

## **Snowy Hydro 2.0 – Main Works Environmental Impact Statement**

The Monaro Acclimatisation Society Inc (MAS) of NSW is a voluntary organisation primarily concerned with the development and maintenance of freshwater fisheries in the south-eastern sector of NSW. The MAS is a primary stakeholder with the NSW Department of Fisheries. The MAS has been in existence for over 70 years and participates with NSW Fisheries in: the stocking of fresh water lakes and rivers with trout and native fish, maintenance of habitat, and policy and legislation development that affects fishing in NSW. The MAS is the pre-eminent organization concerned with angler access to rivers and lakes for the Snowy Mountains / Monaro Region of NSW.

The MAS makes the following comments on the Snowy Hydro 2.0, Main Works Environmental Impact Statement.

From the MAS perspective there are a number of key issues that cause us concern. These issues are:

- ⑤ The transfer of redfin perch from Talbingo Reservoir into Tantangara Reservoir
- ⑤ The transfer of EHN Virus from Talbingo Reservoir into Tantangara Reservoir
- ⑤ The matter of blue green algae blooms in Tantangara Reservoir
- ⑤ The drying of rivers due to the tunneling
- ⑤ Access to Tantangara Reservoir during the construction phase.

To provide clarity excerpts from the EIS are in italics and relevant sections highlighted yellow.

### **Appendix G - Mitigation Measures Table**

#### **Table G.1 Mitigation measures**

##### **Marine transport NAV01**

*The following measures will be implemented to manage interactions between marine transport and public boating activities during construction:*

- *public exclusion zones will be established around all inreservoir construction areas;*
- *an aquatic license will be obtained from RMS for all inreservoir construction activities and exclusion zones;*
- *all work vessels will be limited to 4 knots;*
- *all vessels and barges will be fitted with Automatic Identification System and comply with all licensing requirements of Australian Maritime Safety Authority and Roads and Maritime Services including specific requirements for Alpine Waters;*

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- any fixed obstruction such as marker buoys and moorings will comply with Roads and Maritime Services requirements and are adequately lit at night; and

- notification signs advising of the works and public closures at:

- the intersection of Snowy Mountains Highway and Tantangara Road;
- the intersection of Snowy Mountains Highway and Long Plain Road; and,
- Tantangara Boat Ramp.

The MAS is concerned that the closure plan is limited to the immediate surrounding location. Those who visit the area with a boat in tow will be disappointed to find that having travelled a long distance the access is closed. The MAS would like to see this section modified to ensure minimal inconvenience to traveling anglers.

Our suggestion is that notification signs should also be placed at:

- ⑤ The Snowy Mountains Highway at Adaminaby,
- ⑤ The Snowy Mountains Highway at Tumut, and
- ⑤ Closures be placed on the Live Traffic NSW website and 132701 phone number.

By adopting this approach anglers who might fail to check before they leave will be given adequate warning at places where they could make alternative arrangements for their fishing or activity.

## **Appendix M.2 - Aquatic Ecology Assessment**

### **Operational Phase**

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*Notwithstanding this, mixing of the reservoir waters during operation is unlikely to significantly affect pH, electrical conductivity, turbidity, dissolved oxygen concentration (except as a result of temperature changes); nutrients and metals (except for aluminium and copper) in either reservoir. The greatest potential change during operation would be in water temperature, particularly in Tantangara Reservoir. The risk of negative impacts to aquatic ecology from changes to water quality or temperature in the reservoirs is considered to be low.*

*Given these findings, consideration of the proposed safeguards and the potential option for offsets in the event inadvertent damage to aquatic habitats or populations of biota occur, the project has acceptable outcomes to aquatic ecology values in the project study area.*

The MAS notes that the issue of “blue green algae” does not appear to have been considered in this EIS. Last year, 2018/19 saw the whole of Tantangara subjected to a blue green algal bloom. This is the first time anglers can remember such an outbreak. While the MAS does not profess to understand all the causes of the outbreak, we believe that a significant contributor is the large population of wild horses that domicile on the lake plains. The MAS has significant evidence of the damage done by wild horses and of particular concern is the trampling of the stream banks and the consequential release of once bound up nutrients, the large amounts of dung and the lowering of the water table by horse activity

The MAS also notes that the amount of horse dung now deposited higher on the flood plain of Tantangara lake will only further fuel blue green algae, especially if it is inundated from time to time.

While we acknowledge that the EIS may not be concerned with the wild horses issue, the matter of blue green algae is important. If significant blue green algae outbreaks are to become the norm, then the EIS should investigate what affect water transfer will have in relation to blue green algae. As examples:

- ⑤ how will the transfer of blue green algae water from Tantangara into the Murrumbidgee River affect the aquatic biota, especially platypus and down stream use by anglers and farmers who border the river, and
- ⑤ how will transfer of blue green algae impact on Talbingo Reservoir and Lake Eucumbene.

The MAS believes that the lack of information on blue green algae and its potential to become a permanent feature of Tantangara should be investigated fully and reported in this EIS.

#### 7.2.3.3 Primary catchments

##### *Redfin Perch*

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*Redfin perch would be expected to affect populations of salmonids in Tantangara Reservoir via predation on smaller trout and competition for other food resources. Complete displacement of brown or rainbow trout from Tantangara Reservoir, however, is not expected.*

The MAS believes that the statement highlighted is quite disingenuous and seeks to convey the impression that redfin will not be a problem for trout should they invade Tantangara Reservoir.

The MAS notes that this statement is at odds with what has been experienced in other Australian locations and by two significant scientific studies into the impact of redfin on trout. (D.R.Moy. Survival of Trout Liberated into Barker's Creek Reservoir, Harcourt, Victoria. Freshwater Fisheries Newsletter, No 6, July 1974. Fisheries and Wildlife Division, Ministry for Conservation Victoria and Brett W. Molony et al, The relative efficacy of stocking fry and yearling rainbow trout (*Oncorhynchus mykiss*) into a large impoundment dominated by redfin perch (*Perca fluviatilis*) in south-west Australia. Marine and Freshwater Research, 2004, 55 781-785. CSIRO Publishing.)

While the EIS author does not expect redfin to completely displace trout, no evidence has been produced for this expectation. Based on experiences across Australia the real expectation is that the redfin impact on trout will be significant to the point where this important tourism asset for the region will be compromised. The MAS would like this section revised to include: "However while it is feasible that some salmonids may remain it is expected that the introduction of redfin will have a significant impact on the numbers of trout available to the angling public."

#### 7.2.5.3 Tantangara Reservoir

*Over the long term operation of Snowy 2.0, there is potential that redfin perch would be transferred into Tantangara Reservoir from Talbingo Reservoir. A precautionary approach assumes that a proportion of redfin perch being transferred may be infected with EHNV (although there is no evidence that this is currently the case) and/or that redfin perch transferred to Tantangara Reservoir would amplify the risk of becoming infected by EHNV (Hick, et al., 2019). On this basis, there is a possible likelihood of transfer of EHNV, albeit at least in a subclinical form. The most abundant fish species within Tantangara Reservoir are brown and rainbow trout. Brown trout are not known for susceptibility to EHNV but rainbow trout are, at least in controlled farmed and laboratory settings, and therefore would be considered to be at risk. A fish kill of rainbow trout or redfin perch would affect the populations of either species and may have secondary impacts on water quality.*

The MAS notes that this assessment of the potential transfer of EHNV into Tantangara and its secondary impact on water quality does not give a complete picture of the EHNV secondary impacts.

Should EHNV establish in Tantangara then there also exists the secondary threat of the virus spreading to the Murrumbidgee River below Tantangara and to Lake Eucumbene.

The MAS notes that EHNV has been identified as a fatal disease to Macquarie Perch in laboratory tests. The MAS also notes that the last surviving population of Macquarie Perch in the Murrumbidgee River is situated a short distance below the Tantangara Dam. Should EHNV enter Tantangara there would be a strong possibility that it could travel down to this remnant population of Macquarie Perch.

Similarly, should the EHNV travel down the Portal into Lake Eucumbene this would have a dramatic impact on the rainbow trout fishery in Lake Eucumbene.

The MAS notes that the proposed screening of the Dam outlet and the Portal are not likely to be able to stop the spread of EHNV. The MAS is of the opinion that if EHNV is detected in Tantangara then a moratorium on water transfer from Tantangara to the Murrumbidgee River and Lake Eucumbene should be enacted.

The MAS would like to see this section revised to fully explore the secondary impacts of EHNV on Lake Eucumbene and the Murrumbidgee River. Additionally, a detailed EHNV response plan should be devised to ensure:

- ⑤ That Tantangara Reservoir is regularly monitored over the life of the project for EHNV, and
- ⑤ If EHNV is detected in Tantangara its spread to the Murrumbidgee River and Lake Eucumbene is prevented.

## **6.5 Tunnel Excavation and Groundwater Drawdown**

The MAS notes that a consequence of the tunnelling will be the change in river flows for those rivers crossing the tunnel footprint. We note the use of grouting to ameliorate some draw down, but overall it seems that a significant number of rivers important to anglers will see increased drying as a result of the project.

*Impacts to aquatic biota due to impaired water quality in watercourses associated with reduced flow. This would likely be most evident in disconnected pool habitat with the potential for elevated temperatures and reduced concentrations of dissolved oxygen particularly during summer.*

*Conservative model predictions for the Eucumbene River adjacent to the tunnel alignment indicate possible periods of no flow are predicted overall to increase from 14 % to 26 % (Site 10), 33 % to 39 % (Site 9), 3 % to 17 % (Site 11) and from 0 % to 3 % (Site 2). Increased no flow days could be greater during summer at Sites 10 (21 % to 40 %) and 11 (4 % to 23 %). Based on drawdown contours, greater reductions in flow in Eucumbene River are predicted upstream of these sites adjacent to the tunnel alignment, where groundwater levels could reduce by around 20 m. In comparison, Sites 2, 9, 10 and 11 on the Eucumbene River are predicted to have < 2 m drawdown. Reduced flow in the Eucumbene River could occur from its headwaters to around Site 2 (approximately 12 km length of watercourse), being most pronounced further upstream.*

As outlined in the EIS the most likely scenario would be for the rivers to develop into disconnected habitat. The MAS is concerned that while this may now occur from time to time the EIS indicates that this disconnection will become more frequent or longer over time as the drawn down increases in the decades after operations begin. While the EIS indicates that flows will return after rain events, the EIS does not signal how much rain would be required to get the pools reconnected and how long they would be reconnected for. Also, the EIS does not indicate that it has factored in the effects of climate change.

The MAS is very concerned that the reductions in flow in the Eucumbene River could have an adverse impact on the annual spawning run of brown and rainbow trout (as well as other biota). It is well documented that newly hatched trout remain in their natal river for 12 months before beginning the journey down stream to the lake. Should this natural replenishment event be compromised due to an increase in drying events for the river it might be necessary to increase the stocking of fish in Lake Eucumbene to make up the shortfall and maintain the viability of the fishery.

## Wild Horses

As mentioned in our response to the Aquatic Ecology Assessment, the current unsustainable number of wild horses on the Tantangara and Eucumbene headwaters has already had an impact on the water table. The Currango Swamp is now dry and many of the smaller tributaries have had their banks scalloped and are silted and turbid. While the MAS understands the EIS is not directly interested in wild horses, the impact they have already had and will continue to have on the headwaters does not appear to have been investigated in the EIS. Combining the effect of horses with the effect of the tunnel may lead to an entirely different scenario in terms of flow reductions, dry periods and replenishment rates in the waterways affected by the tunnel.

The MAS would like to see more detail in the EIS relating to the replenishment rate of dried rivers from rainfall, particularly during the summer period and the effect wild horses have on the modelling so a proper assessment can be made on the potential effect on the recreational fishery.

### **Appendix X.2 - Recreational Users Study**

#### **4.3.2 Traffic Impacts**

*Notification signs advising of the works and public closures will be at:*

- *the intersection of Snowy Mountains Highway and Tantangara Road;*
- *the intersection of Snowy Mountains Highway and Long Plain Road;*
- *Tantangara boat ramp.*

The MAS is concerned that the closure plan is limited to the immediate surrounding location. Those who visit the area with a boat in tow will be disappointed to find that having travelled a long distance the access is closed. The MAS would like to see this section modified to ensure minimal inconvenience to traveling anglers.

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### **Appendix M.3 - Offset Strategies**

#### **Recreational fishing in Tantangara**

- *With stakeholders (in particular Monaro Acclimatisation Society) develop a program for stocking of large fish (rainbow trout) in Tantangara Reservoir.*
- *Improve boat launching access at Talbingo and Tantangara reservoirs.*

The MAS has engaged with Snowy Hydro since the concept of Snowy 2.0 was announced by Malcolm Turnbull former PM. Our negotiations have revolved around ensuring that the recreational trout fishery

of Tintangara is maintained in the face of potential redfin invasion. Our discussions have identified that the best mitigation is for larger trout to be stocked. Larger trout have the ability to avoid redfin predation and will ensure that the fishery is maintained.

The MAS partners with NSW Fisheries in the operation of the Gaden Trout Hatchery, Jindabyne. NSW. NSW Fisheries have acknowledged that Gaden Hatchery will not be able to supply larger fish for the stocking of Tintangara due to space and water issues. To overcome this barrier the MAS continues to negotiate with Snowy Hydro for a facility to grow larger numbers of bigger fish. It should be noted that the term larger is identified as trout averaging about 200mm in length. In NSW the minimum legal length for harvesting trout is 250mm.

The MAS is supportive of this offset and believes that this is the only feasible option of keeping the Snowy Mountains trout fishery viable in the face of redfin and / or EHNV transfer from Talbingo.

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31 October 2019