NSW NATIONAL PARKS & WILDLIFE SERVICE

Review of Environmental Factors

Snowies Iconic Walk, Kosciuszko National Park

26 July 2019

Contents

Review of Environmental Factors

This is the **standard template** for preparing a Review of Environmental Factors (REF) for activities within lands reserved or acquired under the *National Parks and Wildlife Act 1974* (NPW Act). The template addresses the environmental impact assessment requirements for activities subject to Part 5 of the *Environmental Planning and Assessment Act 1979*.

Proponents should always use the current version of the template.

A separate template is available and should be used instead for the following activities:

- **minor activities and uses requiring a lease or licence under s.151 of the NPW Act** – for further information refer to the sustainability assessment criteria and guidelines.

To complete this template you will need the Office of Environment and Heritage (OEH) Guidelines for Preparing a Review of Environmental Factors. This and other guidance documents are available at the OEH website or by contacting the Environment Line on 13 15 55.

Once completed and signed, the template, together with the applicable fee, should be sent to your nearest National Parks and Wildlife Regional Office.

Note for external proponents

If the REF is for an activity to be undertaken by an individual, company or organisation, **before preparing the REF** the proponent must:

- confirm the legal permissibility of the proposal (section 3.1 of this document)
- confirm that there are no pre-existing approvals (such as permits, licences or easements)
- consult with the relevant National Parks and Wildlife Service (NPWS) office to obtain in-principle support for the proposal.

If the REF is for an activity requiring a lease or licence under s.151 NPW Act, telecommunications facilities, or within the Sydney Drinking Water Catchment it will need to be submitted with additional information (refer Section 10 of this document).

1 Brief description of the proposed activity

Please provide a brief description of the work to be conducted.

Description of proposed activity*	Construction of three new tracks, and upgrades and realignments, for the Snowies Iconic Walk to connect existing walking tracks and iconic landmarks and connect five resorts, accommodation and services at Thredbo, Charlotte Pass, Guthega, Perisher and Lake Crackenback. A combination of construction methods is planned including, elevated structures and bridges, rock paving (including pitched rock) and natural/gravel surfaces. The works will involve construction of approximately 27 kilometres of new walking tracks which include some minor upgrades and/or realignments to an existing track near Porcupine Rocks. Other works proposed include new bridges over Spencers Creek, Wrights Creek and Trapyard Creek, small campsites at two locations along new alignments and upgrades of car parking facilities at the existing Porcupine Rocks trailhead at Perisher Valley (project maps attached).
Name of NPWS park or reserve	Kosciuszko National Park
Location of activity (e.g. precinct name or nearby street)	The study area is located within the Snowy Monaro Regional Council area. The Snowies Iconic Walk is located approximately 28 kilometres west of Jindabyne and 132 kilometres south-east of Albury in NSW (maps attached).

Estimated commencement date	1/11/2019
Estimated completion date	30/06/2022

* **Note**: a comprehensive description of the proposal is required in section 6.2 of this form.

2 Proponent's details

All correspondence and notices will be sent to the address of the proponent.

OEH proponents	
Area or Section/Division	Southern Ranges Branch

Contact name	Ms Maggie Sutcliffe
Position	Senior Project Officer, Alpine-Queanbeyan Area
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Email	Magnolia.Sutcliffe@environment.nsw.gov.au

3 Permissibility

3.1 Legal permissibility

Indicate whether the activity is permissible under the legislation. Include an explanation where necessary.

Section 1.10 and Appendix 1 of the Guidelines for Preparing a Review of Environmental Factors provide guidance on permissibility.

☐ *National Parks and Wildlife Act 1974* **(NPW Act)**

Justification (consider the following matters):

☒ Objects of the Act (s.2A)

In accordance with Section 2A the proposed works are considered to have minimal impacts on the conservation of nature, objects, places or features of cultural value, or public appreciation of nature and cultural heritage and have considered the principles of ecologically sustainable development. Impacts to biodiversity have been avoided and minimised through detailed investigations of a number of proposed trail alignments between May 2017 and April 2019 (Biosis 2017, 2018, 2019). These have included field investigations, analysis of environmental values and potential impacts, consultation with experts and extensive on-ground micro-siting. The avoidance of significant impacts on threatened species/communities, including alpine bogs, threatened reptiles and Mountain Pygmy-possum *Burramys parvus*, has been a major driver in selecting the final trail configuration. The installation of elevated structures/bridges would minimise impacts in sensitive terrestrial and wetland habitats, allowing landscape connectivity to be maintained. Furthermore, pre-construction micro-siting will be undertaken for elevated structures in alpine bog communities, montane drainage lines and open grassy heathland habitats with the intent of minimising impacts on the threatened bog community, Critically Endangered Blue-tongued Greenhood *Pterostylis oreophila*, Endangered Alpine She-oak Skink *Cyclodomorphus praealtus* and other threatened biota. During construction, impacts would be minimised by undertaking pre-disturbance/clearing checks for threatened species by an ecologist, confining construction activities to a narrow corridor, using sensitive construction techniques (e.g. pneumatic drilling of footing for elevated structures), airlifting materials and equipment into the site and storing construction materials on hard surfaces or on temporary platforms. Post-construction, best practice active rehabilitation protocols would be implemented in temporarily disturbed areas. As part of the trail operations it is intended to have project-specific programs to monitor changes to alpine bog vegetation under elevated structures, monitor feral predator movements and implement control as required, and ensure weed and pathogen monitoring and control. The trails will also be included in current trail maintenance programs that operate in the park.

The proposed Snowies Iconic Walk would foster public appreciation, understanding and enjoyment of nature by providing and promoting increased access to mountain landscapes to visitors and tourists. Trail construction and materials have been chosen to minimise impacts and ongoing maintenance and will ensure sustainable use by increased numbers of visitors planned for the area.

The study area has been assessed as having low overall archaeological potential and has been subject to an Aboriginal Cultural Heritage Assessment (ACHA). Only specific areas require further archaeological investigation or approvals under the *National Parks and Wildlife Act 1974*.

☒ Reserve management principles (s.30E–30K)

Section 30E of the NPW Act sets out the management principles for National Parks in NSW. The proposed Snowies Iconic Walk adheres to the majority of management principles and will promote public appreciation of the values of Kosciuszko National Park. It will also provide for sustainable visitor use and enjoyment by ensuring that construction materials used to create the trails are durable, easily maintained, allow for ease of walking, adhere to The Australian Standards for Walking Tracks (AS2156.1-2001) and are strategically placed to allow scenic amenity. The proposal also demonstrates sustainable use and adaptive reuse by incorporating existing trails and features into the proposed trail alignments (e.g. Porcupine Rocks).

The proposal does not entirely align with the conservation of biodiversity, the maintenance of ecosystem function, the protection of geological and geomorphological features and natural phenomena, or the maintenance of natural landscapes. This is based on the potential for the proposal to remove or disturb native vegetation, create a formed trail in a predominantly natural habitat, disturb threatened species habitat and increase opportunities for introduced species such as weeds and feral predators (e.g. cats and foxes). Targeted survey/detailed habitat assessments have been taken into account in the current proposal design and enabled NPWS to ensure project planning aligns with this principle. NPWS has demonstrated consideration of this principle via targeted surveys, strategic micro-siting of trails, exploration of alternative alignments and by proposing construction methods and materials which minimise vegetation removal and habitat fragmentation. Further mitigation and minimisation of impacts can be achieved by implementing a project-specific enhanced/amplified pest animal and weed management program that includes ensuring appropriate hygiene controls are implemented during construction and operation of the tracks.

Strategic micro-siting of the trail alignment has assisted in minimising potential impacts of the proposal to the threatened Alpine Bogs and Associated Fens community in line with the protection of the ecological integrity of one or more ecosystems for present and future generations. Micro-siting has made recommendations to ensure that trail construction materials such as elevated structures are used and to ensure management strategies are in place to mitigate potential direct and indirect impacts. Long-term monitoring of elevated structures and their influence on alpine bog vegetation condition and habitat connectivity is also proposed.

In accordance with management principles set out in s.30E the proposal would also act to conserve places, objects, features and landscapes of cultural value. The entire study area has been assessed as having low archaeological potential with only very specific areas supporting cultural sites. Recommendations have been included in a project ACHAR (attached to this REF) to guide approval for disturbing any Aboriginal cultural heritage sites and to manage impacts during construction.

☒ Title and relevant sections of plan of management or statement of management intent

The Kosciuszko National Park Plan of Management (PoM) 2006 applies to the study area.

The overarching aim of the Kosciuszko National Park PoM is to maintain or improve the condition of the natural and cultural values that together make the park a special place. It is guided by the principles listed in s.30E of the NPW Act 1974. The proposed construction, upgrading and realignment of the Snowies Iconic Walk satisfies the intent of the PoM by promoting public appreciation and sustainable use of the park's natural and cultural values.

As discussed above, the proposal adheres to the majority of the above listed principles and will promote public appreciation of the values of Kosciuszko National Park. The proposal has also been nominated in the Draft Walking Tracks Strategy for the Kosciuszko Summit Precinct (OEH 2018) and is subject to Kosciuszko National Park Proposed Amendment to Plan of Management (OEH 2019), which is currently awaiting ministerial approval. The proposal will also provide for sustainable visitor use and enjoyment by ensuring that construction materials and methods used to create the trails have minimal environmental impact and are durable, easily maintained, allow for ease of walking. They will also adhere to The Australian Standards for Walking Tracks (AS2156.1-2001) and are strategically placed to allow scenic amenity. The proposal also demonstrates sustainable use and adaptive reuse by incorporating existing trails and features into the proposed trail alignments (e.g. Porcupine Rocks walking track and trailhead and links to the Main Range Track).

The entire study area has been assessed as having low archaeological potential with only very specific areas supporting cultural sites. .

☐ Leasing, licensing and easement provisions of Part 12

☒ Management powers and responsibilities of OEH (s.8 and s.12)
(**for internal OEH projects only)**

Under s.8 (7b) of the NPW Act the Chief Executive may enter into arrangements for the carrying out of such works as the Chief Executive considers necessary for or in connection with the protection and care of fauna and the protection of native plants.

Elevated structures would be constructed over approximately 5 kilometres of the new alignments to avoid impacts on sensitive terrestrial and wetland habitats that support threatened species and ecological communities such as threatened alpine reptiles, mammals, invertebrates and bog communities. Pedestrian bridges are proposed to span Spencers Creek, Wrights Creek and the headwaters of Trapyard Creek to avoid disturbance of the bed, banks and instream habitat features. The bridge at Spencers Creek (near the Snowy River) will also avoid a known population of the threatened Perisher Wallaby-grass *Rytidosperma vickeryae*. Other minor creeks and waterways will also be spanned with smaller bridges and structures.

Under s.12 (a-g), the Service is to carry out such works and activities as the Minister may direct, either generally or in a particular case, in relation to the conservation and protection of threatened species, populations and ecological communities, the identification and protection of buildings, places and objects of non-Aboriginal cultural values and provision of facilities and opportunities for sustainable visitor or tourist use and enjoyment on land reserved under the Act.

The proposal will act to protect identified natural and cultural values and to provide a durable, low-maintenance walkway for visitor and tourist use.

Special note:
For lease proposals under s.151 NPW Act involving new buildings or structures, section 151A(5) of the NPW Act states that the Minister must not grant a lease under s.151 for visitor or tourist uses that authorises the erection of a new building or structure unless the plan of management identifies the purpose as permissible and the general location for the new building.
If relevant to the proposal, indicate whether this requirement has been met, or will be.

☐ *Wilderness Act 1987* (for activities in wilderness areas)

Justification (consider the following matters):

☐ Objects of the Act (s.3)

☐ Wilderness management principles (s.9)

☐ Restrictions on leasing, licensing and easement (see s.153A NPW Act)

☒ *Environmental Planning and Assessment Act 1979* **(EP&A Act)**
Consider aims and objectives of relevant environmental planning instruments, zoning and permissible uses, development controls, etc.

Explanatory note: Clause 65 of State Environmental Planning Policy (Infrastructure) 2007 provides that development for any purpose may be undertaken within lands **reserved** under the NPW Act without consent. This removes the need for development consent under Part 4 of the EP&A Act (e.g. council approval), meaning that most activities within OEH land are assessed under Part 5. However, proponents should still confirm that the Infrastructure State Environmental Planning Policy (SEPP) is applicable to their particular proposal, and provide consideration of other environmental planning instruments that would otherwise apply to the proposal if it were not occurring on OEH land.

If the lands are **not reserved** under the NPW Act (i.e. are lands vested in the Minister under Part 11), the zoning provisions under the relevant local environmental plan will need to be checked.

Justification (indicate any or all of the following that are relevant):

☒ The activity may be undertaken without development consent as it is

☒ **on reserved land** and is:

☒ for a purpose authorised under the NPW Act (cl.65 Infrastructure SEPP)

☐ The activity is **not on reserved land** but may be undertaken without development consent because:

☐ it is zoned E1 under the [insert name of relevant local environmental plan] **or**

☐ the zoning of the land does not require development consent for the activity.

[Identify and briefly outline the alternative zoning of the land under the relevant local environmental plan.]

Kosciuszko National Park is zoned E1 National Parks and Nature Reserves under the Snowy River Local Environmental Plan 2013. The objectives of the E1 zone are:

- To enable the management and appropriate use of land that is reserved under the NPW Act or that is acquired under Part 11 of that Act.
- To enable uses authorised under the NPW Act.
- To identify land that is to be reserved under the NPW Act and to protect the environmental significance of that land.

Uses authorised under the NPW Act are permitted without consent in the E1 zone. No other development is permitted.

According to Clause 65 of Infrastructure SEPP, development for any purpose may be carried out without consent on land reserved under the NPW Act if the development is for a use authorised under that Act.

☒ The activity is on land that contains coastal wetlands, littoral rainforest or koala habitat and the relevant aims, objectives, principles and provisions of the relevant SEPPs (namely SEPP 14, SEPP 26 or SEPP 44) have been considered in preparation of the REF.

Explanatory note: these SEPPs do not apply to land reserved under the NPW Act. However, it is OEH policy that the **objectives** and **principles** of these SEPPs are applied to the assessment of on-park activities.

- No SEPP 14 wetlands are located within or in close proximity to the study area.
- No SEPP 26 Littoral Rainforest is located within or in close proximity to the study area.
- Under Clause 5 of SEPP 44, this policy does not apply to land dedicated or reserved under the NPW Act 1974. Moreover, no SEPP 44 core Koala habitat was identified within or in close proximity to the study area during multiple field investigations.

☒ *Heritage Act 1977* (for activities likely to affect items or places listed on the State Heritage Register or of historic cultural heritage value)

Justification (indicate any or all of the following that are relevant):

The activity is on land that contains:

☐ an item listed on the State Heritage Register (SHR)

☐ an item not listed on the SHR but identified by OEH as being of state significance

☐ an item listed on the OEH Heritage and Conservation Register (contained in the Historic Heritage Information Management System)

☐ a place, building landscape feature or moveable heritage item older than 25 years

NB: Activities likely to affect the above may require expert advice and assessment, such as preparation of a heritage impact statement.

NPWS has identified several historic heritage values including (see details in Section 6):

- National Heritage Listing
- Old Kosciusko Road
- Illawong Hut (Illawong Lodge)
- Bullocks Hut curtilage.

☒ *Biodiversity Conservation Act 2016*

Justification:
Is the activity consistent with the biodiversity conservation objectives of the Act?

The proposal will meet the objectives of the *Biodiversity Conservation Act 2016* (BC Act) by maintaining a healthy, productive and resilient environment according to the principles of environmentally sustainable development. It will maintain the diversity and quality of ecosystems by avoiding and minimising impacts on threatened species and ecological communities. In particular, impacts to biodiversity have been minimised or mitigated during project planning and pre-construction through:

- Detailed field investigations of multiple proposed trail alignments between May 2017 and April 2019
- Analysis of multiple alignment and camp site options
- Extensive on-ground micro-siting
- A range of impact avoidance and minimisation measures implemented at the project design phase including the proposed use of elevated structures to span sensitive terrestrial and wetland habitats
- Pre-construction micro-siting to be undertaken for elevated structures in sensitive habitats

During construction, impacts will be minimised by confining construction activities to a clearly defined narrow corridor, using sensitive construction techniques, airlifting materials and equipment into the site and storing construction materials on hard surfaces or on temporary platforms. Post-construction, best practice rehabilitation protocols would be implemented and ongoing monitoring and management activities will be undertaken. Monitoring of post-construction impacts from weeds, feral pest animals and diseases will inform the requirements to undertake enhanced and strategic threat management to ensure that impacts are minimised for threatened biota.

Interpretive signage is proposed to improve and share knowledge about biodiversity conservation. Signage will be developed at the detailed design stage.

☒ *Rural Fires Act 1997*

Justification:
Is the activity consistent with the objectives of protecting life and property and protection of the environment? Is it consistent with bush fire management plans?

The proposed works are not inconsistent with the *Rural Fires Act 1997*.

☒ *Fisheries Management Act 1994*

Justification:
Will the activity affect fish, fish habitat or marine vegetation, including threatened species? Is approval required under the Act?

The Snowy River, Thredbo River, Blue Cow Creek, Spencers Creek, Guthrie Creek, Lubra Creek, Wrights Creek, Trapyard Creek, Betts Creek and numerous unnamed tributaries intersect, or occur close to, the proposed trails.

The Endangered Aquatic Ecological Community in the Catchment of the Snowy River in NSW includes all native fish and aquatic invertebrates within all rivers, creeks and streams of the catchment (DPI 2012). It therefore occurs within all named and unnamed tributaries that flow directly into the Snowy River and Thredbo Rivers.

Two threatened aquatic species, the River Blackfish (Snowy River population) *Gadopsis marmoratus* and the Alpine Redspot Dragonfly *Austropetalia tonyana*, may occur in high quality waterways and minor tributaries within the study area. Tests of Significance undertaken (Appendix 4, Biosis 2019) concluded that if proposed avoidance and minimisation strategies are implemented at the design stage and mitigation measures are adhered to, there is unlikely to be a significant impact on threatened aquatic communities/species.

To avoid impacts on aquatic species/communities, it is intended that all waterways will be spanned with elevated structures or bridges. This will avoid disturbance to the bed, banks and instream habitat features such as woody debris, rocks and pools. These structures will be single span in most instances and are unlikely to change water flow, velocity, turbidity or seasonality. Although bridge construction would avoid disturbance to the bed, banks and instream habitat features, it may be necessary to use temporary scaffolding. Impacts to localised sections of riparian vegetation are required in order to facilitate the project works such as trail clearing and structure installation. Broader trail surface types not directly near or over waterways will minimise ground disturbance which will reduce the potential for alteration in surface water and quality of surface runoff, e.g. through us of elevated structure or rock filled tracks.

A pedestrian bridge is proposed to span Spencers Creek. It is intended to be secured by screwing or bolting piers to rock to avoid installation of concrete footings, where possible. Temporary scaffolding may be required during construction. Although bridge construction would avoid disturbance to the bed, banks and instream habitat features, it may be necessary to use temporary scaffolding.

Waterways within the works areas are classified as TYPE 1 Highly sensitive key fish habitat and CLASS 1 and 2 key fish habitat. If in-stream woody debris is proposed to be removed, disturbed, moved or harmed this is considered to be dredging under Section 263 of the FM (General) Regulation 2010. Given the works are being undertaken by a public authority, Section 199 of the FM Act applies and NPWS is required to give the Minister written notice of the proposed work, and consider any matters raised by the Minister within 21 days. Any removed woody debris will be reinstated outside of the immediate works area.

DPI Fisheries will be consulted regarding concurrence and approvals requirements under the FM Act.

☒ **Commonwealth legislation** (including the *Environment Protection and Biodiversity Conservation Act 1999* **(EPBC Act)** and the *Telecommunications Act 1997*)

Note: if Matters of National Environmental Significance (MNES) are likely to be affected, identify these below.

Justification (indicate any of the following that are relevant):

The activity is on land that contains the following, or the activity may affect:

☒World Heritage or National Heritage values of a place on the World Heritage List or National Heritage List

☒ the ecology of a Ramsar wetland

☒ nationally listed threatened species and ecological communities, or migratory species

☐ the Commonwealth marine environment.

Threatened species and ecological communities

Assessments undertaken by Biosis (2019) found that 11 threatened species and one threatened community occur and may be impacted by the project or have an important population in or near the final trail alignments.

Under the EPBC Act, an assessment of the likelihood of a significant impact on the most relevant threatened biota has been undertaken in accordance with the Commonwealth's significant impact guidelines (CoA 2013). These are provided in Appendix 3 (Biosis 2019) and consider the following species/communities:

- Alpine Sphagnum Bogs and associated Fens community, Endangered
- Shining Cudweed *Argyrotegium nitidulum*, Vulnerable
- Anemone Buttercup Ranunculus anemoneus, Vulnerable
- Blue-tongued Greenhood *Pterostylis oreophila*, Critically Endangered
- Broad-toothed Rat *Mastacomys fuscus*, Vulnerable
- Greater Glider *Petauroides volans*, Vulnerable
- Koala *Phascolarctos cinereus*, Vulnerable
- Mountain Pygmy-possum *Burromys parvus*, Endangered
- Smoky Mouse *Pseudomys fumeus*, Endangered
- Spotted-tailed Quoll *Dasyurus maculatus*, Endangered
- Alpine She-oak Skink *Cyclodomorphus praealtus*, Endangered
- Guthega Skink *Liopholis guthega*, Endangered

The proposal may result in potential impacts, most of which would be temporary in nature (i.e. during construction), on threatened species/communities. These are likely to be relatively minor in the context of the extensive areas available in the national park and include:

- Permanent loss of up to 0.13 hectares and temporary short-term impacts could extend out to 0.45 ha of the Alpine Sphagnum Bogs and associated Fens (PCT 637) community. Impacts will be minimised by installing elevated structures to span all occurrences of this community along the final trail alignments. However there may be minor permanent loss of this community where footings are installed. Elevated structures will have an ongoing shading influence that may alter vegetation composition and structure towards shade-tolerant species. Temporary short-term impacts could extend out to 0.45 hectares in PCT 637. Long-term impacts could include the introduction or weeds and pathogens not already present in this community. It is proposed that long-term monitoring of the condition of this threatened community will inform ongoing management actions to maintain the condition and function of the retained areas under/near elevated structures.

- Disturbance and/or loss of habitat for Shining Cudweed. This species was not found along the final trail alignments but is known to grow on the edge of walking tracks (NPWS 2001).
- Disturbance and/or loss of habitat for Anemone Buttercup. Large and intact populations of this species have been avoided by abandoning the option that crossed Mount Perisher between Guthega and Perisher Valley. Known populations of Anemone Buttercup along the final alignments have been avoided through micro-siting in 2019.
- Disturbance and/or loss of habitat for the Blue-tongued Greenhood. This species was not recorded along the proposed trail alignments during surveys although several waterway crossings were not inspected. Although susceptible to impacts, viability of any impacted population is likely to be high due to the extensive nature and high quality of surrounding habitat.
- Disturbance and/or loss of habitat for the Broad-toothed Rat. This species occurs extensively across most of the impact area. However habitat loss for this species is considered relatively minor in the context of the extensive areas of suitable habitat across the national park and Australian Alps bioregion. As this species is known to be a preferential food source for foxes and cats the reduction in vegetation cover along the trails may provide increased access for these predators.
- Disturbance and/or loss of habitat for Greater Glider and Koala. These species were not recorded during surveys. However, impacts are likely to be minor for arboreal species given the narrow trail footprint, avoidance of large trees in forested environments and the contiguous nature of habitat availability in the national park.
- Disturbance/loss of habitat for the Mountain Pygmy-possum. This species was not recorded during habitat-based surveys but there are records and potential habitat close to the study area. All areas of granitic boulderfield habitat with podocarpus shrubs have been avoided by the final trail alignments. This species still has the potential to disperse through most high elevation heathland and woodland communities and vegetation removal will result in a minor reduction in dispersal habitat. Increased predation by foxes and cats on dispersing animals may result from a reduction in vegetation cover along the trails. It is intended to mitigated predation impacts through a program of predator monitoring pre- and post-construction to determine if elevated control efforts are required to ensure predation pressure does not increase as a result of new tracks and infrastructure.
- Disturbance and/or loss of habitat for Smoky Mouse. This species was not recorded during surveys and nearest records are over 25 km away. However habitat loss for this species is considered relatively minor in the context of the extensive areas of suitable habitat across the national park and Australian Alps bioregion.
- Disturbance and/or loss of habitat for Spotted-tailed Quoll. Suitable habitat exists for this species within the study area. However habitat loss for this species is considered relatively minor in the context of the extensive areas of suitable habitat across the national park and Australian Alps bioregion.
- Permanent/temporary removal of grassy heathland vegetation that provides habitat for Alpine She-oak Skink. This species has been recorded within high quality grassy heathland (PCT 641) and in proximity to the study area. Up to 0.25 ha of habitat could be permanently removed as a result of the project while temporary short-term impacts could extend out to 2.29 ha during construction. Key areas of habitat on Mount Perisher have been avoided and most other areas of open grassy heathland vegetation along the final alignments will be spanned with elevated structures.
- Loss of habitat for the Guthega Skink. High quality habitat for this species has been mostly avoided by abandoning the Guthega to Perisher Valley trail alignment that crossed Mount Perisher. Significant effort has been made to avoid other suitable rocky habitat with potential burrow sites along the final trail alignments during field surveys and micro-siting with NPWS staff and external experts. There may be increased risk of predation if trails encourage fox and cat movement.

In summary, small areas of habitat for these species will be permanently affected by the project and larger areas will be temporarily affected but any such effects are not likely to constitute a significant impact on any of them. If works are undertaken according to the proposed trail surface treatments (e.g. elevated structures and rock surfaces in sensitive areas) and all construction activities are strictly managed, all species are expected to re-occupy rehabilitated habitats once works are completed. Impacts would be minimised through avoidance of known and potential habitat (i.e. pre-construction route searches and micro-siting, elevated platforms) and employing strict construction access, hygiene and rehabilitation processes to minimise indirect impacts. In addition, an ongoing commitment has been made to monitor and where required implement pest, weed and pathogen management post trail construction.

Other Commonwealth matters:

- Ramsar site 68, Blue Lake (including Hedley Tarn), occurs approximately 1.5 kilometres to the north-west of the study area, however no creeks or rivers intersected by the project drain into the Blue Lake Ramsar site and the site will not be significantly impacted by the proposal.
- The National Heritage List includes natural, historic and Indigenous places of outstanding heritage value. Approval under the EPBC Act is required for any action occurring within, or outside, a National Heritage place that has, will have, or is likely to have a significant impact on the National Heritage values of the National Heritage place. The Australian Alps National Parks and Reserves, which includes Kosciuszko National Park, is listed as a national heritage place under the EPBC Act. According to CoA (2013), an action is likely to have a significant impact on the National Heritage values of a National Heritage place if there is a real chance or possibility that it will cause:
    - One or more of the National Heritage values to be lost
    - One or more of the National Heritage values to be degraded or damaged, or
    - One or more of the National Heritage values to be notably altered, modified, obscured or diminished.

A significant impact on a Matter of National Environmental Significance listed under the EPBC Act is considered unlikely if all impact avoidance and minimisation measures are implemented and strictly adhered to. However, as indicated in EPBC Act policy guidelines (CoA 2013) a referral under provisions of the Act can be made to provide legal certainty to the project. It is our understanding that NPWS intends to submit a referral to the Commonwealth Department of Environment and Energy.

3.2 Consistency with OEH policy

Indicate whether the activity is consistent with OEH policy, including an explanation where necessary. Information on park management policies can be found on the Policies webpage.

Policy name	How proposal is consistent
Vehicle Access	Newly constructed and amended tracks will be designed for walkers and not trail bikes, mountain bikes or 4WDs. Because these will be essentially maintenance on foot, via aerial access and are highly durable surface, vehicle access for ongoing maintenance will not be required.
Walking Tracks	In accordance with the Kosciuszko Plan of Management, the Snowies Iconic Trail would act to promote public appreciation and understanding of the national park's natural and cultural values and to provide for sustainable visitor use and enjoyment that is compatible with conservation of these values. This will achieved by constructing trails that are durable, easily maintained and allow for ease of walking. The proposal also demonstrates sustainable use by incorporating existing trails and features into the proposed trail alignment. Trail alignments and options have undergone multiple iterations to avoid and minimise impacts on the national park and its biota. The avoidance of significant impacts on threatened species and communities, especially alpine bogs, threatened reptiles and Mountain Pygmy-possum, has been a major driver in selecting the final trail configuration. The provision of approximately 5 kilometres of elevated structures and a bridge over Spencers Creek will promote the conservation of biodiversity and cultural values, maintenance of ecosystem function and natural landscapes and the protection of ecological integrity. These would also mitigate impacts on threatened species/communities by minimising the construction footprint and allowing dispersal of flora and fauna. The stone pitching should be in accordance with the geomorphology of the alpine region and be aesthetically appropriate. Most of the trail would be constructed from durable rock and steel sections reducing maintenance requirements. The aim of the proposal is to create a Grade 3 walking track according to the Australian Walking Tracks Grading System that specifies acceptable track widths, surface, grade and directional markers. Facilities are generally not provided along Grade 3 walking tracks and users require no bushwalking experience and only a minimum level of specialised skills to use them.

Visitor Accommodation Policy	Two minor camp sites may be constructed along the Snowies Iconic Walk. These would be located at the bottom of Guthrie Ridge on the new alignment between Charlotte Pass and Guthega Track and near Porcupine Rocks on the new alignment between Perisher Valley and Bullocks Flat Track. The potential campsite located at the end of Guthrie's Ridge on the Charlotte Pass to Guthega section cannot be constructed without an amendment to the Kosciuszko Plan of Management. The Plan of Management states 'In order to protect the natural character and values of the Main Range Management Unit, do not provide formal camping facilities and designated campsites'. More broadly, the camp sites would act to promote public appreciation and understanding of the national park's natural and cultural values and to create opportunities to enhance visitor understanding of these values. The design of the camp sites would also provide for sustainable visitor use and enjoyment that is compatible with conservation of natural and cultural values as it would be appropriately low-key and suitable for the location. For example, camp sites might comprise up to five scattered raised timber platforms for tents. Above-ground toilets would be suitable for remote and sensitive locations; they would comprise one or two small tanks that can be serviced by helicopter. No campfires would be allowed.

* Identify and provide details of those OEH policies which are relevant to the proposal

3.3 Type of approval sought

OEH proponents

☒	Internal OEH approval* or authorisation, including expenditure

* OEH does not grant park approvals (e.g. leases, licences, consents etc.) to itself but has a range of general powers to undertake activities on-park, for example, ss. 8 and 12 NPW Act.

External proponents

Appendix 1 of *Guidelines for Preparing a Review of Environmental Factors* provides a list of the types of approval that may be obtained from the OEH.

Provide a brief description of the type of approval sought (e.g. 'a lease for visitor accommodation under s.151 NPW Act')	Not applicable
☐	Section/clause Click or tap here to enter text.of Click or tap here to enter text.Act/Regulation
☐	Section/clause Click or tap here to enter text. of Click or tap here to enter text.Act/Regulation
☐	Section/clause Click or tap here to enter text.of Click or tap here to enter text.Act/Regulation
☐	Section/clause Click or tap here to enter text.of Click or tap here to enter text.Act/Regulation

Are there any existing approvals, such as permits, leases, licences or easements, which apply to part of or all of the activity?

☒	No
☐	Yes Provide details: Click or tap here to enter text.

4 Consultation – general

Specify the details of consultation, including who was consulted, how and when they were consulted, and the results of the consultation.

Section 2.6 of Guidelines for Preparing a Review of Environmental Factors provides guidance on consultation. Refer also to explanatory notes below.

Provide details of consultation:	The proposed activity does not require any statutory consultation with Council or State Emergency Service. Under the Infrastructure SEPP 2007, the proposed activity requires statutory consultation is required with the Department of Planning, Industry and Environment (DPIE) and DPI Fisheries. These works are being proposed by Southern Ranges Branch NSW National Parks and Wildlife Service. Biosis and NPWS has consulted extensively with /DPIE biodiversity staff regarding all aspects of field work and biodiversity assessment. This included site visits, meetings and document review between May 2017 and June 2019. Key outcomes are summarised in Table 10 (Biosis 2019). DPI Fisheries will be consulted regarding concurrence and approvals requirements under the FM Act. The ACHA undertaken for this project has included consultation and field surveys with Bega Local Aboriginal Land Council (LALC) and Southern Aboriginal Working Group (SAWG). Other stakeholder consulted by NPWS include: • Perisher Resort • Charlotte Pass Resort • Thredbo Resort • Crackenback Village • NPWS commercial operators (PEP Holders) • Perisher Chamber of Commerce • SLoPES (Ski Lodges of Perisher Smiggins) • Guthega Inn • Illawong Ski tourers.

Statutory consultations If the activity affects the items below, the proponent must consult with the relevant identified authority.	
	☐ local council infrastructure or services (such as stormwater, sewer, roads) ☐ heritage items listed under the local environmental plan (LEP) ☐ flood liable land **Consult with the local council under clause 13, Infrastructure SEPP.**
	☐ adjacent to a marine park declared under the *Marine Parks Act 1997* ☐ adjacent to an aquatic reserve declared under the *Fisheries Management Act 1994* **Consult with the Marine Park Authority (marine parks) or Department of Primary Industries – Fisheries (aquatic reserves) under clause 16, Infrastructure SEPP.**
	☐ navigable waters ☒ traffic generating development **Consult Roads and Maritime Services under clause 16 or Schedule 3 Infrastructure SEPP.** Consultation with RMS will be undertaken by NPWS as required for logistics, materials storage and traffic management in vicinity of Spencer's Creek on Kosciuszko Road.
	☐ new coastal protection works on the open coast or entrance to a coastal lake **Consult the NSW Coastal Panel under clause 129, Infrastructure SEPP.**
	☐ in the foreshore area (of Sydney Harbour) within the meaning of the *Place Management NSW Act 1998* **Consult with Place Management NSW (formerly known as the Sydney Harbour Foreshore Authority) under clause 16, Infrastructure SEPP.**
	☐ increasing the amount of artificial light in the dark night sky within 200km of the Siding Spring Observatory. **Consult the Director of the Observatory under clause 16, Infrastructure SEPP.**
	☒ works affecting submerged land such as creeks, streams and rivers (and including intermittently submerged areas, such as wetlands and non-perennial creeks) that involve excavation, removing material, depositing material or draining water **Consult Department of Primary Industries – Fisheries under s.199 of the Fisheries Management Act.**

	If the activity requires a lease of licence under s.151A NPW Act does it require notification and consultation under s.151F and/or s.151G? ☐ Yes ☐ No

Explanatory notes:

- Proponents should provide evidence that the relevant OEH (National Parks and Wildlife Service) office supports the proposal in-principle.
- There are statutory requirements to consult with local councils and public authorities for certain proposals identified in clauses 13–16 of State Environmental Planning Policy (Infrastructure) 2007.
- There are additional statutory requirements to consult with the Roads and Maritime Services for traffic generating developments listed in Schedule 3 of State Environmental Planning Policy (Infrastructure) 2007.
- There are specific consultation and referral requirements for certain proposals requiring a lease or licence under s.151A NPW Act. Refer to the Leases and Licences Referral Policy and Procedures for more information.

5 Consultation – Native Title

Section 3.12 of Guidelines for Preparing a Review of Environmental Factors provides further guidance

1. Is the land subject to an **Indigenous Land Use Agreement**? (Check the OEH website or with the OEH Aboriginal Heritage and Joint Management Team).

☒ No (go to Question 2)

☐ Yes
If yes, check any relevant provisions of the ILUA including any notification procedures that must be followed.

If relevant, provide details	Click or tap here to enter text.

No other steps are required – proceed to Section 6

2. Has there been a determination of native title applicable to the land or is there a native title claim pending (check the National Native Title Tribunal website)?

☒ No (go to Question 3)

☐ Yes
If yes, contact the OEH Aboriginal Heritage and Joint Management Team. You may need to consult with the native title claimant regarding the proposed activity.

If relevant, provide details	Click or tap here to enter text.

3. Has native title been **extinguished**?

☒ No or unclear (go to Question 4)

☐ Yes (Note: Clear evidence will be needed to demonstrate extinguishment).
If extinguished, the Native Title Act 1993 procedures do not apply. However, other policies about consultation with Aboriginal people will still be relevant.

If relevant, provide details	Click or tap here to enter text.

4. If native title is not confirmed as extinguished, does the activity have a **high risk** of adversely affecting native title (e.g. major infrastructure works, new buildings or granting of leases).

☒ No
No further consideration required

☐ Yes
If yes, proponents should discuss with OEH the need to notify and consult Native Title Services Corp or any native title claimants.

If relevant, provide details	Click or tap here to enter text.

6 Proposed activity (or activities)

6.1 Location of activity

Please attach a locality plan, map, photographs, diagrams and a site plan showing the location and layout of the proposed activity, and provide the following details of the location of the proposed activity site.

Park name	Kosciuszko National Park
Description of location	The study area is the assessment corridor that was used to investigate biodiversity values and is located within Kosciuszko National Park approximately 28 kilometres west of Jindabyne (see Figure 1 attached). The study area forms a continuous corridor of intact bushland within Kosciuszko National Park which is contiguous with the Snowy River National Park to the south, Alpine National Park to the south-west and Bimberi Wilderness to the north-east. Figure 2 attached provides a range of land administration, topographic and natural features information. The locations of the final alignments are described below and are shown in detail in Figure 3 attached. **Charlotte Pass to Guthega Track** (5.8 kilometres) – A new track connecting Charlotte Pass to Guthega from the Main Range Track (200 metres south of the current Snowy River crossing) and following the slopes above the Snowy River downstream to the existing Illawong Track. This option includes a bridge crossing of Spencers Creek near its confluence with the Snowy River and a camp site at the bottom of Guthrie Ridge **Charlotte Pass to Perisher Valley Track** (9.9 kilometres) - A new track starting from Charlotte Pass access road and following the southern extent of the Ramshead Range to Porcupine Rocks where it meets the existing Porcupine Walking Track. This option includes a campsite in the vicinity of Porcupine Rocks and upgrades of the existing Porcupine Rocks Track trailhead at Perisher Valley. **Perisher Valley to Bullocks Flat Track** (11.6 kilometres)– A new track starting at Perisher Valley at the existing Porcupine Rocks trailhead then heading south across the plateau before traversing downslope to meet the existing Bullocks Walking Track near the ski-tube bridge over the Thredbo River.
Site commonly known as (if applicable)	Snowies Iconic Walk, Kosciuszko National Park
Street address (if available)	Not applicable Suburb: Click or tap here to enter text.Postcode: Click or tap here to enter text.
Site reference	Centroid of site is: (6 digits) 624302 (7 digits) 5968793
	GDA_1994_MGA_Zone_55
Council (Local Government)	Snowy Monaro Regional Council

Title reference (if available)	Folio identifier or volume-folio (if Torrens Land System) Not applicable
	Registered deed number (if Old Land System) Not applicable
NSW State electorate	Monaro

6.2 Description of the proposed activity

Include a full and comprehensive description of the activity. All aspects of the proposed activity should be described.

See section 3.2 of Guidelines for preparing a Review of Environmental Factors for further guidance. Attach additional information if required.

Description of the proposed activity – include pre-construction, construction, operation and remediation:

The Snowies Iconic Walk is a new 45 km multi-day walking track connecting five existing resort locations, accommodation and services at Thredbo, Charlotte Pass, Guthega, Perisher and Lake Crackenback. The activities to which this REF applies include the construction of new trails and some minor upgrades to existing trails and infrastructure. Other components of the Snowies Iconic Walk are being implemented as part of general park maintenance or have been subject to previous REFs.

Proposed activities include:

- Construction of approximately 27 km of new walking tracks, including minor upgrades to the existing Porcupine Rocks track.
- Construction of a bridge over Spencers Creek near its confluence with the Snowy River.
- Construction of other elevated structures and small bridges.
- Construction of two minor camp sites (one of which requires Plan of Management amendments).
- Upgrade of car parking facilities at the existing Porcupine Rocks trailhead.

The Snowy River, Thredbo River, Blue Cow Creek, Spencers Creek, Guthrie Creek, Lubra Creek, Wrights Creek, Trapyard Creek, Betts Creek and numerous unnamed tributaries intersect, or occur close to, the proposed trails.

Pre-construction activities aimed at avoiding and minimising biodiversity impacts have included two years of field investigations (May 2017 to April 2019), analysis of multiple alignment and camp site options and extensive on-ground micro-siting (Biosis 2017; Biosis 2019). A summary showing how final alignments were arrived at is provided in Table 1 of Biosis (2019), see attached. The avoidance of significant impacts on threatened species and communities, especially alpine bogs, threatened reptiles and Mountain Pygmy-possum *Burramys parvus*, has been a major driver in selecting the final trail configuration.

A range of impact avoidance and minimisation measures have been adopted by NPWS at the project design phase. Key trail surface types proposed are elevated structures and bridges, rock paving (including pitched rock) and natural/gravel surface. Natural surfaces will be used in lower elevations areas and less sensitive environments (e.g. where slopes are gentler and frost heave is less severe, and away from waterways). A construction description document is available as an attachment to this REF.

A pedestrian bridge is proposed to span Spencers Creek but would not have footings in the creek. It is intended to secure piers by screwing or bolting to rock to avoid the construction of concrete piers. Although bridge construction would avoid disturbance to the bed, banks and instream habitat features, it may be necessary to use temporary scaffolding. Construction materials would be airlifted close to the site and, where possible, bridge components would be assembled off-site. Other mitigation measures would include welding mats and erosion and sedimentation control measures.

Elevated platforms (raised steel mesh) will comprise a steel frame with a steel mesh top in order to withstand the climatic extremes of alpine areas with little or no maintenance. The mesh will include wide spacing to enable sufficient light for plant photosynthesis and would be high enough to allow vegetation to grow under the platform. They may also allow for movement

of small mammals and reptiles. Elevated platforms would also allow any cultural artefacts located during clearing to be left in situ

The installation of approximately 5 kilometres of elevated structures and a bridge over Spencers Creek would minimise biodiversity impacts in sensitive terrestrial and wetland habitats. Elevated structures are likely to better facilitate connectivity as vegetation cover can be retained under such structures. It is intended that all waterways will be spanned with elevated structures or small bridges to avoid disturbance to the bed, banks and instream habitat features such as woody debris, rocks and pools. Elevated structures are proposed for all areas supporting the Alpine Sphagnum Bogs community (PCT 637) and will also facilitate the movement of Broad-toothed Rat *Mastacomys fuscus* and other ground-dwelling species.

Furthermore, NPWS is committed to undertaking pre-construction micro-siting for elevated structures in alpine bog vegetation communities, montane drainage lines and open grassy heathland habitats with the aim of avoiding and minimising impacts on threatened communities, Blue-tongued Greenhood *Pterostylis oreophila*, Alpine She-oak Skink *Cyclodomorphus praealtus* and other threatened biota.

Rock paving would be installed along approximately 16 km of new tracks. When installed correctly with appropriate drainage (Darlington 2016), it has the advantages of being virtually non-erodable. The Mowamba Granodiorite rock preferred for rock paving, was subject to a rigorous selection process that considered geological, aesthetic, cost and availability factors (Darlington 2016). Rock paving may increase available habitat opportunities for threatened reptiles by providing basking sites.

Gravel/natural surfaces are more appropriate for lower elevation forested habitats that are not subject to climatic extremes. These would be installed over approximately 6 km of new tracks between Perisher and Bullocks Flat.

Construction impacts associated with elevated structures would include permanent disturbance of vegetation and habitat through shading and installation of footings resulting in an anticipated maximum disturbance width of 800 mm. To install elevated structures in wet or sensitive habitats up to 1000 mm either side of the structures will be temporarily disturbed by foot traffic, installation works and laydown areas for materials and equipment. It is anticipated that all materials will be flown in by helicopter and that construction and storage can be undertaken from the elevated structure as it is built (this has been demonstrated recently for the installation of the Main Range steel platform near Mount Lee). These areas will be rehabilitated using best practice methods where required or allowed to regenerate. During operation, an area of 200 mm either side of the structure will require vegetation pruning. Pruned material can be mulched on-site with a small transportable mulcher, spread in a manner that does not smoother retained vegetation or taken off-site in particularly sensitive areas where mulching and spreading is not appropriate.

Construction impacts associated with rock paving or natural/gravel surface tracks includes permanent removal of up to a maximum disturbance width of 500 mm. An additional area of up to 1500 mm either side of the track surface would be temporarily disturbed by construction access, small machinery and laydown areas for materials and equipment. These areas will be actively rehabilitated and allowed to regenerate. During operation, an area of 350 mm either side of the track would be required for vegetation pruning as part of the Park's standard trail maintenance program.

Management and maintenance of all new tracks will be incorporated into existing trail maintenance regimes, pest and animal control and pathogen monitoring programs.

Two minor camp sites are planned for open areas along the Charlotte Pass to Guthega Track and Charlotte Pass to Perisher Valley Track new alignments. These would comprise up to five raised platforms for tents and above-ground single-cubicle toilets suitable for remote and sensitive areas constructed as per the Parks Facilities Manual. Camp fires would not be permitted. All construction materials would be airlifted onto the sites. Similarly, toilet waste

tanks would be serviced by helicopter. One of these camp sites (Guthrie Ridge) will require a Plan of Management amendment before proceeding.

The parking area to be upgraded near the existing Porcupine Rocks trailhead is already heavily disturbed.

Rehabilitation and/or regeneration of disturbed areas will be undertaken using best practice methods according to Good (2006), DECC (2007) and McPhee (2013). Where alpine vegetation is removed, the sods will be salvaged and used to cover bare soil created along the edges of the new tracks or in spaces between rock paving. Any excess soils, gravel and shales will also be used to rehabilitate disturbed areas or placed into bulker bags and transported to other areas. Organic soils will not be left exposed during construction. Post-construction, any bare soil (not on the trail tread) will be covered. This could include sowing with locally collected *Poa* spp. seed at a rate of at least 20g/m^2 and covered with a layer of rice straw to a depth of 20-30 millimetres. Where required, exposed batters will be covered and secured with jute soil-saver to protect them from gale force winds.

Construction impacts will be further minimised by:

- Building from the trail and elevated structure where possible
- Airlifting all materials and equipment to construction sites.
- Restricting any ground transport to existing disturbed areas or the defined construction corridor.
- Implementing strict weed and pathogen hygiene protocols during construction and operation.
- Storing materials on-site on hard surfaces or on gluts/bearers and removed/shifted within 7 days (if not on hard surfaces).
- Shifting/altering camp sites and routes travelled by contractors to avoid vegetation damage.

Post-construction the following ongoing monitoring activities are proposed:

- Monitoring weed invasion and introduction/spread of soil, plant and animal pathogens.
- Monitoring feral predators (cats and foxes).
- Monitoring alpine bog vegetation communities under or near elevated structures.

The outcomes of monitoring will inform the need for enhanced threat management to ensure no increase in impacts to threatened biota.

The size of the proposed activity footprint:

Trails constructed with rock paving or natural surfaces will have a final constructed width of 500 millimetres (0.5 metres). Elevated structures will be 800 millimetres wide (0.8 metres). These final trail widths are considered the permanent impact areas for the project.

The trails will be constructed within an 'activity footprint' (referred to as the subject site in Biosis 2019) that will allow for all earthworks, drainage, materials storage, transportation of personnel and equipment, rehabilitation activities and ongoing maintenance. The final trail widths will sit within this activity area and will be much smaller than the activity footprint described below.

The activity footprint consists of the trail construction footprint and future maintenance corridor.

Widths vary depending on the track surface used:

- 3500 millimetres (3.5 metres) wide for rock paving and natural/gravel surface tracks.
- 2800 millimetres (2.8 metres) wide for elevated structures and bridges.

Overall, native vegetation disturbance will be up to 9.23 ha based on the following:

- 1.56 hectares of native vegetation to be permanently lost or modified (e.g. through clearing for rock paving, natural surface trails or through shading under elevated structures).
- 1.76 hectares of native vegetation to be modified for ongoing trail maintenance through minor pruning of taller shrubs close to the new tracks.
- Up to 5.91 hectares of native vegetation to be temporarily disturbed through creating side cuts, machinery movements, material storage and construction access in the activity footprint. These areas will be fully rehabilitated to their natural state once works are complete through and will be subject to ongoing recovery monitoring.

Ancillary areas including proposed camp sites and additional car parking were considered part of the activity footprint. Each camp site is expected to be no more than 200 m^2 in area.

Ancillary activities, such as advertising or other signage (including any temporary signs, banners or structures promoting an event or sponsorship arrangements), roads, infrastructure and/or bush fire hazard reduction:

Temporary warning safety signs relating to construction activities will be erected in the study area and will be removed post-construction.

Proposed construction methods, materials and equipment:

As outlined above, construction methods and materials have been selected to withstand the climatic extremes and fragile soils of alpine and sub-alpine environments while minimising impacts on threatened communities and species. A track construction methods and specifications document prepared by NPWS is attached to this REF (Attachment 1). The building materials, especially the Mowamba Granodiorite rock preferred for rock paving, was subject to a rigorous selection process that considered geological, aesthetic, cost and availability factors. Rocks will be airlifted as close as possible to the works site and any ground transport will be via existing tracks and trails. Materials may be stored on-site on hard surfaces or on gluts/bearers and removed/shifted within 7 days (if not on hard surfaces). Campsites and routes travelled by contractors need to be shifted/altered to avoid vegetation damage. Construction of elevated platforms would involve minimal disturbance. The construction footprint should require the permanent removal of no more than 500 mm of vegetation for rock paving and natural/gravel tracks and 800 mm for elevated structures. Gravel will be sourced from the Snowy Addit within National Park and is produced from crushed rock that is not suitable for rock paving.

Receival, storage and on-site management for materials used in construction:

All materials, personnel and machinery will travel via existing roads and tracks, or would be airlifted as close as possible to the works site. Potential helicopter staging areas include: the existing Charlotte Pass helipad; Spencers Creek Rest Area (NPWS to arrange a Road Occupancy licence from NSW Roads & Maritime Services); Guthega asphalt carpark (Perisher); Guthega gravel carpark and dam wall (NPWS to arrange permission with Snowy Hydro); Perisher carpark; Candleheath Road above ‘Valhalla Lodge’; and Skitube carpark D (Bullocks Flat). Staging areas will be weed free to minimise the risk of transporting weeds into other parts of the National Park during construction.

No vehicle access would be allowed beyond formed roads. All vehicles and machinery being used during construction and going beyond formed roads will be subject to best practice hygiene methods to prevent introduction of weeds and pathogens. A wash down bay will be available at the National Parks & Wildlife Service Waste Point Depot for use by contractors. Machinery hygiene sites could be set up by contractor at Perisher, Guthega, Skitube Carpark D (NPWS to arrange permission from owners/operators).

A cache would be used to store any welding equipment, pneumatic drills etc. Paving rocks would be stored on-site on hard surfaces or on gluts/bearers and removed/shifted within 7 days (if not on hard surfaces) to prevent vegetation death/damage. Strategies will be put in place to ensure that pollutants cannot enter waterways or highly sensitive areas in case of a potential fuel spill. Bunding areas will be established for any machinery on site. Campsites and routes travelled by contractors will be shifted/altered to avoid vegetation damage. Toilets must be secured to withstand high winds and elevated to avoid vegetation damage. All waste matter must be removed from the site and disposed of appropriately.

Earthworks or site clearing including extent of vegetation to be removed:

Disturbance areas range in width from 2.8 metres to 3.5 metres depending on the trail type. Including campsites and the carpark upgrade at Perisher Valley, this would total approximately 9.28 hectares. Of the 9.28 hectares, 1.56 hectares of vegetation would be permanently removed and/or disturbed to create tracks and install elevated structures, 1.76 hectare of vegetation will also be modified to maintain clearance along the tracks (i.e. pruning) and 5.91 hectares will be temporarily disturbed during construction and then actively rehabilitated or allowed to naturally regenerate once works are completed. Clear delineation of all work sites will be undertaken by NPWS staff or an independent party prior to construction.

Environmental safeguards and mitigation measures:

Environmental safeguards include measures to avoid, minimise and mitigate environmental impacts. Pre-construction activities aimed at avoiding and minimising biodiversity impacts have included two years of field investigations to identify threatened species/communities on site, analysis of multiple alignment and camp site options and extensive on-ground micro-siting. The avoidance of significant impacts on threatened species and communities, especially alpine bogs, threatened reptiles and Mountain Pygmy-possum, has been a major driver in selecting the final trail configuration. In particular, impacts to high quality Guthega Skink and Alpine She-oak Skink habitat were avoided by abandoning the trail option between Guthega and Perisher Valley.

Furthermore, NPWS is committed to undertaking pre-construction micro-siting for elevated structures in alpine bog vegetation communities, montane drainage lines and open grassy heathland habitats with the aim of avoiding and minimising impacts on threatened communities, Blue-tongued Greenhood, Alpine She-oak Skink and other threatened biota.

The installation of elevated structures in many places and bridges waterways such as Spencers Creek, Wrights Creek and Trapyard Creek will minimise biodiversity impacts in sensitive terrestrial and wetland habitats and maintain vegetation and aquatic connectivity. If installed correctly with appropriate drainage, rock paving is non-erodible and may provide additional habitat for fauna (e.g. reptiles). Both track treatments are highly durable and therefore require little or no maintenance. Furthermore, the proposed use of elevated structures and rock paving on existing trails is expected to mitigate and minimise the risk of worsening erosion in sensitive areas and will improve existing erosion issues.

Pre-construction, the following environmental safeguards apply:

- Adhere to preliminary micro-sited alignments and trail surface treatments or, if these vary before or during construction, undertake any necessary supplementary investigations of biodiversity impacts. For example, if trails are to be realigned outside the Biosis (2019) 15 metre wide assessment corridor for a significant length, or alignments are chosen that were not subject to detailed survey between 2017-2019, then additional biodiversity assessment/environmental approvals will be required.
- Adhere to the construction corridors, maintenance zones and vegetation clearance footprints described in Biosis (2019).
- Engage expert assistance to undertake pre-construction micro-siting for elevated structures in alpine bog communities, montane drainage lines and open grassy heathland habitats with the aim of minimising and avoiding impacts on threatened communities, Blue-tongued Greenhood and Alpine She-oak Skink.
- Clearly delineate all works sites (to be undertaken by NPWS/DPIE staff or an independent party).
- Protect any large trees hollow-bearing trees or trees supporting raptor nests adjacent to work sites.
- Prepare a Construction Environmental Management Plan (CEMP) outlining all environmental controls and mitigation measures to be implemented.
- Establish unexpected threatened species finds protocol to be appended to CEMP.
- Prepare a Rehabilitation Plan.

The transport of materials, construction methods and management of work sites have been designed to minimise impacts on the sensitive alpine environment. Best practice in-stream rehabilitation works will be undertaken if required around structure footings post-construction (refer DPI Guidelines for instream works on waterfront land).

During construction, the following environmental safeguards would minimise impacts on sensitive vegetation/habitats:

- Works involving soil disturbance will only occur in alpine and sub-alpine areas from the beginning of November to the end of April each year.

- Build from the trail and elevated structure where possible.
- Airlift all materials and equipment to construction sites, where road access is not possible.
- Restrict any ground transport to existing disturbed areas.
- Implement strict weed and pathogen hygiene protocols during construction.
- Store construction materials on-site on hard surfaces or on gluts/bearers and removed/shifted within seven days (if not on hard surfaces).
- Shift/alter camp sites and route travelled by contractors to avoid vegetation damage.
- Avoid the removal of large hollow-bearing trees in forest/woodland habitats.
- Implement best practice trail design, construction and sediment management practices.
- Salvage and relocate any threatened species uncovered during removal of vegetation or soil disturbance to adjacent suitable habitat, to be done by a licenced operator. Notify and report on these activities to NPWS and DPIE.
- A weather related cease work protocol will be in place to ensure works do not proceed during and immediately after heavy rainfall/snowfall or other severe weather conditions that could lead to environmental damage.

Post-construction, any disturbed areas will be rehabilitated to a high standard or left to regenerate. All bare soil will be protected from erosion/ frost heave by the use of mulch or geo-textile fabric.

The completed Snowies Iconic Walk will become part of a cyclical asset maintenance program. Access for maintenance will be via foot or possibly via quad bike or helicopter. Vegetation maintenance within the identified corridor adjacent to the formed track would be undertaken using hand tools or small power tools. Cut vegetation would be dispersed locally or used in high use areas for rehabilitation (mulch/thatching).

Management of the new trail network will involve the following protocols/plans/strategies from the Kosciuszko National Park Plan of Management (2006) being implemented or new programs being established:

- Inclusion in any existing ‘Integrated pest management strategies’ such as the Southern Ranges Branch Pest Management Strategy.
- A project-specific feral predator monitoring with additional controls along new trails to be incorporated into existing baiting and trapping programs in the Park.
- An impact and control-based monitoring program will be established to monitor changes to vegetation health, vigour and functioning under elevated structures, especially for the threatened alpine bog community. Adaptive management actions will be implemented if the significant declines in vegetation are detected through monitoring (actions may include reviewing elevated structure surface type).
- Weed management and pathogen hygiene strategy that includes annual assessment of weed and pathogen introduction along the new trails.

Sustainability measures – including choice of materials (such as recycled content) and water and energy efficiency:

The Snowies Iconic Walk is a new multi-day walking track that will connect existing resorts and extend and connect existing walking tracks. Existing sections require upgrading to improve sustainability against the current and future number of visitors (i.e. durable and low-maintenance). Furthermore, improved drainage will increase sustainability in the long-term.

The proposal also demonstrates sustainable use and adaptive reuse by incorporating existing trails and features into the proposed trail alignments (e.g. Porcupine Rocks).

The Mowamba Granodiorite rock that is preferred for rock paving, was subject to a rigorous selection process that considered geological, aesthetic, cost and availability factors (Darlington 2016). Suitable rocks are not only required to be geologically compatible with surroundings but also need to be sourced in sufficient quantities from sources that are suitable in terms of environmental impacts.

The use of steel elevated platforms and pitched rock pathways will ensure a fully hardened and non-erodible surface that requires little or no ongoing maintenance.

Construction timetable and staging and hours of operation:

The construction of the track is to occur as follows:

- 2019/20: Stage 1 – Charlotte Pass to Guthega (Illawong) section
- 2020/21: Stage 2 – Charlotte Pass to Perisher Valley (Porcupine Rocks)
- 2021/22: Stage 3 – Perisher Valley to Bullocks Flat ski tube

Generally, construction is to occur between November and end of April each season. The construction season is heavily dependent on weather conditions and snow fall and melt. At lower elevations (e.g. in the Thredbo Valley) the construction season may be able to continue into May and even early June.

Hours of operation: Generally, Monday to Friday but contractors will be allowed to work weekends where required. Construction will be restricted during major visitation times and events (including but not limited to the Christmas/New Year and Easter periods).

Note: if the activity involves building or infrastructure works, it may require certification to Building Code of Australia or Australian Standards prior to commencement. Further information on the types of projects requiring certification, and how to obtain certification, is contained within the OEH *Construction Assessment Procedures*.

6.3 Objectives of the proposal

Clearly state the objectives of the proposal.

See section 3.2 of Guidelines for Preparing a Review of Environmental Factors for further guidance.

Provide details of objectives of the proposal	To construct a new network of durable, low-maintenance walking track to connect existing resorts and to extend and connect existing walking tracks and iconic landmarks while minimising impacts on the natural and cultural values of Kosciuszko National Park. The Snowies Iconic Walk will allow visitors to appreciate spectacular alpine, sub-alpine and forest environments over 4 days, with overnight accommodation primarily at resorts or small campsites.

7 Reasons for the activity and consideration of alternatives

Section 3.2 of Guidelines for preparing a Review of Environmental Factors provides further guidance.

Reasons for activity:

The overarching purpose for the activity is to create a low maintenance multi-day walking trail system that connects existing walking tracks and iconic landmarks and minimises impacts on the natural and cultural values of the National Park while enhancing the alpine experience for visitors.

Alternatives:

Trail alignments and options have undergone multiple iterations in an attempt to avoid and minimise impacts on the national park and its biota. Table 1 (Biosis 2019, attached) provides a summary of how the final trail alignments were arrived at through various investigations and consideration of risks to biodiversity, soils and waterways.

The proposed trail alignments, options and ancillary areas assessed included:

- Three alignment options for the Charlotte Pass to Guthega trail.
- Multiple alignment options for the Guthega to Perisher Valley trail including over Mount Perisher and at Wheatley Gap.
- Three alignment options for the Perisher Valley to Bullocks Flat trail.
- Charlotte Pass to Perisher Valley via Ramshead Range as an alternative option to avoid Mount Perisher for the Guthega to Perisher trail section.

Camping areas:

- West of Illawong Hut.
- On the western side of Spencers Creek.
- South-west of Porcupine Rocks.

After extensive field investigations and consultation with NPWS/DPIE and independent experts, the entire Guthega to Perisher trail alignment was abandoned due to the potential for significant impacts on threatened reptiles and Mountain Pygmy-possum habitat on Mount Perisher. This has been a significant compromise for the project resulting in the selection of the Charlotte Pass to Perisher Valley alignment via the Ramshead range.

Justification for preferred option:

The preferred final alignment is summarised below:

- Charlotte Pass to Guthega Track following the lower slopes of the Snowy River valley downstream to the existing Illawong Track. This option includes a bridge crossing of Spencers Creek and a camp site at the bottom of Guthrie Ridge.
- Charlotte Pass to Perisher Valley Track following the southern extent of the Ramshead Range to the existing Porcupine Walking Track. This option includes a campsite in the vicinity of Porcupine Rocks and upgrades of the existing Porcupine Rocks trailhead at Perisher Valley.
- Perisher Valley to Bullocks Flat Track heading south across the plateau before traversing downslope to meet the existing Bullocks Walking Track near the Thredbo River.

The avoidance of significant impacts on threatened species and communities, especially alpine bogs, Alpine She-oak Skink, Guthega Skink and Mountain Pygmy-possum, has been a major driver in selecting the final trail configuration.

Special note for visitor use, tourism and other proposals requiring a lease or licence under s.151 NPW Act

Proposals seeking a lease or licence under s.151 NPW Act must address the site suitability requirements of the sustainability assessment criteria adopted by the Chief Executive of OEH (**see below**). For further information on completing the assessment of site suitability, refer to the criteria and supporting guidelines.

Site suitability (lease or licence proposals under s.151 NPW Act)	
Site character	Not applicable
Landscape context	Not applicable
Application of site suitability matrix	Not applicable
Strategic site assessment (if required by the matrix) Attach any separate assessment report	Not applicable

8 Description of the existing environment

Include a comprehensive description of the existing environment and surrounds that will be, or are likely to be, affected by the proposed activity. Sensitive areas of the environment should be identified in this section.

Section 3.4 of Guidelines for preparing a Review of Environmental Factors provides further guidance.

Description of the existing environment:

Biodiversity assessments identified eight alpine, sub-alpine and montane plant community types and small areas of exotic vegetation. These communities include forest, woodland, heathland, shrubland, grassland and peatland habitats across many landscape settings, elevations and aspects. The trails cross several local permanent waterways and many tributaries of the Snowy and Thredbo Rivers where a diverse range of aquatic habitats are present.

The study area supports a range of vegetation formations including Alpine Complex, Grassy Woodlands and Wet Sclerophyll Forest representing the diverse elevations, landscape settings, soils and aspects traversed by the project. Within these formations, and their associated vegetation classes, eight PCTs were identified, including:

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 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 645 – Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion.

PCT 679 – Black Sallee - Snow Gum low woodland of montane valleys, 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.

See Biosis (2019) attached for detailed information.

Meteorological data:

Average meteorological data for the national park region is available for:

Perisher Valley - http://www.bom.gov.au/climate/averages/tables/cw_071072.shtml

Thredbo Top Station - http://www.bom.gov.au/climate/averages/tables/cw_071032.shtml

Topography:

The trails cross a range of elevations, aspects and landscape settings.

- Elevation ranges between 1920 metres above sea level on Ramshead Range and 1120 metres above sea level at Bullocks Flat.

Landscape settings include:

- Alpine and sub-alpine wet valleys, gullies and drainage lines
- Alpine, sub-alpine and montane plains, slopes and inverted tree-lines
- High ridges and rocky slopes
- Valley floors.

Surrounding land uses:

Current land uses including nature conservation, road infrastructure, hydroelectricity production, ski resorts and other recreation infrastructure. In the wider locality, similar land uses occur throughout the Kosciuszko National Park. The study area also has a history of seasonal cattle/sheep grazing which has contributed to small infestations of agricultural and environmental weeds. Cattle have been absent from the study area since the ban on cattle grazing in Kosciuszko National Park, instituted in 1969.

Geology/geomorphology:

The study area comprises three NSW (Mitchell) Landscape formations: Main Range Sub-alpine, Main Range Alpine and Jindabyne Plains. The dominant geology present consists of Silurian-Devonian gneissic granite with soils consisting of the Main Range Sub-alpine Mitchell Landscape throughout areas between 2200 metres and 1550 metres elevation (Figure 2, attached).

Soil types and properties:

The dominant soils consist of the Main Range Sub-alpine Mitchell Landscape throughout areas between 2200 metres and 1550 metres elevation. Soils shift to Main Range Montane Mitchell Landscape along the Perisher Valley to Bullocks Flat Trail at elevations between 1550 metres and 1150 metres and then to Jindabyne Plains between 1150 metres and 1100 metres (DECC 2002).

Uniform textured alpine humus and transitional alpine humus soils and peat with abundant organic matter. Alpine humus soils are highly susceptible to erosion. The capacity for these soils to withstand the natural climatic changes and are degraded by the impacts of trampling which reduces the porosity and permeability of the soils and results in the soils reaching saturation faster. This promotes increased flow of water on the surface, resulting in the ‘trenching’ of tracks.

Within the Main Range Montane landscape, soils range from gritty clay loams on granites and pedal red to yellow clay subsoils on metasediments. The Jindabyne Plains comprise shallow gravelly loams on slopes, extensive red and yellow texture contrast soils on slopes near main streams and dark coloured gritty loams and clays in alluvium.

Waterways including wild and scenic rivers:

The Snowy River, Thredbo River, Blue Cow Creek, Spencers Creek, Guthrie Creek, Lubra Creek, Wrights Creek, Trapyard Creek, Betts Creek and numerous unnamed tributaries intersect, or occur close to, the proposed trails. There are no declared wild and scenic rivers within the study area.

Catchment values:

The trails occur directly in the catchments of the Snowy and Thredbo Rivers, or within the following sub-catchments (Figure 2, attached):

- Spencers Creek
- Trapyard Creek
- Wrights Creek
- Betts Creek
- Rock Creek
- Pipers Creek
- Lubra Creek.

These catchments are within the national park and are generally in a natural state. Hydrological modification has occurred in the broader catchment for hydro-electricity development, water harvesting, alpine resorts and roads.

These alpine and mountain waterways have high recreational values and are popular for activities such as fishing, hiking and camping.

Coastal risk areas:

Not applicable

Ecological communities (threatened ecological communities and regionally significant communities):

The following threatened ecological communities occur within the study area and the study site:

- Alpine Sphagnum Bogs and associated Fens/Montane Peatlands (Endangered under the EPBC Act and the BC Act)
- 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 Bioregions (Endangered under the BC Act).It should be noted that the diagnostics and listing of this threatened community was recently amended (28 June 2019). The community is now referred to as Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion Critically Endangered Ecological Community. The examples of the former community in the study area may not meet the new diagnostics and listing based on vegetation structure, landscape setting, floristics, rainfall and geographic distribution. Further work may be required in spring 2019 to resolve this. Refer to https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Scientific-Committee/Determinations/2019/monaro-tableland-final-determination-CEEC.pdf?la=en&hash=08778611BB71929B4B80EAE429060ABA50664030
- Aquatic Ecological Community in the Catchment of the Snowy River in NSW (Endangered under the Fisheries Management Act).

No regionally significant communities were identified in the study area.

Wetland communities including SEPP 14 wetlands:

No SEPP 14 wetlands are located within or in close proximity to the study area.

SEPP 26 littoral rainforest (or equivalent):

No SEPP 26 Littoral Rainforest is located within or in close proximity to the study area.

Flora (including flora of conservation significance):

Biodiversity assessments identified eight alpine, sub-alpine and montane plant community types and small areas of exotic vegetation. These communities include forest, woodland, heathland, shrubland, grassland and peatland habitats across many landscape settings, elevations and aspects.

A list of flora species recorded or likely to occur within the study area is provided in Biosis (2019), attached.

The following threatened flora species have been recorded or are considered to have a medium or greater likelihood of occurring within the study area:

- Shining Cudweed *Argyrotegium nitidulum* (Vulnerable, EPBC Act and BC Act)
- Mountain Greenhood *Pterostylis alpina* (Vulnerable, BC Act)
- Slender Greenhood *Pterostylis foliate* (Vulnerable, BC Act)
- Blue-tongued Greenhood *Pterostylis oreophila* (Critically Endangered, EPBC Act and BC Act)
- Anemone Buttercup *Ranunculus anemoneus* (Vulnerable, EPBC Act and BC Act)
- Perisher Wallaby-grass *Rytidosperma vickeryae* (Vulnerable, BC Act).

Fauna (including fauna of conservation significance):

Fauna habitats found within the study area include forest and woodland (containing hollow-bearing trees), coarse woody debris, waterways, bogs and fens, rock outcrops and boulderfields, exposed rock and rock paving, heathland and grassland.

A list of fauna species recorded or likely to occur within the study area is provided in Biosis (2019), attached.

Threatened fauna species recorded from or considered to have a medium or greater likelihood of occurring within the study area include: nine mammals, eight birds, two reptiles, one fish and one invertebrate. These are listed below:

- Mountain Pygmy-possum *Burramys parvus* (Endangered, EPBC Act and BC Act)
- Spotted-tailed Quoll *Dasyurus maculatus* (Endangered EPBC Act, Vulnerable BC Act)
- Eastern Bentwing-bat *Miniopterus schreibersii oceanensis* (Vulnerable, BC Act)
- Broad-toothed Rat *Mastacomys fuscus* (Vulnerable EPBC and BC Act)
- Greater Glider *Petauroides volans* (Vulnerable, EPBC Act)
- Smoky Mouse *Pseudomys fumeus* (Endangered EPBC Act, Critically Endangered BC Act)
- Koala *Phascolarctos cinereus* (Vulnerable EPBC Act and BC Act)
- Eastern False Pipistrelle *Falsistrellus tasmaniensis* (Vulnerable, BC Act)
- Eastern Pygmy-possum *Cercartetus nanus* (Vulnerable, BC Act)
- Powerful Owl *Ninox strenua* (Vulnerable, BC Act)
- Gang-gang Cockatoo *Callocephalon fimbriatum* (Vulnerable, BC Act)
- Brown Treecreeper (eastern subspecies) *Climacteris picumnus victoriae* (Vulnerable, BC Act)
- Olive Whistler *Pachycephala olivacea* (Vulnerable, BC Act)
- Flame Robin *Petroica phoenicea* (Vulnerable, BC Act)
- Scarlet Robin *Petroica boodang* (Vulnerable, BC Act)
- Pink Robin *Petroica rodinogaster* (Vulnerable, BC Act)
- Diamond Firetail *Stagonopleura guttata* (Vulnerable, BC Act)
- Alpine She-oak Skink *Cyclodomorphus praealtus* (Endangered EPBC Act and BC Act)
- Guthega Skink *Liopholis guthega* (Endangered EPBC Act and BC Act)
- River Blackfish (Snowy River population) *Gadopsis marmoratus* (Endangered Population, FM Act)
- Alpine Redspot Dragonfly (Vulnerable, BC Act)

Twelve migratory species of international significance have been recorded or are predicted to occur in the locality. These include: Common Sandpiper, Fork-tailed Swift, Sharp-tailed Sandpiper, Curlew Sandpiper, Pectoral Sandpiper, Latham's Snipe, White-throated Needletail, Rainbow Bee-eater, Black-faced Monarch, Yellow Wagtail, Satin Flycatcher, Orange-bellied Parrot, Eastern Curlew and Rufous Fantail.

Area of outstanding biodiversity value declared under the BC Act:

No areas of outstanding biodiversity value declared within the project site.

SEPP 44 koala habitat:

Under Part 1 Clause 5, SEPP 44 does not apply to land dedicated or reserved under the National Parks & Wildlife Act 1974. Moreover, no core Koala habitat was identified within the study area.

Wilderness (either nominated or declared):

None

Aboriginal cultural heritage:

The project ACHA and amendment documents are attached to this REF and provide further details on existing Aboriginal cultural heritage values. The findings are summarised below.

An ACHA for the Snowy Mountains Iconic Walk Project, Kosciuszko National Park, was conducted in July 2017 by Sue Feary and Gerard Niemoeller (2017). The ACHA consisted of a desktop assessment inclusive of the development of a predictive model, and detailed the outcomes of a field investigation and consultation with the Aboriginal community.

An addendum to the ACHA was completed in June 2019 by Sue Feary and Gerard Niemoeller, following the realignment of two sections of the proposed route. The addendum included an additional field investigation and continued consultation with the Aboriginal community.

The ACHA and addendum were conducted in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010a), the Code of Practice for archaeological investigation of Aboriginal objects in New South Wales (DECCW, 2010b), the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH, 2011), and relevant sections of the Kosciuszko National Park Plan of Management (Department of Environment and Conservation NSW, 2006).

As part of the ACHA (2017) a predictive model was developed to inform the field investigation and assessment of Aboriginal heritage values for the Snowies Iconic Walk Project. The predictive model was informed by background research, which included a search of the Aboriginal Heritage Information Management System (AHIMS) and a review of previous archaeological studies conducted in the area in order to determine the likelihood of previously unrecorded Aboriginal objects or sites being located within the study area

A search of AHIMS register was undertaken on 5 April 2017. The search centred on the study area and covered a radius of approximately 10 kilometres. A total of 118 Aboriginal sites were identified during this search. The vast majority of sites recorded within approximately 10 kilometres of the study area are stone artefact sites. Many of the AHIMS sites have been recorded in the Thredbo Valley, and at Perisher, Charlotte's Pass and Smiggins Holes ski resorts. This is considered to be reflective of the nature of archaeological assessment work carried out in the area, rather than an accurate depiction of traditional Aboriginal land use or occupation.

No AHIMS sites are located within the development corridor of the proposed alignment options assessed. Nearby sites included:

- Site AHIMS# 61-3-0113 a single silcrete flake at the Perisher Water reservoir end of the Porcupine Rocks walking track.
- Site AHIMS# 63-1-0001 near a saddle on the Guthrie Ridge which has only has only an approximate location and is described as a moth pestle (collected and now in the Australian Museum).
- Lubra Rocks site below Perisher Valley (AHIMS# 61-3-0014).
- Site AHIMS# 61-3-0008 is 40 artefacts at Perisher Gap, collected by Jo Flood.
- Site AHIMS# 61-3-0150, consisting of a single quartz flake.

The findings of predictive model indicated that small artefact scatters representing transitory movement may be present in saddles and along ridgelines in the alpine and subalpine zones, associated with summer visits to harvest Bogong Moths and conduct ceremonies. River valleys also had the potential to contain larger sites reflecting longer term occupation and/or larger

Aboriginal populations. Four areas of archaeological potential were identified during the development of the predictive model (see Figure 7 of the ACHA attached to the REF).

The initial field investigation (2017) was undertaken over five days from 15 to the 19 May 2017. Present during the field investigation were Sue Feary and Gerard Niemoeller, and representatives from Bega Local Aboriginal Land Council (LALC) and Southern Aboriginal Working Group (SAWG). Chris Darlington and Graham Weston from NPWS assisted with fieldwork and provided logistical support.

The field survey identified one site, a low density artefact scatter on Guthrie saddle at 1800 metres elevation (Guthrie Saddle 1 [GS-]1). GS1 measures 2 by 2 metres, and consists of four flakes of a grey volcanic rock, with small phenocrysts (possibly basalt). The site is located upon a broad saddle within a small exposure of granite gravel outcropping. The area in which GS-1 is located was assessed to possess high archaeological potential. GS1 was assessed as having moderate to high archaeological significance due to its proximity to AHIMS site # 63-1-0001, where a possible moth pestle was found in 1970.

As a result of the field investigation the track was realigned to avoid GS1, and incorporated a 10 metre diameter buffer. Effective survey coverage of the proposed sections of the walking track was almost nil due to very heavy vegetation cover, with the majority of the route assessed as having low archaeological potential due to steepness of landforms, lack of resources and erosional forces. The absence of Aboriginal sites for most of the route was attributed to either the low potential for them to be present and/or very poor ground visibility. It was concluded that Porcupine Rocks may have cultural significance to Aboriginal people due to its distinctive natural formations.

Following the results of the 2017 assessment, a field investigation was undertaken for some of the proposed realignments (Perisher Valley to Bullocks Flat, and Charlottes Pass to Illawong Hut) and took place over 2 days between 6 and 7 February 2019. It should be noted that the realignment between Charlotte Pass and Perisher Valley (via Porcupine Rocks) was deemed not subject to field surveys. The field investigation for Perisher Valley to Bullocks Flat and Charlottes Pass to Illawong Hut was undertaken by Sue Feary and Gerard Niemoeller, Maggie Sutcliffe, Tim Greville, Anthony Evans, and Janelle Herlihy from NPWS, and a representative from Bega LALC. The predictive model developed as part of the original ACHA assessment was applied for the purposes of the secondary field investigation. Overall, the archaeological potential of the landscape was considered low with areas of higher potential attributed to elevated flat terraces adjacent to the Snowy River above the flood zone, and well drained topographies along the northern embankments and lower slopes of the Thredbo River. The results of the Perisher ski resort archaeological assessment also suggested that there was potential for low density artefact scatters to occur within sheltered and well-drained areas across the Prussian Flat Plateau.

No Aboriginal sites were identified as part of the secondary field investigation. Ground visibility and exposure were poor within both realignments and hampered the ability of surveyors to identified Aboriginal sites/objects. It was concluded that both realignments possessed low archaeological potential due to the poor nature of landforms (steep slopes), and poor site preservation due to flooding and erosional forces. An attempt was made to inspect AHIMS# 61-3-0150, however it was not relocated. An area of sensitivity was established along 700 metres of the Perisher Valley to Bullocks Flats track in the vicinity of AHIMS# 61-3-0150.

The following recommendations were provided following the completion of the ACHA (2017) and addendum (2019):

- It is recommended that no further archaeological investigation of the overall project is required as the archaeological footprint has been adequately understood, notwithstanding the limitations of poor ground visibility.
- Due to low levels of ground visibility during the field survey, it is recommended that locations identified as having potential for sites to be present should be re-surveyed

once vegetation has been cleared (only relevant where pavers are to be laid, not where the raised platform is to be installed).

- If any objects are found, a DPIE authorised person should be present to collect or move the artefacts to the side of the track out of harm's way, if this approach is endorsed by the registered Aboriginal groups. Any such sites would be recorded and put on the AHIMS database. If authorised movement is not possible, works will need to cease at the location and an AHIP will be required.
- It is recommended that an AHIP is issued for a 700 metre section of the Bullocks Flat section of the realignment in the vicinity of site AHIMS# 61-3-0150 to allow for movement and/or harm to any objects found during the monitoring programme as described in 7.2 of the addendum (2019).
- Further investigation through a due diligence process is recommended if there are to be significant deviations from the current development corridor.
- This report should be further modified to include the results of field survey for the new walking track from Charlotte Pass to Perisher once field survey and assessment has been completed. If objects are found and cannot be avoided, they should be included in the AHIP by way of a variation.
- It is recommended that this report is presented to the Kosciuszko National Park Aboriginal Working Group and circulated to Registered Aboriginal Parties for comment and feedback.
- Should suspected Aboriginal objects/sites be identified during the proposed works the following procedure must be followed:
    - Stop work.
    - Record site and determine boundary.
    - Identify a buffer around the site.
    - If avoidance is not feasible, move artefact to a suitable location, and complete an AHIMS site card to record new location.
    - Alternatively, artefacts may be collected and given to a relevant RAP, pursuant to a Care and Control Agreement.

National/State/local natural or cultural heritage values:

NPWS has identified several historic heritage values including:

Old Kosciusko Road: the Charlotte Pass to Perisher Valley walking track crosses it outside of Charlotte Pass and then is parallel for approximately 150 metres at a distance of 20-50 metres as does the existing cross country ski track. Also the Perisher to Bullocks walking track alignment crosses it near Prussian Flat. Impacts are negligible and there is positive impact of interpreting the old road. No signs of the old road were discovered during field work but if remnants are encountered prior to construction the track may be slightly realigned to avoid harm (see Old Kosciusko Road alignment on attached maps).

National Heritage Listing: The Australian Alps (including Kosciuszko National Park) was listed as a National Heritage Place 'Australian Alps National Parks and Reserves' on 7 November 2008. The National Heritage Listing requires consultation with the Federal Department of the Environment if any of the outstanding heritage values identified when listing will be impacted upon. These values include: Glacial and Periglacial Features, Fossils, Karst, Biological Heritage, Moth Feasting, Transhumant Grazing, Scientific Research, Water Harvesting and Recreation. There will not be any impact upon these values from proposed works. The works are permissible under this listing'.

Bullocks Hut curtilage: The bottom end of the Perisher Valley to Bullocks Flat walking track goes through this curtilage. NPWS is seeking further heritage advice from their internal Cultural Heritage team and if necessary the track can be moved to avoid the curtilage and join the existing Thredbo Valley Track further to the east outside of the curtilage. The Conservation Management Plan from 2002 states that 'Bundilla', the Bullocks Fishing Lodge complex has been assessed as being of regional heritage significance and is therefore not eligible for listing on the State Heritage Register. The complex is recognised in the Kosciuszko Plan of Management as being an item of local environmental heritage significance.

Illawong Hut (Illawong Lodge):

The proposed Charlotte Pass to Guthega track section joins the existing Illawong Hut Walk 120 metres north-west of the Illawong Hut (Illawong Lodge).

Information below sourced from http://www.illawong.asn.au/:

Illawong Lodge was originally built as Pounds Creek Hut 1926/27. It was built by the NSW Government Tourist Bureau to assist in the first winter crossing from Kiandra to the Hotel Kosciuszko by Dr Herbert Schlink and his party in 1927.

In 1956, with the permission of the then Kosciusko State Park Trust, a group of cross-country ski enthusiasts, then called the Ski Tourers Association and who were later to become Illawong Ski Tourers (IST), undertook to restore and extend the decrepit building known as Pounds Creek Hut and to operate it as Illawong Lodge.

Illawong Lodge is a place of heritage significance for its role in, and association with, the phases of skiing in the Snowy Mountains Region. As such it is of local significance for the Snowy Mountains Region and it represents important historic, aesthetic and social values for this area of NSW.

Illawong Lodge's history is strongly associated with the development and evolution of back-country skiing in Australia and it has been used continuously for this purpose from its initial construction to today—about 80 years—50 of which involve an association with Illawong Ski Tourers. Today the members and friends of IST continue to devote the same care and attention to Illawong, and its cultural associations, as they did in 1956.

Vegetation of cultural landscape value:
(e.g. gardens and settings, introduced exotic species or evidence of broader remnant land uses)

None

Other cultural heritage values:

None

Recreation values:

The nationally significant tourism and recreational values of Kosciuszko National Park are based upon the diverse range of natural and cultural settings present. Kosciuszko National Park receives approximately 1 million visitors a year. Recreation values of Kosciuszko National Park are considered high. Winter recreational values include skiing and snowboarding as well as cross-country skiing, snow play, snow camping and ice climbing. Non-snow based recreational pursuits include walking, cycling, sightseeing, driving, picnicking, fishing and camping. Other activities include caving, horse riding, cycling, canoeing, rafting, boating, rock climbing, photography, painting and educational tours. Concentrated use occurs in the alpine resorts, picnic and camping areas, short walks and lookouts. The Main Range, in particular Mount Kosciuszko is a key visitor attraction in summer. Charlotte Pass, together with Thredbo, Selwyn and Perisher Range alpine resorts, is significant for its recreational values.

Scenic and visually significant areas:

The Snowies Iconic Walk takes people to Australia's highest mountains, leads people along some of Australia's highest and most scenic ridgelines and provide exceptional elevated views of glacial lakes which are the freshest bodies of water on mainland Australia (Darlington 2016). The three southern resorts are situated adjacent to the highest and some of the most scenic landscapes in Australia (NPWS 2006). Although the scenic values of the park are generally high, many landscapes are marred by visually intrusive developments such as the Snowy Mountains Hydro-electric Scheme.

Education and scientific values:

Scientific research work conducted in Kosciuszko National Park across a range of disciplines is regarded as highly significant. This encompasses pioneering research in anthropology, botany, ecology, geology, geomorphology, hydrology and meteorology (PoM 2006). The glacial features are of high scientific and educational significance for Australia. They are an outstanding example of a glaciation that developed under extremely marginal conditions (Galloway 1989) and are the only occurrences on the Australian mainland. They also help our understanding of ice age climates. Karst areas of the park, especially Yarrangobilly and Cooleman Plain, have attracted considerable scientific interest.

Soils that are of outstanding scientific value both individually (e.g. the alpine humus soils) and in association with each other, including fossil soils and features. Alpine flora archaeological relics have also been the subject of scientific studies.

Interests of external stakeholders (e.g. adjoining landowners, leaseholders):

Commercial Tour Operators, local businesses, community recreation groups, Resort Operators, such as Charlotte Pass Village, Perisher and Thredbo.

Matter of National Environmental Significance under the EPBC Act:

Matters of Environmental Significance under the EPBC Act that are relevant to this project include nationally listed threatened species/communities and migratory species.

The following species /communities have been recorded or are considered to have a medium or greater likelihood of occurring within the study area:

- Shining Cudweed
- Anemone Buttercup
- Blue-tongued Greenhood
- Broad-toothed Rat
- Greater Glider
- Koala
- Mountain Pygmy-possum
- Smoky Mouse
- Spotted-trailed Quoll
- Alpine She-oak Skink
- Guthega Skink
- Alpine Sphagnum Bogs and associated Fens Endangered Ecological Community

Twelve migratory species have been recorded or are predicted to occur in the locality. While some of these species would be expected to use the study area on occasions, some may do so regularly, and others may be resident. The study area does not provide important habitat for an ecologically significant proportion of any of these species.

Ramsar site 68, Blue Lake (including Hedley Tarn), occurs approximately 1.5 kilometres to the north-west of the study area, however no creeks or rivers intersected by the project drain into the Blue Lake Ramsar site and a significant impact on this wetland is considered unlikely.

9 Impact assessment

This part of the REF provides an analysis of **all possible impacts** from the proposed activity and a description of **any proposed mitigation measures**.

Section 3.7 of Guidelines for Preparing a Review of Environmental Factors provides further guidance on impact assessment and mitigation measures.

9.1 Physical and chemical impacts during construction and operation

Section 3.8 of Guidelines for preparing a Review of Environmental Factors provides further guidance.

	Applicable?*	**Impact level** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
1. Is the proposal likely to impact on soil quality or land stability?	☒	Low	The proposed works involve small machine and hand excavation for installation of rock paving, pitched rock and footings for elevated platforms.	• A CEMP should be prepared prior to any construction works commencing. The CEMP should include all relevant REF safeguards. • Implement sediment and erosion control measures in accordance with 'the Blue Book' Managing Urban Stormwater, Soils and Construction Vol 1 and 2A (Landcom, 2004).

	Applicable?*	**Impact level** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
2. Is the activity likely to affect a waterbody, watercourse, wetland or natural drainage system?	☒	Low-medium	The Snowy River, Thredbo River, Blue Cow Creek, Spencers Creek, Guthrie Creek, Lubra Creek, Wrights Creek, Trapyard Creek, Betts Creek and numerous unnamed tributaries intersect, or occur close to, the proposed trails. It is intended that all waterways will be spanned with elevated structures or bridges to avoid disturbance the bed, banks and instream habitat features such as woody debris, rocks and pools. These structures will be single span in most instances and are unlikely to change water flow, velocity, turbidity or seasonality. Impacts to localised sections of riparian vegetation are required in order to facilitate the project works such as trail clearing and structure installation. Elevated structures are proposed for all areas supporting the Alpine Sphagnum Bogs community (PCT 637). Pedestrian bridges are proposed to span Spencers Creek, Wrights Creek and Trapyard Creek but would not have footings in the creek. Temporary scaffolding may be required during construction.	• Implement sediment and erosion control measures in accordance with 'the Blue Book' Managing Urban Stormwater, Soils and Construction Vol 1 and 2A (Landcom, 2004). • Screw or bolt piers to rock (preferred construction method). • Track mats or similar for machinery access (e.g. excavator). • Welding mats to prevent vegetation burning and for removal of welding waste materials. • Airlift construction materials if ground transport not available via existing tracks. • Assemble structural components off-site where possible. • Post-construction, implement best practice in-stream rehabilitation works around structure footings (if required). • Avoid use of natural surface trails in proximity to waterways (e.g. within 30 metres of waterways) to minimise sediment run-off.

	Applicable?*	**Impact level** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
Notes: • a public authority does not require approval under the Water Management Act to undertake various works (e.g. excavating or depositing material) within 40 metres of a river; however, the REF should take account of the Guidelines for Controlled Activities prepared by the Department of Primary Industries – Water • consultation with Department of Primary Industries – Fisheries may be required for certain works, under s.199 Fisheries Management Act - see Section 4.				
3. Is the activity likely to change flood or tidal regimes, or be affected by flooding?	☒	Low	Bridges over Spencers Creek, Wrights Creek and Trapyard Creek.	Bridges will be designed to minimise changes to local water flows and to withstand flooding events. No footings are proposed in creeks.
4. Is the activity likely to affect coastal processes and coastal hazards, including those projected by climate change (e.g. sea level rise)?	☐	Not applicable	Not applicable	Not applicable

5. Does the activity involve the use, storage, or transport of hazardous substances or the use or generation of chemicals, which may build up residues in the environment?	☒	Low	Although the consequences of a fuel or chemical spill on sensitive alpine environment would be high, heavy machinery would not be used on site and no chemicals or fuel would be stored on site. Helicopter refuelling is also an identified risk. Overall, the likelihood of a spill or any pollution event occurring is very low.	• Store all hazardous chemicals offsite such as fuel, or herbicide. If onsite storage is required chemicals should be stored in appropriate bunding/storage systems away from waterways and only for short periods. • Petrol will only be used in the vehicles onsite. Petrol will not need to be stored in a separate container onsite. • Ensure appropriate spill kits, are present onsite, and that personnel are trained to use them. • Ensure all equipment and machinery is in good working order in order to reduce emissions and avoid repair works. • Contractor to develop strategies to ensure that no fuel, oil or other pollutants enter the ecosystem around the site. • Contractor to develop refuelling procedures to ensure that, even if a spill occurs, it is impossible for contaminants to enter a waterway or sensitive areas. • Toilet must be installed and secured to the ground in a manner that is impossible for even the strongest winds to cause a spill of pollution. • No galvanised or zinc products or coatings to be used. • Aircraft refuelling will be conducted at airbases or designated staging points in hard stand locations with appropriate bunding in place.
6. Does the activity involve the generation or disposal of gaseous,	☒	Low	Only small exhaust emitting machinery will be used on site. Minimal liquid and solid wastes	• Waste matter and toilet facility must be transported and disposed of off-site. • A wind-secure hopper will be used to collect rubbish that will be transported off-site.

	Applicable?*	**Impact level** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
liquid or solid wastes or emissions?			would be generated by the camp sites, toilet facilities and as a result of construction.	• Use of exhaust emitting machinery on site will be minimised. • Welding mats used for removal of welding waste materials. • Well-maintained equipment will be used in order to reduce emissions.
7. Will the activity involve the emission of dust, odours, noise, vibration or radiation in the proximity of residential or urban areas or other sensitive locations?	☒	Low	Noise and vibration would be associated with pneumatic drilling to install footings for elevated platforms. Although this may have an impact on skinks and other ground-dwelling fauna, it is likely to be only temporary and intermittent over the relatively short construction period. The activity may cause temporary disturbance to park users through noise and construction operations.	• Ensure any machinery to be used is muffled, well maintained and in good working order. • Construction noise to be minimised during peak visitation periods. • Dust management protocols to be applied if required (e.g. auger holes).

***** *If yes, check box and all columns need to be completed. If no, leave unchecked and write 'NA' in the third and fourth columns.*

9.2 Biological impacts during construction and operation

Section 3.9 of Guidelines for Preparing a Review of Environmental Factors provides further guidance.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
1. Is any vegetation to be cleared or modified? (includes vegetation of conservation significance or cultural landscape value)	☒	medium	A total 9.23 ha of native vegetation would be removed or modified as a result of this project. This includes 1.56 ha to be permanently lost or modified, 1.76 ha to be modified through minor pruning and up to 5.91 ha to be temporarily disturbed during construction and fully rehabilitated post-construction. Up to 0.13 ha of the threatened Alpine Sphagnum Bogs/Montane Peatland ecological community would be permanently impacted. Elevated structures will have an ongoing shading influence that may alter vegetation composition and structure towards more shade-tolerant species. Up to 0.015 hectares of already disturbed understorey vegetation within Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland EEC will be removed (note	• Vegetation removal/disturbance is to only occur within the designated construction corridor and only when an alternative isn't available (e.g. utilise existing access rather than clearing for new access). • All machinery and materials to be airlifted as close as possible to the works site. • Holes for support posts to be excavated using pneumatic drill (rather than auger) to minimise environmental impacts. Excess soil to be stored in bulker bags. • All material stockpiles, vehicle parking and machinery storage will be located within disturbed areas and not in areas of adjacent retained native vegetation. Any materials not stored on hard surfaces should remain for more than 7 consecutive days. • All vehicle movements restricted to existing tracks and trails. • All materials should be stored on hard surfaces or raised on gluts/bearers where hard surfaces are not available • Prior to works commencing any machinery, equipment and PPE will be washed down off-site to remove soil and weed seeds. • Ensure any imported construction materials are weed and pathogen free.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			updated listing previously discussed). Otherwise construction methods for elevated platform and rock paving may include low-impact activities such as pneumatic drilling, welding and construction by hand and small machinery. Micro-siting will be undertaken to avoid threatened communities/species prior to any works commencing.	• Toilet facility should be raised off the ground to avoid disturbing vegetation and so that light and rainfall can penetrate vegetation beneath/near these structures, where appropriate • Construction-stage tents or camp shelters need to be shifted at least every 7 days in order to minimise vegetation disturbance. • Workers must vary access routes to and from camp sites in order to minimise trampling. • Mats (such as strips of fibre-glass reinforced plastic) should be used to protect vegetation from trampling during construction.
2. Is the activity likely to have a significant effect on threatened flora species, populations, or their habitats, or area of outstanding biodiversity value (refer to threatened species assessment of significance (5 part test))?	☒	Low-medium	Assessments have been undertaken to determine the likelihood of a significant impact on threatened species in accordance with the Commonwealth's significant impact guidelines (Appendix 3, Biosis 2019, attached) and the Assessment of Significance under the BC Act (Appendix 4, Biosis 2019). The assessments concluded that there is unlikely to be a significant impact on any threatened species, populations or their habitats. It was concluded that there is unlikely to be a significant impact	• Micro-siting and/or use of elevated platforms will be undertaken to avoid significant species/communities prior to commencement by a qualified person. • Ground disturbance and vegetation removal will be minimised. • Vegetation removed can be salvaged and reinstated in situ to cover track edges and bare ground. • Footings for any elevated structures will use low impact installation techniques (e.g. pneumatic drilling). • Construction work will be undertaken using low-impact techniques (e.g. small machinery) or by hand, and by working progressively from the new surface or elevated structures. • Equipment and materials will be airlifted to the site and will be stored on hard surfaces or on gluts/bearers for no more than 7 days. • Toilet facilities will be installed above ground (to avoid vegetation disturbance) and secured to withstand strong winds. • No vehicles will be required to use existing tracks and trails.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			on threatened species/communities because: High quality habitat for threatened species/communities has been largely avoided as a result of the options analysis process. Options with the greatest environmental impacts were abandoned. Trail design features (i.e. elevated structures and rock paving) have further reduced environmental impacts by avoiding wetland and sensitive habitat. Proposed surface types will minimise impacts on soil, vegetation and habitat, confining the area of impacts to corridors varying from 2.8-3.5 m. Habitat loss and fragmentation is considered to be low due to the extent of habitat still available in the immediate surrounds.	• Trampling will be minimised by shifting any camps/tents at least every 7 days, using mats in and around the construction site and by varying routes taken to the work site. • Best practice materials and equipment hygiene methods will be implemented to prevent the introduction of weeds and pathogens. • Any changes to natural surfaces and drainage patterns will be minimised as far as practicable. • All trail edges and works areas will be rehabilitated to a high standard in accordance with DECC (2007) and McPhee (2013). • Weeds should be monitored and treated immediately post-construction and in an ongoing manner. • Best practice materials and equipment hygiene methods will be implemented to prevent the introduction of weeds and pathogens. • Post-construction monitoring of vegetation retained under elevated structures will be undertaken to assess any long term decline in vegetation health and vigour.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
3. Does the activity have the potential to endanger, displace or disturb fauna (including fauna of conservation significance) or create a barrier to their movement?	☒	Low-medium	The activity has the potential to temporarily disturb and displace ground-dwelling and burrowing fauna species (e.g. noise and vibration associated with drilling, human activity). However, it is unlikely to have a significant impact on any fauna species, including threatened reptile species. Elevated structures will not disrupt the continuity of aquatic or terrestrial habitat. Rock paving and gravel paths would not create movement barriers for fauna as they are relatively narrow and provide a natural substrate. New trail establishment in areas of sub-alpine heath may increase access for feral predators. Camps established during construction phase may also attract feral predators.	• Ground disturbance and vegetation removal will be minimised. • Footings for any elevated structures will use low impact installation techniques. • Construction work will be undertaken using low-impact techniques (e.g. small machinery) or by hand. • Any vehicles will be required to use existing tracks and trails. • Best practice materials and equipment hygiene methods will be implemented to prevent the introduction of weeds and pathogens. • All trail edges and works areas will be rehabilitated to a high standard in accordance with DECC (2007) and McPhee (2013). • If any threated fauna are observed, works will stop to consider options, including relocation in consultation with NPWS and DPIE. • Ongoing impacts of new weed invasions, increased feral predators and plant pathogens will be monitored and controlled through a project-specific program. • Feral predators and other introduced animals (e.g. deer) will be monitored and programs undertaken as part of existing pest management programs.
4. Is the activity likely to have a significant effect on threatened fauna species, or their habitats, or areas of outstanding biodiversity	☒	Low	The activity is unlikely to have a significant impact on any fauna species or their habitats (see Biosis 2019, attached). There are no areas of outstanding	• Ground disturbance and vegetation removal will be minimised. • Footings for any elevated structures will use low impact installation techniques.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
value (refer to threatened species assessment of significance (5 part test))?			biodiversity value in the study area.	• Construction work will be undertaken using low-impact techniques (e.g. small machinery) or by hand. • Any vehicles will be required to use existing tracks and trails. • Best practice materials and equipment hygiene methods will be implemented to prevent the introduction of weeds and pathogens. • All trail edges and works areas will be rehabilitated to a high standard in accordance with DECC (2007) and McPhee (2013). • Weeds should be monitored and treated immediately post-construction and in an ongoing manner. • If any threatened fauna are observed during micro-siting or construction, works will stop to consider options, including relocation. • Ongoing impacts of feral predators and other introduced animals will be monitored and controlled through a project-specific program.
5. Is the activity likely to impact on an ecological community of conservation significance?	☒	Low-medium	Assessments have been undertaken to determine the likelihood of a significant impact on threatened communities in accordance with the Commonwealth's significant impact guidelines (Appendix 3, Biosis 2019) and the Assessment of Significance under the BC Act (Appendix 4, Biosis 2019, attached). The assessments concluded that there is unlikely to be a	• Micro-siting and/or use of elevated platforms will be undertaken to avoid significant species/communities. • Ground disturbance and vegetation removal will be minimised. • Vegetation removed can be salvaged and reinstated in situ to cover track edges and bare ground. • Footings for any elevated structures will use low impact installation techniques. • Construction work will be undertaken using low-impact techniques (e.g. small machinery) or by hand.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			significant impact on any threatened ecological communities. Three threatened ecological communities occur within the study area: Up to 0.13 ha of Endangered Alpine Sphagnum Bogs and associated Fens (PCT 637) community would be permanently removed or modified as a result of the project. This community has largely been avoided as a result of the options assessment process. Elevated structures are proposed for all areas supporting bog communities along the final alignment. Pre-construction micro-siting will also be undertaken for elevated structures. Approximately 0.015 ha of Endangered Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland (PCT 679) along the Thredbo River would be permanently removed. This	• Equipment and materials will be airlifted to the site and will be stored on hard surfaces or on gluts/bearers for no more than 7 days. • Toilet facilities will be installed above ground (to avoid vegetation disturbance) and secured to withstand strong winds. • Any vehicles will be required to use existing tracks and trails. • Trampling will be minimised by shifting any camps/tents at least every 7 days and by varying routes taken to the work site. • Best practice materials and equipment hygiene methods will be implemented to prevent the introduction of weeds and pathogens. • Weeds should be monitored and treated immediately post-construction for a five-year period whereupon standard maintenance measures will apply • Any changes to natural surfaces and drainage patterns will be minimised as far as practicable. • All trail edges and works areas will be rehabilitated to a high standard in accordance with DECC (2007) and McPhee (2013). • Implement sediment and erosion control measures in accordance with ‘the Blue Book’ Managing Urban Stormwater, Soils and Construction Vol 1 and 2A (Landcom 2004). • Sediment and erosion controls should be optimised where the final alignments follow the Snowy and Thredbo Rivers, and natural surface trails to be avoided with 30 metres of waterways. • Large and hollow-bearing trees to be avoided, unless they pose a significant risk to the trails or personnel.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			comprises already disturbed understorey vegetation. This impact is considered to be minimal in the context of extensive stands of this community in the Thredbo Valley. See previous notes regarding status of this community to be reviewed. Aquatic Ecological Community in the Catchment of the Snowy River in NSW occurs in the Snowy and Thredbo Rivers and Guthega Pondage. All biota in these rivers are considered to form part of this endangered ecological community. It is intended that all waterways will be spanned with elevated structures or bridges to avoid disturbance to the bed, banks and instream habitat features such as woody debris, rocks and pools.	

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
6. Is the activity likely to have a significant effect on an endangered ecological community or its habitat (refer to threatened species assessment of significance (5 part test))?	☒	Low	As above	As above
7. Is the activity likely to cause a threat to the biological diversity or ecological integrity of an ecological community?	☒	Low	It is highly unlikely that the activity will cause a threat to biological diversity or ecological integrity of the ecological communities along the proposed realignment. Assessments undertaken as part of the EPBC Act and BC Act concluded that there is unlikely to be a significant impact on any threatened species/communities. It is therefore highly unlikely that the project would result in the local extinction of any species/communities. Although the project involves the construction of a trail system in a predominantly natural landscape, it is not likely to	• Micro-siting and/or use of elevated platforms will be undertaken in order to avoid significant species/communities. • Ground disturbance and vegetation removal will be minimised. • Vegetation removed can be salvaged and reinstated in situ to cover track edges and bare ground. • Footings for any elevated structures will use low impact installation techniques. • Construction work will be undertaken using low-impact techniques (e.g. small machinery) or by hand. • Equipment and materials will be airlifted to the site and will be stored on hard surfaces or on gluts/bearers for no more than 7 days. • Toilet facilities will be installed above ground (to avoid vegetation disturbance) and secured to withstand strong winds. • Any vehicles will be required to use existing tracks and trails.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			create movement barriers for fauna or to affect pollination, seed dispersal, vegetative reproduction or gene flow. The narrow tracks are unlikely to significantly fragment habitats or disrupt ecological functioning but may increase localised predation by feral predators and increase risk of weeds and pathogens spreading into new areas of the Park. The steel mesh used in elevated structures will include wide spacing to enable sufficient light for photosynthesis and would be high enough to allow vegetation to grow and migrate under the platform.	• Trampling will be minimised by shifting any camps/tents at least every 7 days and by varying routes taken to the work site. • Best practice materials and equipment hygiene methods will be implemented to prevent the introduction of weeds and pathogens. • Weeds and pathogens should be monitored and treated immediately post-construction and in an ongoing manner. • Any changes to natural surfaces and drainage patterns will be minimised as far as practicable. • All trail edges and works areas will be rehabilitated to a high standard in accordance with DECC (2007), McPhee (2013) and Biosis (October 2018c).
8. Is the activity likely to introduce noxious weeds, vermin, feral species or genetically modified organisms into an area?	☒	Low-medium	Quarantine processes will be implemented when there is a risk of the importation of weed seed, phytophthora or other damaging pathogens associated with rocks, trucks, plant or equipment from within or around the National Park. Road base and drainage rock are the highest risk for weeds to be sourced from the Snowy Addit.	• Best practice materials and equipment hygiene methods will be implemented to prevent the introduction of weeds and pathogens. This is to be detailed in the project CEMP with reference to published standards (e.g. *Hygiene protocols for the control of diseases in Australian frogs*, *A guide for machinery hygiene for civil construction*). • All vehicles, tools and equipment to the washed down prior to entering beyond gate at Charlotte Pass. A wash down bay is available at the National Parks & Wildlife Service Waste Point Depot for use by the Contractor by negotiation with the Principal.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			Pest animals evident throughout the study area include fox, feral deer, feral pigs, rabbits and wild dogs. Local impacts to native species may occur as a result of increased predation by foxes and cats at the site level due to a reduction in vegetation cover.	• No vehicle access beyond formed roads. • Machinery hygiene sites to be set up by Contractor at Perisher, Guthega and possibly Skitube Alpine Railway car park D (NPWS to seek permission from owners/operators of Skitube). • Rocks must be free of soil to eliminate the risk of phytophthora or other pathogens. • Weeds should be monitored and treated immediately post-construction and in an ongoing manner (this should target species such as Sweet Vernal-grass *Anthoxanthum odoratum*, Soft Rush *Juncus effusus* and Milfoil *Achillea millefolium*).. • All compost/organic matter (sourced on site as a priority) and rice straw used is free of zinc, phytophthora, weeds and other pathogens. • Prepare and/or implement integrated vertebrate pest management strategy in co-oridnation with existing programs in the area. This will include monitoring and control. • Prepare and/or implement weed management strategy aimed at suppressing and eradicating existing weed populations and preventing establishment of new weeds along trail alignments. Contractors will be provided with inductions to assist them to identify high threat weeds (e.g. Hawkweed species) and pathogen outbreaks.
9. Is the activity likely to affect any declared area of outstanding biodiversity value?	☐	Not applicable	Not applicable	Not applicable

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
11. Is the activity likely to affect any joint management agreement under the BC Act?	☐	Not applicable	Not applicable	Not applicable

***** *If yes, check box and all columns need to be completed. If no, leave unchecked and write 'NA' in the third and fourth columns.*

9.3 Community impacts during construction and operation

Section 3.10 of Guidelines for Preparing a Review of Environmental Factors provides further guidance.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
1. Is the activity likely to affect community services or infrastructure?	☐	Not applicable	Not applicable	Not applicable

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
2. Does the activity affect sites of importance to local or the broader community for their recreational or other values or access to these sites?	☒	Positive	The broader project under the banner of the Snowies Iconic Walk would provide a new 45 km multi-day walking track connecting the five existing resorts, accommodation and services at Thredbo, Charlotte Pass, Guthega, Perisher and Lake Crackenback. It will therefore provide an opportunity for walkers and visitors to experience and appreciate alpine environment and vistas over a 4-day period. Cross-country ski trails occur along the Charlotte Pass to Perisher Valley and Perisher to Bullocks Flat new alignments. However appropriate setbacks have been provided to separate these two activities. Upgraded car parking at Porcupine Rocks trailhead would benefit visitors to the park. Construction disturbance would be temporary and a number of safety measures would be put in place to reduce the risk of negative interactions between walkers and construction activities. For example some tracks and trails may be used by construction vehicles and rocks may be airlifted close to the work site at various times.	• Vehicles will be restricted to a very low speed (<20 km/hr when in areas not open to the public and 5 km/hr when within 10 m of a member of the public). • Car-pooling is required for construction workers to reduce impact of additional vehicles on visitors. • Appropriate controls must be in place where the flight path crosses public tracks and trails and to take reasonable care to ensure that no people are below the flight path while sling load operations are being conducted. • The Contractor must develop a plan for flight paths to ensure that no flying occurs over members of the public while the sling is attached. • Aircraft operations only to be conducted Monday to Friday and to avoid weekends and NSW public holidays unless approval sought from relevant Area Manager. • No aircraft operations can occur from 22 December 2018 until 6 January 2019. • Warning signs need to be developed under the Safe Work Plan and installed by the Contractor. • Interpretive signs to be installed at both ends of the realignment to explain its importance

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
3. Is the activity likely to affect economic factors, including employment, industry and property value?	☒	Low-medium	The project will create employment opportunities for local contractors and seasonal workers.	Not applicable
4. Is the activity likely to have an impact on the safety of the community?	☒	Low	Construction disturbance would be temporary and a number of safety measures would be put in place to reduce the risk of negative interactions between walkers and construction activities. For example some tracks and trails may be used by construction vehicles and rocks may be airlifted close to the work site at various times.	• Vehicles will be restricted to a very low speed (<20 km/hr when in areas not open to the public and 5 km/hr when within 10 m of a member of the public). • Appropriate controls must be in place where the flight path crosses public tracks and trails and to take reasonable care to ensure that no people are below the flight path while sling load operations are being conducted. • The Contractor must develop a plan for flight paths to ensure that no flying occurs over members of the public while the sling is attached. • Warning signs need to be developed under the Safe Work Plan and installed by the Contractor.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
5. Is the activity likely to cause a bushfire risk?	☒ ☐	Low-medium	Use of welding equipment and mechanical tools with hot exhausts or potential to emit sparks may ignite a fire in dry fuels.	• No smoking allowed in the national park environment. • No camp fires allowed by construction contractors. • All construction teams to have a fire prevention plan which includes immediate reporting procedures for any accidental ignition events, carrying basic firefighting equipment (rake hoes, water and small fire extinguishers) and having a clear evacuation plan. • No high risk works allowed on total fire ban days.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
6. Will the activity affect the visual or scenic landscape? This should include consideration of any permanent or temporary signage (e.g. signs advertising an event and related sponsorship).	☒	Negative	The locality will undergo a permanent transformation during and post-construction as it will involve the construction of approximately 27 kilometres of elevated structures and formed trails and a pedestrian bridge in a predominantly natural environment. However the materials selected for the elevated platforms and rock paving have been chosen on the basis of their aesthetic appeal, low-maintenance requirements and to reflect the visual character of the area. Raw steel would be used to construct the elevated platform and geologically similar Mowamba Granodiorite rock is preferred for rock paving. The mesh used in elevated structures will include wide spacing to enable sufficient light for plant photosynthesis and would be high enough to allow vegetation to grow and fauna to travel under the platform. The narrow porous nature of the walking tracks and extensive use of elevated structures will maintain connectivity for flora and fauna. Final trail surfaces would vary from 0.5-0.8 metres wide and all edges will be rehabilitated to a high standard post-construction. All construction signage would be removed from the site at the completion of works.	• Corralling rocks to be used along the edges of trail upgrades to discourage walkers from leaving the trail. • Ground disturbance and vegetation removal will be minimised. • Vegetation removed can be salvaged and reinstated in situ to cover track edges and bare ground. • Footings for any elevated structures will use low impact installation techniques. • Construction work will be undertaken using low-impact techniques (e.g. small machinery) or by hand. • All trail edges and works areas will be rehabilitated to a high standard in accordance with DECC (2007) and McPhee (2013).

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
7. Is the activity likely to cause noise, pollution, visual impact, loss of privacy, glare or overshadowing to members of the community, particularly adjoining landowners?	☒	Low	The will be some minor disruption and visual impacts during construction operations.	• Refer to above safeguards related to community.

***** *If yes, check box and all columns need to be completed. If no, leave unchecked and write 'NA' in the third and fourth columns.*

9.4 Natural resource impacts during construction and operation

Section 3.11 of Guidelines for Preparing a Review of Environmental Factors provides further guidance.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
1. Is the activity likely to result in the degradation of the park or any other area reserved for conservation purposes?	☒	Low	As discussed above, the locality will undergo a permanent transformation due to the construction of the new alignments of the Snowies Iconic Walk in what is now a predominantly natural environment. However potential impacts to natural and cultural values within the park have been avoided and minimised through pre-construction surveys, options analysis and design considerations. Both track treatments (i.e. elevated structures and rock paving) are highly durable and therefore require little or no maintenance. They are also expected to mitigate and minimise the risk of worsening erosion in sensitive habitats and to improve current erosion by removing the source of disturbance where existing trails are to be upgraded near Porcupine Rocks. In the longer term the Snowies Iconic Walk will allow sustainable use by increased visitor numbers. Resultant impacts and losses relatively minor in the context of the surrounding intact landscape and National Park.	Listed in Sections 3.8-3.9 above

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
2. Is the activity likely to affect the use of, or the community's ability to use, natural resources?	☒	Positive	The Snowies Iconic Walk will enable the community to enjoy the natural surroundings while minimising impacts on the natural and cultural values of the National Park.	Listed in Section 3.10 above
3. Is the activity likely to involve the use, wastage, destruction or depletion of natural resources including water, fuels, timber or extractive materials? This should include opportunities to utilise recycled or alternative products.	☐	Not applicable	Not applicable	Not applicable
4. Does the activity provide for the sustainable and efficient use of water and energy? Where relevant to the proposal, this should include consideration of high efficiency fittings, appliances, insulation, lighting, rainwater tanks, hot water and electricity supply.	☐	Not applicable	Not applicable	Not applicable

9.5 Aboriginal cultural heritage impacts during construction and operation

Section 3.12 of Guidelines for Preparing a Review of Environmental Factors provides further guidance.
Addressing matters 1–5 will assist in meeting requirements set out in OEH's Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
1. Will the activity disturb the ground surface or any culturally modified trees?	☒		The proposed activity will result in ground disturbance and vegetation removal. No modified trees were recorded in the study area.	• Refer to attached ACHA and recommendations. • Should any Aboriginal objects be encountered during works, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the DPIE and Aboriginal stakeholders.
2. Does the activity affect known Aboriginal objects or Aboriginal places? Include all known sources of information on the likely presence of Aboriginal objects or places, including AHIMS search results.	☐		Refer to attached ACHA which states the study area possessed low archaeological potential due to the poor nature of landforms (steep slopes), and poor site preservation due to flooding and erosional forces. An area of sensitivity was established along 700 metres of the Perisher Valley to Bullocks Flats track in the vicinity of AHIMS# 61-3-0150. The 2019 ACHA addendum is currently undergoing consultation with registered aboriginal parties.	• Refer to attached ACHA and recommendations.

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
3. Is the activity located within, or will it affect, areas : - within 200m of waters* - within a sand dune system* - on a ridge top, ridge line or headland - within 200m below or above a cliff face - within 20m of or in a cave, rock shelter or a cave mouth? *See the Guidelines for Preparing a REF for definitions.	☒	Low	Track construction will take place with 200 metres of the Snowy and Thredbo Rivers and other smaller creeks.	• Implement ACHA recommendations (attached). • Implement sediment and erosion control measures in accordance with 'the Blue Book' Managing Urban Stormwater, Soils and Construction Vol 1 and 2A (Landcom, 2004). • Screw or bolt piers to rock (preferred construction method). • Track mats or similar for machinery access (e.g. excavator). • Welding mats to prevent vegetation burning and for removal of welding waste materials. • Airlift construction materials if ground transport not available via existing tracks. • Assemble structural components off-site where possible. • Post-construction, implement best practice in-stream rehabilitation works around structure footings (if required).

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
4. If Aboriginal objects or landscape features are present, can impacts be avoided?	☒	Low	The trail can be mostly aligned to avoid any values. An area of sensitivity was established along 700 metres of the Perisher Valley to Bullocks Flats track in the vicinity of AHIMS# 61-3-0150.	• Ground disturbance and vegetation removal will be minimised. • Should any Aboriginal objects be encountered during works, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the DPIE and Aboriginal stakeholders. • Appropriate permits will be obtained for works in the area of sensitivity.
5. If the above steps indicate that there remains a risk of harm or disturbance, has a desktop assessment and visual inspection^ been undertaken (refer to the Due Diligence Code)? ^ For activities proposed by OEH, at a minimum, this should be undertaken by an OEH employee with Aboriginal Site	☒	Low	An ACHAR has been completed and is attached to this REF. The 2019 ACHA addendum is currently undergoing consultation with registered aboriginal parties.	Refer to attached ACHA and recommendations

	Applicable?*	**Likely impact** (negligible, low, medium or high; negative or positive; or N/A)	**Reasons** (describe the type, nature and extent of the impact, the nature of the receiving environment and any proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
Awareness training and relevant practical experience, as approved by an Area Manager.				
6. Is the activity likely to affect wild resources or access to these resources, which are used or valued by the Aboriginal community?	☐	Not applicable	Not applicable	Not applicable

***** *If yes, check box and all columns need to be completed. If no, leave unchecked and write 'NA' in the third and fourth columns.*

Special explanatory notes:

- If the above assessment indicates that there is still a reasonable risk or potential that Aboriginal objects, Aboriginal places or sensitive landscape features could be adversely affected by a proposal, consistent with the precautionary principle, it should either be re-considered or further detailed investigations undertaken.
- If it is concluded that an activity will have unavoidable and justified impacts on Aboriginal objects or Aboriginal places, the proponent should consider applying for an Aboriginal Heritage Impact Permit (AHIP) under s.90 of the NPW Act.

9.6 Other cultural heritage impacts during construction or operation

Section 3.13 of Guidelines for Preparing a Review of Environmental Factors provides further guidance.

	Applicable?*	**Likely impact** (negligible, maintenance, minor, major, contentious; or NA)	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
1. What is the impact on places, buildings, landscapes or moveable heritage items? Attach relevant supporting information where required, such as a heritage impact statement.	☒	Low	Several heritage values have been identified as listed above.	• The intent has been to avoid heritage items by siting the track away from them during the design phase, and if required, undertaking minor realignments during pre-construction micro-siting. • If encountered, archaeological remains will be assessed by an archaeologist to determine whether the suspected find constitutes a relic under the NSW *Heritage Act 1977* and whether NSW Heritage Council should be notified.
2. Is any vegetation of cultural landscape value likely to be affected (e.g. gardens and settings, introduced exotic species, or evidence of broader remnant land uses)?	☐	Not applicable	Not applicable	Not applicable

***** *If yes, check box and all columns need to be completed. If no, leave unchecked and write 'NA' in the third and fourth columns.*

9.7 Matters of national environmental significance under the EPBC Act

Section 3.14 of *Guidelines for Preparing a Review of Environmental Factors* provides further guidance. Also refer to Significant Impact Guidelines produced by the Commonwealth Department of the Environment.

	Applicable?*	**Impact level** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
Is the proposal likely to impact on matters of national environmental significance as follows:				
- listed threatened species or ecological communities	☒	Low-medium	Assessments have been undertaken to determine the likelihood of a significant impact on threatened species/communities in accordance with the Commonwealth's significant impact guidelines (Appendix 3, Biosis 2019, attached). These were undertaken for 11 threatened species and one threatened community. The assessments concluded that, there is unlikely to be a significant impact on any threatened ecological communities/species provided that impact avoidance and minimisation strategies are implemented at the design stage and mitigation measures are adhered to.	• Pre-construction searches, micro-siting and/or use of elevated platforms will be undertaken in order to avoid significant species/communities. • Ground disturbance and vegetation removal will be minimised. • Vegetation removed can be salvaged and reinstated in situ to cover track edges and bare ground. • Footings for any elevated structures will use low impact installation techniques. • Construction work will be undertaken using low-impact techniques (e.g. small machinery) or by hand. • Equipment and materials will be airlifted to the site and will be stored on hard surfaces or on gluts/bearers for no more than 7 days.

	Applicable?*	**Impact level** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
				• Toilet facilities will be installed above ground (to avoid vegetation disturbance) and secured to withstand strong winds. • Any vehicles will be required to use existing tracks and trails. • Trampling will be minimised by shifting any camps/tents at least every 7 days and by varying routes taken to the work site. • Best practice materials and equipment hygiene methods will be implemented to prevent the introduction of weeds and pathogens. • Weeds should be monitored and treated immediately post-construction for a five-year period whereupon standard maintenance measures will apply. • Any changes to natural surfaces and drainage patterns will be minimised as far as practicable. • All trail edges and works areas will be rehabilitated to a high standard in accordance with DECC (2007) and McPhee (2013). • Ongoing post-construction impacts of feral predators will be monitored and controlled through a project-specific program.
- listed migratory species	☒	Negligible	Twelve migratory species have been recorded or are predicted to occur in the locality. While some of these species would be expected to use the study area on occasions, some may do so	As above.

	Applicable?*	**Impact level** (negligible, low, medium or high; negative or positive; or NA)	**Reasons** (describe the type, nature and extent of impact, taking into account the receiving environment & proposed safeguards which will limit the impact)	**Safeguards/mitigation measures**
			regularly and others may be resident. The study area does not provide important habitat for an ecologically significant proportion of any of these species.	
- the ecology of Ramsar wetlands	☒	Negligible	Ramsar site 68, Blue Lake (including Hedley Tarn), occurs approximately 1.5 kilometres to the north-west of the study area, however no creeks or rivers intersected by the project drain into the Blue Lake Ramsar site and the site will not be significantly impacted by the proposal.	Not applicable
- Commonwealth marine environment	☐	Not applicable	Not applicable	Not applicable
- world heritage values of world heritage properties	☐	Not applicable	Not applicable	Not applicable
- the national heritage values of national heritage places	☒	Low	The Australian Alps National Parks and Reserves, which includes Kosciuszko National Park, is listed as a national heritage place under the EPBC Act.	• The intent is to avoid disturbance of specific heritage items or sites by undertaking minor realignments where required. • If encountered, archaeological remains will be assessed by an archaeologist.

***** *If yes, check box and all columns need to be completed. If no, leave unchecked and write 'NA' in the third and fourth columns.*

Note:

- The Protected Matters Search Tool can assist in checking for matters of national environmental significance.
- Referral to the Commonwealth may be required if the activity is likely to have a significant effect on matters of national environmental significance. Refer to the Significant Impact Guidelines. Contact NPWS if a significant affect is likely.

10 Proposals requiring additional information

Only complete the following sections **if applicable** to the proposal.

10.1 Lease or licence proposals under s.151 NPW Act

Section 2.2 of Guidelines for preparing a Review of Environmental Factors provides further guidance.

Proponents must complete and submit a **Sustainability Assessment** together with the REF. This also applies where OEH is the proponent for projects of the kind listed in s.151A, NPW Act.

For information on the sustainability assessment criteria and guidelines, including assessment templates, go to the Development guidelines webpage.

Indicate which sustainability assessment is attached:

☐ special activities and uses (involving more than 400 people) – Sustainability Assessment **Template 2**

☐ built structures and facilities – Sustainability Assessment **Template 3.**

Note that for **minor activities and uses** (usually events and similar proposals involving fewer than 400 people), a streamlined and combined REF and Sustainability Assessment template is available (**Template 1**).

10.2 Telecommunications facilities (s.153D, NPW Act)

Section 2.2 and Appendix 1 of Guidelines for Preparing a Review of Environmental Factors provide further guidance.

Are there feasible alternative sites for the facility on land that is not reserved under the NPW Act?	Not applicable
Does the site of any above ground facility cover the minimum area possible?	Not applicable
Is the facility to be designed and constructed to minimise risk of damage to the facility from bushfires?	Not applicable
Has the site and construction of the facility been selected to, as far as practicable, minimise visual impact?	Not applicable
Is it feasible to use an existing means of access to the site?	Not applicable
Is the facility essential for the provision of telecommunications services for land reserved under the NPW Act or for surrounding areas to be served by the facility?	Not applicable
Will the facility be removed and the site restored as soon as possible after the facility becomes redundant (e.g. due to changes in technology)?	Not applicable
Has the site been selected after taking into account the objectives set out in any plan of management relating to the land?	Not applicable
If feasible, will the facility be co-located with an existing structure or located at a site that is already disturbed by an existing lease, licence, easement or right of way.	Not applicable

If co-location is proposed, please indicate if:

- ☐ the proponent will be the owner of the facility
- ☐ the proponent will be a co-user of the facility.

10.3 Activities within the Sydney Drinking Water Catchment

Activities within the catchment are subject to the provisions of the State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011.

Does the activity incorporate any current recommended practices and performance standards endorsed or published by the Sydney Catchment Authority that relate to the protection of water quality?	Not applicable
If the activity does not do so, how will the activity achieve outcomes not less than these?	Not applicable
Will the activity have a neutral or beneficial effect on water quality?	Not applicable

11 Threatened species assessment of significance (5 part test)

Threatened species and ecological communities, or their habitats, which are likely to be affected by the activity must be identified and considered in the REF.

The factors set out in s.5AA EP&A Act are used to decide whether there is likely to be a significant effect on threatened species ecological communities or their habitats. These are known as the threatened species assessment of significance or '5 part test', and are set out below. These factors can be addressed in the body of the REF, or in a separate document submitted with the REF. In preparing the assessment, refer to any relevant guidelines published by OEH.

Threatened species and communities and critical habitats listed under both the *Biodiversity Conservation Act 2016* and *Fisheries Management Act 1994* should be included. Those **only** listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) should **not** be included. Impacts on EPBC Act listed species and communities should be addressed in section 9, or in a separate attached assessment. The proponent will still need to separately consider whether referral to the Commonwealth is required.

When you have completed the threatened species assessment of significance (5-part test), include the findings in the Biological Impacts section (or as an attachment).

The 5-part test (s.5AA Environmental Planning and Assessment Act)

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

  (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

  (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

(c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

(e) whether the proposed development or activity constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Tests of Significance were undertaken for 25 threatened species, one endangered population and three endangered ecological communities (Appendix 4, Biosis 2019, attached). These include:

- Shining Cudweed, Vulnerable
- Mountain Greenhood, Vulnerable
- Slender Greenhood, Vulnerable
- Blue Tongued Greenhood, Critically Endangered
- Anemone Buttercup, Vulnerable
- Perisher Wallaby-grass, Vulnerable
- Broad-toothed Rat, Vulnerable
- Eastern Pygmy-possum, Vulnerable
- Eastern False Pipistrelle, Vulnerable
- Eastern Bentwing Bat, Vulnerable
- Koala, Vulnerable
- Mountain Pygmy-possum, Endangered
- Smoky Mouse, Critically Endangered
- Spotted-tailed Quoll, Vulnerable
- Gang-gang Cockatoo, Vulnerable
- Powerful Owl, Vulnerable
- Olive Whistler, Vulnerable
- Scarlet Robin, Vulnerable
- Flame Robin, Vulnerable
- Pink Robin, Vulnerable
- Diamond Firetail, Vulnerable
- Brown Treecreeper, Vulnerable
- Alpine She-oak Skink, Endangered
- Guthega Skink, Endangered
- Alpine Red-spot Dragonfly, Vulnerable
- River Blackfish (Snowy River endangered population)
- Snowy River endangered aquatic ecological community, Endangered
- Montane Peatlands Endangered Ecological Community, Endangered
- Tablelands Snow Gum, Black Sallee and Ribbon Gum Grassy Woodland, Endangered in South Eastern Highlands bioregion (under review).

The assessments indicate that a significant effect is not likely to result from the project because:

- The threat of local extinction is low due to impact avoidance, minimisation and mitigation.
- High quality threatened reptile habitat has been mostly avoided.

- The extent of permanent habitat removal (i.e. 1.56 ha) is relatively minor when considered in the context of extensive areas of surrounding habitat.
- The proposal will result in minor fragmentation which will not impact fauna dispersal, pollination or other ecosystem processes.
- All waterways and sensitive habitats will be spanned by elevated structures/bridges.
- Strict construction controls and mitigation measures and best practice rehabilitation and management protocols would be implemented.

As a significant effect is not likely to result from the project, a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR) is not considered necessary.

12 Summary of impacts

Summarise the impacts and consider the cumulative impacts of the activity based on the classification of individual impacts as low, medium or high adverse, negligible or positive.

Section 3.15 of Guidelines for Preparing a Review of Environmental Factors provides further guidance.

Category of impact	**Significance of impacts**		
	Extent of impact	**Nature of impact**	**Environmentally sensitive features**
Physical and chemical	Low	Construction of approximately 27 km of new walking tracks, including minor upgrades to existing tracks. This would comprise approximately 5 km of elevated structures, 16 km of rock paving and 6 km of gravel/natural surface tracks. Construction corridor widths would vary from 3500 mm for formed paths and 2800 mm for elevated structures. Permanent vegetation removal would occur over widths varying from 500 mm to 800 mm. A pedestrian bridge would be constructed to span Spencers Creek. It is intended to secure piers by screwing or bolting to rock to avoid the construction of concrete piers. Although the consequences of a fuel or chemical spill on sensitive alpine environment would be high, heavy machinery would not be used on site and no chemicals or fuel would be stored on site. Therefore the likelihood of a spill or any pollution event occurring is very low.	Minimise physical impacts on threatened species/communities by: • Minimise ground disturbance and vegetation removal. • Footings for any elevated structures will use low impact installation techniques • Construction work will be undertaken using low-impact techniques (e.g. small machinery) or by hand. • Equipment and materials will be airlifted to the site and will be stored on hard surfaces or on gluts/bearers for no more than 7 days. • Any vehicles will be required to use existing tracks and trails. • Trampling will be minimised by shifting any camps/tents at least every 7 days and by varying routes taken to the work site. • Implement sedimentation and erosion control measures. Minimise potential chemical impacts on local waterways and threatened communities by: • Store all hazardous chemicals offsite such as fuel, or herbicide. • If onsite storage is required chemicals should be stored in appropriate bunding/storage systems away from waterways and only for short periods.

Category of impact	Significance of impacts		
	Extent of impact	**Nature of impact**	**Environmentally sensitive features**
			• Petrol will only be used in the vehicles onsite. Petrol will not need to be stored in a separate container onsite. • Ensure appropriate spill kits, are present onsite, and that personnel are trained to use them. • Ensure all equipment and machinery is in good working order in order to reduce emissions and avoid repair works. • Contractor to develop strategies to ensure that no fuel, oil or other pollutants enter the ecosystem around the site. • Contractor to develop refuelling procedures to ensure that, even if a spill occurs, it is impossible for contaminants to enter a waterway or sensitive areas. • Toilet must be installed and secured to the ground in a manner that is impossible for even the strongest winds to cause a spill of pollution. • No galvanised or zinc products or coatings to be used. • Use of exhaust emitting machinery on site will be minimised. • Contractor to establish bunding areas for any machinery kept on site.
Biological	Low-medium	Assessments against the Significant Impact Criteria (CoA 2013) and Tests of Significance (under s.7.3 of the BC Act) have been undertaken for threatened species/communities recorded from or likely to occur within the study area. These assessments indicate that a significant effect is not likely to result from the	The proposal has aimed to minimise the physical impacts on environmentally sensitive features by: • Micro-siting and/or the use of elevated platforms to avoid threatened species/ communities.

Category of impact	Significance of impacts		
	Extent of impact	**Nature of impact**	**Environmentally sensitive features**
		proposal provided impact avoidance and minimisation strategies are implemented at the detailed design stage and mitigation measures are adhered to.	• Ground disturbance and vegetation removal will be minimised. • Vegetation removed can be salvaged and reinstated in situ to cover track edges and bare ground. • Construction work will be undertaken using low-impact techniques (e.g. small machinery) or by hand. • Equipment and materials will be airlifted to the site and will be stored on hard surfaces or on gluts/bearers for no more than 7 days. • Any vehicles will be required to use existing tracks and trails. • Trampling will be minimised by shifting any camps/tents at least every 7 days and by varying routes taken to the work site. • Best practice materials and equipment hygiene methods will be implemented to prevent the introduction of weeds and pathogens. • Any changes to natural surfaces and drainage patterns will be minimised as far as practicable. • All trail edges and works areas will be rehabilitated to a high standard in accordance with DECC (2007) and McPhee (2013). • Ongoing post-construction impacts of feral predators, weeds and diseases will be monitored and controlled through a project-specific program.
Natural resources	Not applicable	Not applicable	Not applicable

Category of impact	Significance of impacts		
	Extent of impact	**Nature of impact**	**Environmentally sensitive features**
Community	Low	Construction disturbance would be temporary and a number of safety measures would be put in place to reduce the risk of negative interactions between walkers and construction activities. An appropriate setback has been applied in separating existing cross-country ski trails from the Snowies Iconic Walk. Post-construction, visitors and tourists will benefit from increased accessibility to a remote alpine environment, increased opportunities for accommodation and camping during the 4-day walk and upgraded parking facilities near the Porcupine Rocks trailhead.	• Vehicles will be restricted to a very low speed (<20 km/hr when in areas not open to the public and 5 km/hr when within 10 m of a member of the public). • Appropriate controls must be in place where the flight path crosses public tracks and trails and to take reasonable care to ensure that no people are below the flight path while sling load operations are being conducted. • The Contractor must develop a plan for flight paths to ensure that no flying occurs over members of the public while the sling is attached. • Warning signs need to be developed under the Safe Work Plan and installed by the Contractor.
Cultural heritage	Low	An ACHA has been completed. The study area has a low likelihood to contain Aboriginal objects and/or places. One area of sensitivity will require consideration.	Appropriate permits will be obtained for working in areas of sensitivity. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the DPIE and Aboriginal stakeholders.

13 Conclusions

In conclusion indicate if:

- there is likely to be a significant effect on the environment and an environmental impact statement is required

  ☒ No

  ☐ Yes

  Reason(s):

  A significant effect on the environment is considered unlikely if all impact avoidance and minimisation measures are implemented and strictly adhered to. Therefore an environmental impact statement is not required.

- there is likely to be a significant effect on threatened species, populations, ecological communities or their habitats and a species impact statement is required

  ☒ No

  ☐ Yes

  Reason(s):

  As the BC Act Tests of Significance indicates that a significant effect is not likely to result from the project, a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR) is not considered necessary.

- the activity is in respect of land that is, or is part of, critical habitat and a species impact statement is required

  ☒ No

  ☐ Yes

- the activity is likely to significantly impact matters of national environmental significance listed under the Commonwealth Environment Protection and Biodiversity Conservation Act

  ☒ No

  ☐ Yes

  Reason(s):

  A significant impact on a Matter of National Environmental Significance listed under the EPBC Act is considered unlikely if all impact avoidance and minimisation measures are implemented and strictly adhered to. However, as indicated in EPBC Act policy guidelines (CoA 2013) a referral under provisions of the Act can be made to provide legal certainty to the project. It is our understanding that NPWS are intending to lodge a referral with the Department of Environment and Energy in the near future.

- the activity will require certification to the Building Code of Australia, Disability (Access to Premises – Buildings) Standards 2010 or Australian Standards in accordance with the OEH Construction Assessment Procedure.

  ☐ No

  ☒ Yes

14 Supporting documentation

Please provide details of documentation included with this application.

Supporting information may include, but is not limited to: a Sustainability Assessment (for proposals requiring a lease of licence under s.151A NPW Act); threatened species assessment of significance (5-part test); LEP land use tables; AHIMS search; engineering plans, maps; specialists studies etc.

Document title	**Author**	**Date**
REF supporting maps **(at end of REF document)**: • Figure 1 – locality plan • Figure 2 – existing conditions and features map sheets • Figure 3 – proposed works including trail surface types map sheets.	Biosis Pty Ltd	July 2019
Summary report of construction process **(ATTACHMENT 1 for download)**.	NPWS	July 2019
Snowies Iconic Walk: Flora and fauna assessment & Test of Significance Report **(ATTACHMENT 2 for download)**	Biosis Pty Ltd	July 2019
Snowy Mountains Iconic Walk Project, Kosciuszko National Park: Aboriginal cultural heritage assessment **(ATTACHED 3.1 for download)**	Feary and Niemoeller	2017
Snowy Mountains Iconic Walks Project, Kosciuszko National Park: Aboriginal cultural heritage assessment. Addendum June 2019 **(ATTACHED 3.2 for download)**	Feary and Niemoeller	2019
Other documents cited		
Biosis 2017. Snowy Mountains Iconic Walk Environmental Scoping Report. Report for NSW National Parks and Wildlife Service. Authors: Trulock N, Kelly E, Gilmore, D, Clancy, R. Biosis Pty Ltd. Project no. 24791	Biosis Pty Ltd	2017
DECC 2002. Descriptions for NSW (Mitchell) Landscapes: Version 2 (2002). NSW Government Department of Environment and Climate Change, Hurstville.	NSW Government	2002
DECC 2007. Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park. Dept of Environment and Climate Change, NSW.	NSW Government	2007
Good, R. 2006. The Australian Alps Rehabilitation Manual; a guide to	Australian Alps Liaison Committee	2006

ecological restoration in the Australian Alps. Australian Alps Liaison Committee.		
Landcom 2004. Managing Urban Stormwater: Soils and Construction (4th Edition). New South Wales Government.	NSW Government	2004
McPhee, L. 2013. Australian Alps National Parks Rehabilitation Field Guide. Australian Alps Liaison Committee.	Australian Alps Liaison Committee	2013
NPWS 2006. Kosciuszko National Park Plan of Management. Report prepared by NSW National Parks and Wildlife Service, Hurstville.	NSW Government	2006
OEH 2019. Kosciuszko National Park Proposed Amendment to Plan of Management. State of NSW and Office of Environment and Heritage.	NSW Government	2019
OEH 2018. Draft Walking Tracks Strategy Kosciuszko Summit Precinct. State of NSW and Office of Environment and Heritage.	NSW Government	2018
Summit Area Trails Upgrades Plan	Chris Darlington, NPWS	1/01/2016

15 Fees

Proponents are required to pay an initial fee of $170 (a final fee is also required before determination of the REF). If the activity consists of environmental remediation and/or the proponent is a community group, OEH may waive the fees on request.

☐	$170 payment/cheque for initial fee is enclosed
☐	A waiver of fees is requested for the following reasons:

16 Signature of proponent

The REF must be certified by the **proponent** – not the consultant(s) where consultant(s) are used.

Signature		Signature	
Name (printed)	Maggie Sutcliffe	Name (printed)	
Position	Senior Project Officer, NPWS	Position	
Date	26/07/2019	Date	

Seal (if signing under seal):

Next steps — for OEH use

- External proponent REF or major REF
    - Proceed to prepare determination report and determination notice.

- Internal minor REF
    - Proceed to prepare determination notice (no determination report required).

Determination report templates, determination notices and model conditions are available on the Review of Environmental Factors (REF) Guidelines OEH intranet page.

Legend

Study area (final alignments)

IBRA Sub-region

Smiggin Holes

Perisher Valley

Australian Alps
Snowy Mountains

Charlotte Pass

South Eastern
Highlands
Monaro

Australian Alps
Snowy Mountains

Figure 1 Location

0 500 1,000 1,500 2,000 2,500

Metres

Scale: 1:50,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

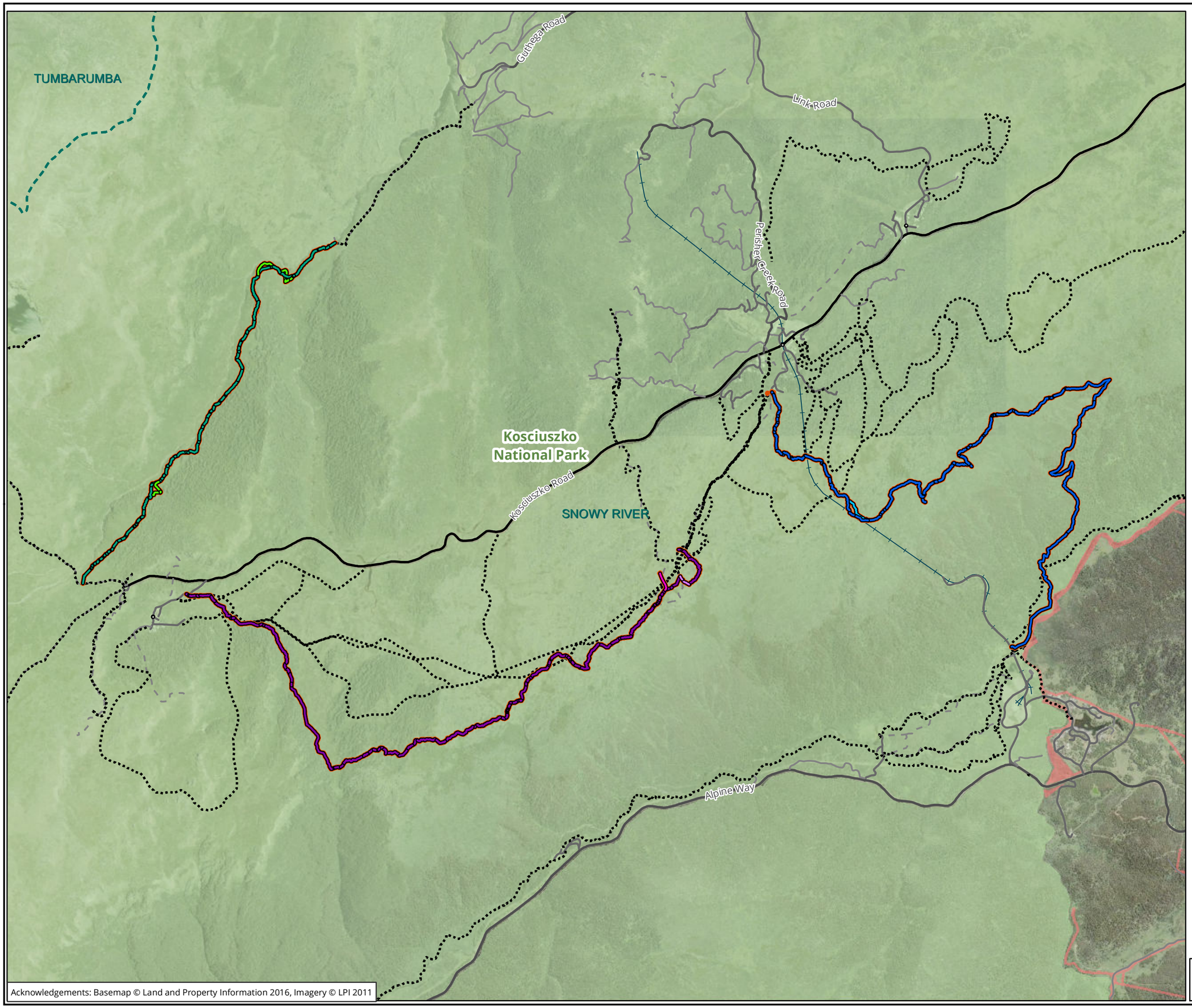
N

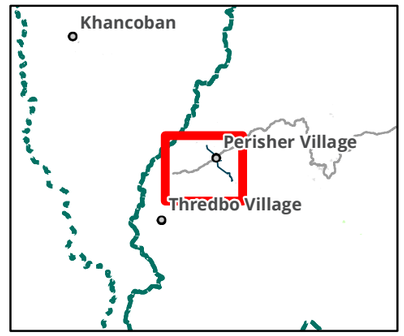
biosis

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 29243
Date: 21 June 2019,
Checked by: MJAL, Drawn by: LH, Last edited by: lharley
Location:P:\29200s\29243\Mapping
29243_REF_F1_Locality





Legend

- Study area
- Crown land
- NPWS Reserve
- Existing walking tracks

LPI Road Segment

- Arterial Road
- Sub Arterial Road
- LocalRoad
- Track-Vehicular
- Path

Final alignments

- Charlotte Pass to Guthega Trail
- Charlotte Pass to Guthega Trail - Possible alignment - requires further assessment
- Charlotte Pass to Perisher Valley (Ramshead Range)
- Charlotte Pass to Perisher Valley (Ramshead Range) - Existing walking trail to be modified
- Charlotte Pass to Perisher Valley (Ramshead Range) - Possible alignment - requires further assessment
- Perisher to Bullocks Flat Trail
- Perisher to Bullocks Flat Trail - Possible alignment - requires further assessment

Figure 2.1 Existing conditions - Roads and trails

0 400 800 1,200 1,600 2,000

Metres

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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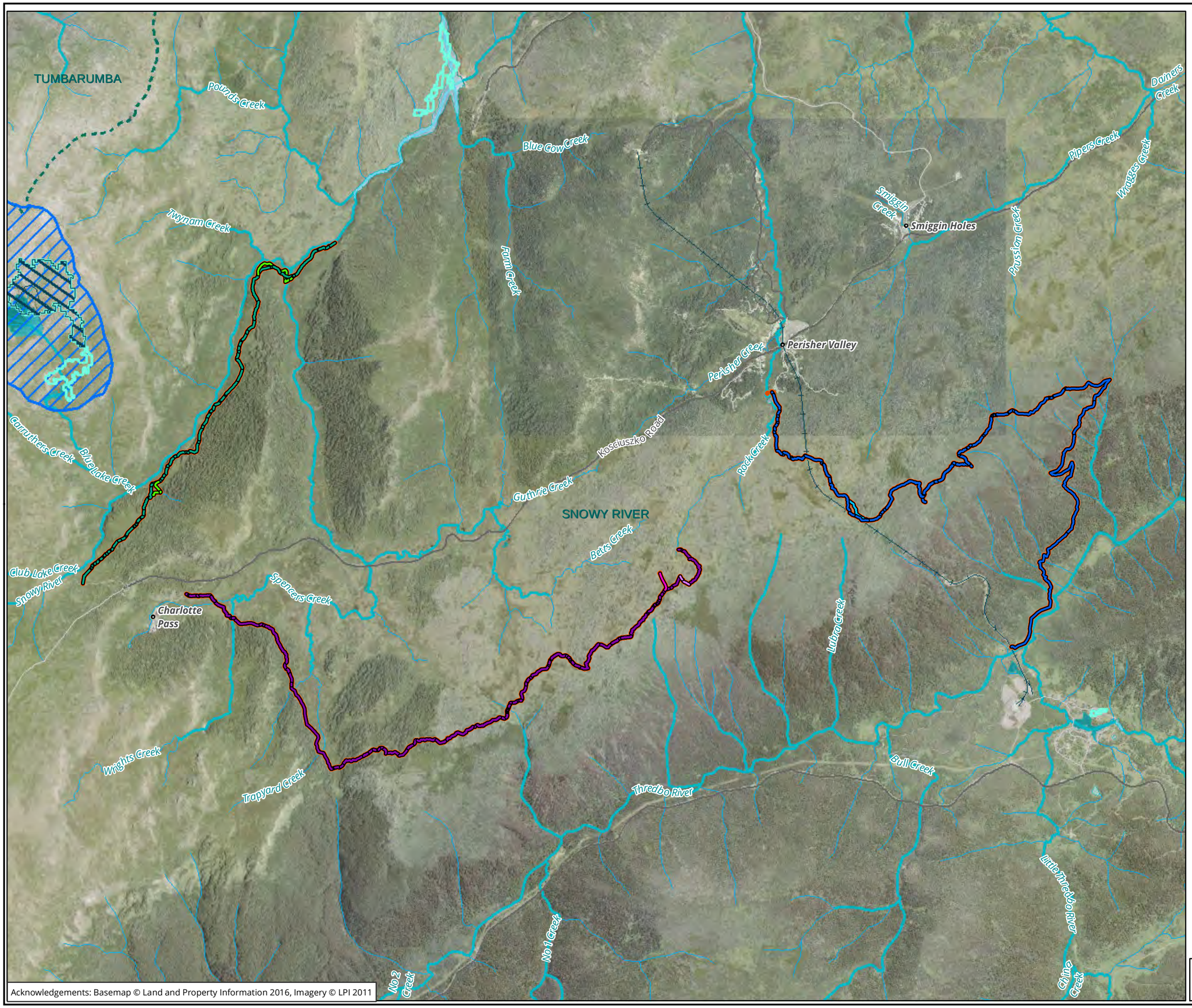

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © LPI 2011

Legend

- Study area
- Ramsar wetland
- Directory of Important Wetlands of Australia (DIWA)
- Local wetlands

HydroArea

- Canal-Drain
- Natural Watercourse

HydroLine

- NonPerennial
- Perennial

Final alignments

- Charlotte Pass to Guthega Trail
- Charlotte Pass to Guthega Trail - Possible alignment - requires further assessment
- Charlotte Pass to Perisher Valley (Ramshead Range)
- Charlotte Pass to Perisher Valley (Ramshead Range) - Existing walking trail to be modified
- Charlotte Pass to Perisher Valley (Ramshead Range) - Possible alignment - requires further assessment
- Perisher to Bullocks Flat Trail
- Perisher to Bullocks Flat Trail - Possible alignment - requires further assessment

Figure 2.2 Existing conditions - Hydrology

0 400 800 1,200 1,600 2,000

Metres

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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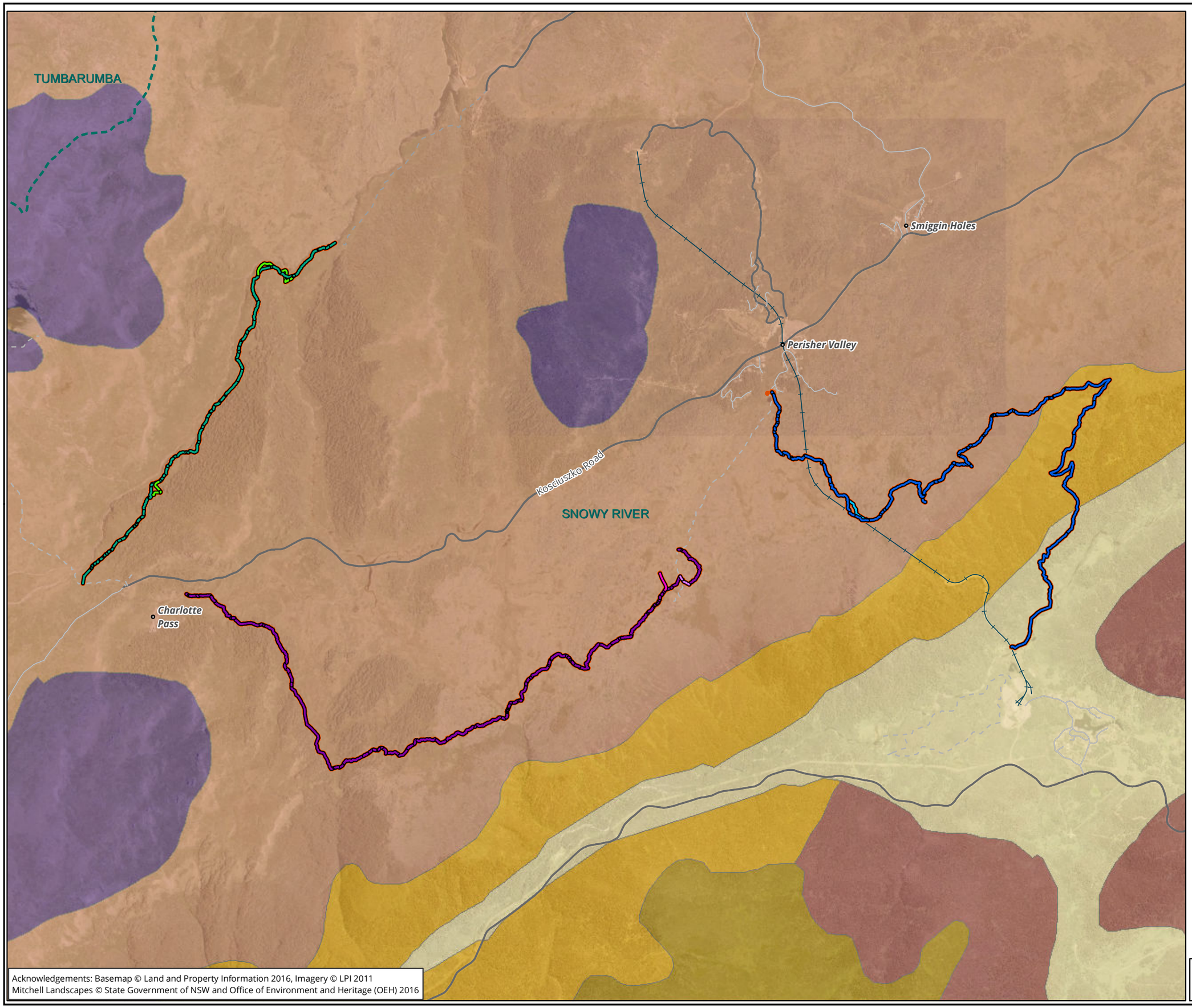

Legend

- Study area

Mitchell Landscapes v3.1

- Alpine Zone
- Chimneys Ridge Montane
- Chimneys Ridge Sub-alpine
- Jindabyne Plains
- Main Range Montane
- Main Range Sub-alpine

Final alignments

- Charlotte Pass to Guthega Trail
- Charlotte Pass to Guthega Trail - Possible alignment - requires further assessment
- Charlotte Pass to Perisher Valley (Ramshead Range)
- Charlotte Pass to Perisher Valley (Ramshead Range) - Existing walking trail to be modified
- Charlotte Pass to Perisher Valley (Ramshead Range) - Possible alignment - requires further assessment
- Perisher to Bullocks Flat Trail
- Perisher to Bullocks Flat Trail - Possible alignment - requires further assessment

Figure 2.3 Existing conditions - Mitchell Landscapes

0 400 800 1,200 1,600 2,000

Metres

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Date: 21 June 2019,
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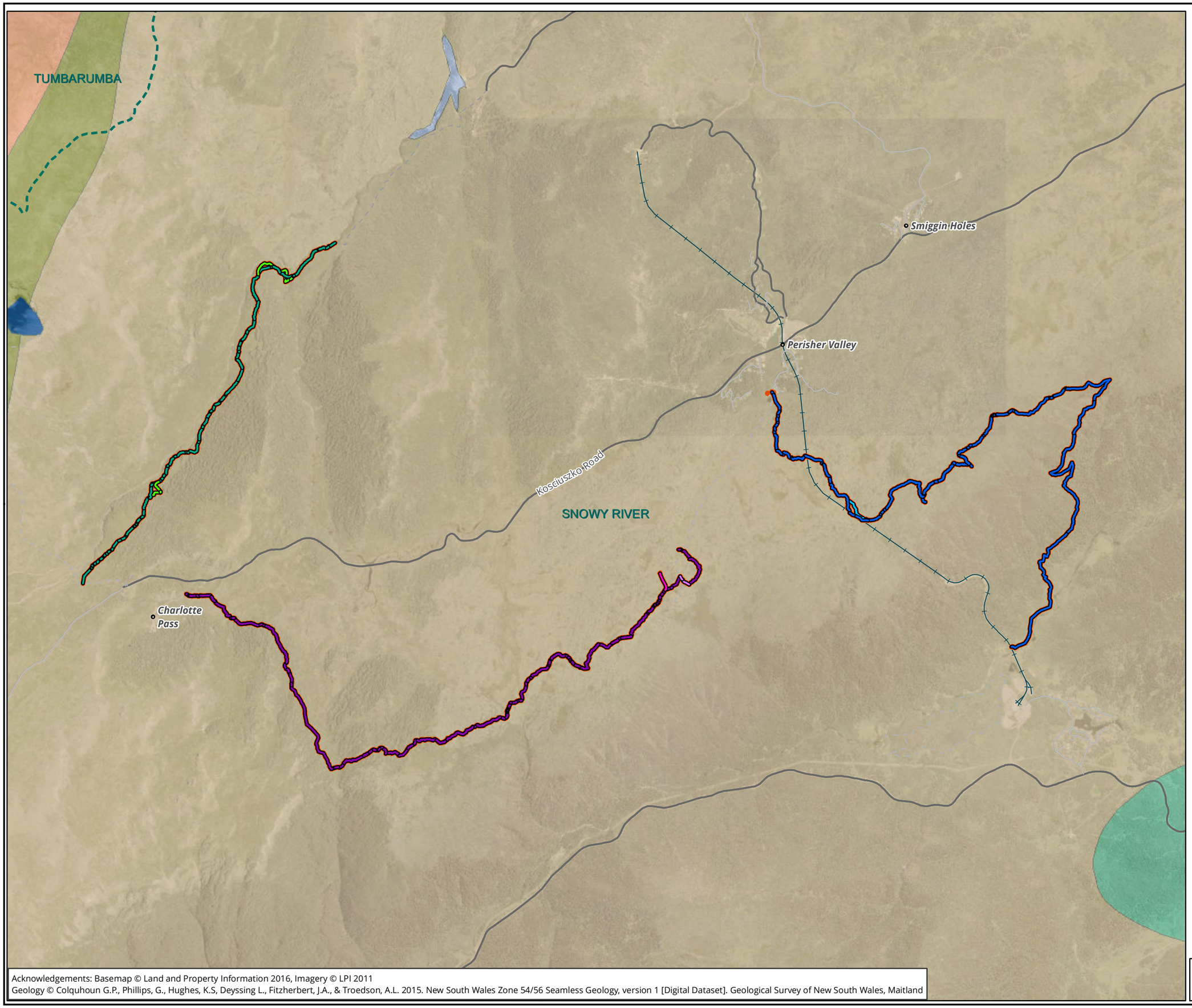

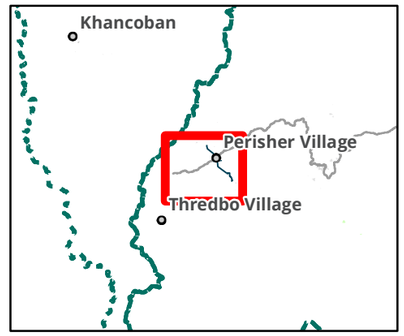

Legend

Study area

Geological units

- Adaminaby Group
- Anthropogenic stored water, pondage, reservoirs, canals
- Etheridge Monzogranite
- Lake deposits (aqueous)
- Mowambah Granodiorite
- Pendergast Tonalite

Final alignments

- Charlotte Pass to Guthega Trail
- Charlotte Pass to Guthega Trail - Possible alignment - requires further assessment
- Charlotte Pass to Perisher Valley (Ramshead Range)
- Charlotte Pass to Perisher Valley (Ramshead Range) - Existing walking trail to be modified
- Charlotte Pass to Perisher Valley (Ramshead Range) - Possible alignment - requires further assessment
- Perisher to Bullocks Flat Trail
- Perisher to Bullocks Flat Trail - Possible alignment - requires further assessment

Figure 2.4 Existing conditions - Geology

0 400 800 1,200 1,600 2,000

Metres

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Geology © Colquhoun G.P., Phillips, G., Hughes, K.S, Deyssing L., Fitzherbert, J.A., & Troedson, A.L. 2015. New South Wales Zone 54/56 Seamless Geology, version 1 [Digital Dataset]. Geological Survey of New South Wales, Maitland

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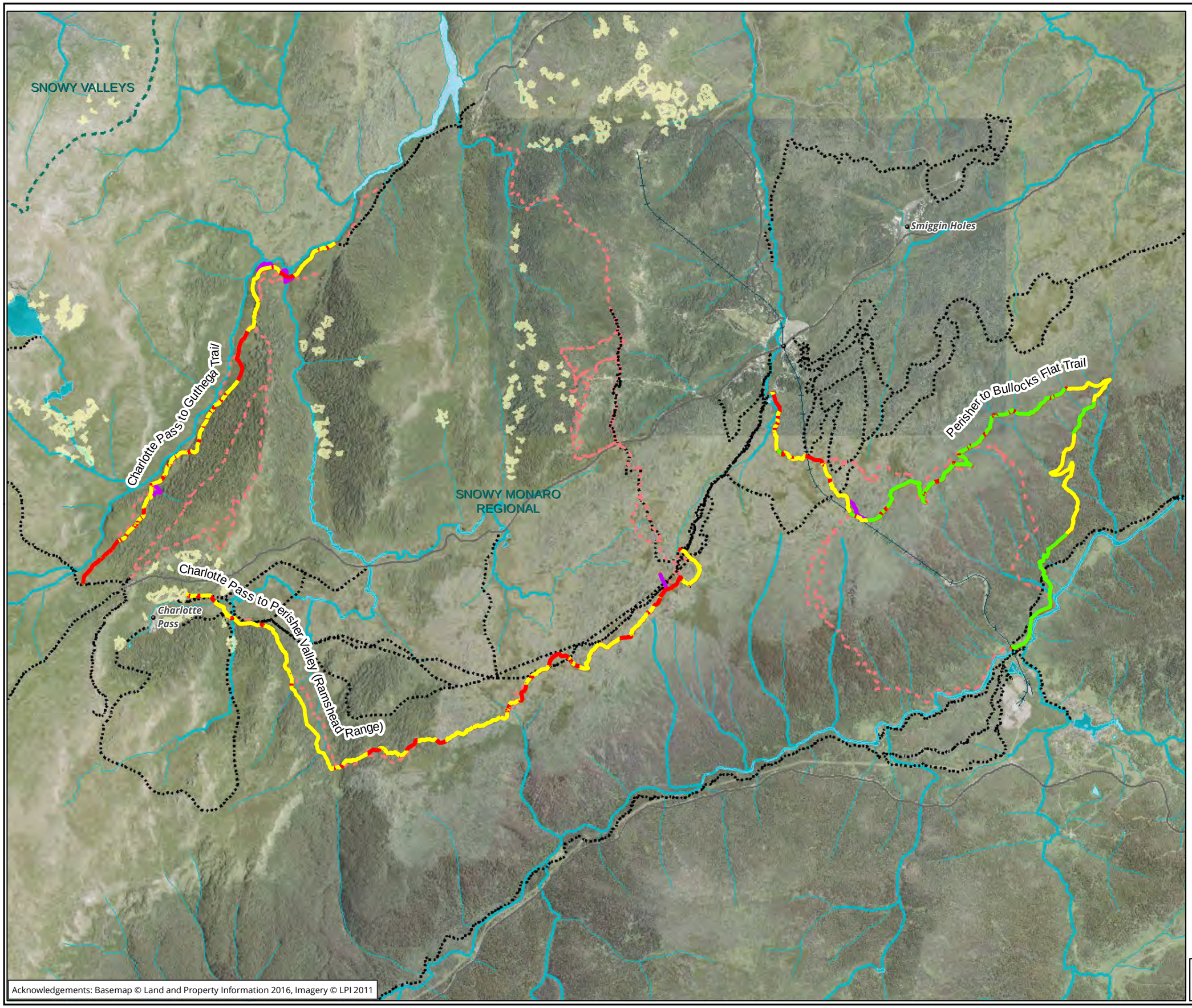

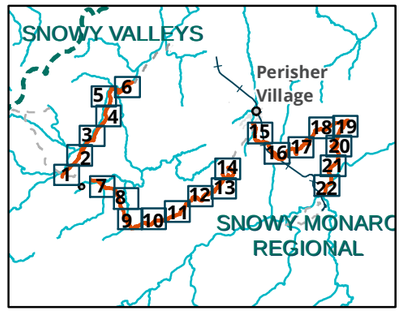

Legend

- Study area
- Existing walking tracks
- Previous alignments
- Boulderfields 2014

Final alignments - construction type

- Elevated structure
- Natural surface
- Rock paving/ Pitched rock
- To be determined

Figure 3 Proposed works

0 400 800 1,200 1,600 2,000

Metres

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.1 Proposed works - Charlotte Pass to Guthega Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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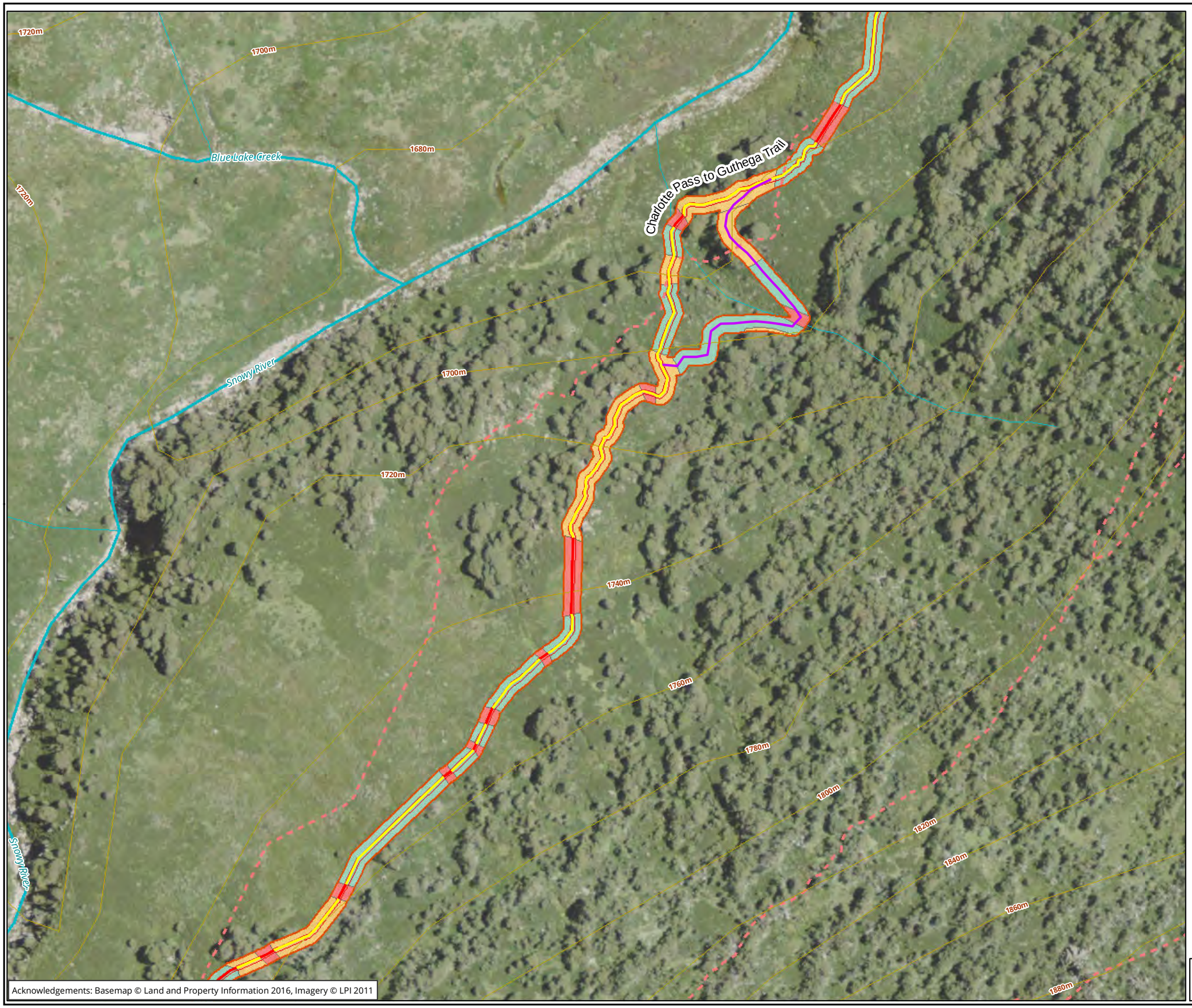

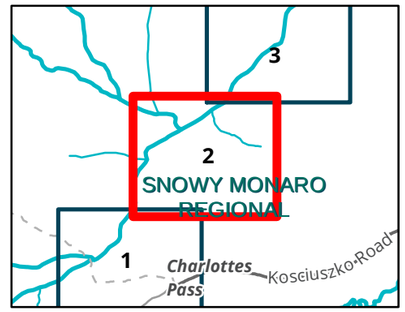

Legend

- Study area
- Subject site
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock
- To be determined

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.2 Proposed works - Charlotte Pass to Guthega Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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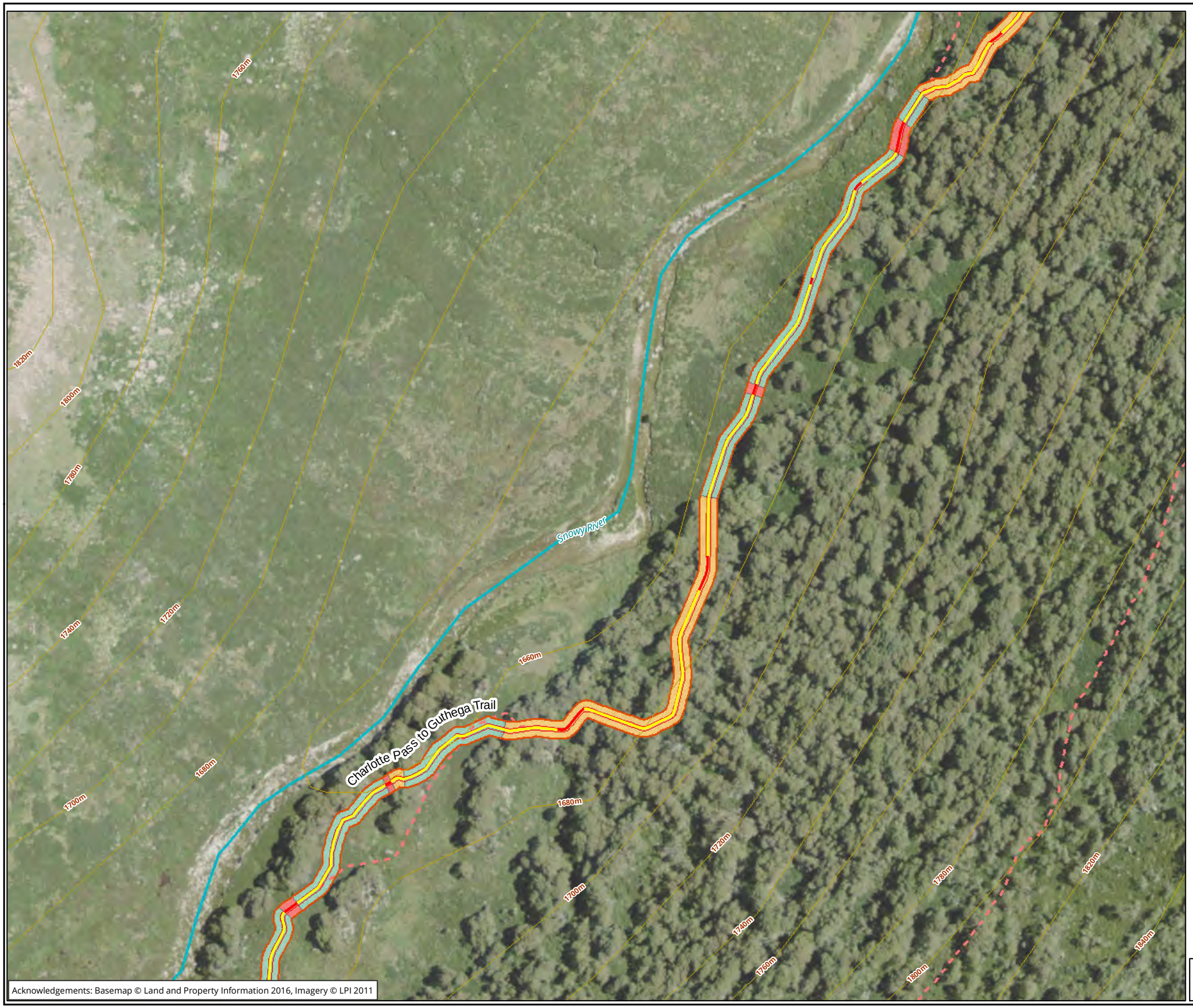

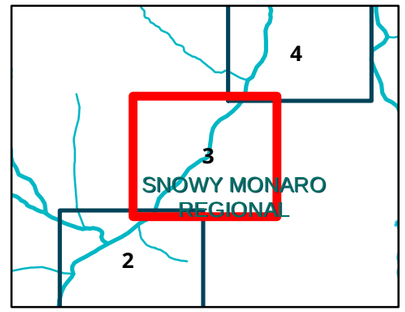

Legend

- Study area
- Subject site
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.3 Proposed works - Charlotte Pass to Guthega Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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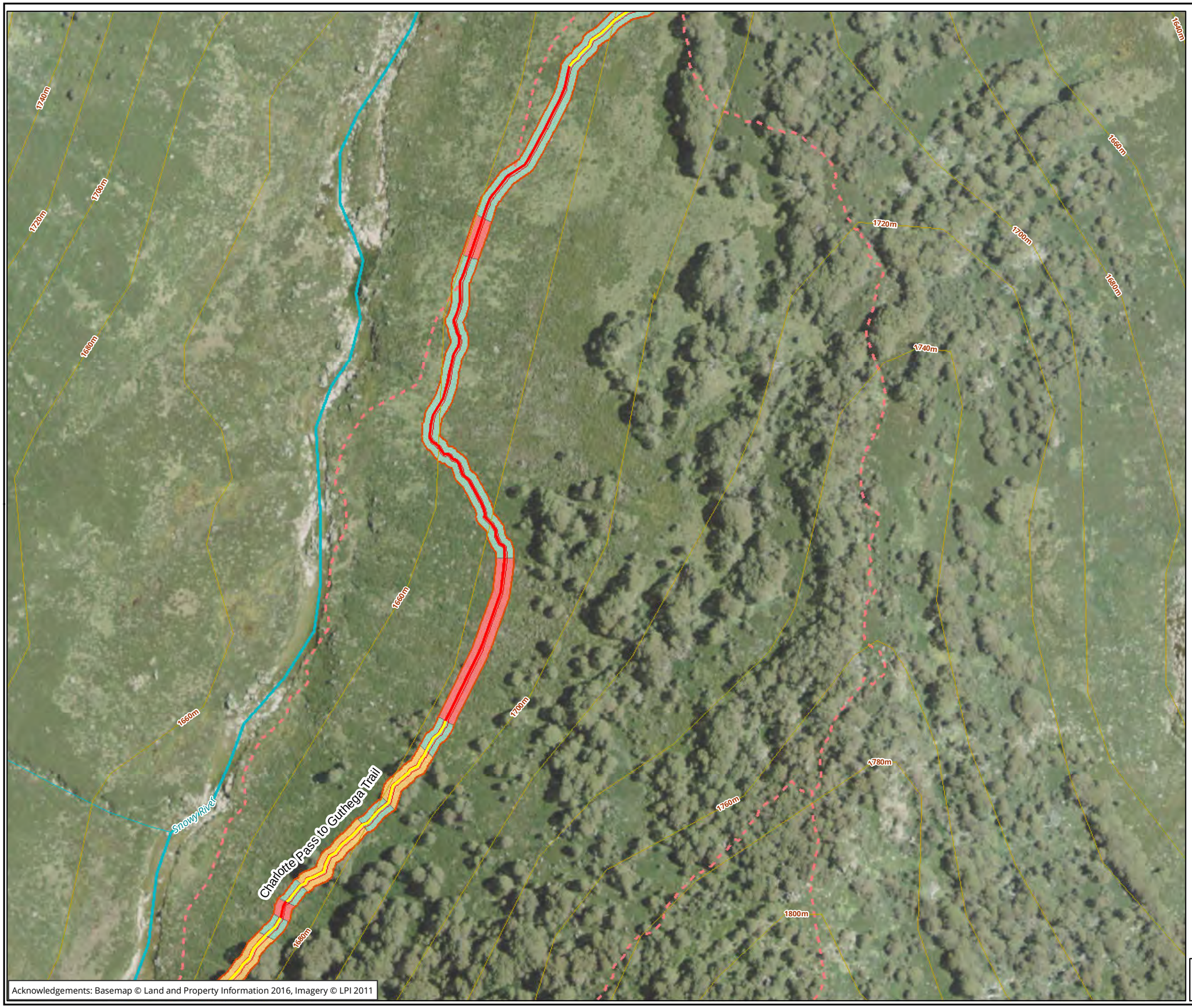

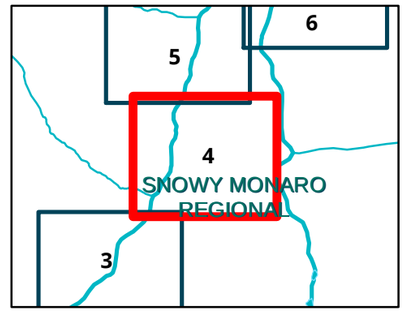

Legend

- Study area
- Subject site
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.4 Proposed works - Charlotte Pass to Guthega Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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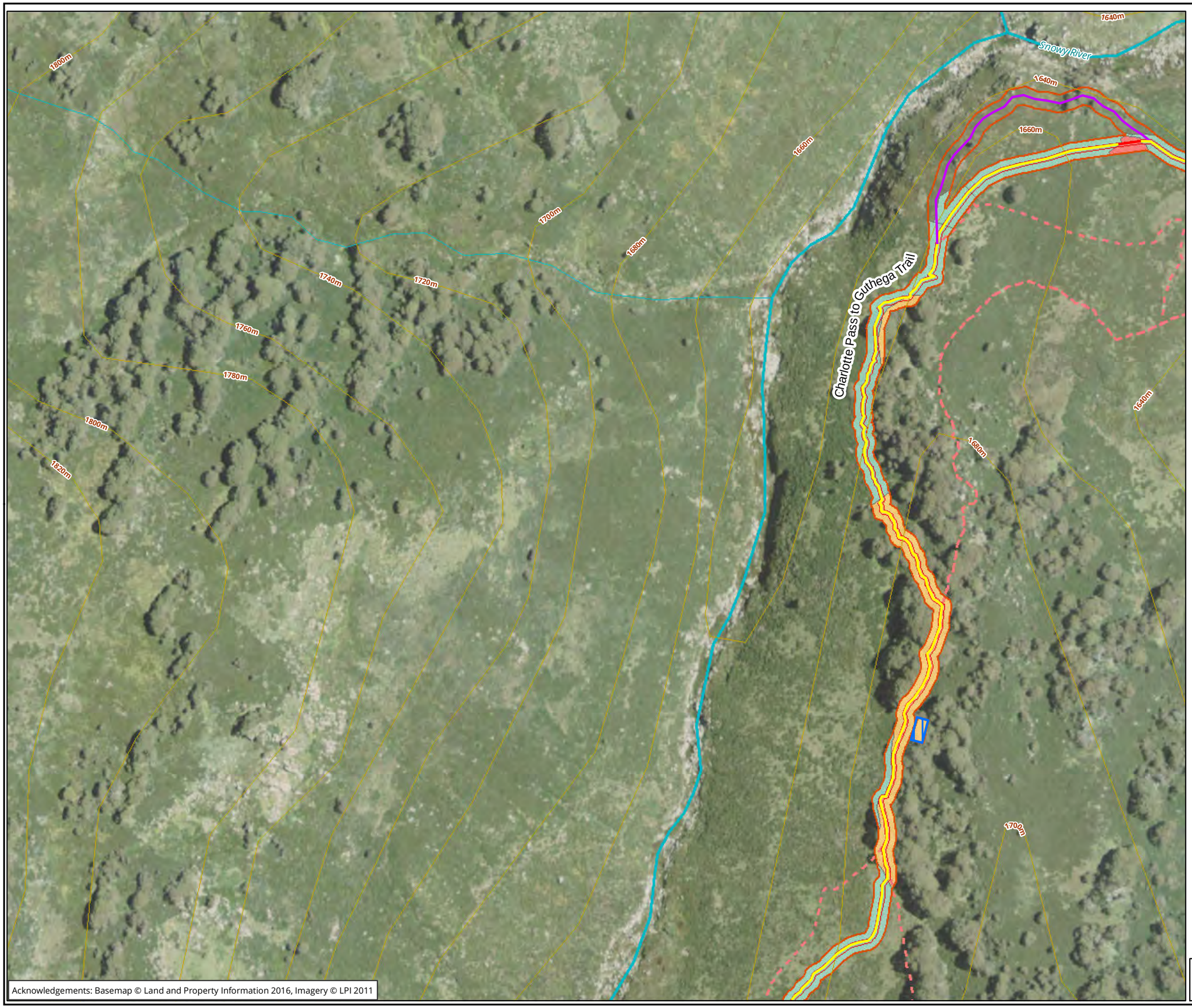

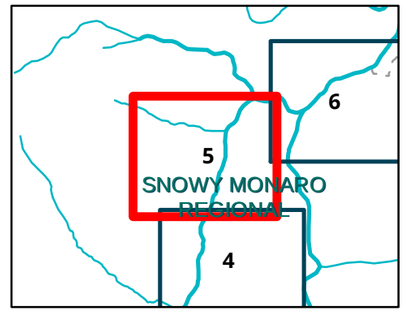

Legend

- Study area
- Subject site
- Proposed camp site
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock
- To be determined

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.5 Proposed works - Charlotte Pass to Guthega Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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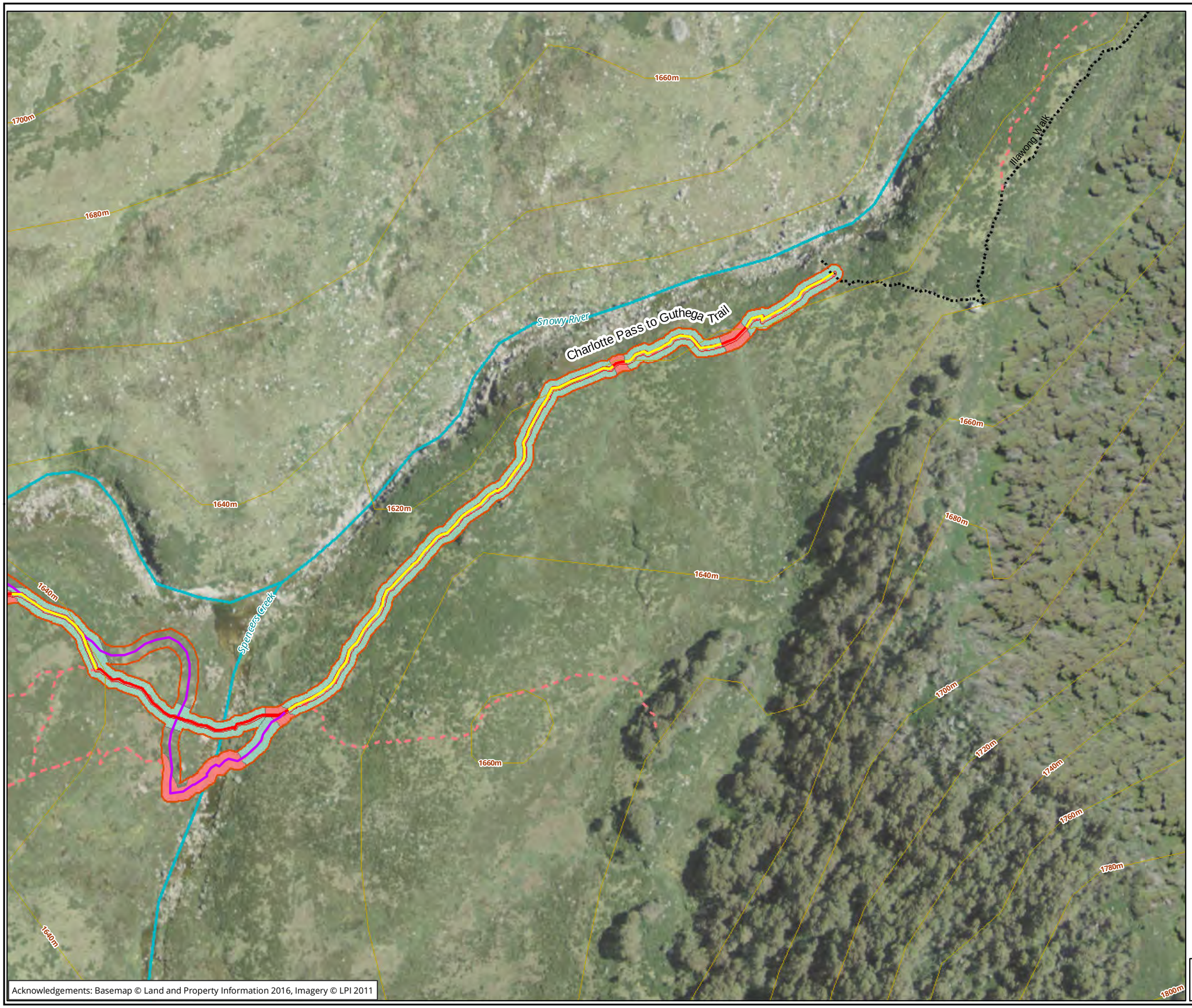

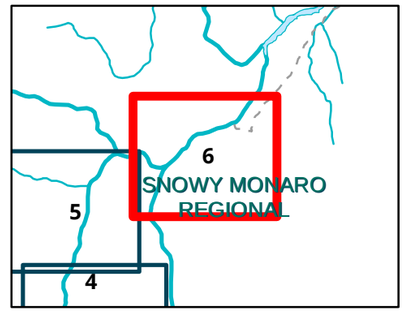

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock
- To be determined

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion

Figure 3.6 Proposed works - Charlotte Pass to Guthega Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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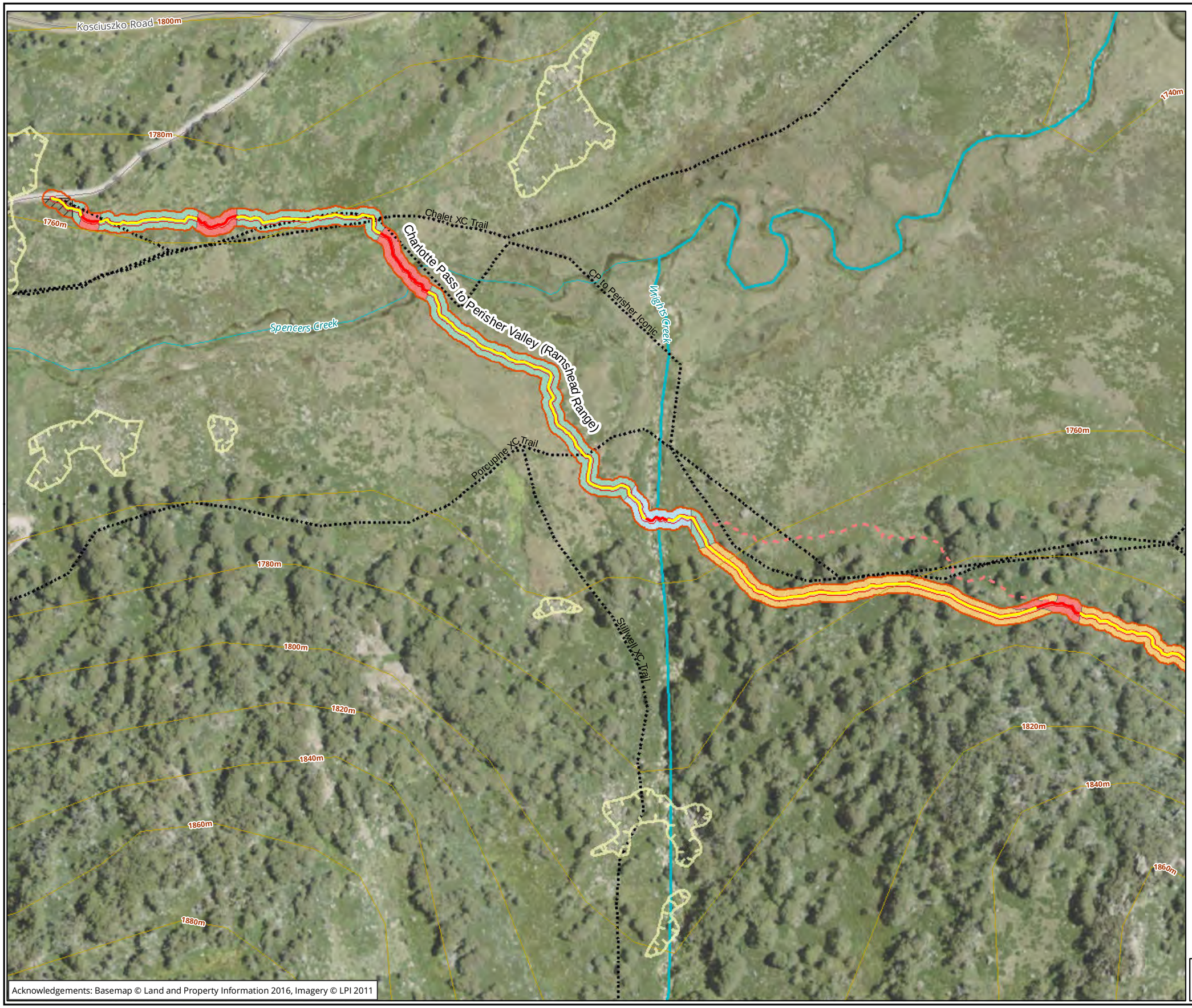

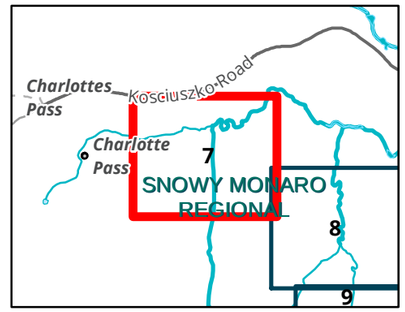

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour
- Boulderfields 2014

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- 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 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion
- Non-native vegetation / disturbed area

Figure 3.7 Proposed works - Charlotte Pass to Perisher Valley (Ramshead Range)

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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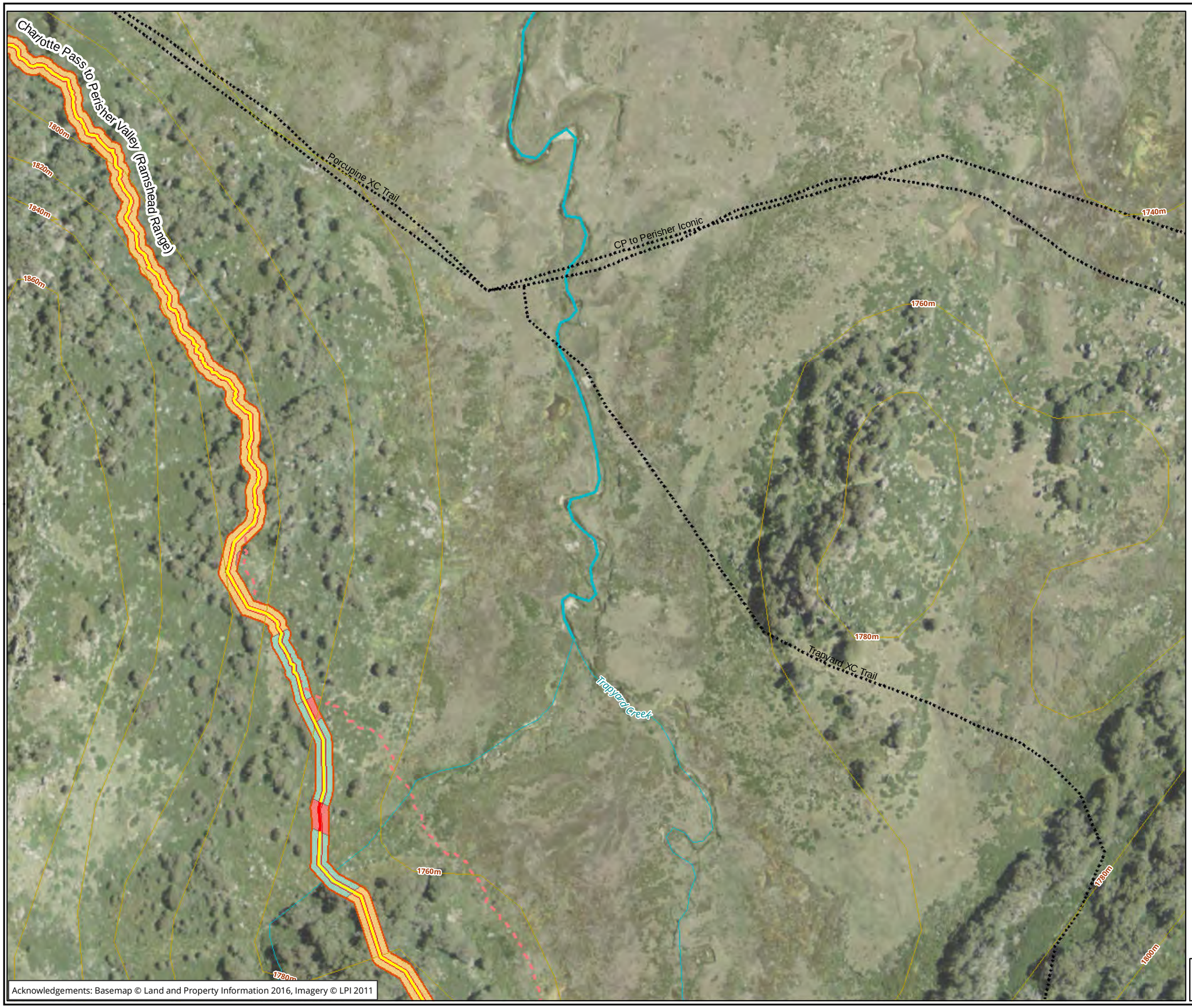

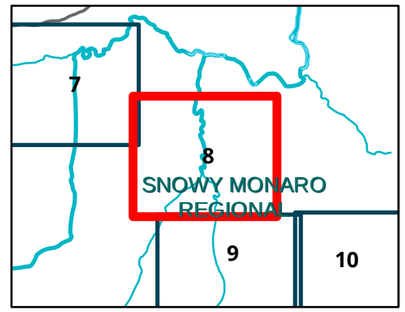

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.8 Proposed works - Charlotte Pass to Perisher Valley (Ramshead Range)

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

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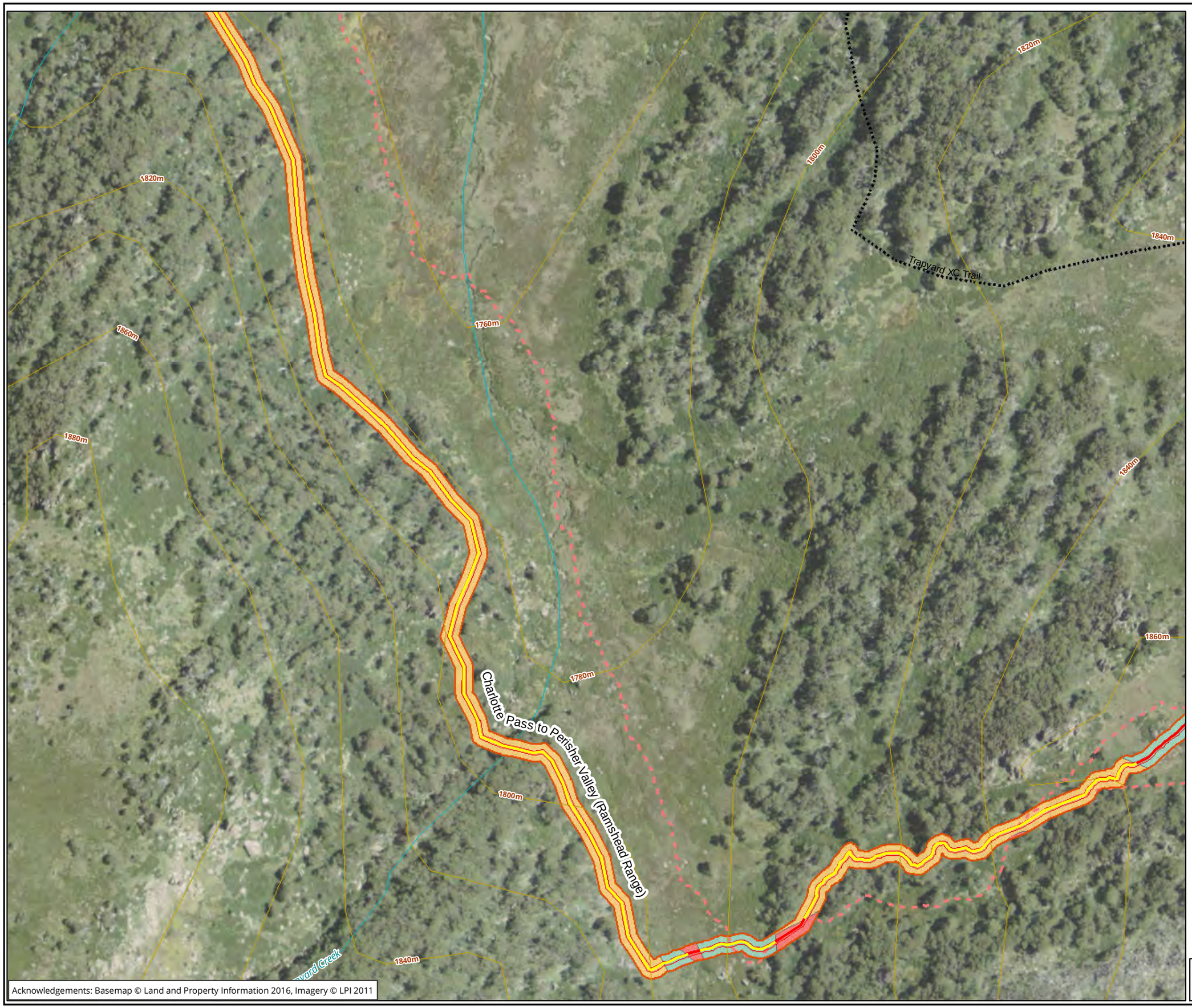

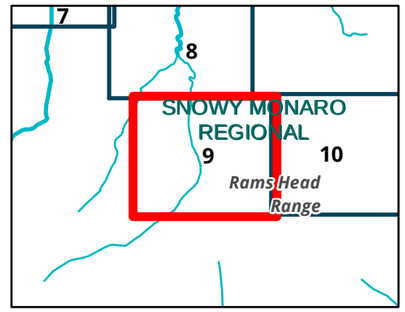

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.9 Proposed works - Charlotte Pass to Perisher Valley (Ramshead Range)

0 30 60 90 120 150

Metres
Scale: 1:3,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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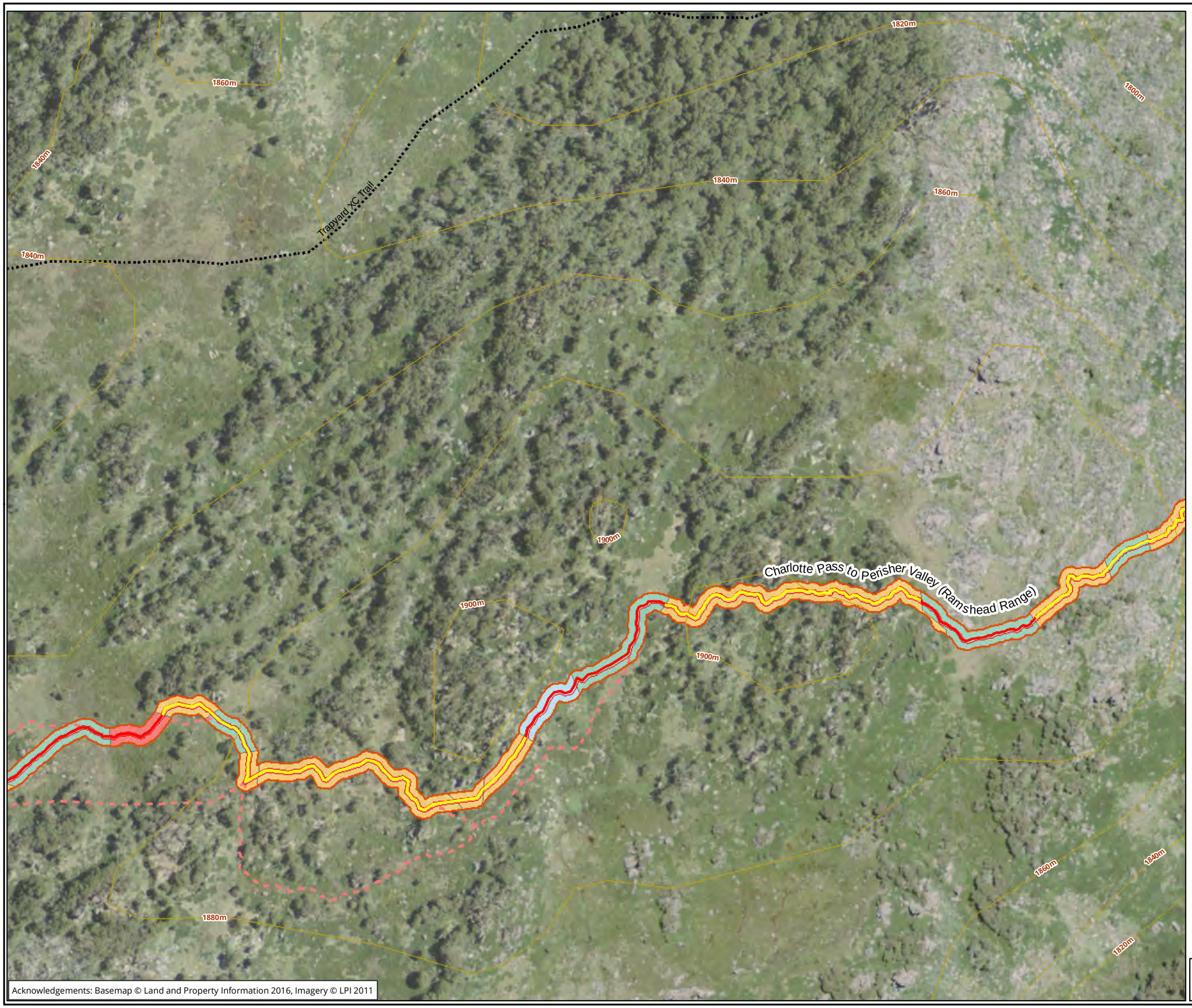

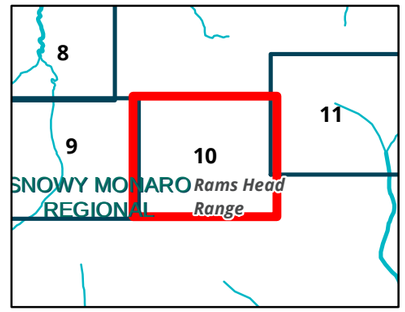

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- 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 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.10 Proposed works - Charlotte Pass to Perisher Valley (Ramshead Range)

0 30 60 90 120 150

Metres
Scale: 1:3,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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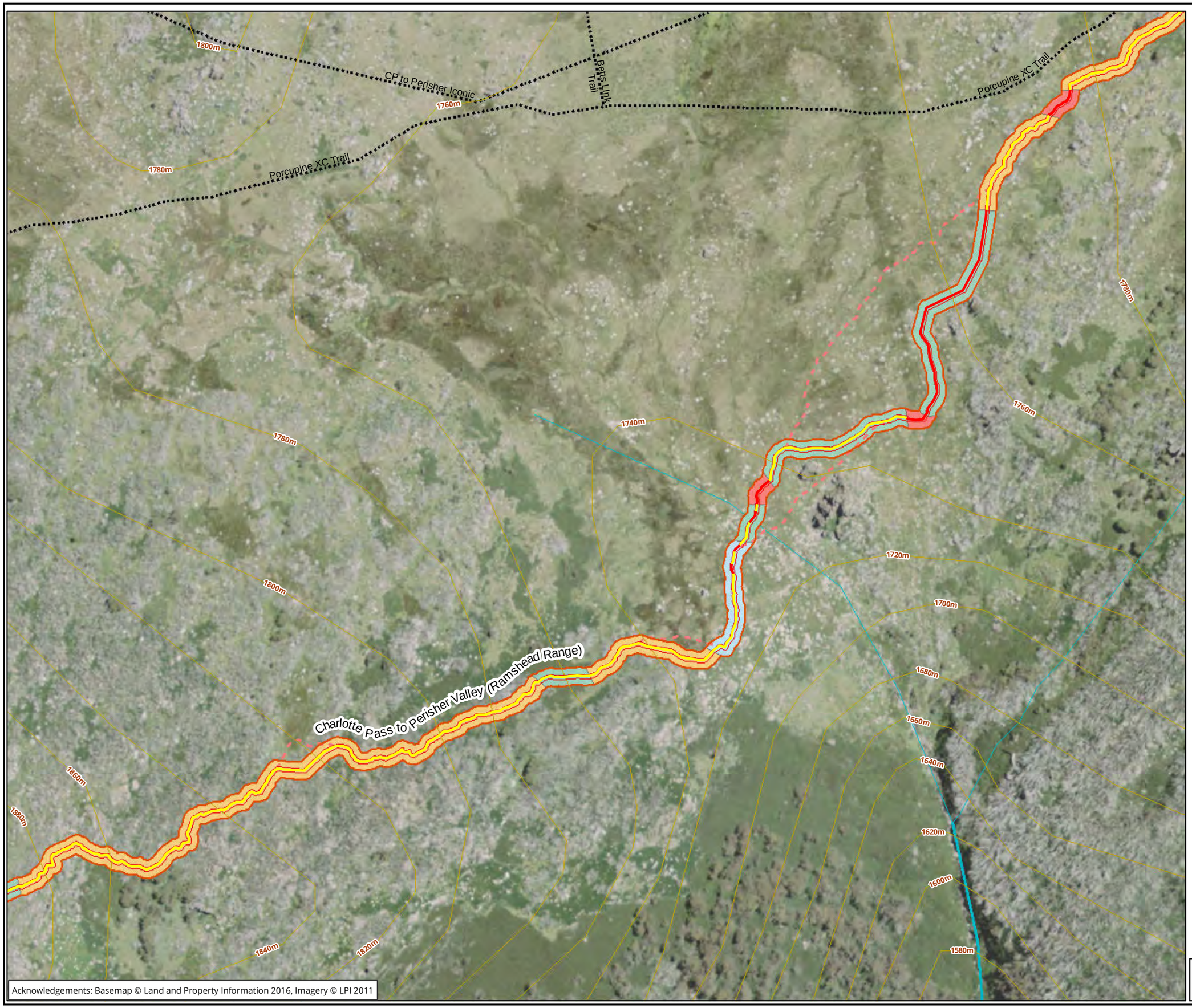

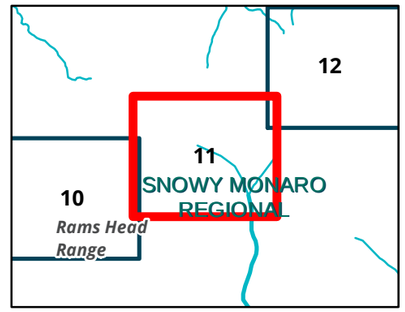

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- 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 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.11 Proposed works - Charlotte Pass to Perisher Valley (Ramshead Range)

0 30 60 90 120 150

Metres
Scale: 1:3,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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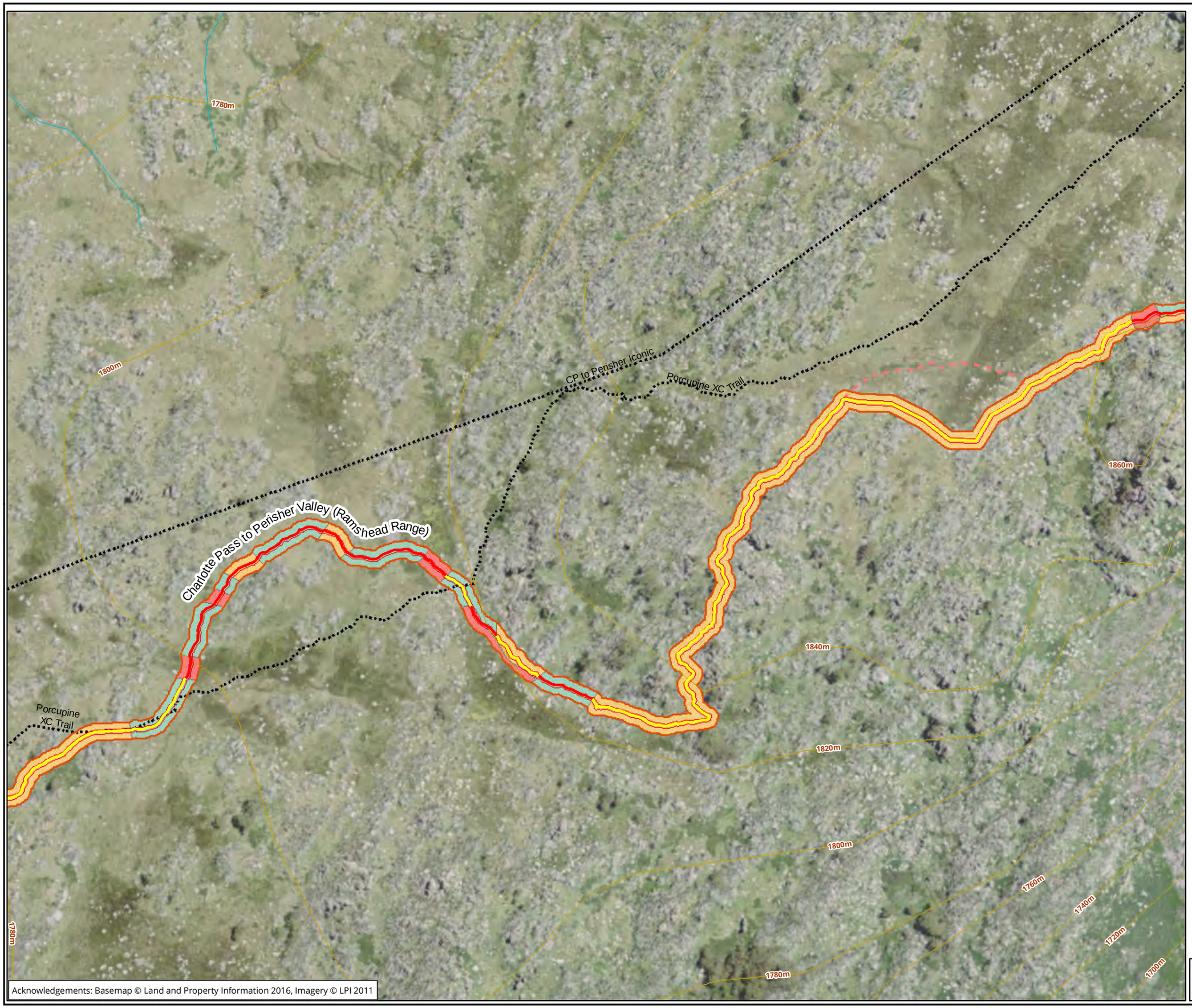

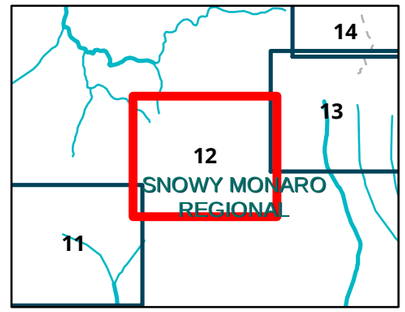

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.12 Proposed works - Charlotte Pass to Perisher Valley (Ramshead Range)

0 30 60 90 120 150

Metres
Scale: 1:3,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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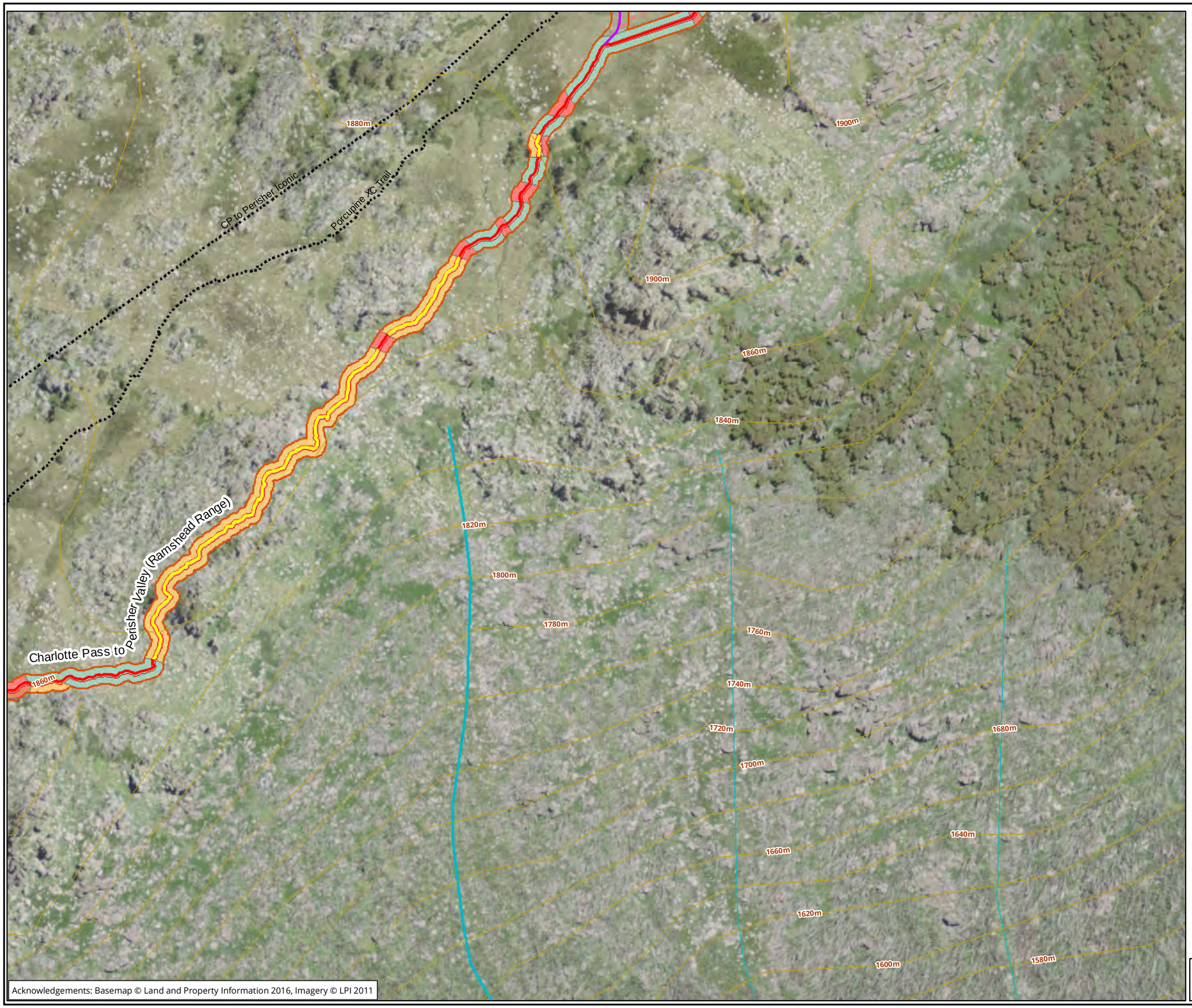

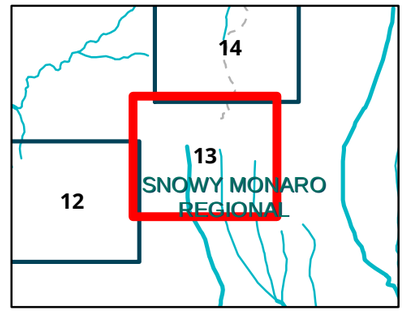

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock
- To be determined

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.13 Proposed works - Charlotte Pass to Perisher Valley (Ramshead Range)

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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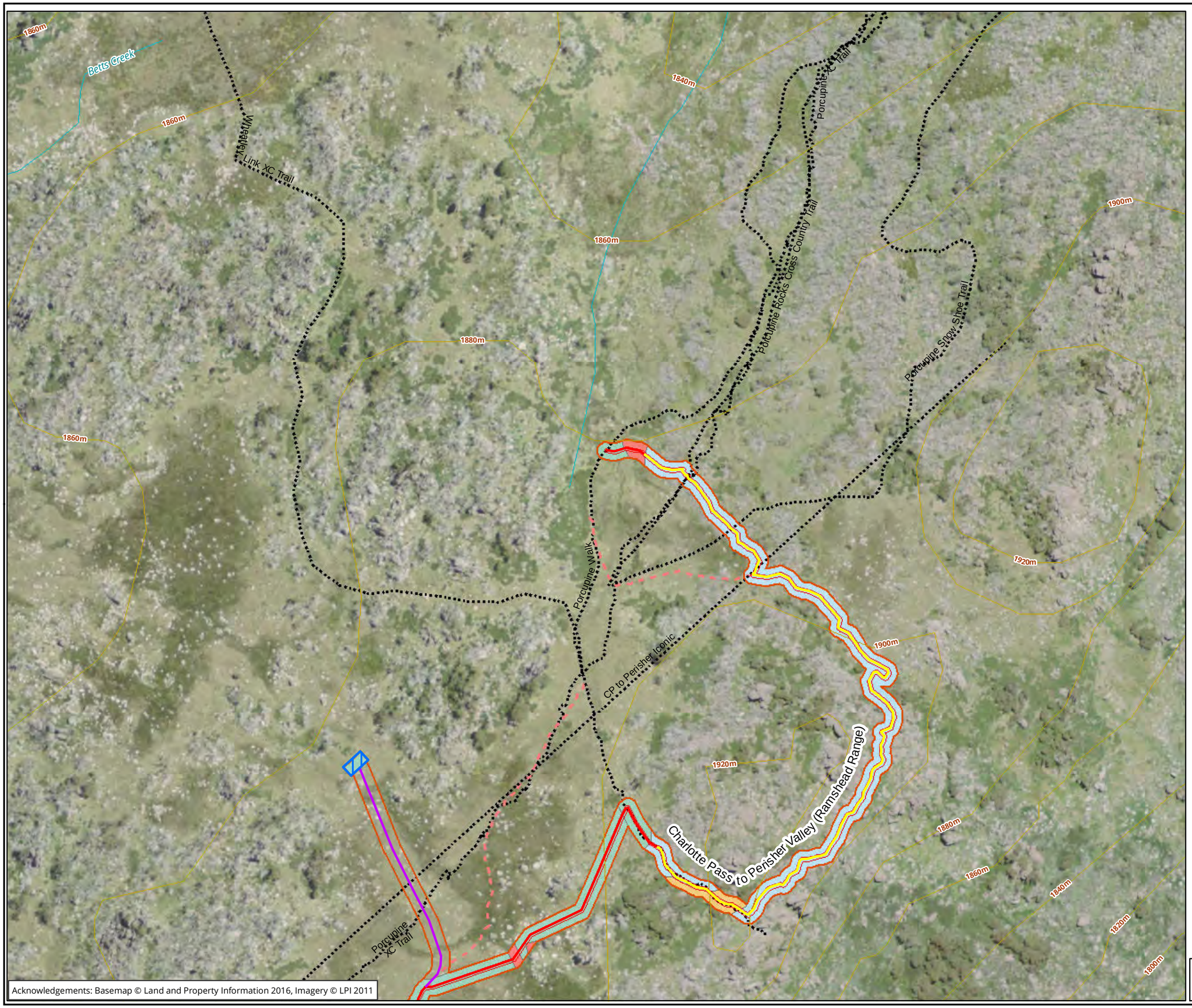

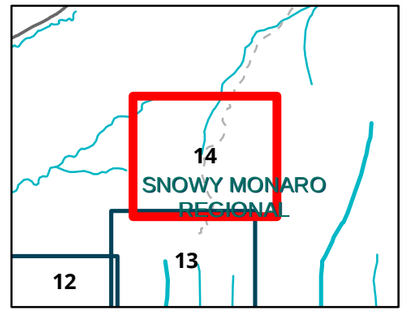

Legend

- Study area
- Subject site
- Proposed camp site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Rock paving/ Pitched rock
- To be determined

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- 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 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.14 Proposed works - Charlotte Pass to Perisher Valley (Ramshead Range)

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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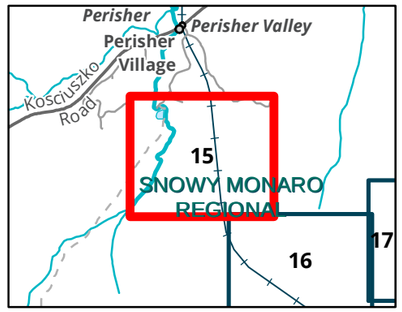

Legend

- Study area
- Subject site
- Proposed carpark extension
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Natural surface
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 641 Alpine grassland/herbfield and open heathlands in Kosciuszko National Park, Australian Alps Bioregion
- PCT 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion
- Non-native vegetation / disturbed area

Figure 3.15 Proposed works - Perisher to Bullocks Flat Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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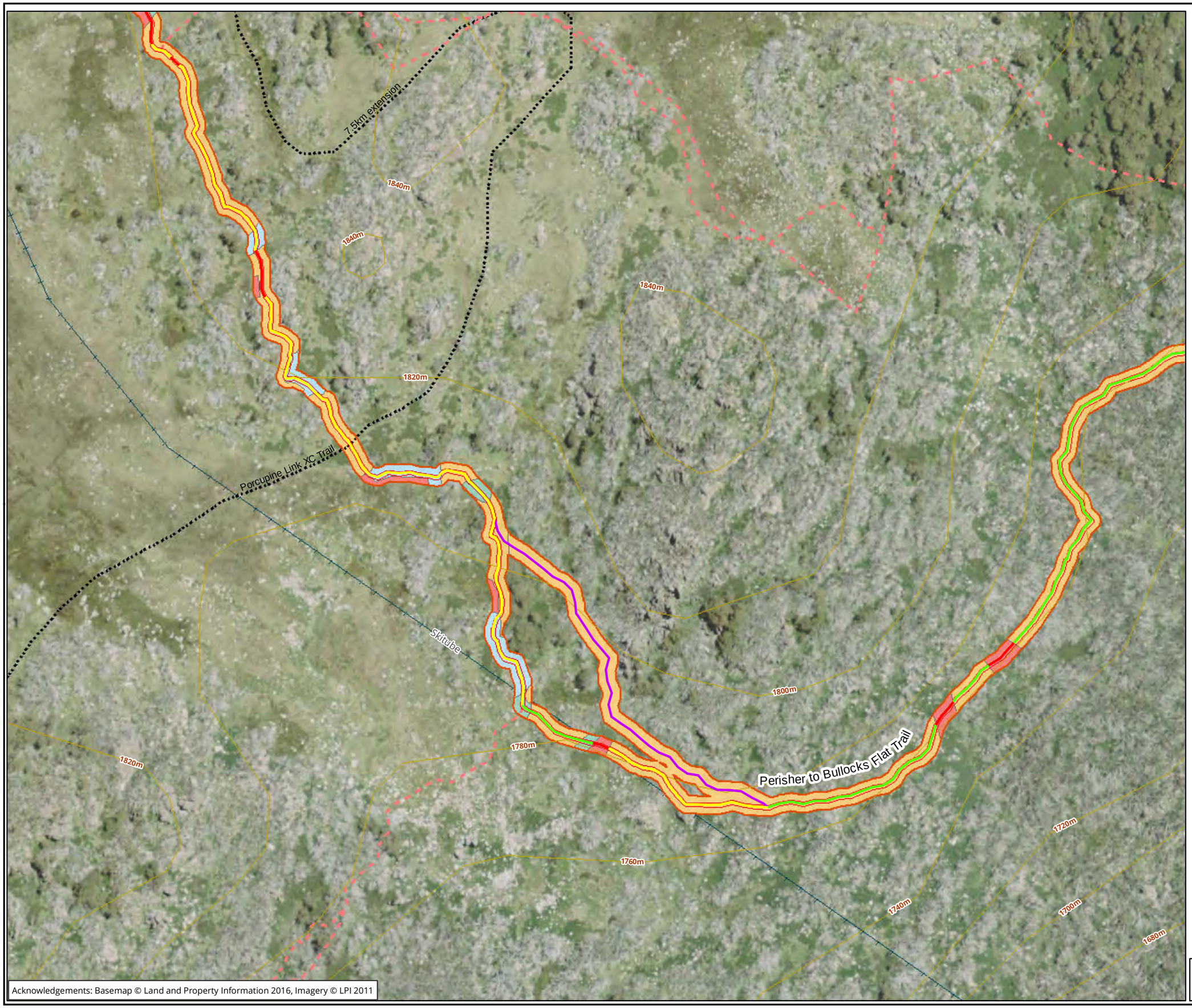

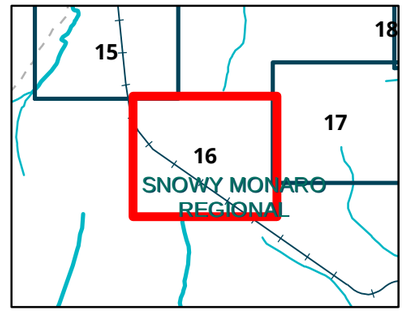

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Natural surface
- Rock paving/ Pitched rock
- To be determined

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- 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 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.16 Proposed works - Perisher to Bullocks Flat Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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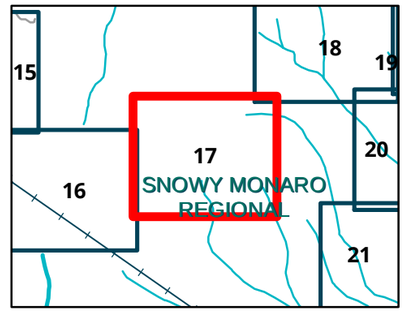

Legend

- Study area
- Subject site
- Previous alignments
- Contour

Final alignments - construction type

- Elevated structure
- Natural surface

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- 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 645 Alpine Snow Gum shrubby open woodland at high altitudes in Kosciuszko NP, Australian Alps Bioregion

Figure 3.17 Proposed works - Perisher to Bullocks Flat Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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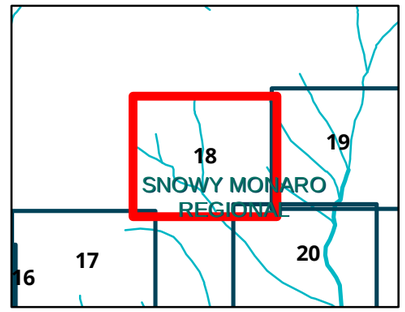

Legend

- Study area
- Subject site
- Contour

Final alignments - construction type

- Elevated structure
- Natural surface

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 644 Alpine Snow Gum - Snow Gum shrubby woodland at intermediate altitudes in northern Kosciuszko NP, South Eastern Highlands Bioregion and Australian Alps Bioregion

Figure 3.18 Proposed works - Perisher to Bullocks Flat Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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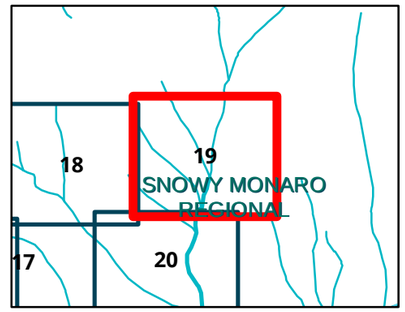

Legend

- Study area
- Subject site
- Contour

Final alignments - construction type

- Elevated structure
- Natural surface
- Rock paving/ Pitched rock

Plant Community Type

- PCT 637 Alpine Sphagnum Bogs EEC
- PCT 638 Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and 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

Figure 3.19 Proposed works - Perisher to Bullocks Flat Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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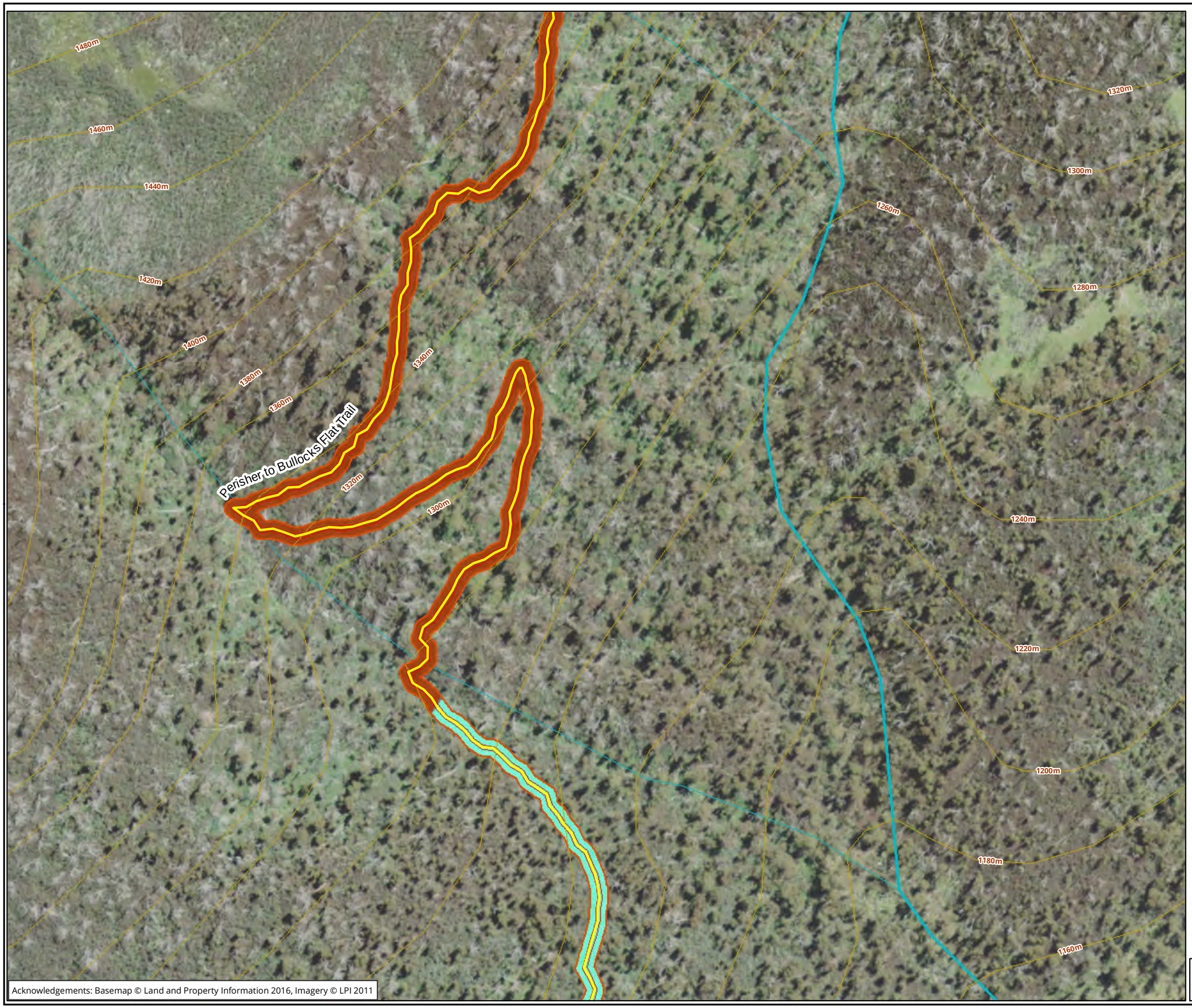

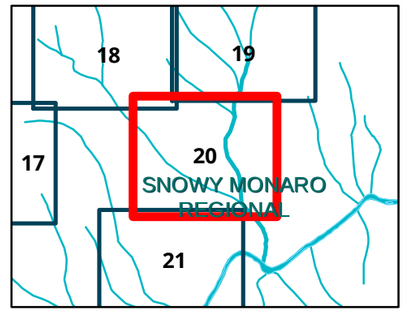

Legend

- Study area
- Subject site
- Contour

Final alignments - construction type

- Rock paving/ Pitched rock

Plant Community Type

- PCT 638 Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern 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

Figure 3.20 Proposed works - Perisher to Bullocks Flat Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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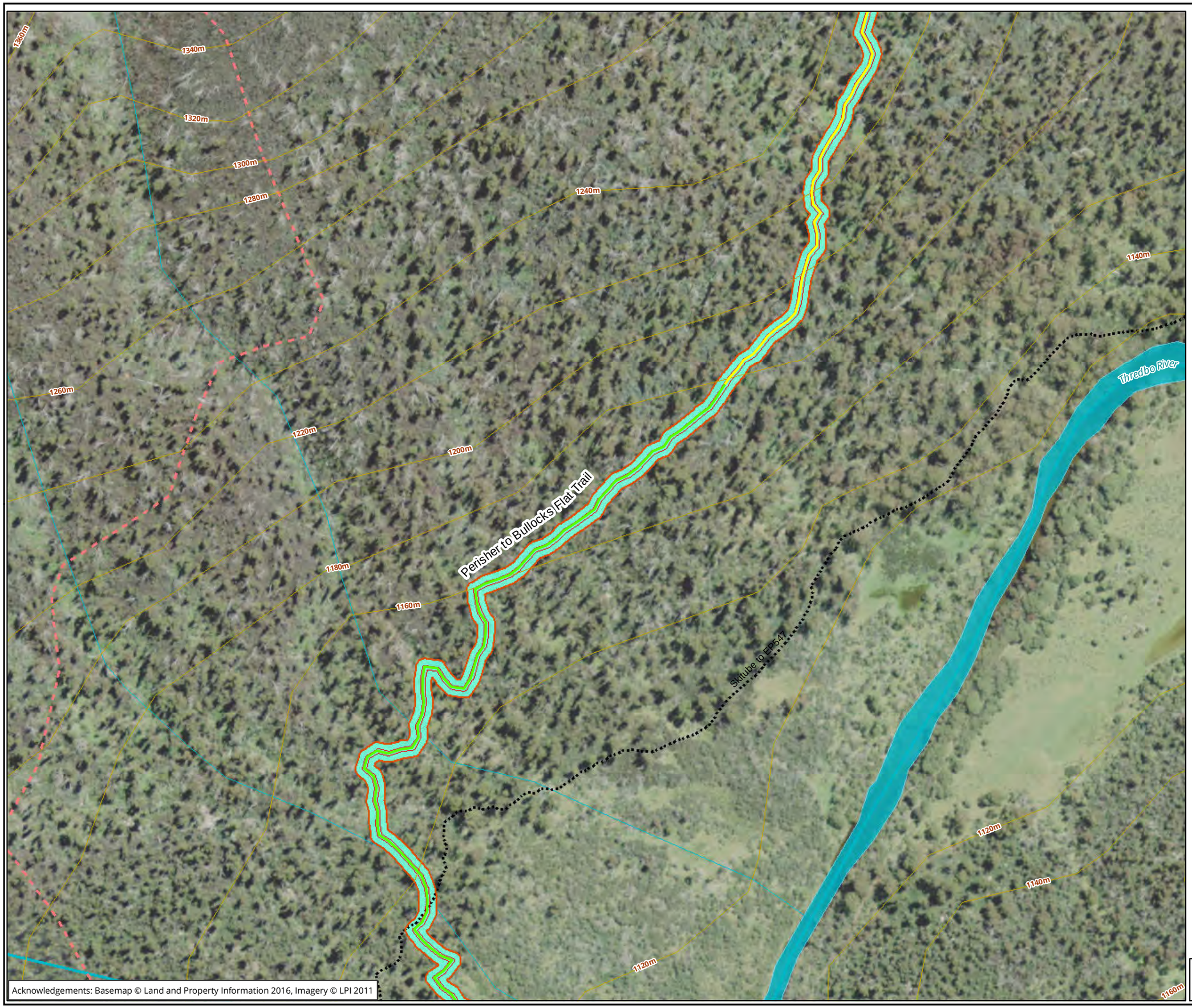

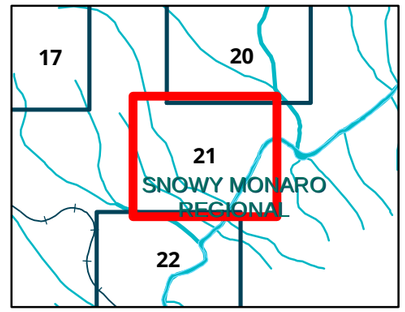

Legend

- Study area
- Subject site
- Previous alignments
- Contour

Final alignments - construction type

- Natural surface
- Rock paving/ Pitched rock

Plant Community Type

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

Figure 3.21 Proposed works - Perisher to Bullocks Flat Trail

0 30 60 90 120 150

Metres
Scale: 1:3,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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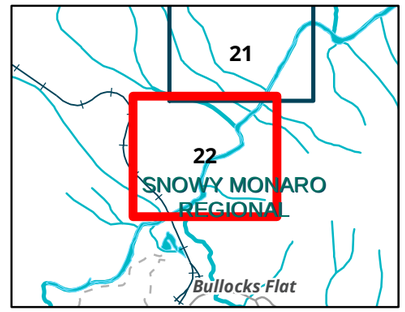

Legend

- Study area
- Subject site
- Existing walking tracks
- Previous alignments
- Contour

Final alignments - construction type

- Natural surface

Plant Community Type

- PCT 679 Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland
- PCT 1196 Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion

Figure 3.22 Proposed works - Perisher to Bullocks Flat Trail

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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