

Liverpool Range Wind Farm

Fact Sheet 07 October 2021

Transport & Traffic Fact Sheet



Why was the assessment undertaken?

Transportation associated with construction and operation of wind farms can impact on local and regional road networks. The use of over-size/over-mass (OSOM) vehicles as well as an increase in traffic on the surrounding road network has the potential to have some impact on road safety.

A **Transport Impact Assessment (TIA)** and **Over-Size/Over-Mass (OSOM) Haulage Route Assessment** were prepared by GTA Consultants Pty Ltd (now Stantec) to consider the change in potential traffic and transport impacts as a result of the following key changes to the approved wind farm layout and design proposed by the Modified Project:

- Increase in the potential turbine size and reduction in the maximum number of wind turbines that has influenced the amount of construction material, water and equipment requiring transportation to site.
- Changes to the proposed site access points off public roads due to the modifications to the wind farm layout and for construction of the transmission line adjacent to Ulan Road.
- Changes to the wind farm layout and inclusion of a Battery Energy Storage System (BESS).
- Changes to the preferred OSOM haulage route from the Port of Newcastle to enable larger turbine components to be safely and efficiently delivered to site.

In addition, a **Public Road Upgrade Investigation (PRUI)** was prepared by iCubed Consulting Pty Ltd to better understand the applicable road upgrade standards and the extent of public road upgrades likely to be required for the Modified Project. From this, the associated ground disturbance was modelled so that potential ecology and heritage impacts associated with public road upgrades can be appropriately assessed.



What was the approach?

The traffic and transport assessments listed above were prepared considering all relevant conditions of Development Consent SSD 6696, legislation and guidelines, in particular:

- Roads Act 1993
- Austroads *Guide to Road Design Part 3 (Geometric design) and Part 4A (Signalised and unsignalised intersections)* (Austroads Guidelines)

The traffic and transport assessments have been prepared in consultation with Transport for NSW (TfNSW), Warrumbungle Shire Council, Upper Hunter Shire Council, Mid-Western Regional Council, and councils along the OSOM haulage route from the Port of Newcastle, wherever relevant.

The traffic and transport assessments build on the findings of the Traffic and Transport Report jointly prepared by Epuron Pty Ltd and Zem Energy in 2014 and 2017 in support of the Approved Project.

TRANSPORT IMPACT ASSESSMENT (TIA)

The TIA assessed the potential impacts associated with the Modified Project, and considered the following:

- Existing traffic conditions surrounding the site
- Proposed OSOM and Heavy vehicle access route
- The anticipated traffic generated through construction and operational phases
- Suitability of the proposed site access points off nearby public roads
- The potential transport impacts of the development proposal on the surrounding road network

The TIA was prepared using detailed traffic generation estimates for the estimated number of OSOM, Heavy and Light vehicles required during construction and operation phases of the Project. The estimates have been calibrated to wind farm projects that Tilt Renewables has recently constructed and are considered to be an accurate indication of the types of vehicles and number of trips required to construct and operate the Modified Project.

The TIA includes a sight line assessment of all newly proposed site access points from nearby public roads into the wind farm and transmission line route adjacent to Ulan Road, in accordance with Austroads Guide to Road Design: Part 4A (Unsignalised and Signalised Intersections).



OSOM HAULAGE ROUTE ASSESSMENT

GTA (now Stantec) undertook physical inspections of the OSOM haulage route proposed by the Approved Project as well as alternate OSOM haulage routes to identify all relevant constraints such as tight intersections and bends, low height clearance bridges and overpasses, narrow roads, roadside vegetation, culverts and causeways, and utilities.

The OSOM Haulage Route Assessment includes swept path diagrams for all constrained bends and intersections that show the worst-case turning movements assuming a 90 m long turbine blade (longest load) and 5 m diameter turbine tower section (widest and tallest loads), and where localised upgrades, vegetation clearing or encroachment into private property may be required.

PRELIMINARY ROAD UPGRADE INVESTIGATION (PRUI)

The Preliminary Road Upgrade Investigation (PRUI) assessed the nearby public roads proposed to be used during construction and operation of the Project to allow for the safe and efficient access for OSOM and Heavy vehicles. The PRUI involved the following key tasks:

- Review of the road upgrade standards specified in Development Consent SSD 6696
- Preparation of optimised road upgrade standards in accordance with Austroads Guide to Road Design Part 3 (Geometric design) to minimise the extent of ground disturbance and associated potential impacts on ecology and heritage values and private property, without compromising the safe and efficient operation of the road network.
- Site visits of public roads proposed to be used during construction and operation of the Project and physical inspection of road conditions and associated infrastructure such as bridges and culverts, to determine where road upgrades are anticipated to be required.
- Consultation with Warrumbungle, Upper Hunter and Mid-western councils to agree on applicable road upgrade standards and extent of road upgrades anticipated for the Project.
- Preparation of 3D modelling of agreed road upgrade standards to accurately estimate the extent of ground disturbance required to construct the anticipated road upgrades.



What did we find and how does it compare to the Approved Project?

TRANSPORT NETWORK IMPACTS

The key findings of the TIA in relation to impacts on the public road network during construction and operation are as follows:

- The main traffic and transport impacts will be during the construction phase. Peak construction vehicle activity will result in approximately 304 vehicle movements per day (one-way) on the surrounding road network. This represents a reduction in traffic generation of around 6 per cent from the estimated 325 vehicle movements (one-way) per day for the Approved Project.
- It is estimated that over the approximately 3 year construction period approximately 25,000 Light vehicle one-way trips, 94,350 Heavy vehicle one-way trips, and 2,900 OSOM one-way trips will be generated.
- During operations the Project will generate up to 30 vehicle movements per day comprising Light vehicles such as utes and vans. There may also be minor OSOM and Heavy vehicle movements over the operational life of the Project to replace turbine components or transformers, however this is not expected to occur on a year-on-year basis. These findings are similar to the Approved Project.
- The anticipated construction vehicle traffic generation is considered minor in comparison to the daily traffic volumes along the proposed OSOM haulage route and State and Regional roads intended to be used to construct the Project, and is not anticipated to adversely affect the safety or function of the surrounding road network.
- Minor road network disruptions may occur, primarily from the use of OSOM vehicles, however the proposed reduction in the number of wind turbines would result in a corresponding reduction in OSOM vehicle movements compared to the Approved Project.
- Overall, the Modified Project is expected to have a reduced impact on traffic movements in the area than what was estimated for the Approved Project.

SITE ACCESS POINTS

Based on the findings of the constructability and layout review, the Modified Project identifies a total of 92 potential site access points from nearby public roads, compared to 28 site access points proposed by the Approved Project. A total of 51 identified site access points are internal to the wind farm site, 19 of which are along State Forest Road. The remaining 41 identified site access points provide access to the approximately 50 km of external transmission line adjacent to Ulan Road, 22 of which make use of existing site access points. A breakdown of the potential site access points identified for the Modified Project is provided below:

- Adopt 10 approved site access points
- Micro-site 12 approved site access points
- Propose 70 new site access points
- Delete six approved site access points

The Modified Project identifies a total of 51 identified site access points that are internal to the wind farm site, 19 of which are along State Forest Road, which is a local road that generally experiences minimal traffic. Some of the newly proposed site access points internal to the wind farm site are specifically required to construct the internal transmission line.

The remaining 41 site access points identified for the Modified Project provide access to the approximately 45 km of external transmission line adjacent to Ulan Road, of which 22 make use of existing driveways or tracks off Ulan Road. The Approved Project identified four site access points along the external transmission line, however more site access points are required along this section of the transmission line to avoid topographic constraints.

It is unlikely that all of the potential site access point locations will be required. The final number and location of site access points to be used during construction and operational phases will be determined through the detailed design process. During operations the site access points will experience minimal traffic and are therefore unlikely to result in noticeable disruptions to the road network. This is particularly so for the site access points along the external transmission line as only periodic inspections of the line are anticipated.

All approved site access points were previously assessed in the Traffic and Transport Report jointly prepared by Epuron Pty Ltd and Zem Energy in 2017, which concluded that they all comply with the applicable sight line distances in accordance with Austroads Guide to Road Design Part 4A.

The TIA prepared for the Modified Project concludes that all micro-sited and new site access points proposed by the Modified Project comply with the applicable sight line distances in accordance with Austroads Guide to Road Design Part 4A.

The TIA concludes that there are no anticipated sight line issues at any of the proposed site access points, noting that the majority of the proposed site access points are located in largely open areas with no obstructions.

OSOM HAULAGE ROUTE ASSESSMENT - refer to the map on the following page

The Approved Project proposed to transport large turbine components from the Port of Newcastle along the State road network via Maitland, Whittingham, Jerrys Plains, Denman, Merriwa, and onto the Regional and Local road network near Coolah and Cassilis townships.

Following detailed inspections of the OSOM haulage route proposed by the Approved Project and considering the potential for larger turbines to be used, the OSOM Haulage Route Assessment proposes the following changes to the OSOM haulage route:

1. Exit the Port of Newcastle at Selwyn Street onto Industrial Drive, to avoid impacts to private property near the Port.

2. Exit New England Highway onto John Renshaw Drive at Tarro, to avoid passing through built-up areas in Maitland.

3. Enter the Hunter Expressway at Buchanan and the Golden Highway at Mt Thorley via 'contra-flow' movements along the exit ramp, to avoid significant infrastructure constraints at those interchange locations.

4. Provide 3 x OSOM route options to address the lowclearance bridge at Denman:

Option 1: cross Denman Bridge at Denman for lower height loads less than 5.2m high; or

Option 2: detour around Denman Bridge by travelling east along Denman Road, turning into Bengalla Road, travelling along Wybong Road and connecting back to the Golden Highway at Sandy Hollow.

Option 3: detour around Denman Bridge by turning onto Edderton Road (near Coolmore) and following Bengalla Road and Wybong Road to reconnect to the Golden Highway at Sandy Hollow.

The OSOM Haulage Route Assessment identified several appropriate layover areas along the OSOM haulage route to address driver fatigue and to minimise the potential for major disruptions to the road network in the event of a vehicle breakdown.

Transport for NSW (TfNSW) and all relevant councils have been consulted and are generally supportive of the proposed changes to the OSOM haulage route and overall findings of the OSOM Haulage Route Assessment.

PUBLIC ROAD UPGRADES

The key findings of the PRUI and associated consultation with relevant councils are as follows:

- All Local roads proposed to be used by Heavy and OSOM vehicles are anticipated to require upgrading to varying standards (either sealed or unsealed pavement) as agreed with the relevant councils.
- Particular sections of Vinegaroy Road (Regional road) will require localised upgrades to the agreed standards to facilitate OSOM vehicle turning movements.
- Upgrades to Ulan Road (Regional road) are not anticipated as no OSOM vehicles are proposed to travel along that road.
- Assuming all identified public roads will be used to construct the Modified Project, approximately 110 kms of public road upgrades are anticipated across Warrumbungle, Upper Hunter and Mid-western local government areas (LGAs) (see table below).
- The anticipated public road upgrades are estimated to result in approximately 190.55 hectares (ha) of ground disturbance. There may be opportunities through the detailed design process to minimise further the total ground disturbance by reducing the road pavement widths at constrained locations and steepening cut and fill batters where geotechnical conditions allow.

POTENTIAL SEQUENCED DELIVERY OF ROAD UPGRADES

We are investigating ways to reduce the overall construction period and minimise potential disruptions to the local community. This could include sequencing the relevant public road upgrades and on-site construction activities to allow on-site construction works to commence progressively throughout the initial stage of the construction program.

We will continue to work closely with the relevant councils through the development of the Project, including preparation of Traffic Management Plan and any proposed sequencing of construction to ensure we minimise any potential impacts to the safe and efficient operation of the road network.

Local Government Area (LGA)	Length of anticipated road upgrades
Warrumbungle LGA	Sealed standard: 59.44 kms
	Unsealed standard: 22.12 kms
Upper Hunter LGA	Sealed standard: 19.95 kms
	Unsealed standard: 6.29 kms
Mid-western LGA	Sealed standard: Not applicable
	Unsealed standard: 2.61 kms
TOTAL	Total sealed standard: 79.39 kms
	Total unsealed standard: 31.02 kms

Liverpool Range Wind Farm | Fact Sheet 07 | Transport & Traffic



What are the proposed mitigation strategies?

Measures to mitigate potential impacts to local traffic during the construction period will be outlined in a Traffic Management Plan (TMP) in accordance with the existing conditions of the Development Consent.

The TMP will be prepared in consultation with the relevant road authorities (including TfNSW and relevant councils) to ensure that appropriate safety standards are achieved and disruption to local traffic is minimised. In particular the TMP will include a driver code of conduct, address driver fatigue, travelling speeds, as well as procedures to ensure that drivers implement safe driving practices to and from the site. Other mitigation measures are likely to include:



Cross Denman Bridge, Denman for lower height loads less than 5.2m high.

- A community information and awareness program which will include notices in the local newspapers, newsletters to local residents and regular updates via the Project website.
- Providing a 24-hour telephone contact during construction to enable any issue or concern to be rapidly identified and addressed.
- Temporary signage will also be erected where required, to provide warning of increased construction traffic.
- For OSOM loads, use of a licensed and experienced haulage contractor who will be responsible for obtaining all necessary permits and approvals from the TfNSW and the applicable council.
- Escort vehicles for OSOM vehicles will be provided in accordance with TfNSW requirements and travel from the Port of Newcastle will occur in the early morning outside of peak traffic periods.
- Upgrading relevant sections of the OSOM and Heavy vehicle routes to agreed standards with the relevant local council.
- Preparation of a road dilapidation report prior to the commencement of construction and following completion of construction to determine any road damage attributable to the Project.
- Periodic inspection and rectification of the public roads during construction by the Proponent.
- Implementation of appropriate dust, erosion and sediment control measures for access tracks within the site.
- The Proponent will repair the damage caused by the construction of the Project.

Public Road Upgrade Cross Section - Type 1 (Unsealed Widen As Required) - Scale 1:20



Assessment against Development Consent

The Modified Project can comply with the existing conditions of the Development Consent relating to traffic and transport, in particular:

- A Traffic Management Plan (TMP) will be prepared prior to commencement of construction in consultation with relevant roads authorities to the approval of the Secretary of the Department of Planning, Industry and Environment (DPIE).
- All required traffic and transport mitigation measures will be implemented where required.
- The required public road upgrades will be constructed.
- The road maintenance requirements, including dilapidation surveys and road damage rectification works, will be implemented.

Minor updates are required to the Development Consent in relation to vehicle routes and road upgrades to address the following changes proposed by the Modified Project:

- Updates to the road upgrade standards as agreed in consultation with the relevant councils.
- Updates to the site access points and public roads proposed to be used during construction and operation.
- Removal of the condition that allows Site Access Point 9 from Vinegaroy Road to be used, as that site access point is no longer required by the Modified Project.

GOODS AND SERVICES REGISTER

To register interest in providing goods or services for the Project, please visit <u>www.liverpoolrangewindfarm.com.au</u> and complete the linked form under the Employment section.



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If you haven't already, please subscribe to our newsletter to ensure you receive all Project updates and information. We understand that not everyone uses email, so we will be working with local businesses to host Project information packs such as the newsletter, fact sheets and maps. Subscribe to receive the newsletter by email or post, by contacting us at: liverpoolrangewindfarm@tiltrenewables.com

 For more information, please visit the website below

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