

Attention: Kurtis Wathen

20 July 2023

SSD-59906734: Request for Secretary's Environmental Assessment Requirements (SEARs) for Yarrabin (Phoenix) Pumped Hydro Energy Storage for Dubbo Regional Council & Mid-Western Regional Council

Dear Kurtis,

Thank you for referring the abovementioned request for SEARs via the NSW Major Projects Planning Portal on 6th July 2023 inviting comment from Transport for NSW (TfNSW).

TfNSW has reviewed the Scoping Report, prepared by GHD, dated 29 June 2023 prepared for the prospective hydro energy storage development comprising of the following:

- Construction and operation a pumped hydro energy storage (PHES) project, Phoenix Pumped Hydro Energy Storage (Yarrabin), located within the CWO REZ with a generating capacity of about 810 MW, and 12 hours target storage of 9,600 to 9,720 MWh.
- An upper and lower reservoir constructed off-stream on land east of Lake Burrendong, connected by a 'drill & blast' excavated vertical shaft and tunnel via a siloed surface powerhouse.
- The Project is to connect into the existing 330 kV network at a new switching station located along the Wellington to Mount Piper transmission line.
- Temporary construction worker accommodation camp for up to 500 workers, including site office/facilities, water, sewerage and power supply.
- Parking, laydown and stockpile/storage areas
- Adit tunnels and portals to facilitate construction access to underground tunnels.
- Quarries and borrow areas, including explosives magazine(s), rock crushers and concrete batching plant(s).
- Public road upgrades to facilitate site access, and internal site access track construction.

TfNSW notes the upper reaches of Lake Burrendong are located approximately 500m south of the site and the project involves construction of two reservoirs. Consideration needs to be given to the maritime comments provided in Attachment A. If you wish to discuss any maritime matters please contact navigationadvicenorth@transport.nsw.gov.au

TfNSW key interests are the safety and efficiency of the transport network, the needs of our customers and the integration of land use and transport in accordance with the *Future Transport Strategy 2056*.

To ensure that TfNSW's key interests are addressed, TfNSW requests that any future application be submitted with an Environmental Impact Assessment (EIA) containing a Traffic Impact Assessment (TIA), prepared by a suitably qualified person/s in accordance with the Austroads Guide to Traffic Management Part 12, Australian Standards and any complementary TfNSW Supplements, and *Roads and Maritime Guide to Traffic Generating Developments*. The TIA should contain information listed in Attachment B: Traffic Impact Assessment (TIA).

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In addition to the requested TIA, due to the significant scope of the transport logistics for OSOM transit, a concept-level route analysis is required to be provided with the SSD application based on high-level 3D swept path analysis to generally indicate locations where civil works are likely to be required. The route analysis is to include at a minimum the following:

- Identify the OSOM route to be utilised and any indicative pinch points within the network vertically, horizontally and laterally and the potential civil works required to accommodate the OSOM vehicles.
- The logistics assessment is to highlight each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.
- Pull-over bay locations for the design vehicle and associated swept path analysis and identification of any long haulage segments of the route where overtaking cannot be achieved.
- The design vehicle templates used with the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).
- Provide the following measurements parameters of the OSOM components / materials to be moved:
 - Identify all the types of OSOM vehicles proposed to be used for the project.
 - Overall combination length, width, height and mass
 - Maximum component length
 - Maximum component widths
 - Maximum load heights (clearance to overhead obstructions such as structures, utilities and vegetation),
 - Wheelbase dimensions,
 - Maximum trailer articulation angle(s),
 - Minimum overhang heights above the road surface,
 - Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology).

It should be noted that NHVR permits do not cover the civil works required along any proposed OSOM route. Any works required along the OSOM route must be considered within the scope of works for the SSD to ensure that the development is constructable.

TfNSW encourages early discussions with proponents regarding the traffic and network matters associated with State Significant Development. If you wish to discuss this matter further, please contact the undersigned on ph 1300 019 680.

Yours faithfully,



Alexandra Power

Team Leader Development Services (Renewable Resources)
West Region | Community and Place
Regional and Outer Metropolitan

Attachment A: Maritime Comments

- Public access and use of the reservoir/s is not clear in the scoping report. If the reservoir/s will be open for recreational use, including vessels, hazard identification would need to be considered in consultation with TfNSW Maritime as each reservoir would be considered 'navigable waters'. The *Marine Safety Act 1998* No 121 Part 1 Section 4 defines 'navigable waters' as all waters (whether or not in the State) that are from time to time capable of navigation and are open to or used by the public for navigation, whether on payment of a fee or otherwise.
- All proposed transmission lines crossing navigable waters must demonstrate compliance with:
 - AS 6947-2009: Crossing of Waterways by Electricity Infrastructure, and
 - Crossings of NSW Navigable Waters - Electricity Industry Code (TfNSW guideline)

Attachment B: Traffic Impact Assessment (TIA)

The purpose of the TIA is to address the impact of traffic generation on the public road network and measures employed to ensure traffic efficiency and road safety during construction, operation and decommissioning of the project.

The requested TIA should be tailored to the scope of the proposed development and include, but not be limited to, the following:

- Detailed plans identifying the proposed location of any:
 - Project-related infrastructure within and outside of the project boundary.
 - Transmission line infrastructure and associated access requirements, or any other project-related structures, within a road reserve. Include demarcation of local and classified road reserves.
 - Identify the key access roads with the classified road network required for the project (including any access required from classified road network for components being constructed outside of the project area) and justification of additional access required to a classified road in accordance with *section 2.119 of State Environmental Planning Policy (Transport and Infrastructure) 2021*.
 - Structures on the road network that could be sensitive to blasting (e.g. bridges, pump stations, etc.). Note, if any structures are likely to be affected, an assessment of the impact must ensure that the peak particle velocity is limited to an acceptable level to TfNSW.
 - Details of any proposed ancillary infrastructure to be provided on-site for example, concrete batching facilities, workers accommodation etc. The TIA should identify:
 - **Concrete batching facility** - The source for input materials and quantify the traffic generation associated with the haulage of the source materials. Where the location of source materials is not yet known, worst case scenarios for traffic distribution of those materials to and from the development site are to be addressed.
 - **Accommodation** - Details of the accommodation, including but not limited to the maximum accommodation capacity, the work schedules relevant to staff turn over, the transport options available (Light Vehicles, Shuttle Buses, carpooling etc) and traffic generation volumes of workers arriving / departing, any staff pick up locations external to the project site, peak shift change / staff turn over details, any services required to support the proposed accommodation and what traffic will those support services generate.
- Cumulative impacts:
 - Identify and assess the implications of any road and rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes.
 - An assessment should be undertaken as a part of the EIS and TIA to identify the projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following:
 - The cumulative impacts from traffic generated from the construction workforces in terms of the origin-destination routes, access, AM/PM peaks where there is overlap with other projects.
 - The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects.
 - Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development.
 - Cumulative traffic, safety impacts in relation to the Caerleon Estate, at the intersection of Hill End Road/Castlereagh Highway and the intersection of Hill End Road/Caerleon Estate subdivision spine road.

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- Heavy vehicle and OSOM routes:
 - Identify the return routes for OSOMs.
 - National Heavy Vehicle Regulator (NHVR) approved routes identified on the Restricted Access Maps (RAV MAP) are to be utilised for the heavy vehicle routes for the proposed development.
 - The TIA is required to include details on the number of OSOM movements, the intended time for OSOM movements to occur and identify the location of pull-over bays / rest areas along the OSOM routes.
- Project schedule:
 - Hours and days of work, number of shifts and start and end times,
 - Phases and stages of the project, including construction, operation and decommissioning.
- Traffic volumes including:
 - Existing background traffic,
 - Project-related traffic for each phase or stage of the project,
 - Projected cumulative traffic at commencement of operation, and a 10-year horizon post-commencement.
- Traffic characteristics including:
 - Number and ratio of heavy vehicles to light vehicles,
 - Peak times for existing traffic,
 - Peak times for project-related traffic including commuter periods,

Note: If there is a reliance on shuttle buses/carpooling proposed to mitigate peak traffic volumes for the AM/PM peak of construction then the TIA is required to detail how the shuttle busing/carpooling commitment will be achieved through strategies, protocols, and the like. If carpooling and shuttle bus strategies cannot be supported by detailed methods/procedures that are achievable, enforceable, and practicable, then the shuttle bus/carpooling methods would be unviable and would require the TIA to be amended to assess the worst-case scenario during peak of construction.
 - Proposed hours for transportation and haulage,
 - Interactions between existing and project-related traffic.
 - Capacity analysis using SIDRA or other relevant application, to identify an acceptable Level of Service (LOS) at intersections with the classified (State) road/s, and where relevant, analysis of any other intersections along the proposed transport route/s. With respect to this requirement the proponent is to consider the queue length analysis of the MR216/HW18 intersection.
- The origins, destinations, routes and directional split for:
 - Commuter (employee and contractor) light vehicles and pool vehicles,
 - Heavy (haulage) vehicles,
 - OSOM vehicles.
- Identify the necessary road network infrastructure and access upgrades required to cater for and mitigate the impact of project related traffic on each proposed route (LV/HV/OSOM routes) on both the local and classified road network for the development (for instance, road widening, hardstand areas, pullover bays, site access upgrades, intersection treatments, upgrades identified as part of the OSOM route analysis/swept path assessment etc).

In this regard, a strategic design drawing/s should be submitted with the SSD application for any identified road infrastructure and access upgrades. It should be noted that any identified road infrastructure upgrades will need

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to be to the satisfaction of TfNSW and Council. Works must be appropriately designed in accordance with *Austrroads Guide to Road Design* for the existing posted speed limit, including provision of Safe Intersection Sight Distance (SISD).

Note: The design needs to comply with *TfNSW Strategic design requirements for DAs*. To assist you in preparing the designs, please refer to the link: <https://roads-waterways.transport.nsw.gov.au/business-industry/partners-suppliers/documents/planningprinciples/strategic-design-fact-sheet-02-2022.pdf>

- Road safety assessment of key haulage route/s:
 - Where road safety concerns are identified at a specific location along the proposed haulage routes, TfNSW suggests that the TIA be supported by a targeted Road Safety Audit undertaken by suitably qualified persons in accordance with the *Austrroads Guidelines*.
- A review of crash data along the identified transport route/s for the most recent 5 year reporting period and an assessment of road safety along the proposed transport route/s considering the safe systems principles adopted under Future Transport 2056.
- Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather, icy road conditions).
- The layout of the internal road network, parking facilities and infrastructure.
- Impact on rail corridors and level crossings detailing any proposed interface treatments. Note, the rail authority for rail corridors in the vicinity of the site and likely OSOM route is ARTC.
- Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction.
- Identification and assessment of potential environmental impacts of the project, such as blasting, lighting, visual, noise, dust and drainage on the function and integrity of all affected public roads.
- Controls for transport and use of any dangerous goods in accordance with the *Australian Dangerous Goods Code* and *AS4452 Storage and Handling of Toxic Substances*.
- A draft Traffic Management Plan (TMP) that could be implemented following approval of the EIS, in consultation with relevant Councils and TfNSW. The TMP is to address the construction, operation and decommission phases of the proposed development and be prepared and implemented in accordance with *Australian Standard 1742.3* and the *Work Health and Safety Regulation 2017*.