

Submission in relation to Shoalhaven Hydro Expansion Project

Environmental Impact Statement

General comment:

I find the EIS report very patchy and full of inaccuracies and poorly supported assertions. It appears to have been prepared hastily for what I can only assume is to meet a political agenda. It also lacking sufficient detail for the reader to actually evaluate the impact of the project. Because of the very limited amount of time that the EIS is open for comment I have failed to respond in the detail required. Further opportunity to comment on the details

My reasons for opposing the proposed expansion are:

1. I have great sympathy for those people who live adjacent to the project who will be adversely affected for a considerable length of time. The burden they will bear is greater than Origin should ask of neighbours.
2. Further I see the Project as running counter to the interests of Kangaroo Valley, its residents and businesses.
3. I am not convinced that the value of the project is worth such a huge expenditure of fossil fuels (effectively a mining project) to achieve a supposed decarbonised variable energy generation. I appreciate that storage of energy is important for our future, however, to design a system that requires a major expenditure of energy in pumping up water (16 hours) to then generate energy by letting it go (9 hours) is hardly a solution. Is 'pumped hydro' actually green? The EIS does not document how Origin Energy has explored other options. I believe it is required to do so.
4. My immediate concern is for the wildlife and wildlife habitat that will be destroyed in the construction of the project. This area was heavily burnt in January 2020 and the eastern boundary of the Currowan fire is Origin's expansion site. As I live within the burnt area I have seen the huge loss of flora and fauna that fire caused. The fact that the bush Origin will clear has been a refuge to remnant species makes it particularly valuable. The EIS states that the areas to be cleared are regrowth when in fact only 25% is regrowth from the building of the first stage and that regrowth has been over a period of 45+ years. In addition, the wildlife that crosses Bendeela Road and the beginning of Jacks Corner Road are currently greatly impacted by resident and visitor traffic. To add industrial scale vehicles running for 24 hours for 5 years to this mix will destroy many wombats, wallabies, kangaroos, echidnas, possums, bandicoots and birds. Every time I drive past the Bendeela pondage/pumping station I note fauna wandering within the expansion site. For example, for the last week or so a very charming echidna has been foraging on the grassy area next to the pond. These animals will not be relocated. They will be destroyed. There is no project worth that expense of life.
5. I find the EIS report inaccurate and under detailed in sections. I have tried below to go through sections of the report and make my comments and queries.

The project outline given within the EIS I find to be vague and lacking detail. The Scoping Report states that there will be potential variations during the design and construction phase. These may include:

- Repositioning of project components...;
- Altered construction methods (including spoil haulage, component delivery, use of cable crane, tunnelling methods etc) ...; and
- Total energy capacity

The Report states *"It is desirable that flexibility is provided in the project description to allow the final design and specifications to be determined based on selection of preferred technology and optimisation of layout"*. The EIS and its appendices do reflect Origin Energy's intention to be 'flexible' making it very difficult to evaluate what will actually be done to execute the project. The language of the report includes phrases such as *'could be', 'may', 'will be assessed', 'are anticipated to be', 'methods will be deployed to minimise disturbance within the Moreton National Park to the extent possible', 'A rehabilitation management plan will be prepared', 'methods are subject to change based on detailed design', 'Origin is engaging with specialist tunnelling contractors to determine the most efficient and effective method of tunnelling'* and so on. The EIS and Report perhaps have been submitted prematurely either to meet an unspecified timing agenda by Origin and/or the NSW Government, or to limit effective review of the details of the Project by outsiders such as myself.

In this document I will make specific comments and ask questions in relation to most of the Appendices to the EIS.

Appendix B. Indicative concept design.

Comments and queries on Appendix B

1. **The tunnels are to be lined with steel reinforced shotcrete. I assume this is predominantly concrete which is not a 'green' product. Does Origin Energy plan to moderate the sustainability of this building material?**
2. **There is reference in the report that the steel lining to the tunnels may not be used. What will be the implications of a fully concrete tunnel wall? Will it be more vulnerable to earth movements and water erosion?**
3. **Will concrete be trucked to site and the tunnel walls fabricated on site or precast concrete used? Will the construction include concrete manufacturing? What impact will this process have on the construction environment in terms of noise, dust, vehicle movements, habitat destruction? The report states: *Procedures to capture, contain and appropriately dispose of any concrete wastes from concrete works* [What are these procedures?] *Where possible, concrete structures to be pre-fabricated prior to installation instream or within the riparian zone (40m of any waterway), where practicable* [Phrases such as 'where**

practicable’ and *‘where possible*’ are worrying as they indicate no commitment to keep concrete pollution away from waterways and the surrounding habitats and residences.]

4. I understand there are currently technological barriers to low-carbon concrete manufacturing. How will this project address and offset the use of high-carbon concrete?

Appendix D. Community engagement

Comments and queries on Appendix D

1. I query the accuracy of this table of community engagement as I know for a fact that one entry at least is false:

Kangaroo Valley Environment Group	11 October 2022	Email correspondence received in response to letter emailed to community organisations.	Happy to hear the proposal is going ahead.	Noted.
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The Kangaroo Valley Environment Group (KVEG) did not make a decision to support the expansion and at no time advised Origin that the organisation was “happy to hear the proposal is going ahead”. In fact, KVEG has formally agreed to request the extension of the period for comment to allow the organisation and its members to fully evaluate the proposed expansion.

2. I further query the actual practice of ‘community engagement’ used. I agree that Origin staff have advised residents and other interested and affected parties of the company’s plans, however, at no time were people or organisations encouraged to be engaged in the development or planning of the project with the company.

Appendix F. Biodiversity development assessment report

Comments and queries on Appendix F:

1. Reference to the 2019-20 Currowan fire in section 4.1 simply identifies that the areas within the proposed expansion were not burnt. As the unburnt area actually represents the edge of the fire zone the impact for refuge and relocation of wildlife would have been significant. Because the burnt bushland has not fully recovered it is likely (although I have no actual evidence) that its function as a refuge continues. This has not been considered in the biodiversity assessment report.
2. The impact of the development on species that are not vulnerable or endangered is not explored, for example the common wombat (on page 59 wombats are referred to as having arboreal and terrestrial habits!) and echidna are resident species and easily destroyed by vehicle strikes and disturbed habitat. These are still important species badly affected by the 2020 fires. Movement of species into other areas is limited because of the fierce competition for suitable habitat.

3. **Vehicle strike prevention is stated:** *“potential impacts can be avoided and managed and will be addressed in the CEMP, and include examples such as on-site education, identifying and reporting hazards as they occur during construction, and setting appropriate working hours and vehicle speed limits.”* **Why are these measures not detailed here so they can be evaluated? Compliance to lower speed limits, for example, need to be reinforced with the application of fines from well-located speed cameras during the whole course of construction. The CEMP refers to the construction environmental management plan (CEMP) – why is this not available now? Will it be exposed to public scrutiny when developed?**
4. **A recent survey from October 2021 to November 2022 found a total of 303 animals have been counted as road kill. These dead animals were surveyed by volunteers and I know that the surveying of Bendeela-Jacks Corner Roads was under reported. The Roadkill Report details that priority should be given to mitigation of wombat roadkill for the following reasons: Highest number of deaths (170), this rate of their kill in the Valley is not sustainable. They are very slow breeders, with one joey in two years, many of which do not survive weaning if the grass is dry and tough. They are sexually mature at two to three years of age and in perfect circumstances live for 15 years, but on average might reach about 10 years with the average life span reducing. Wombats are likely to be reclassified as vulnerable by the IUCN soon. Mange, land clearing and the Currowan fire have placed pressure on numbers.**
5. **As I understand it there is no truly effective offset to flora and fauna affected by development. The loss of a habitat that supports a breeding pair of Gang-gang Cockatoos is irreplaceable; dumping spoil on wombat holes will kill wombats and even if they were to be relocated there is no evidence to support their long-term survival; gliders and possums require mature trees with breeding holes which have mostly been destroyed in adjacent bushland burnt in the Currowan fire of 2020 so it will be difficult for them to relocate; dust and sediment in the streams and river cannot be retrieved to allow platypus to feed; and so on. The idea of using credits through the open market where available or otherwise make payment through the Biodiversity Conservation Fund means that there will be no local offset to compensate for the destroyed species and habitat. For Origin this will represent limited consequences for biodiversity destruction.**
6. **There is no mention of the impact on platypus or the bearded dragons that inhabit the riverine edges. Why have these not been surveyed?**
7. **Page 156 states: “There are no planned night works...” yet the description of the construction specifies 24 hour 7 days a week work schedules. Why is there this discrepancy?**
8. **The report states “Avoid, minimise, and mitigate impacts to biodiversity” yet there are insufficient details of how this will happen. How can I evaluate measures that are not detailed in the report. Reading the mitigation actions recommended in Table 10-1 there is no details of how these activities will be supervised and closely managed. It is not my experience that teams of contract workers respect vague guidelines (particularly those designed to protect native flora and fauna) unless tightly**

supervised and held to account through fines and dismissal. For example, “Vehicle movements on internal access tracks will be limited to 20km/h speed limit implemented to reduce the risk of vehicle strike to fauna.” How will vehicles be tracked and monitored? What will be the consequences for employees exceeding the speed limit?

Appendix I. Surface Water

The report states that there are risks to the quality of waterways during both construction and operation of the expanded scheme. *“With the implementation of mitigation measures outlined below, it was determined that risk of these impacts occurring were very low or low for waterways and waterbodies within the study area. The only waterway that was identified as having a medium risk was Lake Yarrunga. This was because construction activities are expected to occur within and in close proximity of this sensitive waterway therefore the likelihood of impact was slightly higher. It is expected, however, that identified nominated water quality mitigation measures will adequately mitigate the risks.”* **There are also risks to water quality of the ongoing operation.**

Comments and queries on Appendix I

- 1. The surface water had one visit to sample water quality, but all the rest is desktop assessment using old data from 2019, one of the water tests is from Oakdale (wrong river system), and the Spoils management plan says that a spoils management plan will be drawn up at construction stage, and that when there is a plan it might have things in it that will work!!**
- 2. Erosion and sedimentation of downstream waterways from vegetation clearing, earthworks, overflow discharges of sediment basins, movement of spoil, spoil stockpiling and emplacement, and instream works will impact wildlife such as platypus who require freshwater and a silt free environment in order to survive. The EIS states “the detailed design and construction planning and include: • Development of detailed erosion and sediment control planning aligned to final disturbance footprint; • Exploration of opportunities to maximise the reuse of water and spoil.”**
This indicates that the current EIS does not have sufficient detail to guarantee the quality of water, particularly in Lake Yarrunga or more accurately called the Kangaroo River. It is likely that cement dust, dust from truck movements and from the exposed spoil pile during construction may well disperse and given the strength and direction of the wind float from the spoil area down below to the river. Additional works at the river side at Bendeela will no doubt damage a section of the riverine environment.
- 3. How do we know mitigation measures recommended will be applied in construction and operation? The mitigation measures are not detailed and cannot be assessed as a result.**
- 4. 2022 rainfall was significantly higher than previous years. If this level of rainfall occurs during construction & operation what impact will this have? Eg. Appendix D on rainfall based on 2016 rainfalls – that is, during an extended drought. The modelling done in relation to surface water bears no relation to the reality of this valley in 2022.**
- 5. What are the measures to treat water collected in sediment basins for reuse on-site or discharge to downstream waterways? Downstream waterways are living systems that require careful management.**

6. Operation of the scheme post-construction includes continued risk to the quality of waterways, particularly the Kangaroo River.
7. Appendix H Soil Landscapes for the site - a major error in the report is that soil data as it effects surface water quality, hydrology and geomorphology is based on profiles of 3 soil systems unrelated to that found at Bendeela and Fitzroy Falls. Wattamolla, Barrengarry and Nowra are all distinctly different from the soil along Bendeela and Jacks Corner Road. Any gardener or even anyone giving a quick glance at the soil will note its complete variation from the 3 samples.

Appendix J. Groundwater

Comments and queries on Appendix J:

1. **This report is written as if any problems, eg. “The design of the spoil emplacement area will effectively minimise the risk of potential acid generation and seepage to the environment... a Spoil Management Plan as part of detailed design and construction planning and identify mitigating and remedial measures in the event that actual acid rock drainage is identified.” will be magically addressed when they emerge. Measures to be used to minimise risk of acid seepage need to be explicitly detailed and not left to trust. How can I evaluate the efficacy of the measures if they are not provided?**
2. **The rainfall chart details that it covers up to December 2021 but the actual impact of rainfall is only assessed to December 2019 which is prior to the heavy rainfall events of 2022 and expected into the future. Will unusual rainfall events as occurred in March 2022, for example, have a negative impact on either or both construction and operation of the power station, particularly the stability of the acid containment measures?**
3. **I have not found reference in the document to the possibility of rock faults and thus the stability of the escarpment beyond: There are no significant structural features such as faults and folds mapped in the vicinity of the Project on the NSW Seamless Geology Geodatabase. However, faulting was encountered during the investigation and construction stage for the original Kangaroo Valley scheme. How will these faults impact the project and its environs? Recent heavy rains have produced collapses of the sandstone escarpment surrounding the Valley putting homes, residents and habitats at risk. How will the tunnelling and other construction works impact the stability of the sandstone escarpment? The use of dynamite within the sandstone must surely aggravate instability.**
4. **There appears to be no assessment of the impact of the construction and operation of this project on groundwater dependent features such as hanging swamps. Hanging swamps are a vital part of the ecology and important flora and fauna habitat. They are mentioned, for example, “Shoalhaven Hanging Swamps of high potential reliance and Shoalhaven Sandstone Forest of low and moderate potential on the upper slopes and plateau” but has an assessment of the project’s impact been undertaken?**

Appendix K. Spoil Management Strategy

Comments and queries on Appendix K:

1. **The spoil stockpile is planned “to be located in an area of low biodiversity and cultural values (i.e. previously disturbed site) and where visual, noise and dust impacts can be reasonably engineered and managed”. This site of low biodiversity has actually been undisturbed for 45 years (since 1977) and according to the Biodiversity report contains both medium and large sized hollow trees suitable for nesting. The site is also adjacent to bushland that was heavily impacted by the Currowan fire in January 2020. As a resident who regularly travels through the site, I can attest to the high number of wildlife who occupy the area. While maintaining that the spoil will be dumped on previously disturbed land the report states: “minimal clearing of native vegetation of up to 29.5 ha, of which 25 percent (%) is regrowth vegetation”. This 29.5 hectares is not a trivial amount when it is understood to have ‘survived’ the fires and been a refuge for animals fleeing the burnt bushland which has still not recovered from the impact of the fires.**
2. **The existence of quantities of PAF [potential acid forming] spoil is another major concern. Should PAF material escape into the environment, and particularly the waterways, it will be very destructive. The PAF containment basin will be located closest to the houses on Bendeela Rd and the public roadway. I question whether this strategy is wise as surely the location should be furthest from other properties and the public.**
3. **The mitigation measures outlined in Table 5-1 indicate that plans for the management of spoil and the rehabilitation of the spoil dump do not actually exist. “A spoil management plan will be prepared for the Project. The spoil management plan will outline appropriate management procedures for the generation, management of spoil.” How can we be assured that mitigation of ill-effects is possible without an explicit plan? For example, do issues related to Potential surface contamination (L2) mean that they haven’t explored stability issues thoroughly? Is slippage within the spoil dump site likely?**

Appendix L. Traffic and transport impact assessment

The report states: “The results of the traffic and transport impact assessment indicate that the construction and operation of the Project is expected to have a negligible impact on the performance of key intersections in the study area including Moss Vale Road (B73) / Nowra Road (B73) / Promised Land Trail, Moss Vale Road (B73) / Bendeela Road and Bendeela Road / Jacks Corner Road / Lower Bendeela Road.”

Comments and queries on Appendix L:

1. **From my understanding of the traffic report it was undertaken through desk modelling and based on an assessment of roads prior to recent road closures and slippages. None of the roads photographed currently look like their photograph. The heavy rains have**

exposed how unstable the roads actually are in reality. This assessment should be upgraded to express 2020 roads. The authors appear to agree: “Nevertheless, updated traffic counts and potential seasonal fluctuations should be considered during detailed design stage of the Project.”

- 2. To state that increased heavy vehicle movements will have ‘negligible impact’ on poorly constructed roads is not credible. As a regular driver on Moss Vale Road, Bendeela Road and Jacks Corner Road the impact of increased traffic, say related to an event, is very noticeable with delays particularly encountered on Hampden Bridge.**
- 3. Cyclists regularly use Bendeela and Jacks Corner Road as it is quieter and a challenging ride from the village. It is unlikely this use of the roads could continue during construction.**
- 4. Again it is important to mention the other non-human users of the roads and the devastating impact that can be predicted from vehicle strikes causing roadkill. See details of roadkill above in comments on Appendix F.**

[Appendix Q. Socio-economic impact assessment](#)

Comments and queries on Appendix Q:

- 1. Unfortunately I have limited time left to comment fully on this report which requires closer examination. Like all the other Appendices in the overall EIS this section details impacts without providing answers. Essentially the fact is that this project will disrupt local businesses and residents for many years without directly benefiting anyone. Local accommodation businesses are always full from tourists so they do not require the boost from accommodating the project’s workers. Unless of course the project drives away the tourists because the Valley has become an industrial site!**
- 2. There are virtually no mitigating measures nominated. This is not an area of high unemployment, in fact quite the opposite. Offering to train and employ locals will not gain Origin much support.**
- 3. Kangaroo Valley relies upon its natural environment to define its image and this has attracted residents and also viable tourist businesses. Destroying some of that environment and further disrupting the lives of residents and visitors runs counter to the interests of the Valley.**