Title of Proposal - Snowy 2.0 Main Works

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Commonwealth Development

1.2 Provide a detailed description of the proposed action, including all proposed activities.

Snowy 2.0

Snowy Hydro Limited (Snowy Hydro), the operator of the Snowy Mountains Hydro-electric Scheme (Snowy Scheme), is proposing to build and operate Snowy 2.0. Snowy 2.0 is a project that will increase the pumped hydro-electric capacity within the existing Snowy Scheme by linking the Tantangara and Talbingo reservoirs with tunnels feeding a new underground power station. The project will involve tunnelling and excavation works between the two reservoirs to depths of up to 1 kilometre (km).

Snowy 2.0 has been declared Critical State Significant Infrastructure (CSSI) in accordance with the provisions of Division 5.2 of the New South Wales (NSW) Environmental Planning and Assessment Act 1979 (EP&A Act) with the declaration coming into effect on 9 March 2018. As a result, Snowy 2.0 may be carried out without obtaining development consent under Part 4 of the EP&A Act. However, Snowy 2.0 is subject to Division 5.2 of the EP&A Act, which requires the preparation of an environmental impact statement (EIS) and the approval of the NSW Minister for Planning.

With respect to the provisions of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), while considerable survey work has been carried out to date, additional detailed surveys remain to be completed to determine potential impacts of Snowy 2.0 Main Works on matters of national environmental significance (MNES) and the environment generally. Accordingly, Snowy Hydro has referred Snowy 2.0 Main Works to the Commonwealth Minister for the Environment and nominated that Snowy 2.0 Main Works has potential to have a significant impact on MNES and the environment generally. The Snowy 2.0 Main Works are therefore likely to be deemed a controlled action to allow for potential impacts to be fully addressed in the EIS.

Proposed action: Main Works

This referral addresses the 'Snowy 2.0 Main Works'. The Snowy 2.0 Main Works are proposed to follow the completion of the 'Snowy 2.0 Exploratory Works' if Snowy Hydro elects to proceed with Snowy 2.0 at that time on the basis of the information obtained through the Exploratory Works.

The Exploratory Works includes an exploratory tunnel and portal and other exploratory and

construction activities primarily in the Lobs Hole area of the Kosciuszko National Park (KNP). The Exploratory Works are being assessed in a separate EIS under the EP&A Act and is subject to a separate State approval (Snowy Hydro, 2018, see Application Number SSI 18_9208 to the NSW Department of Planning and Environment (DPE)).

A referral for the Exploratory Works (EPBC Act referral 2018/8217) was lodged with the Commonwealth Department of the Environment and Energy (DEE) and publicly notified from 2 June to 20 June 2018. The DEE provided their decision on the referral for Exploratory Works on 10 July 2018 finding the Exploratory Works to be 'not a controlled action' under the EPBC Act. The DEE also issued a declaration on 10 July 2018 that Exploratory Works is a class of actions to which section 28 of the EPBC Act does not apply.

The Snowy 2.0 Main Works covers the major construction elements of Snowy 2.0, including permanent infrastructure (such as the underground power station, power waterways, access tunnels, chambers and shafts), temporary construction infrastructure (such as construction adits, construction compounds and accommodation, and the temporary storage of extracted rock material) and supporting infrastructure (such as road upgrades and extensions, water and sewage treatment infrastructure). Associated aquatic and sub-aqueous works will be required within the two reservoirs. This will comprise the provision of water intake infrastructure and the sub-aqueous placement of extracted rock within the two reservoirs.

Once the Main Works are constructed, temporary construction elements (such as construction compounds, accommodation camps and extracted rock stockpiles) will be removed and on¬going rehabilitation and revegetation programs implemented. Snowy 2.0 Main Works also includes the operation of Snowy 2.0.

The following key design elements are needed for the operation of Snowy 2.0, and are referred to as operational infrastructure:

- an underground pumped hydro-electric power station complex;
- water intake structures at Tantangara and Talbingo reservoirs;
- power waterway tunnels, chambers and shafts;
- access tunnels;
- new and upgraded roads to allow ongoing access and maintenance; and
- power and communication infrastructure, including:

- a cableyard to provide a connection point for Snowy 2.0 to the electricity transmission network and the national electricity market (NEM);

- permanent auxiliary power supply connection; and
- communications cable.

To support the construction of operational infrastructure, the following temporary and permanent design elements and activities are needed and are referred to as construction elements. Construction elements include:

- construction compounds at Talbingo, Lobs Hole, Marica and Tantangara;
- construction adits at Talbingo and Tantangara;
- site-based accommodation camps at Lobs Hole and Tantangara;
- road establishment and other access improvements and upgrades to allow access to construction areas;
- management of excavated rock from tunnelling activities, including:
- permanent subaqueous storage within Talbingo and Tantangara reservoirs; and

- temporary on-land storage within the KNP and temporary and/or permanent storage outside of KNP;

• supporting services infrastructure including construction power, water and wastewater infrastructure, and communication infrastructure; and

• additional barge access infrastructure and excavated rock handling facilities and infrastructure at both Talbingo and Tantangara for subaqueous placement of excavated material.

The operation of Snowy 2.0 will involve the transfer of water through a series of newly established power waterway tunnels and the underground power station to provide for energy generation, as well as large scale energy storage. Energy will be generated when water is transferred from Tantangara Reservoir, through the headrace tunnel into the underground power station, before being transferred to Talbingo Reservoir through the tailrace tunnel. Storage of energy will be possible by pumping water back through the tailrace tunnel, from Talbingo Reservoir up to Tantangara Reservoir, where it can be used again for energy generation when needed.

Decisions concerning the operational mode, flow rates and flow duration would be made by Snowy Hydro on the basis of the state of the NEM with due regard given to operational constraints and the Snowy Water Licence.

The project described in this Referral is based on a reference design prepared to document Snowy Hydro's functional and performance requirements for Snowy 2.0 and provide guidance to contractors preparing tenders to undertake the final design and construction of the project. As such, details of the final design for Snowy 2.0 Main Works have yet to be confirmed, as it is subject to a current tendering process. It is anticipated that the final design will be incorporated into the EIS for Snowy 2.0 Main Works. A detailed description of the proposed action is provided in Chapter 3 of the Snowy 2.0 Main Works Scoping Report which is provided with this referral.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
Project area - corner 1	1	-35.601806115147	148.27498631779
Project area - corner 1	2	-35.601808296004	148.274989
Project area - corner 1	3	-35.601806115147	148.27498363558
Project area - corner 1	4	-35.601806115147	148.27498631779
Project area - corner 2	1	-35.595355115154	148.78330795337
Project area - corner 2	2	-35.595350753088	148.78331063558
Project area - corner 2	3	-35.595355115154	148.78330795337
Project area - corner 3	1	-35.935681943047	148.79092831779
Project area - corner 3	2	-35.935681943047	148.79092831779
Project area - corner 3	3	-35.935681943047	148.79092831779

Area	Point	Latitude	Longitude
Project area - corner 4	1	-35.942214943219	148.28043231779
Project area - corner 4	2	-35.942214943219	148.28043231779
Project area - corner 4	3	-35.942214943219	148.28043231779
Project area	1	-35.602508335371	148.27421581736
Project area	2	-35.596366860384	148.78302013864
Project area	3	-35.936227039336	148.79057323923
Project area	4	-35.942898238997	148.27902233591
Project area	5	-35.602508335371	148.27421581736

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

Snowy 2.0 Main Works is located in the Australian Alps in southern NSW, about mid-way between Canberra and Albury.

The nearest large towns to Snowy 2.0 Main Works are Cooma and Tumut. Cooma is located about 50 km south east of the project area (or 70 km by road from Providence Portal at the southern edge of the project area), and Tumut is located about 35 km north west of the project areas (or 45 km by road from Tumut 3 power station at the northern edge of the project area). Other townships near the project area include Talbingo, Cabramurra and Adaminaby. Talbingo and Cabramurra were built for the original Snowy Scheme workers and their families, while Adaminaby was relocated in 1957 to make way for the establishment of Lake Eucumbene.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

The size of the proposed action area has yet to be determined. These areas will be determined and reported in the EIS.

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. The proposed action incorporates multiple land parcels.

1.8 Primary Jurisdiction.

New South Wales

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 01/2020

End date 12/2026

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

The EP&A Act and the NSW Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) form the statutory framework for planning approval and environmental assessment in NSW.

Section 5.12 of the EP&A Act provides for the declaration of State significant infrastructure (SSI), and Section 5.13 enables the Minister for Planning to declare SSI to CSSI if 'it is of a category that, in the opinion of the Minister, is essential for the State for economic, environmental or social reasons'.

Snowy 2.0 is listed in Schedule 5, clause 9, subclause (3) of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) and, when declared to be SSI and CSSI, may be carried out without development consent under Part 4 of the Act.

Snowy 2.0 has been declared CSSI in accordance with the provisions of Division 5.2 of the EP&A Act with the declaration coming into effect on 9 March 2018. As a result, Snowy 2.0 Main Works may be carried out without development consent under Part 4 of the EP&A Act, subject to the provisions at Division 5.2 of the Act that require preparation of an EIS and approval from the NSW Minister for Planning.

In respect of potential impacts to the environment generally, for the avoidance of doubt it is noted that:

the objects of the EP&A Act include:to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats; andto facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.the impacts of the Snowy 2.0 Main Works to the environment will be adequately addressed through the assessment process under the EP&A Act.

1.13 Describe any public consultation that has been, is being or will be undertaken,

including with Indigenous stakeholders.

Stakeholder engagement for Snowy 2.0 has been comprehensive to date and reflects the importance Snowy Hydro places on this aspect of its business.

An important part of stakeholder engagement was the Snowy 2.0 Feasibility Study which was completed in December 2017 and made publicly available via the Snowy Hydro website.

Stakeholder engagement commenced in mid-to-late 2017 when Snowy 2.0 was introduced to all stakeholders with information on Snowy Hydro's website, publication of newsletters and booklets, a round of community drop-in sessions held in Adaminaby, Cooma, Talbingo and Tumut in November 2017, briefing sessions and meetings.

Snowy Hydro is committed to continuing to engage with stakeholders during the approval process for Snowy 2.0.

Engagement targeted specifically for Snowy 2.0 Main Works will comprise several initiatives, as follows:

two rounds of community consultation sessions to be held in key local communities in late 2018 and early 2019;Chamber of Commerce-led engagement with businesses around impacts and opportunities associated with Snowy 2.0 Main Works;engagement with Indigenous leaders, groups, and organisations around mobilisation for opportunities associated with Snowy 2.0 Main Works;discussions with potentially-affected commercial operators in KNP; and discussions with recreational groups around potential impacts to recreational usage associated with Snowy 2.0 Main Works.

In addition to these direct stakeholder and community engagement initiatives project information will also be provided to the local community and targeted stakeholders via the following:

project information booklets and video;Snowy 2.0 pages on the Snowy Hydro website (www.snowyhydro.com.au);emails to key groups including groups registered on the Snowy 2.0 Business Directory;Snowy 2.0 display in the Snowy Hydro Discovery Centre, Cooma.Snowy Hydro quarterly newsletter will contain project updates; and a project email address to directly respond to concerns and enquiries (snowy2.0@snowyhydro.com.au)

Details of the public consultation activities undertaken to date are contained in the Snowy 2.0 Exploratory Works EIS (see Snowy Hydro, 2018, see Application Number SSI 18_9208 to the DPE available at the following link

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9208#).

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

Exploratory Works

An EIS for the Exploratory Works was prepared in accordance with the SEARs and Part 3 of

Schedule 2 of the EP&A Regulation (as per Section 5.16 of the EP&A Act). The Exploratory Works EIS was submitted to DPE and placed on public exhibition from 23 July to 20 August 2018. The Exploratory Works EIS is available at the following link http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9208#.

The Exploratory Works action (EPBC Act referral 2018/8217) was determined to be 'not a controlled action' under the EPBC Act on 10 July 2018, and the DEE also issued a declaration on 10 July 2018 that Exploratory Works is a class of actions to which section 28 of the EPBC Act does not apply.

Main Works

As previously stated, an EIS will be prepared for Snowy 2.0 Main Works. It is intended this would be conducted under Division 5.2 of the EP&A Act, as the applicable accredited assessment process determined under section 87(4) of the EPBC Act.

Preliminary environmental investigations have been carried out to identify the relevant matters to be addressed in the EIS for Snowy 2.0 Main Works, and the required level of assessment. This process was guided by the draft guidelines for scoping an environmental impact statement as prepared by the DPE (2017) and informed by the series of workshops undertaken between Snowy Hydro and the Project Team. This process included:

involving the DPE, the community and other stakeholders early in the process; undertaking a process of identifying and characterising relevant matters, taking into account an initial scientific and technical assessment and stakeholder responses; and reporting the outcomes of that assessment in the attached Scoping Report.

Based on the findings of the preliminary assessment, the following are considered key issues for the EIS:

KNP, as the majority of Snowy 2.0 Main Works is located within this important conservation area recognised for its natural, cultural and recreational values;biodiversity, including:terrestrial ecology,aquatic ecology,heritage, including:Aboriginal cultural heritage;historic heritage;amenity, including:noise and vibration;landscape and visual amenity;land, including:geology and soils;contamination;water, including:ground water;surface water, including geomorphology and flooding;transport and access;social; andeconomic.

Other issues or matters requiring assessment, but may not require a standalone or detailed technical assessment in the EIS are:

air quality;built environment; andclimate change and other risks.

Details of the preliminary environmental investigations carried out to identify relevant matters for the EIS are provided in Chapter 5 and Appendix A of the Snowy 2.0 Main Works Scoping Report which was submitted to DPE on 11 October 2018 and is provided with this referral.

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

Yes

1.16.1 Identify the nature/scope and location of the related action (Including under the relevant legislation).

The proposed action is related to the following actions or proposals in the region:

A separate application by TransGrid for the Snowy 2.0 Transmission Connection Project. TransGrid will be submitting a separate application and EIS for the project under the NSW EP&A Act, as well as a separate referral for the project under the EPBC Act.The Snowy 2.0 Exploratory Works (EPBC 2018/8217) which is being assessed in a separate EIS under the EP&A Act and is subject to a separate State approval (Snowy Hydro, 2018, see Application Number SSI 18_9208 to the NSW DPE).

The Murray 1 Pressure Tunnel was also previously referred under the EPBC Act (EPBC 2000/112). This action was undertaken outside the Snowy 2.0 Main Works project area and is not considered to be a related action.

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The <u>interactive map</u> tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• <u>Profiles of relevant species/communities</u> (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

- Significant Impact Guidelines 1.1 Matters of National Environmental Significance;
- <u>Significant Impact Guideline 1.2 Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies</u>.

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

Yes

2.2.1 Impact table

Place	Impact
Australian Alps National Parks and Reserves	An assessment of this National Heritage place will be undertaken in the Snowy 2.0 Main Works EIS. Environmental assessments of Snowy 2.0 were commenced in mid-2017 and are ongoing. The potential impact of Snowy 2.0 Main Works on National Heritage places has yet to be determined. Snowy Hydro has resolved to take a precautionary approach and nominate that Snowy 2.0 has the potential to have a significant impact on the nominated National Heritage places so that actual impacts can be assessed and documented within the EIS for the project. As discussed in Section 1.2

Place	Impact
	of this Referral, an accredited assessment process will be sought under section 87(4) of the EPBC Act where the Commonwealth accredits the assessment process under Division 5.2 of the EP&A Act. This will enable the DPE to manage the assessment of Snowy 2.0 Main Works, including the issuing of the assessment requirements for the EIS.
Snowy Mountains Scheme	An assessment of this National Heritage place will be undertaken in the Snowy 2.0 Main Works EIS. Environmental assessments of Snowy 2.0 were commenced in mid-2017 and are ongoing. The potential impact of Snowy 2.0 Main Works on National Heritage places has yet to be determined. Snowy Hydro has resolved to take a precautionary approach and nominate that Snowy 2.0 has the potential to have a significant impact on the nominated National Heritage places so that actual impacts can be assessed and documented within the EIS for the project. As discussed in Section 1.2 of this Referral, an accredited assessment process will be sought under section 87(4) of the EPBC Act where the Commonwealth accredits the assessment process under Division 5.2 of the EP&A Act. This will enable the DPE to manage the assessment of Snowy 2.0 Main Works, including the issuing of the assessment requirements for the EIS.

2.2.2 Do you consider this impact to be significant?

Yes

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
Commonwealth listed threatened ecological communities	One community known to occur within area: • Alpine Sphagnum Bogs and Associated Fens Three communities may or are likely to occur within area: • Grey Box (Eucalyptus macrocarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia • Natural Temperate Grassland of the South Eastern Highlands • White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland Environmental assessments of Snowy 2.0 were commenced in mid-2017 and are ongoing. The potential impact of Snowy 2.0 Main Works on any listed species or any threatened ecological community, or their habitat has yet to be determined. Snowy Hydro has resolved to take a precautionary approach and nominate that Snowy 2.0 has the potential to have a significant impact on the nominated listed species, threatened ecological communities, or their habitat so that actual impacts can be assessed and documented within the EIS for the project. As discussed in Section 1.2 of this Referral, an accredited assessment process will be sought under section 87(4) of the EPBC Act where the Commonwealth accredits the assessment process under Division 5.2 of the EP&A Act. This will enable the DPE to manage the assessment of Snowy 2.0 Main Works, including the issuing of the assessment procus for the EIS
Commonwealth listed threatened species	Seven bird species may or are likely to occur within the area: • Regent Honeyeater (Anthochaera phrygia) • Australasian Bittern (Botaurus poiciloptilus) • Curlew Sandpiper (Calidris ferruginea) • Painted Honeyeater (Grantiella picta) • Swift Parrot (Lathamus discolor) • Eastern Curlew, Far Eastern Curlew (Numenius madagascariensis) • Australian Painted-snipe, Australian Painted Snipe (Rostratula australis) One fish species known to occur within the area: • Macquarie Perch (Macquaria australasica) Three fish species may occur within the area: • Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat- headed Jollytail, Flat-headed Minnow (Galaxias rostratus) • Trout Cod (Maccullochella macquariensis) • Murray Cod (Maccullochela

Species

Impact

peelii) Four frog species known to occur within the area: • Booroolong Frog (Litoria booroolongensis) • Alpine Tree Frog, Verreaux's Alpine Tree Frog (Litoria verreauxii alpina) • Southern Corroboree Frog (Pseudophryne corroboree) • Northern Corroboree Frog (Pseudophryne pengillevi) Three frog species may or are likely to occur within the area: • Yellow-spotted Tree Frog, Yellow-spotted Bell Frog (Litoria castanea) • Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog (Litoria raniformis) • Spotted Tree Frog (Litoria spenceri) One insect species may occur within the area: • Golden Sun Moth (Synemon plana) Five mammal species known to occur in the area: • Mountain pygmy-possum (Burramys parvus) • Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (Dasyurus maculatus maculatus) • Broad-toothed Rat, Tooarrana (Mastacomys fuscus mordicus) • Greater Glider (Petauroides volans) • Smoky Mouse, Konoom (Pseudomys fumeus) Three mammal species may or are likely to occur within the area: • Corben's Longeared Bat, South-eastern Long-eared Bat (Nyctophilus corbeni) • Koala (Phascolarctos cinereus) • Grey-headed flying fox (Pteropus poliocephalus) Nine plant species known to occur within the area:

Mauve Burr-daisy (Calotis glandulosa) • Hoary Sunray, Grassland Paper-daisy (Leucochrysum albicans var. tricolor) • Bago Leek-orchid (Prasophyllum bagoense) • Brandy Marys Leek-orchid (Prasophyllum innubum) • Kelton's Leek-orchid (Prasophyllum keltonii) • Blue-tongued Orchid, Kiandra Greenhood (Pterostylis oreophila) • Monaro Golden Daisy (Rutidosis leiolepis) • Austral Toadflax, Toadflax (Thesium australe) • Swamp Everlasting, Swamp Paper Daisy (Xerochrysum palustre) Seven plant species may or are likely to occur within the area: • River Swamp Wallaby-grass, Floating Swamp Wallaby-grass (Amphibromus fluitans) • Curtis' Colobanth (Colobanthus curtisiae) • Black Gum (Eucalyptus aggregata) • East Lynne Midgeorchid (Genoplesium vernale) • Clover Glycine, Purple Clover (Glycine latrobeana) • Omeo Stork's-bill (Pelargonium sp. Striatellum) •

Spacies	Impact
Species	Tarengo Leek Orchid (Prasophyllum petilum) Five reptile species may or are likely to occur
	within the area: • Pink-tailed Worm-lizard, Pink-
	tailed Legless Lizard (Aprasia parapulchella) •
	Alpine She-oak Skink (Cyclodomorphus
	praealtus) • Striped Legless Lizard (Delma
	impar) • Guthega Skink (Liopholis guthega) •
	Grassland Earless Dragon (Tympanocryptis
	pinguicolla) Environmental assessments of
	Showy 2.0 were commenced in mid-2017 and
	Main Works on any listed species or any
	threatened ecological community or their
	habitat has vet to be determined. Snowy Hydro
	has resolved to take a precautionary approach
	and nominate that Snowy 2.0 has the potential
	to have a significant impact on the nominated
	listed species, threatened ecological
	communities, or their habitat so that actual
	impacts can be assessed and documented
	within the EIS for the project. As discussed in
	Section 1.2 of this Referral, an accredited
	assessment process will be sought under
	section 87(4) of the EPBC Act where the
	Commonwealth accredits the assessment
	process under Division 5.2 of the EP&A Act.
	assessment of Snowy 2.0 Main Works
	including the issuing of the assessment
	requirements for the FIS

2.4.2 Do you consider this impact to be significant?

Yes

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed migratory species, or their habitat?

Yes

2.5.1 Impact table

Species	Impact
Commonwealth listed migratory species	One migratory marine bird is likely to occur within the area: • Fork-tailed Swift (Apus

Species

Impact

pacificus) Three migratory terrestrial species are known to occur within the area: • Whitethroated Needletail (Hirundapus caudacutus) • Satin Flycatcher (Myiagra cyanoleuca) • Rufous Fantail (Rhipidura rufifrons) Two migratory terrestrial species may or are likely to occur within the area: • Black-faced Monarch (Monarcha melanopsis) • Yellow Wagtail (Motacilla flava) Seven migratory wetland species may occur within the area: • Common Sandpiper (Actitis hypoleucos) • Sharp-tailed Sandpiper (Calidris acuminata) • Curlew Sandpiper (Calidris ferruginea) • Pectoral Sandpiper (Calidris melanotos) • Latham's Snipe, Japanese Snipe (Gallinago hardwickii) • Eastern Curlew, Far Eastern Curlew (Numenius madagascariensis)

• Osprey (Pandion haliaetus) Environmental assessments of Snowy 2.0 were commenced in mid-2017 and are ongoing. The potential impact of Snowy 2.0 Main Works on any listed migratory species or their habitat has yet to be determined. Snowy Hydro has resolved to take a precautionary approach and nominate that Snowy 2.0 has the potential to have a significant impact on the nominated listed migratory species or their habitat so that actual impacts can be assessed and documented within the EIS for the project. As discussed in Section 1.2 of this Referral, an accredited assessment process will be sought under section 87(4) of the EPBC Act where the Commonwealth accredits the assessment process under Division 5.2 of the EP&A Act. This will enable the DPE to manage the assessment of Snowy 2.0 Main Works, including the issuing of the assessment requirements for the EIS.

2.5.2 Do you consider this impact to be significant?

Yes

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

Yes

2.11.1 Describe the nature and extent of the likely impact on the whole of the environment.

In July 2018 following the acquisition of all remaining shares of Snowy Hydro by the Commonwealth, Snowy Hydro became a Government Business Enterprise (GBE). Notwithstanding this, for the purposes of this referral, and under the provisions of the EPBC Act, Snowy Hydro is considered to be a 'Commonwealth agency'.

Preliminary environmental investigations have been undertaken and are provided in Chapter 5 of the Snowy 2.0 Main Works Scoping Report which is provided with this referral.

Comprehensive assessments have yet to be completed to determine the impact of Snowy 2.0 Main Works on the whole of the environment and will be undertaken as part of the EIS.

Environmental assessments of Snowy 2.0 were commenced in mid-2017 and are ongoing. The potential impact of Snowy 2.0 Main Works on the whole of the environment has yet to be determined. Snowy Hydro has resolved to take a precautionary approach and nominate that Snowy 2.0 has the potential to have a significant impact on the whole of the environment so that actual impacts can be assessed and documented within the EIS for the project. As discussed in Section 1.2 of this Referral, an accredited assessment process will be sought under section 87(4) of the EPBC Act where the Commonwealth accredits the assessment process under Division 5.2 of the EP&A Act. This will enable the DPE to manage the assessment of Snowy 2.0 Main Works, including the issuing of the assessment requirements for the EIS.

2.11.2 Do you consider this impact to be significant?

Yes

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

The Snowy 2.0 Main Works are located primarily within the boundaries of the KNP and spans the NSW Western Slopes, South Eastern Highlands and Australian Alps Interim Biogeographic Regionalisation of Australia (IBRA) regions.

The seasonal presence of snow sets the Australian Alps apart from most other places on mainland Australia, with intact remnant vegetation extending across the Australian Alps, providing a high degree of connectivity. These factors combine to support a significant and diverse assemblage of flora and fauna species and vegetation communities; many of which are unique to the region, including several state and federally-listed threatened flora and fauna species.

The project area includes significant biodiversity features including the upper slope and inverted treelines and associated subalpine treeless flats and valleys across changes in elevation and lithology, resulting in different and unique flora and fauna assemblages.

Preliminary and detailed survey work has been undertaken, including detailed plant community type mapping and targeted flora and fauna surveys. These surveys have resulted in the identification of one threatened ecological community within the broader project area; Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions, listed as an endangered ecological community under the NSW Biodiversity Conservation Act 2016 (BC Act), and Alpine Sphagnum Bogs and Associated Fens, listed as an endangered ecological community under the tepBC Act. Known and expected plant community types (PCTs) mapped for the broader project area are shown in the attached report.

More than 25 threatened species have been recorded during targeted surveys undertaken to date. Notable threatened species include fauna species such as:

Smoky Mouse (Pseudomys fumeus) - BC Act and EPBC Act;Broad-toothed Rat (Mastacomys fuscus) - BC Act and EPBC Act;Booroolong Frog (Litoria booroolongensis) - BC Act and EPBC Act;Alpine Tree Frog (Litoria verreauxii alpina) - BC Act and EPBC Act;Alpine She-oak Skink (Cyclodomorphus praealtus) - BC Act and EPBC Act; andGang-gang Cockatoo (Callocephalon fimbriatum) – BC Act.

Notable flora species include:

Mauve Burr-daisy (Calotis glandulosa) - BC Act and EPBC Act;Kiandra Leek Orchid (Prasophyllum restroflexum) - BC Act and EPBC Act; andMonaro Golden Daisy (Rutidosis

leiolepsis) - BC Act and EPBC Act.

Flora and fauna relevant to the project area are described further in Section 5.3 of the Snowy 2.0 Main Works Scoping report which is provided with this referral.

3.2 Describe the hydrology relevant to the project area (including water flows).

Snowy 2.0 Main Works is in the Australian Alps. The majority of project infrastructure will be located between the Tantangara and Talbingo reservoirs, within the catchments of the Yarrangobilly, Eucumbene and Murrumbidgee rivers. Receiving waters include:

the Yarrangobilly, Eucumbene and Murrumbidgee rivers and some of their tributaries; and Talbingo and Tantangara reservoirs.

The rivers and their tributaries include a variety of watercourse typologies including ephemeral bogs and fens, minor watercourses and major regional rivers. These watercourses provide habitat for a number of endangered species and have a high conservation value.

Talbingo and Tantangara reservoirs are part of the Snowy Scheme. Aside from their operational functions the reservoirs are used for recreational purposes, including boating, swimming and fishing.

Water from Talbingo Reservoir is released through the Tumut 3 power station into Jounama Pondage, which releases water into Blowering Reservoir. Blowering Reservoir is operated by Water NSW and releases water into the Tumut River to supply a variety of consumptive users but primarily large irrigation schemes. The Tumut 3 power station also has the ability to pump water from Jounama Pondage back into Talbingo Reservoir.

Water from Tantangara is either released into the Murrumbidgee River or diverted to the Eucumbene Reservoir. Water from Eucumbene Reservoir is diverted into either the Tumut or Murray River schemes.

The hydrology relevant to the project area is described in Section 5.6.2 of the Snowy 2.0 Main Works Scoping report which is provided with this referral.

3.3 Describe the soil and vegetation characteristics relevant to the project area.

The Snowy 2.0 Main Works project spans the NSW Western Slopes, South Eastern Highlands and Australian Alps IBRA regions. The geology of the alpine area comprises granites that have formed faulted and stepped ranges. More recent volcanic activity produced basalts and, in the Pleistocene, the cold climate superimposed glacial features on the landscape. The South Eastern Highlands are part of the Lachlan fold belt that runs through the eastern states as a complex series of metamorphosed Ordovician to Devonian sandstones, shales, volcanic rocks and granite body intrusions. Overlying these older units, a regionally extensive weathered zone is assumed to exist.

This complex geology, in association with topography, has resulted in a diverse soil landscape.

Soils vary significantly across the bioregions in relation to altitude, temperature and rainfall. The soils of the Australian Alps and Highlands reflect the extreme climatic gradient across the ranges and a relatively large range of soil types is found over a comparatively small area. Main soil orders within the project area include Kandosols, Tenosols, Dermosols, Vertosols, Ferrosols, Organosols, and Rudosols. The alpine soils support unique flora and fauna, with uniform organic soils and peats found at the highest elevations

The soil characteristics relevant to the project area are described in Section 5.5.1 of the Snowy 2.0 Main Works Scoping report which is provided with this referral.

The vegetation characteristics relevant to the project area are described previously in the description of flora and fauna relevant to the project area. The vegetation characteristics relevant to the project area are described in Section 5.3 of the Snowy 2.0 Main Works Scoping report which is provided with this referral.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

The majority of the project area is within the KNP. The KNP is reserved as a national park under Part 4, Division 3 of the NSW *National Parks and Wildlife Act 1974* (NPW Act). NSW national parks are the responsibility of the NPWS which is a part of the OEH.

KNP contains unique sub-alpine values and declared Wilderness Areas and is listed on the Australian National Heritage List. All activities within KNP must be consistent with the Kosciuszko National Park Plan of Management 2006 (PoM) in accordance with Part 5 of the NPW Act.

The values of the KNP are set out in the PoM and are listed below.

The KNP is unique as it contains Australia's highest mountains, unique glacial landscapes and unusual assemblages of plants and animals. The KNP has a rich Aboriginal and European history. The KNP has a variety of recreational uses and is Australia's pre-eminent skiing destination due to the presence of snow fields and alpine resorts.

The existing Snowy Scheme has been operating within the KNP since 1949. The existing Scheme and assets have long been part of the landscape and are a key feature in park recreation and visitation.

The PoM incorporates the Snowy Management Plan, which is set out in Schedule 2 of the Snowy Management Plan Procedures Agreement dated 3 June 2002. Snowy Hydro is required, under Part 4 of the NPW Regulation, to comply with the environmental management obligations imposed on the company under the Snowy Management Plan. The Snowy Management Plan Procedures Agreement would need to be reviewed and updated as required for Snowy 2.0 Main Works.

Details of the preliminary investigations of project impacts to the KNP are provided in Section 5.2 of the Snowy 2.0 Main Works Scoping report which is provided with this referral.

3.5 Describe the status of native vegetation relevant to the project area.

Native vegetation within KNP are protected in part through the provisions of the PoM and the Park Zoning that covers the whole of the KNP and is intended to:

protect the values of the park, as set out in the PoM under the headings of Natural Values, Cultural Values and Recreational Values;optimise opportunities for a wide range of recreational activities and visitor experiences; andminimise conflict between participants in different recreational activities, and between visitors, management operations and other authorised uses.

KNP has five management zones:

Wilderness Zone - Wilderness areas declared under the NSW Wilderness Act 1987;Back Country Zone - Those parts of the KNP without public road access and not within declared wilderness areas;Minor Road Corridors - Corridors along minor public roads and associated visitor developments;Major Road Corridors - Corridors along major sealed and unsealed public roads and associated visitor developments; andVisitor Services Zone - Alpine resorts, development nodes and operational centres.

The project area is mostly contained within the Back Country Zone. Some of the supporting infrastructure (roads, power and communication) are within, or cross, the Major and Minor Road Corridors. None of the project area is contained within a Wilderness Zone area.

The condition of native vegetation within the Exploratory Works project area is described in Section 5.1.2(ii) and Appendix F of the Exploratory Works EIS (Snowy Hydro, 2018, see Application Number SSI 18_9208 to the DPE available at the following link http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9208#). The condition of vegetation in the project area for Snowy 2.0 Main Works will be described in the Main Works EIS following outcomes of surveys and site investigations.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

Snowy 2.0 will increase the pumped hydro-electric capacity within the existing Snowy Scheme by linking the Tantangara Reservoir (at 1,222 m AHD) and Talbingo Reservoir (at 546 m AHD) with underground tunnels feeding an underground power station. The project will involve tunnelling and excavation works between the two reservoirs to depths of up to 1 km.

3.7 Describe the current condition of the environment relevant to the project area.

A project area for Snowy 2.0 Main Works has been identified that includes the elements of the project, including all construction and operational elements. The existing environment within the project area includes:

the water bodies of Talbingo and Tantangara reservoirs, covering areas of 19.4 square kilometres (km2) and 21.2 km2 respectively. The reservoirs provide the water to be utilised in the pumped hydro-electric scheme; major watercourses including the Yarrangobilly, Eucumbene

and Murrumbidgee rivers and some of their tributaries; andpart of the KNP (which covers the majority of the project area), characterised by two key zones: upper slopes and inverted treelines in the west of the project area (referred to as the 'ravine', and associated subalpine treeless flats and valleys in the east of the project area (referred to as the 'plateau').

The project area is interspersed with built infrastructure including recreational sites and facilities, main roads as well as unsealed access tracks, hiking trails, electricity infrastructure, and infrastructure associated with the Snowy Scheme.

The current condition of the environment within the Exploratory Works project area is described in Chapter 5 of the Exploratory Works EIS which is publicly available on the DPE website (see link http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9208). The condition of the environment in the project area for Snowy 2.0 Main Works will be described in the Main Works EIS following outcomes of surveys and site investigations.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

There are no Commonwealth Heritage Places relevant to the proposed action. The Snowy Mountains have a rich history, beginning with the early explorer-settlers in the 1820s, the establishment of pastoralism and summer grazing in the 1830s, the gold rush at Kiandra in 1859-60 and early scientific exploration. Thereafter, throughout the twentieth century, the Snowy Scheme was built, scientific research developed further, and tourism and recreation were promoted. A wide range of historical items and places are distributed throughout the mountains, including stockman's huts, fences and mine sites. Heritage items and values relevant to the project are described in Section 5.4 of the Snowy 2.0 Main Works Scoping Report which is provided with this referral.

3.9 Describe any Indigenous heritage values relevant to the project area.

The Snowy Mountains is country to many Aboriginal people who have cultural and spiritual associations that have long histories embodied in objects which can be seen on the ground and other intangible values related to the past and current concerns and aspirations (NSW DEC 2006). The project area itself is located within the lands of the Wolgalu people (Boot 2000).

Recent archaeological research has confirmed an Aboriginal presence in the Snowy Mountains since the early Holocene, approximately 9,000 years before present (Aplin et al. 2010, Theden-Ringl 2016). Previously recorded Aboriginal site types in the Snowy Mountains area include stone artefacts, grinding grooves, rock shelters, scarred or carved trees, quarries, contact sites, ceremonial sites and burials.

Indigenous heritage values relevant to the project are described in Section 5.4.1 of the Snowy 2.0 Main Works Scoping Report which is provided with this referral.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

While most of the project area is contained within the boundaries of the KNP and included within a Crown land tenure, some areas of the park (eg at Lobs Hole and around Tantangara Reservoir) are held as freehold lots, as shown on Figure 2.

3.11 Describe any existing or any proposed uses relevant to the project area.

The majority of the project area is within the KNP. All of the proposed pumped hydro-electric and temporary construction elements and most of the supporting infrastructure for Snowy 2.0 Main Works are located within the boundaries of KNP. Some of the supporting infrastructure (including sections of road upgrade, power and communications infrastructure) extends beyond the national park boundaries. These sections of infrastructure are primarily located to the east and south of Tantangara Reservoir.

There may be other areas required for construction laydown or other similar uses that extend beyond the boundaries of the project area following the appointment of a delivery contractor for Snowy 2.0, and as construction requirements are confirmed as part of the final design. Any activities associated with such uses would be assessed in the EIS and subject to consultation with relevant stakeholders and the community.

The site location and project area are described further in Section 2.3 of the Snowy 2.0 Main Works Scoping Report which is provided with this referral.

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

Consistent with the principles of ecologically sustainable development, Snowy 2.0 is being designed to avoid and minimise impacts where possible. In the first instance this has included consideration of site suitability based on design and construction needs, existing assets and infrastructure (such as road access), and environmental conditions. Snowy Hydro has been working with NPWS since the announcement of Snowy 2.0 with the objective of ensuring the proposed design avoids and minimises impacts to biodiversity, heritage, recreation, and considers their long-term objectives for land management in KNP.

This process is an iterative process between design and environment assessment and supported by consultation activities. This process has been informed and refined by the results of field surveys and consultation with key stakeholders, in particular NPWS and OEH. On this basis, impacts on biodiversity, heritage, recreation and land use can be avoided and minimised for the Snowy 2.0 Main Works.

For the Snowy 2.0 Main Works, an avoidance footprint will be defined and presented in the Main Works EIS to limit the extent of direct impacts and disturbance. This is a commitment made by Snowy Hydro and will be implemented by the construction contractor(s). It is anticipated the construction method would be further refined during detailed design to ensure avoidance and minimisation objectives are met.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

For listed species and threatened ecological communities, an assessment of the biodiversity values and the likely biodiversity impacts of the project will be undertaken in accordance with relevant NSW and Commonwealth legislation and guidelines, including:

Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia 2013);Commonwealth Department of the Environment – survey guidelines for nationally threatened species (various);Biodiversity Assessment Method (OEH 2017);Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (DEC 2004);Threatened species survey and assessment guidelines: field survey

methods for fauna – Amphibians (DECC 2009); andNSW Guide to Surveying Threatened Plants (OEH 2016).

Any potential impacts on the values of National Heritage places will be assessed as part of the assessment of historic heritage. The assessment of historic cultural heritage assessment would be undertaken in accordance with the principles of the Australia ICOMOS Burra Charter (Australia ICOMOS 2013a) and its relevant Practice Notes (Australia ICOMOS 2013b, 2013c, 2017). It would also comply with the Historical Archaeology Code of Practice (Heritage Council of NSW 2006) and the NSW Heritage Manual (1996) and its various updates and other guidelines published by the NSW Heritage Office (1996, 2001, 2009).

The assessment would include a review and synthesis of the historical context of the area based on primary and secondary sources, including historical maps and various published and unpublished sources (eg academic theses and consultant reports).

Given that most of Snowy 2.0 Main Works is within the boundaries of the KNP, Snowy Hydro will liaise closely with NPWS to determine the extent of decommissioning of temporary construction facilities and rehabilitation activities to be undertaken following construction of Snowy 2.0 Main Works. This approach will be taken to ensure that decommissioning allows for integration with future planned recreational uses of these areas and to maintain the values of KNP.

Rehabilitation will be considered during all phases of construction, from design and site preparation, through to stabilisation and revegetation.

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

National Heritage Places - Yes

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

Listed threatened species and communities - Yes

5.1.5 Listed migratory species

Listed migratory species - Yes

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

Protection of the environment from Commonwealth actions - Yes

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

Not applicable

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

Snowy Hydro has an excellent track record of responsible environmental management and compliance with environmental laws, permits and approvals.

Snowy Hydro's operations are subject to environmental laws and regulations as well as project and site-specific environmental permits and approvals issued at the Federal, State and Local Government levels. These include compliance with the KNP Plan of Management and the Snowy Management Plan for operations within KNP; Environmental Protection Licences (EPLs) and environmental authorisations applicable to each of Snowy Hydro's generation facilities; and the Snowy Water Licence which prescribes rights and obligations with respect to the collection, diversion, storage, use and release of water within the Snow Scheme and the release of environmental flows.

Snowy Hydro operates in accordance with the following EPLs and environmental authorisations that specify the conditions relating to pollution prevention and monitoring:

EPL 10515 Scheme Wide Operations;EPL 10379 Cabramurra Town Sewage Treatment Plant;EPL 13036 Colongra Power Station;EPL 13161 Transport of Trackable Waste;EPL 21051 Helicopter related activities;Valley Power Waste Discharge Licence;Laverton North Waste Discharge Licence;Lonsdale and Port Stanvac Power Station EPL; andAngaston Power Station EPL.

For Snowy Scheme operations, licensed under EPLs 10515, 10379 and 13161, a Pollution Incident Response Management Plan (PIRMP) has been developed and made publicly available in accordance with Part 3A clause 98D(2) and 98D(3) of the NSW Protection of the Environment Operations (General) Amendment (Pollution Incident Response Management Plans) Regulation 2012 for Snowy Hydro.

All licences and the PIRMP for Snowy Scheme operations are located on the Snowy Hydro website (https://www.snowyhydro.com.au/our-energy/environment/environment-protection licences/) as well as the NSW EPA's register under the Protection of the Environment Operations Act 1997 (POEO Act).

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b)

if a permit has been applied for in relation to the action – the person making the application.

EPA v Snowy Hydro Limited (2008) 162 LGERA 273 – Land and Environment Court of NSW: In September 2008, as occupier, Snowy Hydro was convicted and fined \$100,000 + prosecutor's costs for an offence against section120(1) of the POEO Act, regarding an incident that occurred at Jindabyne Dam.

The fine was imposed for causing water pollution to the Snowy River. This resulted from an incident during works to upgrade the Jindabyne Dam spillway in 2006. Snowy Hydro was prosecuted as occupier of the site, and its principal contractor, Fulton Hogan, who carried out the works which introduced the pollutants to the river, was also convicted for the same offence (EPA v Fulton Hogan Pty Ltd [2008] NSWLEC 268).

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

An Environmental Management System (EMS) has been in place at Snowy Hydro since June 2000 and independently certified to the ISO14001 Standard. Further information is available on Snowy Hydro's website

(https://www.snowyhydro.com.au/ourenergy/environment/environmentalsystems-processes/).

The EMS ensures Snowy Hydro stands by its environmental commitments by:

setting clear direction through the Environment Policy and Objectives; identifying environmental risks and legal obligations; putting in place effective operational controls; checking and correcting as they go; and reviewing and updating policies and procedures.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

2000/112 - Snowy Mountain Hydro-electric Authority (SMHEA)/Water Management/Kosciuszko National Park/NSW/Murray 1 Pressure Tunnel

2018/8217 - SNOWY HYDRO LIMITED/Commonwealth/Lobs Hole Ravine Road, Kosciuszko National Park, NSW, 2627/New South Wales/Snowy 2.0 Exploratory works, Snowy Mountains, NSW

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
EMM 2018a. Scoping Report for Snowy 2.0 Main Works, EMM Consulting Pty Ltd, October 2018	In this report, EMM has relied on information from publicly available desktop sources such as the NSW BioNet Atlas, Aboriginal Heritage Information Management System (AHIMS) database, and other published literature and reports. These sources are listed within the Scoping Report. The report has been prepared by suitably qualified environmental consultants. As such, a reasonably high level of reliability is assumed in the context of the desktop level of information presented.	Any uncertainties identified in the cited text should be considered in the context of the uncertainties of those database and desktop results presented.
EMM 2018b. Environmental Impact Statement, Exploratory Works for Snowy 2.0, EMM Consulting Pty Ltd, July 2018	The report was prepared by suitably qualified environmental consultants largely based on field surveys and monitoring. As such, a reasonably high level of reliability is assumed. For some aspects, EMM had to rely on information from publicly available desktop sources.	Any uncertainties identified in the cited text should be considered in the context of the suncertainties of those database and desktop results presented.
Snowy Hydro Ltd, 2017. Snowy 2.0 Feasibility Study Report, December 2017	The report is a feasibility study outlining the concept of Snowy 2.0. The context of the report is to provide an understanding of the overall project to a feasibility level.	The report is a feasibility study outlining the concept of Snowy 2.0 and is subject to the limitations noted in that report.

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

Snowy 2.0 Main Works provides several benefits that justify its selection over alternative projects. In particular the pumped hydro-electric energy storage technology used in Snowy 2.0 would have high full cycle energy efficiency, a long lifespan and would provide 350,000 megawatt hours (MWh) of energy storage, which is significant storage capacity. These benefits are considered to justify the use of pumped hydro energy storage to complement other smaller scale energy storage technologies.

While other opportunities have been identified in NSW and throughout Australia for pumped hydro-electric storage, notably the atlas of pumped hydro-electric storage released in 2017 (Blakers et al. 2017), the lead time and planning for such projects is extremely complex. Snowy 2.0 utilises existing assets under the control of Snowy Hydro. In this regard, Snowy Hydro is uniquely positioned to be able to deliver a project of the magnitude of Snowy 2.0 that will provide significant benefits to NSW and the NEM utilising its existing reservoirs.

In developing Snowy 2.0, Snowy Hydro considered a range of alternative designs, layouts and locations for various elements of the project. Some of these elements and their alternatives were considered during the Snowy 2.0 Feasibility Study (Snowy Hydro 2017). Others were the subject of more recent and more detailed investigations and resulted in the location of the elements that make up Snowy 2.0 Main Works.

The alternatives and options considered included:

horizontal alignment options for headrace and tailrace tunnels, which is closely aligned with the location of intake structures within Talbingo and Tantangara reservoirs;optimisation of power house locations – with two options previously proposed: the ravine and plateau options, with the ravine option providing the preferred outcome of reduced construction timeframes;main access (MAT) and emergency egress, cable and ventilation tunnel (ECVT) options, which included different locations and configurations to align with the preferred power house location; androad alignment options – different road alignment options have been considered and continue to be considered in order to provide connection between key project infrastructure and minimise environmental impacts where possible. This includes iterations of road access to Marica.

As previously discussed, Snowy Hydro is currently in the tendering phase to determine the delivery contractor for Snowy 2.0. It is anticipated that all feasible options and alternatives will be identified and documented within the EIS.

Project alternatives are discussed further in Section 2.5 of the Snowy 2.0 Main Works Scoping Report which is provided with this referral.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

GM Water and Environment

9.2.2 First Name

Andrew

9.2.3 Last Name

Nolan

9.2.4 E-mail

andrew.nolan@snowyhydro.com.au

9.2.5 Postal Address

2 Monaro Highway Cooma NSW 2630 Australia

9.2.6 ABN/ACN

ABN

17090574431 - SNOWY HYDRO LIMITED

9.2.7 Organisation Telephone

02 6453 2888

9.2.8 Organisation E-mail

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date:

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

information I have given on, or attached to the EPBC Act Referral is complete, current and	
correct. I understand that giving false or misleading information is a serious offence. I decla	ire
that I am not taking the action on behalf of or for the benefit of any other person or entity.	
Signature: Date:23 10 18	

\bigcirc	·
l,,	the person proposing the action, consent to the
designation of	as the proponent of the purposes of
the action describe in this EPBC Act Referral	•

Signature:..... Date:

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

9.5.1 Job Title

General Manager Water and Environment

9.5.2 First Name

Andrew

9.5.3 Last Name

Nolan

9.5.4 E-mail

andrew.nolan@snowyhydro.com.au

9.5.5 Postal Address

2 Monaro Highway Cooma NSW 2630 Australia

9.5.6 ABN/ACN

ABN

17090574431 - SNOWY HYDRO LIMITED

9.5.7 Organisation Telephone

02 6453 2888

9.5.8 Organisation E-mail

info@snowyhydro.com.au

Proposed designated proponent - Declaration

I, _____, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:..... Date:

9.6 Is the Referring Party an Organisation or Individual?

Organisation

Director

9.8.2 First Name

Brett

9.8.3 Last Name

McLennan

9.8.4 E-mail

bmclennan@emmconsulting.com.au

9.8.5 Postal Address

20 Chandos Street St Leonards NSW 2065 Australia

9.8.6 ABN/ACN

ABN

28141736558 - EMM CONSULTING PTY LIMITED

9.8.7 Organisation Telephone

02 9493 9500

9.8.8 Organisation E-mail

info@emmconsulting.com.au

Referring Party - Declaration

I, ______, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature: BM cennany Date: 23/10/2018

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

- 1. Figure 1 MWEPBC001_ActionArea_20181011_02.pdf
- 2. Figure 2 MWEPBC002_LandTenure_20181011_02.pdf
- 3. FullProjectIndicativeProjectArea_02pg_EMM_20180924.zip
- 4. Snowy 2.0 Main Works scoping report_20181015_FNL_Part1.pdf
- 5. Snowy 2.0 Main Works scoping report_20181015_FNL_Part2.pdf
- 6. Snowy 2.0 Main Works scoping report_20181015_FNL_Part3.pdf
- 7. Snowy 2.0 Main Works scoping report_20181015_FNL_Part4.pdf