5 Native vegetation

The extent of native vegetation within the Main Works was determined using Section 5 of the BAM (OEH 2017a), as summarised within this chapter.

5.1 Background review

A review of regional vegetation mapping was undertaken to inform the site survey. OEH (2016a) and OEH (2015) identify twenty-six PCTs within the Main Works survey area:

- PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion;
- PCT 280 - Red Stringybark - Blakely's Red Gum +/- Long-leaved Box shrub/grass hill woodland of the NSW South Western Slopes Bioregion;
- PCT 290 - Red Stringybark - Red Box - Long-leaved Box - Inland Scribbly Gum tussock grass - shrub low open forest on hills in the southern part of the NSW South Western Slopes Bioregion;
- PCT 295 - Robertson's Peppermint - Broad-leaved Peppermint - Norton's Box - stringybark shrub-fern open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion;
- PCT 296 - Brittle Gum - peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion;
- PCT 297 - Broad-leaved Peppermint - Norton's Box - Red Stringybark tall open forest on red clay on hills in the southern part of the NSW South Western Slopes Bioregion;
- PCT 298 - Apple Box - Norton's Box - Blakely's Red Gum valley flat moist grassy tall open forest in the southern NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion;
- PCT 299 - Riparian Ribbon Gum - Robertson's Peppermint - Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion;
- PCT 300 - Ribbon Gum - Narrow-leaved (Robertson's) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment;
- PCT 301 - Drooping She oak - Ricinocarpus bowmannii - grasstree tall open shrubland of the Coolac - Tumut Serpentinite Belt;
- PCT 304 - Candlebark - Apple Box - Narrow-leaved Peppermint tall open forest on granite in the Tumbarumba region of the South Eastern Highlands Bioregion and upper NSW South Western Slopes Bioregion;
- PCT 305 - Apple Box - Broad-leaved Peppermint - Red Stringybark shrubby hill open forest in the upper NSW South Western Slopes Bioregion and adjacent South Eastern Highlands Bioregion;
- PCT 306 - Red Box - Red Stringybark - Norton's Box hill heath shrub - tussock grass open forest of the Tumut region;

- PCT 316 - Norton's Box - Red Box - Red Stringybark +/- Nodding Flax Lily forb-grass open forest mainly on the Tumut region;
- PCT 637 - Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion;
- PCT 638 - Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion;
- PCT 639 - Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion;
- PCT 641 - Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion;
- PCT 643 - Alpine shrubland on scree, blockstreams and rocky sites of high-altitude areas of Kosciuszko National Park, Australian Alps Bioregion;
- PCT 644 - Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion;
- PCT 953 - Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion;
- PCT 1100 - Ribbon Gum - Snow Gum grassy forest on damp flats, eastern South Eastern Highlands Bioregion;
- PCT 1190 - Snow Gum - Candle Bark shrubby open forest in valleys of the southern ACT ranges, South Eastern Highlands Bioregion;
- PCT 1191 - Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion;
- PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion; and
- PCT 1224 - Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion.

5.2 Methods

The following sections outline the methods employed to map vegetation, and to assess the vegetation integrity of native vegetation within the survey area.

5.2.1 Detailed vegetation mapping and habitat assessment

An assessment of the survey area was undertaken between August and October 2017. Additional mapping was undertaken in February and March 2018 due to the inclusion of additional survey areas. These initial assessments included detailed vegetation mapping and habitat assessments. The survey area was traversed on foot and by vehicle, with vegetation mapped and aligned with NSW PCTs. Revision and refinement of this preliminary vegetation mapping was undertaken in November and December 2018, in response to additional plots being undertaken and review of the PCTs across the Snowy 2.0 survey area.

PCTs were stratified into vegetation zones based on broad condition state using the definitions in Table 5.1.

Table 5.1 Definitions used in delineation of vegetation zones

Condition class	Description
High	Largely intact with all stratum present and minimal disturbance
Medium	Some elements or stratum missing or immature, but minimal disturbance
Poor	Tree stratum present, but understorey vegetation degraded due to weeds or other major disturbance.
Derived grassland	Trees stratum missing, with sparse shrub layer. Native vegetation restricted to groundcover.
Other	Regeneration is occurring due to previous human impacts, such as clearing or fire, but minimal to moderate disturbance to other stratum
Low	Tree stratum and shrub stratum missing. Native vegetation restricted to groundcover

Where there was some uncertainty about correct PCT alignment, or to justify PCT alignment, a series of rapid vegetation assessments (RVAs) were undertaken, with the three dominant species in the overstorey, midstorey and groundcover recorded. This data was assessed against data held in the VIS to confirm PCT alignment.

Vegetation was mapped in the field using GPS-enabled tablet computers using Collector for ArcGIS™. Field data was then aligned with a canopy height model (CHM) developed using Light Detection and Ranging (LiDAR) data in a GIS.

As a result of a recent design change being provided outside of the survey season, vegetation mapping of some areas was completed using a combination of review of vegetation mapping of adjacent areas undertaken for Snowy 2.0, review of regional vegetation mapping (OEH 206a and OEH 2015) where this wasn't available and API. These areas, representing less than 1% of the total area of native vegetation mapped for Snowy 2.0, will be verified during the appropriate survey season and updated vegetation mapping and credit calculations will be addressed during the response to submissions (RTS).

5.2.2 Vegetation integrity assessment

Following the stratification of vegetation zones within the survey area, native vegetation integrity was assessed using data obtained via a series of plots, as per the methodology outlined in Section 5 of the BAM (OEH 2017a). Plot data was collected from the survey area between November 2017 and April 2019. At each plot location the following was undertaken:

- one 20 x 20 m plot, for assessment of composition and structure; and
- one 20 x 50 m plots for assessment of function, including a series of five 1 x 1 m plots to assess average leaf litter cover.

The assessment of composition and structure, based on a 20 x 20 m plot, recorded species name, stratum, growth form, cover and abundance rating for each species present within the plot. Cover (foliage cover) was estimated for all species rooted in or overhanging the plot, and recorded using decimals (if less than 1%, rounded to whole number (1-5%) or estimated to the nearest 5% (5- 100%). Abundance was counted (up to 20) and estimated above 20, and recorded using the following intervals: 1, 2, 3, 4, 5, 10, 20, 50, 100, 500, 1000, 1500, 2000 etc.

The assessment of function recorded the number of large trees, the presence of tree stem size class, tree regeneration, number of trees with hollows and length of fallen logs, as well as leaf litter cover within the 20 x 50 m plot and five 1 x 1 m subplots. The minimum number of plots and transects per vegetation zone was determined using Table 4 of the BAM (OEH 2017a). A total of 481 plots were undertaken as a part of the biodiversity assessment for Snowy 2.0, with 338 plots undertaken within or in close proximity (250 m) to the survey area and 146 plots used in determining vegetation integrity scores. Datasheets are provided in Annexure A while compiled plot data is provided in Annexure B.

A small number of plots were completed after flowering period for some species. As a result, some species were not identifiable to genus level. Species that were recorded to family level were recorded as native with the relevant growth form assigned, as a conservative approach.

As a result of a recent design change being provided outside of the survey season, some vegetation zones did not have the minimum number of plots required by the BAM (OEH 2017a). For zones which were missing additional plots (PCT 303 – Derived grassland and PCT 1196 – Medium and Other), collected plot data was duplicated. For zones where no plot data was collected (PCT 638 – Derived grassland, PCT 952 – Medium and High and PCT 1196 - Poor), benchmark data was used for the purposes of this assessment. In total, 13 plots were either duplicated or used benchmark data. Additional plots will be completed during the appropriate survey season and updated credit calculations will be addressed during the response to submissions (RTS).

The vegetation integrity score was calculated as per equation 1 in the BAM (OEH 2017a).

5.3 Results

5.3.1 Vegetation description

The Main Works survey area spans from north of Lobs Hole on Talbingo Reservoir, across to South Tantangara and down to Rock Forest.

Prior to European settlement of the area, Lobs Hole is likely to have been used regularly by Aboriginal people throughout the annual cycle of movement through country. Since European settlement, Lobs Hole has a long history of occupation, first used in the early 1800s for the movement of stock. Since this time Lobs Hole has been the site of prospecting, grazing, settlement, refuge from the winters of Kiandra, gardening and agriculture. From the 1860s to approximately 1917, Lobs Hole was the site of copper mining (Plate 5.1). During the construction of the Snowy Scheme, Lobs Hole was well used during surveying work. A major surveying camp was set up by Major Clews at Lobs Hole, believed to be at the junction of the Yarrangobilly and Tumut rivers and now under water, but this is not confirmed (Plate 5.2). The Wallace's Creek camp was apparently located near to the junction of Wallace's Creek and Yarrangobilly River (exact location unknown, NSW Archaeology 2019). Lobs Hole is now a public camping area (Ravine Campground) with an earthen boat ramp which is used to access the southern reaches of Talbingo Reservoir. These historical activities and past land uses have resulted in significant amounts of clearing and disturbance of vegetation in the area. Native vegetation, which includes fauna habitats have been modified by past disturbances associated with land clearing, livestock grazing and weed invasion. Native vegetation has re-established itself throughout Lobs Hole; however, Blackberry, a weed of national significance, has established itself to the point of infestation within the area, particularly in gullies and along the Yarrangobilly River.

Vegetation along the upper (southern) extent of Lobs Hole Ravine Road and in the Marica area is largely intact, with minimal disturbance evident. Vegetation comprises tall montane forests with large trees and a shrubby understorey. Weed invasion is minimal, and largely limited to road edges. The lower section of Lobs Hole Ravine Road, generally below 1,200 m, consists of dry sclerophyll forests with a shrubby to grassy understorey. In some area's disturbance due to past land use is evident and significant, while in other areas there is minimal disturbance. Weediness varies, depending on past land use, and is heavy in some areas particularly gullies and along watercourses.

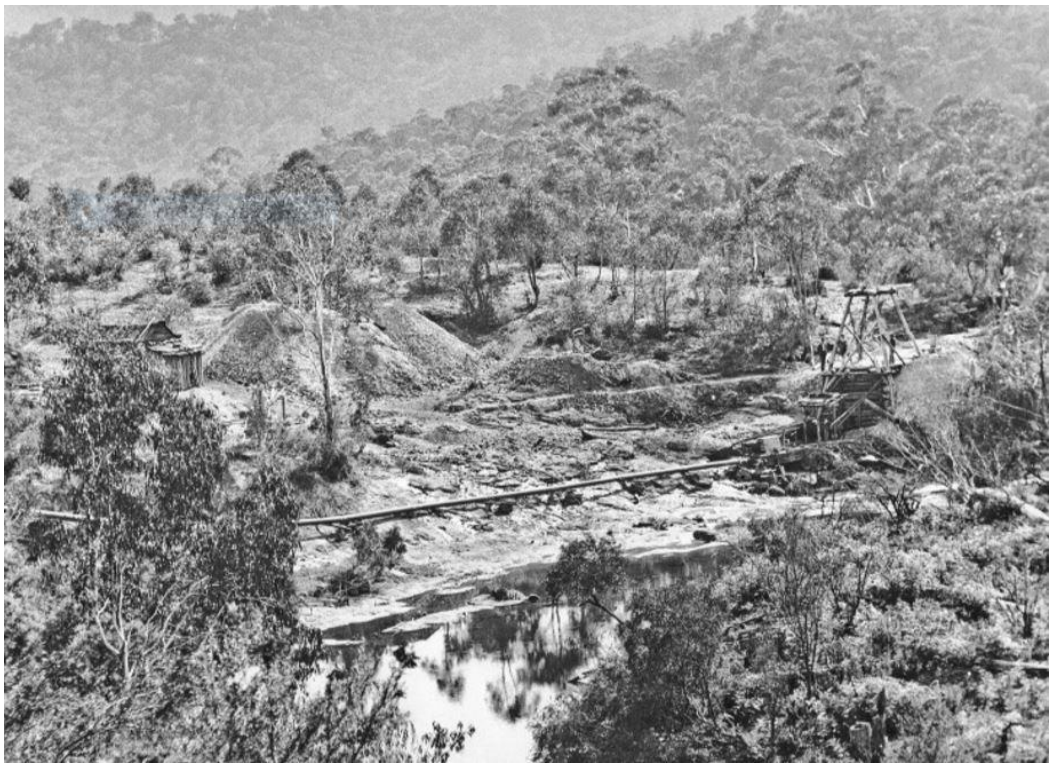


Plate 5.1 The Lobs Hole Copper Mine in ~1901, showing disturbance to native vegetation (photo taken by Ernest Clayton Andrews, source: Geological Survey of NSW)

Plate 5.2 Lobs Hole Survey Camp at the junction of the Yarrangobilly and Tumut Rivers (now under water). Source: Steve Brayshaw

The plateau area, east of Wallace's Creek Firetrail, consists of a mix of dry grassy plains in cold air depressions, ringed by grassy woodlands of Black Sally (*Eucalyptus stellulata*) and Snow Gum (*Eucalyptus pauciflora*). In drainage lines, dry grasslands give way to wet grasslands. Alpine bogs and fens occur on drainage depressions and along major watercourses. In this area disturbance is limited to historical land use, for gold mining associated with Kiandra and construction of the Snowy scheme, along with impacts from recreational use such as horse-riding. Impacts from feral Horses are prevalent in the grassy plains, Alpine bogs and fens and along drainage lines.

Vegetation along Tantangara road comprises of grasslands and grassy woodlands, with minimal disturbance. Vegetation at the southern end of Tantangara Reservoir consists of grassy woodlands and grasslands, moderately disturbed as a result of fire damage, historical clearing, weed invasion and heavy recreational use. In 2003, a large-scale bushfire burnt thousands of hectares within the Australian Alps, particularly affecting the Tantangara area. Native vegetation has re-established itself throughout Tantangara, with natural regeneration occurring. The high threat weed Ox-eye Daisy (*Leucanthemum vulgare*) has established itself to the point of infestation within the southern part of Tantangara, in Kelly's Plain, and spanning west towards Nungar track. NPWS are currently undertaking weed control measures including spraying and track closures. The Tantangara area is used regularly by campers, four-wheel-drive enthusiasts and fisherman, with impacts from these activities evident, including clearing of vegetation, prolific track creation and weed invasion. Feral Horse numbers are also high in this area.

Rock Forest is located just outside of the KNP, on the southern boundary of the Park. Vegetation in this private property consists predominantly of derived grasslands as a result of historical clearing and grazing. Remnant patches of moderate to high quality forest and woodlands occur as a mosaic throughout the property on rocky rises.

5.3.2 Plant community types

Site investigations, including determination of vegetation communities using the methods described in Section 5.2.1, identified the presence of 22 PCTs within the Main Works disturbance footprint. The PCTs found in the disturbance footprint, including vegetation formation and vegetation class (Keith 2004), are described within Table 5.2 and shown in Figure 5.1. Each of the 22 PCTs is described in further detail within the following section.

Table 5.2 Plant community types mapping within the Main Works disturbance footprint

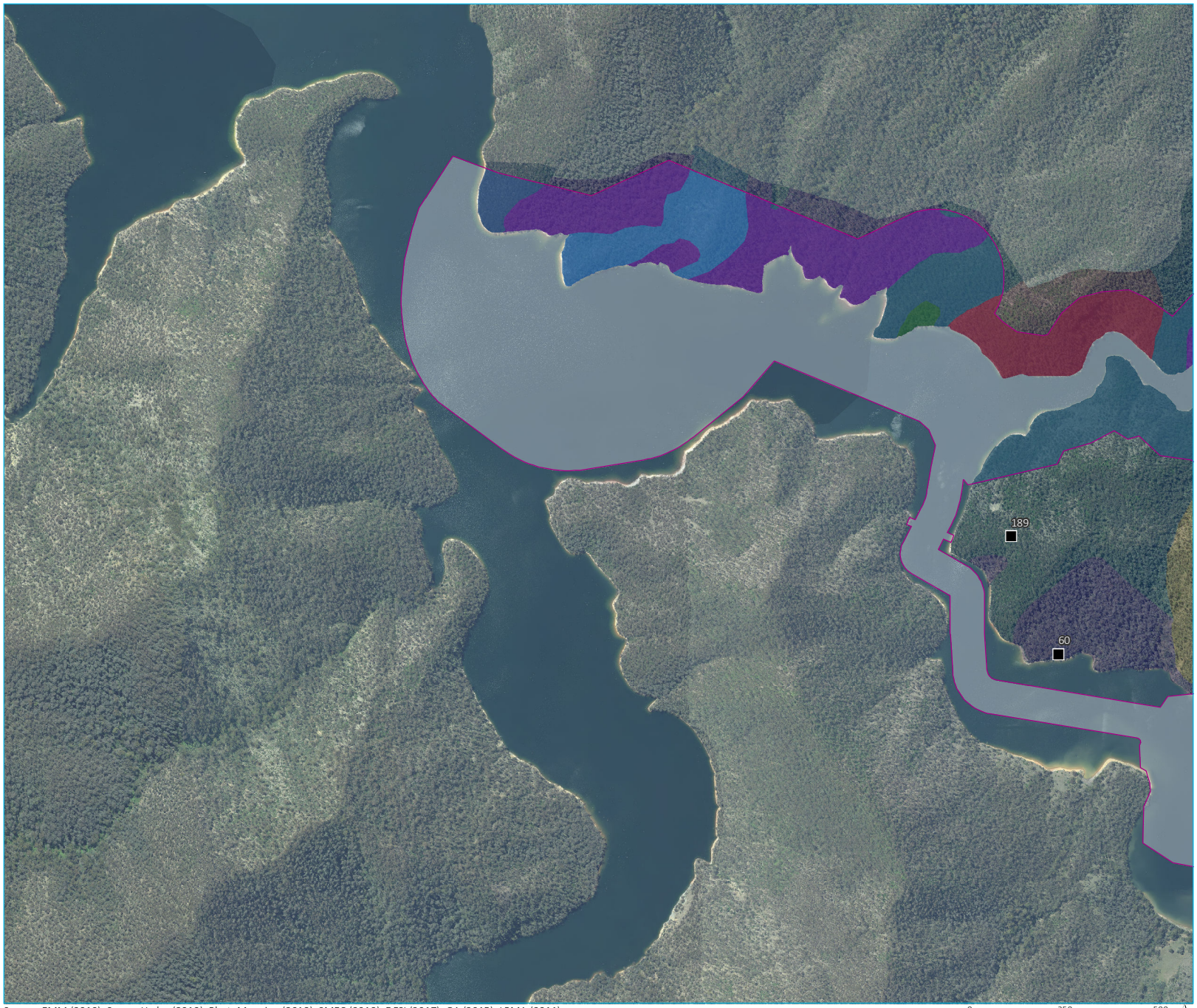
Plant community type	Vegetation formation	Vegetation class	Area (ha)
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Dry Sclerophyll Forests (Shrub/grass sub-formation)	Upper Riverina Dry Sclerophyll Forests	6.99
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	29.97
PCT 299 – Riparian Ribbon Gum - Robertsons Peppermint - Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands	Dry Sclerophyll Forest (Shrubby sub-formation)	Southern Tableland Dry Sclerophyll Forests	3.87
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	69.62

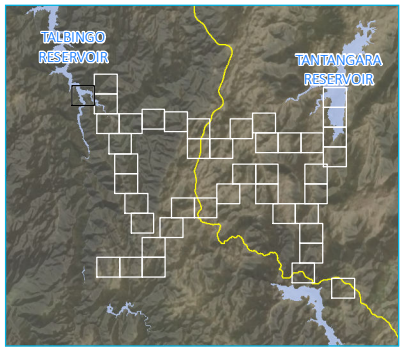
Table 5.2 Plant community types mapping within the Main Works disturbance footprint

Plant community type	Vegetation formation	Vegetation class	Area (ha)
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	8.45
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 Woodland	78.44
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	37.05
PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion	Alpine Complex	Alpine Bogs and Fens	4.09
PCT 638 – Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Wet Sclerophyll Forests (Grassy sub-formation)	Montane Wet Sclerophyll Forests	15.96
PCT 639 – Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Wet Sclerophyll Forests (Grassy sub-formation)	Montane Wet Sclerophyll Forests	6.61
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	0.26
PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	Grassy Woodlands	Subalpine Woodlands	116.22
PCT 679 – Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion	Grassy Woodlands	Subalpine Woodlands	0.26
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	81.09
PCT 765 – Carex - Juncus sedgeland/wet grassland of the South Eastern Highlands Bioregion	Freshwater Wetlands	Montane Bogs and Fens	0.12
PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion	Grassy Woodlands	Subalpine Woodlands	18.92
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	14.35
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	43.37
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Grassy Woodlands	Subalpine Woodlands	26.05

Table 5.2 Plant community types mapping within the Main Works disturbance footprint

Plant community type	Vegetation formation	Vegetation class	Area (ha)
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Grassy Woodlands	Subalpine Woodlands	348.14
PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Grasslands	Temperate Montane Grasslands	133.84
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Grasslands	Temperate Montane Grasslands	9.00
TOTAL			**1,052.68**





KEY

- Plot location
- Main Works disturbance footprint
- PCT 299 High
- PCT 296 High
- PCT 296 Medium
- PCT 300 High
- PCT 311 High
- PCT 729 High
- PCT 1191 High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.1

snowy 2.0

EMM creating opportunities

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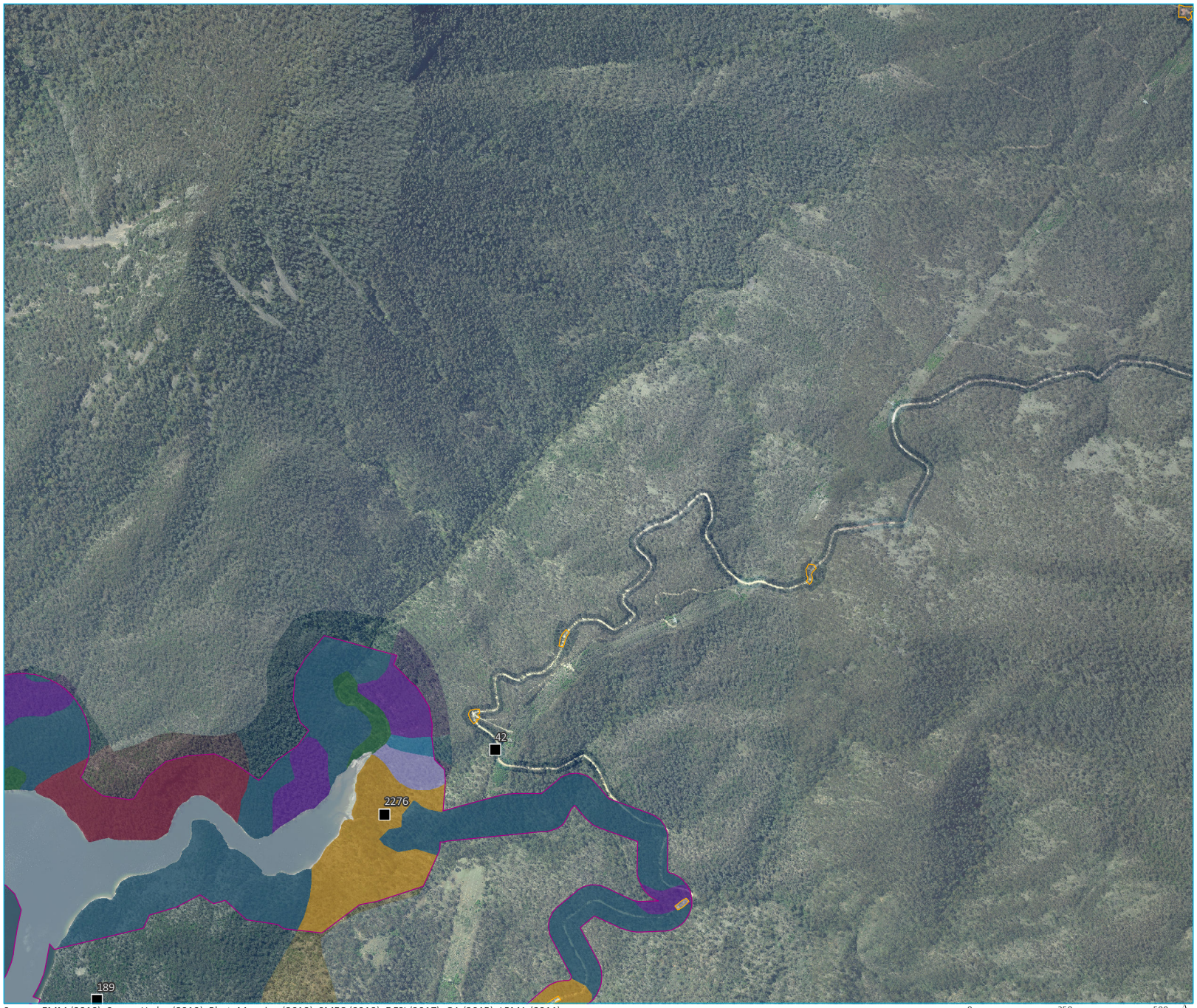

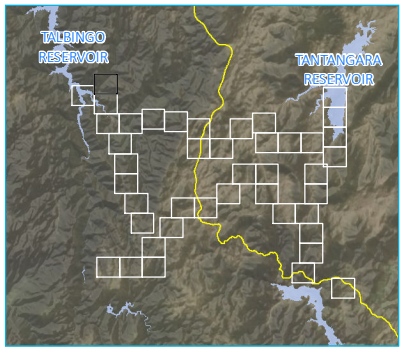

KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 299
- High

PCT 296
- High
- Derived grassland

PCT 300
- High

PCT 311
- High

PCT 729
- High
- Medium

PCT 1191
- High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.2

snowy 2.0

EMM creating opportunities

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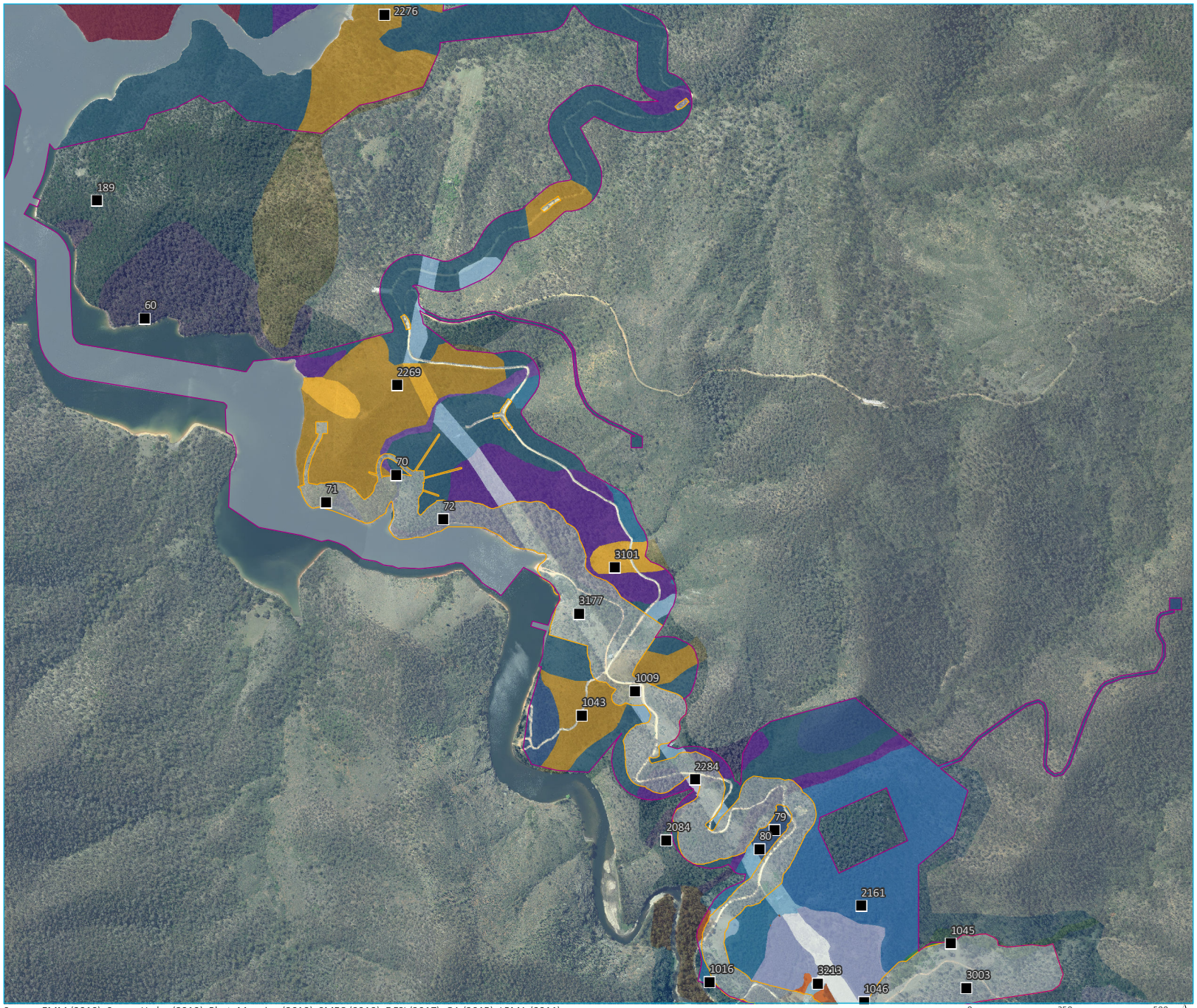

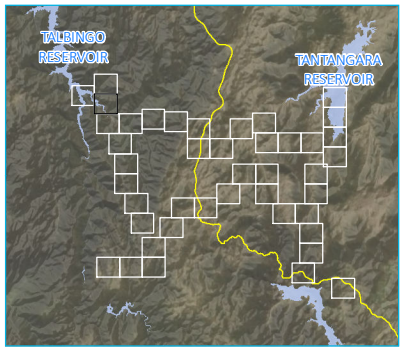

KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 299
- Medium

PCT 285
- Medium
- Derived grassland

PCT 296
- High
- Medium
- Derived grassland

PCT 300
- High
- Medium
- Derived grassland

PCT 302
- High
- Medium
- Low
- Other

PCT 311
- High

PCT 729
- High
- Medium
- Derived grassland

PCT 999
- Medium

PCT 1191
- High
- Medium
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.3

snowy 2.0

EMM creating opportunities

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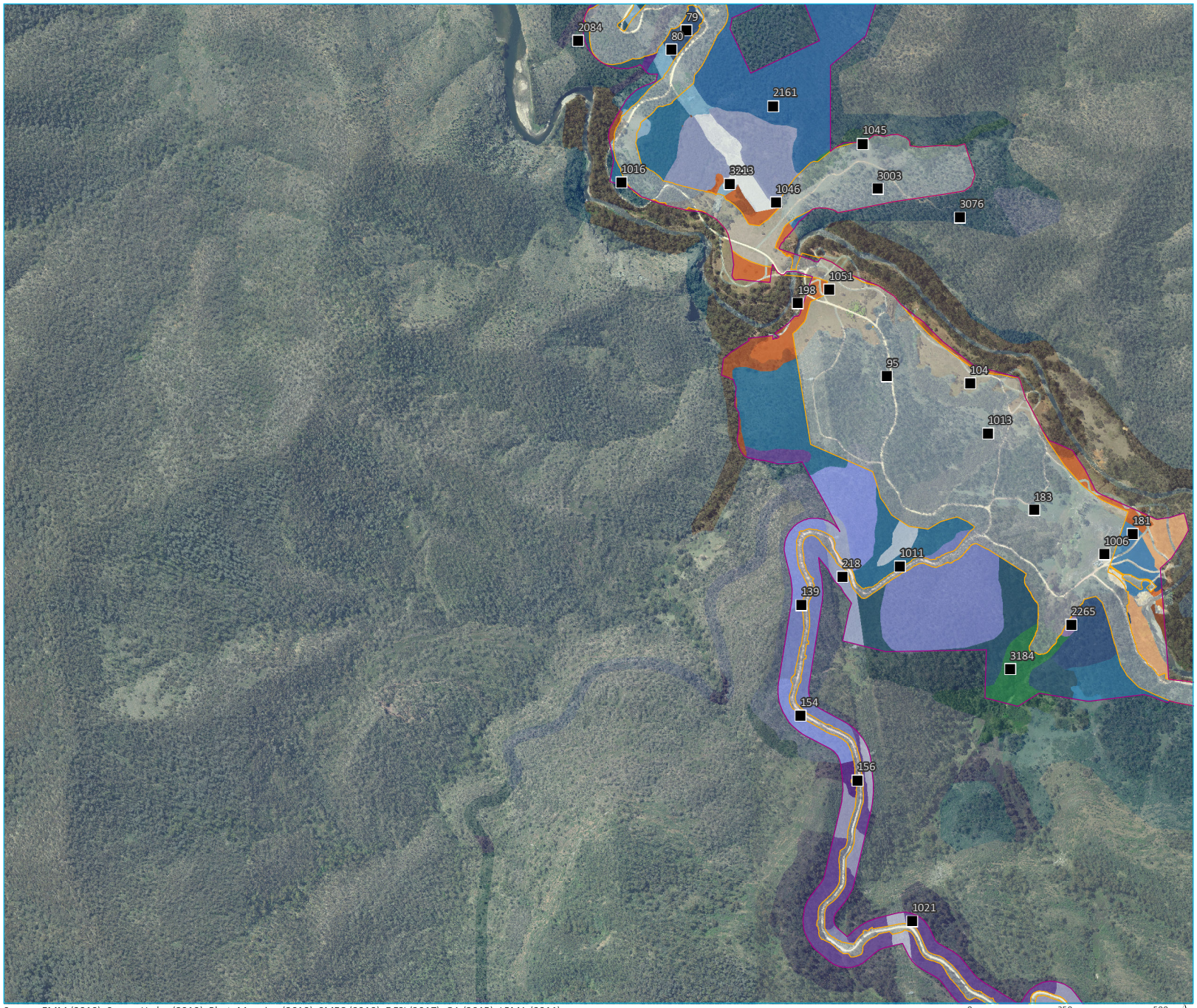

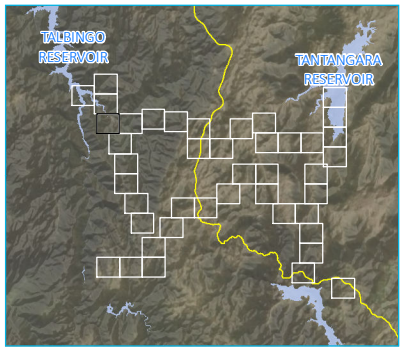

KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 299
- Medium
- Low

PCT 285
- High
- Medium
- Low
- Poor
- Derived grassland

PCT 296
- High
- Medium
- Low
- Poor
- Derived grassland

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

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

PCT 729
- High
- Medium
- Low
- Poor
- Derived grassland

PCT 999
- High
- Medium
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.4

snowy 2.0

EMM creating opportunities

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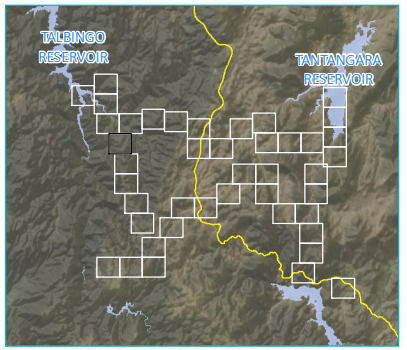

KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 300
- High
- Medium
- Poor
- Other

- Derived grassland

PCT 302
- Poor

PCT 729
- High
- Medium
- Poor

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.5

snowy 2.0

EMM creating opportunities

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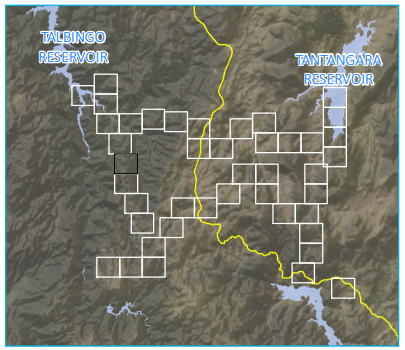

KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 300
- High

PCT 643
- Low

PCT 729
- High

PCT 953
- High
- Derived grassland

PCT 1196
- High
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.6

snowy 2.0

EMM creating opportunities

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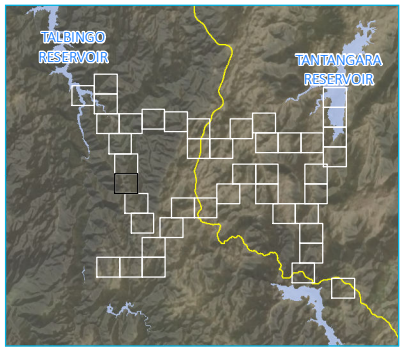

KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 296
- High
- Medium

PCT 300
- High

PCT 303
- High

PCT 637
- High

PCT 953
- High
- Derived grassland

PCT 1196
- High
- Medium
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.7

snowy 2.0

EMM creating opportunities

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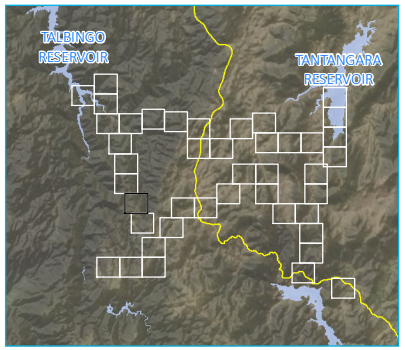

KEY

- Plot location
- Main Works disturbance footprint

PCT 296
- High
- Medium

PCT 638
- High

PCT 639
- High

PCT 1225
- High

PCT 1224
- High

PCT 1196
- High
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

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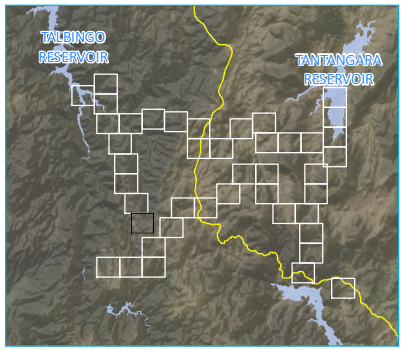
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.8

snowy 2.0

EMM creating opportunities



KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 303
- High
- Other

PCT 637
- High

PCT 638
- High
- Derived grassland

PCT 639
- High

PCT 644
- High
- Derived grassland

PCT 1225
- High
- Other

PCT 1224
- High

PCT 1196
- High
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.9

snowy 2.0

EMM creating opportunities

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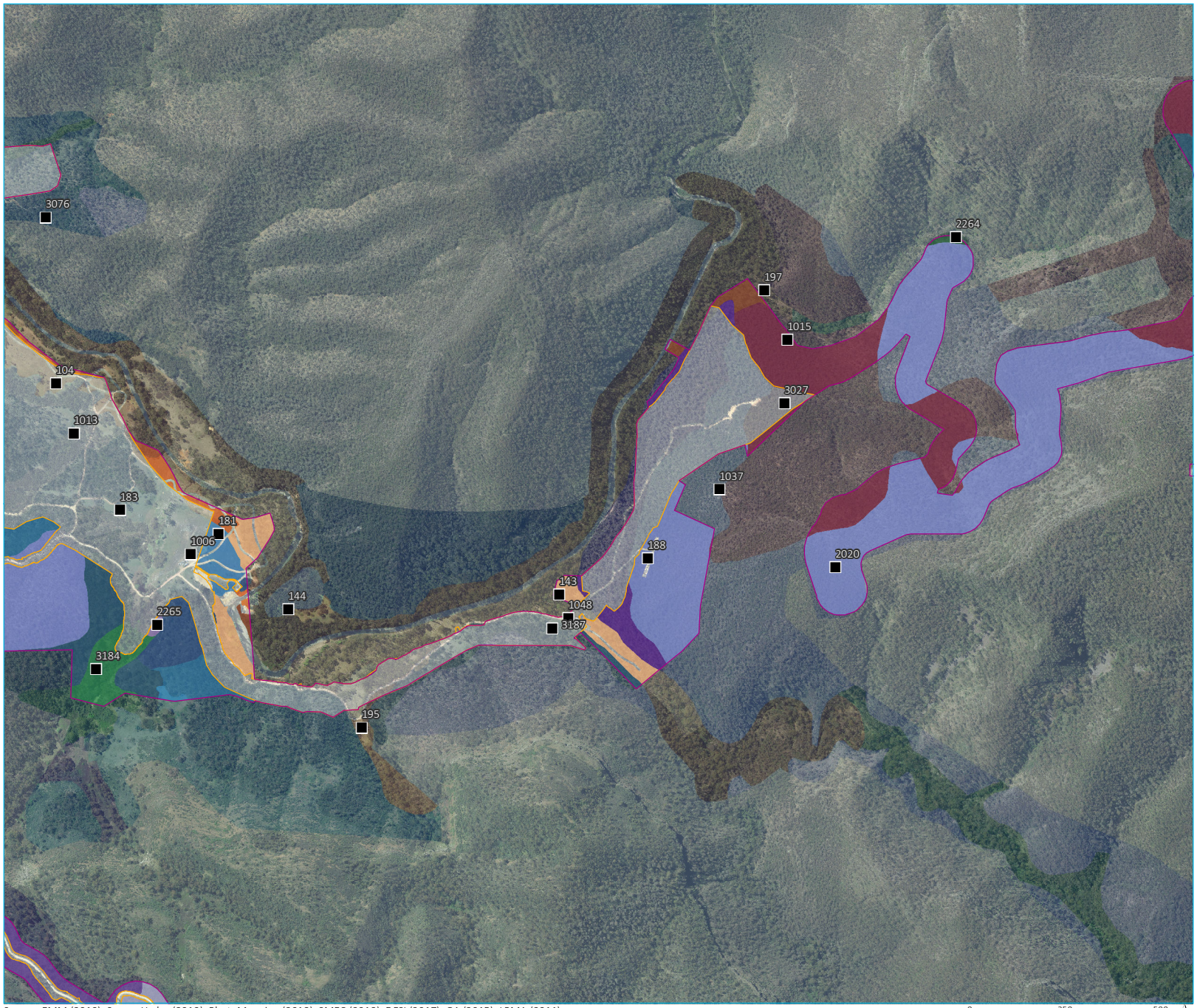

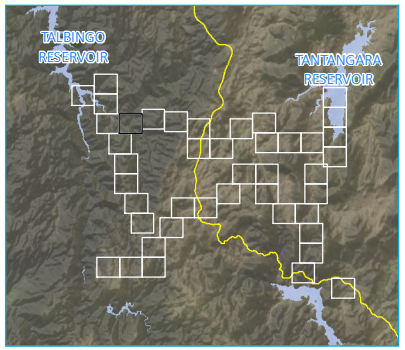

KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 299
- High
- Medium
- Low

PCT 285
- High
- Medium
- Low
- Poor

PCT 296
- High
- Medium
- Low
- Poor

PCT 300
- High
- Medium
- Low

- Other
- Derived grassland

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

PCT 311
- High

PCT 729
- High
- Medium
- Low
- Poor

PCT 953
- High

PCT 999
- High
- Medium

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.10

snowy 2.0

EMM creating opportunities

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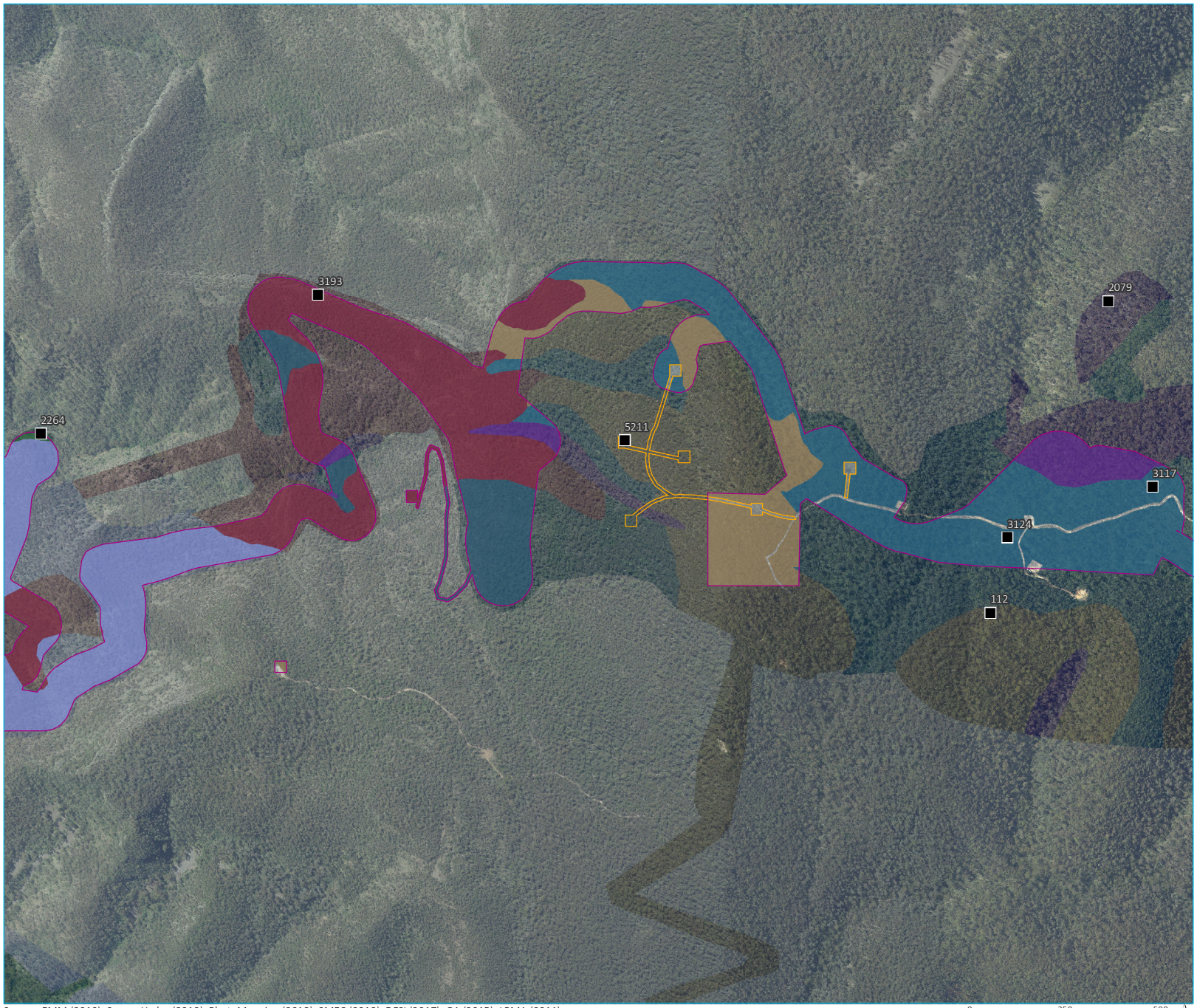

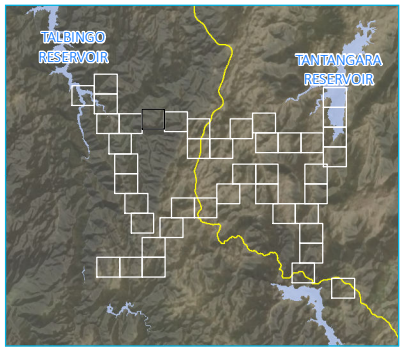

KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 299 High
PCT 300 High
PCT 311 High
PCT 729 High
PCT 953 High
PCT 999 High
PCT 1196 High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

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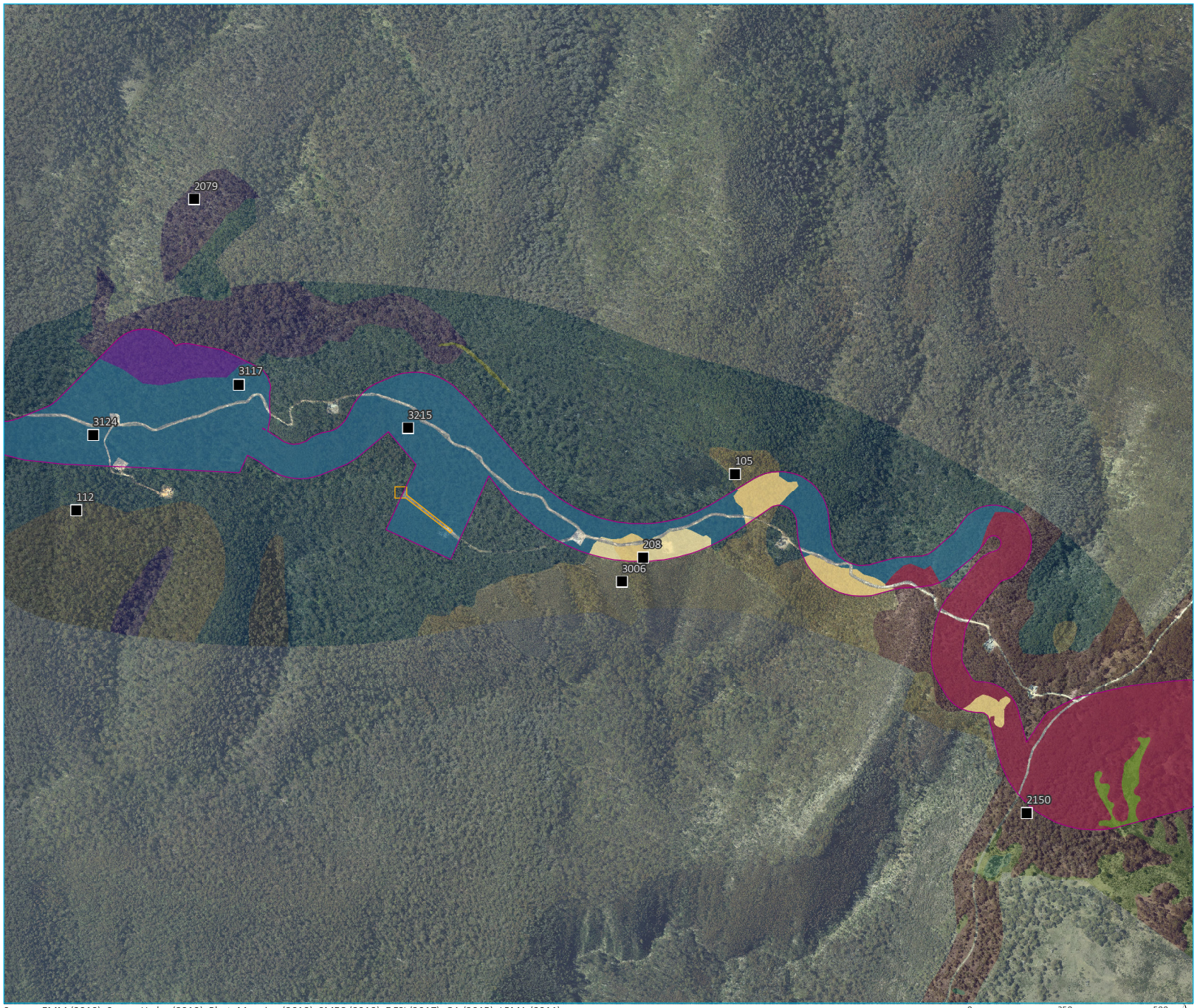
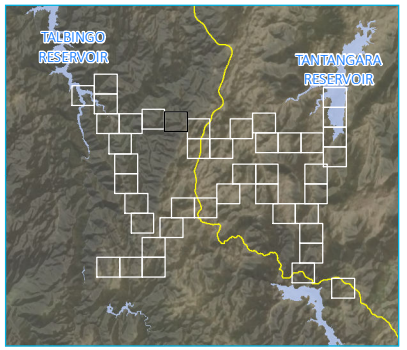
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.11

snowy 2.0

EMM creating opportunities





KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 300
- High

PCT 637
- High

PCT 639
- High
- Other

PCT 644
- High

PCT 765
- High

PCT 953
- High

PCT 1224
- High

PCT 1196
- High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.12

snowy 2.0

EMM creating opportunities

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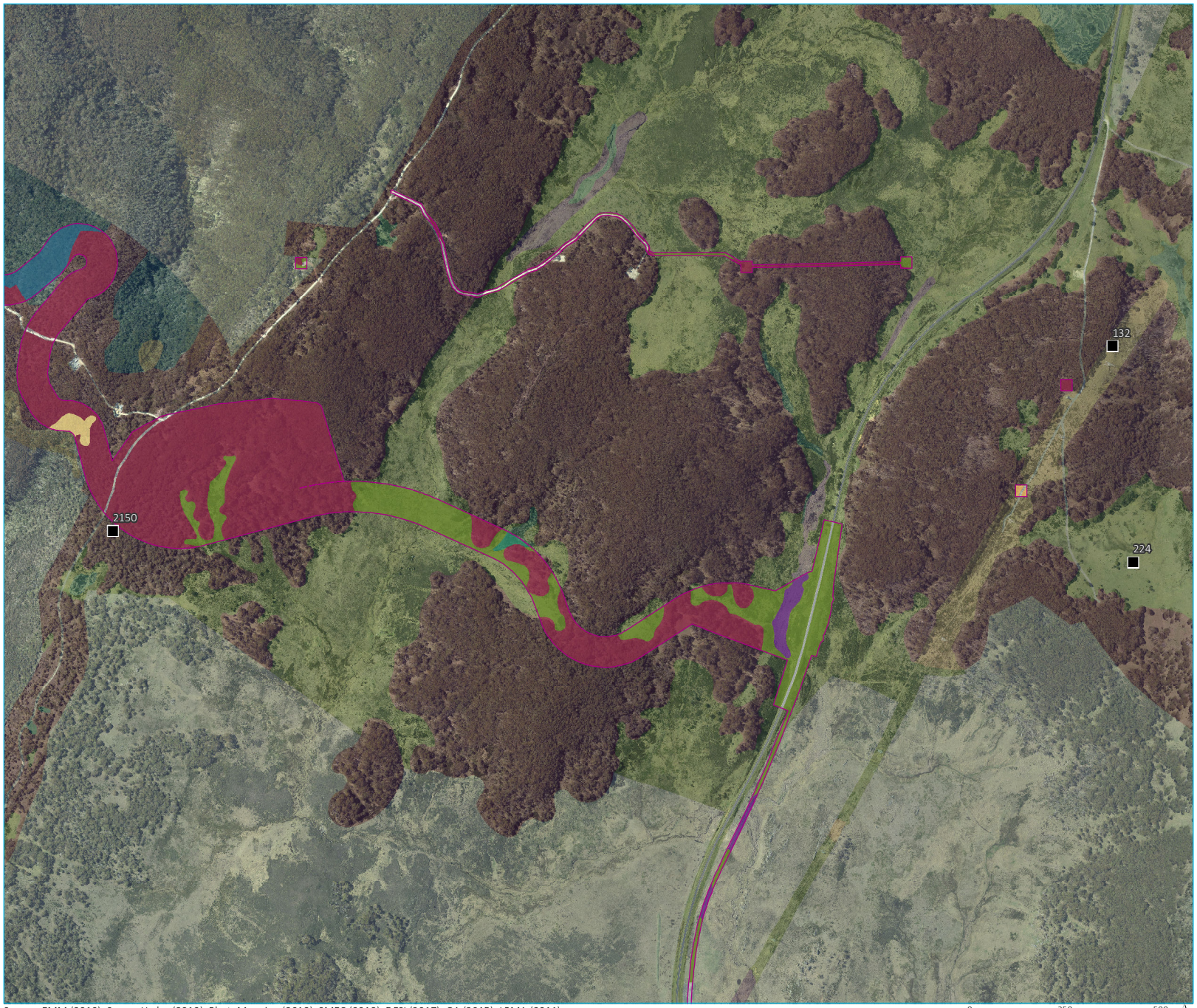

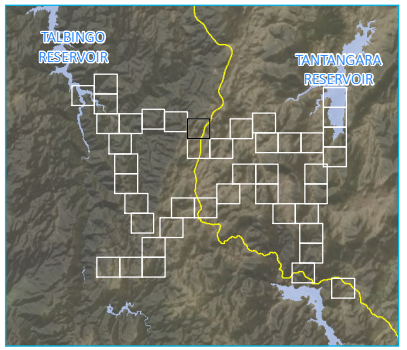

KEY

- Plot location
- Main Works disturbance footprint
- PCT 637 High
- PCT 639 High
- PCT 644 High
- Derived grassland
- PCT 1225 High
- PCT 1224 High
- PCT 1196 High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

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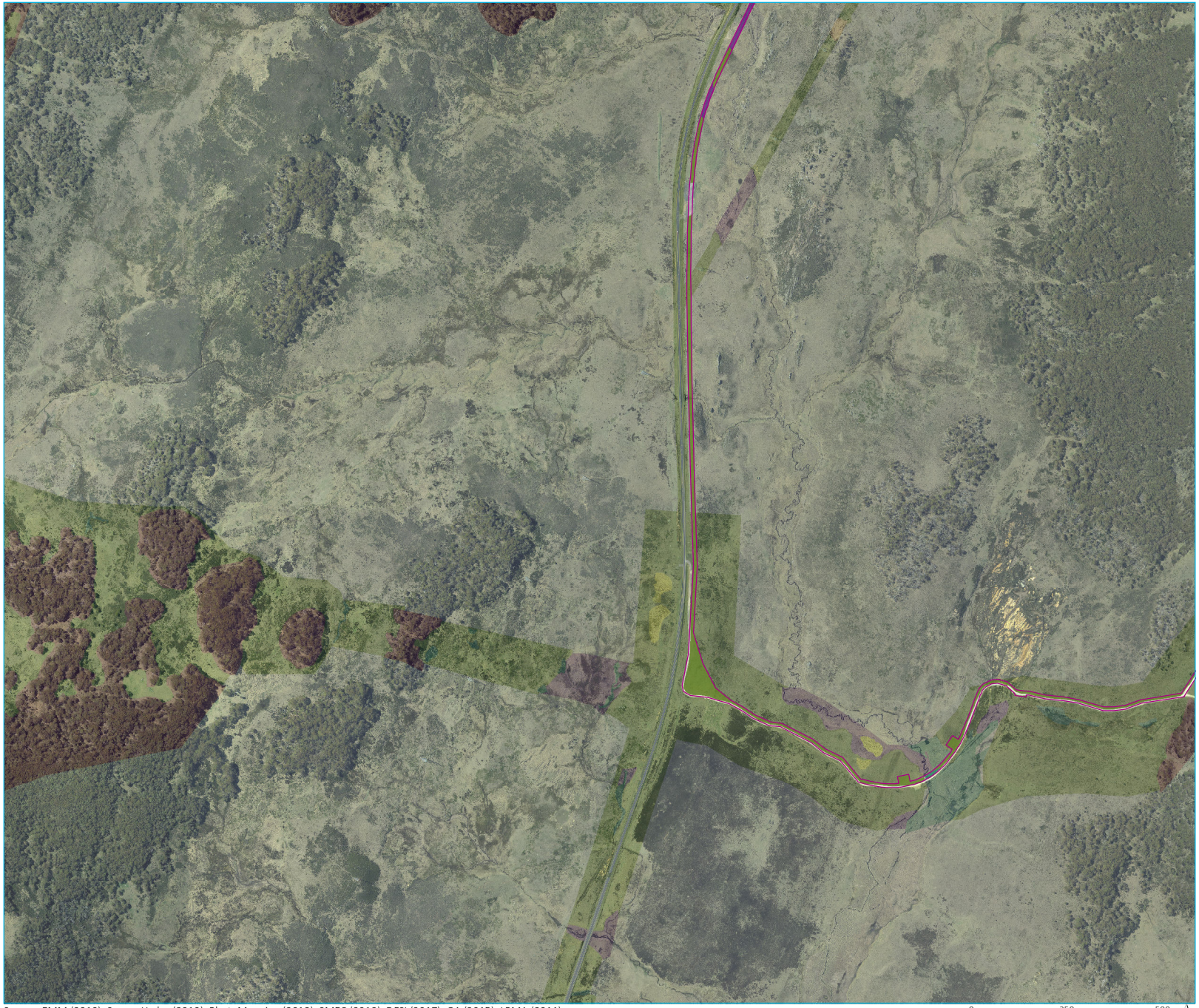
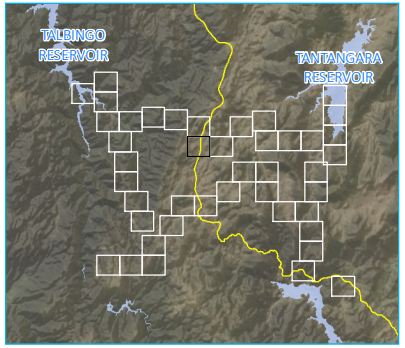
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.13

snowy 2.0

EMM creating opportunities





KEY

- Main Works disturbance footprint
- PCT 637 High
- PCT 644 High
- Derived grassland
- PCT 765 High
- PCT 1225 High
- PCT 1224 High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.14

snowy 2.0

EMM creating opportunities

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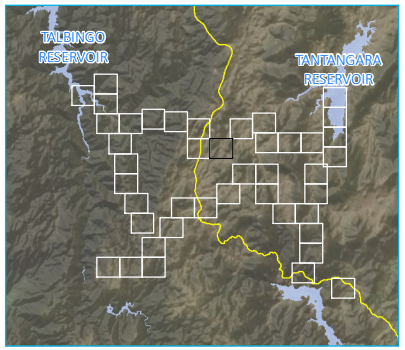


KEY

- Main Works disturbance footprint
- PCT 303
  - High
- PCT 637
  - High
  - Medium
- PCT 644
  - High
- PCT 679
  - High
  - Other
- PCT 1225
  - High
- PCT 1224
  - High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

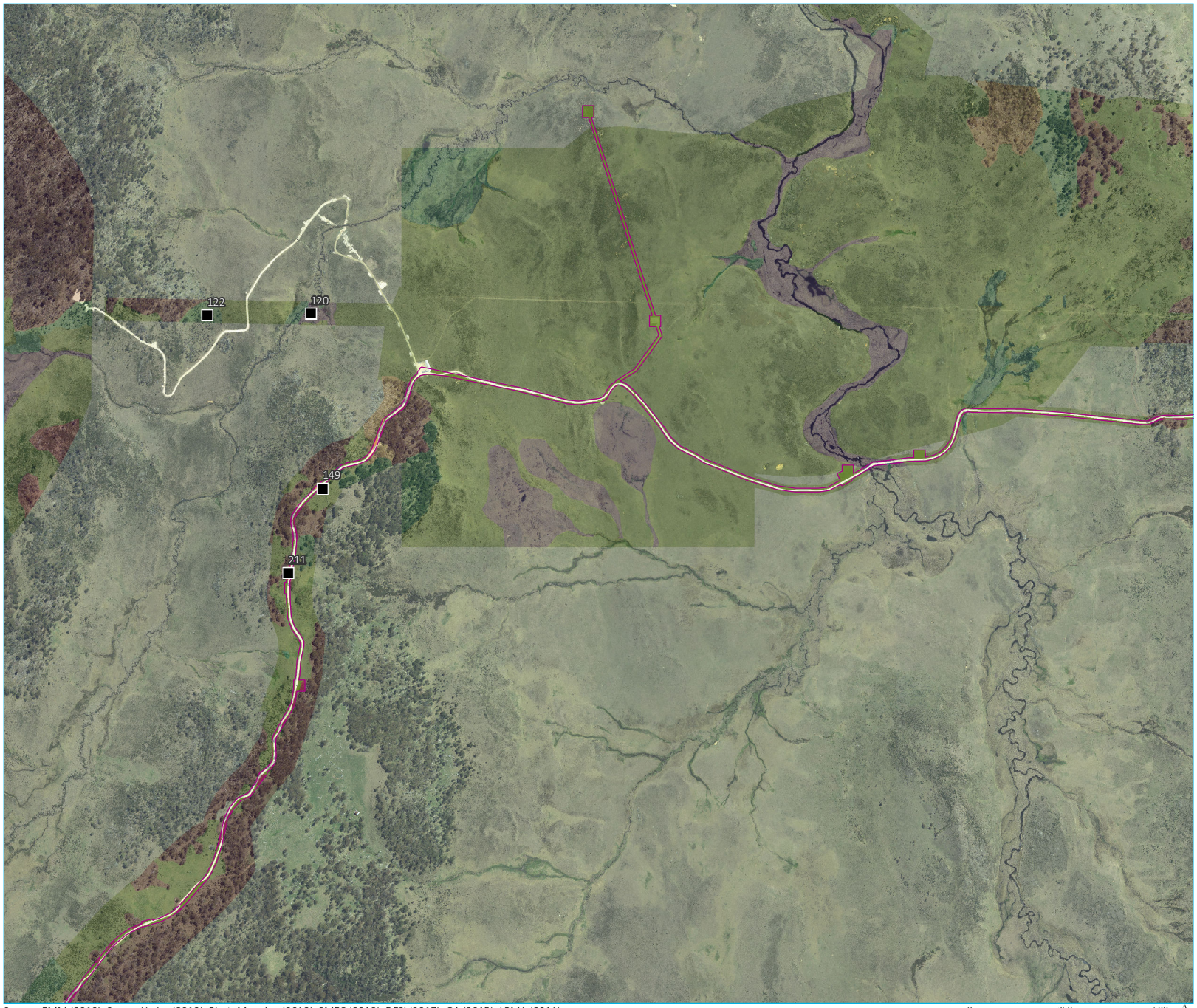
\\emmsvr1\EMM2\V171188 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

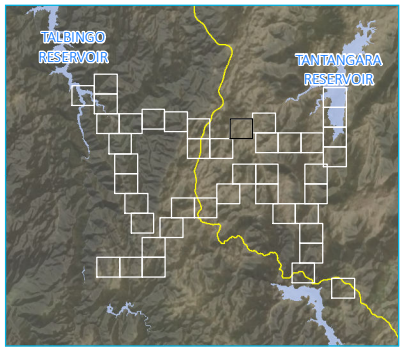
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.15

snowy 2.0

EMM creating opportunities





KEY

- Plot location
- Main Works disturbance footprint

PCT 303
- High

PCT 637
- High
- Medium

PCT 644
- High

- Medium
- Other

PCT 679
- Other

PCT 1225
- High

PCT 1224
- High
- Poor

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

0 250 500 m

GDA 1994 MGA Zone 55

N

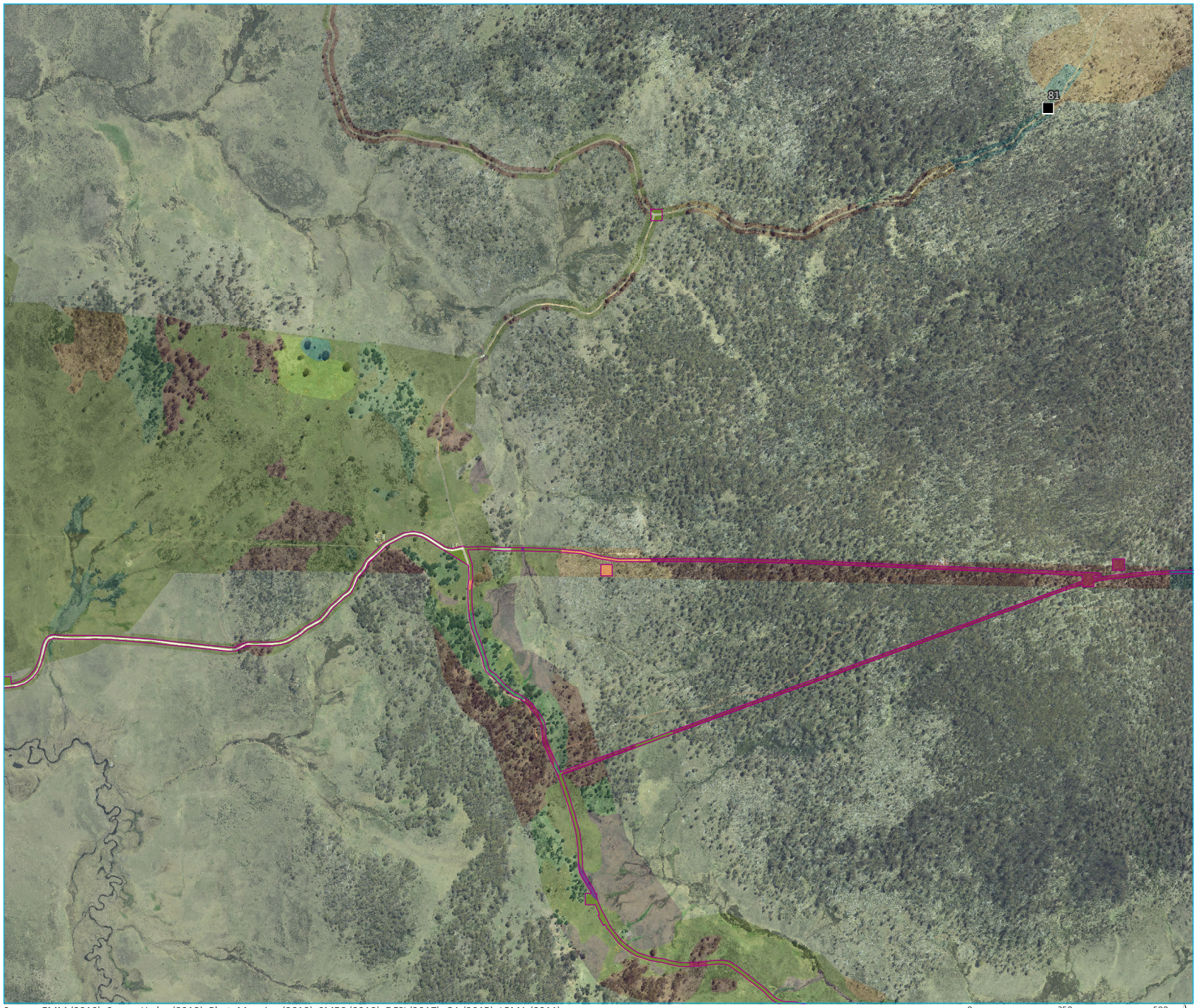
\\emmsvr1\EMM2\V17188 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

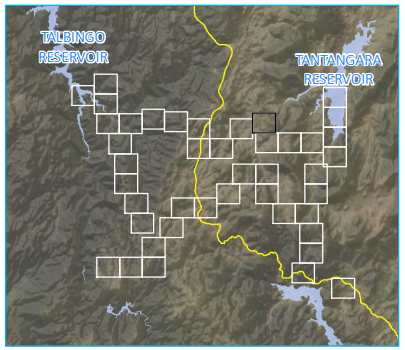
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.16

snowy 2.0

EMM creating opportunities





KEY

- Plot location
- Main Works disturbance footprint
- PCT 303
  - High
  - Medium
  - Other
- PCT 637
  - High
- PCT 644
  - High
- Other
- PCT 1225
  - High
- PCT 1224
  - High
  - Poor
- PCT 1196
  - High
  - Medium
  - Poor

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.17

snowy 2.0

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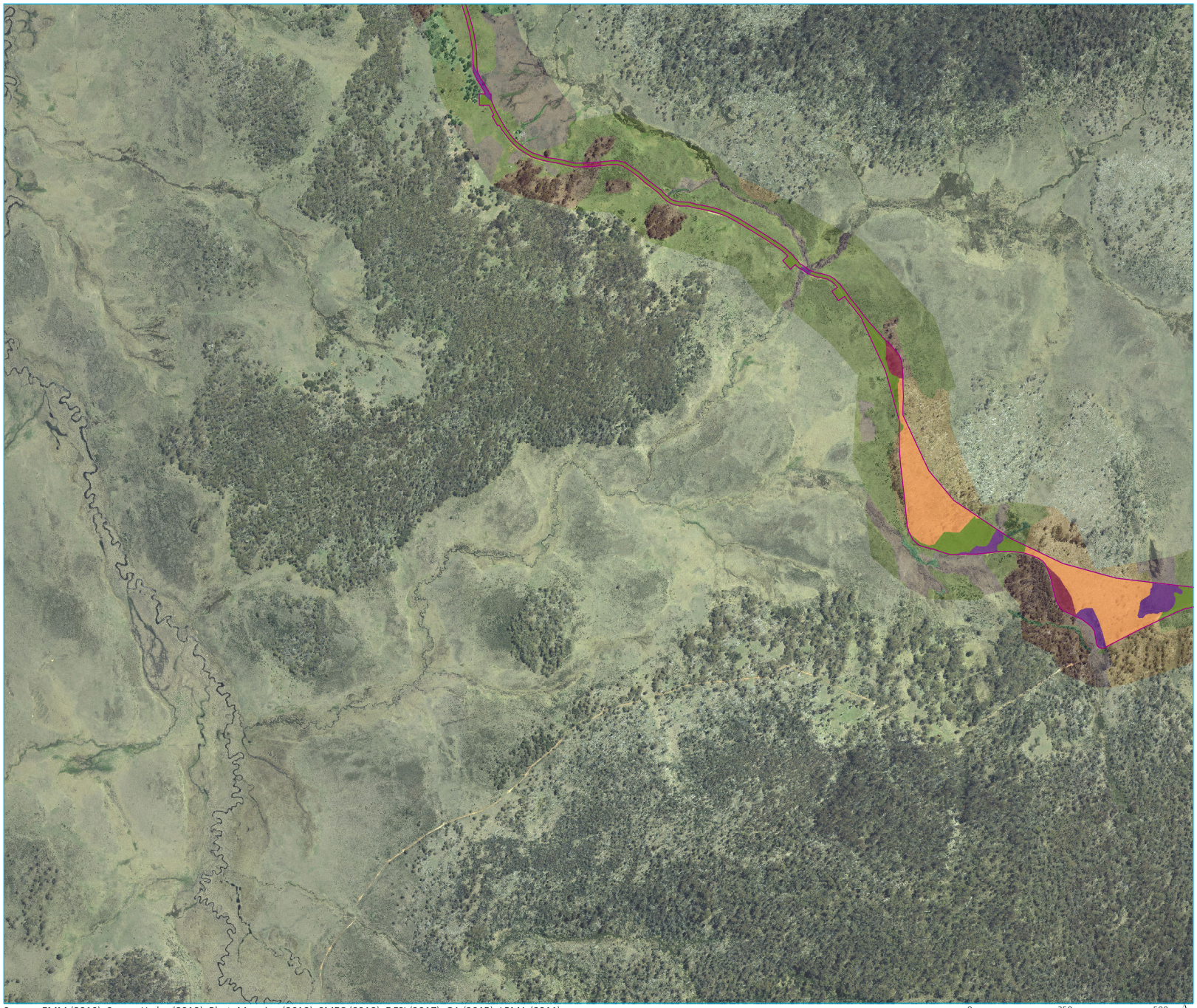
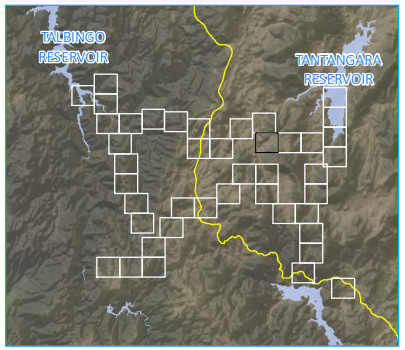




KEY

- Main Works disturbance footprint
- PCT 303
  - High
  - Medium
- PCT 637
  - High
  - Medium
- PCT 644
  - High
  - Other
- PCT 1225
  - High
- PCT 1224
  - High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

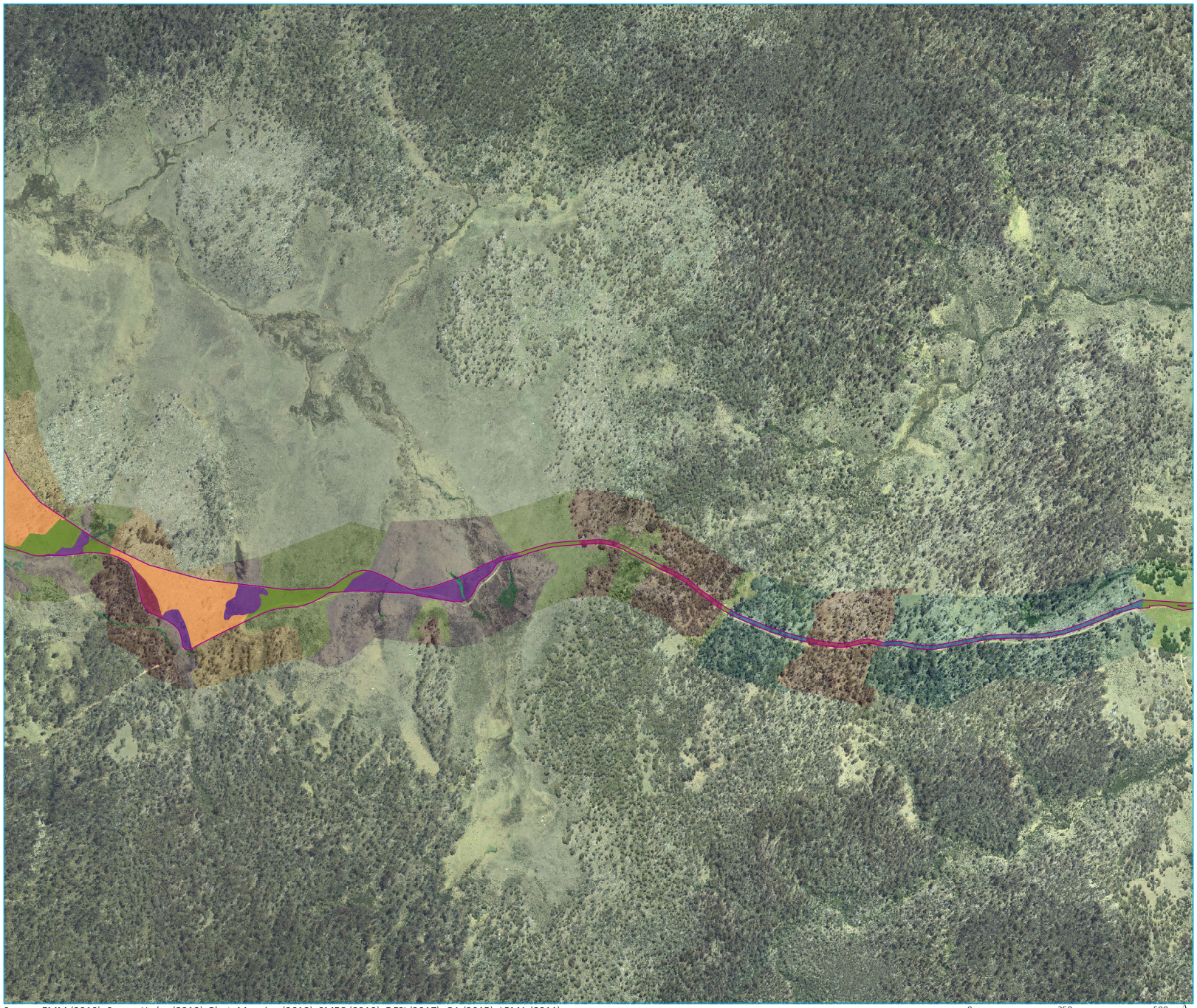
\\emmsvr1\EMM2\V171188 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

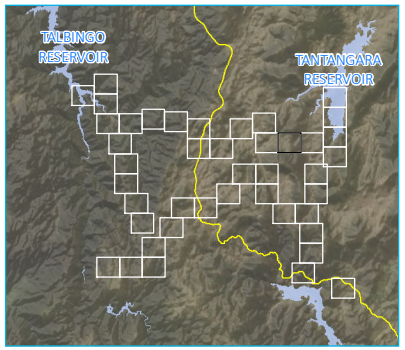
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.18

snowy 2.0

EMM creating opportunities





KEY

- Main Works disturbance footprint
- Other
- PCT 303
  - High
- PCT 637
  - High
  - Medium
- PCT 644
  - High
- PCT 1225
  - High
- PCT 1224
  - High
- PCT 1196
  - High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.19

snowy 2.0

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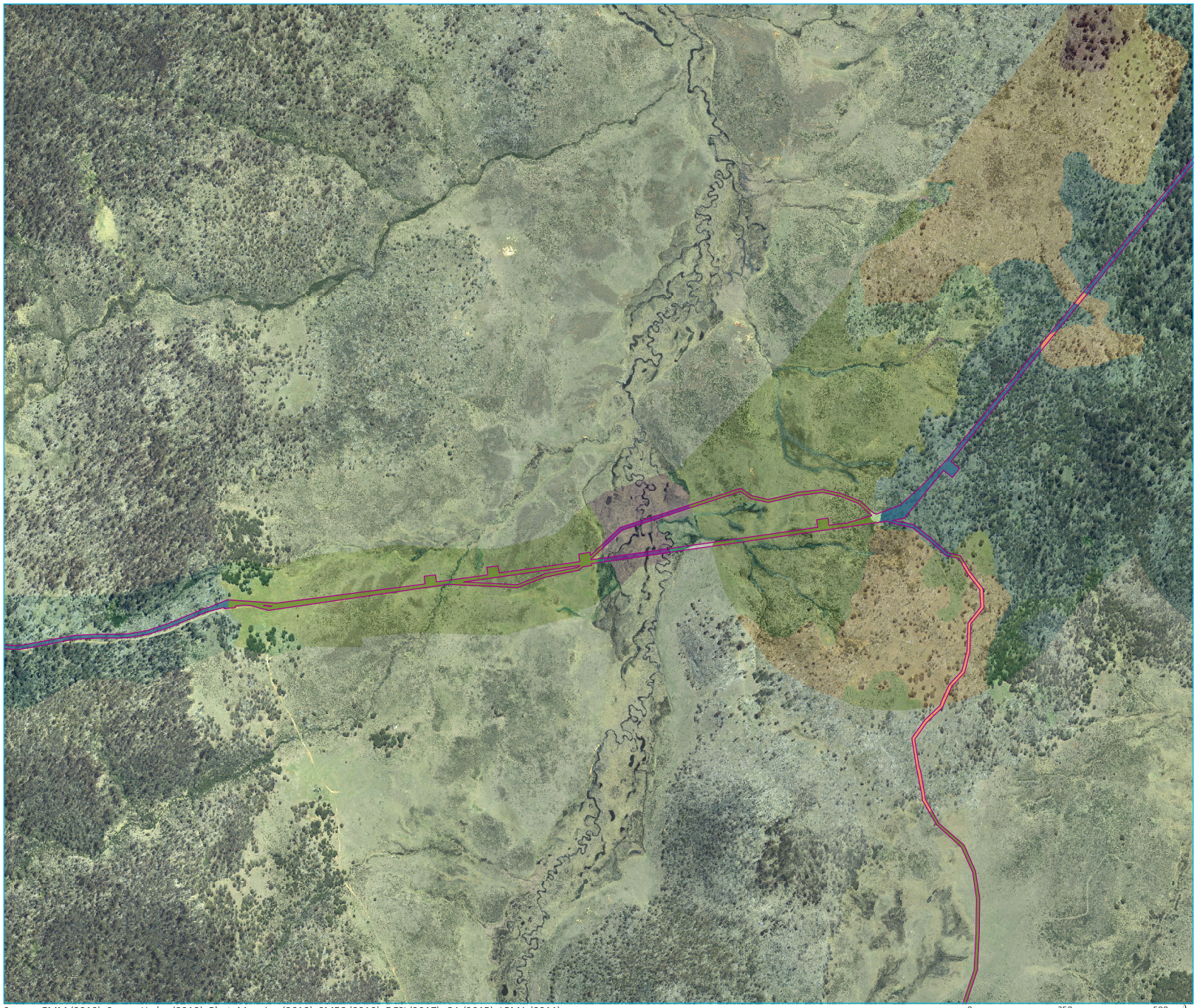

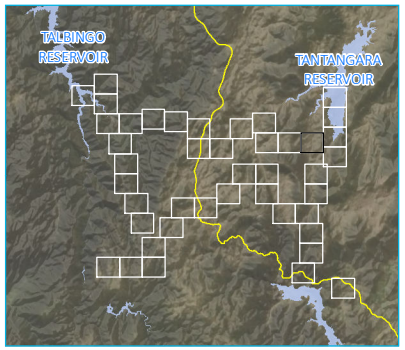

KEY

- Main Works disturbance footprint
- PCT 303
  - High
  - Other
- PCT 637
  - High
  - Medium
- PCT 644
  - High
  - Other
- PCT 1225
  - High
- PCT 1224
  - High
- PCT 1196
  - High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.20

snowy 2.0

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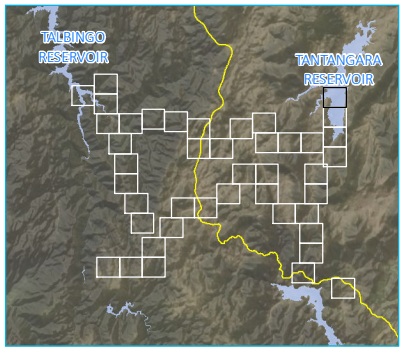


KEY

- Plot location
- Main Works disturbance footprint

PCT 303
- High

PCT 637
- High
- Medium
- Poor

PCT 644
- High

PCT 1224
- High
- Medium
- Low

PCT 1196
- Medium

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

0 250 500 m

GDA 1994 MGA Zone 55

N

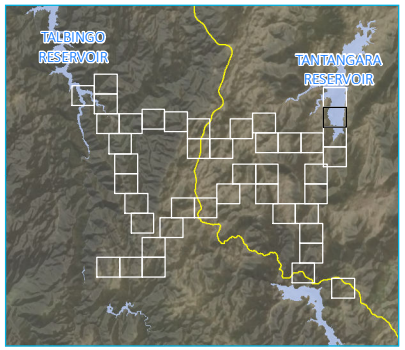
\\emmsvr1\EMM2\V17188 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.21

snowy 2.0

EMM creating opportunities



KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 303
- High

PCT 637
- High
- Medium
- Poor

PCT 644
- High
- Other

PCT 1224
- High
- Medium
- Low

PCT 1196
- High
- Other

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.22

snowy 2.0

EMM creating opportunities

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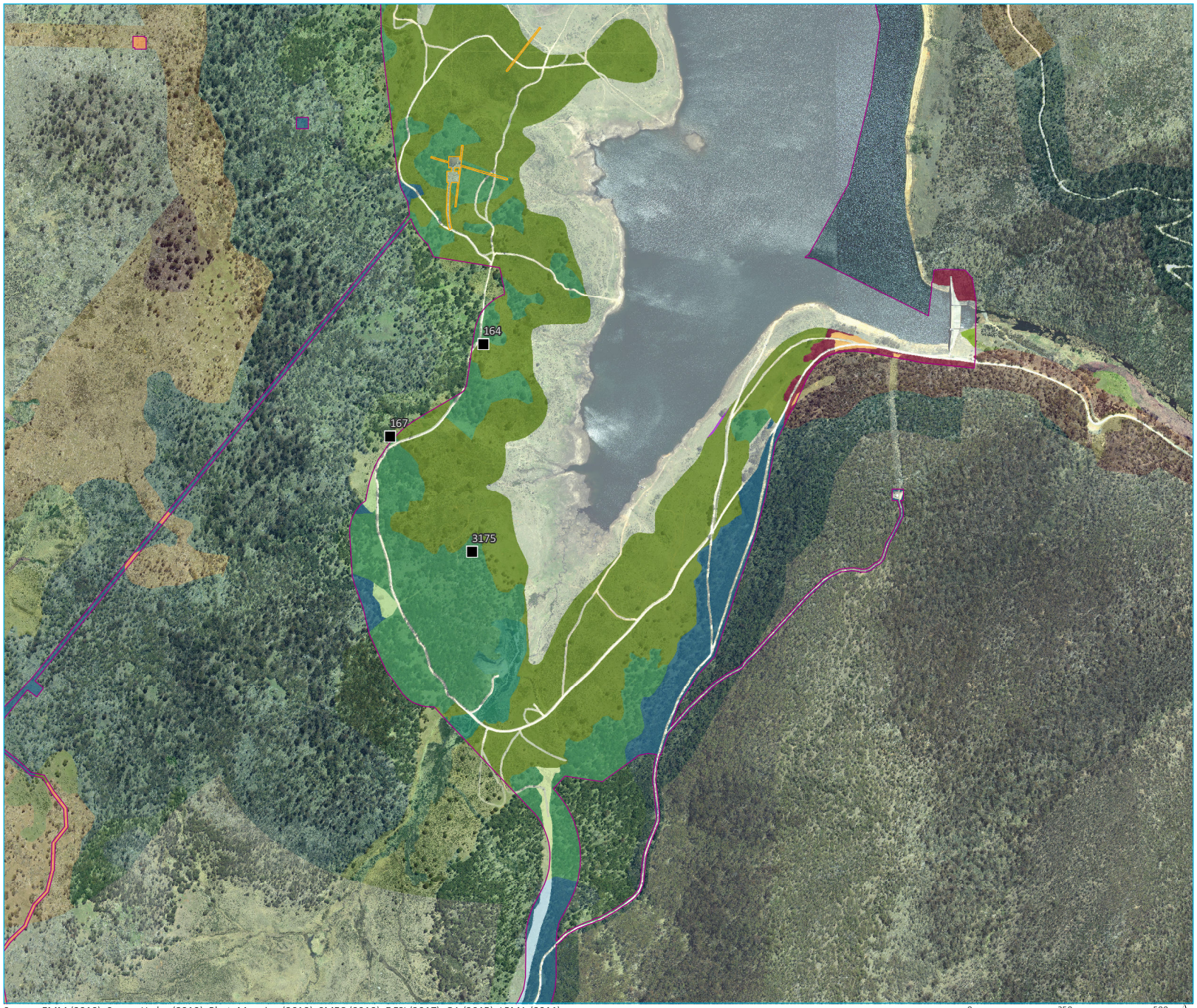

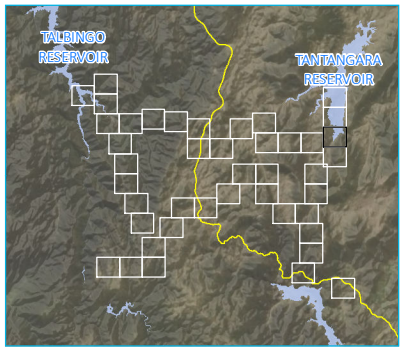

KEY

- Plot location
- Main Works disturbance footprint
- Approved footprint

PCT 303
- High
- Other
- Derived grassland

PCT 637
- High

PCT 644
- High
- Medium
- Other

Derived grassland

PCT 765
- Medium

PCT 1225
- High
- Medium
- Low

PCT 1224
- High
- Medium

PCT 1196
- High
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.23

snowy 2.0

EMM creating opportunities

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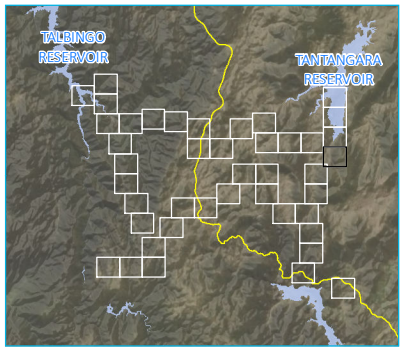


KEY

- Plot location
- Main Works disturbance footprint

PCT 303
- High
- Derived grassland

PCT 637
- High

PCT 644
- Other

PCT 1225
- High

PCT 1224
- High

PCT 1196
- High
- Derived grassland

\\emmsvr1\EMM2\V171\88 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

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

0 250 500 m

GDA 1994 MGA Zone 55

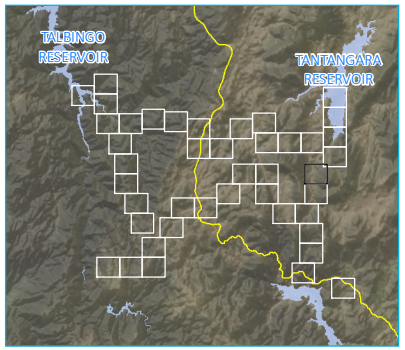
N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.24

snowy 2.0

EMM creating opportunities



KEY

- Plot location
- Main Works disturbance footprint
- PCT 303
  - High
  - Derived grassland
- PCT 637
  - High
- PCT 644
  - High
- Derived grassland
- PCT 1225
  - High
- PCT 1224
  - High
- PCT 1196
  - High
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

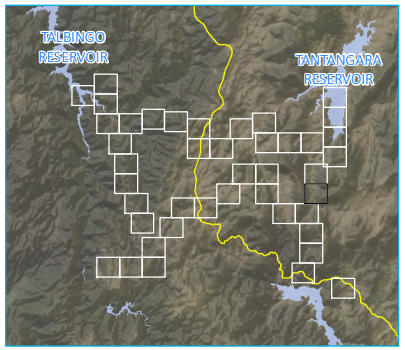
\\emmsvr1\EMM2\V17188 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.25

snowy 2.0

EMM creating opportunities



KEY

- Main Works disturbance footprint
- PCT 303
  - High
  - Derived grassland
- PCT 637
  - High
- PCT 644
  - High
  - Other
- Derived grassland
- PCT 1225
  - High
- PCT 1224
  - High
- PCT 1196
  - High
  - Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.26

snowy 2.0

EMM creating opportunities

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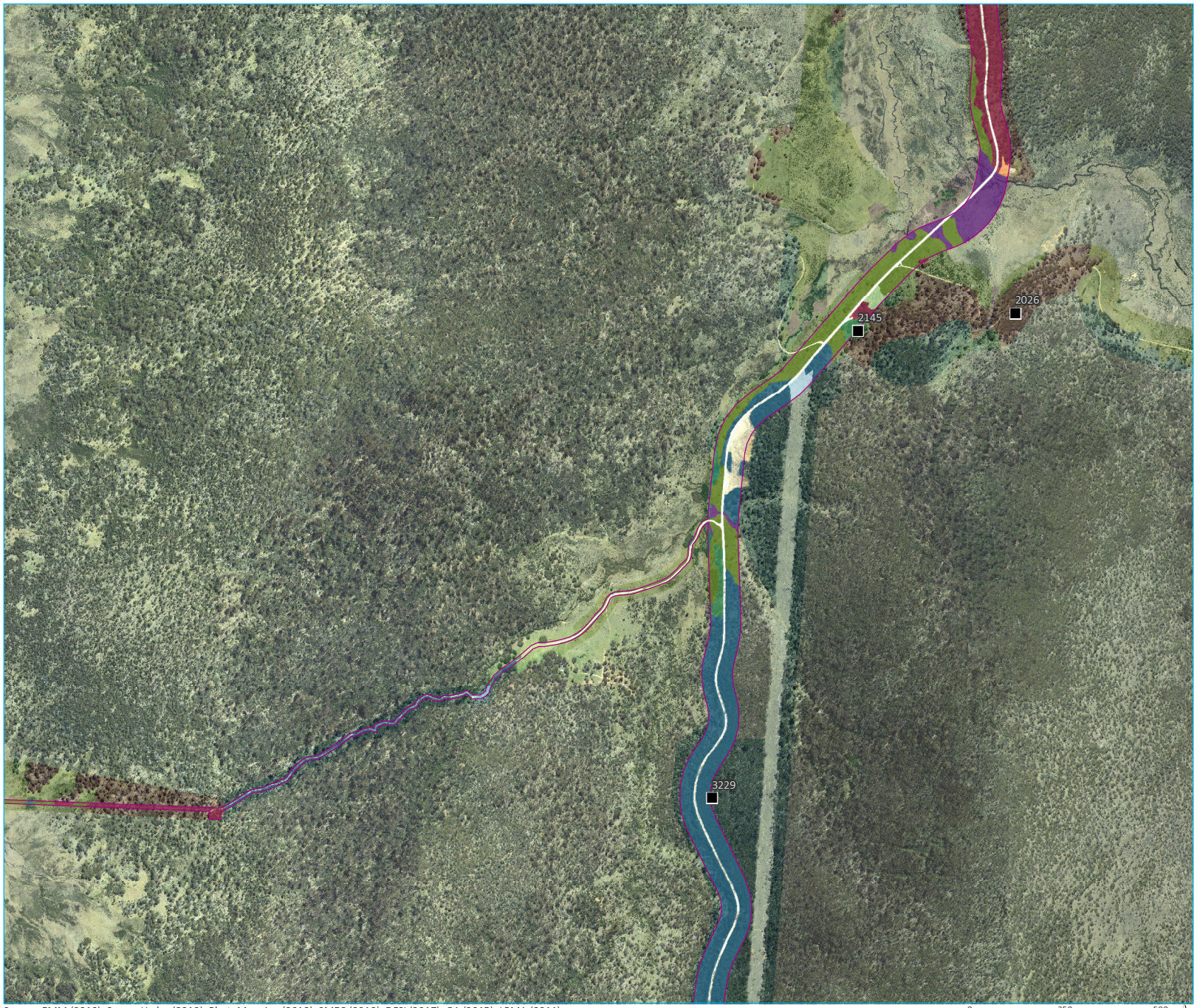
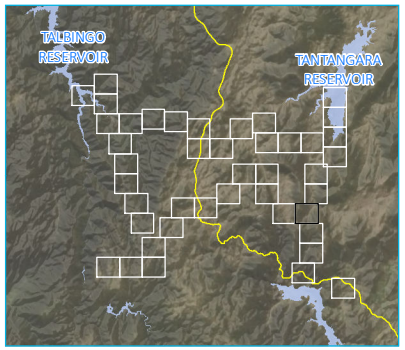




KEY

- Plot location
- Main Works disturbance footprint

PCT 303
- High
- Other
- Derived grassland

PCT 637
- High

PCT 643
- High

PCT 644
- High
- Other

PCT 1225
- High

PCT 1224
- High

PCT 1196
- High
- Other
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

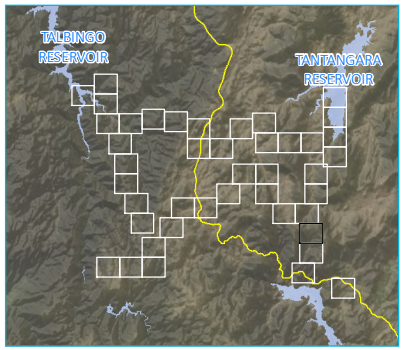
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.27

snowy 2.0

EMM creating opportunities

\\emmsvr1\EMM2\V17188 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019



KEY

- Plot location
- Main Works disturbance footprint
- PCT 303
  - High
  - Derived grassland
- PCT 637
  - High
- PCT 639
  - High
- PCT 644
  - High
- PCT 1224
  - High
- PCT 1196
  - High
  - Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

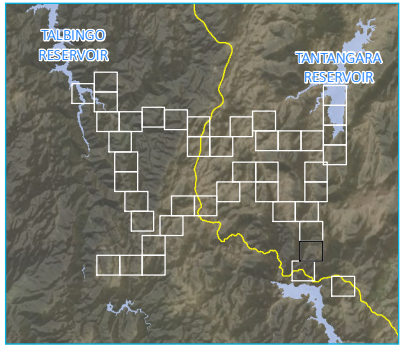
\\emmsvr1\EMM2\V171.88 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.28

snowy 2.0

EMM creating opportunities



KEY

- Plot location
- Main Works disturbance footprint

PCT 303
- High
- Derived grassland

PCT 637
- High

PCT 639
- High

PCT 644
- High

PCT 1225
- High

PCT 1224
- High

PCT 1196
- High
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.29

snowy 2.0

EMM creating opportunities

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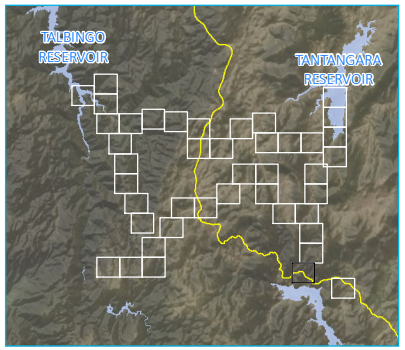


KEY

- Plot location
- Main Works disturbance footprint

PCT 303
- High
- Medium
- Poor

PCT 637
- High

PCT 639
- High

PCT 644
- High

PCT 1225
- High
- Medium

PCT 1224
- High
- Medium
- Low
- Poor

PCT 1196
- High
- Medium
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

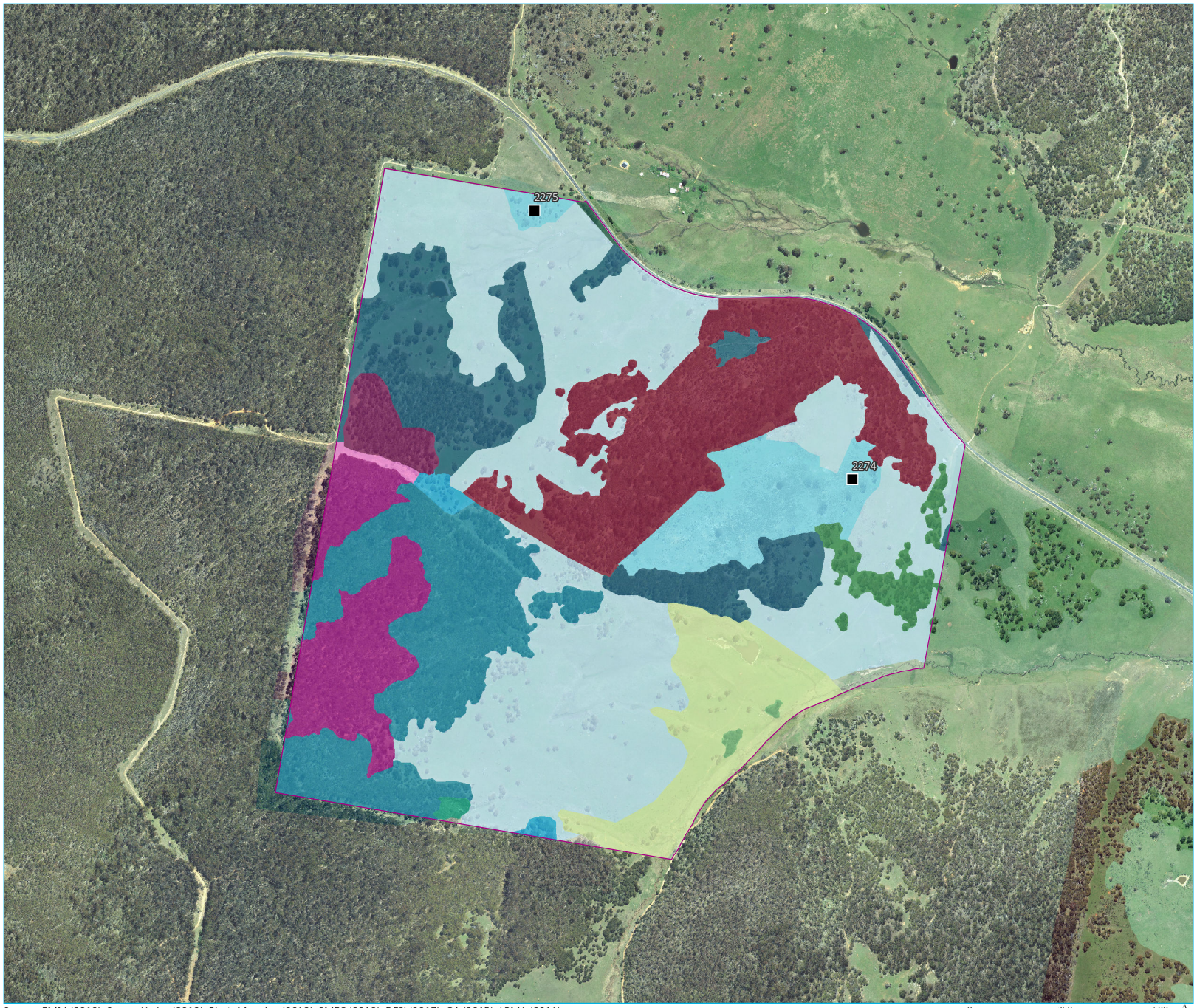
\\emmsvr1\EMM2\V171\88 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

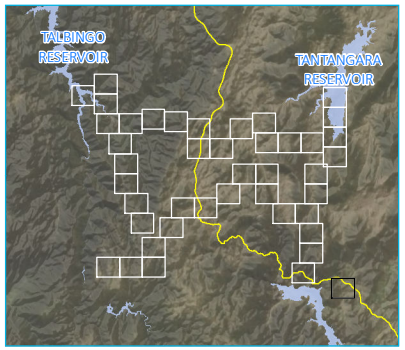
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.30

snowy 2.0

EMM creating opportunities





KEY

- Plot location
- Main Works disturbance footprint

PCT 303
- High
- Poor
- Derived grassland

PCT 637
- Medium

PCT 644
- High

PCT 679
- High

PCT 952
- High
- Medium
- Derived grassland

PCT 1196
- High
- Medium
- Poor
- Other
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

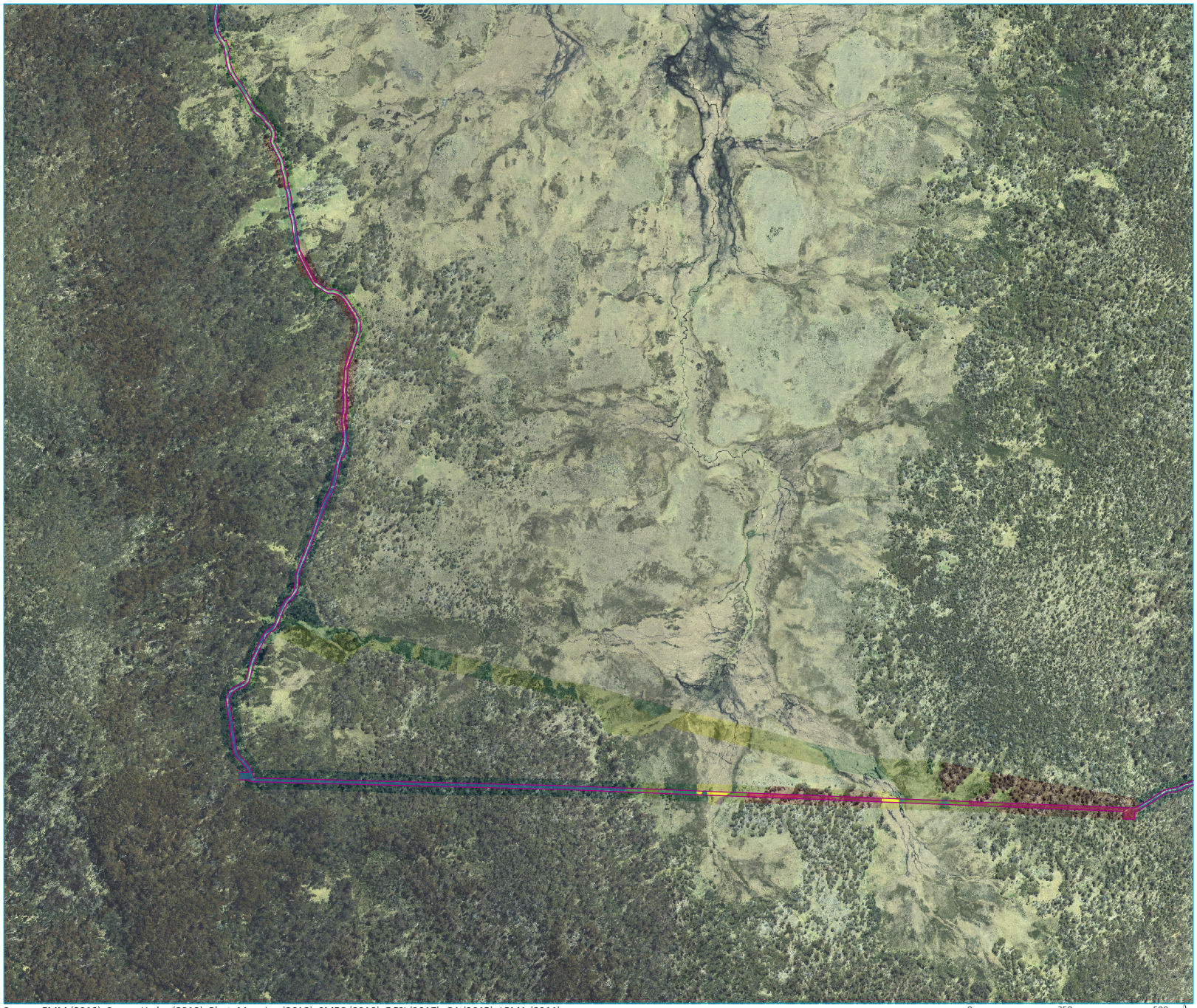
\\emmsvr1\EMM2\V171\88 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

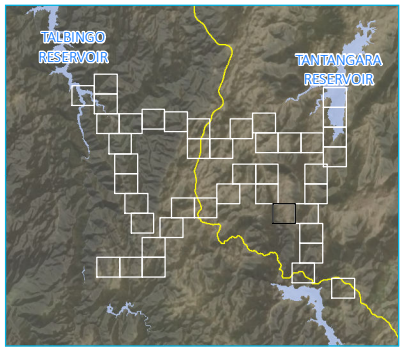
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.31

snowy 2.0

EMM creating opportunities





KEY

- Main Works disturbance footprint
- PCT 303 — High
- PCT 637 — High
- PCT 644 — High
- PCT 644 — Medium
- PCT 765 — High
- PCT 1225 — High
- PCT 1224 — High
- PCT 1196 — High

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

0 250 500 m

GDA 1994 MGA Zone 55

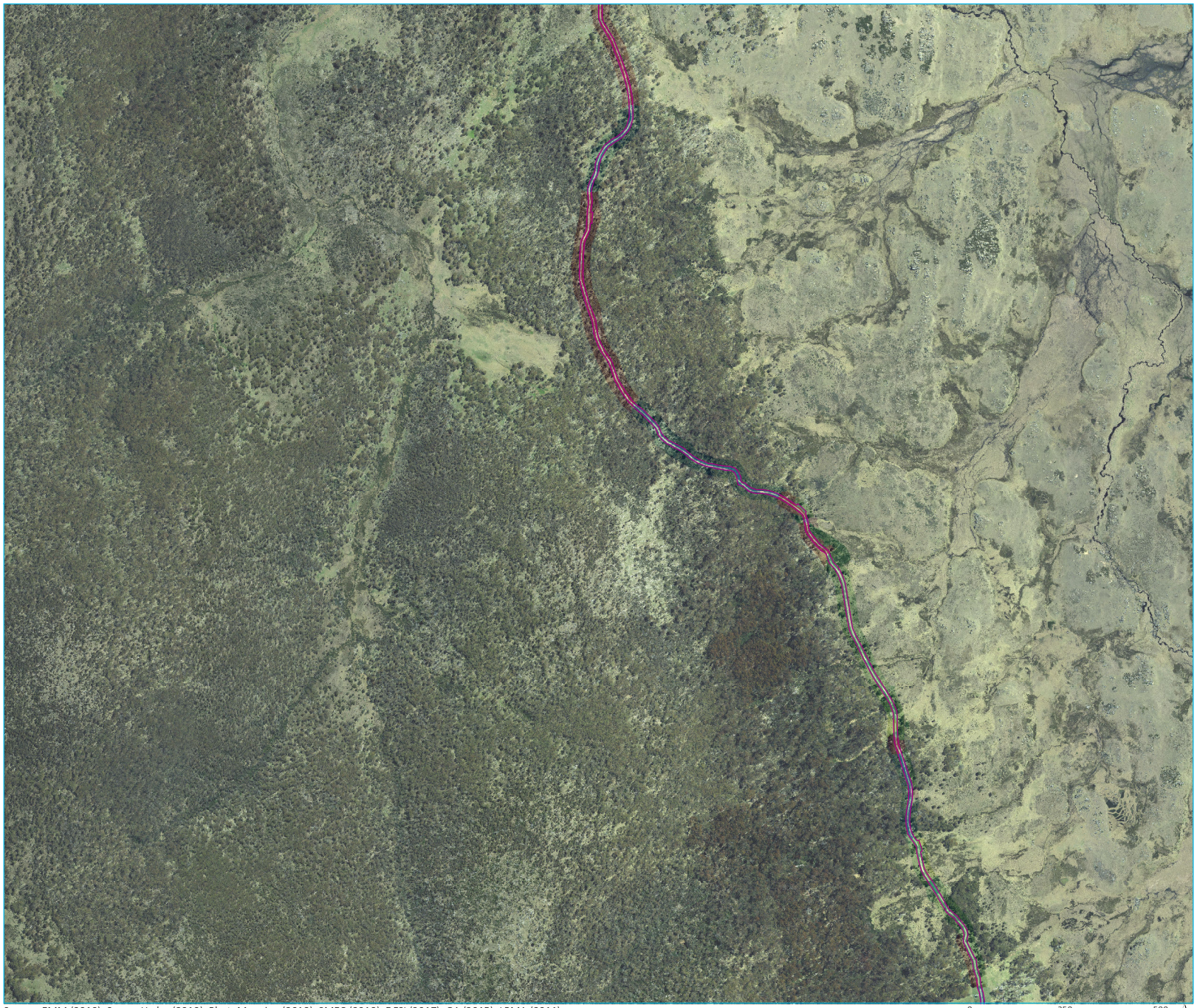
N

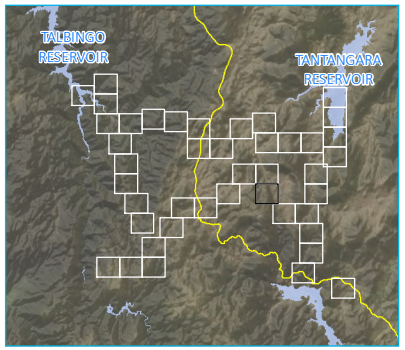
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.32

snowy 2.0

EMM creating opportunities





KEY

- Main Works disturbance footprint
- PCT 303 — High
- PCT 637 — High
- PCT 644 — High
- PCT 1225 — High
- PCT 1224 — High
- PCT 1196 — High

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

0 250 500 m

GDA 1994 MGA Zone 55

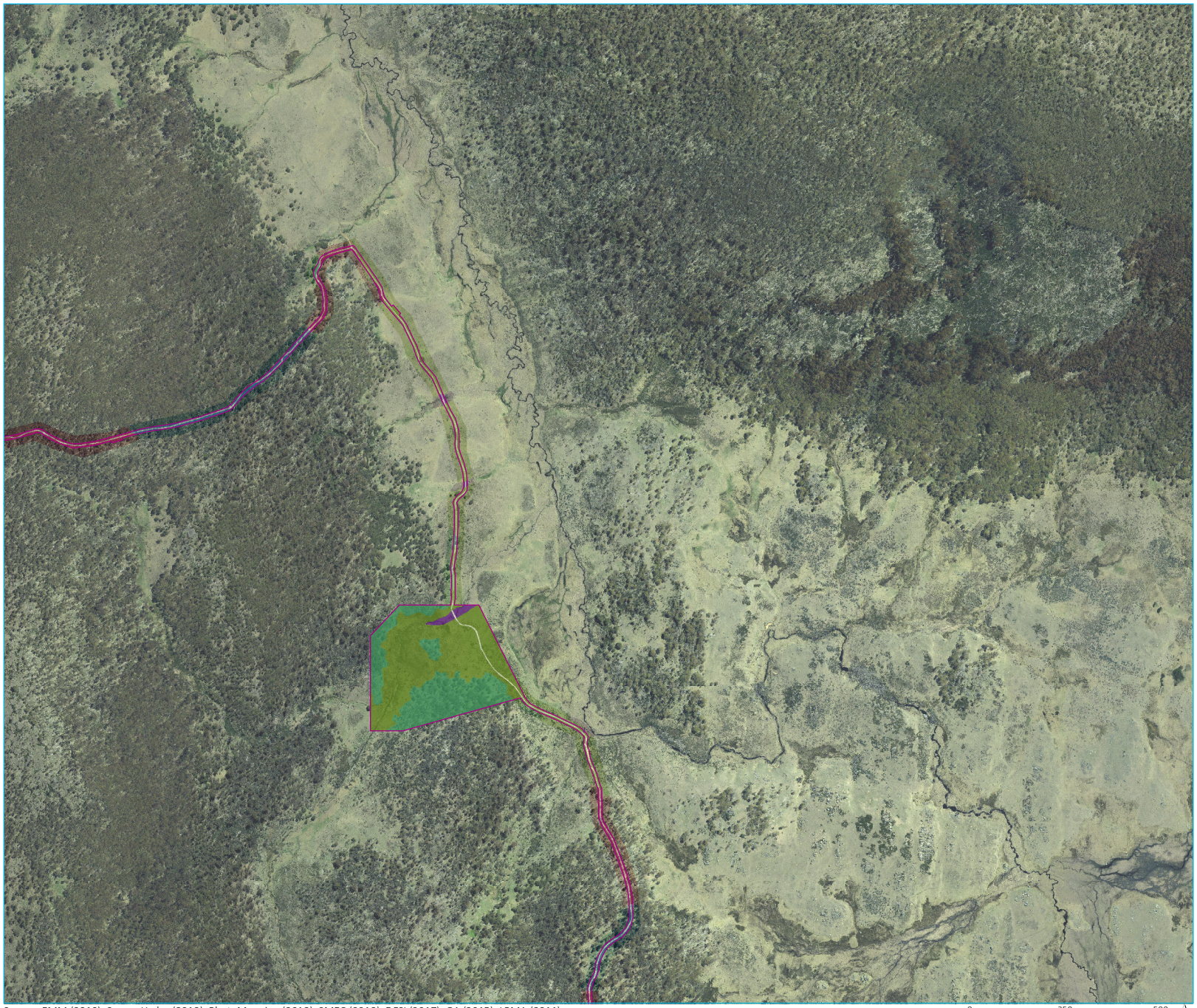
N

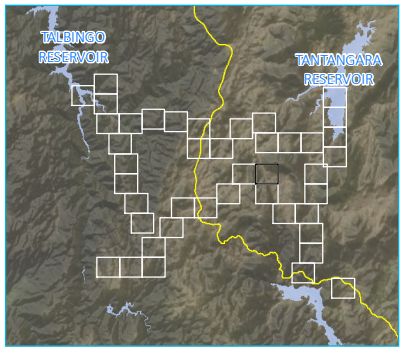
Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.33

snowy 2.0

EMM creating opportunities





KEY

- Main Works disturbance footprint
- PCT 303 — High
- PCT 644 — High
- PCT 1225 — High
- PCT 1224 — High
- PCT 1196 — High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.34

snowy 2.0

EMM creating opportunities

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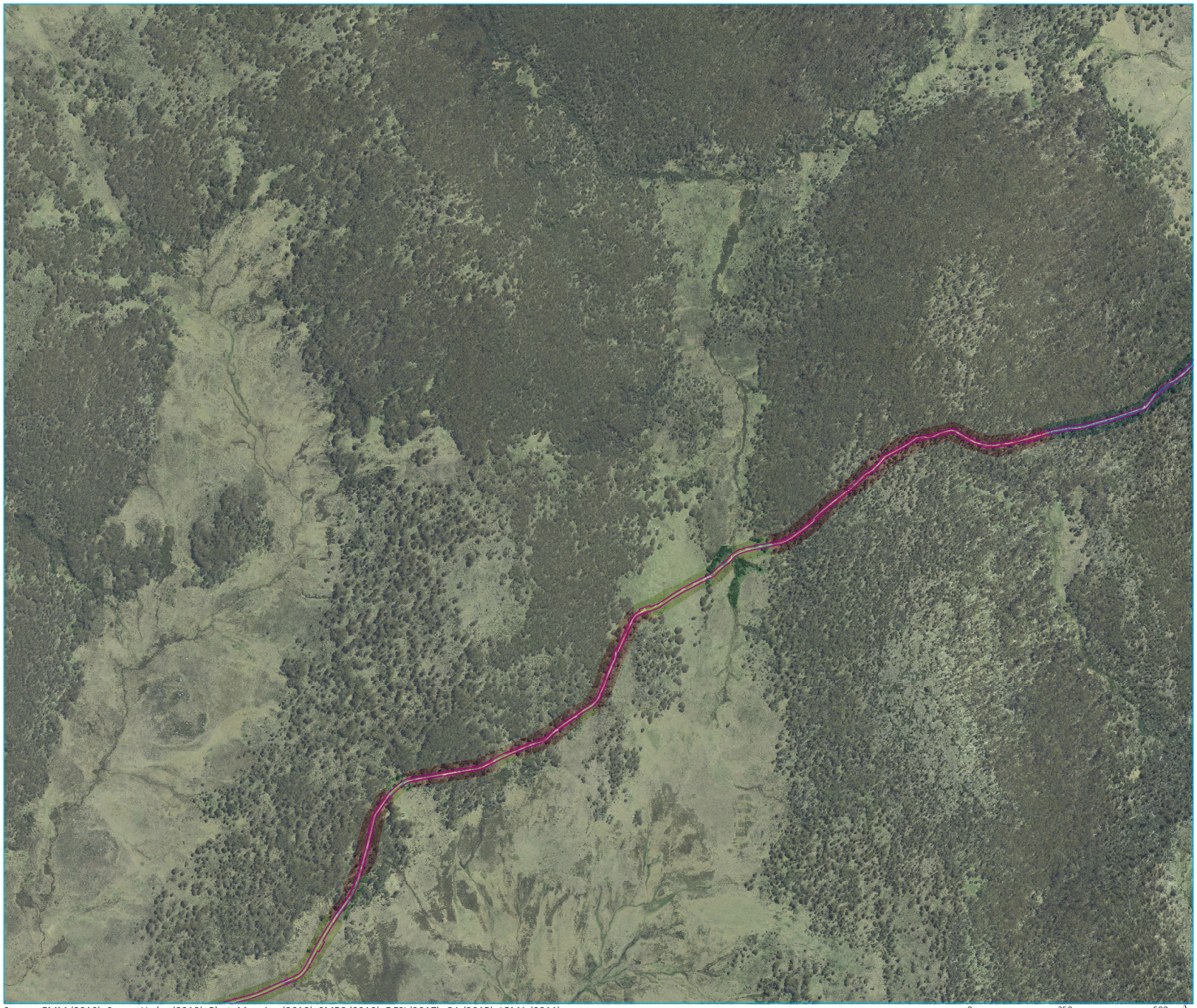

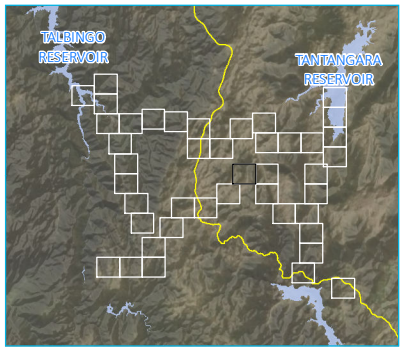

KEY

- Main Works disturbance footprint
- PCT 303 — High
- PCT 637 — High
- PCT 644 — High
- PCT 1225 — High
- PCT 1224 — High
- PCT 1196 — High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.35

snowy 2.0

EMM creating opportunities

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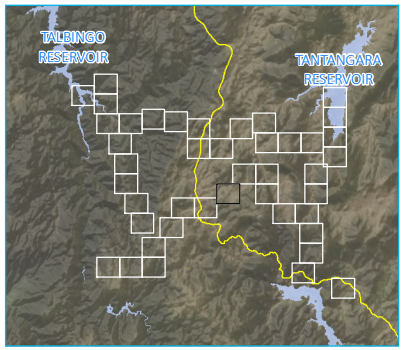

KEY

- Main Works disturbance footprint
- PCT 303 — High
- PCT 637 — High
- PCT 644 — High
- PCT 1225 — High
- PCT 1224 — High

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.36

snowy 2.0

EMM creating opportunities

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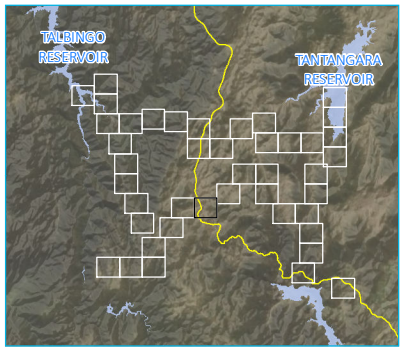


KEY

- Plot location
- Main Works disturbance footprint
- PCT 303
  - High
- PCT 637
  - High
  - Medium
- PCT 644
  - High
- PCT 1225
  - High
  - Medium
  - Poor
- PCT 1224
  - High
  - Medium
  - Poor

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

0 250 500 m

GDA 1994 MGA Zone 55

N

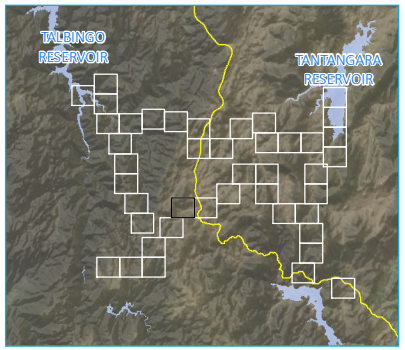
\\emmsvr1\EMM2\V171.88 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.37

snowy 2.0

EMM creating opportunities



KEY

- Plot location
- Main Works disturbance footprint
- PCT 303
  - High
- PCT 637
  - High
- PCT 644
  - High
  - Derived grassland
- PCT 1225
  - High
  - Medium
  - Low
- PCT 1224
  - High
  - Medium
  - Poor

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.38

snowy 2.0

EMM creating opportunities

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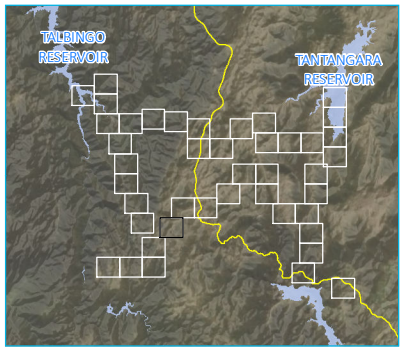


KEY

- Plot location
- Main Works disturbance footprint
- PCT 303
  - High
- PCT 637
  - High
- PCT 644
  - High
- Other
- Derived grassland
- PCT 1225
  - High
  - Medium
- PCT 1224
  - High
  - Poor

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

0 250 500 m

GDA 1994 MGA Zone 55

N

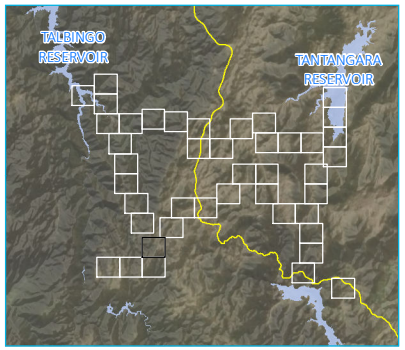
\\emmsvr1\EMM2\V17\88 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.39

snowy 2.0

EMM creating opportunities



KEY

- Plot location
- Main Works disturbance footprint
- PCT 644
- High
- Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

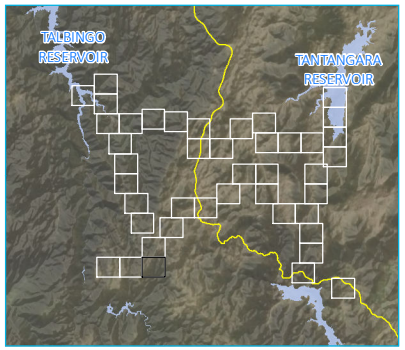
\\emmsvr1\EMM2\V17188 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.40

snowy 2.0

EMM creating opportunities



KEY

- Plot location
- Main Works disturbance footprint
- High
- Derived grassland

PCT 644

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

0 250 500 m

GDA 1994 MGA Zone 55

N

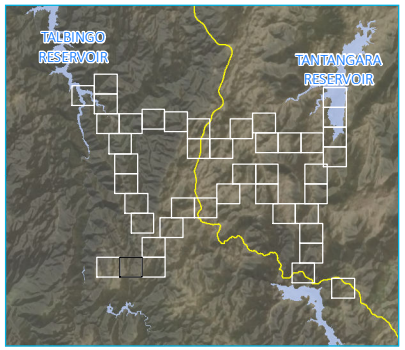
\\emmsvr1\EMM2\V17\88 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.41

snowy 2.0

EMM creating opportunities



KEY

- Plot location
- Main Works disturbance footprint
- PCT 637
  - High
- PCT 644
  - High
  - Derived grassland
- PCT 679
  - High
- PCT 1225
  - Low
- PCT 1224
  - High
  - Low
  - Poor
- PCT 1196
  - High
  - Derived grassland

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

0 250 500 m

GDA 1994 MGA Zone 55

N

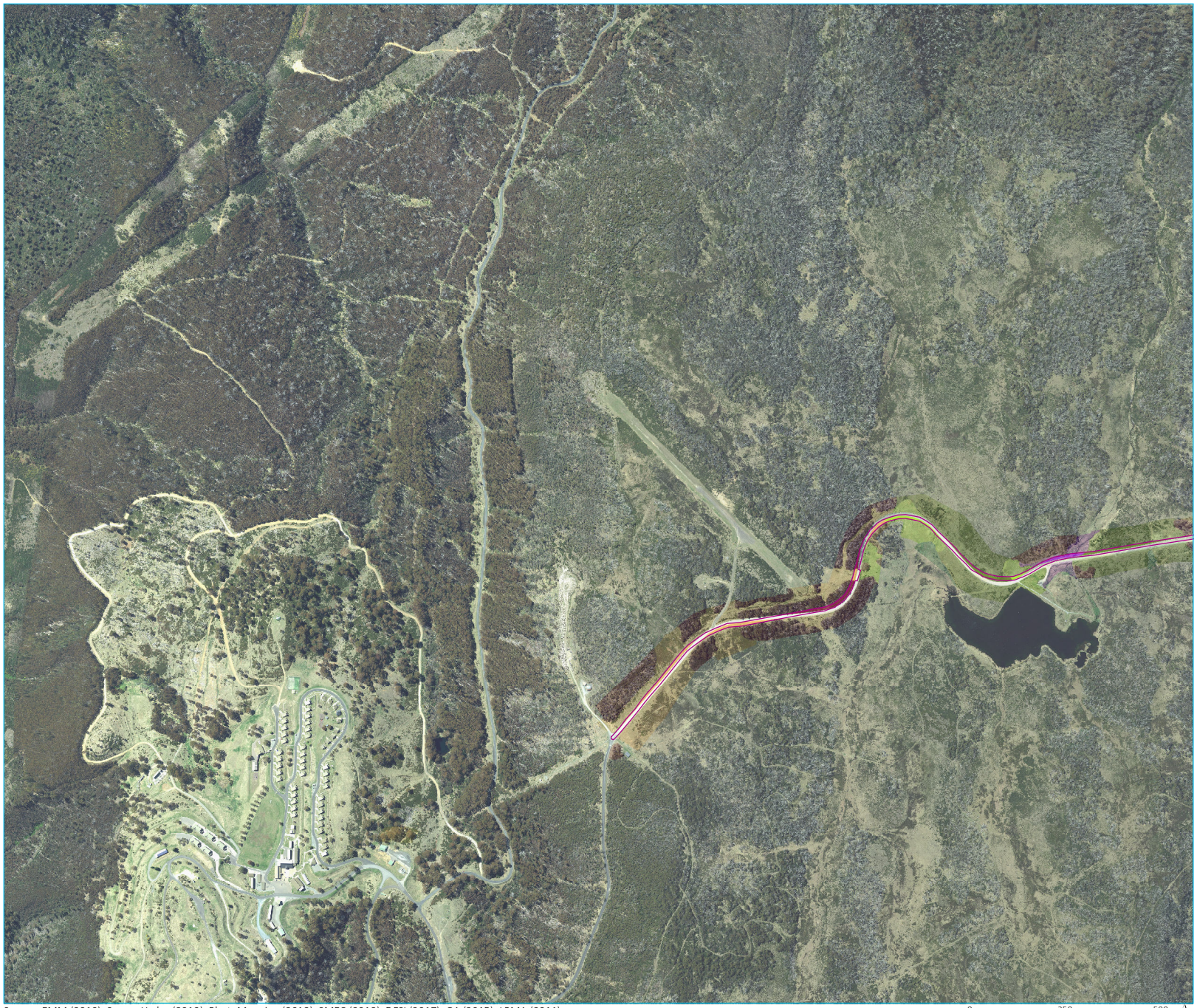
\\emmsvr1\EMM2\V171\88 - Snowy Hydro 2.0\GIS\02_Maps_EIS_MW\TechReports\BDAR\B003_MWPCTandPlots_20190620_DDP_02.mxd 4/09/2019

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.42

snowy 2.0

EMM creating opportunities



KEY

- Main Works disturbance footprint
- Derived grassland
- PCT 637
  - High
- PCT 639
  - High
- PCT 644
  - High
- PCT 1225
  - Low
- PCT 1224
  - High
  - Low
  - Poor

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Plant Community Type and vegetation zone mapping within the Main Works disturbance footprint, including plots locations

Snowy 2.0
Biodiversity Assessment Report
Main Works
Figure 5.1.43

snowy 2.0

EMM creating opportunities

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5.3.3 Vegetation zones

Each of the 22 PCTs identified within the Main Works disturbance footprint was stratified into vegetation zones based on broad condition state, as per the method outlined in Section 5.2.1, and allocated a condition class as per the descriptions in Table 5.1. This process identified 70 vegetation zones within the project area, as outlined in Table 5.3.

Table 5.3 Vegetation zones mapped within the Main Works disturbance footprint

Plant community type	Condition	Area (ha)
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Low	<0.01
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Derived grassland	1.51
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Poor	0.56
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Medium	4.78
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	High	0.14
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Low	1.11
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Derived grassland	0.68
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Poor	0.05
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Medium	19.49
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	High	8.64
PCT 299 – Riparian Ribbon Gum - Robertsons Peppermint - Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands	Medium	1.91
PCT 299 – Riparian Ribbon Gum - Robertsons Peppermint - Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands	High	1.96
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	1.49
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	4.87
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	8.59
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	54.67
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	2.71

Table 5.3 Vegetation zones mapped within the Main Works disturbance footprint

Plant community type	Condition	Area (ha)
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	0.13
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	3.19
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	1.60
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	0.82
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	Derived grassland	17.06
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	Poor	0.38
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	0.83
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	Medium	<0.01
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	High	60.17
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	37.05
PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion	Poor	0.15
PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion	Medium	0.47
PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	3.47
PCT 638 – Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Derived grassland	0.45
PCT 638 – Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	High	15.51
PCT 639 – Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Other	1.60
PCT 639 – Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	5.01
PCT 643 - Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion	Low	0.26
PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	Derived grassland	2.61

Table 5.3 Vegetation zones mapped within the Main Works disturbance footprint

Plant community type	Condition	Area (ha)
PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	Other	8.29
PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	Medium	0.38
PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	104.94
PCT 679 – Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion	Other	0.01
PCT 679 – Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	0.25
PCT 729 - Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Low	0.15
PCT 729 - Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Derived grassland	2.98
PCT 729 - Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Medium	11.41
PCT 729 - Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	High	66.55
PCT 765 – Carex - Juncus sedgeland/wet grassland of the South Eastern Highlands Bioregion	High	0.12
PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion	Derived grassland	0.53
PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion	Medium	14.75
PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion	High	3.64
PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	Derived grassland	1.47
PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	12.88
PCT 999 - Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	Derived grassland	1.24
PCT 999 - Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	Medium	4.70
PCT 999 - Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	High	37.43
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Derived grassland	1.58
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Medium	1.15
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	High	23.32
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Derived grassland	89.40

Table 5.3 Vegetation zones mapped within the Main Works disturbance footprint

Plant community type	Condition	Area (ha)
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Other	14.42
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Poor	1.36
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Medium	28.15
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	214.81
PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Low	0.01
PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Poor	0.73
PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Medium	15.91
PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	High	117.19
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Low	0.12
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Poor	0.17
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Medium	0.11
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	High	8.61

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

Descriptions of each PCT are provided in the following tables. PCTs and vegetation zones are mapped in Figure 5.1.

Table 5.4 PCT 285 - Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion description

PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	
PCT ID	285
Common name	Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion
Condition classes	Five vegetation zones were mapped within the project area: • Low • Derived grassland • Poor • Medium • High

Table 5.4 PCT 285 - Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion description

Extent within Main Works	Low: <0.01 ha Derived grassland: 1.51 ha Poor: 0.56 ha Medium: 4.78 ha High: 0.14 ha The vegetation zone assigned a condition of Low was not inputted into the calculator as the area of this vegetation zone is less than 0.01 ha.
Description	This PCT occurs on valley flats surrounding creeks at the bottom of Lobs Hole Ravine. Broad-leaved Sally (*Eucalyptus camphora* subsp. *humeana*) is the dominant canopy species with few Candlebark (*Eucalyptus rubida*) scattered throughout. Midstorey consists of Wedge-leaved Wattle (*Acacia pravissima*), Dwarf Cherry (*Exocarpos strictus*), Blackwood (*Acacia melanoxylon*) and Small-leaved Silver Wattle (*Acacia dealbata*), Mountain Mirbelia (*Mirbelia oxylobioides*), Hoary Guinea Flower (*Hibbertia obtusifolia*) and Sifton Bush (*Cassinia arcuata*). The ground cover includes a mix of native grasses, sedges, rushes and both native and exotic forbs. Grass species include Kangaroo Grass (*Themeda triandra*), *Poa sieberiana*, Tussock (*Poa labillardierei*), Weeping Grass (*Microlaena stipoides*), Wiry Panic (*Entolasia stricta*). Sedges and Rush species include Tall Sedge (*Carex appressa*), *Carex gaudichaudiana*, *Carex inversa* and Wattle Mat-rush (*Lomandra filiformis*). Native forbs include Poverty Raspwort (*Gonocarpus tetragynus*), Raspwort (*Gonocarpus teucrioides*), Bidgee-widgee (*Acaena novae-zelandiae*), Daphne Heath (*Brachyloma daphnoides*), Native Raspberry (*Rubus parvifolius*) and *Oxalis perennans*. Blackberry is the dominating exotic species and was observed to be outcompeting many native forbs and grasses. Other exotic species include Sweet Briar, St John's Wort (*Hypericum perforatum*), Yorkshire Fog (*Holcus lanatus*) and Common Centaury (*Centaurium erythraea*).
Survey effort	Derived grassland: one plot (3213) Poor: one plot (1013) Medium: two plots (1046, 144) High: one plot (2265)
Condition description	This PCT occurs in a variety of condition states throughout the project area. The majority of this PCT within the project area is in medium condition with relatively high native cover, a simpler vegetation structure and some weeds present. Areas in high condition consist of relatively intact native vegetation with low exotic cover. Patches of this vegetation adjacent to Yarrangobilly River have been mapped as poor condition. These areas include isolated trees with a modified understorey and exotic species present. Cleared grassland areas derived from this PCT with a higher native component were mapped as derived grasslands; this primarily includes areas underneath managed powerline easements.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Broad-leaved Sally and Candlebark. This communities midstorey predominantly aligns with the species listed in the NSW VIS Classification, including Small-leaved Wattle, Blackwood, Sifton Bush, Mountain Mirbelia and Hoary Guinea Flower. Groundcover also consists of associated grasses and forbs including Tall Sedge, Bidgee-widgee, Kangaroo Grass, Poverty Raspwort and Native Raspberry.
Justification of evidence used to identify the PCT	PCT 285 occurs within the South Eastern Highlands, NSW South Western Slopes and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs on valley flats surrounding creeks within mountain landscapes. This community has been mapped within these landforms. Characteristic species recorded within this community align with the VIS.

Table 5.4 PCT 285 - Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion description

Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed Justification: The VIS states the PCT likely relates to the Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and South Western Slopes Bioregions (BC Act) endangered ecological community (EEC). Given the dominant species in the overstorey of the PCT, Broad-leaved Sally, is not one of the characteristic species used to define the community (NSWSC 2011) the PCT is considered unlikely to align with the EEC.
Estimate of percent cleared value of PCT across NSW	75%

Photograph 5.1 Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion – Plot 2265

Table 5.5 PCT 296 - Brittle Gum – peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion description

PCT 296 - Brittle Gum – peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	
PCT ID	296
Common name	Brittle Gum – peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion
Condition classes	Five vegetation zones were mapped within the project area: • Low • Derived Grassland • Poor • Medium • High
Extent within Main Works	Low: 1.11 ha Derived grassland: 0.68 ha Poor: 0.05 ha Medium: 19.49 ha High: 8.64 ha
Description	This PCT occurs on steep hillslopes and mountain landforms within the bottom of Lobs Hole Ravine. The canopy consists of Brittle gum (*Eucalyptus mannifera* subsp*. mannifera*), Broad-leaved Peppermint (*Eucalyptus dives*) and Red Stringybark (*Eucalyptus macrorhyncha*). Robertson's Peppermint (*Eucalyptus robertsonii* subsp*. robertsonii*) was recorded scattered throughout. The midstorey varies between a fairly sparse to dense cover comprising of Silver Wattle, Native Blackthorn (*Bursaria spinosa*), Common Fringe-myrtle (*Calytrix tetragona*), Hoary guinea flower, Mountain Banksia (*Banksia canei*) and *Cassinia longifolia*. The groundcover consists of a variety of native grasses, forbs, rushes and sedges. Grasses including Tussock, Snowgrass (*Poa sieberiana* var*. sieberiana*), Silvertop Wallaby Grass (*Rytidosperma pallidum*) and *Poa sieberiana* var*. cyanophylla* while native forbs comprise of Raspwort, Grass Trigger plant (*Stylidium graminifolium*), Small St John's Wort (*Hypericum gramineum*) and Hairy Apple Berry (*Billardiera scandens*). Rushes and sedges include Wattle Mat-rush and Fluke Bogrush (*Schoenus apogon*). Exotic species recorded within this vegetation type include St John's Wort, Blackberry, Sweet Briar and Common Centaury.
Survey effort	Low: one plot (181) Derived grassland: one plot (3301) Poor: one plot (1006) Medium: three plots (2161, 3076, 3003) High: three plots (42, 79, 80)
Condition description	This PCT occurs in a variety of condition states throughout the project area within the bottom of Lobs Hole Ravine and adjacent to Talbingo Reservoir. The majority of this PCT in the project area is in high condition consisting of relatively intact vegetation with high native cover, multiple vegetation strata, and low exotic cover. Several areas of medium condition were also identified; these areas also have relatively high native cover but have a simpler vegetation structure and/or some weeds present. One area in Lobs Hole Ravine contains patches of poor and low condition PCT 296; the poor condition area consists of a small patch of isolated trees with a modified understorey, while the low condition area is the highly modified grassland that surrounds this poor condition patch of forest. Cleared grassland areas derived from this PCT with a higher native component were mapped as derived grasslands; this primarily includes areas of derived native grassland underneath managed powerline easements.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Brittle Gum, Broad-leaved Peppermint, Red Stringybark and Robertson's Peppermint. Aligning midstorey species include Silver Wattle and Hoary guinea flower. Understorey species that align with this PCT include Wattle Mat-rush, Small St John's Wort, Grass Trigger plant and Raspwort.

Table 5.5 PCT 296 - Brittle Gum – peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion description

Justification of evidence used to identify the PCT	PCT 296 occurs within the NSW South Western Slopes, South Eastern Highlands and Australian Alps, in which the project area is located. The landscape position described within the VIS states the PCT occurs at altitudes over 500 m on steep hillslopes or mountain landform patterns; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	40%

Photograph 5.2 Brittle Gum – peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion – Plot 42

Table 5.6 PCT 299 – Riparian Ribbon Gum – Robertson's Peppermint – Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion description

PCT 299 – Riparian Ribbon Gum – Robertson's Peppermint – Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion

PCT ID	299
Common name	Riparian Ribbon Gum - Robertson's Peppermint - Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion
Condition classes	Two vegetation zones were mapped within the project area: • Medium • High
Extent within Main Works	Medium: 1.91 ha High: 1.96 ha
Description	This PCT occurs on valley flats and along streams within the bottom of Lobs Hole Ravine. The canopy is composed of Ribbon Gum (*Eucalyptus viminalis*), Robertson's Peppermint and Red Stringybark. The midstorey comprises of Dwarf Cherry, Dolly Bush (*Cassinia aculeata*), Silver Wattle, Blackwood, *Cassinia longifolia*, Wedge-leaved Wattle and Native Blackthorn. Ground cover consists mainly of native forb species such as Native Geranium (*Geranium solanderi*), Prickly Starwort (*Stellaria pungens*), Poverty Raspwort, *Asperula spp.*, and Kidney Weed (*Dichondra repens*). The groundcover also consisted of a small number of native grasses and sedges such as Tall Sedge, Spiny-headed Mat-rush (*Lomandra longifolia*), Many-flowered Mat-rush (*Lomandra multiflora*), Wheatgrass (*Anthosachne scabra*) and Kangaroo Grass. Exotic species such as Blackberry, St John's Wort, Yorkshire Fog, Sweet Briar and Common Centaury.
Survey effort	Medium: one plot (3184) High: one plot (2264)
Condition description	Several areas of this PCT occur in the project area, with two areas in the central and western parts of Lobs Hole Ravine in medium condition and one area in the eastern part of Lobs Hole Ravine in high condition. The medium condition areas occur in the parts of Lobs Hole Ravine that were subject to historical clearing, and as such are slightly degraded from weed invasion and past disturbance. The high condition area of PCT 299 occurs within a larger area of intact vegetation and has limited evidence of past disturbance and very low weed cover.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community; including Ribbon Gum, Robertson's Peppermint and Red Stringybark. Silver Wattle and Blackwood align with the midstorey species. Tall Sedge and Wheatgrass align with the groundcover species.
Justification of evidence used to identify the PCT	PCT 299 occurs within South Eastern Highlands, NSW South Western Slopes and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs on valley flats and along streams in mountain landforms, generally between 350 and 850 m altitude; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	50%

Table 5.6 **PCT 299 – Riparian Ribbon Gum – Robertson's Peppermint – Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion description**

Photograph 5.3 **Riparian Ribbon Gum - Robertsons Peppermint - Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion – Plot 1036**

Table 5.7 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 Kosciuszko escarpment description

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 Kosciuszko escarpment	
PCT ID	300
Common name	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 Kosciuszko escarpment
Condition classes	Four vegetation zones were mapped within the project area: • Derived Grassland • Other • Medium • High
Extent within Main Works	Derived Grassland: 1.49 ha Other: 4.87 ha Medium: 8.59 ha High: 54.67 ha
Description	This PCT occurs on sheltered hillslopes across the project area; this PCT is known to occur along Lobs Hole Ravine Road, at the bottom of Lobs Hole Ravine and across to the Marica area. The canopy is composed of Ribbon Gum and Narrow-leaved Peppermint. The midstorey comprises of, Silver wattle, Handsome Flat Pea (*Platylobium formosum*), Wedge-leaved Wattle, Narrow Leaf Hop Bush (*Dodonaea viscosa* subsp. *angustissima*), Bulbine Lily (*Bulbine bulbosa*), *Cassinia longifolia* and River Lomatia (*Lomatia myricoides*). Ground cover includes a number of native grasses, rushes and forbs. Grasses recorded include Slender Wallaby Grass (*Rytidosperma penicillatum*), *Dichelachne rara*, Longhair Plume Grass (*Dichelachne crinita*), Tussock, and Speargrass (*Austrostipa scabra*). Native forbs include Bidgee-widgee, Tall Bluebell (*Wahlenbergia stricta* subsp. *stricta*), Small St John's Wort, Variable Glycine (*Glycine tabacina*), Prickly Woodruff (*Asperula scoparia*) and Native violet (*Viola betonicifolia*). The exotic species Delicate Hairgrass (Aira elegantissima), Common Centaury, St John's Wort and Blackberry were recorded within the community.
Survey effort	Derived Grassland: one plot (2284) Other: two plots (174, 2119) Medium: three plots (1020, 1021, 3179) High: five plots (60, 72, 156, 172, 2079)
Condition description	This PCT occurs in a variety of condition states throughout the project area where it primarily occurs on steep slopes and sheltered gullies within the Yarrangobilly River catchment. The majority of this PCT in the project area is in high and medium condition states, consisting of relatively intact vegetation with high native cover and relatively low exotic cover. Several areas of this PCT along Lobs Hole Ravine Road were classified as 'other'; these areas have been subject to past clearing and now consist of scattered mature trees but with regeneration of native canopy and midstorey species evident. The ground layer of this condition state is typically a mix of native and exotic species. Cleared grassland areas derived from this PCT with a relatively high native component were mapped as derived grasslands; this primarily includes areas of derived native grassland and shrublands underneath managed powerline easements in Lobs Hole Ravine.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Ribbon Gum and Narrow-leaved Peppermint. Aligning midstorey species include Silver Wattle, Handsome Flat Pea, Wedge-leaved Wattle and River Lomatia. Understorey species aligning with the VIS include Bidgee-widgee, Small St John's Wort, Variable Glycine, Prickly Woodruff and Native Violet.

Table 5.7 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 Kosciuszko escarpment description

Justification of evidence used to identify the PCT	PCT 300 occurs within the South Eastern Highlands, NSW South Western Slopes and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs on sheltered hillslopes in a mountain landform pattern; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	20%

Photograph 5.4 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 Kosciuszko escarpment – Plot 72

Table 5.8 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 description

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	
PCT ID	302
Common name	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
Condition classes	Five vegetation zones were mapped within the project area: • Low • Poor • Other • Medium • High
Extent within Main Works	Low: 2.71 ha Poor: 0.13 ha Other: 3.19 ha Medium: 1.60 ha High: 0.82 ha
Description	This PCT occurs adjacent to the Yarrangobilly River and Wallace's Creek in Lobs Hole Ravine. The canopy is composed of Ribbon Gum, Black Sally (*Eucalyptus stellulata*) and Broad-leaved Sally. Midstorey species include Wedge-leaved Wattle, Native Blackthorn, Dolly Bush, Hazel Pomaderris (*Pomaderris aspera*), *Pomaderris angustifolia*, Hoary Guinea Flower, Matted Parrot-pea (*Dillwynia sericea*), Blackwood, Dwarf Cherry (*Exocarpos stricta*), *Cassinia longifolia*, Rosemary Grevillea (*Grevillea rosmarinifolia*) and River Lomatia. Ground cover includes a number of native grasses, rushes and forbs. Grasses recorded include Kangaroo Grass, Common Couch (*Cynodon dactylon*), Tussock and *Poa sieberiana*, Bulbine Lily, Variable Glycine, Common Woodruff (*Asperula conferta*), Bracken Fern (*Pteridium esculentum*), Tall Sedge and Stinking Pennywort (*Hydrocotyle laxiflora*). A high number of exotic species were recorded in some vegetation zones, including Square Tail Fescue (*Vulpia bromoides*), Delicate Hairgrass, Common Centaury, St John's Wort, Catsear (*Hypochaeris radicata*), Common Sowthistle (*Sonchus oleraceus*), Sheep Sorrel (*Acetosella vulgaris*) and Blackberry.
Survey effort	Low: two plots (1051, 104) Poor: one plot (195) Other: two plots (143, 1048) Medium: one plot (198) High: one plot (197)
Condition description	This PCT occurs in a variety of condition states within the bottom of Lobs Hole Ravine, occurring within riparian areas near Yarrangobilly River and Wallace's Creek. The majority of this PCT within the project area is of high condition consisting of relatively intact vegetation with high native cover, multiple vegetation strata, and low exotic cover. Small areas of medium condition were also identified, with relatively high native cover but have a simpler vegetation structure with a higher number of weeds present. Several areas of this PCT were classified as 'other'; these areas have been subject to past clearing and now consist of scattered mature trees with native regeneration. Areas adjacent to Yarrangobilly River within highly disturbed areas from human activity have been mapped as Low, consisting of a high number of exotic species and lacking upper stratum species. Cleared grassland areas derived from this PCT with a higher native component were mapped as derived grasslands; primarily areas occurring underneath managed powerline easements.

Table 5.8 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 description

Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Ribbon Gum and Broad-leaved Sally. Aligning midstorey species include Blackwood, Hazel Pomaderris, *Pomaderris angustifolia* and River Lomatia. Groundcover species aligning with this PCT include Kangaroo Grass, Tall Sedge and Common Couch.
Justification of evidence used to identify the PCT	PCT 302 occurs within the South Eastern Highlands and NSW South Western Slopes IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs on brown to grey posolic loamy clays adjacent to creeks and on adjoining flats; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed Justification: The VIS states the PCT likely relates to two threatened communities. It is considered a partial subset of White Box Yellow Box Blakely's Red Gum Woodland EEC/CEEC and likely related to Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and South Western Slopes Bioregions EEC. The PCT is not considered part of the White Box Yellow Box Blakely's Red Gum Woodland EEC/CEEC as the characteristic tree species are not present. Although Ribbon Gum, a characteristic overstorey species is present, the EEC occurs above 600 m elevation (NSWSC 2011) PCT 302 within the Main Works project area is below 600 m; indicating the PCT is unlikely to be representative of the EEC.
Estimate of percent cleared value of PCT across NSW	50%

Photograph 5.5 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 – Plot 97

Table 5.9 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 description

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	
PCT ID	303
Common name	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
Condition classes	Five vegetation zones were mapped within the project area: • Derived Grassland • Poor • Other • Medium • High
Extent within Main Works	Derived Grassland: 17.06 ha Poor: 0.38 ha Other: 0.83 ha Medium: <0.01 ha High: 60.17 ha The vegetation zone assigned a condition of Medium was not inputted into the calculator as the area of this vegetation zone is less than 0.01 ha.
Description	This PCT occurs on valley bottoms across the project area; spanning from Rock Forest to Tantangara Reservoir and along Alpine Creek Fire Trail. The dominant canopy species within this community is Black Sally. The midstorey comprises of Tree Violet (*Hymenanthera dentata*), Small-fruit Hakea (*Hakea microcarpa*), *Pimelea pauciflora* and Mountain mireblia. Groundcover consists predominantly of native forbs and grasses. Forb species include Common Woodruff, Pale Vanilla-lily (*Arthropodium milleflorum*), *Cynoglossum australe*, Native Geranium, *Acaena ovina*, *Epilobium billardiereanum* subsp. *cinereum,* Bidgee-Widgee, Two-flowered Knawel (*Scleranthus biflorus*), Scaly Buttons (*Leptorhynchos squamatus*), Prickly Starwort and Bulbine Lily. Grass species include Kangaroo Grass, Tall Sedge, *Carex breviculmis*, Wheatgrass, *Dichelachne* spp., Snowgrass (*Poa sieberiana*), and *Poa sieberiana*. Exotic ground cover species included Sweet Vernal Grass (*Anthoxanthum odoratum*), White Clover (*Trifolium repens*), Yorkshire Fog and Sheep Sorrel (*Acetosella vulgaris*).
Survey effort	Derived Grassland: one plot (2244) Other: two plots (135, 3149) Poor: one plot (202) High: five plots (127, 167, 175, 2063, 2145)
Condition description	This PCT occurs in a variety of condition states throughout the project area where primarily occurring in valley bottoms and adjacent footslopes spanning from Rock Forest and up to Tantangara Reservoir. The majority of this PCT within the project area is in high condition state, with small patches occurring within Rock Forest and larger patches at the bottom of Tantangara Road adjacent to the reservoir. Several areas of this PCT adjacent to Tantangara Reservoir were classified as 'other'; these areas have been subject to a past fire and now consist of regeneration of Black Sally. The ground layer of this condition state is typically a mixture of native and exotic species. Rock Forest predominantly consists of cleared grassland areas derived from this PCT as a result of historical clearing. These areas have been mapped as derived grassland.

Table 5.9 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 description

Characteristic species used for identification of PCT	Canopy species, Black Sally, associated with this PCT was recorded within this community. Tree Violet aligns with the PCTs midstorey species. Aligning understorey species includes Kangaroo grass, Bidgee-Widgee, Native Geranium and *Acaena ovina*.
Justification of evidence used to identify the PCT	PCT 303 occurs within the South Eastern Highlands, NSW South Western Slopes and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs in valley bottoms or adjacent footslopes subject to cold air drainage; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed Justification: The VIS states the PCT likely relates to the TEC Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions EEC. The PCT is not considered part of this TEC as the characteristic tree species are not present. Although Black Sally is present within this PCT, other upper stratum species are missing; indicating the PCT is unlikely to be representative of the EEC.
Estimate of percent cleared value of PCT across NSW	94%

Photograph 5.6 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 – Plot 175

Table 5.10 PCT 311 –Red Stringybark - Broad-leaved Peppermint - Norton's Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion description

PCT 311 – Red Stringybark - Broad-leaved Peppermint - Norton's Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	
PCT ID	311
Common name	Red Stringybark - Broad-leaved Peppermint - Norton's Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion
Condition classes	A single vegetation zone was mapped within the project area: • High
Extent within Main Works	High: 37.05 ha
Description	This PCT occurs on upper hill slopes between Lobs Hole Ravine and the Marica area. The canopy is composed of Norton's Box (*Eucalyptus nortonii*), Red Stringybark and Broad-leaved Peppermint. The midstorey comprises of Common Fringe-myrtle, Narrow-leaved Hopbush, Hoary guinea flower, Native Blackthorn, Cassinia longifolia, Dwarf Cherry, Silver wattle, Daphne Heath, Dillwynia sieberi and Creamy Candles (Stackhousia monogyna). This community has a diverse ground cover comprising of native forbs, sedges, rushes and grasses. Native grasses include Speargrass, Ringed Wallaby Grass (Rytidosperma caespitosum) and Plumegrass (Dichelachne hirtella). Native forbs, rushes and sedges recorded include Purple Coral Pea (Hardenbergia violacea), Senecio bathurstianus, Native Geranium, Poison Rock Fern (Cheilanthes sieberi), Poverty Raspwort, Stinking Pennywort, Twining glycine (*Glycine clandestine*), *Lomandra filiformis* subsp. *coriacea*, and Carex breviculmis. Several exotic species were recorded including Delicate Hairgrass, Common Centaury, St John's Wort, Scarlet pimpernel (*Lysimachia arvensis*), Sweet Briar and Silver Grass.
Survey effort	High: four plots (1015, 1029, 3027, 3193)
Condition description	This PCT occurs in a single condition state of high within Lobs Hole. These areas consist of relatively intact vegetation with high native cover and relatively low exotic cover.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Norton's Box, Red Stringybark and Broad-leaved Peppermint. Aligning midstorey species include Daphne Heath, *Cassinia longifolia*, Native Blackthorn and Hoary Guinea Flower. *Lomandra filiformis* subsp. *coriacea*, Purple Coral Pea, Twining Glycine, and Stinking Pennywort align with the groundcover species for this PCT.
Justification of evidence used to identify the PCT	PCT 311 occurs within the South Eastern Highlands, NSW South Western Slopes and Australia Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs on upper hill slopes and hill crests in hill landscapes; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	40%

Table 5.10 **PCT 311 –Red Stringybark - Broad-leaved Peppermint - Norton's Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion description**

Photograph 5.7 **Red Stringybark - Broad-leaved Peppermint - Norton's Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion – Plot 3027**

Table 5.11 PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion description

PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion	
PCT ID	637
Common name	Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion
Condition classes	Three vegetation zones were mapped within the project area: • Poor • Medium • High
Extent within Main Works	Poor: 0.15 ha Medium: 0.47 ha High: 3.47 ha
Description	This PCT occurs in small drainage areas across the project area. Spanning from Rock Forest, along Alpine Creek Fire Trail and near Tantangara Reservoir. This community does not contain any canopy species, comprising of only low shrubland and sedgeland. Midstorey is sparse mainly consisting of Swamp Heath (*Epacris paludosa*), Alpine Baeckea (B*aeckea gunniana*), *Leptospermum* spp., *Epacris* spp. and Small-fruited Hakea. Groundcover is predominately native forbs, grasses and rushes. Native forb species include *Brachyscome obovata*, Bog Carraway (*Oreomyrrhis ciliata*), Mountain Woodruff (*Asperula gunnii*), Native Violet and *Senecio gunnii*. Native grass species within this community include *Baloskion australe*, *Carex gaudichaudiana*, *Empodisma minus*, *Luzula modesta*, Bog Snowgrass (*Poa costiniana*), Tall Sedge, *Juncus* spp. and Bog snowgrass. *Sphagnum cristatum* is also present within this community. Exotic species such as White Clover, Yorkshire Fog, Sheep Sorrel and Sweet Vernal Grass were also recorded within this community.
Survey effort	Poor: one plot (41) Medium: one plot (47) High: two plots (99, 2237)
Condition description	This PCT occurs in a variety of condition states throughout the project area, extending from Rock Forest up Tantangara Road and west of the Snowy Mountain Highway. The majority of this PCT in the project area is in high condition consisting of relatively intact vegetation with high native cover and multiple strata. Several small areas of medium condition were also identified; these areas also had relatively high native cover but have a simpler vegetation structure and/or some weeds present. One area adjacent to Tantangara Reservoir contains patches of poor condition state; these areas consists of some isolated trees with a modified understorey.
Characteristic species used for identification of PCT	Midstorey species recorded within this community which align include Swamp Heath and Alpine Baeckea. Aligning goundcover species listed within the VIS were include *Baloskion australe*, *Brachyscome obovata, Carex gaudichaudiana*, *Empodisma minus*, *Luzula modesta*, Bog Snowgrass and *Sphagnum cristatum*.
Justification of evidence used to identify the PCT	PCT 637 occurs within the South Eastern Highlands and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs in areas with impeded drainage and peaty soils between 1,100 and 2,000 m; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.

Table 5.11 PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion description

Status	Commonwealth EPBC Act: Alpine Sphagnum Bogs and Associated Fens NSW BC Act: Montane peatlands and swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions Justification: The VIS states the PCT likely relates to the TEC Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions EEC/EN.
Estimate of percent cleared value of PCT across NSW	5%

Photograph 5.8 Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion

Table 5.12 PCT 638 – Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion

PCT 638 – Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	
PCT ID	638
Common name	Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion
Condition classes	Two vegetation zones were mapped within the project area: • Derived grassland • High
Extent within Main Works	Derived grassland: 0.45 High: 15.51
Description	This PCT occurs at the top of Lobs Hole Ravine Road South and along Link Road at high altitudes. The canopy is composed of Alpine Ash (*Eucalyptus delegatensis*) and Mountain Gum (*Eucalyptus dalrympleana*). The midstorey consists of Mountain Hickory (*Acacia obliquinervia*), Gorse Bitter Pea (*Daviesia ulicifolia*), *Cassinia longifolia*, Dolly Bush, Alpine Shaggy Pea (*Podolobium alpestre*) and Slender Rice-flower. Groundcover predominantly consists of native forbs, with some native grasses. These include Common Woodruff, Old Man's Beard (*Clematis aristata*), Prickly Starwort, Native violet, Small Poranthera (*Poranthera microphylla*), Prickly Woodruff, Snowgrass, Bidgee-widgee and *Coronidium monticola*. Exotic species recorded within the community include Catsear, Blackberry, Sheep Sorrel and White Clover.
Survey effort	Derived grassland: one plot (X1) High: three plots (1050, 2038, 2230)
Condition description	This PCT occurs in two condition states within the project area, with the majority of this PCT occurring in high condition state. These areas along the top of Lobs Hole and Link Road consist of relatively intact vegetation with high native cover, multiple strata and relative low exotic cover. Small roadside patches adjacent to Link Road consist of cleared grassland derived from this PCT. These areas were mapped as derived grassland and consist of a high native component.
Characteristic species used for identification of PCT	Canopy species recorded within this community which align with this PCT include Alpine Ash and Mountain Gum. Midstorey and groundcover species include Mountain Hickory, Common Woodruff, Old Man's Beard, Prickly Starwort and Native violet.
Justification of evidence used to identify the PCT	PCT 638 occurs within the South Eastern Highlands and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs in mountainous areas at high altitude, mainly in the western and southern parts of Kosciuszko. This community has been mapped within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	5%

Table 5.12 **PCT 638 – Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion**

Photograph 5.9 **PCT 638 – Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion – Plot 2038**

Table 5.13 **PCT 639 – Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion description**

PCT 639 – Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	
PCT ID	639
Common name	Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion
Condition classes	Two vegetation zones were mapped within the project area:

Table 5.13 PCT 639 – Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion description

	• Other • High
Extent within Main Works	Other: 1.60 ha High: 5.01 ha
Description	This PCT occurs across the project area, spanning from Tantangara Road across to Wallace's Creek Fire Trail. The canopy is composed of Alpine Ash (*Eucalyptus delegatensis*), Snow Gum (*Eucalyptus pauciflora* and Mountain Gum. The midstorey consists of *Leucopogon* spp., Pink-tip Daisy-bush (*Olearia erubescens*), Native Raspberry and Daphne Heath. Groundcover consists mainly of native forbs with some native grasses. Native forb species include Bidgee-widgee, Prickly Woodruff, *Brachyscome spathulata*, Small Poranthera, Prickly Starwort, Grass Trigger plant, *Veronica derwentiana* and Native Violet. Native grass species such as Snowgrass, Spiny-headed Mat-rush and Wheatgrass are also present within this community. Exotic species within this community include Sweet Vernal Grass, Yorkshire Fog and Spear Thistle (*Cirsium vulgare*).
Survey effort	Other: one plot (3006) High: three plots (105, 207, 208)
Condition description	This PCT occurs in two condition states throughout the project area extending from Tantangara Road to west of Wallace's Creek Fire Trail. The majority of this PCT in the project area is in high condition consisting of relatively intact vegetation with high native cover, multiple vegetation strata, and low exotic cover. One area west of Wallace's Creek Fire Trail contains patches of 'other' condition state. This area burnt during the 2003 fires and supports an immature canopy and increased woody debris due to fallen trees. Significant regeneration is occurring post-fire.
Characteristic species used for identification of PCT	Canopy and understorey species associated with this PCT were recorded within this community, these include Alpine Ash, Snow Gum and Mountain Gum. Groundcover was also consistent with PCT 639, including all native forb species listed within the VIS classification recorded in this community.
Justification of evidence used to identify the PCT	PCT 639 occurs within the Australian Alps and South Eastern Highlands IBRA regions, both of which occur within the project area. The landscape position described within the VIS states the PCT occurs in mountainous areas at high altitudes; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	5%

Table 5.13 **PCT 639 – Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion description**

Photograph 5.10 **Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion – Plot 208**

Table 5.14 PCT 643 –Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion description

PCT 643 –Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion	
PCT ID	643
Common name	Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion
Condition classes	A single vegetation zone was mapped within the project area: • Low
Extent within Main Works	Low: 0.26 ha
Description	This PCT was used to map granite blockstreams on Lobs Hole Ravine Road. While no canopy species are listed to be present in this PCT by the NSW VIS Classification Version 2, Ribbon Gum and Snow Gum were recorded due to the configuration of the 20m x 20m assessment plot, with these species overhanging the plot. The shrub layer is largely absent, with a low cover of *Casinia longifolia,* Small-fruited Hakea (*Hakia macrocarpa*), Blackwood, Silver Wattle and Matted Parrot Pea (*Dillwynia prostrate*) at the edges of the plot. Ground cover is sparse, but present in the accumulated debris and soils in the blockstream. Ground cover species include a number of native grasses, rushes and forbs. Grasses recorded include Kangaroo Grass, Rock Tussock-grass (*Poa petrophila*), Tussock, and *Poa sieberiana* var. *cyanophylla*. Native forbs include Bracken Fern, Australian Indigo (*Indigofera australis*), Blanket Leaf (*Bedfordia arborescens*), Native Geranium, Elderberry Ash (*Polyscias sambucifolia*), *Crypandra amara* var. *amara*, Grass Trigger plant and Bidgee-widgee. Blackberry was the only exotic species recorded within the community.
Survey effort	Low: one plot (173)
Condition description	The PCT consists largely of granite boulders. Little vegetation is present in the blockstream; however, this lack of cover is natural and it was assigned to the Low condition class. Minor occurrences of Blackberry were evident.
Characteristic species used for identification of PCT	Species were not used to identify the PCT.
Justification of evidence used to identify the PCT	PCT 643 occurs within South Eastern Highlands and Australian Alps IBRA regions, both of which occur within the project area. The landscape position described within the VIS states the PCT occurs in rocky areas above 1,300 m in the sub-alpine and alpine areas of Kosciuszko National Park. These landforms as well as the presence of blockstreams was used to justify the presence of this PCT.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	0%

Table 5.14 PCT 643 –Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion description

Photograph 5.11 Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion – Plot 173

Table 5.14 PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion description

PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	
PCT ID	644
Common name	Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion
Condition classes	Four vegetation ones were mapped within the project area: Derived Grassland Other Medium High
Extent within Main Works	Derived Grassland: 2.61 ha Other: 8.29 ha Medium: 0.38 ha High: 104.94 ha

Table 5.14 PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion description

Description	This PCT occurs at sub-alpine areas at high altitudes, spanning from Tantangara Road to Wallace's Creek Fire Trail and down along Kings Cross Road. The canopy is dominated by Snow Gum. Midstorey species include Gorse Bitter Pea, *Hovea montana*, Leafy Bossiaea (*Bossiaea foliosa*), Matted Rice-flower (Pimelea biflora) and Slender Rice Flower. Groundcover consists of native grasses, sedges and forbs. Grass and sedge species include Snowgrass, Woodrush, Knob Sedge, *Carex breviculmis*, Wheatgrass, *Poa helmsii* and Tussock. Native forb species within this community include Two-flowered Knawel (*Scleranthus biflorus*), Prickly Starwort, Button Everlasting (*Coronidium scorpioides*), Australian Carraway (*Oreomyrrhis eriopoda*), Bidgee-widgee, Prickly Woodruff, Native Violet and Small St John's Wort. Exotic species recorded within this community include Sweet Vernal Grass, Sheep Sorrel, Sear Thistle, Dandelion and Yorkshire Fog.
Survey effort	Derived Grassland: two plots (132, 2068) Other: three plots (27, 75, 212) Medium: one plot (211) High: six plots (1042, 2026, 2144, 2150, 2186, 3223)
Condition description	This PCT occurs in a variety of condition states throughout the project area. The majority of this PCT in the project area is in high condition states, consisting of relatively intact vegetation with high native cover and relatively low exotic cover. Small patches of medium condition were also identified. Several areas of this PCT near Tantangara Reservoir spanning across the Nungar Fire Trail were classified as 'other'; these areas have been subject to past fire damage and now consist of scattered mature trees with regeneration of native canopy and midstorey species present. Cleared grassland areas derived from this PCT with a relatively high native component were mapped as derived grasslands; this primarily includes areas adjacent to Kings Cross road.
Characteristic species used for identification of PCT	The canopy species, Snow Gum, associated with this PCT was dominant within this community. Aligning midstorey species include Gorse Bitter Pea, *Hovea montana* and Leafy Bossiaea. Groundcover species aligning with this PCT include *Poa* spp., Two-flowered Knawel, Prickly Starwort, Button Everlasting and Australian Carraway.
Justification of evidence used to identify the PCT	PCT 644 occurs within the South Eastern Highlands and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs in sub-alpine areas between 1,500 and 1,700 m on free draining slopes, ridges and spurs. This community has been recorded on ridge tops and free draining slopes, mapped at altitudes lower than 1,500 m. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	5%

Table 5.14 **PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion description**

Photograph 5.12 **Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion – Plot 1042**

Table 5.15 PCT 679 – Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion description

PCT 679 - Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion	
PCT ID	679
Common name	Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion
Condition classes	Two vegetation zones were mapped within the project area: • Other • High
Extent within Main Works	Other: 0.01 ha High: 0.25 ha
Description	This PCT occurs in small areas within the project area, along Gooandra Fire Trail and a small section at Rock Forest. The canopy is composed of Black Sally, Candlebark and Snow Gum. Midstorey species include Small-fruited Hakea, Slender Rice Flower, Native Raspberry and *Pimelea pauciflora*. Groundcover species include native grasses, sedges and forbs. Native grass and sedge species include Snowgrass, Slender Wallaby Grass, Tall Sedge, Wheatgrass and Tussock. Native forb species within this community include Bidgee-widgee, Prickly Woodruff, *Hydrocotyle* spp., Native Violet, Prickly Starwort, *Geranium* spp. and Sheep's Burr (*Acaena echinate*). Exotic species present within this community include Yorkshire Fog, Blackberry, Sheep Sorrel, Sweet Vernal Grass and White Clover.
Survey effort	Other: one plot (7) High: one plot (2266)
Condition description	This PCT occurs in two condition states throughout the project area; predominately occurring in high condition. These areas consist of relatively intact vegetation with high native cover, multiple vegetation strata, and low exotic cover. Small patches along Gooandra Fire Trail were classified as 'other'; these areas consist of regeneration of native canopy and midstorey species.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Black Sally, Candlebark and Snow Gum. Small-fruited Hakea, Bidgee-widgee, Prickly Woodruff and Snowgrass also aligned with this PCT.
Justification of evidence used to identify the PCT	PCT 679 occurs within the South Eastern Highlands and Australian Alps IBRA regions, in which the project area is located. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed Justification: The VIS states the PCT likely relates to one TEC, Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions EEC. Due to the lack of grassy understory throughout these woodlands it is not considered to align with the TEC above.
Estimate of percent cleared value of PCT across NSW	35%

Table 5.15 PCT 679 – Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion description

Photograph 5.13 Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion – Plot 2273

Table 5.16 PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion description

PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	
PCT ID	729
Common name	Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion
Condition classes	Four vegetation zones were mapped within the project area: • Low • Derived Grassland • Medium • High
Extent within Main Works	Low: 0.15 ha Derived Grassland: 2.98 ha Medium: 11.41 ha High: 66.55 ha
Description	This PCT occurs along Lobs Hole Ravine Road, at the bottom of Lobs Hole and with adjacent foothills of Talbingo Reservoir. The canopy is composed of Candlebark, Broad-leaved Peppermint and Robertson's Peppermint. The midstorey comprises of Common Fringe-myrtle, Hoary guinea, Mountain Banksia, Native Blackthorn, *Cassinia longifolia,* Dwarf Cherry, Wedge-leaved Wattle, Silver wattle, Daphne Heath, Pink Beard Heath (*Leucopogon ericoides*) and Showy Parrot Pea. Ground cover comprising of native forbs, sedges, rushes and grasses. Native grasses include Kangaroo Grass, Snowgrass, and *Dichelachne rara.* Native forbs, rushes and sedges recorded include Scaly Buttons (*Leptorhynchos squamatus*), Raspwort, Poverty Raspwort, Stinking Pennywort, Bears-ear (*Cymbonotus lawsonianus*), *Oxalis perennans*, Rough Bedstraw (*Galium gaudichaudii*), Tall Bluebell, Creeping Cudweed (*Euchiton japonicas*), Honeypots (*Acrotriche serrulata*), Small St Johns Wort, Wattle Mat-rush, Mat-rush (*Lomandra confertifolia*) and *Juncus usitatus*. A number of exotic species were recorded including Delicate Hairgrass, Common Centaury, St John's Wort, Catsear, Sweet Briar and Haresfoot Clover (*Trifolium arvense*).
Survey effort	Low: one plot (183) Derived Grassland: two plots (1045, 3177) Medium: three plots (95, 1011, 1016) High: five plots (70, 189, 193, 2084, 3187)
Condition description	This PCT occurs in a variety of condition states along Lobs Hole Ravine Road and at the bottom of Lobs Hole. The majority of this PCT in the project area is in high condition states, consisting of relatively intact vegetation with high native cover and relatively low exotic cover. A small area consists of medium condition, consisting of relatively high native cover but have a simpler vegetation structure and/or some weeds present. Two areas in Lobs Hole Ravine contain patches of low condition. These areas are highly modified grassland. Cleared grassland areas derived from this PCT with a higher native component were mapped as derived grasslands; this primarily includes areas of derived native grassland underneath managed powerline easements.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Candlebark, Broad-leaved Peppermint and Robertson's Peppermint. Aligning midstorey species include Daphne Heath, *Cassinia longifolia* and Silver Wattle. Snowgrass and *Dichelachne rara* align with this PCTs groundcover species.

Table 5.16 PCT 729 – Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion description

Justification of evidence used to identify the PCT	PCT 729 occurs within the South Eastern Highlands and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs on exposed dry slopes and foothills at intermediate altitudes; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	35%

Photograph 5.14 Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion – Plot 94

Table 5.18 PCT 765 - Carex - Juncus sedgeland/wet grassland of the South Eastern Highlands Bioregion description

PCT 765 – Carex - Juncus sedgeland/wet grassland of the South Eastern Highlands Bioregion	
PCT ID	765
Common name	Carex - Juncus sedgeland/wet grassland of the South Eastern Highlands Bioregion
Condition classes	A single vegetation zone was mapped within the project area: • High
Extent within Main Works	High: 0.12 ha
Description	This PCT occurs west of Tantangara Road adjacent to streams. This community does not contain any canopy species, comprising of only shrubs, and native grasses and sedges. Native midstorey species include *Hakea* spp., Swamp Heath and Coral Heath (*Epacris microphylla*). Understorey species mostly consists of native grasses and sedges including Tall Sedge, *Carex appressa*, *Carex gaudichaudiana*, Tussock, Fluke Bogrush, *Juncus usitatus*, *Juncus* spp., *Luzula modesta* and Bog Snowgrass. Sweet Vernal Grass was the only exotic species to occurs within this community.
Survey effort	High: one plot (2082)
Condition description	This PCT occurs in a high condition state with a high native cover and low presence of weeds.
Characteristic species used for identification of PCT	Species aligning with this PCT include *Hakea* spp., Tall Sedge, *Juncus* spp. and Fluke Bogrush.
Justification of evidence used to identify the PCT	PCT 765 occurs within the South Eastern Highlands IBRA region, in which the project area is located. Characteristic species recorded within this community align with the VIS. This community was differentiated from PCT 637 where there was a lack of Sphagnum and shrub species and/or where this community sat on higher elevations at the top of the slope in areas where groundwater did not show any surface or near-surface expression.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	0%

Table 5.18 PCT 765 - Carex - Juncus sedgeland/wet grassland of the South Eastern Highlands Bioregion description

Photograph 5.15 Carex - Juncus sedgeland/wet grassland of the South Eastern Highlands Bioregion – Plot 2082

Table 5.17 PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion

PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion	
PCT ID	952
Common name	Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion
Condition classes	Three vegetation zones were mapped within the project area: • Derived grassland • Medium

Table 5.17 PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion

	• High
Extent within Main Works	Derived grassland: 0.53 ha Medium: 14.75 ha High: 3.64 ha
Description	This PCT occurs in Rock Forest at high altitudes. The canopy is dominated by Mountain Gum, Narrow-leaved Peppermint, with low numbers of Snow Gum. Midstorey species associated with this PCT include Leafy Bossiaea, *Daviesia ulicifolia*, Hoary Guinea Flower, *Hovea linearis*, *Leucopogon lanceolatus*, *Monotoca scoparia* and *Persoonia sylvatica*. Groundcover species include native grasses and forbs including Kangaroo Grass, Kidney Weed, Slender Wallaby Grass, Tall Sedge, *Dichelachne rara*, Wheatgrass, Tussock and Native Geranium. Exotic species within this community include Sheep Sorrel and St Johns Wort.
Survey effort	Derived grassland: one plot (1054) Medium: three plots (X4, X5, X6 – benchmarks used) High: two plots (X2, X3 – benchmarks used)
Condition description	This PCT occurs in a variety of condition states within Rock Forest. The majority of this PCT is in medium condition state, consisting of relatively intact vegetation with high native cover, a few exotic species, and some grazing and disturbance from cattle. A small patch of high condition within Rock Forest consists of higher native cover. Cleared grassland between the two conditions is derived from this PCT. This area consists of a relatively high native component, mapped as derived grassland.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community. These include Narrow-leaved Peppermint, Mountain Gum and Snow Gum.
Justification of evidence used to identify the PCT	PCT 952 occurs within the South Eastern Highlands and Australian Alps IBRA regions, in which the project area is located. The landscape position occurs on gentle terrain on the tableland above 700 m elevation, on granitic or metasedimentary substrates. This community has been recorded on the tableland above 700 m elevation. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed Justification: The VIS states the PCT likely relates to one TEC, Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions EEC. This PCT is outside the known distribution of the EEC.
Estimate of percent cleared value of PCT across NSW	50%

Table 5.17 **PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion**

Photograph 5.16 **PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion – Plot 1054**

Table 5.18 PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion description

PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	
PCT ID	953
Common name	Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion
Condition classes	Two vegetation zones were mapped within the project area: • Derived Grassland • High
Extent within Main Works	Derived Grassland: 1.47 ha High: 12.88 ha
Description	This PCT occurs in montane areas along Lobs Hole Ravine Road and within the Marica area. The canopy is composed of Mountain Gum (*Eucalyptus dalrympleana)*, Snowy Gum and Broad-leaved Peppermint with occasional Robertson's peppermint. The midstorey mainly consists of Silver Wattle, Red-leaved Wattle (*Acacia rubida*), Daphne Heath, *Cassinia longifolia, Cassinia uncata, Daviesia latifolia,* Dwarf Cherry, Pink-tip Daisy-bush (*Olearia erubescens)*, Common Shaggy Pea (*Oxylobium ellipticum*), *Daviesia mimosoides* subsp. *mimosoides* and Handsome Flat Pea. Ground cover comprises of native forbs, rushes, grasses and ferns. Native forbs include Prickly Woodruff, *Glycine clandestina*, *Senecio gunnii*, Creamy Candles, Grass Trigger-plant and Native Violet. Other ground stratum species include Spiny-head Mat-rush, Mountain Geebung (*Persoonia chamaepitys*) and Common Bracken (*Pteridium esculentum*).
Survey effort	Derived Grassland: one plot (1024) High: three plots (112, 216, 5211)
Condition description	This PCT occurs in two condition states within the project area. The majority of this PCT is of high condition, consisting of relatively intact vegetation with high native cover, multiple vegetation strata, and low exotic cover. Cleared grassland areas derived from this PCT occur along Lobs Hole Ravine Road underneath managed powerline easements.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Mountain Gum, Snowy Gum and Broad-leaved Peppermint. Aligning midstorey species include *Cassinia longifolia*, Silver Wattle, Red-leaved Wattle, *Daviesia mimosoides* subsp. *mimosoides*, Common Shaggy Pea and Pink-tip Daisy-bush. *Glycine clandestina*, *Senecio gunnii*, Creamy Candles, Prickly Woodruff and Native Violet align with this PCTs groundcover species.
Justification of evidence used to identify the PCT	PCT 953 occurs within the South Eastern Highlands and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs in montane areas within the Kosciuszko area; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed Justification: The VIS states the PCT likely relates to the TEC Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions EEC. The project area is outside the known distribution. This community lacks suitable grassy understorey and does not occur on basalt, therefore it is not considered to align with this TEC.
Estimate of percent cleared value of PCT across NSW	5%

Table 5.18 **PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion description**

Photograph 5.17 **Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion – Plot 112**

Table 5.19 PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion description

PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	
PCT ID	999
Common name	Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion
Condition classes	Three vegetation zones were mapped within the project area: Derived Grassland Medium High
Extent within Main Works	Derived Grassland: 1.24 ha Medium: 4.70 ha High: 37.43 ha
Description	This PCT occurs on lower slopes and valleys within the bottom of Lobs Hole Ravine. The canopy is composed of Norton's Box, and Broad-leaved Peppermint. The midstorey comprises of Common Fringe-myrtle, Hoary guinea flower, Native Blackthorn, *Cassinia longifolia, Cassinia aculeate* subsp. *aculeate*, *Cassytha pubescens*, *Pimelea curviflora* var. *sericea*, Dwarf Cherry, Mountain Hickory, Silver Wattle, Daphne Heath, *Leucopogon virgatus* and Showy Parrot Pea. Ground cover comprising of native forbs, sedges, rushes and grasses. Native grasses include Kangaroo Grass, Snowgrass, Wheatgrass, Plumegrass Smooth-flower Wallaby Grass (*Rytidosperma pilosum*) and *Austrostipa scabra* subsp. *falcate*. Native forbs, rushes and sedges recorded include Poverty Raspwort, Australian indigo, *Dianella longifolia* var. *longifolia*, Poison Rock Fern, Native Carrot (*Daucus glochidiatus*), Tufted Bluebell (*Wahlenbergia communis*), Tall Bluebell, Wattle Mat-rush, *Lepidosperma laterale*, Blue Flax Lily (*Dianella revolute* var. *revolute*) and Native Geranium. A number of exotic species were recorded including Delicate Hairgrass, Common Centaury, and St John's Wort.
Survey effort	Derived Grassland: one plot (218) Medium: two plots (139, 154) High: four plots (188, 1037, 2020, 3222)
Condition description	This PCT occurs in multiple condition states within the bottom of Lobs Hole Ravine. The majority of this PCT within the project area is of high condition consisting of relatively intact vegetation with high native cover, multiple vegetation strata, and low exotic cover. Small areas of medium condition were also identified, with relatively high native cover but have a simpler vegetation structure with a higher number of weeds present. Small areas of derived grassland were identified underneath managed powerline easements.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Norton's Box, and Broad-leaved Peppermint. Common Fringe-myrtle and *Cassinia longifolia* align with this PCTs midstorey species. Aligning groundcover species include Snowgrass, Wheatgrass, Kangaroo Grass, *Austrostipa scabra* subsp. *falcate* and Blue Flax Lily.
Justification of evidence used to identify the PCT	PCT 999 occurs within the South Eastern Highlands IBRA region, in which the project area is located. The landscape position described within the VIS states the PCT occurs on lower slopes and valleys, this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	15%

Table 5.19 **PCT 999 – Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion description**

Photograph 5.18 **Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion – Plot 2020**

Table 5.20 PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion description

PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	
PCT ID	1191
Common name	Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
Condition classes	Three vegetation zones were mapped within the project area: • Derived Grassland • Medium • High
Extent within Main Works	Derived Grassland: 1.58 ha Medium: 1.15 ha High: 23.32 ha
Description	This PCT occurs on footslopes along Lobs Hole Road and adjacent to Talbingo Reservoir. The canopy is composed of Snow Gum, Candlebark and Black Sally. The midstorey consists of Blackwood, Silver Wattle, Native Blackthorn, Dwarf Cherry, Mountain Banksia, Hoary Guinea Flower and Narrow Leaf Hop Bush. Ground cover predominantly consists of native grasses and forbs. Native grasses include Kangaroo Grass, Bog Snowgrass, Tall sedge, Wattle Mat-rush, Spiny-headed Mat-rush and Many-flowered Mat-rush. Forb species within this community include Poverty Raspwort, Stinking Pennywort, Kidney Weed, Small St John's Wort, Sheep's Burr, Austral Bugle (*Ajuga australis*), Prickly Starwort and Native Violet. Several exotic species were recorded including Sweet Briar, Blackberry, St Johns Wort, Sheep Sorrel and Catsear.
Survey effort	Derived Grassland: one plot (1009) Medium: one plot (3101) High: four plots (71, 1043, 2269, 2276)
Condition description	This PCT occurs in a variety of condition states within the project area. The majority of this PCT if of high condition consisting of relatively intact vegetation with high native cover, multiple vegetation strata, and low exotic cover. Small areas of medium condition were also identified, with relatively high native cover but have a simpler vegetation structure with a higher number of weeds present. Cleared grassland areas derived from this PCT with a higher native component were mapped as derived grasslands; primarily areas occurring underneath managed powerline easements.
Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Snow Gum, Candlebark and Black Sally. Blackwood and Silver Wattle align with this PCTs midstorey species. Aligning groundcover species include Poverty Raspwort, Stinking Pennywort and Kangaroo Grass.
Justification of evidence used to identify the PCT	PCT 1191 occurs within the South Eastern Highlands, NSW South Western Slopes and Australian Alps, in which the project is located. The landscape position described within the VIS states the PCT occurs on frost-hollow flats and footslopes in undulating tableland areas between 600 and 1,000 m altitude. This community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed Justification: The VIS states the PCT likely relates to the TEC Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions EEC. This PCT is not considered to align with the above TEC lacking suitable grassy understorey.

Table 5.20 **PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion description**

Estimate of percent cleared value of PCT across NSW	95%

Photograph 5.19 **Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion – Plot 1043**

Table 5.21 PCT 1196 – Snow Gum – Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion

PCT 1196 – Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	
PCT ID	1196
Common name	Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion
Condition classes	Five vegetation zones were mapped within the project area: Derived Grassland Other Poor Medium High
Extent within Main Works	Derived Grassland: 89.40 ha Other: 14.42 ha Poor: 1.36 Medium: 28.15 ha High: 214.81 ha
Description	This PCT occurs widely within the project area on montane to sub-alpine ridges and slopes. This community is mapped within Rock Forest, along Tantangara Road and close to the Reservoir, along Lobs Hole Ravine Road and west of Wallace's Creek Fire Trail. The canopy is composed of Snow Gum, Mountain Gum and Robertson's Peppermint. This community consists of a diverse midstorey consisting of *Daviesia ulicifolia*, *Daviesia mimosoides* subsp*. mimosoides*, *Platylobium formosum* subsp*. formosum*, Dolly Bush, Mountain Hickory, Slender Rice-flower (*Pimelea linifolia* var. *linifolia*), Creamy Candles, River Lomatia , Coffee Berry (*Coprosma hirtella*), Dwarf Cherry, Leafy Bossiaea, Alpine Shaggy Pea and Blackwood. Groundcover consisted of native forbs, sedges, rushes and grasses. Native grasses include Snowgrass, *Poa induta* and Tussock. Native forbs, rushes and sedges recorded include Native Violet, Prickly Starwort, Variable Glycine , Native Geranium, Small Poranthera (*Poranthera microphylla*), Trailing Speedwell (*Veronica plebeia),* Spiny-headed Mat-rush, Common Woodruff, Grass Trigger plant, *Acaena agnipila*, Bulbine Lily, Swamp Dock (*Rumex brownii*), *Senecio gunnii*, Mountain Caladenia (*Caladenia alpine*), Common Buttercup (*Ranunculus lappaceus*), Slender Woodrush (*Luzula atrata*), Old Man's Beard, *Lomandra filiformis* subsp*. coriacea*, *Brachyscome spathulata* and Bidgee-widgee. Exotic species such as Catsear, White Clover (*Trifolium repens*) and Blackberry were recorded within the community.
Survey effort	Derived Grassland: five plots (178, 1039, 2240, 2250, 2256) Other: three plots (2274, 2274A, 2275) Poor: one plot (X7) Medium: four plots (81, 81A, 81B, 81C) High: six plots (3098, 3117, 3124, 3215, 3229, 3234)
Condition description	This PCT occurs in a variety of condition states across the project area. The majority of this PCT within the project area is of high condition consisting of relatively intact vegetation with high native cover, multiple vegetation strata, and low exotic cover. Small areas of medium condition were also identified, with relatively high native cover but have a simpler vegetation structure with a higher number of weeds present. Patches of the PCT within Rock Forest have been mapped as poor condition. These areas include isolated trees with a modified understorey and exotic species present. A large portion of cleared grassland areas within Rock Forest were mapped as derived grasslands; with areas historically cleared for agriculture. Several areas of this PCT were classified as 'other'; these areas have been subject to past clearing and now consist of scattered mature trees with native regeneration.

Table 5.21 PCT 1196 – Snow Gum – Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion

Characteristic species used for identification of PCT	Canopy species associated with this PCT were recorded within this community, these include Snow Gum, Mountain Gum and Robertson's Peppermint. Aligning midstorey species include *Daviesia ulicifolia*, *Daviesia mimosoides* subsp. *mimosoides, Platylobium formosum* subsp. *formosum* and Coffee Berry. Aligning understorey species include Snowgrass, Prickly Starwort, Bidgee-widgee, *Senecio gunnii*, Small Poranthera, Spiny-headed Mat-rush, Native Violet and *Brachyscome spathulata*.
Justification of evidence used to identify the PCT	PCT 1196 occurs within the South Eastern Highlands, NSW South Western Slopes and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs on montane to sub-alpine slopes and ridges; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed Justification: This VIS states that this PCT forms part of the Tablelands Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions EEC. Due to the lack of grassy understory throughout these woodlands it is not considered to align with the TEC above.
Estimate of percent cleared value of PCT across NSW	5%

Photograph 5.20 Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion – Plot 179

Table 5.22 PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion description

PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	
PCT ID	1224
Common name	Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion
Condition classes	Four vegetation zones were mapped within the project area: Low Poor Medium High
Extent within Main Works	Low: 0.01 ha Poor: 0.73 ha Medium: 15.91 ha High: 117.19 ha
Description	This PCT occurs on flat valley bottoms across the project area; including areas adjacent to Tantangara Reservoir, west of Snowy Mountain Highway and along tracks east of Snowy Mountains Highway. This community does not contain any canopy species, comprising only of grasslands and heathlands, and including a high number of native midstorey and ground cover species. The midstorey consists predominantly of *Hakea microcarpa*, *Acrothamnus hookeri*, Hairy Anchor Plant (*Discaria pubescens*) and Slender Rice Flower (*Pimelea linifolia*). This community has a diverse ground cover comprising of native forbs and grasses. Native forbs include Bidgee-widgee, *Acaena ovina*, Native Violet, Common Woodruff, Native Geranium, Small St. John's Wort and Prickly Starwort. Native grasses include *Carex breviculmis*, Granite Buttercup (*Ranunculus graniticola*), *Luzula* sp., *Dichelachne* sp., Kangaroo Grass, Wheatgrass , *Poa sieberiana* and *Dichelachne rara*. Exotic species were recorded within the community include Sweet Vernal Grass (*Anthoxanthum odoratum*), Smooth Hawksbeard (*Crepis capillaris*), Spear Thistle (*Cirsium vulgare*) and Sheep Sorrel.
Survey effort	Low: one plot (2127) Poor: one plot (2220) Medium: three plots (199, 2050, 2170) High: six plots (50, 126, 149, 164, 224, 2102)
Condition description	This PCT occurs in a variety of condition states within the project area. The majority of this PCT is of high condition consisting of relatively intact vegetation with high native cover and low exotic cover. Small areas of medium condition were also identified, with relatively high native cover but have a simpler vegetation structure with a higher number of weeds present. On area adjacent to Tantangara Reservoir contains a patch of low condition PCT 1224. This area is highly modified due to high levels of disturbance from recreational uses, pest species and a high number of exotics. Areas mapped as poor occur along tracks, with a number of exotic species present.
Characteristic species used for identification of PCT	Aligning midstorey species include *Hakea microcarpa*, *Acrothamnus hookeri* and Slender Rice Flower. *Carex breviculmis* and Granite Buttercup align with this PCTs groundcover species.
Justification of evidence used to identify the PCT	PCT 1224 occurs within the South Eastern Highlands and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs on broad, flat valley bottoms in montane to sub-alpine areas between 1,200 and 1,600 m; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.

Table 5.22 PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion description

Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed
Estimate of percent cleared value of PCT across NSW	5%

Photograph 5.21 Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion – Plot 2102

Table 5.23 PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion description

PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	
PCT ID	1225
Common name	Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion
Condition classes	Four vegetation zones were mapped within the project area: • Low • Poor • Medium • High
Extent within Main Works	Low: 0.12 ha Poor: 0.17 ha Medium: 0.11 ha High: 8.61 ha
Description	This PCT occurs on broad, flat valley bottoms across the project area. Spanning from Tantangara Reservoir to Nungar Fire Trail and over to Link Road. This community does not contain any canopy species, comprising of sub-alpine grasslands. The midstorey is sparse and lacking in most areas, with *Epacris gunnii* recorded in some areas. Groundcover consists mostly of native grasses, sedges and rushes as well as native forbs. Native grass and grasslike species include Tall sedge, *Carex gaudichaudiana*, *Empodisma minus*, Bog Snowgrass and Club-rush (*Isolepis inundata*). Native forb species recorded within this community include *Hypericum japonicum*, Gunn's Willow-herb (*Epilobium gunnianum*), *Neopaxia australasica*, Granite Buttercup (*Ranunculus graniticola*) and Pennywort (*Hydrocotyle algida*).
Survey effort	Low: one plot (32) Poor: one plot (49) Medium: one plot (54) High: three plots (61, 120, 2099)
Condition description	This PCT occurs in a variety of condition states throughout the project area. The majority of this PCT is in low condition, predominantly adjacent to Tantangara Reservoir. These areas consist of low species diversity and a high number of exotics due to high levels of disturbance from recreational uses and pest species. This PCT occurs in high condition along Nungar Creek Fire Trail, Bullocks Hill fire Trail and Link Road; consisting relatively intact vegetation with high native cover and low exotic cover. Several small patches of medium condition were also identified; these areas also have a relatively high native cover with some weeds present. A small patch of poor condition occurs along Nungar Cree Fire Trail; consisting of a modified understorey.
Characteristic species used for identification of PCT	*Epacris gunnii* aligns with the midstorey species for this PCT. Aligning groundcover species include Tall sedge, *Carex gaudichaudiana*, *Empodisma minus*, Bog Snowgrass, Hypericum japonicum, Gunn's Willow-herb, Neopaxia australasica and Granite Buttercup.
Justification of evidence used to identify the PCT	PCT 1225 occurs within the South Eastern Highlands and Australian Alps IBRA regions, in which the project area is located. The landscape position described within the VIS states the PCT occurs on broad, flat valley bottoms in montane to sub-alpine areas between 1,200 and 1,600 m; this community has been recorded within these landforms. Characteristic species recorded within this community align with the VIS.
Status	Commonwealth EPBC Act: not listed NSW BC Act: not listed

Table 5.23 **PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion description**

Estimate of percent cleared value of PCT across NSW	5%

Photograph 5.22 **Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion – Plot 120**

5.3.4 Assessment of patch size

For each vegetation zone within the Main Works disturbance footprint, patch size was assessed using a select process in ArcGIS, using existing vegetation mapping and aerial imagery. All intact native vegetation separated by a distance of less than 100 m (woody vegetation ecosystems) or 30 m (non-woody vegetation ecosystems) was mapped sequentially.

This process showed that vegetation within the project area forms part of large patches of connecting vegetation throughout KNP, with patch sizes of greater than 100 ha. This patch size was used in the calculator.

5.3.5 Vegetation integrity score

The vegetation integrity score for each vegetation zone is presented in Table 5.24.

Table 5.24 Vegetation zones mapped within the Main Works project area

Plant community type	Condition	Vegetation integrity score
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Derived grassland	0.6
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Poor	56
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	Medium	36.9
PCT 285 – Broad-leaved Sally grass – sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	High	56.7
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Low	3.4
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Derived grassland	57.9
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Poor	4.2
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	Medium	70.4
PCT 296 – Brittle Gum – Peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	High	54
PCT 299 – Riparian Ribbon Gum - Robertsons Peppermint - Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands	Medium	65.4
PCT 299 – Riparian Ribbon Gum - Robertsons Peppermint - Apple Box riverine very tall open forest of the NSW South Western Slopes Bioregion and South Eastern Highlands	High	73.8
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	Derived grassland	4.3
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	Other	39.8
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	56.8
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	High	67.1
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	19.2
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	Poor	0.1
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	50.3

Table 5.24 Vegetation zones mapped within the Main Works project area

Plant community type	Condition	Vegetation integrity score
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	46.3
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	High	93.6
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	Derived grassland	29.6
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	Poor	50.5
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	71
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	High	87.6
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	69
PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion	Poor	13.5
PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion	Medium	72.2
PCT 637 – Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	79.2
PCT 638 – Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Derived grassland	100[1]
PCT 638 – Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	High	91.9
PCT 639 – Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Other	79.5
PCT 639 – Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	69.3
PCT 643 - Alpine shrubland on scree, blockstreams and rocky sites of high altitude areas of Kosciuszko National Park, Australian Alps Bioregion	Low	13
PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	Derived grassland	60.5
PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	Other	67.1
PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	Medium	67.6
PCT 644 – Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	90.6
PCT 679 – Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion	Other	81.1
PCT 679 – Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	51

Table 5.24 Vegetation zones mapped within the Main Works project area

Plant community type	Condition	Vegetation integrity score
PCT 729 - Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Low	6
PCT 729 - Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Derived grassland	31.1
PCT 729 - Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	Medium	78.2
PCT 729 - Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	High	77.6
PCT 765 – Carex - Juncus sedgeland/wet grassland of the South Eastern Highlands Bioregion	High	75.5
PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion	Derived grassland	31.6
PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion	Medium	100[1]
PCT 952 – Mountain Gum - Narrow-leaved Peppermint - Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion	High	100[1]
PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	Derived grassland	32
PCT 953 – Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	89.9
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	Medium	48.6
PCT 999 - Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	High	70.9
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Derived grassland	33.1
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Medium	43.8
PCT 1191 – Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	High	66.4
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Derived grassland	43.4
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Poor	100[1]
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Other	44.2
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	Medium	81.3
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion	High	92.3
PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Low	31.7
PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Poor	49.7

Table 5.24 Vegetation zones mapped within the Main Works project area

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	Medium	49
PCT 1224 – Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	High	85.6
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Low	31.4
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Poor	47.8
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	Medium	36.5
PCT 1225 – Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	High	94.7

Notes: 1. Composition, structure and function condition scores were entered as benchmark due to lack of plots.