



11 kv Line Rehabilitation Strategy

May 2024



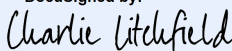
11 kv Line Rehabilitation Strategy

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22/05/ 2024

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TABLE OF CONTENTS

1	Introduction	1
2	Strategy Objectives	4
3	Rehabilitation Strategy	4
4	Snowy Management Plan (Environmental Management Plan)	5
5	Kosciuszko National Park Plan of Management	5
6	Final Landform and Land Use	5
7	Removal of Infrastructure	5
8	Landscape Rehabilitation Approach	7
8.1	Delineation of Access Tracks	7
8.2	Soil Profile Rehabilitation	7
8.3	Vegetation Rehabilitation (Grassland and Woodland Domains)	7
8.4	Access Tracks Management	8
8.5	Rehabilitation Progress Measures	8
9	Rehabilitation Monitoring	8
10	Rehabilitation Maintenance	9
11	Project Delivery Program	10
12	Rehabilitation Progress Reporting and Acceptance	11

Appendices

Appendix A Plant Community Types for the 11 kv Easements

Figures

Figure 1	Location of the Providence Portal to Tantangara 11 kv Corridor	2
Figure 2	Location of the Eucumbene to Happy Jacks 11 kv Corridor	3
Figure 3	Project Delivery Flowchart	10



1 Introduction

On 2 September 2022 the NSW Minister for Planning issued an infrastructure approval (SSI 9717) for the Snowy 2.0 Transmission Connection Project. The project includes the development of new 330 kilovolt (kV) transmission lines and associated infrastructure connecting Snowy 2.0 to the electricity grid.

Condition B38 of the infrastructure approval requires the preparation of an *Additional Easement Rehabilitation Strategy* (the Strategy) within six months from the commencement of construction of the Snowy 2.0 Transmission Connection Project to the satisfaction of the NSW National Parks and Wildlife Service (NPWS). The condition states that the Strategy addresses the following projects:

- a) *Providence Portal substation to Tantangara Dam – removal of transmission line, replacement with a standalone supply or underground line between the Snowy 2.0 Tantangara intake/portal area and Tantangara Dam area, and rehabilitation of the easement.*
- b) *Eucumbene Portal to Happy Jacks transmission – transmission lines being removed and replaced by an alternative standalone power supply and rehabilitation of the easement; and*
- c) *timing for each program of works.*

This Strategy has been prepared to address the requirements of Condition B38 of the infrastructure approval. It provides a summary of the rehabilitation approach for the two electrical transmission lines and corridors currently utilised by Snowy Hydro Limited (SHL) in Kosciusko National Park (KNP) – herein referred to as the project.

The location of the two corridors can be seen in figures 1 and 2.

This Strategy provides a high-level description on how the project would be undertaken including how the existing transmission line infrastructure will be removed, how the disturbed footprints of the corridors will be progressively rehabilitated and the likely timing of the project. The intent being to integrate these corridors back into the surrounding landscape.

Upon successful completion of the project, SHL will relinquish rights to the corridors.

This Strategy has been prepared in consultation with NPWS.

Figure 1 | Location of the Providence Portal to Tintangara 11 kv Corridor

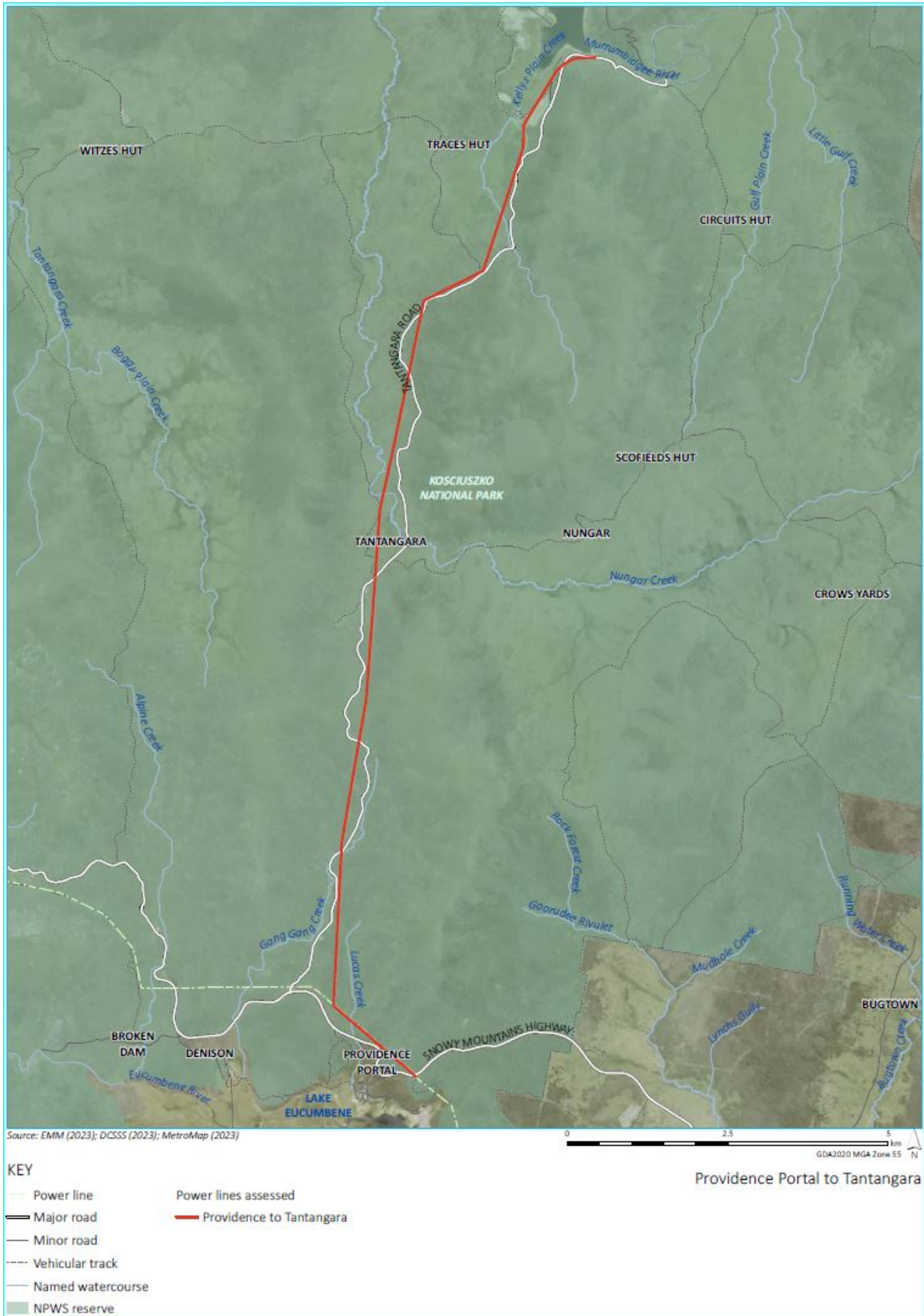


Figure 2 | Location of the Eucumbene to Happy Jacks 11 kv Corridor





2 Strategy Objectives

The overarching objectives of this Strategy are:

- To define an end point to be achieved through the project. The aim of which is to achieve a functioning landscape that would require minimal NPWS maintenance. The landscape is to be safe, stable and sustainable.
- To outline the implementation process of the project to ensure completion in a timely manner, including methodologies that ensure a 'light touch' approach during the asset removal process, schedules for both the transmission line infrastructure removal and landscape rehabilitation for the two corridors.
- To allow for ongoing access and management across both corridors throughout project execution.
- Outline project completion criteria. Including performance indicators, timing, and corrective actions if milestones are not going as expected.
- Outline a monitoring and maintenance program to ensure effective rehabilitation occurs within identified timeframes.
- Outline an annual reporting and assurance process.
- Outline a program for the execution of the project. Programming will consider integration into SHL asset management plans and budgets taking into consideration the completion of key Snowy 2.0 milestones (such as establishment of power to Tantangara Dam from the Snowy 2.0 Tantangara site).

3 Rehabilitation Strategy

The objectives of rehabilitation are to establish a framework for rehabilitation of the two corridors.

To assist in defining the lands encompassed in this Strategy, the corridors have been divided into three domains based on function and final land use.

The domains are:

1. Grasslands – consisting of Subalpine dry grasslands and heathlands of valley slopes and floors
2. Woodlands – consisting of Subalpine woodlands
3. Access tracks – consisting of tracks that are to be kept and maintained for future NPWS use.

Plant Community Types (PCTs) for Domains 1 and 2 are listed in Appendix A.

It is likely that the project will be broken into smaller zones to enable physical works to be completed on multiple fronts at a single time and enable progressive restoration while allowing for ongoing site access to limit impacts on NPWS operations.



4 Snowy Management Plan (Environmental Management Plan)

The *Snowy Management Plan (Environmental Management Plan)* (the SMP(EMP)) was prepared following the corporatisation of the Snowy Mountains Hydro Electric Authority. The SMP(EMP) is the key environmental management plan that stipulates the way in which SHL must undertake prescribed activities on lands with KNP. The project and its associated activities are to comply with all relevant measures detailed within the SMP (EMP). The project will require the completion of an environmental assessment (Review of Environmental Factors (REF)) prepared under the provisions of Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and a Rehabilitation Management Plan (RMP) to ensure success. The REF will be reviewed and assessed by NPWS, and the RMP will be approved by NPWS prior to works proceeding.

5 Kosciuszko National Park Plan of Management

The *Kosciuszko National Park Plan of Management* (KNP PoM) provides NPWS with the key objectives, principles, and policies to guide the long-term management and conservation of the broad range of values contained within the park. This Strategy and the larger scope of the project will align with intent of the KNP PoM through the rehabilitation of the corridors.

6 Final Landform and Land Use

The final conceptual landform for the project will consist of a landscape that integrates with the surrounding environment. The aim is to link vegetation communities adjacent to the corridor footprints through natural regeneration of these areas, subsequently resulting in fauna movement corridors. Establishing these fauna corridors would be consistent and complement the goals and overarching principles of the KNP PoM.

It is envisaged that, over time, with the exception of required access roads, there will be little to no evidence of the existence of the transmission line corridors.

7 Removal of Infrastructure

The existing infrastructure present within each of the corridors that requires removal includes:

- Transmission poles including cross arm members
- Overhead conductors
- Transmission cables
- Back stay wires.

All transmission poles will be cut at the ground and the stumps left to decompose naturally.



Non-treated poles may be used for rehabilitation.

All infrastructure material removed from the corridor footprint will be disposed of appropriately. Planning for the management of waste generated throughout the project will consider the hierarchy of waste control to identify opportunities for reuse and recycling of materials while minimise waste being transported to landfill.

The two corridors will be broken into zones during the detailed planning and environmental assessment phase. The removal sequence for the transmission line infrastructure is likely to involve:

- Lowering of transmission cables
- Removal of overhead conductors
- Removal of cross arm members
- Removal of backstay cables (cut off below ground level)
- Removal of vertical poles (cut off at ground level).

The actual sequence will be documented in the REF(s).

The infrastructure removal methodology will consider the limitation of ground disturbance as a key guiding principle. Operations in areas of Snow Grass must consider its low resilience to disturbance.

Other key considerations for determining the infrastructure removal methodology include:

- The selection of plant in minimising harm to existing groundcover vegetation and compaction of the underlying soil profile (e.g. tracked or balloon tyred plant).
- Adopting relevant hygiene protocols for all plant and materials to mitigate risks for the introduction of exotic species and pathogens.
- Identifying the number of transmission poles chemically treated. These poles will be removed and disposed of.
- Non-treated poles may also be used for rehabilitation.
- Transmission pole back stay anchors located below ground level are to be left insitu to minimise excavation and subsequent ground disturbance. The back stay cables linking the transmission poles and back stay anchors are to be cut below the ground surface and removed, any minor excavations will be backfilled and mulched applied where required.



8 Landscape Rehabilitation Approach

8.1 Delineation of Access Tracks

Access tracks will be required during rehabilitation, after rehabilitation for management and monitoring, and potentially long-term for NPWS access. These tracks will be delineated in agreement with NPWS and documented in the REF(s).

Use of existing access tracks will be used where possible for the removal/rehabilitation works.

8.2 Soil Profile Rehabilitation

Where the soil profile has been impacted through historic use or through the course of this project, rehabilitation of the surface will be required to establish an appropriate growing medium.

This may be achieved by ripping or scarifying the soil surface (using the bucket of an excavator and/or use of hand tools). The application of a layer of mulch will be applied to exposed soil surfaces.

Soil rehabilitation will be documented in the REF(s).

8.3 Vegetation Rehabilitation (Grassland and Woodland Domains)

Following the removal of infrastructure within the corridors, the rehabilitation approach for both Grassland and Woodland domains will involve:

- Ripping or scarifying of compacted soil where required.
- Mulching exposed soil surfaces. Mulching of these surfaces will be to a depth of 100 mm using an organic mulch.
- Placement of any local organic materials over the mulch, such as senescent shrubs, dead grass butts and vegetation that were impacted during the removal of the easement infrastructure.
- Tracks that are no longer required for access will be ripped to address soil compaction issues in the pavement surface. Organic mulch will be applied to sections that have exposed soil at the surface.
- Within the Woodland landscape areas, the strategic use of insitu dead vegetation within the easement corridor will be adopted. Opportunistic placement of senescent shrubs, dead tree canopies, logs and tree branches above disturbed ground and across retired tracks will further assist the rehabilitation process by providing wind protection and microclimates for the natural recruitment of woodland species. Consideration will also be given to the use of non- treated transmission poles in the rehabilitation of these areas.

Vegetation rehabilitation will be documented in the REF(s).



8.4 Access Tracks Management

Existing access tracks within the easements that are to be kept for access throughout the rehabilitation areas during the maintenance period will comply with the standards outlined in the *NPWS Erosion and Sediment Control on Unsealed Roads Field Guide*. Some of these tracks will require physical barriers to prevent access into the rehabilitation areas.

Upon completion of the rehabilitation works these tracks will be deemed 'no longer required' as part of the monitoring program. The tracks will then be progressively closed and rehabilitated.

NPWS maintenance tracks that are to remain operational throughout the project execution phase and post completion will continue to be managed under the existing Road Maintenance Agreement that is in place between NPWS and SHL. Ongoing access for NPWS staff to continue operations will need to be considered (including consultation with NPWS) during the detailed planning phase. The project will be staged such that access will be progressively reinstated as works in zones are completed.

Access management will be documented in the REF(s).

8.5 Rehabilitation Progress Measures

The project will use an adaptive management model, whereby maintenance activities will be scheduled based on observations and findings following annual inspections. Annual inspection will generate reports that will detail the projects progress against performance indicators and the completion criteria. Based on these findings corrective actions involving active intervention may be required to assist achieving the completion criteria targets. These reports will be provided to NPWS for endorsement prior to SHL maintenance work taking place.

Following completion of the REF(s), a RMP or RMPs will be developed to detail:

- Rehabilitation performance indicators
- Corrective actions
- Monitoring and reporting framework
- Completion criteria
- Final NPWS signoff mechanism.

These plans will be developed in consultation with NPWS and require their approval prior to executing any physical works.

9 Rehabilitation Monitoring

The monitoring program will be designed to ensure effective rehabilitation occurs within identified timeframes, noting that response timeframes for the natural recruitment and reestablishment of the various PCTs may be long term given the subalpine environment. The key goal of the monitoring program is to ensure that continual assessment is being completed, and progress towards achieving the completion criteria is being made.

A baseline assessment will be conducted prior to any physical works being completed to effectively measure the response to rehabilitation efforts over time.



A Rehabilitation Management Plan (RMP) will be developed in consultation with NPWS that will provide detail on completion time frames for field inspections and monitoring. Several monitoring styles will be adopted across the powerline easements following the initial rehabilitation process. These will include:

- Visual inspection of the disturbed areas
- Random quadrat monitoring to assess the vegetation recruitment according to target PCTs
- Unmanned Aircraft Vehicle System (UAVS) that have the capability to monitor the whole of the easements.

These inspections will assess progress against the project performance indicators and completion criteria while also providing guidance on the yearly rehabilitation maintenance requirements such as:

- Site safety
- Erosion and Sediment Control requirements
- Weed presence and control program
- If active intervention (revegetation) of rehabilitation areas is required
- Grazing management – fencing and thatch placement if levels of grazing are observed to be having significant effect of rehabilitation efforts.

Additional details of the rehabilitation monitoring approach will be addressed in the RMP(s).

10 Rehabilitation Maintenance

Maintenance activities will be conducted according to the outcomes of the annual monitoring reports.

Maintenance of the rehabilitation areas is expected to largely consist of:

- General maintenance of previous rehabilitation works
- Weed management
- Erosion and sediment control
- Restoration through active intervention (revegetation) where required.

Adaptive management practices will be adopted regarding revegetation. If after three years of monitoring (or earlier if considered necessary) there is still bare ground and/or large mulched patches, active revegetation, either seeding or planting will be undertaken. Seed is to be collected from the areas surrounding the powerline easements for sowing or to grow into tube stock. Species selection will be based on the PCTs that are local to the rehabilitation sites.

11 Project Delivery Program

Timing of project implementation will be as soon as practicable, considering the need to put the work into SHL asset plans and budgets. There is also a need to consider the construction and commissioning of Snowy 2.0 including the retention of the Providence Portal to Tantangara transmission line and corridor until the alternate supply from the Snowy 2.0 Tantangara site to Tantangara Dam wall is connected.

Figure 3 displays the projects whole-of-life staging process for the completion of the project including the steps from the preparation of this Strategy, development of the REF(s), development of RMP(s), execution of works and ongoing monitoring, maintenance and reporting, and final handover and acceptance of the lands to NPWS.

The physical removal of the Eucumbene to Happy Jacks Transmission line is scheduled to commence in Summer 2024/2025. However, the timing of the removal of Providence Portal to Tantangara Transmission line is not scheduled until late 2027, as these works cannot commence until the alternate power source from the Snowy 2.0 site has been established to Tantangara Dam.

Physical on ground works will not take place throughout winter months to prevent the potential for unnecessary damage to the easement corridor.

Annual rehabilitation monitoring, reporting and works will continue until such time the completion criteria is reached. This process will be detailed further in the RMP(s).

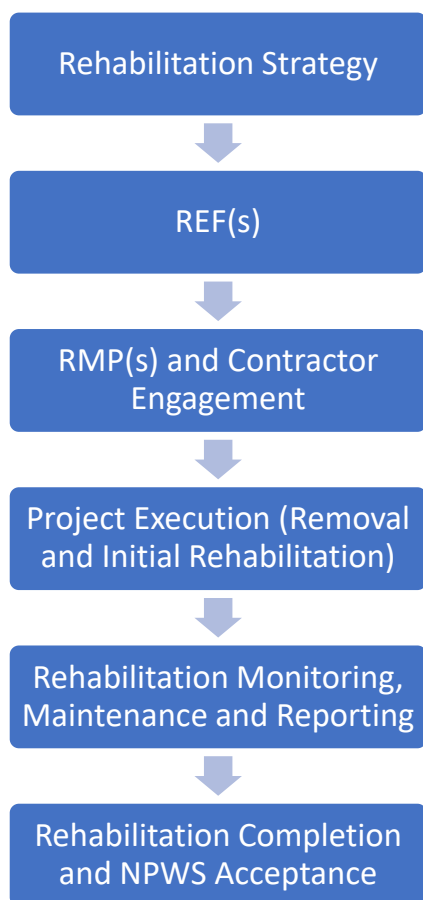


Figure 3 Project Delivery Flowchart



12 Rehabilitation Progress Reporting and Acceptance

The annual reporting and NPWS sign off mechanism will be detailed within RMP(s). The plan(s) will address the annual reporting and assurance process, including report delivery timeframes, review periods and a sign off mechanism for NPWS acceptance.

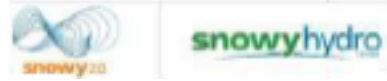
Annual reporting regarding rehabilitation will outline:

- Site safety practices and incidents
- Monitoring programme results
- Maintenance activities
- Refinement of rehabilitation or monitoring methodology
- Progress against performance indicators and proposed timelines to achieve the completion criteria.

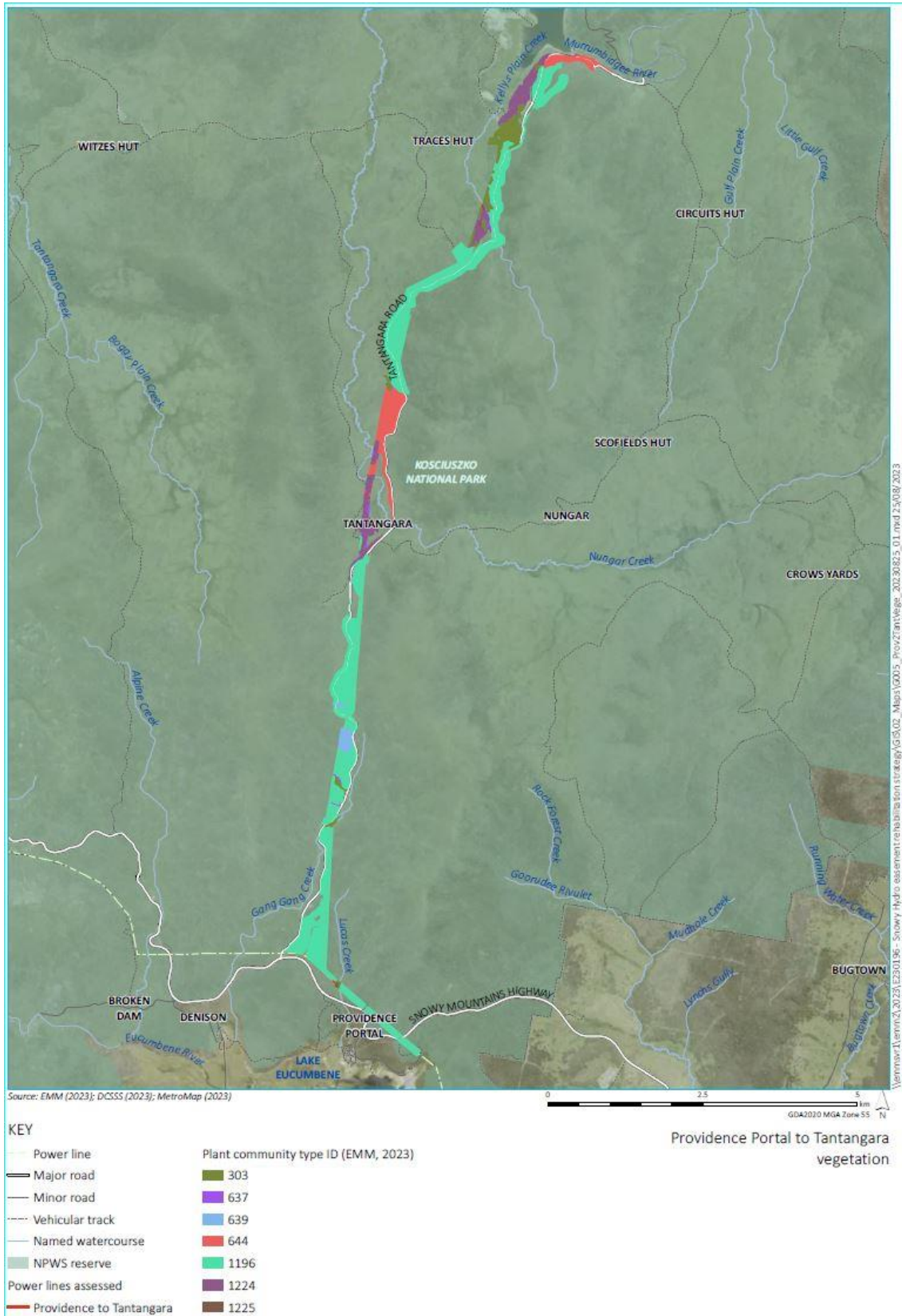
The RMP(s) will also detail the final acceptance process when all completion criteria have been satisfied and the acceptance mechanism that will see the management of lands being transferred from SHL to NPWS.

Appendix A

Plant Community Types for the 11 kv Easements



Appendix A: Plant Community Types (PCTs) for the 11kv Easements.



Plant Community Types (PCTs) within the Providence Portal to Tantangara Easement.



Source: EMM (2023); DCSSS (2023); MetroMap (2023); DPE (2022)



KEY

Power line	Plant community type ID (DPE, 2022)	3879
Minor road	3297	3886
Vehicular track	3307	3888
Named watercourse	3380	3890
NPWS reserve	3381	3891
	3382	3892

Eucumbene to Happy Jacks vegetation

Plant Community Types (PCTs) within the Eucumbene to Happy Jacks Easement.

Plant Community Types (PCTs) within the Providence Portal to Tantangara Easement.	
Plant Community Type (PCT) ID	Plant Community Type (PCT) Name
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
637	Alpine and sub-alpine peatlands, damp herbfields and fens, South Eastern Highlands Bioregion and Australian Alps Bioregion
639	Alpine Ash - Snow Gum shrubby tall open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion
644	Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion
1196	Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion
1224	Sub-alpine dry grasslands and heathlands of valley slopes, southern South Eastern Highlands Bioregion and Australian Alps Bioregion
1225	Sub-alpine grasslands of valley floors, southern South Eastern Highlands Bioregion and Australian Alps Bioregion

Plant Community Types (PCTs) within the Eucumbene to Happy Jacks Easement.	
Plant Community Type (PCT) ID	Plant Community Type (PCT) Name
3297	Kosciuszko Snow Gum-Mountain Gum Moist Forest
3307	Kosciuszko-Namadgi Alpine Ash Moist Grassy Forest
3380	Jounama Snow Gum Shrub Woodland
3381	Kosciuszko Alpine Sally Woodland
3382	Kosciuszko Eastern Slopes Mountain Gum Forest
3879	Kosciuszko High Plateau Grassy Open Heath
3886	Kosciuszko Frost Hollow Grassland
3888	Kosciuszko Subalpine Valley Wet Meadow
3890	Kosciuszko Alpine Wet Heath
3891	Kosciuszko Range Boggy Herbfield
3892	Kosciuszko Subalpine Valley Damp Heath