

# Attachment B

## Area of Kosciuszko National Park permanently impacted

### 1. Snowy Hydro's assertion

Snowy Hydro assert that the area of Kosciuszko National Park that would be permanently impacted by Snowy 2.0 is only 99 ha:

*"The facts are that only 0.01% of the National Park will be permanently impacted by this project -- or less than 1 sq km -- of the park."*

### 2. Introduction

It is assumed that Snowy Hydro's assertion is based on the proposition that areas subject to post construction landscaping and revegetation are equivalent to the original vegetation communities, habitats and landscapes of the National Park.

While NPA recognises the importance of impact mitigation, we in no way accept that such measures diminish the scale and significance of the proposed impact on the ecology and natural landscapes of the Park.

Such an argument is equivalent to suggesting that the landscaped gardens in a residential development are the equivalent of previously existing bushland.

NPA interprets the metrics of Snowy 2.0 very differently:

- The project area, as described in the EIS, is 250,000 ha (2,500 square kilometres), roughly one third of Kosciuszko National Park.
- The Main Works will disturb 1,680 ha, clear 1,053 ha of native vegetation and destroy 992 ha (approximately 10 square kilometres) of threatened species habitat.
- However, the total area that will be subject to some level of permanent environmental impact (all stages of the project) through vegetation clearance, earthworks, spoil dumping, and the modification of groundwater, streams, impoundments and water-dependant ecosystems will exceed 10,000 ha (100 square kilometres).

The EIS states, rather gratuitously:

*"the configuration of the project takes advantage of existing reservoir infrastructure and is constructed almost entirely underground in order to minimise the surface impacts of the works."*

10,000 ha of land above ground is permanently damaged, far more than the area of underground works!

### 3. 250,000 ha 'Project Area'

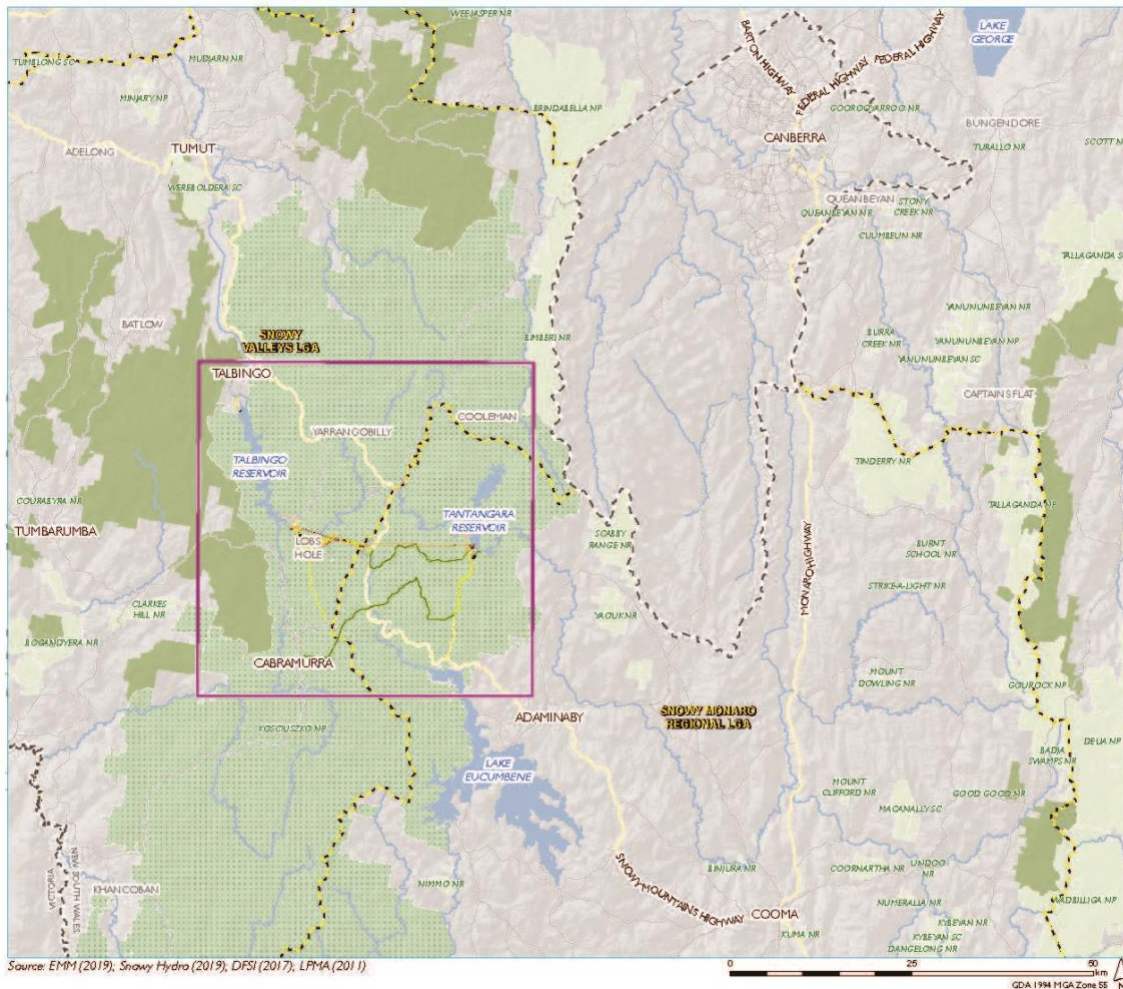
The EIS refers to the 'Project Area' as:

*"The area in which Snowy 2.0 will be built and operated is referred to in the EIS as the project area, also shown on Figure 4. The majority of the project area is within Kosciuszko National Park (KNP) however the total disturbance footprint of the project is very small at less than 0.25% of the total park size."*

It is totally disingenuous to trivialise the extent of impact by stating that “the total disturbance footprint of the project is very small at less than 0.25% of the total park size”.

The ‘Project Area’ covers approximately 50 km x 50 km, an area of 2,500 square kms<sup>1</sup> (250,000 ha).

The Project Area encompasses a third of Kosciuszko National Park (690,000 ha) - an area greater than the Australian Capital Territory, and twice the size of Greater Sydney.



**Snowy 2.0 Project Area (Figure 4 in EIS)**

#### 4. ‘Disturbance Footprint’

The EIS refers to a ‘Disturbance Footprint’<sup>2</sup> of 1,680 ha, narrowly defined as the area of physical disturbance. No information is provided on how the Disturbance Footprint was calculated:

*“The disturbance area is the extent of construction works required to build Snowy 2.0. The maximum disturbance area is about 1,680 hectares (ha), less than 0.25% of the total area of*

<sup>1</sup> 1 km<sup>2</sup> = 100 ha = 1,000,000 m<sup>2</sup>; 1 ha = 10,000 m<sup>2</sup> (100m x 100m)

<sup>2</sup> “Disturbance Footprint” encompasses “the extent of physical disturbance likely to be required to accommodate construction activities and infrastructure needed to build Snowy 2.0 Main Works, based on preliminary designs provided by FGJV”. Main Report 1 page 2-10.

*KNP. Parts of the disturbance area will be rehabilitated and landformed and other parts will be retained permanently for operation (operational footprint)."*

It is clear that the disturbance area does not include all the area subject to less immediate but nonetheless significant permanent environmental impacts, including areas affected by changes to water availability and condition (a critical factor for the park's water dependant ecosystems).

Even with its narrow definition, a Disturbance Footprint of 1,680 ha (16.8 km<sup>2</sup>) is huge. To put it into context, it equates to an area to be subjected to trampling with construction works of 4 times the size of Lane Cove National Park.

As noted above, post construction landscaping and revegetation cannot restore the indigenous ecology, habitats, landscapes and fauna of the national park. The areas within the 'disturbance area' are permanently affected.

## 5. Native Vegetation Loss

Loss of 1,053 ha of Native Vegetation including 992 ha of habitat for 14 threatened species

*"As a worst-case prediction, it is anticipated there will be a total loss of 1,053 ha of native vegetation including 4.09 ha of TECs and 992 ha of habitat for fourteen threatened species."*

It is assumed that this area of permanent loss of vegetation and native animals (including 14 threatened species) is within the 'disturbance footprint of 1,680 ha. Though the EIS doesn't make this clear, nor the degree of overlap between native vegetation and threatened species habitat.

Of itself the 'total loss' of 1,053 ha (10 km<sup>2</sup>) of native vegetation and associated vegetation and threatened species is totally unacceptable. But the area permanently damaged is 10 times that amount (see Section 6).

## 6. 'Operational Footprint'

*"The operational footprint is the area required for permanent infrastructure to operate Snowy 2.0. The maximum operational footprint is about 99 ha. This is 0.01% of the total area of KNP."*

Snowy 2.0 might ultimately only require 99 ha for its built infrastructure such as entrances to tunnels, substations and surge tanks, however it will have left behind a legacy of permanent damage to 100 km<sup>2</sup> of the Park, plus the ongoing visual blight.

## 7. Far greater residual impacts acknowledged in the EIS

Appendix M.1-01 of the EIS states:

### ***"ES6.2 Residual impacts and offsets***

*Residual impacts arising from Snowy 2.0 Main Works include:*

- *Impacts to 1,052.68 ha of native vegetation across 22 PCTs, including impacts to 4.09 ha of the Alpine Sphagnum Bogs and Associated Fens EEC.*
- *Impacts to 992 ha of habitat for fourteen threatened species credit species.*
- *Potential indirect impacts, including:*
  - *increase in weeds and pathogens;*
  - *increase in predatory and pest species;*
  - *light and noise pollution during night works;*

- *changes to runoff regimes;*
- *fragmentation, resulting in reduction in connectivity; and*
- *groundwater drawdown, resulting in changes in hydrology of GDEs.”*

***“A total of 32,118 ecosystem credits and 44,100 species credits are required to offset the residual impacts of Main Works”***

This acknowledgement alone exposes Snowy Hydro’s lie that the ongoing impact is just 99 ha and “very small at less than 0.25% of the total park size”.

## 8. Actual area of KNP permanently impacted and changed

A far more relevant measure of the area permanently damaged by the project would be the ‘Impact Footprint’ as defined below by NPA<sup>3</sup>.

NPA’s estimate of the ‘Impact Footprint’ is approximately 100 km<sup>2</sup> (10,000 ha), as summarised in the table below (a fuller version is provided in Appendix A).

<b>Area impacted</b>	<b>ha</b>
Construction sites - Tantangara, Marica, Lob’s Hole, Talbingo	650
Tantangara Reservoir	2,117
Talbingo Reservoir/Jounama Pondage	2,317
Land above tunnel (water table drawdown)	5,000
Roads and tracks	100
Transmission lines and access tracks	125
<b>Total</b>	<b>10,309</b>

This does not include:

- Rivers, dams waterways downstream of Tantangara Reservoir that will be infested by the pest species transported up from Talbingo – i.e. Murrumbidgee River, Eucumbene Dam, all the Snowy Scheme, Snowy, Tumut and Murray Rivers (noting that some waterways are already infested with some of the pest species)
- The visual blight on a pristine natural environment over 100’s km<sup>2</sup> of KNP
  - engineering structures
  - transmission towers and lines
  - rock dumps
  - major road construction works, particularly down steep mountainsides
  - surge tank
  - etc

This is a huge project covering one-third of KNP with a permanent impact on 100 km<sup>2</sup> and it shouldn’t be disguised as anything less.

Also, NPA takes great exception to empty conclusions in the EIS such as:

---

<sup>3</sup> “Impact Footprint” is “the area of KNP that is permanently damaged and/or altered to a significant extent”.

*“Through the implementation of proposed mitigation, management and offsetting measures, the EIS demonstrates that Snowy 2.0 Main Works could be undertaken without any significant long term impacts on the local environment.*

*As such, Snowy 2.0 Main Works is considered to be in the public interest.”*

How could environmental vandalism on this scale ever be ‘in the public interest’, especially within Kosciuszko National Park?

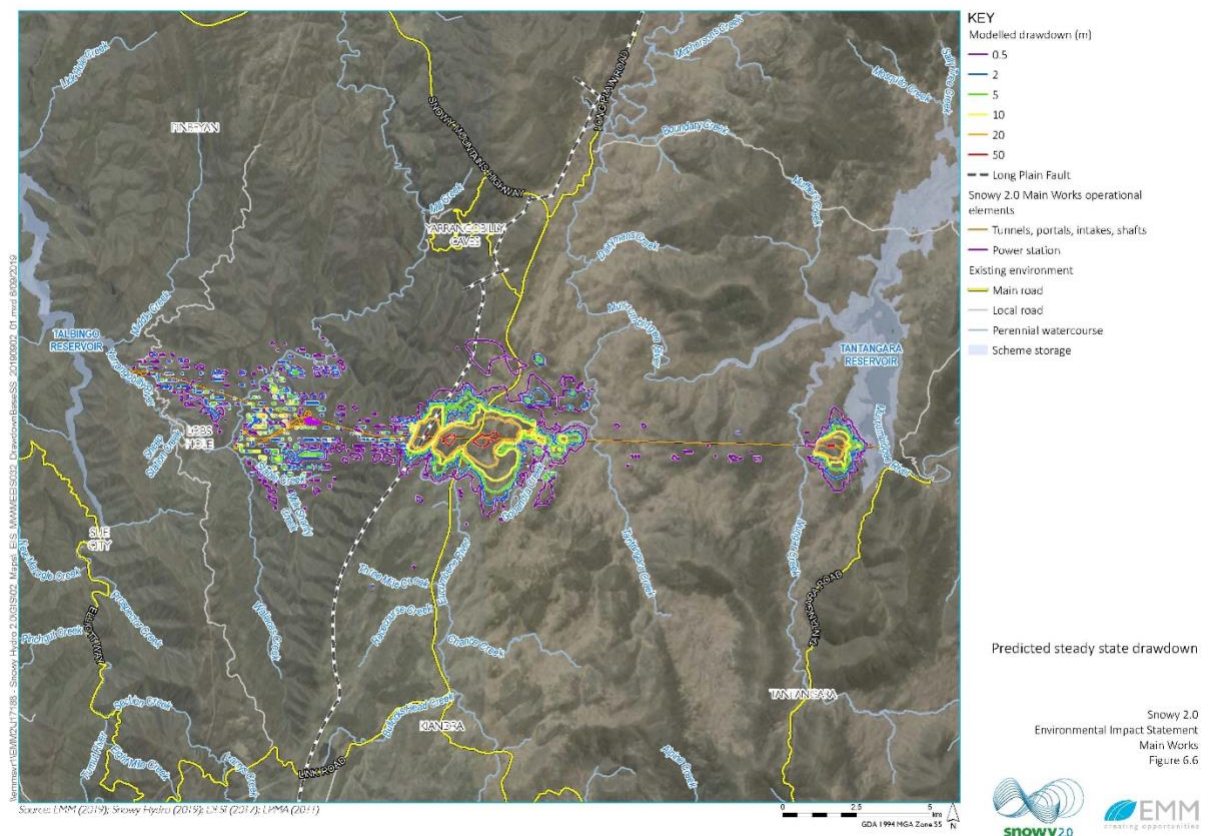
## Appendix A – Areas of KNP permanently changed/impacted

Location	Area (ha)	Impacts
Construction sites at Tantangara, Marica, Lob's Hole and Talbingo	650	<ul style="list-style-type: none"> <li>• all construction site landscapes permanently altered (land-formed)               <ul style="list-style-type: none"> <li>○ Tantangara 100 ha</li> <li>○ Talbingo 300 ha</li> <li>○ Lob's Hole 200 ha</li> <li>○ Marica 50ha</li> </ul> </li> <li>• loss of habitat</li> <li>• residual impacts               <ul style="list-style-type: none"> <li>○ weeds</li> <li>○ spills</li> </ul> </li> </ul>
Tantangara Reservoir	2117	<ul style="list-style-type: none"> <li>• dumping of over 4,000,000 m<sup>3</sup> of excavated spoil from edge of reservoir               <ul style="list-style-type: none"> <li>○ reduces capacity of Reservoir by 3 GL</li> <li>○ some spoil has naturally occurring asbestos and is acidic</li> <li>○ sedimentation across section of reservoir floor</li> </ul> </li> <li>• some suspended sediment discharged downstream to Murrumbidgee River and Eucumbene Dam</li> <li>• dump area clearly visible when dam is below full supply level as a large rock-lined elevated barrier 25 metres high (from the floor of the reservoir), completely different to the surrounding gently sloping landscape</li> <li>• intake structure clearly visible from the surrounding area</li> <li>• mixing of waters from Talbingo (different temperature, characteristics)</li> <li>• noxious species (fish, fish diseases and weeds) transferred from Talbingo and decimating the current fish population               <ul style="list-style-type: none"> <li>○ redfin perch – Class One Noxious Pest, illegal to transfer between waterways in NSW</li> <li>○ eastern gambusia, wild goldfish</li> <li>○ Epizootic Haematopoietic Necrosis Virus (EHNV)</li> <li>○ elodea weed</li> <li>○ likely elimination of the last remaining colony in the world of the stocky galaxia (need to check name)</li> </ul> </li> <li>• frequently fluctuating water level - up to 5 m a day               <ul style="list-style-type: none"> <li>○ shoreline will move back and forth many hundreds of metres a day (when Snowy 2.0 is pumping or generating)</li> <li>○ shore will often be soddened and muddy from rapidly receding water line (when generating)</li> </ul> </li> <li>• devastating impact on aquatic ecology for entire reservoir, accustomed to 60 years of just seasonal fluctuations in level</li> </ul>

		<ul style="list-style-type: none"> <li>• when empty will be a puddle surrounded by 2000 ha of barren dirt/mud flats</li> <li>• loss of public amenity</li> <li>• devastating impact on recreational fishing</li> <li>• visual blight</li> <li>• no more than a holding tank</li> </ul>
Talbingo Reservoir and Jounama Pondage	1936 + 381	<ul style="list-style-type: none"> <li>• dumping over 4,000,000 m<sup>3</sup> of excavated spoil from edge of Reservoir <ul style="list-style-type: none"> <li>○ reduces capacity of Reservoir by ~1 GL</li> <li>○ some spoil has naturally occurring asbestos and/or is acidic</li> <li>○ sedimentation across whole of reservoir floor and down to Jounama</li> </ul> </li> <li>• 16,021 tonnes of suspended sediment discharged downstream to Jounama Pondage (surface area 381 ha)</li> <li>• mixing of waters from Tantangara (different temperature, characteristics)</li> <li>• impact on aquatic ecology</li> <li>• intake structure and adit, both with a massive incision into the mountain</li> </ul>
Tunnel (water table drawdown)	5,000	<ul style="list-style-type: none"> <li>• area where the water table will be depressed by 0.5 m or more</li> <li>• permanent destruction of habitat and impact on native animal and fish population</li> <li>• permanent reduction in stream flows</li> <li>• reduced inflow to reservoirs?</li> <li>• reduced water for the rivers and communities downstream of the Snowy Scheme?</li> </ul>
Roads and tracks	100	<ul style="list-style-type: none"> <li>• 100km x 10m wide impact</li> <li>• altered environment along road edges</li> <li>• weed transfer along edges of roads</li> <li>• rubbish thrown away</li> <li>• animal kill</li> <li>• massive construction of new two-lane sealed road down the precipitous mountainside to Lob's Hole</li> <li>• visual blight</li> </ul>
Transmission lines and access tracks	125	<ul style="list-style-type: none"> <li>• 10km of lines</li> <li>• side-by-side steel lattice towers ~40 m high, visible for miles away</li> <li>• towers usually located on high points and mountain peaks, clearly visible on the skyline</li> <li>• multiple conductors and earth wires</li> <li>• 120 m wide easement swathe clearing native vegetation to just above ground level</li> <li>• destruction of habitat for native animals</li> <li>• access tracks to the towers and along the route</li> </ul>



Total	10,309	
Plus, downstream waterways of Tantangara Reservoir	1,000's ha	<ul style="list-style-type: none"> <li>almost certain infestation by noxious species (fish, fish diseases and weeds) transported from Talbingo to Tantangara and thence downstream to Murrumbidgee River, Eucumbene Dam and thence the Snowy Scheme and downstream rivers (Snowy, Murray)</li> </ul>
Plus, Visual impact	over 1,000's ha	<ul style="list-style-type: none"> <li>visual blight in a pristine natural environment over 1000's hectares of KNP <ul style="list-style-type: none"> <li>engineering structures</li> <li>transmission towers and lines</li> <li>rock dumps</li> <li>major road construction works, particularly down steep mountainsides</li> <li>surge tank</li> <li>etc</li> </ul> </li> </ul>



**Predicted steady state drawdown of water table (EIS Figure 6.6)**