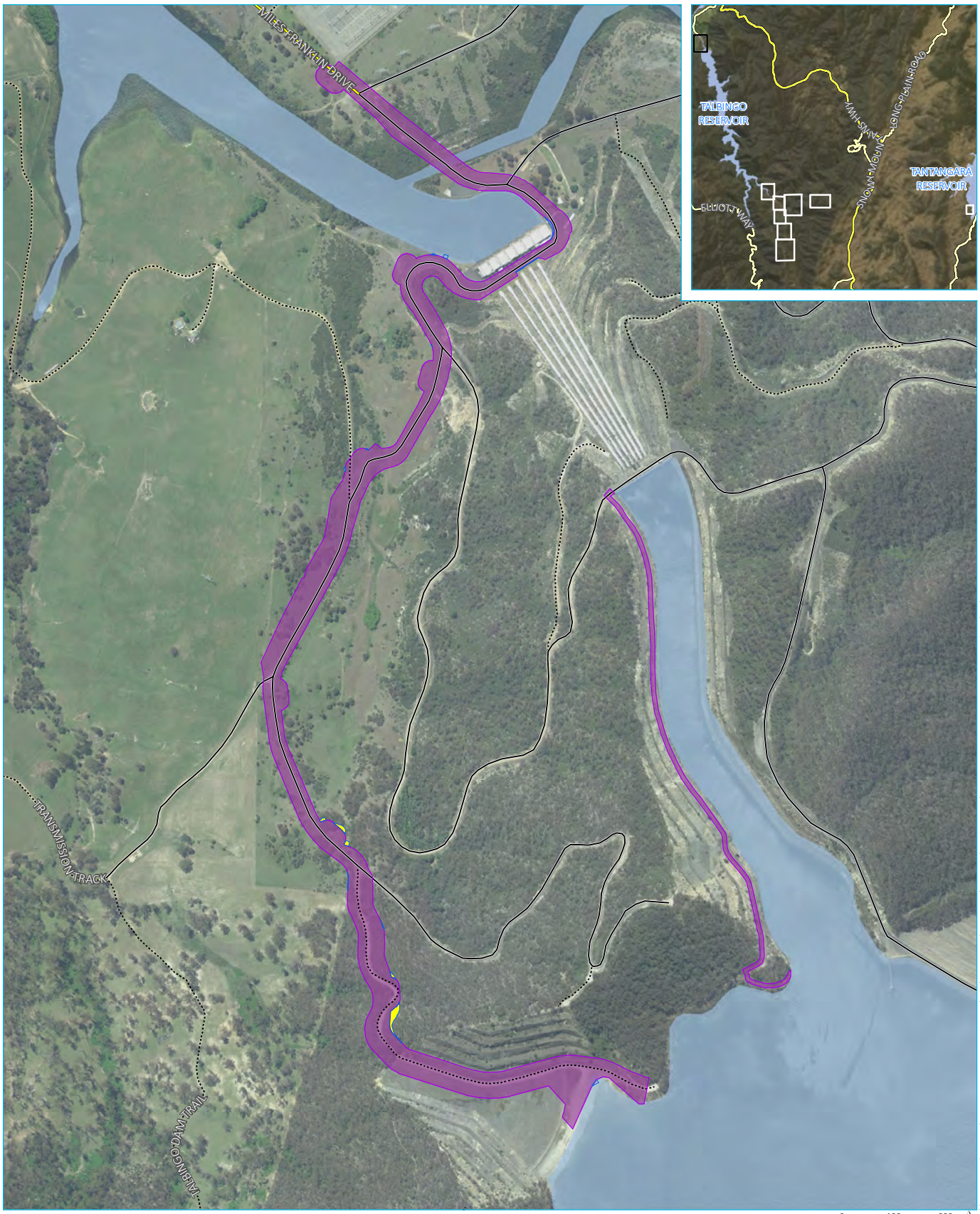
Table 3.3 Summary of impacts not requiring offsets – native vegetation

Vegetation zone number	PCT	Vegetation zone name	Area	Vegetation integrity score	Future vegetation integrity score	Change in vegetation integrity score	Credits required
15	PCT 643 – Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion	643_Low	0.06	13	0	-13	0

Table 3.4 Summary of impacts not requiring offsets – threatened species

Species	Vegetation zone name	Area (ha)/individual (HL)	Habitat condition	Future habitat condition	Loss of habitat condition	Candidate SAII	Species credits
Gang-gang Cockatoo	296_High	0.01	55.3	0	-55.3	No	0
Eastern Pygmy-possum	296_Medium	0.01	71.9	0	-71.9	No	0
Eastern Pygmy-possum	300_Poor	0.01	71.7	0	-71.7	No	0
Eastern Pygmy-possum	302_Medium	0.01	65.9	0	-65.9	No	0
Eastern Pygmy-possum	302_Poor	0.01	26.6	0	-26.6	No	0
Alpine Tree Frog	303_Other	0.01	40.2	0	-40.2	No	0
Alpine Tree Frog	1224_High	0.02	36.2	0	-36.2	No	0

Figure 3.1 Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment



Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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N

KEY

- Main road
- Local road
- Vehicular track
- EW approved construction footprint (additional)
- EW approved construction footprint
- Waterbody
- Impacts requiring offsets
- Areas not requiring assessment

Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment

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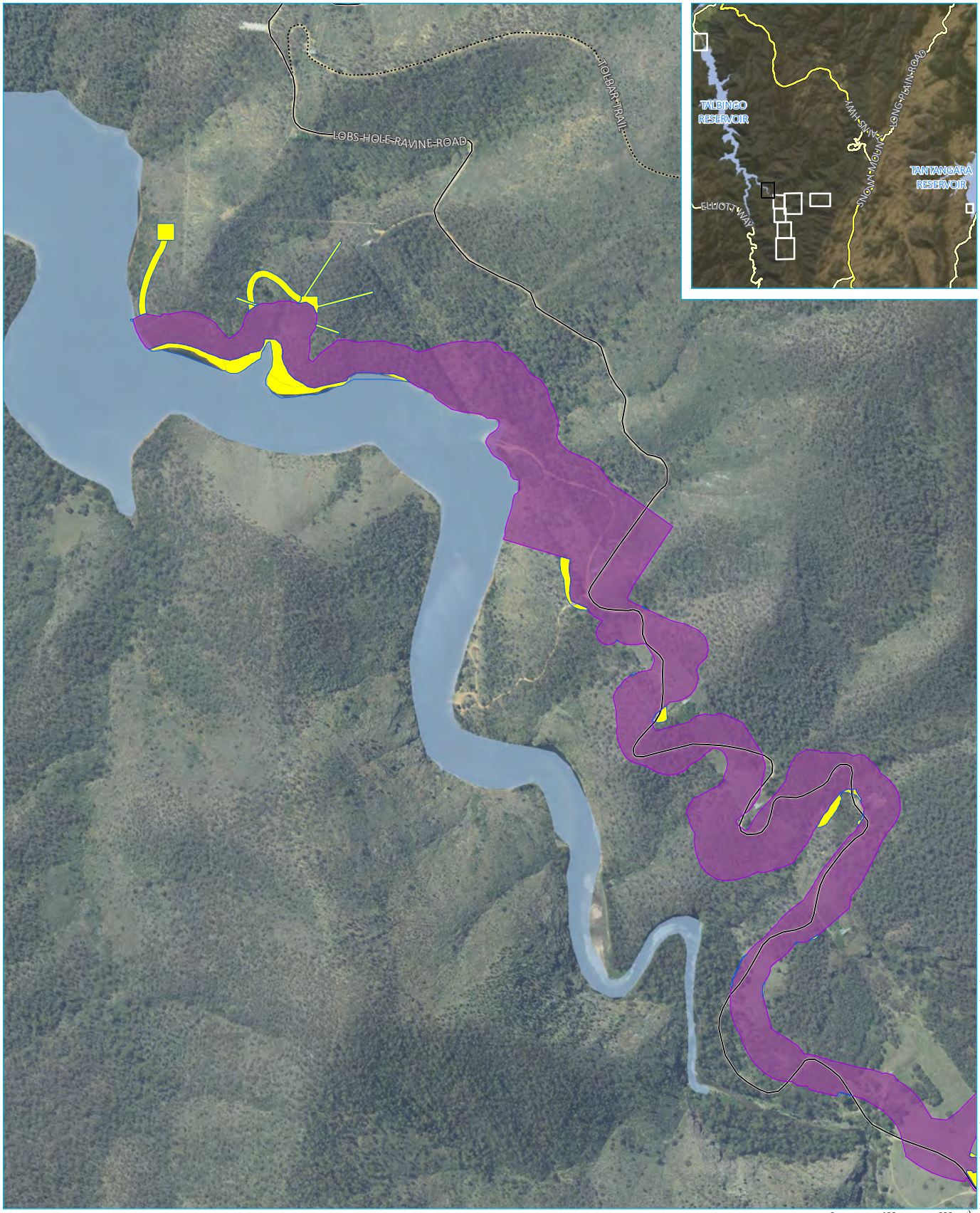

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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KEY

- Local road
- Vehicular track
- EW approved construction footprint (additional)
- EW approved construction footprint
- Waterbody
- Impacts requiring offsets
- Areas not requiring assessment

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Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment

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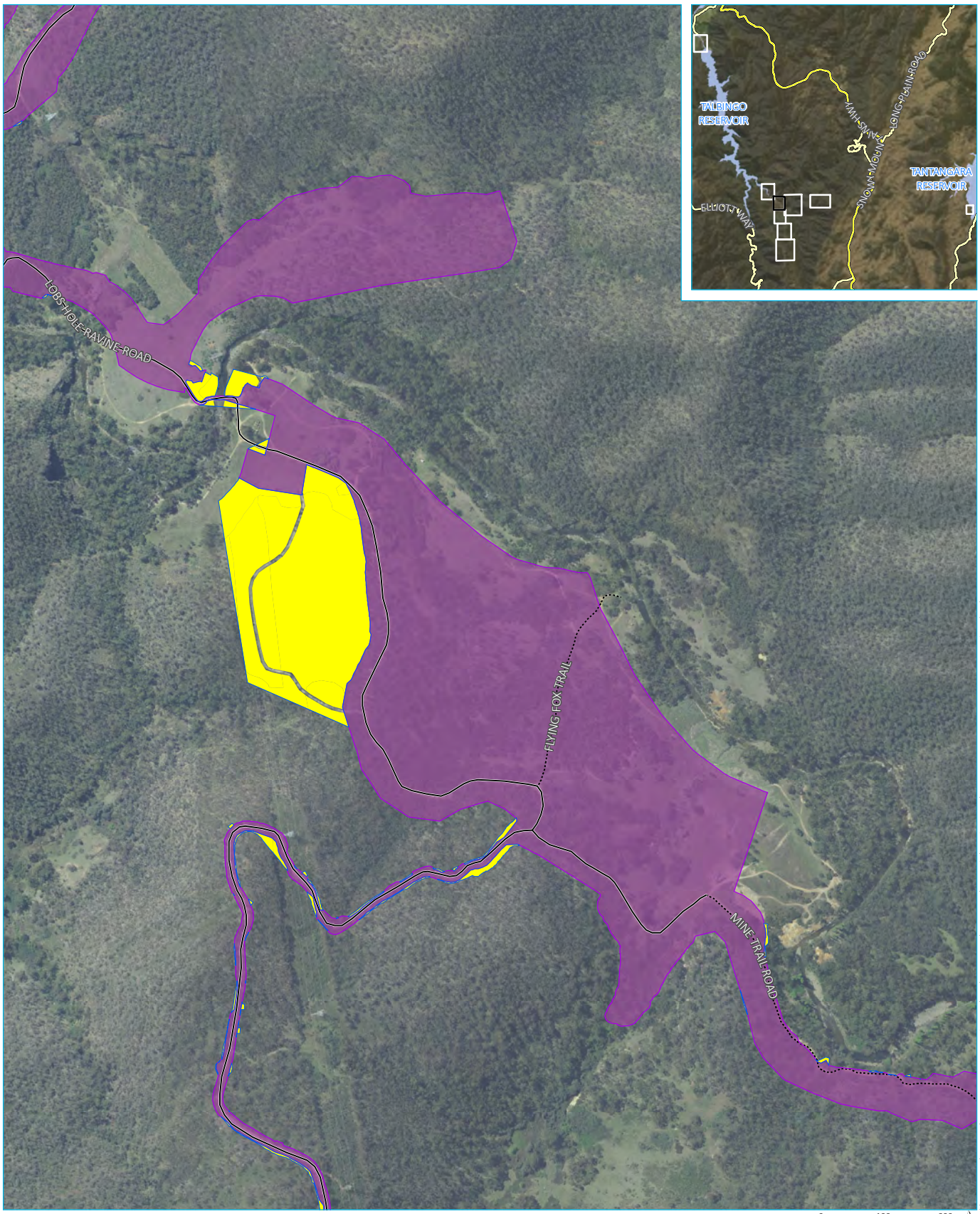

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55
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KEY

- Local road
- Vehicular track
- EW approved construction footprint (additional)
- EW approved construction footprint
- Impacts requiring offsets
- Areas not requiring assessment

Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment

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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

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GDA 1994 MGA Zone 55

KEY

- Vehicular track
- EW approved construction footprint (additional)
- EW approved construction footprint
- Impacts requiring offsets
- Areas not requiring assessment

Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment

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Modification 1 Response to Submissions
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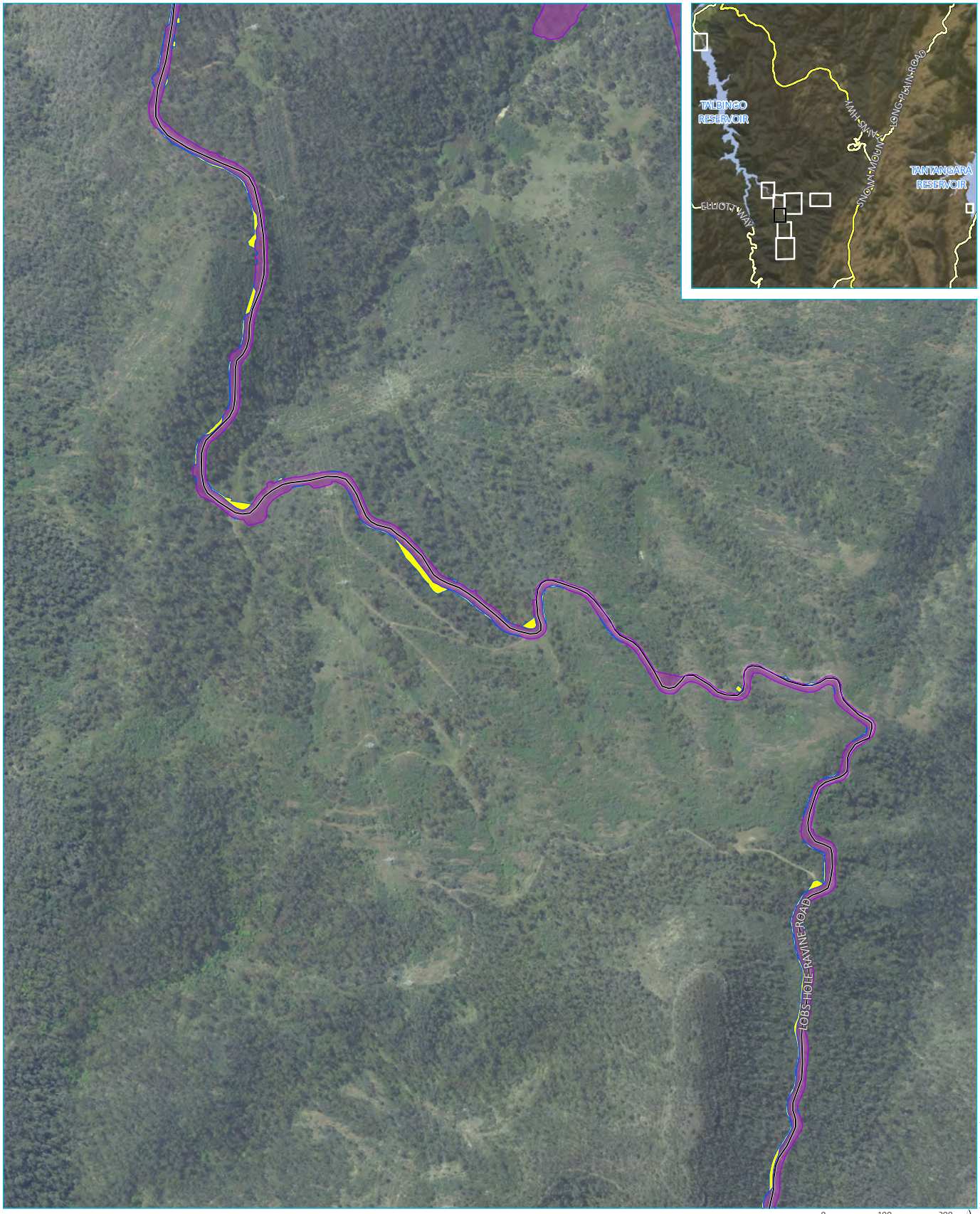

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GDA 1994 MGA Zone 55
N

KEY

- Local road
- Vehicular track
- EW approved construction footprint (additional)
- EW approved construction footprint
- Impacts requiring offsets
- Areas not requiring assessment

Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment

Snowy 2.0
Modification 1 Response to Submissions
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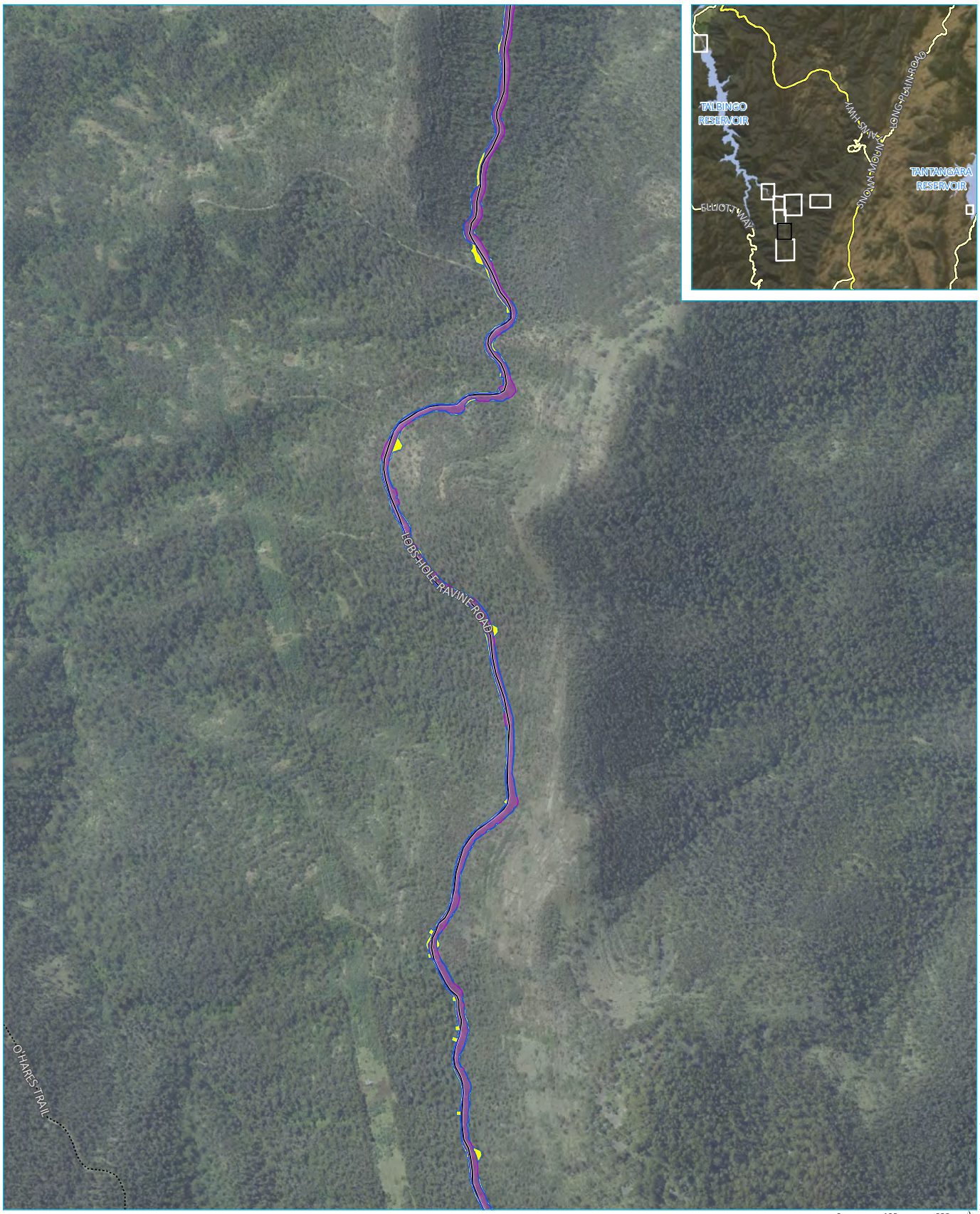

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 100 200 m
GDA 1994 MGA Zone 55

N

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KEY

- Local road
- Vehicular track
- EW approved construction footprint (additional)
- EW approved construction footprint
- Impacts requiring offsets
- Areas not requiring assessment

Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment

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Modification 1 Response to Submissions
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creating opportunities

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 100 200 m
GDA 1994 MGA Zone 55

N

KEY

- Local road
- Vehicular track
- EW approved construction footprint (additional)
- EW approved construction footprint
- Impacts requiring offsets
- Impacts not requiring offsets
- Areas not requiring assessment

Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment

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Modification 1 Response to Submissions
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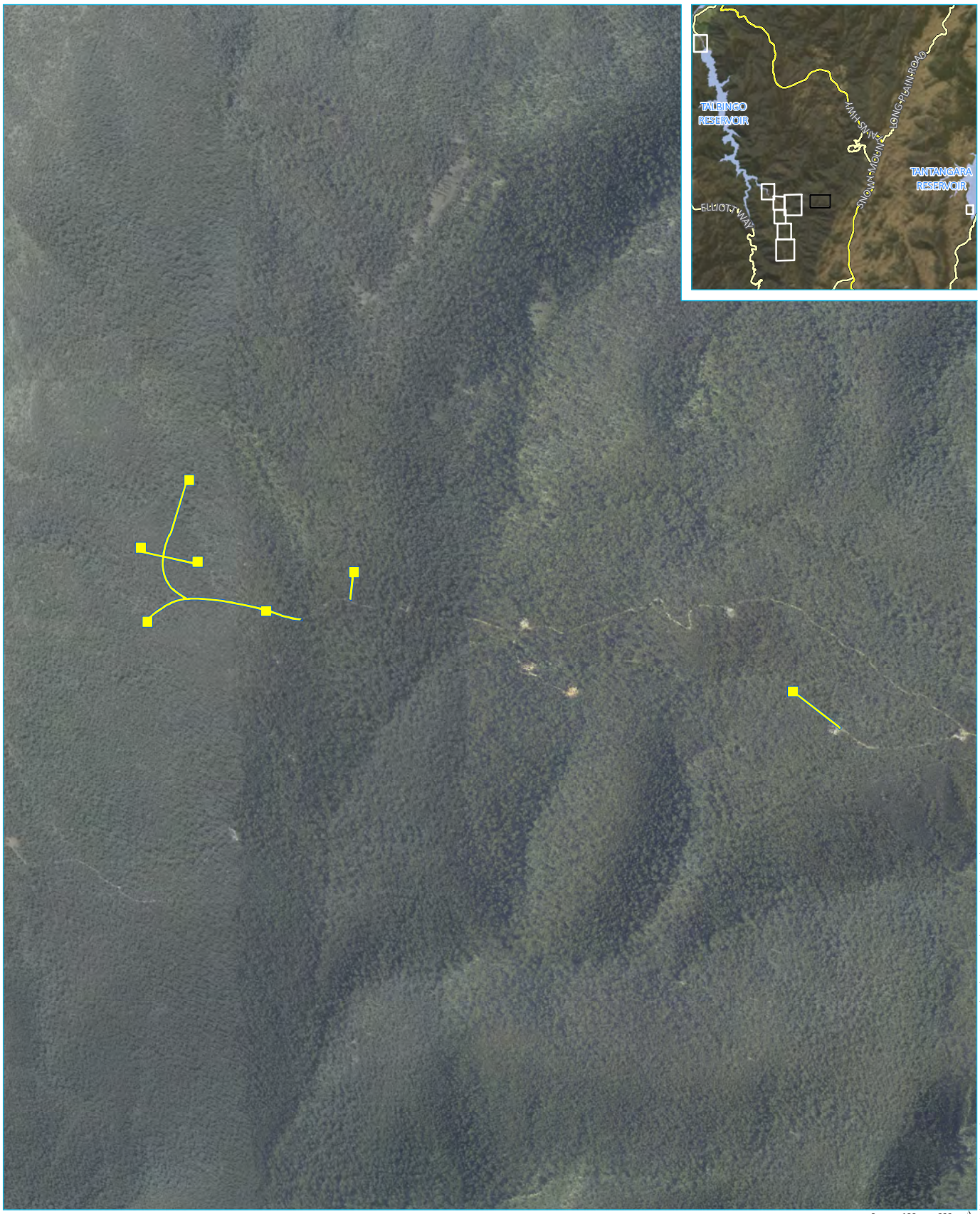

Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 100 200 m
GDA 1994 MGA Zone 55

N

KEY

- EW approved construction footprint (additional)
- Impacts requiring offsets

Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment

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Modification 1 Response to Submissions
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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

0 100 200 m
GDA 1994 MGA Zone 55

N

KEY

- Vehicular track
- EW approved construction footprint (additional)
- Waterbody
- Impacts requiring offsets

Impacts requiring offsets, impacts not requiring offsets and areas not requiring assessment

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Modification 1 Response to Submissions
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4 Conclusion

As a result of response to submissions including additional offsets for the removal of dangerous trees, and changes to the Modification 1 boundary additional offsets will be required as well as the increase of removal of native vegetation and impacts to threatened species habitat. Residual impacts following the amendments within this RTS include:

- clearing of 14.81 ha of native vegetation (including the removal of 91 dangerous trees); and
- impacts to 10.91 ha of threatened species habitat for five species credit species.

Threatened species survey identified 10 fauna species recorded adjacent to the dangerous trees. However, no species credit species were identified utilising the dangerous trees to be removed.

A total of 325 ecosystem credits are required for the Exploratory Works Modification 1 disturbance footprint and dangerous tree removal, and 356 species credits arising from Modification 1. These impacts will be offset in accordance with the objective and principles outlined in the biodiversity framework.

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Phillips S and Callaghan J 2011, The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus. Australian Zoologist 35 (3): 774-780.

Appendix A

Vegetation integrity assessment - datasheets

BAM Site – Field Survey Form

Plot ID:	76	**Date:**	10-01-18	**Survey Name:**	Lobbs Hole Ravine Road north	**Recorders:**	SD
Zone:	55	**Easting:**	625307.5339	**Plot dimensions:**	20m x 50m	**Midline bearing:**	160
Datum:	GDA94	**Northing:**	6039766.938	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	

Plant Community Type:	300: Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	**Confidence:**	Low	**Photo #:**	
Vegetation Class:	Southern Tableland Wet Sclerophyll Forests	**EEC:**	No	**Confidence:**	High

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	13
	Grasses etc.:	10
	Forbs:	18
	Ferns:	0
	Other:	3
Sum of Cover of native vascular plants by growth form group	Trees:	30.7
	Shrubs:	21.2
	Grasses etc.:	6.3
	Forbs:	9.3
	Ferns:	0
	Other:	0.3
High Threat Weed cover:		0.2

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	1	0	0
30 – 49 cm:	1	0	1
20 – 29 cm:	0	0	0
10 – 19 cm:	0	0	0
5 – 9 cm:	0	0	0
< 5 cm:	0	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	28		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	30	20	60	60	40	0	0	1	20	10	80	70	90	50	70	1	0	0	0	0
Average of the 5 subplots:	42					6.2					72					0.2				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)	Sedimentary rock (unidentified)	**Soil Surface Texture**	Sandy clay loam	**Soil Colour**	Brown	**Soil Depth**	Medium
Lithology (B)							
Slope	20	**Aspect**	160	**Site Drainage**	Moderate	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Severe	greater than 10yo	Regrowth
Cultivation (inc. pasture):			
Soil erosion:	Moderate	greater than 10yo	
Firewood / CWD removal:			
Grazing (identify native/stock):	Light	greater than 10yo	
Fire damage:			
Storm damage:			
Weediness:	Light	3 to 10 yo	Blackberry
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobbs Hole Ravine Road north				
Date:	10-01-18	**Plot ID:**	76	**Recorders:**	SD

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus robertsonii*	30	100		N	
Shrub (SG)	*Acacia pravissima*	15	100		N	
Other (OG)	*Clematis aristata*	0.1	20		N	
Grass & grasslike	*Lomandra bracteata*	0.5	40		N	
Other (OG)	*Glycine microphylla*	0.1	10		N	
Shrub (SG)	*Pimelea linifolia*	0.2	40		N	
Forb (FG)	*Hydrocotyle laxiflora*	1	1		N	
Shrub (SG)	*Pimelea curviflora*	0.1	10		N	
	Rubus anglocandicans	1	1		E	
Grass & grasslike	*Microlaena stipoides*	4	1000		N	
Forb (FG)	*Arthropodium milleflorum*	0.1	10		N	
Shrub (SG)	*Cassinia arcuata*	0.5	5		N	
Forb (FG)	*Lagenophora stipitata*	4	1000		N	
Forb (FG)	*Dianella revoluta*	0.1	5		N	
Shrub (SG)	*Banksia canei*	1	5		N	
Shrub (SG)	*Olearia myrsinoides*	2	500		N	
	Hypericum perforatum	0.1	10		HTE	
Shrub (SG)	*Acacia obliquinervia*	0.5	10		N	
	Plantago lanceolata	0.1	10		E	
Shrub (SG)	*Mirbelia oxylobioides*	1	20		N	
Tree (TG)	*Eucalyptus dives*	0.2	5		N	
	Centaurium erythraea	0.1	10		E	
Grass & grasslike	*Lomandra filiformis subsp. filiformis*	0.1	10		N	
Forb (FG)	*Geranium solanderi*	0.1	10		N	
Forb (FG)	*Boronia nana var. hyssopifolia*	0.1	5		N	
Shrub (SG)	*Hibbertia obtusifolia*	0.1	10		N	
Grass & grasslike	*Anthosachne scabra*	0.2	50		N	
Forb (FG)	*Viola betonicifolia*	0.1	10		N	
Forb (FG)	*Gonocarpus tetragynus*	0.5	100		N	
Forb (FG)	*Wahlenbergia stricta*	0.1	10		N	
Shrub (SG)	*Leucopogon fletcheri subsp. brevisepalus*	0.1	1		N	
Grass & grasslike	*Echinopogon ovatus*	0.5	100		N	
Forb (FG)	*Stylidium graminifolium*	0.1	10		N	
Shrub (SG)	*Bursaria spinosa*	0.5	5		N	
Forb (FG)	*Asperula scoparia*	1	300		N	
Shrub (SG)	*Gompholobium huegelii*	0.1	1		N	
Forb (FG)	*Dichondra repens*	0.5	100		N	
Forb (FG)	*Hypericum gramineum*	0.1	20		N	
Forb (FG)	*Cymbonotus lawsonianus*	0.1	10		N	
Forb (FG)	*Euchiton japonicus*	0.1	20		N	
Other (OG)	*Glycine clandestina*	0.1	10		N	
Forb (FG)	*Stellaria pungens*	0.2	30		N	
Grass & grasslike	*Poa sieberiana var. hirtella*	0.1	1		N	
Forb (FG)	*Galium gaudichaudii*	1	20		N	
Grass & grasslike	*Luzula densiflora*	0.2	40		N	
Shrub (SG)	*Brachyloma daphnoides*	0.1	1		N	
Grass & grasslike	*Poa sieberiana var. sieberiana*	0.5	30		N	

Tree (TG)	*Eucalyptus rubida*	0.5	7		N	
Grass & grasslike	*Carex appressa*	0.1	1		N	
	Rosa rubiginosa	0.1	1		HTE	
Forb (FG)	*Acaena novae-zelandiae*	0.1	5		N	
Grass & grasslike	*Austrostipa mollis*	0.1	5		N	

BAM Site – Field Survey Form

Plot ID:	88	**Date:**	22-11-17	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	SW, SW
Zone:	55	**Easting:**	625982.396	**Plot dimensions:**	20m x 50m	**Midline bearing:**	204
Datum:	GDA94	**Northing:**	6039028.785	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	

Plant Community Type:	302: Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	**Confidence:**	Medium	**Photo #:**	
Vegetation Class:	Upper Riverina Dry Sclerophyll Forests	**EEC:**	No	**Confidence:**	High

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	0
	Shrubs:	0
	Grasses etc.:	3
	Forbs:	3
	Ferns:	0
	Other:	1
Sum of Cover of native vascular plants by growth form group	Trees:	0
	Shrubs:	0
	Grasses etc.:	62.1
	Forbs:	0.3
	Ferns:	0
	Other:	0.1
High Threat Weed cover:		21.1

BAM Attribute (1000 m2 plot) DBH			
DBH	**Stem count (euc)**	**Stem count (non-euc)**	**Stems with Hollows**
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	0	0	0
20 – 29 cm:	0	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	0		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	10	25	5	5	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots:	13					0					0					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Valley flat	**Lf Pattern (A)**	Alluvial plain	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Loam	**Soil Colour**	Brown	**Soil Depth**	At least 100mm
Lithology (B)							
Slope		**Aspect**	SSW	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Severe	less than 3yo	Historic clearing, area used for camping, regular slashing may occur to accommodate camping.
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:	Light	less than 3yo	Majority or area cleared except for small patch of vegetation which may experience loss of fallen timber for car
Grazing (identify native/stock):			No evidence
Fire damage:			No evidence
Storm damage:			No evidence
Weediness:	Severe	less than 3yo	High number of exotic species
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, …, 1, 2, 3, …, 10, 15, 20, 25, …100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, …, 10, 20, 30, … 100, 200, …, 1000, …

Survey Name:	Lobs Hole Ravine					
	Date:	22-11-17	**Plot ID:**	88	**Recorders:**	SW, SW

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Grass & grasslike	*Themeda triandra*	60	1000		N	
	Hypericum perforatum	10	300		HTE	
	Bromus molliformis	5	200		E	
Other (OG)	*Convolvulus angustissimus*	0.1	3		N	
	Hypochaeris radicata	3	300		E	
	Taraxacum officinale	0.2	20		E	
	Lysimachia arvensis	0.1	20		E	
	Vulpia bromoides	20	1000		E	
	Briza minor	0.1	20		E	
	Potentilla recta	0.1	20		E	
	Acetosella vulgaris	1	200		HTE	
	Agrostis capillaris	10	500		HTE	
	Rubus fruticosus sp. agg.	0.1	5		HTE	
Grass & grasslike	*Carex breviculmis*	0.1	5		N	
Grass & grasslike	*Carex appressa*	2	20		N	
	Cirsium vulgare	0.1	5		E	
	Sonchus oleraceus	0.1	10		E	
	Verbascum virgatum	0.1	2		E	
Forb (FG)	*Cymbonotus preissianus*	0.1	2		N	
Forb (FG)	*Oxalis perennans*	0.1	10		N	
Forb (FG)	*Veronica subtilis*	0.1	10		N	
	Aira elegantissima	0.5	500		E	

BAM Site – Field Survey Form

Plot ID:	97	**Date:**	12-12-17	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	AM, SW
Zone:	55	**Easting:**	627960.6244	**Plot dimensions:**	20m x 50m	**Midline bearing:**	20
Datum:	GDA94	**Northing:**	6038787.024	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:		302: Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion		**Confidence:**	Low	**Photo #:**	
Vegetation Class:		Upper Riverina Dry Sclerophyll Forests		**EEC:**	No	**Confidence:**	Low

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	2
	Shrubs:	14
	Grasses etc.:	8
	Forbs:	4
	Ferns:	0
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	30
	Shrubs:	43.6
	Grasses etc.:	14.6
	Forbs:	0.4
	Ferns:	0
	Other:	0
High Threat Weed cover:		75.5

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	1	0	1
50 – 79 cm:	1	0	1
30 – 49 cm:	1	0	0
20 – 29 cm:	1	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	0	1	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	65		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	90	85	85	95	95	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots:	90					0.4					0					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Other	**Lf Pattern (A)**	Alluvial plain	**Microrelief**	
		Lf Element (B)	River flat	**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Loam	**Soil Colour**	Dark brown	**Soil Depth**	At least 100mm
Lithology (B)							
Slope		**Aspect**	North	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Light	greater than 10yo	
Storm damage:			No evidence
Weediness:	Severe	less than 3yo	Blackberry infestation 80% of plot
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine				
Date:	12-12-17	**Plot ID:**	97	**Recorders:**	AM, SW

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus viminalis*	10	8		N	
Tree (TG)	*Eucalyptus robertsonii*	20	6		N	
Shrub (SG)	*Acacia pravissima*	30	50		N	
Shrub (SG)	*Bursaria spinosa*	2	7		N	
Shrub (SG)	*Prostanthera lasianthos variant 'typical'*	0.5	3		N	
Grass & grasslike	*Poa helmsii*	10	70		N	
Shrub (SG)	*Cassinia aculeata*	2	10		N	
Shrub (SG)	*Leptospermum polygalifolium subsp. polygalifolium*	5	20		N	
Grass & grasslike	*Poa labillardierei var. labillardierei*	3	50		N	
Shrub (SG)	*Pomaderris aspera*	1	4		N	
Forb (FG)	*Asperula scoparia*	0.1	30		N	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	0.1	10		N	
Shrub (SG)	*Pomaderris angustifolia*	1	8		N	
Grass & grasslike	*Carex breviculmis*	0.1	10		N	
Grass & grasslike	*Dichelachne inaequiglumis*	1	100		N	
Forb (FG)	*Geranium solanderi var. solanderi*	0.1	20		N	
Shrub (SG)	*Mirbelia oxylobioides*	0.2	20		N	
Shrub (SG)	*Gynatrix pulchella*	0.2	5		N	
Shrub (SG)	*Lomatia myricoides*	1	2		N	
Forb (FG)	*Gonocarpus tetragynus*	0.1	20		N	
Shrub (SG)	*Olearia phlogopappa*	0.2	3		N	
Forb (FG)	*Oxalis perennans*	0.1	10		N	
Grass & grasslike	*Rytidosperma penicillatum*	0.1	10		N	
Grass & grasslike	*Carex iynx*	0.2	5		N	
Shrub (SG)	*Pimelea pauciflora*	0.2	2		N	
	Rosa rubiginosa	0.5	5		HTE	
Shrub (SG)	*Grevillea rosmarinifolia subsp. rosmarinifolia*	0.2	1		N	
Grass & grasslike	*Carex inversa*	0.1	10		N	
	Rubus fruticosus sp. agg.	75	1000		HTE	
Shrub (SG)	*Pomaderris subcapitata*	0.1	2		N	

BAM Site – Field Survey Form

Plot ID:	108	**Date:**	23-11-17	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	AM, SW
Zone:	55	**Easting:**	626424.2617	**Plot dimensions:**	20m x 50m	**Midline bearing:**	308
Datum:	GDA94	**Northing:**	6038732.062	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:		302: Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion		**Confidence:**	High	**Photo #:**	
Vegetation Class:		Upper Riverina Dry Sclerophyll Forests		**EEC:**	No	**Confidence:**	High

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	6
	Grasses etc.:	6
	Forbs:	5
	Ferns:	0
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	43
	Shrubs:	65.6
	Grasses etc.:	21.4
	Forbs:	0.6
	Ferns:	0
	Other:	0
High Threat Weed cover:		7.2

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	1	0	1
50 – 79 cm:	0	0	0
30 – 49 cm:	1	0	0
20 – 29 cm:	1	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	1	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	23		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	95	100	70	60	20	0	0	2	0	0	0	0	5	0	0	0	0	10	0	0
Average of the 5 subplots:	69					0.4					1					2				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Valley flat	**Lf Pattern (A)**	Alluvial plain	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Loam	**Soil Colour**	Brown	**Soil Depth**	At least 100mm
Lithology (B)							
Slope		**Aspect**	SSE	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:	Light		Evidence of small trees cut felled
Grazing (identify native/stock):			No evidence
Fire damage:			No evidence
Storm damage:			No evidence
Weediness:	Moderate	less than 3yo	Exotic species present
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, …, 1, 2, 3, …, 10, 15, 20, 25, …100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, …, 10, 20, 30, … 100, 200, …, 1000, …

Survey Name:	Lobs Hole Ravine					
	Date:	23-11-17	**Plot ID:**	108	**Recorders:**	AM, SW

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus camphora subsp. humeana*	3	2		N	
Tree (TG)	*Eucalyptus viminalis*	20	10		N	
Tree (TG)	*Eucalyptus stellulata*	20	20		N	
Shrub (SG)	*Acacia pravissima*	35	50		N	
Grass & grasslike	*Themeda triandra*	20	200		N	
	Hypochaeris radicata	0.2	20		E	
	Hypericum perforatum	0.8	50		HTE	
	Plantago lanceolata	0.2	20		E	
	Rosa rubiginosa	2	20		HTE	
	Rubus fruticosus sp. agg.	2	10		HTE	
Shrub (SG)	*Rubus parvifolius*	10	50		N	
Forb (FG)	*Asperula conferta*	0.1	20		N	
Forb (FG)	*Acaena agnipila*	0.1	20		N	
Grass & grasslike	*Juncus sarophorus*	0.1	1		N	
Grass & grasslike	*Poa helmsii*	1	20		N	
Shrub (SG)	*Cassinia aculeata*	5	10		N	
Shrub (SG)	*Grevillea rosmarinifolia*	15	20		N	
	Bromus sterilis	30	1000		E	
	Poa pratensis	5	100		E	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	0.1	5		N	
	Vulpia bromoides	3	100		E	
	Veronica arvensis	0.1	20		E	
	Centaurium erythraea	0.2	50		E	
Forb (FG)	*Dichondra repens*	0.2	100		N	
Forb (FG)	*Geranium solanderi*	0.1	20		N	
Shrub (SG)	*Mirbelia oxylobioides*	0.1	1		N	
Grass & grasslike	*Carex appressa*	0.1	5		N	
	Bromus diandrus	2	50		HTE	
	Cirsium vulgare	0.2	10		E	
Forb (FG)	*Acaena novae-zelandiae*	0.1	20		N	
	Cerastium glomeratum	0.1	10		E	
	Briza minor	0.1	10		E	
	Potentilla recta	0.1	1		E	
Shrub (SG)	*Acacia siculiformis*	0.5	1		N	
Grass & grasslike	*Poa sieberiana*	0.1	10		N	
	Crataegus monogyna	0.2	2		HTE	
	Crataegus monogyna	0.2	2		HTE	
	Veronica peregrina	0.1	10		E	
	Myosotis discolor	0.1	10		E	

BAM Site – Field Survey Form

Plot ID:	143	**Date:**	22-11-17	**Survey Name:**	Lobs Hole Ravine adjusted location for 143	**Recorders:**	ED, LH
Zone:	55	**Easting:**	627654.339	**Plot dimensions:**	20m x 50m	**Midline bearing:**	20
Datum:	GDA94	**Northing:**	6038148.986	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:		302: Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion		**Confidence:**	Low	**Photo #:**	
Vegetation Class:		Upper Riverina Dry Sclerophyll Forests		**EEC:**	Yes	**Confidence:**	Low

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	2
	Shrubs:	13
	Grasses etc.:	5
	Forbs:	7
	Ferns:	1
	Other:	1
Sum of Cover of native vascular plants by growth form group	Trees:	35
	Shrubs:	132.7
	Grasses etc.:	20.5
	Forbs:	0.8
	Ferns:	0.6
	Other:	0.1
High Threat Weed cover:		16.3

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	1	0	0
30 – 49 cm:	1	0	0
20 – 29 cm:	1	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	12		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	40	25	80	80	25	0	0	0	0	0	2	0	0	0	0	0	0	0	0	25
Average of the 5 subplots:	50					0					0.4					5				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Valley flat	**Lf Pattern (A)**	Alluvial plain	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Fine loam	**Soil Colour**	Dark brown	**Soil Depth**	Deep
Lithology (B)							
Slope	Flat	**Aspect**		**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Light	greater than 10yo	Previous clearing
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			
Grazing (identify native/stock):			
Fire damage:			
Storm damage:			
Weediness:	Moderate	greater than 10yo	Blackberry
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine adjusted location for 143					
	Date:	22-11-17	**Plot ID:**	143	**Recorders:**	ED, LH

GF Code	*Top 3 native species in each growth form group: Full species name mandatory* *All other native and exotic species: Full species name where practicable*	Cover	Abund	Voucher	N, E or HTE	Stratum
Shrub (SG)	*Acacia pravissima*	60	200		N	
Shrub (SG)	*Pomaderris aspera*	45	10		N	
Grass & grasslike	*Poa helmsii*	20	200		N	
	Rosa rubiginosa	0.7	5		HTE	
	Rubus fruticosus sp. agg.	15	100		HTE	
Shrub (SG)	*Mirbelia oxylobioides*	4	20		N	
Shrub (SG)	*Cassinia longifolia*	15	40		N	
Tree (TG)	*Eucalyptus stellulata*	10	15		N	
Forb (FG)	*Geranium solanderi*	0.2	10		N	
Shrub (SG)	*Cassinia aculeata*	5	10		N	
	Hypericum perforatum	0.2	30		HTE	
Shrub (SG)	*Banksia spinulosa var. collina*	0.5	1		N	
	Bromus diandrus	0.4	20		HTE	
Forb (FG)	*Oxalis perennans*	0.1	5		N	
Shrub (SG)	*Leucopogon gelidus*	0.2	5		N	
Grass & grasslike	*Carex appressa*	0.1	1		N	
Grass & grasslike	*Poa sieberiana*	0.2	10		N	
Shrub (SG)	*Hibbertia obtusifolia*	0.2	4		N	
Fern (EG)	*Pteridium esculentum*	0.6	10		N	
Shrub (SG)	*Dillwynia prostrata*	0.1	6		N	
Forb (FG)	*Asperula conferta*	0.1	10		N	
Grass & grasslike	*Lomandra micrantha subsp. Tuberculata*	0.1	1		N	
Shrub (SG)	*Bursaria spinosa*	1	5		N	
Shrub (SG)	*Gynatrix pulchella*	1	5		N	
Other (OG)	*Glycine tabacina*	0.1	1		N	
Forb (FG)	*Poranthera microphylla*	0.1	3		N	
Forb (FG)	*Hydrocotyle laxiflora*	0.1	2		N	
Forb (FG)	*Asperula scoparia*	0.1	10		N	
Shrub (SG)	*Exocarpos strictus*	0.6	3		N	
Forb (FG)	*Dichondra repens*	0.1	2		N	
Grass & grasslike	*Carex breviculmis*	0.1	1		N	
Tree (TG)	*Eucalyptus viminalis*	25			N	
	Malus spp.	0.1	1		E	
Shrub (SG)	*Rubus parvifolius*	0.1	5		N	
	Vulpia bromoides	0.1	10		E	

BAM Site – Field Survey Form

Plot ID:	164	**Date:**	23-11-17	**Survey Name:**	Tantangara Dam south intake	**Recorders:**	ED, LH
Zone:	55	**Easting:**	649062.6036	**Plot dimensions:**	20m x 50m	**Midline bearing:**	117
Datum:	GDA94	**Northing:**	6037390.662	**IBRA region:**	Australian Alps (Snowy Mountains)	**Zone ID:**	
Plant Community Type:	1224: Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion			**Confidence:**	Medium	**Photo #:**	
Vegetation Class:	Temperate Montane Grasslands			**EEC:**	Yes	**Confidence:**	Low

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	1
	Shrubs:	3
	Grasses etc.:	8
	Forbs:	5
	Ferns:	0
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	2
	Shrubs:	27.2
	Grasses etc.:	23.5
	Forbs:	2.1
	Ferns:	0
	Other:	0
High Threat Weed cover:		0.7

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	0	0	0
20 – 29 cm:	1	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	0		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	5	10	10	15	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots:	9					0					0					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Fine loam	**Soil Colour**	Dark brown	**Soil Depth**	Moderate
Lithology (B)							
Slope		**Aspect**		**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No
Cultivation (inc. pasture):			No
Soil erosion:			No
Firewood / CWD removal:			
Grazing (identify native/stock):	Moderate	greater than 10yo	Horses and rabbits present. trampling is severe changing nsture and structure of landscape
Fire damage:			No
Storm damage:			No
Weediness:	Moderate	greater than 10yo	
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, …, 1, 2, 3, …, 10, 15, 20, 25, …100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, …, 10, 20, 30, … 100, 200, …, 1000, …

Survey Name:	Tantangara Dam south intake					
	Date:	23-11-17	**Plot ID:**	164	**Recorders:**	ED, LH

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus stellulata*	2	2		N	
Grass & grasslike	*Themeda triandra*	0.2	20		N	
Shrub (SG)	*Hakea microcarpa*	25	200		N	
Shrub (SG)	*Epacris breviflora*	2	20		N	
Grass & grasslike	*Juncus sarophorus*	4	50		N	
Forb (FG)	*Senecio gunnii*	0.5	40		N	
Forb (FG)	*Gonocarpus montanus*	0.1	20		N	
Forb (FG)	*Hydrocotyle laxiflora*	0.2	80		N	
	Cirsium spp.	0.1	3		E	
Forb (FG)	*Acaena novae-zelandiae*	1	40		N	
Forb (FG)	*Epilobium gunnianum*	0.3	50		N	
	Holcus lanatus	30	500		E	
	Acetosella vulgaris	0.7	10		HTE	
Grass & grasslike	*Carex breviculmis*	0.1	4		N	
Grass & grasslike	*Luzula flaccida*	0.1	5		N	
	Hypochaeris radicata	0.1	6		E	
Grass & grasslike	*Poa labillardierei var. labillardierei*	5	100		N	
	Anthoxanthum odoratum	40	1000		E	
Grass & grasslike	*Poa sieberiana*	10	300		N	
Grass & grasslike	*Empodisma minus*	4	80		N	
Shrub (SG)	*Epacris microphylla*	0.2	10		N	
Grass & grasslike	*Carex inversa*	0.1	5		N	

BAM Site – Field Survey Form

Plot ID:	173	**Date:**	20-11-17	**Survey Name:**	Lobs Hole Ravine Track	**Recorders:**	ED, LH
Zone:	55	**Easting:**	627162.9974	**Plot dimensions:**	20m x 50m	**Midline bearing:**	84
Datum:	GDA94	**Northing:**	6033833.665	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	643: Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion			**Confidence:**	High	**Photo #:**	
Vegetation Class:	Alpine Heaths			**EEC:**	Yes	**Confidence:**	Low

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	4
	Grasses etc.:	0
	Forbs:	2
	Ferns:	1
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	4
	Shrubs:	8.2
	Grasses etc.:	0
	Forbs:	0.2
	Ferns:	1
	Other:	0
High Threat Weed cover:		0.1

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	0	0	0
20 – 29 cm:	1	0	0
10 – 19 cm:	0	0	0
5 – 9 cm:	0	1	0
< 5 cm:	0	1	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	17		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	10	75	5	10	10	0	0	0	0	0	15	0	0	0	0	75	25	85	90	90
Average of the 5 subplots:	22					0					3					73				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)	Basalt	**Soil Surface Texture**	Volcanic boulderfield	**Soil Colour**		**Soil Depth**	
Lithology (B)							
Slope	Steep	**Aspect**		**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			
Cultivation (inc. pasture):			
Soil erosion:			
Firewood / CWD removal:			
Grazing (identify native/stock):			
Fire damage:	Light	greater than 10yo	Charred logs
Storm damage:			
Weediness:			
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine Track					
	Date:	20-11-17	**Plot ID:**	173	**Recorders:**	ED, LH

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Fern (EG)	*Pteridium esculentum*	1	25		N	
Forb (FG)	*Stellaria pungens*	0.1	5		N	
	Rubus fruticosus sp. agg.	0.1	2		HTE	
Shrub (SG)	*Indigofera australis*	0.2	3		N	
Shrub (SG)	*Bedfordia arborescens*	2	2	Yes	N	
Shrub (SG)	*Cassinia longifolia*	5	10		N	
Tree (TG)	*Acacia melanoxylon*	1	3		N	
Tree (TG)	*Acacia dealbata subsp. subalpina*	2	5		N	
Tree (TG)	*Eucalyptus viminalis*	1	1		N	
	Galium aparine	0.1	2	Yes	E	
Forb (FG)	*Geranium solanderi var. solanderi*	0.1	3		N	
Shrub (SG)	*Polyscias sambucifolia subsp. leptophylla*	1	1		N	

BAM Site – Field Survey Form

Plot ID:	188	**Date:**	13-12-17	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	AM, SW
Zone:	55	**Easting:**	627887.1793	**Plot dimensions:**	20m x 50m	**Midline bearing:**	190
Datum:	GDA94	**Northing:**	6038242.868	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	999: Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion			**Confidence:**	Low	**Photo #:**	
Vegetation Class:	Southern Tableland Dry Sclerophyll Forests			**EEC:**	No	**Confidence:**	Low

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	1
	Shrubs:	13
	Grasses etc.:	4
	Forbs:	5
	Ferns:	0
	Other:	1
Sum of Cover of native vascular plants by growth form group	Trees:	35
	Shrubs:	119
	Grasses etc.:	10.2
	Forbs:	1.4
	Ferns:	0
	Other:	0.2
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	**Stem count (euc)**	**Stem count (non-euc)**	**Stems with Hollows**
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	1	0	3
20 – 29 cm:	1	0	1
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	48		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	80	60	85	90	80	0	15	0	0	0	0	10	0	0	0	5	1	1	0	10
Average of the 5 subplots:	79					3					2					3.4				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Loam clay	**Soil Colour**	Brown	**Soil Depth**	Skeletal to shallow
Lithology (B)							
Slope		**Aspect**	Western	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Light	greater than 10yo	
Storm damage:			No evidence
Weediness:			No evidence
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine						
		Date:	13-12-17	**Plot ID:**	188	**Recorders:**	AM, SW

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus dives*	35	20		N	
Shrub (SG)	*Banksia canei*	60	200		N	
Shrub (SG)	*Acacia buxifolia subsp. buxifolia*	0.2	3		N	
Other (OG)	*Cassytha pubescens*	0.2	5		N	
Shrub (SG)	*Tetratheca baueriifolia*	2	100		N	
Forb (FG)	*Gonocarpus teucrioides*	1	200		N	
Forb (FG)	*Hovea heterophylla*	0.1	10		N	
Shrub (SG)	*Brachyloma daphnoides*	5	50		N	
Shrub (SG)	*Leucopogon attenuatus*	30	500		N	
Shrub (SG)	*Leucopogon virgatus*	1	30		N	
Forb (FG)	*Boronia nana var. hyssopifolia*	0.1	20		N	
Shrub (SG)	*Podolobium procumbens*	3	50		N	
Shrub (SG)	*Mirbelia oxylobioides*	5	30		N	
Shrub (SG)	*Monotoca scoparia*	0.5	10		N	
Grass & grasslike	*Poa sieberiana var. sieberiana*	5	100		N	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	0.1	10		N	
Shrub (SG)	*Dillwynia phylicoides*	10	100		N	
Shrub (SG)	*Hibbertia obtusifolia*	0.2	10		N	
Forb (FG)	*Stylidium graminifolium*	0.1	10		N	
Grass & grasslike	*Rytidosperma pallidum*	5	50		N	
Shrub (SG)	*Calytrix tetragona*	2	20		N	
Forb (FG)	*Dianella revoluta var. revoluta*	0.1	3		N	
Shrub (SG)	*Daviesia ulicifolia*	0.1	2		N	
Grass & grasslike	*Lomandra multiflora subsp. Multiflora*	0.1	5		N	

BAM Site – Field Survey Form

Plot ID:	190	**Date:**	09-01-18	**Survey Name:**	Lobs Hole Ravine Road north	**Recorders:**	SD
Zone:	55	**Easting:**	627370.4074	**Plot dimensions:**	20m x 50m	**Midline bearing:**	300
Datum:	GDA94	**Northing:**	6044577.778	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	

Plant Community Type:	296: Brittle Gum - peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	**Confidence:**	High	**Photo #:**	
Vegetation Class:	Southern Tableland Dry Sclerophyll Forests	**EEC:**	No	**Confidence:**	High

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	11
	Grasses etc.:	5
	Forbs:	6
	Ferns:	1
	Other:	2
Sum of Cover of native vascular plants by growth form group	Trees:	20
	Shrubs:	29.3
	Grasses etc.:	2.5
	Forbs:	0.9
	Ferns:	0.1
	Other:	0.6
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	1	0	2
30 – 49 cm:	0	0	0
20 – 29 cm:	0	0	0
10 – 19 cm:	0	0	0
5 – 9 cm:	0	0	0
< 5 cm:	0	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	4490		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	90	80	80	95	95	0	2	5	5	0	10	10	30	30	15	15	1	10	1	10
Average of the 5 subplots:	88					2.4					19					7.4				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)	Sedimentary rock (unidentified)	**Soil Surface Texture**	Sandy loam	**Soil Colour**	Brown	**Soil Depth**	Shallow
Lithology (B)							
Slope	30	**Aspect**	North-west	**Site Drainage**	Good	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Moderate	greater than 10yo	
Cultivation (inc. pasture):			
Soil erosion:	Moderate	greater than 10yo	
Firewood / CWD removal:			
Grazing (identify native/stock):			
Fire damage:	Light	3 to 10 yo	
Storm damage:			
Weediness:			
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine Road north				
Date:	09-01-18	**Plot ID:**	190	**Recorders:**	SD

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus mannifera subsp. mannifera*	7	5		N	
Tree (TG)	*Eucalyptus dives*	3	5		N	
Tree (TG)	*Eucalyptus macrorhyncha*	10	10		N	
Shrub (SG)	*Acacia obliquinervia*	10	100		N	
Shrub (SG)	*Dillwynia phylicoides*	15	200		N	
Other (OG)	*Cassytha glabella*	0.5	20		N	
Shrub (SG)	*Brachyloma daphnoides*	1	30		N	
Forb (FG)	*Dianella revoluta*	0.1	10		N	
Forb (FG)	*Poranthera spp.*	0.2	30		N	
Forb (FG)	*Gonocarpus tetragynus*	0.2	30		N	
Forb (FG)	*Asperula spp.*	0.2	30		N	
Grass & grasslike	*Lomandra bracteata*	0.1	20		N	
Shrub (SG)	*Cassinia longifolia*	0.7	20		N	
Shrub (SG)	*Hibbertia obtusifolia*	0.5	20		N	
Forb (FG)	*Senecio quadridentatus*	0.1	1		N	
Grass & grasslike	*Rytidosperma pallidum*	2	100		N	
Shrub (SG)	*Tetratheca bauerifolia*	1	200		N	
Shrub (SG)	*Persoonia chamaepeuce*	0.2	30		N	
Other (OG)	*Hardenbergia violacea*	0.1	10		N	
Shrub (SG)	*Exocarpos strictus*	0.1	2		N	
Shrub (SG)	*Banksia canei*	0.5	2		N	
Grass & grasslike	*Poa spp.*	0.2	20		N	
Grass & grasslike	*Austrostipa scabra*	0.1	10		N	
Shrub (SG)	*Pimelea linifolia*	0.1	10		N	
Shrub (SG)	*Leucopogon fletcheri subsp. brevisepalus*	0.2	10		N	
Grass & grasslike	*Lomandra filiformis subsp. filiformis*	0.1	5		N	
Forb (FG)	*Stylidium graminifolium*	0.1	5		N	
Fern (EG)	*Asplenium flabellifolium*	0.1	5		N	

BAM Site – Field Survey Form

Plot ID:	192	**Date:**	09-01-18	**Survey Name:**	Lobbs Hole Ravine Road north	**Recorders:**	SD
Zone:	55	**Easting:**	627958.7871	**Plot dimensions:**	20m x 50m	**Midline bearing:**	160
Datum:	GDA94	**Northing:**	6045556.519	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	

Plant Community Type:	300: Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	**Confidence:**	High	**Photo #:**	
Vegetation Class:	Southern Tableland Wet Sclerophyll Forests	**EEC:**	No	**Confidence:**	High

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	13
	Grasses etc.:	5
	Forbs:	12
	Ferns:	0
	Other:	3
Sum of Cover of native vascular plants by growth form group	Trees:	25.5
	Shrubs:	38.8
	Grasses etc.:	16.5
	Forbs:	2.4
	Ferns:	0
	Other:	0.4
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	1	0	0
50 – 79 cm:	3	0	5
30 – 49 cm:	0	0	0
20 – 29 cm:	0	0	0
10 – 19 cm:	0	0	0
5 – 9 cm:	0	0	0
< 5 cm:	0	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	30		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	100	100	60	80	95	0	0	50	25	1	10	10	20	15	20	0	0	0	95	0
Average of the 5 subplots:	87					15.2					15					19				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)	Sedimentary rock (unidentified)	**Soil Surface Texture**	Clay	**Soil Colour**	Brown	**Soil Depth**	Medium
Lithology (B)							
Slope	30	**Aspect**	South-east	**Site Drainage**	Medium	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Moderate	greater than 10yo	
Cultivation (inc. pasture):			
Soil erosion:	Light	greater than 10yo	
Firewood / CWD removal:			
Grazing (identify native/stock):			
Fire damage:	Light	3 to 10 yo	
Storm damage:			
Weediness:			
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobbs Hole Ravine Road north						
		Date:	09-01-18	**Plot ID:**	192	**Recorders:**	SD

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus robertsonii*	20	10		N	
Tree (TG)	*Eucalyptus mannifera subsp. mannifera*	5	5		N	
Shrub (SG)	*Daviesia latifolia*	20	500		N	
Shrub (SG)	*Grevillea rosmarinifolia*	2	50		N	
Shrub (SG)	*Leucopogon fletcheri subsp. brevisepalus*	5	200		N	
Shrub (SG)	*Cassinia aculeata*	5	10		N	
Shrub (SG)	*Platylobium montanum*	2	100		N	
Tree (TG)	*Acacia melanoxylon*	0.5	5		N	
Shrub (SG)	*Olearia phlogopappa*	0.8	30		N	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	0.3	20		N	
Shrub (SG)	*Persoonia chamaepeuce*	2	80		N	
Forb (FG)	*Asperula scoparia*	0.5	50		N	
Grass & grasslike	*Poa sieberiana var. sieberiana*	5	500		N	
Forb (FG)	*Geranium solanderi*	0.1	10		N	
Grass & grasslike	*Lomandra filiformis subsp. filiformis*	0.2	30		N	
Grass & grasslike	*Poa sieberiana var. cyanophylla*	10	1000		N	
Forb (FG)	*Podolepis jaceoides*	0.3	100		N	
Forb (FG)	*Gonocarpus tetragynus*	0.2	40		N	
Forb (FG)	*Stackhousia monogyna*	0.1	1		N	
Forb (FG)	*Stellaria pungens*	0.2	20		N	
Shrub (SG)	*Banksia canei*	0.5	8		N	
Forb (FG)	*Ranunculus lappaceus*	0.2	20		N	
Shrub (SG)	*Acacia pravissima*	0.1	5		N	
	Centaurium erythraea	0.1	10		E	
Forb (FG)	*Galium binifolium*	0.2	30		N	
Forb (FG)	*Poranthera microphylla*	0.2	30		N	
Other (OG)	*Clematis aristata*	0.1	10		N	
Other (OG)	*Glycine tabacina*	0.2	30		N	
Shrub (SG)	*Coprosma quadrifida*	0.1	1		N	
Other (OG)	*Glycine microphylla*	0.1	10		N	
Forb (FG)	*Veronica derwentiana subsp. derwentiana*	0.2	5		N	
Shrub (SG)	*Exocarpos strictus*	0.2	1		N	
Grass & grasslike	*Lomandra longifolia*	1	20		N	
Shrub (SG)	*Cassinia longifolia*	1	20		N	
Shrub (SG)	*Coprosma hirtella*	0.1	1		N	
Forb (FG)	*Viola betonicifolia*	0.1	20		N	
Forb (FG)	*Viola hederacea*	0.1	1		N	

BAM Site – Field Survey Form

Plot ID:	194	**Date:**	12-12-17	**Survey Name:**	O'Hares Creek Trail			**Recorders:**	SW, AM
Zone:	55	**Easting:**	625172.182	**Plot dimensions:**	20m x 50m			**Midline bearing:**	180
Datum:	GDA94	**Northing:**	6036523.662	**IBRA region:**	South Eastern Highlands (Bondo)			**Zone ID:**	
Plant Community Type:			300: Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment			**Confidence:**	Low	**Photo #:**	
Vegetation Class:			Southern Tableland Wet Sclerophyll Forests			**EEC:**	No	**Confidence:**	Low

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	5
	Shrubs:	16
	Grasses etc.:	12
	Forbs:	21
	Ferns:	1
	Other:	3
Sum of Cover of native vascular plants by growth form group	Trees:	48.3
	Shrubs:	53.4
	Grasses etc.:	27.2
	Forbs:	3.6
	Ferns:	25
	Other:	0.4
High Threat Weed cover:		7.1

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	1	0	3
30 – 49 cm:	1	0	1
20 – 29 cm:	1	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	0	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	111		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	95	80	90	90	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots:	83					0					0					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Loamy clay	**Soil Colour**	Brown	**Soil Depth**	At least 100mm
Lithology (B)							
Slope	15°	**Aspect**	ESE	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:	Light	less than 3yo	Some feral pig damage
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Light	greater than 10yo	
Storm damage:			No evidence
Weediness:	Light	less than 3yo	Exotic forbs
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	O'Hares Creek Trail						
		Date:	12-12-17	**Plot ID:**	194	**Recorders:**	SW, AM

GF Code	*Top 3 native species in each growth form group: Full species name mandatory* *All other native and exotic species: Full species name where practicable*	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus viminalis*	20	5		N	
Tree (TG)	*Eucalyptus robertsonii subsp. robertsonii*	20	7		N	
Tree (TG)	*Eucalyptus dives*	7	3		N	
Shrub (SG)	*Cassinia longifolia*	5	20		N	
Shrub (SG)	*Platylobium formosum subsp. formosum*	10	100		N	
Forb (FG)	*Cymbonotus preissianus*	0.1	5		N	
Shrub (SG)	*Mirbelia oxylobioides*	25	70		N	
Fern (EG)	*Pteridium esculentum*	25	200		N	
Shrub (SG)	*Exocarpos strictus*	1	5		N	
Grass & grasslike	*Anthosachne scabra*	5	300		N	
Grass & grasslike	*Lomandra longifolia*	2	20		N	
Grass & grasslike	*Poa tenera*	2	100		N	
Forb (FG)	*Stellaria pungens*	0.2	50		N	
Forb (FG)	*Viola betonicifolia*	0.1	30		N	
Shrub (SG)	*Banksia canei*	0.5	8		N	
Forb (FG)	*Plantago varia*	1	100		N	
Grass & grasslike	*Dichelachne rara*	5	500		N	
Other (OG)	*Glycine clandestina*	0.1	50		N	
Forb (FG)	*Wahlenbergia stricta subsp. stricta*	0.1	20		N	
Forb (FG)	*Picris angustifolia subsp. merxmuelleri*	0.2	50		N	
Forb (FG)	*Hydrocotyle laxiflora*	0.2	100		N	
Forb (FG)	*Hovea heterophylla*	0.1	10		N	
Grass & grasslike	*Poa sieberiana var. hirtella*	10	100		N	
	Rosa rubiginosa	0.1	2		HTE	
Other (OG)	*Hardenbergia violacea*	0.2	20		N	
Other (OG)	*Cassytha pubescens*	0.1	5		N	
Shrub (SG)	*Pimelea linifolia subsp. linifolia*	0.3	20		N	
Forb (FG)	*Geranium solanderi var. solanderi*	0.2	50		N	
	Taraxacum officinale	0.1	5		E	
Forb (FG)	*Senecio quadridentatus*	0.1	20		N	
Forb (FG)	*Poranthera microphylla*	0.1	20		N	
Forb (FG)	*Gonocarpus teucrioides*	0.2	200		N	
	Hypochaeris radicata	0.1	20		E	
Shrub (SG)	*Bursaria spinosa*	0.3	4		N	
Tree (TG)	*Acacia melanoxylon*	1	2		N	
Shrub (SG)	*Tetratheca bauerifolia*	10	500		N	
Forb (FG)	*Microtis unifolia*	0.1	5		N	
	Hypericum perforatum	2	100		HTE	
Forb (FG)	*Pimelea curviflora var. sericea*	0.1	20		N	
Forb (FG)	*Stylidium graminifolium*	0.1	20		N	
	Rubus fruticosus sp. agg.	5	30		HTE	
Shrub (SG)	*Gompholobium huegelii*	0.2	10		N	
Shrub (SG)	*Pimelea pauciflora*	0.1	2		N	
Shrub (SG)	*Hibbertia obtusifolia*	0.1	5		N	
Shrub (SG)	*Acacia pravissima*	0.2	1		N	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	0.2	20		N	
Forb (FG)	*Dianella revoluta var. revoluta*	0.1	5		N	

Grass & grasslike	*Rytidosperma penicillatum*	2	100		N	
Forb (FG)	*Oxalis perennans*	0.1	10		N	
Forb (FG)	*Chrysocephalum semipapposum*	0.2	40		N	
	Centaurium erythraea	0.1	20		E	
Grass & grasslike	*Luzula flaccida*	0.1	20		N	
Tree (TG)	*Acacia dealbata subsp. subalpina*	0.3	3		N	
Grass & grasslike	*Poa sieberiana var. sieberiana*	0.5	50		N	
Shrub (SG)	*Leucopogon virgatus*	0.1	5		N	
Forb (FG)	*Acaena novae-zelandiae*	0.1	30		N	
Shrub (SG)	*Acrotriche serrulata*	0.1	2		N	
Shrub (SG)	*Leucopogon attenuatus*	0.1	3		N	
Forb (FG)	*Senecio gunnii*	0.1	10		N	
Shrub (SG)	*Cassinia aculeata subsp. aculeata*	0.4	2		N	
Forb (FG)	*Dichondra repens*	0.1	50		N	
Grass & grasslike	*Echinopogon ovatus*	0.1	10		N	
Grass & grasslike	*Lachnagrostis filiformis*	0.2	20		N	
Grass & grasslike	*Lomandra multiflora subsp. Multiflora*	0.1	10		N	

BAM Site – Field Survey Form

Plot ID:	201	**Date:**	29-11-17	**Survey Name:**	Port Phillip Trail Tantangara North	**Recorders:**	SW, SZD
Zone:	55	**Easting:**	643221.7613	**Plot dimensions:**	20m x 50m	**Midline bearing:**	148
Datum:	GDA94	**Northing:**	6048793.201	**IBRA region:**	Australian Alps (Snowy Mountains)	**Zone ID:**	
Plant Community Type:	303: Black Sally grassy low woodland in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion			**Confidence:**	Low	**Photo #:**	
Vegetation Class:	Southern Tableland Grassy Woodlands			**EEC:**	Yes	**Confidence:**	High

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	1
	Shrubs:	2
	Grasses etc.:	5
	Forbs:	20
	Ferns:	0
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	2
	Shrubs:	0.5
	Grasses etc.:	53.6
	Forbs:	2.5
	Ferns:	0
	Other:	0
High Threat Weed cover:		0.1

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	0	0	0
20 – 29 cm:	0	0	0
10 – 19 cm:	0	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	0		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	5	10	15	20	15	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots:	13					0.4					0					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Footslope	**Lf Pattern (A)**	Low hills	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)	Shale	**Soil Surface Texture**	Clay loam	**Soil Colour**	Light brown	**Soil Depth**	shallow
Lithology (B)							
Slope	0.05	**Aspect**	NNW	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):	Light	less than 3yo	Brumbie and rabbits
Fire damage:	Severe	less than 3yo	
Storm damage:			No evidence
Weediness:	Light	less than 3yo	Pasture weeds
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, …, 1, 2, 3, …, 10, 15, 20, 25, …100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, …, 10, 20, 30, … 100, 200, …, 1000, …

Survey Name:	Port Phillip Trail Tantangara North				
Date:	29-11-17	**Plot ID:**	201	**Recorders:**	SW, SZD

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus stellulata*	2	7		N	
Shrub (SG)	*Hakea microcarpa*	0.3	1		N	
Forb (FG)	*Ranunculus lappaceus*	0.1	50		N	
Forb (FG)	*Diuris behrii*	0.1	30		N	
Forb (FG)	*Scleranthus biflorus*	0.2	50		N	
Forb (FG)	*Cymbonotus lawsonianus*	0.2	50		N	
Forb (FG)	*Veronica subtilis*	0.1	20		N	
Forb (FG)	*Craspedia costiniana*	0.3	100		N	
Forb (FG)	*Acaena ovina*	0.1	20		N	
Forb (FG)	*Epilobium gunnianum*	0.1	20		N	
Forb (FG)	*Rhodanthe anthemoides*	0.1	20		N	
Forb (FG)	*Leptorhynchos squamatus*	0.1	10		N	
Forb (FG)	*Senecio pinnatifolius var. alpinus*	0.1	5		N	
Grass & grasslike	*Poa costiniana*	0.5	50		N	
Grass & grasslike	*Poa sieberiana var. sieberiana*	50	1000		N	
Forb (FG)	*Coronidium scorpioides*	0.2	50		N	
Shrub (SG)	*Pultenaea fasciculata*	0.2	50		N	
Forb (FG)	*Stylidium graminifolium*	0.1	10		N	
Forb (FG)	*Asperula scoparia*	0.1	30		N	
Grass & grasslike	*Themeda triandra*	2	200		N	
Grass & grasslike	*Poa sieberiana var. cyanophylla*	1	50		N	
Forb (FG)	*Oreomyrrhis spp.*	0.1	2		N	
Forb (FG)	*Pterostylis cycnocephala*	0.1	3		N	
	Acetosella vulgaris	0.1	10		HTE	
Forb (FG)	*Viola betonicifolia*	0.1	5		N	
Forb (FG)	*Geranium antrorsum*	0.1	5		N	
Forb (FG)	*Euphrasia collina subsp. diversicolor*	0.1	10		N	
	Taraxacum officinale	0.1	5		E	
Grass & grasslike	*Carex breviculmis*	0.1	10		N	
Forb (FG)	*Erigeron bellidioides*	0.1	20		N	

BAM Site – Field Survey Form

Plot ID:	218	**Date:**	12-12-17	**Survey Name:**	Access Roads	**Recorders:**	SD, EL
Zone:	55	**Easting:**	625998.1173	**Plot dimensions:**	20m x 50m	**Midline bearing:**	318
Datum:	GDA94	**Northing:**	6038194.426	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	999: Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion			**Confidence:**	High	**Photo #:**	
Vegetation Class:	Southern Tableland Dry Sclerophyll Forests			**EEC:**		**Confidence:**	

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	2
	Shrubs:	14
	Grasses etc.:	5
	Forbs:	9
	Ferns:	1
	Other:	1
Sum of Cover of native vascular plants by growth form group	Trees:	0.2
	Shrubs:	85.6
	Grasses etc.:	3.6
	Forbs:	3.3
	Ferns:	0.2
	Other:	1
High Threat Weed cover:		0.5

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	0	0	0
20 – 29 cm:	0	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	0		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	40	10	10	10	30	25	25	35	10	15	0	0	0	20	4	10	10	4	4	4
Average of the 5 subplots:	20					22					4.8					6.4				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**		**Lf Pattern (A)**	Hills	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Silty clay	**Soil Colour**	Red	**Soil Depth**	Shallow
Lithology (B)							
Slope	20	**Aspect**	ENE	**Site Drainage**	Good	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Severe	greater than 10yo	Historical. Single age class no old trees in adjacent community.
Cultivation (inc. pasture):			No evidence
Soil erosion:	Moderate	3 to 10 yo	Asssociated with removal of overstorey and also access road adjacent.
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):	Light		Native and exotic herbivores
Fire damage:	Light	3 to 10 yo	Burnt logs
Storm damage:			No evidence
Weediness:	Light	less than 3yo	Roadside weeds
Other:	Moderate	3 to 10 yo	Clearing associated with power line corridor.

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Access Roads						
		Date:	12-12-17	**Plot ID:**	218	**Recorders:**	SD, EL

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Shrub (SG)	*Acacia buxifolia*	1	20		N	
Shrub (SG)	*Calytrix tetragona*	70	1000		N	
Shrub (SG)	*Leucopogon attenuatus*	1	30		N	
Shrub (SG)	*Acacia pravissima*	2	20		N	
Shrub (SG)	*Banksia canei*	0.1	3		N	
Other (OG)	*Cassytha glabella*	1	50		N	
	Hypericum perforatum	0.5	30		HTE	
Tree (TG)	*Eucalyptus nortonii*	0.1	1		N	
Grass & grasslike	*Rytidosperma caespitosum*	1	200		N	
Forb (FG)	*Stylidium graminifolium*	0.5	100		N	
	Rubus anglocandicans	0.5	10		E	
Tree (TG)	*Eucalyptus dives*	0.1	1		N	
Shrub (SG)	*Cassinia longifolia*	0.5	5		N	
	Centaurium erythraea	0.5	100		E	
Shrub (SG)	*Brachyloma daphnoides*	5	100		N	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	2	50		N	
Grass & grasslike	*Poa spp.*	0.2	20		N	
Forb (FG)	*Hypericum gramineum*	0.2	30		N	
Grass & grasslike	*Anthosachne scabra*	0.2	30		N	
Forb (FG)	*Oxalis perennans*	0.1	10		N	
Shrub (SG)	*Mirbelia oxylobioides*	3	30		N	
	Conyza canadensis var. canadensis	0.1	2		E	
Forb (FG)	*Hydrocotyle laxiflora*	1	200		N	
Forb (FG)	*Euchiton sphaericus*	0.1	10		N	
Forb (FG)	*Acaena novae-zelandiae*	0.1	5		N	
	Aira elegantissima	0.2	50		E	
Shrub (SG)	*Monotoca scoparia*	0.5	2		N	
Grass & grasslike	*Lomandra bracteata*	0.2	20		N	
Shrub (SG)	*Pimelea linifolia*	0.1	10		N	
Forb (FG)	*Gonocarpus teucrioides*	0.2	20		N	
Fern (EG)	*Cheilanthes sieberi*	0.2	20		N	
Shrub (SG)	*Bursaria spinosa*	2	10		N	
Forb (FG)	*Dianella revoluta*	1	30		N	
Shrub (SG)	*Hibbertia obtusifolia*	0.2	10		N	
Forb (FG)	*Microtis unifolia*	0.1	1		N	
Shrub (SG)	*Podolobium alpestre*	0.1	2		N	
	Hypochaeris radicata	0.1	2		E	
Shrub (SG)	*Pimelea glauca*	0.1	1		N	

BAM Site – Field Survey Form

Plot ID:	1007	**Date:**	16-03-18	**Survey Name:**	X7	**Recorders:**	JA, ACM
Zone:	55	**Easting:**	626074.9424	**Plot dimensions:**	20m x 20m	**Midline bearing:**	182
Datum:	GDA94	**Northing:**	6038950.364	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:		302: Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion		**Confidence:**		**Photo #:**	
Vegetation Class:		Upper Riverina Dry Sclerophyll Forests		**EEC:**	Yes	**Confidence:**	

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	1
	Shrubs:	4
	Grasses etc.:	6
	Forbs:	0
	Ferns:	0
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	1
	Shrubs:	81.3
	Grasses etc.:	5.4
	Forbs:	0
	Ferns:	0
	Other:	0
High Threat Weed cover:		10.1

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	0	0	0
20 – 29 cm:	5	0	0
10 – 19 cm:	9	0	0
5 – 9 cm:	2	0	0
< 5 cm:	0	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	2		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	95	60	85	90	100	5	30	15	10	0	0	15	5	0	0	0	0	0	0	0
Average of the 5 subplots:	86					12					4					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Valley flat	**Lf Pattern (A)**	Plain	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)	Clay	**Soil Surface Texture**	Smooth soil covered by grass	**Soil Colour**	Orange-brown	**Soil Depth**	Shallow -moderate
Lithology (B)							
Slope	Slight upslope along midline (5°)	**Aspect**	182°S	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Severe	greater than 10yo	Adjacent to unsealed track and remains of building
Cultivation (inc. pasture):			
Soil erosion:			
Firewood / CWD removal:			
Grazing (identify native/stock):			
Fire damage:			
Storm damage:			
Weediness:	Severe	greater than 10yo	
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	X7						
		Date:	16-03-18	**Plot ID:**	1007	**Recorders:**	JA, ACM

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus camphora*	1	6		N	
Shrub (SG)	*Acacia pravissima*	80	1000		N	
Shrub (SG)	*Bursaria spinosa*	1	3		N	
	Rosa rubiginosa	0.1	2		HTE	
	Rubus fruticosus sp. agg.	6	12		HTE	
	Hypericum perforatum	4	200		HTE	
Grass & grasslike	*Carex incomitata*	1	21		N	
	Centaurium erythraea	0.1	50		E	
Grass & grasslike	*Rytidosperma penicillatum*	0.1	5		N	
Grass & grasslike	*Dichelachne spp.*	0.1	15		N	
Grass & grasslike	*Carex breviculmis*	0.1	50		N	
Grass & grasslike	*Lomandra spp.*	0.1	15		N	
Grass & grasslike	*Themeda triandra*	4	300		N	
Shrub (SG)	*Brachyloma daphnoides*	0.1	1		N	
Shrub (SG)	*Grevillea rosmarinifolia*	0.2	1		N	

BAM Site – Field Survey Form

Plot ID:	1015	**Date:**	15-03-18	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	AM, CK
Zone:	55	**Easting:**	628253.5021	**Plot dimensions:**	20m x 50m	**Midline bearing:**	105
Datum:	GDA94	**Northing:**	6038816.712	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	311: Red Stringybark - Broad-leaved Peppermint - Nortons Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion			**Confidence:**	High	**Photo #:**	
Vegetation Class:	Upper Riverina Dry Sclerophyll Forests			**EEC:**	No	**Confidence:**	High

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	15
	Grasses etc.:	6
	Forbs:	3
	Ferns:	0
	Other:	4
Sum of Cover of native vascular plants by growth form group	Trees:	32
	Shrubs:	94.3
	Grasses etc.:	9.2
	Forbs:	0.4
	Ferns:	0
	Other:	0.4
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	1	0	0
30 – 49 cm:	10	0	0
20 – 29 cm:	1	0	1
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	31		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	95	90	90	95	65	1	2	5	1	30	0	0	0	0	0	1	0	0	0	0
Average of the 5 subplots:	87					7.8					0					0.2				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Silty clay	**Soil Colour**	Light brown	**Soil Depth**	
Lithology (B)							
Slope	5	**Aspect**	NE	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Moderate	greater than 10yo	
Storm damage:			No evidence
Weediness:			no weeds
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine						
		Date:	15-03-18	**Plot ID:**	1015	**Recorders:**	AM, CK

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus dives*	15	10		N	
Tree (TG)	*Eucalyptus nortonii*	7	5		N	
Tree (TG)	*Eucalyptus macrorhyncha*	10	8		N	
Shrub (SG)	*Banksia canei*	30	200		N	
Shrub (SG)	*Mirbelia oxylobioides*	35	200		N	
Shrub (SG)	*Platylobium formosum*	22	80		N	
Shrub (SG)	*Pomaderris subcapitata*	0.5	10		N	
Shrub (SG)	*Podolobium procumbens*	1	30		N	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	2	100		N	
Other (OG)	*Hardenbergia violacea*	0.1	5		N	
Forb (FG)	*Dianella revoluta var. revoluta*	0.2	30		N	
Grass & grasslike	*Dichelachne rara*	0.1	10		N	
Grass & grasslike	*Rytidosperma pallidum*	1	30		N	
Shrub (SG)	*Tetratheca bauerifolia*	1	50		N	
Grass & grasslike	*Lomandra longifolia*	1	20		N	
Shrub (SG)	*Hibbertia obtusifolia*	0.2	10		N	
Forb (FG)	*Gonocarpus tetragynus*	0.1	20		N	
Other (OG)	*Billardiera scandens*	0.1	5		N	
Shrub (SG)	*Persoonia chamaepeuce*	0.1	5		N	
Forb (FG)	*Hovea heterophylla*	0.1	10		N	
Shrub (SG)	*Monotoca scoparia*	0.3	5		N	
Shrub (SG)	*Leucopogon virgatus*	0.1	10		N	
Grass & grasslike	*Poa sieberiana var. hirtella*	5	100		N	
Shrub (SG)	*Acacia pravissima*	3	20		N	
Shrub (SG)	*Cassinia longifolia*	0.5	5		N	
Shrub (SG)	*Choretrum pauciflorum*	0.2	3		N	
Shrub (SG)	*Leucopogon attenuatus*	0.2	5		N	
Shrub (SG)	*Correa lawrenceana var. rosea*	0.2	5		N	
Grass & grasslike	*Lepidosperma laterale*	0.1	2		N	
Other (OG)	*Cassytha pubescens*	0.1	10		N	
Other (OG)	*Glycine clandestina*	0.1	3		N	

BAM Site – Field Survey Form

Plot ID:	1018	**Date:**	20-03-18	**Survey Name:**	Lobs Hole	**Recorders:**	AM, CK
Zone:	55	**Easting:**	627137.3172	**Plot dimensions:**	20m x 50m	**Midline bearing:**	330
Datum:	GDA94	**Northing:**	6037934.516	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	302: Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion			**Confidence:**	High	**Photo #:**	
Vegetation Class:	Upper Riverina Dry Sclerophyll Forests			**EEC:**	No	**Confidence:**	High

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	8
	Grasses etc.:	7
	Forbs:	1
	Ferns:	0
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	47
	Shrubs:	6.2
	Grasses etc.:	61.4
	Forbs:	0.1
	Ferns:	0
	Other:	0
High Threat Weed cover:		25.5

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	1	0	0
30 – 49 cm:	1	0	0
20 – 29 cm:	1	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	54		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	93	85	70	80	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots:	79.6					0					0					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Valley flat	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Clay loam	**Soil Colour**		**Soil Depth**	
Lithology (B)							
Slope	2	**Aspect**	NW	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Moderate	greater than 10yo	Historical clearing
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Light	greater than 10yo	
Storm damage:			No evidence
Weediness:	Moderate		
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole						
		Date:	20-03-18	**Plot ID:**	1018	**Recorders:**	AM, CK

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus viminalis*	35	20		N	
Tree (TG)	*Acacia dealbata*	4	8		N	
Shrub (SG)	*Acacia pravissima*	3	10		N	
Tree (TG)	*Acacia melanoxylon*	8	6		N	
Shrub (SG)	*Cassinia longifolia*	1	3		N	
Shrub (SG)	*Gynatrix pulchella*	0.1	1		N	
Grass & grasslike	*Poa helmsii*	60	500		N	
	Rubus fruticosus sp. agg.	25	100		HTE	
Shrub (SG)	*Dodonaea viscosa subsp. angustissima*	0.1	2		N	
Grass & grasslike	*Dichelachne inaequiglumis*	0.2	50		N	
Shrub (SG)	*Exocarpos strictus*	0.2	3		N	
	Cirsium vulgare	0.2	30		E	
	Centaurium erythraea	0.1	20		E	
	Hypericum perforatum	0.2	20		HTE	
	Rosa rubiginosa	0.3	10		HTE	
Forb (FG)	*Geranium solanderi var. solanderi*	0.1	30		N	
Shrub (SG)	*Rubus parvifolius*	0.5	50		N	
Grass & grasslike	*Rytidosperma penicillatum*	0.1	30		N	
Grass & grasslike	*Anthosachne scabra*	0.2	50		N	
Shrub (SG)	*Melicytus dentatus*	0.5	2		N	
	Asparagus officinalis	0.3	3		E	
	Hypericum androsaemum	0.1	3		E	
Grass & grasslike	*Lachnagrostis filiformis*	0.5	50		N	
Shrub (SG)	*Cassinia aculeata*	0.8	2		N	
Grass & grasslike	*Microlaena stipoides var. stipoides*	0.1	10		N	
Grass & grasslike	*Carex incomitata*	0.3	30		N	

BAM Site – Field Survey Form

Plot ID:	1019	**Date:**	16-03-18	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	AM, CK
Zone:	55	**Easting:**	627362.9423	**Plot dimensions:**	20m x 50m	**Midline bearing:**	281
Datum:	GDA94	**Northing:**	6032066.195	**IBRA region:**	Australian Alps (Snowy Mountains)	**Zone ID:**	
Plant Community Type:	1196: Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion				**Confidence:**	High	**Photo #:**
Vegetation Class:	Subalpine Woodlands				**EEC:**	No	**Confidence:** High

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	10
	Grasses etc.:	5
	Forbs:	19
	Ferns:	0
	Other:	2
Sum of Cover of native vascular plants by growth form group	Trees:	65
	Shrubs:	13.4
	Grasses etc.:	62.7
	Forbs:	27.1
	Ferns:	0
	Other:	1.2
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	2	0	1
50 – 79 cm:	3	0	2
30 – 49 cm:	1	0	0
20 – 29 cm:	1	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	48		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	65	75	85	85	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots:	76					0					0					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Loam	**Soil Colour**		**Soil Depth**	
Lithology (B)							
Slope	3	**Aspect**	W	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Light	greater than 10yo	
Storm damage:			No evidence
Weediness:	Light		
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine						
		Date:	16-03-18	**Plot ID:**	1019	**Recorders:**	AM, CK

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus dalrympleana*	10	4		N	
Tree (TG)	*Eucalyptus pauciflora*	40	40		N	
Tree (TG)	*Acacia dealbata subsp. subalpina*	15	30		N	
Shrub (SG)	*Acacia obliquinervia*	3	20		N	
Shrub (SG)	*Cassinia aculeata*	3	10		N	
Shrub (SG)	*Lomatia myricoides*	3	10		N	
Shrub (SG)	*Platylobium formosum*	2	80		N	
Grass & grasslike	*Poa sieberiana var. sieberiana*	60	1000		N	
Shrub (SG)	*Acacia pravissima*	1	8		N	
Forb (FG)	*Asperula scoparia*	20	10000		N	
Other (OG)	*Glycine clandestina*	1	500		N	
Forb (FG)	*Geranium potentilloides*	0.1	50		N	
Other (OG)	*Clematis aristata*	0.2	100		N	
	Dactylis glomerata	0.5	30		E	
Forb (FG)	*Arthropodium milleflorum*	0.2	50		N	
Grass & grasslike	*Dichelachne hirtella*	0.2	100		N	
Forb (FG)	*Wahlenbergia stricta subsp. stricta*	0.1	50		N	
Forb (FG)	*Lobelia gibbosa*	0.1	10		N	
Forb (FG)	*Ranunculus lappaceus*	0.1	20		N	
Forb (FG)	*Coronidium monticola*	0.2	50		N	
Forb (FG)	*Acaena novae-zelandiae*	5	1000		N	
Forb (FG)	*Veronica calycina*	0.2	50		N	
Forb (FG)	*Picris angustifolia*	0.1	20		N	
	Trifolium repens	0.1	20		E	
Grass & grasslike	*Anthosachne scabra*	0.3	50		N	
Grass & grasslike	*Lomandra longifolia*	2	50		N	
Forb (FG)	*Stackhousia monogyna*	0.1	5		N	
Shrub (SG)	*Olearia erubescens*	0.1	2		N	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	0.2	30		N	
Forb (FG)	*Brachyscome spathulata*	0.1	30		N	
Forb (FG)	*Cullen microcephalum*	0.1	3		N	
Shrub (SG)	*Daviesia ulicifolia*	0.7	20		N	
Forb (FG)	*Viola betonicifolia*	0.1	100		N	
Forb (FG)	*Stellaria pungens*	0.2	200		N	
Shrub (SG)	*Coprosma hirtella*	0.3	10		N	
Forb (FG)	*Epilobium billardierianum subsp. Cinereum*	0.1	10		N	
Forb (FG)	*Senecio gunnii*	0.1	5		N	
Shrub (SG)	*Pimelea curviflora*	0.1	2		N	
Forb (FG)	*Dianella tasmanica*	0.1	5		N	
Forb (FG)	*Bulbine bulbosa*	0.1	20		N	
Shrub (SG)	*Leucopogon gelidus*	0.2	5		N	

BAM Site – Field Survey Form

Plot ID:	1043	**Date:**	15-03-18	**Survey Name:**	Talbingo	**Recorders:**	AMu, AMo
Zone:	55	**Easting:**	625081.4636	**Plot dimensions:**	20m x 50m	**Midline bearing:**	59
Datum:	GDA94	**Northing:**	6039931.079	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	1191: Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion			**Confidence:**	Medium	**Photo #:**	
Vegetation Class:	Subalpine Woodlands			**EEC:**	No	**Confidence:**	Medium

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	2
	Shrubs:	7
	Grasses etc.:	8
	Forbs:	10
	Ferns:	0
	Other:	1
Sum of Cover of native vascular plants by growth form group	Trees:	21
	Shrubs:	54.3
	Grasses etc.:	11.8
	Forbs:	1
	Ferns:	0
	Other:	0.1
High Threat Weed cover:		3.1

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	3	0	0
20 – 29 cm:	4	0	0
10 – 19 cm:	8	0	0
5 – 9 cm:	1	0	0
< 5 cm:	0	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	7		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	95	25	60	5	70	5	2	40	2	15	5	99	5	95	20	0	0	0	0	0
Average of the 5 subplots:	51					12.8					44.8					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Silty clay	**Soil Colour**	Light brown	**Soil Depth**	
Lithology (B)							
Slope	5-10 degrees	**Aspect**	North-east	**Site Drainage**		**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Severe	greater than 10yo	Relatively young regenerating trees
Cultivation (inc. pasture):			No evidence
Soil erosion:	Light	less than 3yo	Small areas of bare soil
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):	Light		
Fire damage:	Light	greater than 10yo	
Storm damage:			No evidence
Weediness:	Moderate		Exotic grasses and forbs
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Talbingo						
		Date:	15-03-18	**Plot ID:**	1043	**Recorders:**	AMu, AMo

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus rubida*	6	10		N	
Tree (TG)	*Eucalyptus pauciflora*	15	20		N	
Shrub (SG)	*Acacia pravissima*	50	100		N	
Shrub (SG)	*Cryptandra amara*	1	20		N	
Shrub (SG)	*Exocarpos strictus*	2	10		N	
Grass & grasslike	*Rytidosperma penicillatum*	5	500		N	
Shrub (SG)	*Gompholobium huegelii*	0.5	10		N	
	Hypericum perforatum	3	300		HTE	
	Trifolium arvense	0.1	50		E	
Forb (FG)	*Veronica calycina*	0.1	50		N	
	Petrorhagia nanteuilii	0.1	50		E	
	Centaurium erythraea	0.1	100		E	
Grass & grasslike	*Carex breviculmis*	0.2	50		N	
Shrub (SG)	*Hibbertia obtusifolia*	0.2	30		N	
	Aira elegantissima	1	1000		E	
Grass & grasslike	*Dichelachne rara*	0.3	100		N	
Forb (FG)	*Acaena ovina*	0.1	30		N	
Grass & grasslike	*Anthosachne scabra*	0.5	200		N	
Grass & grasslike	*Poa sieberiana var. cyanophylla*	5	500		N	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	0.2	40		N	
Forb (FG)	*Stellaria pungens*	0.1	100		N	
Forb (FG)	*Senecio quadridentatus*	0.1	5		N	
Forb (FG)	*Hypericum gramineum*	0.1	30		N	
Grass & grasslike	*Poa sieberiana var. hirtella*	0.5	50		N	
Forb (FG)	*Dichondra repens*	0.1	100		N	
Forb (FG)	*Daucus glochidiatus*	0.1	10		N	
Forb (FG)	*Gonocarpus tetragynus*	0.1	10		N	
Forb (FG)	*Euchiton japonicus*	0.1	5		N	
Other (OG)	*Glycine clandestina*	0.1	3		N	
Shrub (SG)	*Grevillea arenaria subsp. canescens*	0.4	5		N	
Grass & grasslike	*Luzula flaccida*	0.1	20		N	
Shrub (SG)	*Brachyloma daphnoides*	0.2	5		N	
Forb (FG)	*Stylidium graminifolium*	0.1	2		N	
	Vulpia bromoides	5	1000		E	
	Rosa rubiginosa	0.1	1		HTE	

BAM Site – Field Survey Form

Plot ID:	2084	**Date:**	31-01-19	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	SW, KM
Zone:	55	**Easting:**	625304.0394	**Plot dimensions:**	20m x 50m	**Midline bearing:**	155
Datum:	GDA94	**Northing:**	6039603.223	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	729: Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion			**Confidence:**	High	**Photo #:**	
Vegetation Class:	Southern Tableland Dry Sclerophyll Forests			**EEC:**	No	**Confidence:**	Medium

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	8
	Grasses etc.:	8
	Forbs:	2
	Ferns:	1
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	50
	Shrubs:	146
	Grasses etc.:	24
	Forbs:	3
	Ferns:	1
	Other:	0
High Threat Weed cover:		5

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	2	0	0
20 – 29 cm:	1	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	0	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	111		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	25	15	5	20	70	10	10	10	5	5	15	1	1	1	0	5	2	3	3	1
Average of the 5 subplots:	27					8					3.6					2.8				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Low hills	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Medium grained	**Soil Colour**	Dark orange-brown	**Soil Depth**	At least 30cm
Lithology (B)							
Slope	10	**Aspect**	W	**Site Drainage**	Good drainage	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Moderate	3 to 10 yo	Eucalyptus trunks show old burn marks, some conifers completly burnt
Storm damage:	Light	less than 3yo	Broken Eucalyptus branch, high winds recorded during previous two days
Weediness:	Moderate	less than 3yo	St Johns Wort present in plot
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine						
		Date:	31-01-19	**Plot ID:**	2084	**Recorders:**	SW, KM

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus rubida*	20	4		N	
Tree (TG)	*Eucalyptus dives*	25	8		N	
Shrub (SG)	*Bursaria spinosa*	2	3		N	
Shrub (SG)	*Grevillea arenaria subsp. canescens*	30	60		N	
Shrub (SG)	*Calytrix tetragona*	40	100		N	
Shrub (SG)	*Brachyloma daphnoides*	10	20		N	
Grass & grasslike	*Themeda triandra*	5	50		N	
	Hypericum perforatum	5	100		HTE	
Grass & grasslike	*Lomandra filiformis*	4	150		N	
Grass & grasslike	*Dichelachne micrantha*	4	50		N	
Forb (FG)	*Oxalis perennans*	1	10		N	
	Centaurium erythraea	1	20		E	
Shrub (SG)	*Tetratheca thymifolia*	1	30		N	
Grass & grasslike	*Poa sieberiana*	1	50		N	
Grass & grasslike	*Lomandra longifolia*	5	10		N	
Shrub (SG)	*Dillwynia sericea*	1	15		N	
Grass & grasslike	*Carex appressa*	1	5		N	
Grass & grasslike	*Rytidosperma spp.*	2	50		N	
Grass & grasslike	*Dichelachne hirtella*	2	10		N	
Fern (EG)	*Cheilanthes sieberi*	1	30		N	
Forb (FG)	*Galium gaudichaudii*	2	30		N	
	Trifolium arvense	1	1		E	
Shrub (SG)	*Leucopogon attenuatus*	60	1000		N	
Tree (TG)	*Eucalyptus mannifera*	5	1		N	
Shrub (SG)	*Acacia saliciformis*	2	1		N	

BAM Site – Field Survey Form

Plot ID:	2119	**Date:**	31-01-19	**Survey Name:**	Lower Lobs Hole Ravine Road	**Recorders:**	SW, KM
Zone:	55	**Easting:**	626681.907	**Plot dimensions:**	20m x 50m	**Midline bearing:**	350
Datum:	GDA94	**Northing:**	6036779.516	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	

Plant Community Type:	300: Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	**Confidence:**	High	**Photo #:**	
Vegetation Class:	Southern Tableland Wet Sclerophyll Forests	**EEC:**	No	**Confidence:**	Medium

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	2
	Shrubs:	3
	Grasses etc.:	6
	Forbs:	8
	Ferns:	0
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	65
	Shrubs:	41
	Grasses etc.:	107
	Forbs:	16
	Ferns:	0
	Other:	0
High Threat Weed cover:		15

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	1	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	0	0	0
20 – 29 cm:	0	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	0	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	3		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	2	80	15	20	10	1	2	20	10	0	0	1	1	0	0	0	1	2	3	0
Average of the 5 subplots:	25.4					6.6					0.4					1.2				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Hills	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)	Alluvial loams and clays	**Soil Surface Texture**	Fine grained	**Soil Colour**	Pale light brown	**Soil Depth**	At least 50cm
Lithology (B)							
Slope	30	**Aspect**	N	**Site Drainage**	Good drainage	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Moderate	greater than 10yo	Some burnt trunks
Storm damage:			No evidence
Weediness:	Severe	less than 3yo	St Johns Wort and Blackberry present within plot
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lower Lobs Hole Ravine Road						
		Date:	31-01-19	**Plot ID:**	2119	**Recorders:**	SW, KM

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus viminalis*	10	5		N	
Tree (TG)	*Acacia dealbata subsp. dealbata*	55	60		N	
Shrub (SG)	*Exocarpos strictus*	35	100		N	
	Rubus anglocandicans	25	30		E	
	Rosa rubiginosa	10	15		HTE	
Shrub (SG)	*Pultenaea fasciculata*	5	50		N	
Forb (FG)	*Chrysocephalum semipapposum*	2	200		N	
	Hypericum perforatum	5	500		HTE	
Grass & grasslike	*Rytidosperma erianthum*	60	3000		N	
Forb (FG)	*Wahlenbergia communis*	2	100		N	
Forb (FG)	*Picris angustifolia*	1	20		N	
Grass & grasslike	*Dichelachne rara*	30	1000		N	
	Verbascum virgatum	1	30		E	
Forb (FG)	*Geranium solanderi*	5	100		N	
	Tragopogon dubius	3	10		E	
	Centaurium erythraea	4	100		E	
Forb (FG)	*Oxalis spp.*	1	200		N	
	Trifolium arvense	5	50		E	
	Conyza spp.	2	10		E	
	Petrorhagia nanteuilii	1	20		E	
Grass & grasslike	*Themeda triandra*	4	100		N	
Forb (FG)	*Oxalis perennans*	2	200		N	
Forb (FG)	*Acaena ovina*	2	50		N	
Grass & grasslike	*Microlaena stipoides*	5	300		N	
Forb (FG)	*Galium gaudichaudii*	1	50		N	
Grass & grasslike	*Panicum effusum*	3	100		N	
Shrub (SG)	*Cassinia aculeata*	1	1		N	
Grass & grasslike	*Poa induta*	5	20		N	

BAM Site – Field Survey Form

Plot ID:	2166	**Date:**	15-11-18	**Survey Name:**	Marica Firetrail	**Recorders:**	JS, SW
Zone:	55	**Easting:**	630057.8919	**Plot dimensions:**	20m x 50m	**Midline bearing:**	196
Datum:	GDA94	**Northing:**	6039371.587	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	953: Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion			**Confidence:**	Medium	**Photo #:**	
Vegetation Class:	Southern Tableland Dry Sclerophyll Forests			**EEC:**	No	**Confidence:**	Medium

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	17
	Grasses etc.:	6
	Forbs:	12
	Ferns:	0
	Other:	2
Sum of Cover of native vascular plants by growth form group	Trees:	19.2
	Shrubs:	18.1
	Grasses etc.:	7.1
	Forbs:	1.9
	Ferns:	0
	Other:	0.5
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	1	0	1
50 – 79 cm:	2	0	2
30 – 49 cm:	8	0	0
20 – 29 cm:	1	0	1
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	66		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	90	80	95	90	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots:	88					0					0					0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Mountains	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Loam	**Soil Colour**	Brown	**Soil Depth**	At least 50mm
Lithology (B)							
Slope	20	**Aspect**	WNW	**Site Drainage**	Good	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Light	greater than 10yo	
Storm damage:			No evidence
Weediness:			No evidence
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Marica Firetrail					
		Date:	15-11-18	**Plot ID:**	2166	**Recorders:**	JS, SW

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus dives*	15	30		N	
Tree (TG)	*Eucalyptus macrorhyncha*	4	7		N	
Shrub (SG)	*Daviesia latifolia*	8	500		N	
Shrub (SG)	*Platylobium formosum*	1	100		N	
Shrub (SG)	*Leucopogon fletcheri subsp. brevisepalus*	5	500		N	
Shrub (SG)	*Monotoca scoparia*	1	50		N	
Grass & grasslike	*Lomandra multiflora subsp. multiflora*	0.4	100		N	
Grass & grasslike	*Lomandra filiformis subsp. coriacea*	0.4	500		N	
Forb (FG)	*Dianella revoluta*	0.3	100		N	
Grass & grasslike	*Poa sieberiana var. sieberiana*	3	500		N	
Grass & grasslike	*Poa sieberiana var. cyanophylla*	3	500		N	
Shrub (SG)	*Pimelea linifolia subsp. linifolia*	0.2	20		N	
Shrub (SG)	*Persoonia chamaepeuce*	0.1	5		N	
Other (OG)	*Cassytha pubescens*	0.4	100		N	
Shrub (SG)	*Tetratheca bauerifolia*	0.5	500		N	
Forb (FG)	*Gonocarpus tetragynus*	0.5	500		N	
Forb (FG)	*Stylidium graminifolium*	0.2	50		N	
Shrub (SG)	*Leucopogon virgatus*	0.7	100		N	
Shrub (SG)	*Hibbertia obtusifolia*	0.3	50		N	
Forb (FG)	*Brachyscome aculeata*	0.1	20		N	
Forb (FG)	*Craspedia jamesii*	0.1	7		N	
Forb (FG)	*Calochilus robertsonii*	0.1	1		N	
Other (OG)	*Hardenbergia violacea*	0.1	1		N	
Forb (FG)	*Hovea heterophylla*	0.1	4		N	
Shrub (SG)	*Omphacomeria acerba*	0.1	7		N	
Forb (FG)	*Pterostylis longifolia*	0.1	3		N	
Shrub (SG)	*Astrotricha ledifolia*	0.1	4		N	
Shrub (SG)	*Daviesia ulicifolia subsp. ruscifolia*	0.1	1		N	
Grass & grasslike	*Rytidosperma pallidum*	0.2	20		N	
Shrub (SG)	*Grevillea neurophylla*	0.2	20		N	
Forb (FG)	*Stackhousia monogyna*	0.1	5		N	
Grass & grasslike	*Lomandra longifolia*	0.1	20		N	
Forb (FG)	*Senecio gunnii*	0.1	1		N	
Shrub (SG)	*Acacia falciformis*	0.3	10		N	
Tree (TG)	*Eucalyptus dalrympleana subsp. dalrympleana*	0.2	2		N	
Forb (FG)	*Caladenia congesta*	0.1	3		N	
Shrub (SG)	*Dillwynia phylicoides*	0.2	1		N	
Forb (FG)	*Thelymitra pauciflora*	0.1	1		N	
Shrub (SG)	*Mirbelia oxylobioides*	0.2	7		N	
Shrub (SG)	*Acrotriche serrulata*	0.1	2		N	

BAM Site – Field Survey Form

Plot ID:	3005	**Date:**	03-02-19	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	SW, KM
Zone:	55	**Easting:**	624666.8469	**Plot dimensions:**	20m x 50m	**Midline bearing:**	125
Datum:	GDA94	**Northing:**	6040619.943	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	729: Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion			**Confidence:**	High	**Photo #:**	
Vegetation Class:	Southern Tableland Dry Sclerophyll Forests			**EEC:**	No	**Confidence:**	Medium

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	2
	Shrubs:	13
	Grasses etc.:	2
	Forbs:	3
	Ferns:	0
	Other:	1
Sum of Cover of native vascular plants by growth form group	Trees:	58
	Shrubs:	182
	Grasses etc.:	40
	Forbs:	6
	Ferns:	0
	Other:	4
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	0	0	0
20 – 29 cm:	1	0	0
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	6		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	30	25	25	20	60	3	3	5	2	1	1	0	1	1	1	0	0	0	5	2
Average of the 5 subplots:	32					2.8					0.8					1.4				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Hills	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Medium-course grained	**Soil Colour**	Deep brown-mauve	**Soil Depth**	At least 30cm
Lithology (B)							
Slope	40	**Aspect**	S	**Site Drainage**	Good drainage	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):			No evidence
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Light	greater than 10yo	Some burnt trunks and stumps
Storm damage:	Moderate	less than 3yo	At least 2 fallen Eucalytus trees
Weediness:			No evidence
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, …, 1, 2, 3, …, 10, 15, 20, 25, …100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, …, 10, 20, 30, … 100, 200, …, 1000, …

Survey Name:	Lobs Hole Ravine						
		Date:	03-02-19	**Plot ID:**	3005	**Recorders:**	SW, KM

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus dives*	55	30	No	N	
Tree (TG)	*Eucalyptus mannifera*	3	1	No	N	
Shrub (SG)	*Leucopogon attenuatus*	80	1000	No	N	
Shrub (SG)	*Leucopogon virgatus*	20	200	No	N	
Shrub (SG)	*Grevillea arenaria subsp. Canescens*	10	10	No	N	
Shrub (SG)	*Kunzea muelleri*	40	1000	No	N	
Grass & grasslike	*Poa sieberiana*	20	500	No	N	
Shrub (SG)	*Dodonaea viscosa subsp. Angustissima*	5	50	No	N	
Shrub (SG)	*Epacris celata*	5	100	No	N	
Shrub (SG)	*Tetratheca thymifolia*	2	200	No	N	
Forb (FG)	*Gonocarpus tetragynus*	2	200	No	N	
Shrub (SG)	*Pimelea linifolia subsp. linifolia*	3	50	No	N	
Shrub (SG)	*Acacia pravissima*	5	10	No	N	
Shrub (SG)	*Hibbertia obtusifolia*	5	20	No	N	
Grass & grasslike	*Poa sieberiana var. cyanophylla*	20	300	No	N	
Other (OG)	*Cassytha pubescens*	4	10	No	N	
Forb (FG)	*Stellaria pungens*	1	20	No	N	
Forb (FG)	*Stylidium graminifolium*	3	20	No	N	
Shrub (SG)	*Acacia gunnii*	3	10	No	N	
Shrub (SG)	*Brachyloma daphnoides*	3	30	No	N	
Shrub (SG)	*Bursaria spinosa*	1	1	No	N	

BAM Site – Field Survey Form

Plot ID:	3076	**Date:**	05-02-19	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	SW, KM
Zone:	55	**Easting:**	626305.6539	**Plot dimensions:**	20m x 50m	**Midline bearing:**	250
Datum:	GDA94	**Northing:**	6039139.16	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	

Plant Community Type:	296: Brittle Gum - peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	**Confidence:**	High	**Photo #:**	
Vegetation Class:	Southern Tableland Dry Sclerophyll Forests	**EEC:**	No	**Confidence:**	Medium

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	16
	Grasses etc.:	5
	Forbs:	5
	Ferns:	0
	Other:	2
Sum of Cover of native vascular plants by growth form group	Trees:	54
	Shrubs:	184
	Grasses etc.:	41
	Forbs:	8
	Ferns:	0
	Other:	7
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	5	0	0
20 – 29 cm:	1	0	1
10 – 19 cm:	1	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	22		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	85	90	90	85	80	5	5	10	5	5	1	0	2	1	2	0	0	0	1	0
Average of the 5 subplots:	86					6					1.2					0.2				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Footslope	**Lf Pattern (A)**	Low hills	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)		**Soil Surface Texture**	Medium-fine grained	**Soil Colour**	Dark orange-brown	**Soil Depth**	At least 30cm
Lithology (B)							
Slope	<5	**Aspect**	275	**Site Drainage**	Moderate drainage	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Moderate	less than 3yo	Plot adjacent to road
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):			No evidence
Fire damage:	Moderate	greater than 10yo	Some trees have burn marks from trunk to crown
Storm damage:	Severe	3 to 10 yo	At least 7 fallen Eucalyptus or Banksia, most leaves browned off
Weediness:			No evidence
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine						
		Date:	05-02-19	**Plot ID:**	3076	**Recorders:**	SW, KM

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus dives*	40	12	No	N	
Tree (TG)	*Eucalyptus mannifera*	10	3	No	N	
Shrub (SG)	*Acacia pravissima*	20	50	No	N	
Shrub (SG)	*Epacris celata*	15	50	No	N	
Shrub (SG)	*Acacia saliciformis*	10	20	No	N	
Shrub (SG)	*Daviesia ulicifolia*	10	50	No	N	
Shrub (SG)	*Banksia canei*	60	200	No	N	
Grass & grasslike	*Lomandra longifolia*	10	50	No	N	
	Polypogon spp.	10	50	No	E	
Shrub (SG)	*Hibbertia linearis*	5	100	No	N	
Forb (FG)	*Gonocarpus tetragynus*	1	200	No	N	
Forb (FG)	*Stellaria pungens*	4	100	No	N	
Shrub (SG)	*Brachyloma daphnoides*	10	50	No	N	
Grass & grasslike	*Lomandra filiformis*	5	50	No	N	
Grass & grasslike	*Poa spp.*	20	200	No	N	
Shrub (SG)	*Acacia gunnii*	1	20	No	N	
Shrub (SG)	*Tetratheca thymifolia*	1	300	No	N	
Grass & grasslike	*Carex appressa*	1	10	No	N	
Tree (TG)	*Acacia dealbata*	4	5	No	N	
Grass & grasslike	*Entolasia stricta*	5	20	No	N	
Shrub (SG)	*Leucopogon ericoides*	3	50	No	N	
Shrub (SG)	*Leucopogon virgatus*	3	40	No	N	
Forb (FG)	*Brachyscome decipiens*	1	1	No	N	
Shrub (SG)	*Pimelea linifolia*	5	50	No	N	
Shrub (SG)	*Mirbelia oxylobioides*	31	100	No	N	
Other (OG)	*Cassytha spp.*	5	20	No	N	
Forb (FG)	*Senecio quadridentatus*	1	1	No	N	
Shrub (SG)	*Exocarpos strictus*	5	10	No	N	
Other (OG)	*Billardiera scandens*	2	1	No	N	
Forb (FG)	*Boronia nana var. hyssopifolia*	1	1	No	N	
Shrub (SG)	*Monotoca scoparia*	3	20	No	N	
Shrub (SG)	*Hovea montana*	2	10	No	N	

BAM Site – Field Survey Form

Plot ID:	3177	**Date:**	04-02-19	**Survey Name:**	Lobs Hole Ravine	**Recorders:**	SW, KM
Zone:	55	**Easting:**	625074.1738	**Plot dimensions:**	20m x 50m	**Midline bearing:**	318
Datum:	GDA94	**Northing:**	6040197.698	**IBRA region:**	South Eastern Highlands (Bondo)	**Zone ID:**	
Plant Community Type:	729: Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion			**Confidence:**	High	**Photo #:**	
Vegetation Class:	Southern Tableland Dry Sclerophyll Forests			**EEC:**	No	**Confidence:**	Medium

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	7
	Grasses etc.:	7
	Forbs:	7
	Ferns:	0
	Other:	1
Sum of Cover of native vascular plants by growth form group	Trees:	13
	Shrubs:	181
	Grasses etc.:	95
	Forbs:	22
	Ferns:	0
	Other:	1
High Threat Weed cover:		3

BAM Attribute (1000 m2 plot) DBH			
DBH	Stem count (euc)	Stem count (non-euc)	Stems with Hollows
80 + cm:	0	0	0
50 – 79 cm:	0	0	0
30 – 49 cm:	0	0	0
20 – 29 cm:	0	0	0
10 – 19 cm:	0	0	0
5 – 9 cm:	1	0	0
< 5 cm:	1	0	0
Length of logs (m) (≥10 cm diameter, >50 cm in length)	0		

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each):	10	10	5	20	20	3	0	25	10	25	5	0	0	5	0	0	0	0	5	3
Average of the 5 subplots:	13					12.6					2					1.6				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		**Lf Element (A)**	Hillslope	**Lf Pattern (A)**	Low hills	**Microrelief**	
		Lf Element (B)		**Lf Pattern (B)**			
Lithology (A)	Alluvial loams and clays	**Soil Surface Texture**	Medium-fine grained	**Soil Colour**	Dark brown	**Soil Depth**	At least 30cm
Lithology (B)							
Slope	20	**Aspect**	NW	**Site Drainage**	Good drainage	**Distance to nearest water & type**	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging):	Severe	3 to 10 yo	Derived grassland under power easement. Close to boatramp in Lobs Hole, extensive clearing in surrounding ar
Cultivation (inc. pasture):			No evidence
Soil erosion:			No evidence
Firewood / CWD removal:			No evidence
Grazing (identify native/stock):	Light	less than 3yo	Rabbit scats present
Fire damage:	Light	3 to 10 yo	Some burnt logs present
Storm damage:			No evidence
Weediness:	Severe	less than 3yo	Blackberry, St Johns Wort and Centorium erthyum present in plot
Other:			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Survey Name:	Lobs Hole Ravine						
		Date:	04-02-19	**Plot ID:**	3177	**Recorders:**	SW, KM

GF Code	***Top 3 native species in each growth form group: Full species name mandatory*** ***All other native and exotic species: Full species name where practicable***	Cover	Abund	Voucher	N, E or HTE	Stratum
Tree (TG)	*Eucalyptus rubida*	10	5	No	N	
Shrub (SG)	*Bursaria spinosa*	40	30	No	N	
Shrub (SG)	*Acacia pravissima*	50	100	No	N	
Tree (TG)	*Callitris endlicheri*	1	1	No	N	
Shrub (SG)	*Bossiaea foliosa*	70	300	No	N	
Grass & grasslike	*Themeda triandra*	50	2000	No	N	
Shrub (SG)	*Brachyloma daphnoides*	10	50	No	N	
Shrub (SG)	*Pimelea linifolia*	5	200	No	N	
Forb (FG)	*Pimelea curviflora var. sericea*	2	50	No	N	
	Hypericum perforatum	1	200	No	HTE	
Grass & grasslike	*Carex appressa*	5	20	No	N	
Other (OG)	*Glycine clandestina*	1	1	No	N	
Grass & grasslike	*Rytidosperma spp.*	2	50	No	N	
Forb (FG)	*Gonocarpus tetragynus*	2	200	No	N	
Forb (FG)	*Ranunculus lappaceus*	3	50	No	N	
	Centaurium erythraea	10	200	No	E	
Grass & grasslike	*Dichelachne rara*	10	200	No	N	
	Taraxacum officinale	1	1	No	E	
Forb (FG)	*Oxalis perennans*	5	100	No	N	
Grass & grasslike	*Anthosachne scabra*	1	20	No	N	
Shrub (SG)	*Tetratheca thymifolia*	1	20	No	N	
	Rosa rubiginosa	2	1	No	HTE	
	Rubus anglocandicans	20	50	No	E	
Grass & grasslike	*Poa sieberiana*	25	500	No	N	
Forb (FG)	*Acaena ovina*	5	200	No	N	
Grass & grasslike	*Lomandra multiflora subsp. Multiflora*	2	10	No	N	
Tree (TG)	*Eucalyptus robertsonii*	2	1	No	N	
Forb (FG)	*Chrysocephalum semipapposum*	1	50	No	N	
Forb (FG)	*Ranunculus collinus*	4	20	No	N	
	Centaurium erythraea	3	50	No	E	
Shrub (SG)	*Exocarpos strictus*	5	5	No	N	

Appendix B

Vegetation integrity assessment – plot data

Table B.1 Vegetation integrity plot data

plot	zone	easting	northing	bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowtrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
190	55	627370	6044578	300	3	11	5	6	1	2	20.0	29.3	2.5	0.9	0.1	0.6	1	2	88.0	4490.0	0	0	0	0	1	0	0.0
3076	55	626306	6039139	250	3	16	5	5	0	2	54.0	184.0	41.0	8.0	0.0	7.0	0	1	86.0	22.0	1	1	1	1	0	1	0.0
76	55	625308	6039767	160	3	13	10	18	0	3	30.7	21.2	6.3	9.3	0.0	0.3	0	1	42.0	28.0	0	0	0	1	1	0	0.2
192	55	627959	6045557	160	3	13	5	12	0	3	25.5	38.8	16.5	2.4	0.0	0.4	1	5	87.0	30.0	0	0	0	0	1	0	0.0
2119	55	626682	6036780	350	2	3	6	8	0	0	65.0	41.0	107.0	16.0	0.0	0.0	1	0	25.4	3.0	0	1	0	0	0	1	15.0
194	55	625172	6036524	180	5	16	12	21	1	3	48.3	53.4	27.2	3.6	25.0	0.4	0	4	83.0	111.0	1	1	1	1	1	0	7.1
1018	55	627137	6037935	330	3	8	7	1	0	0	47.0	6.2	61.4	0.1	0.0	0.0	1	0	79.6	54.0	1	1	1	1	1	1	25.5
97	55	627961	6038787	20	2	14	8	4	0	0	30.0	43.6	14.6	0.4	0.0	0.0	2	2	90.0	65.0	1	1	1	1	1	1	75.5
88	55	625982	6039029	204	0	0	3	3	0	1	0.0	0.0	62.1	0.3	0.0	0.1	0	0	13.0	0.0	1	1	0	0	0	1	21.1
108	55	626424	6038732	308	3	6	6	5	0	0	43.0	65.6	21.4	0.6	0.0	0.0	1	1	69.0	23.0	1	1	1	1	0	1	7.2
143	55	627654	6038149	20	2	13	5	7	1	1	35.0	132.7	20.5	0.8	0.6	0.1	1	0	50.0	12.0	1	1	1	1	1	1	16.3
1007	55	626075	6038950	182	1	4	6	0	0	0	1.0	81.3	5.4	0.0	0.0	0.0	0	0	86.0	2.0	1	1	1	0	0	0	10.1
201	55	643222	6048793	148	1	2	5	20	0	0	2.0	0.5	53.6	2.5	0.0	0.0	0	0	13.0	0.0	1	0	0	0	0	1	0.1
1015	55	628254	6038817	105	3	15	6	3	0	4	32.0	94.3	9.2	0.4	0.0	0.4	1	1	87.0	31.0	1	1	1	1	1	1	0.0
173	55	627163	6033834	84	3	4	0	2	1	0	4.0	8.2	0.0	0.2	1.0	0.0	0	0	22.0	17.0	1	0	1	0	0	1	0.1
3177	55	625074	6040198	318	3	7	7	7	0	1	13.0	181.0	95.0	22.0	0.0	1.0	0	0	13.0	0.0	1	0	0	0	0	1	3.0
2084	55	625304	6039603	155	3	8	8	2	1	0	50.0	146.0	24.0	3.0	1.0	0.0	0	0	27.0	111.0	1	1	1	1	0	0	5.0
3005	55	624667	6040620	125	2	13	2	3	0	1	58.0	182.0	40.0	6.0	0.0	4.0	0	0	32.0	6.0	1	1	1	0	0	1	0.0

Table B.1 Vegetation integrity plot data

plot	zone	easting	northing	bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowtrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
188	55	627887	6038243	190	1	13	4	5	0	1	35.0	119.0	10.2	1.4	0.0	0.2	0	4	79.0	48.0	1	1	1	1	0	1	0.0
218	55	625998	6038194	318	2	14	5	9	1	1	0.2	85.6	3.6	3.3	0.2	1.0	0	0	20.0	0.0	1	1	0	0	0	1	0.5
1043	55	625081	6039931	59	2	7	8	10	0	1	21.0	54.3	11.8	1.0	0.0	0.1	0	0	51.0	7.0	1	1	1	1	0	0	3.1
1019	55	627363	6032066	281	3	10	5	19	0	2	65.0	13.4	62.7	27.1	0.0	1.2	5	3	76.0	48.0	1	1	1	1	1	1	0.0
164	55	649063	6037391	117	1	3	8	5	0	0	2.0	27.2	23.5	2.1	0.0	0.0	0	0	9.0	0.0	1	1	1	0	0	1	0.7
2166	55	630058	6039372	196	3	17	6	12	0	2	19.2	18.1	7.1	1.9	0.0	0.5	3	4	88.0	66.0	1	1	1	1	1	1	0.0

Appendix C

Fauna survey effort summary

Table C.1 Fauna survey effort

Survey type	Site name	Location	Surveyors	Start date	End date	Start time	End time	Total effort
Bird surveys	Lobs Hole Ravine		LH	05-12-17	05-12-17	9:40	10:40	1:00
Bird surveys	Lobs Hole Ravine		GM	05-12-17	05-12-17	9:50	10:50	1:00
Bird surveys	Wallace Creek		GM & LH	05-12-17	05-12-17	12:15	13:15	1:00
Bird surveys	Lobs Hole		DJ & AR	21-01-18	21-01-18	14:40	15:40	1:00
Bird surveys	Lobs Hole		DJ & AR	21-01-18	21-01-18	16:40	17:40	1:00
Bird surveys	Lobs Hole Ravine		GM & CK	07-02-18	07-02-18	7:25	8:25	1:00
Bird surveys	Lobs Hole Ravine		GM & CK	07-02-18	07-02-18	9:45	10:45	1:00
Bird surveys	Talbingo	BS1	GD & DK	16-10-18	16-10-18	8:08	9:08	1:00
Bird surveys	Talbingo	BS2	GD & DK	16-10-18	16-10-18	9:36	10:37	1:01
Bird surveys	Talbingo	BS3	GD & DK	16-10-18	16-10-18	10:48	11:48	1:00
Bird surveys	Talbingo	BS4	GD & DK	16-10-18	16-10-18	12:44	13:44	1:00
Bird surveys	Talbingo	BS5	GD & DK	16-10-18	16-10-18	13:52	14:52	1:00
Bird surveys	Lobs Hole Ravine rd	BS13	CK, BR	04-11-18	04-11-18	13:16	14:20	1:04
Bird surveys	Lobs Hole Ravine rd	BS14	BR, CK, JB	05-11-18	05-11-18	10:45	13:39	2:54
Bird surveys	Lobs Hole Ravine rd	BS10	JB, DJ	29-11-18	29-11-18	10:55	11:40	0:45
Bird surveys	Lobs Hole Ravine rd	BS11	JB, DJ	29-11-18	29-11-18	8:26	9:30	1:04
Bird surveys	Lobs Hole Ravine rd	BS12	JB, DJ	29-11-18	29-11-18	9:40	10:29	0:49
Bird surveys	Lobs Hole Ravine rd	BS13	JB, DJ	29-11-18	29-11-18	14:11	15:34	1:23
Bird surveys	Lobs Hole Ravine rd	BS11	EL, AR	15-01-19	15-01-19	17:40	19:00	1:20
Bird surveys	Lobs Hole Ravine rd	BS12	AS, BR	15-01-19	15-01-19	17:45	18:45	1:00
Bird surveys	Lobs Hole Ravine rd	BS9	EL, AR	16-01-19	16-01-19	12:18	13:20	1:02
Bird surveys	Lobs Hole Ravine rd	BS10	AS, BR	16-01-19	16-01-19	12:30	13:45	1:15
Bird surveys	Lobs Hole Ravine rd	BS13	BR, AS	16-01-19	16-01-19	9:07	11:07	2:00
Bird surveys	Lobs Hole Ravine rd	BS14	EL, AR	16-01-19	16-01-19	9:21	11:25	2:04

Table C.1 Fauna survey effort

Survey type	Site name	Location	Surveyors	Start date	End date	Start time	End time	Total effort
Bird surveys	Lobs Hole Ravine rd	BS14	CK, IC	20-01-19	20-01-19	14:20	15:40	1:20
Bird surveys	Lobs Hole Ravine rd	BS11	JW, GS	05-02-19	05-02-19	17:01	17:37	0:36
Bird surveys	Lobs Hole Ravine rd	BS12	JW, GS	05-02-19	05-02-19	16:11	16:55	0:44
Bird surveys	Lobs Hole Ravine rd	BS10	JB, DF	14-02-19	14-02-19	13:52	14:52	1:00
Bird surveys	Lobs Hole Ravine rd	BS27	CW, DK	12-04-19	12-04-19	10:50	11:50	1:00
Owl surveys	Lobs Hole Ravine	LHRR1	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR2	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR3	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR4	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR5	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR6	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR7	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR8	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR9	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR10	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR11	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR12	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR13	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR14	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR15	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR16	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR17	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR18	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR19	JB & DK	07-05-18	20-06-19			8

Table C.1 Fauna survey effort

Survey type	Site name	Location	Surveyors	Start date	End date	Start time	End time	Total effort
Owl surveys	Lobs Hole Ravine	LHRR20	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR21	JB & DK	07-05-18	20-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR22	JB & DK	16-06-19	26-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR23	JB & DK	16-06-19	26-06-19			8
Owl surveys	Lobs Hole Ravine	LHRR24	JB & DK	16-06-19	26-06-19			8
Arboreal trapping	Lobs Hole Ravine	TA02	GM & LH	04-12-17	08-12-17			4
Arboreal trapping	Lobs Hole	TAT01	NG & ED	12-12-17	16-12-17			4
Arboreal trapping	Talbingo Reservoir (south of boat ramp)	TAT02	SW, DJ & KS	17-03-18	22-03-18			4
Arboreal trapping	Lobs Hole Ravine Road	TAT06	NG & ED	12-12-17	16-12-17			4
Arboreal trapping	Yarrangobilly River	TAT08	SW, DJ & KS	17-03-18	22-03-18			4
Arboreal trapping	Link Rd	TAT09	SW, DJ & KS	17-03-18	22-03-18			4
Arboreal trapping	Lobs Hole Ravine rd	TT-10	CK, GM	14-10-18	18-10-18			4
Arboreal trapping	Lobs Hole Ravine rd	TT-11	CK, GM	14-10-18	18-10-18			4
Arboreal trapping	Lobs Hole Ravine rd	TT-12	CK, GM	14-10-18	18-10-18			4
Arboreal trapping	Lobs Hole Ravine rd	TT-5	DJ, KS	12-10-18	16-10-18			4
Arboreal trapping	Lobs Hole Ravine rd	TT-6	DJ, KS	12-10-18	16-10-18			4
Arboreal trapping	Lobs Hole Ravine rd	TT-7	DJ, KS	12-10-18	16-10-18			4
Arboreal trapping	Lobs Hole Ravine rd	TT-8	DJ, KS	12-10-18	16-10-18			4
Arboreal trapping	Lobs Hole Ravine rd	TT-9	JB, AS	16-03-19	20-03-19			4
Arboreal trapping	Talbingo Intake	TAT07	SW, DJ & KS	17-03-18	22-03-18			4
Arboreal trapping	Lobs Hole Ravine, Wallaces creek	TT-53	DK, CW	09-04-19	13-04-19			4
Arboreal trapping	Lobs Hole Ravine	TT-55	DK, CW	09-04-19	13-04-19			4

Table C.1 Fauna survey effort

Survey type	Site name	Location	Surveyors	Start date	End date	Start time	End time	Total effort
Arboreal trapping	Lobs Hole Ravine	TT-57	DK, CW	09-04-19	13-04-19			4
Arboreal trapping	Lobs Hole Ravine	TT-58	DK, CW	10-04-19	14-04-19			4
Spotlighting	Wallace Creek		GM & LH	13-12-17	13-12-17	21:00	23:00	2:00
Spotlighting	Yarrangobilly River		GM & LH	13-12-17	14-12-17	23:50	1:50	2:00
Spotlighting	Lobs Hole Ravine		GM & LH	14-12-17	14-12-17	2:30	4:30	2:00
Spotlighting	Lobs Hole Ravine		GM & LH	25-01-18	25-01-18	0:45	1:45	1:00
Spotlighting	Lobs Hole Ravine		AR & DL	27-01-18	27-01-18	1:45	2:30	0:45
Spotlighting	Lobs Hole Ravine		AR & DL	28-01-18	28-01-18	1:05	2:05	1:00
Spotlighting	Lobs Hole Ravine		AR & ACM	29-01-18	29-01-18	21:00	22:30	1:30
Spotlighting	Lobs Hole Ravine		AR & ACM	29-01-18	30-01-18	22:55	0:05	1:10
Spotlighting	Lobs Hole Ravine		AR & ACM	30-01-18	30-01-18	0:40	1:55	1:15
Spotlighting	Lobs Hole Ravine		GM & CK	08-02-18	08-02-18	21:00	22:00	1:00
Spotlighting	Wallace Creek		SW & DJ	19-03-18	20-03-18	23:28	1:00	1:32
Spotlighting	Proposed campsite		SW & DJ	20-03-18	20-03-18	2:30	3:30	1:00
Spotlighting	Proposed campsite		SW & DJ	20-03-18	20-03-18	3:45	4:05	0:20
Spotlighting	Lobs Hole Ravine		SW & KS	23-03-18	24-03-18	23:30	1:00	1:30
Spotlighting	Lobs Hole Ravine		SW & KS	23-03-18	23-03-18	22:00	23:00	1:00
Spotlighting	Lobs Hole Ravine rd	SL-13	EL, BR	08-11-18	08-11-18	20:33	21:53	1:20
Spotlighting	Yarrangobilly River	SL-10	JB, JW	15-12-18	16-12-18	23:21	0:22	1:01
Spotlighting	Yarrangobilly River	SL-10	JB, JW	16-12-18	16-12-18	21:55	0:14	2:19
Spotlighting	Mines trail	SL-12	JB, JW	16-12-18	16-12-18	0:20	0:58	0:38
Spotlighting	Mines trail	SL-12	JB, JW	17-12-18	17-12-18	0:20	0:58	0:38
Spotlighting	Yarrangobilly River	SL-10	JB, JW	18-12-18	18-12-18	20:55	21:46	0:51
Spotlighting	Lobs Hole Ravine rd	SL-11	JB, JW	20-12-18	20-12-18	21:12	22:02	0:50

Table C.1 Fauna survey effort

Survey type	Site name	Location	Surveyors	Start date	End date	Start time	End time	Total effort
Spotlighting	Mines trail	SL-12	JB, JW	09-01-19	09-01-19	1:02	1:42	0:40
Spotlighting	Lobs Hole Ravine rd	SL-11	JB, JW	10-01-19	10-01-19	0:44	1:26	0:42
Spotlighting	Lobs Hole Ravine rd	SL-11	JB, JW	11-01-19	11-01-19	0:11	1:30	1:19
Spotlighting	Lobs Hole Ravine rd	SL-13	JB, DF	10-02-19	10-02-19	21:53	23:25	1:32
Spotlighting	Lobs Hole Ravine rd	SL-14	JB, JD	10-02-19	11-02-19	23:27	0:39	1:12
Spotlighting	Lobs Hole Ravine rd	SL-13	AR, EL	20-02-19	21-02-19	22:40	0:20	1:40
Spotlighting	Lobs Hole Ravine rd	SL-14	AR, EL	20-02-19	20-02-19	0:20	2:35	2:15
Spotlighting	Lobs Hole Ravine rd	SL-14	JB, DK	15-05-19	15-05-19	17:40	19:59	2:19
Spotlighting	Lobs Hole Ravine rd	SL-30	JB, DK	15-05-19	15-05-19	23:14	23:57	0:43
Spotlighting	Lobs Hole Ravine rd	SL-31	JB, DK	15-05-19	15-05-19	21:16	21:56	0:40
Spotlighting	Lobs Hole Ravine rd	SL-32	JB, DK	15-05-19	15-05-19	20:32	20:55	0:23
Spotlighting	Lobs Hole Ravine rd	SL-30	JB, DK	17-06-19	17-06-19	18:18	18:56	0:38
Spotlighting	Lobs Hole Ravine rd	SL-31	JB, DK	17-06-19	17-06-19	20:52	21:13	0:21
Spotlighting	Lobs Hole Ravine rd	SL-32	JB, DK	17-06-19	17-06-19	19:01	19:29	0:28
Spotlighting	Lobs Hole Ravine rd	SL-30	JB, DK	19-06-19	19-06-19	21:36	22:17	0:41
Spotlighting	Lobs Hole Ravine rd	SL-31	JB, DK	19-06-19	19-06-19	18:33	19:13	0:40
Spotlighting	Lobs Hole Ravine rd	SL-32	JB, DK	19-06-19	19-06-19	20:48	21:26	0:38
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW10	CW & DK	02-05-18	02-05-18	Upper Lob's Hole Ravine rd	EW10	CW & DK
Koala SAT surveys	Lobs Hole Ravine rd	EW100	CK & PF	16-05-18	16-05-18	Lobs Hole Ravine rd	EW100	CK & PF
Koala SAT surveys	Lobs Hole Ravine rd	EW102	CK & PF	15-05-18	15-05-18	Lobs Hole Ravine rd	EW102	CK & PF
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW12	CW & DK	02-05-18	02-05-18	Upper Lob's Hole Ravine rd	EW12	CW & DK
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW130	DK & CW	03-05-18	03-05-18	Upper Lob's Hole Ravine rd	EW130	DK & CW

Table C.1 Fauna survey effort

Survey type	Site name	Location	Surveyors	Start date	End date	Start time	End time	Total effort
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW132	DK & CW	03-05-18	03-05-18	Upper Lob's Hole Ravine rd	EW132	DK & CW
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW136	DK & CW	03-05-18	03-05-18	Upper Lob's Hole Ravine rd	EW136	DK & CW
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW139	DK & CW	03-05-18	03-05-18	Upper Lob's Hole Ravine rd	EW139	DK & CW
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW15	CW & DK	02-05-18	02-05-18	Upper Lob's Hole Ravine rd	EW15	CW & DK
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW16	CW & DK	01-05-18	01-05-18	Upper Lob's Hole Ravine rd	EW16	CW & DK
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW17	CW & DK	01-05-18	01-05-18	Upper Lob's Hole Ravine rd	EW17	CW & DK
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW18	CW & DK	01-05-18	01-05-18	Upper Lob's Hole Ravine rd	EW18	CW & DK
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW21	CW & DK	01-05-18	01-05-18	Upper Lob's Hole Ravine rd	EW21	CW & DK
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW22	CW & DK	01-05-18	01-05-18	Upper Lob's Hole Ravine rd	EW22	CW & DK
Koala SAT surveys	Yarrangobilly River	EW41	CK & PF	18-05-18	18-05-18	Yarrangobilly River	EW41	CK & PF
Koala SAT surveys	Yarrangobilly River	EW42	CK & PF	17-05-18	17-05-18	Yarrangobilly River	EW42	CK & PF
Koala SAT surveys	Yarrangobilly River	EW43	CK & PF	17-05-18	17-05-18	Yarrangobilly River	EW43	CK & PF
Koala SAT surveys	Yarrangobilly River	EW45	CK & PF	17-05-18	17-05-18	Yarrangobilly River	EW45	CK & PF
Koala SAT surveys	Yarrangobilly River	EW46	CK & PF	18-05-18	18-05-18	Yarrangobilly River	EW46	CK & PF
Koala SAT surveys	Yarrangobilly River	EW48	CK & PF	17-05-18	17-05-18	Yarrangobilly River	EW48	CK & PF
Koala SAT surveys	Lobs Hole Ravine rd	EW49	CK & PF	17-05-18	17-05-18	Lobs Hole Ravine rd	EW49	CK & PF
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW5	CW & DK	03-05-18	03-05-18	Upper Lob's Hole Ravine rd	EW5	CW & DK

Table C.1 Fauna survey effort

Survey type	Site name	Location	Surveyors	Start date	End date	Start time	End time	Total effort
Koala SAT surveys	Lobs Hole Ravine rd	EW50	CK & PF	17-05-18	17-05-18	Lobs Hole Ravine rd	EW50	CK & PF
Koala SAT surveys	Construction camp	EW51	DK & CW	04-05-18	04-05-18	Construction camp	EW51	DK & CW
Koala SAT surveys	Construction camp	EW52	DK & CW	04-05-18	04-05-18	Construction camp	EW52	DK & CW
Koala SAT surveys	Construction camp	EW53	DK & CW	05-05-18	05-05-18	Construction camp	EW53	DK & CW
Koala SAT surveys	Construction camp	EW54	DK & CW	05-05-18	05-05-18	Construction camp	EW54	DK & CW
Koala SAT surveys	Lobs Hole Ravine rd	EW56	CK & PF	17-05-18	17-05-18	Lobs Hole Ravine rd	EW56	CK & PF
Koala SAT surveys	Construction camp	EW57	DK & CW	04-05-18	04-05-18	Construction camp	EW57	DK & CW
Koala SAT surveys	Construction camp	EW58	DK & CW	05-05-18	05-05-18	Construction camp	EW58	DK & CW
Koala SAT surveys	Construction camp	EW59	DK & CW	05-05-18	05-05-18	Construction camp	EW59	DK & CW
Koala SAT surveys	Construction camp	EW62	DK & CW	04-05-18	04-05-18	Construction camp	EW62	DK & CW
Koala SAT surveys	Construction camp	EW63	DK & CW	05-05-18	05-05-18	Construction camp	EW63	DK & CW
Koala SAT surveys	Construction camp	EW64	DK & CW	06-05-18	06-05-18	Construction camp	EW64	DK & CW
Koala SAT surveys	Construction camp	EW69A	DK & CW	06-05-18	06-05-18	Construction camp	EW69A	DK & CW
Koala SAT surveys	Lobs Hole Ravine rd	EW69B	CK & PF	16-05-18	16-05-18	Lobs Hole Ravine rd	EW69B	CK & PF
Koala SAT surveys	Construction camp	EW70	DK & CW	06-05-18	06-05-18	Construction camp	EW70	DK & CW
Koala SAT surveys	Construction camp	EW71A	DK & CW	06-05-18	06-05-18	Construction camp	EW71A	DK & CW
Koala SAT surveys	Lobs Hole Ravine rd	EW71B	CK & PF	16-05-18	16-05-18	Lobs Hole Ravine rd	EW71B	CK & PF
Koala SAT surveys	Construction camp	EW72	DK & CW	06-05-18	06-05-18	Construction camp	EW72	DK & CW
Koala SAT surveys	Construction camp	EW77A	DK & CW	06-05-18	06-05-18	Construction camp	EW77A	DK & CW
Koala SAT surveys	Lobs Hole Ravine rd	EW77B	CK & PF	16-05-18	16-05-18	Lobs Hole Ravine rd	EW77B	CK & PF
Koala SAT surveys	Lobs Hole Ravine rd	EW78	CK & PF	17-05-18	17-05-18	Lobs Hole Ravine rd	EW78	CK & PF
Koala SAT surveys	Upper Lob's Hole Ravine rd	EW8	CW & DK	03-05-18	03-05-18	Upper Lob's Hole Ravine rd	EW8	CW & DK
Koala SAT surveys	Lobs Hole Ravine rd	EW86	CK & PF	16-05-18	16-05-18	Lobs Hole Ravine rd	EW86	CK & PF

Table C.1 Fauna survey effort

Survey type	Site name	Location	Surveyors	Start date	End date	Start time	End time	Total effort
Koala SAT surveys	Lobs Hole Ravine rd	EW87	CK & PF	16-05-18	16-05-18	Lobs Hole Ravine rd	EW87	CK & PF
Koala SAT surveys	Lobs Hole Ravine rd	EW94	CK & PF	15-05-18	15-05-18	Lobs Hole Ravine rd	EW94	CK & PF
Koala SAT surveys	Lobs Hole Ravine rd	EW95	CK & PF	17-05-18	17-05-18	Lobs Hole Ravine rd	EW95	CK & PF
Koala SAT surveys	Lobs Hole Ravine rd	EW97	CK & PF	15-05-18	15-05-18	Lobs Hole Ravine rd	EW97	CK & PF
Koala SAT surveys	Lobs Hole Ravine rd	EW98	CK & PF	15-05-18	15-05-18	Lobs Hole Ravine rd	EW98	CK & PF
Koala SAT surveys	Lobs Hole Ravine rd	EW99	CK & PF	15-05-18	15-05-18	Lobs Hole Ravine rd	EW99	CK & PF
Koala Songmeters	Lobs Hole Ravine rd	KSM2	DJ, KS	16-10-18	17-12-18			62
Koala Songmeters	Lobs Hole Ravine rd	KSM3	DJ, KS	16-10-18	17-12-18			62
Koala Songmeters	Wallaces creek trail	KSM4	DJ, KS	16-10-18	17-12-18			62

Appendix D

Targeted survey weather conditions

Table D.1 Targeted survey weather conditions

Date	Min Temp (°C)	Max Temp (°C)	Rain (mm)	Max wind direction	Max wind speed (km/hr)
05-12-17	4.7	10.6	22.6	ESE	70
12-12-17	12.2	21.8	0	NW	37
13-12-17	14.7	23.8	0	W	50
14-12-17	17.1	21.9	0	NW	57
15-12-17	12.9	20.6	1.4	W	41
16-12-17	13.6	21.9	0	WNW	35
21-01-18	20.1	27	0	NNE	48
25-01-18	15.5	21.8	0.8	NNW	30
27-01-18	15.2	22	0	E	46
28-01-18	14.8	24.9	0	ENE	39
30-01-18	17	18.6	0	WNW	46
07-02-18	13.1	24.2	0	WNW	39
08-02-18	16.8	26.5	0	E	43
23-03-18	14.2	23.3	0	WNW	31
24-03-18	8.5	15	0	NNW	39
06-05-18	3.1	11	0	SSW	30
07-05-18	5.2	11.3	0	WNW	52
08-05-18	5.8	12.4	0	WSW	31
09-05-18	5.6	10.2	0	NW	41
10-05-18	2.3	2.4	1	W	72
16-05-18	-0.3	7.3	0	ESE	50
12-10-18	0.2	10.3	0	ESE	76
13-10-18	1.4	14.4	0	ESE	65
14-10-18	5.5	14.2	0	NE	54
15-10-18	5.8	17.2	0	NE	52
16-10-18	7.3	19.1	0	NE	52
17-10-18	8.7	11.9	5.2	NW	41
18-10-18	7.6	13.3	14.8	NW	50
19-10-18	7.1	17.2	0	NNW	31
20-10-18	9.4	15.6	0	WNW	74
21-10-18	1.4	12.6	1.2	ESE	33
22-10-18	6.5	16.3	0	W	31
23-10-18	8.8	19.3	0	WNW	59
24-10-18	3.4	15.5	0	ESE	43
25-10-18	3.2	14.4	0	E	35
26-10-18	5.3	15.1	0	WSW	35
27-10-18	7.9	15	0	W	65

Table D.1 Targeted survey weather conditions

Date	Min Temp (°C)	Max Temp (°C)	Rain (mm)	Max wind direction	Max wind speed (km/hr)
28-10-18	1.5	15.7	0	WNW	26
29-10-18	7.4	17.3	0	WSW	30
30-10-18	7.4	17.5	0	W	43
31-10-18	10.1	20.5	0	SW	48
01-11-18	13.1	24.3	0	NNW	61
02-11-18	14.9	20.8	0	NNW	83
03-11-18	5.3	14.5	1.8	W	67
04-11-18	5.6	17.2	0	WSW	39
05-11-18	9.8	15.9	0	NNW	52
06-11-18	11.5	12.9	8	WNW	70
07-11-18	9.4	9.7	66.2	WNW	65
08-11-18	-1.3	8.5	10.6	W	35
09-11-18	1.3	9.9	0	WNW	39
10-11-18	4.1	13.8	0	W	37
11-11-18	7.7	17	0	ESE	35
12-11-18	8.6	19.4	0	W	31
13-11-18	13.5	16.9	0	N	39
14-11-18	9.8	14	8.4	NNW	50
15-11-18	9.9	16.7	16.6	ESE	54
16-11-18	2.7	15.4	0	ESE	46
17-11-18	5.6	14.8	0	ESE	63
18-11-18	3.6	17.5	0	ESE	65
19-11-18	6.3	17.8	0	E	30
20-11-18	10.8	18.3	0	N	57
21-11-18	10.8	12	24.2	W	63
22-11-18	-0.4	2.5	34	W	91
23-11-18	-0.1	4.2	33.2	WNW	70
24-11-18	1.2	8.6	61.4	SW	46
25-11-18	3	11.3	3	WSW	37
26-11-18	3.7	15.5	0	ESE	50
27-11-18	6.1	15.7	0	ENE	35
28-11-18	7.6	10.6	1	ESE	76
29-11-18	4.8	14.3	0.2	ESE	63
30-11-18	6.7	16	0.6	WNW	50
01-12-18	8.7	19.7	0	WNW	44
02-12-18	11.2	11.3	0.2	WNW	76
03-12-18	2.4	11.7	9	W	70

Table D.1 Targeted survey weather conditions

Date	Min Temp (°C)	Max Temp (°C)	Rain (mm)	Max wind direction	Max wind speed (km/hr)
04-12-18	4.3	18	0	ESE	48
05-12-18	6.8	19	0	E	43
06-12-18	9.6	21.2	0	WNW	35
07-12-18	14.2	23.3	0	WNW	31
08-12-18	15.6	23.5	0	SE	54
09-12-18	15.9	21.2	0	ESE	43
10-12-18	9.8	20.5	13.2	ESE	43
11-12-18	10.3	20.3	0	NE	41
12-12-18	11.3	20.8	0	NE	37
13-12-18	11.3	16.4	16	ENE	74
14-12-18	9.6	17.8	20.2	E	56
15-12-18	10.9	17.1	8.8	NE	54
16-12-18	10.9	15.1	0	N	37
17-12-18	10.3	20	0.4	NW	39
20-12-18	14.4	22.9	0	E	41
09-01-19	11.5	20.8	19.8	W	59
10-01-19	9.3	21.9	0	E	46
11-01-19	12.2	21.2	0	SW	57
15-01-19	20.3	30.6	0	ESE	44
16-01-19	20.8	32.3	0	ESE	63
20-01-19	14.1	26.1	0	ESE	57
05-02-19	13.3	18.8	18.6		
10-02-19	2.9	16.2	2.8	SW	39
11-02-19	7.1	18.7	0	W	50
20-02-19	7.1	20.2	0	ESE	35
21-02-19	8.6	21.5	0	ESE	54
16-03-19	8.5	18.2	0	ESE	74
17-03-19	9.9	16.8	0	ESE	74
18-03-19	8.7	15.5	0.2	SE	67
19-03-19	11.3	19.2	0.2	ESE	43
20-03-19	11.8	19.8	7.6	ESE	41
12-04-19	6.1	13.5	0	WNW	33
15-05-19	4.9	11.8	0	N	17
16-06-19	0.9	6.5	0	ESE	39
17-06-19	-0.4	7.8	0	ESE	50
18-06-19	1.6	4.6	0	WNW	56
19-06-19	-3	2.5	2.4	NNW	20

Table D.1 Targeted survey weather conditions

Date	Min Temp (°C)	Max Temp (°C)	Rain (mm)	Max wind direction	Max wind speed (km/hr)
20-06-19	-3.5	2.6	0	N	31
21-06-19	-4.7	2.9	0	SE	50
22-06-19	-3.3	3.8	0	SE	57
23-06-19	-2.6	2.6	0	ESE	70
24-06-19	-2	6.6	0	ESE	70
25-06-19	-0.4	8.9	0	ESE	46
26-06-19	1.2	9.7	0	ESE	33

Appendix E

Credit Report

BAM Credit Summary Report

Proposal Details

Assessment Id
00015116/BAAS17037/19/00015118

Proposal Name
Snowy Hydro - MOD1 Revised

BAM data last updated *
27/09/2019

Assessor Name
Nathan Garvey

Report Created
01/10/2019

BAM Data version *
15

Assessor Number
BAAS17037

BAM Case Status
Open

Date Finalised
To be finalised

Assessment Revision
0

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	Vegetation integrity loss / gain	Area (ha)	Constant	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Potential SAII	Ecosystem credits
Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion								
15	643_Low	13.0	0.1	0.25	Moderate Sensitivity to Potential Gain	1.25		0
							Subtotal	**0**

Black Sally grassy low woodland in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion								
13	303_Other	40.2	0.3	0.25	High Sensitivity to Potential Gain	2.50		8
							Subtotal	**8**
Brittle Gum - peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion								
1	296_High	55.3	0.1	0.25	High Sensitivity to Potential Gain	1.50		2
2	296_Medium	71.9	0.0	0.25	High Sensitivity to Potential Gain	1.50		1
							Subtotal	**3**
Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion								
16	729_DNG	46.2	1.7	0.25	High Sensitivity to Potential Gain	1.50		29
17	729_High	64.3	4.9	0.25	High Sensitivity to Potential Gain	1.50		119
							Subtotal	**148**
Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion								
23	953_High	74.9	1.1	0.25	High Sensitivity to Potential Gain	1.50		31
							Subtotal	**31**
Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion								
18	999_High	63.6	0.6	0.25	High Sensitivity to Potential Gain	1.50		14
19	999_DNG	38.3	0.1	0.25	High Sensitivity to Potential Gain	1.50		1
							Subtotal	**15**

Red Stringybark - Broad-leaved Peppermint - Nortons Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion								
14	311_High	60.9	0.1	0.25	High Sensitivity to Potential Gain	1.50		2
							Subtotal	**2**
Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment								
3	300_High	47.2	1.6	0.25	High Sensitivity to Potential Gain	1.50		29
4	300_Medium	55.1	0.3	0.25	High Sensitivity to Potential Gain	1.50		7
5	300_Other	51.2	0.1	0.25	High Sensitivity to Potential Gain	1.50		2
6	300_Poor	71.7	0.0	0.25	High Sensitivity to Potential Gain	1.50		1
							Subtotal	**39**
Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion								
7	302_DNG	64.0	0.3	0.25	High Sensitivity to Potential Gain	1.75		9
8	302_High	70.9	0.0	0.25	High Sensitivity to Potential Gain	1.75		1
9	302_Low	21.2	1.0	0.25	High Sensitivity to Potential Gain	1.75		9
10	302_Medium	65.9	0.0	0.25	High Sensitivity to Potential Gain	1.75		1
11	302_Other	68.3	0.3	0.25	High Sensitivity to Potential Gain	1.75		9
12	302_Poor	26.6	0.0	0.25	High Sensitivity to Potential Gain	1.75		1
							Subtotal	**30**

Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion							
20	1191_High	47.2	0.5	0.25	High Sensitivity to Potential Gain	2.50	14
						Subtotal	**14**
Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion							
21	1196_High	55.9	1.6	0.25	High Sensitivity to Potential Gain	1.50	33
						Subtotal	**33**
Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion							
22	1224_High	36.2	0.2	0.25	High Sensitivity to Potential Gain	1.50	2
						Subtotal	**2**
						Total	**325**

Species credits for threatened species

Vegetation zone name	Habitat condition (HC)	Area (ha) / individual (HL)	Constant	Biodiversity risk weighting	Potential SAII	Species credits
Callocephalon fimbriatum / Gang-gang Cockatoo (Fauna)						
296_High	55.3	0.01	0.25	2	False	0
					Subtotal	**0**
Cercartetus nanus / Eastern Pygmy-possum (Fauna)						
296_High	55.3	0.1	0.25	2	False	3
296_Medium	71.9	0.01	0.25	2	False	0
300_High	47.2	1.51	0.25	2	False	36
300_Medium	55.1	0.33	0.25	2	False	9

300_Other	51.2	0.07	0.25	2	False	2
300_Poor	71.7	0.01	0.25	2	False	0
302_High	70.9	0.03	0.25	2	False	1
302_Medium	65.9	0.01	0.25	2	False	0
302_Other	68.3	0.29	0.25	2	False	10
302_Poor	26.6	0.01	0.25	2	False	0
311_High	60.9	0.09	0.25	2	False	3
729_High	64.3	4.92	0.25	2	False	158
999_High	63.6	0.58	0.25	2	False	18
1196_High	55.9	0.61	0.25	2	False	17
					Subtotal	**257**
Litoria booroolongensis / Booroolong Frog (Fauna)						
300_High	47.2	0.03	0.25	2	False	1
302_High	70.9	0.03	0.25	2	False	1
302_Low	21.2	0.16	0.25	2	False	2
302_Other	68.3	0.21	0.25	2	False	7
729_High	64.3	0.02	0.25	2	False	1
					Subtotal	**12**
Litoria verreauxii alpina / Alpine Tree Frog (Fauna)						
303_Other	40.2	0.01	0.25	2	False	0
1224_High	36.2	0.02	0.25	2	False	0

					Subtotal	**0**
Pseudomys fumeus / Smoky Mouse (Fauna)						
729_High	64.3	0.1	0.25	3	True	5
953_High	74.9	0.87	0.25	3	True	49
1196_High	55.9	0.6	0.25	3	True	25
					Subtotal	**79**
Pterostylis foliata / Slender Greenhood (Flora)						
1196_High	55.9	0.28	0.25	2	False	8
					Subtotal	**8**