

Appendix G

Traffic and Transport Impact Assessment (Aurecon)



Flyers Creek Wind Farm
Planning Modification 4 Traffic and Transport
Assessment
Flyers Creek Wind Farm Pty Ltd

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to life*

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1 Introduction

The Flyers Creek Wind Farm Development was approved (MP08_252) on 14 March 2014. The documentation that was submitted as part of the development application included an Environmental Assessment (EA) which incorporated an assessment of the traffic implications of the development. (Aurecon EA, dated May 2011, Section 13).

The approved development as of 14 March 2014 comprised 42 turbine wind farm with 56m blades and associated infrastructure for power transfer into the grid including a 132kV power transmission line and switching station.

It is noted that the traffic assessment that supported the application was based on a marginally larger wind farm comprising 44 turbines with blade lengths assessed as 60m, which essentially provided a conservative estimate of traffic impacts for the approved scheme.

Overtime there have been two previous modifications to the proposed wind farm, however these have not triggered a review of traffic implications. It is noted that Mod 2 involved the removal of the 132kV transmission line whilst Mod 3 included a reduction in the number of turbines to 38.

The traffic impacts of the of the approved project are managed under conditions imposed on the Project Approval including conditions F15, F16, F17 and F21(c). These conditions are provided below for information:

- F15. Unless otherwise agreed by the Secretary, the Proponent shall commission an independent, qualified person(s) to undertake the following in consultation with the relevant road authority*
- (a) Prior to commencement of construction, review the proposed route and existing access provisions to the Project to determine whether the route and existing provisions allow for safe access of construction and operational vehicles associated with the Project (including appropriate site distances and provisions for over-mass or over-dimensional transport and safety with other road users). Where improvements or changes to the proposed route are required, the Proponent shall implement these to the satisfaction of the relevant road authority, prior to the commencement of construction and at full expense of the Proponent; and*
 - (b) Assess all roads proposed to be used for over-mass and / or over dimensional transport (including intersections, bridges, culverts and other road features) prior to the commencement of construction to determine whether the existing road condition can accommodate the proposed over-mass and or over-dimensional haulage. Where improvements are required, the Proponent shall implement these to the satisfaction of the relevant road authority, prior to over-mass or over-dimensional vehicles accessing the site and at the full expense of the Proponent.*
- F16 Prior to the commencement of construction, the Proponent shall undertake a **Road Dilapidation Report** of sealed roads on haulage route(s) within the Blayney Local Government Area. The Report shall assess the current condition of the road(s) and describe mechanisms to restore any damage that may result due to traffic and transport*

related to the construction of the Project. The Report shall be submitted to the relevant road authority for review and prior to commencement of haulage.

- F17 The Proponent shall repair all damage to sealed roads during construction. Measures undertaken to restore or reinstate roads affected by the Project shall be undertaken in accordance with the reasonable requirements of the relevant road authority (including timing requirements), and at the full expense of the Proponent. Within three months of completion of construction:*
- (a) The Proponent shall undertake gravel re-sheeting to a minimum depth of 100mm on all gravel roads used for access during construction. Works shall be completed in accordance with Roads and Maritime Services Specification M220; and*
 - (b) A Report shall be prepared to assess any damage to sealed roads that may have resulted from the construction of the Project (including mechanisms to restore any damage) and submitted to the relevant road authority for review.*
- F21 (c) A **Construction Traffic and Access Management Plan** to manage construction traffic and access impacts of the Project. The Plan shall be developed in consultation with the relevant road authority and shall include, but not necessarily be limited:*
- i. Identification of construction traffic routes and construction traffic volumes (including heavy vehicle / spoil haulage / material haulage) on these routes;*
 - ii. Details of vehicle movements for construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress and egress points;*
 - iii. Identification of construction impacts that could result in disruption of traffic, public transport (inclusive of school buses), pedestrian and cycle access, property access, including details of oversize load movements;*
 - iv. Details of management measures to minimise traffic impacts, including temporary road work traffic control measures, onsite vehicle queuing and parking areas and management measures to minimise peak time congestion (including school buses), and measures to ensure safe pedestrian and cycle access;*
 - v. A response plan which sets out a proposed response to any traffic construction or other incident; and*
 - vi. Mechanisms for the monitoring, review and amendment of this Plan.*

These conditions require more extensive pre-construction traffic impact assessment and management of construction to be undertaken once more details and definition into the construction process is known so that impacts and road damage is either mitigated or repaired to an appropriate degree.

The current modification (Mod 4) comprises the following changes from the previous approved modification (Mod 3) and includes:

- Increase to the maximum wind turbine envelope including increase of turbine tip height of 10 metres (m) from 150m to 160m and in particular in relation to the traffic assessment an increase in the blade lengths from 60m to maximum 70m; and
- Inclusion of a 132 kilovolt (kV) transmission line and switching station proposed to connect the wind farm substation to the electrical grid.

This traffic impact assessment forms an update as to the implications that Mod 4 would have to the findings of the original traffic impact assessment associated with the approved development but in the context of the changes proposed from currently approved project (Mod 3) to Mod 4.

2 Proposal Summary

2.1 Existing Traffic and Transport Impact Assessment (EA, May 2011)

As stated previously an assessment of the traffic and transport issues associated with the construction and operation of the proposed wind farm was undertaken within the EA report dated May 2011 as part of the initial Development Application. The assessment assumed the following components:

- A total of 44 turbines to be constructed, each with 150m tip height and 60m blade length;
- A substation; and
- A 132kV transmission line and switching station.

The assessment identified that the main issues with traffic management would arise during construction, due to the need for restricted access vehicles (RAV) to deliver components. Operational traffic was considered minimal, consisting of a small number of on-site staff and periodic visits by maintenance staff and mobile plants.

The report identified that a large portion of the components would be imported from overseas and due to the location of the site and shape of the components to be delivered, roads were deemed to be the best method to transport the cargo from ports to site. Determination of optimal delivery routes were separated into regional and local scales.

Bathurst, Orange and Cowra were identified as the main commercial centres surrounding the site through which RAV deliveries would pass through, and from which smaller project components and services would be sought. It was considered likely that the majority of RAV access to the site would be through Cowra via the mid-western highway, although some vehicles would potentially approach from Orange through the Newell Highway and Mitchell Highway. It was anticipated that movements through Bathurst will predominately be generated by construction workers and deliveries by non RAV vehicles, as it is not on the RAV transport route.

Due to the distributed nature and hilly terrain of the site, a number of different local access routes are required to access different parts of the site. It was proposed that the main access route be through Errowanbang and Gap Roads due their high suitability for RAVs and low degree of existing local traffic. Minor upgrade works was expected to be required for some intersections.

2.2 Planning Modification 4

Planning Mod 4 comprises the following changes to the project (Mod 3):

- Increase to the maximum wind turbine envelope including increase of turbine tip height of 10 metres (m) from 150m to 160m and in particular in relation to the traffic assessment an increase in the blade lengths from 60m to maximum 70m; and
- Inclusion of a 132kilovolt (kV) transmission line and switching station proposed to connect the wind farm substation to the electrical grid.

Mod 4 will not increase turbine numbers from the approved layout (Mod 3) and therefore the traffic impact associated with the modification considers:

- the RAV dimensions required to accommodate the larger components (primarily blades); and
- activities associated with the construction and operation of the 132kV transmission line.

The traffic impacts of the 132kV transmission line and switching station was assessed as part of the original traffic impact assessment. This report confirms that the traffic impacts associated with the construction and operation and maintenance of the 132kV transmission line and switching station will remain unchanged from that previously assessed.

Based on the above it is considered that Mod 4 would not result in any more traffic than was assessed as part of the original proposal.

3 Traffic Generation

3.1 Traffic Generation Background

The original traffic assessment for the development identified that over the period of construction the Wind Farm would generate the following one way traffic movements on public roads:

- | | |
|--|-------------|
| • Restricted Access Vehicle (RAV) ¹ | 457 |
| • Total construction vehicle movements | 3910 – 4545 |
| • Employees | 5000 |

Given that transport assessment was based on a larger number of turbines than current modifications propose and that the original proposal also included a 132kV transmission line as is currently proposed within Mod 4, it is considered that Mod 4 would not result in higher traffic volumes than was assessed as part of the approved original development

3.2 Construction Traffic Standard Road Vehicles

Standard road vehicle traffic generation of the Wind Farm is primarily associated with workforce movement and the delivery of non-turbine materials, such as concrete and reinforcement.

The number of these vehicles is unlikely to increase over and above that assessed for the original application.

3.3 RAVs or Over-sized vehicles

As identified within the previous traffic assessment there are a number of wind farm components that require use of RAV's in order to transport them to the site, these include

- Towers sections (4 per turbine)
- Hub (1 per turbine)
- Nacelle (1 per turbine)
- Blades (3 per turbine)
- Generator / transformers (substation)

Mod 4 will not result in any additional components to be transported from previous assessments however the components themselves may increase in size, as follows:

- Tower sections – these may increase by a few metres in order to accommodate the additional length of the blades (3 sections to provide additional 10m of height – tower sections may increase by between 3 and 4m); and
- Blades – these will increase to 70m which is 10m more than previously assessed and 14m more than approved.

¹ Over-mass or over-dimensional vehicle

The biggest vehicle will be that required to transport the blades which for delivery will need to include a trailer that can extend to accommodate a 70m blade. It is noted that fewer of these movements will be required than previously assessed due to the reduction in turbine numbers that has occurred through the initial approval process and modifications prior to Mod 4.

4 Traffic Routes

4.1 Site Access from Regional Centres

The original transport assessment identified long distance deliveries to site involving RAVs will likely approach from one of the following routes:

- From the south via the Mid-Western Highway and passing through Cowra.

It is likely that all RAV deliveries from NSW Ports will be via this route. RAV deliveries from Victoria (via Hume Highway) and Queensland (via Pacific and Hume Highways) will also likely be via Cowra.

- From the north via Mitchell Highway and Millthorpe Road and passing through Orange.

It is noted that any RAV using this route will require special consideration for the turn at Millthorpe Road towards Forest Reefs. It is expected that far fewer RAVs will approach from this route compared to through Cowra

It was also noted that some traffic to the site may also approach from the east through Bathurst. These movements will only involve non RAV vehicles, such as workforce movements and smaller deliveries, as Bathurst is not on the RAV transport route.

No major changes to the regional road network has been made since the approval of the initial DA, so it is expected that the routes identified in the previous assessment will remain.

4.2 Local Access to Site

Local access routes to the site are generally as per the previous approval. However, Errowanbang Road has been upgraded along the full 25km length of its carriageway as part of the South Cadia Access Route project.

The upgrade involves the construction of a new bridge at Dirt Hole Creek, realignment of dangerous corners, and the sealing / reconstruction of existing road to a 9m pavement width. This is expected to make the road trafficable for B-Double trucks.

As the proposed main access route to the wind farm in the initial DA was via Errowanbang Road and Gap Roads, the upgrades to Errowanbang Road will not change the preferred RAV route from previous recommendations. However, it is anticipated that degree of minor works required to accommodate swept paths including vegetation trimming may be reduced or not required at all due to the improved base conditions and widening of the road.

Details of specific works at intersections into and out of the public road system and along tracks to individual turbine site will be considered in more detail as part of the Construction Traffic Management Plan and will include swept paths that will be able to be undertaken with more accuracy once detailed vegetation mapping and technical survey work has been completed.

It is anticipated that specific turbine site access tracks will be determined with regard to minimising vegetation removal, safety and in consultation with relevant parties including land owners.

5 On-Site Access Management and Mitigation

5.1 Access Management

The proposed modification does not introduce any new turbine locations and therefore practical access management will be generally as within the approved concept and will comprise:

- Use of existing or construction of new unsealed tracks, as generally identified and agreed as part of the approved development proposal;
- Potential short sections of sealed track where grades require;
- Where acceptable and subject to an approved Construction Environmental Management Plan localised vegetation removal or cut back; and
- Construction of stormwater culverts as required previously.

5.2 Mitigation Measures

A number of measures will be incorporated during the construction and operation of the wind farm to ensure that transport and traffic impacts arising out of the development are minimised. These measures will be developed in consultation with Blayney Shire Council and be detailed in the Construction Traffic Management Plan for the project.

It is anticipated that Mod 4 would have no material impact on the type of mitigation measures agreed to be provided as part of the existing Project Approval, however the individual level of intersection / vegetation temporary works may increase slightly to accommodate larger vehicles.

6 Traffic and Transport Conclusions

Based on the preceding analysis it is concluded that Mod 4 to the Flyers Creek Wind Farm will:

- Increase to the maximum wind turbine envelope including increase of turbine tip height of 10 metres (m) from 150m to 160m and in particular in relation to the traffic assessment an increase in the blade lengths from 60m to maximum 70m.
- Inclusion of a 132kilovolt (kV) transmission line and switching station proposed to connect the wind farm substation to the electrical grid; and
- Have no change in the number of turbines from the approved layout.

On the basis of the above and in terms of the traffic and transport assessment of the development it is concluded that Mod 4:

- Would not result in any additional traffic movements associated with construction or operation of the wind farm than previously identified;
- Would result in the tower and blade components of the development being longer than previously considered;
- Would increase the largest trailer accessing the site from one capable of transporting a 60m blade to one capable of transporting a 70m blade;
- Will be subject to a Construction Traffic Management Plan and Construction Environmental Plan which will include swept path analysis showing the impact of the largest vehicle on intersections, culverts, bridges and vegetation along the access route; and
- Will be subject to conditions to ensure that damage to the roads during construction and post construction are repaired to the satisfaction of the relevant authorities as per the existing project Approval.

Based on the preceding analysis it is considered that Mod 4 will have no material negative transport impacts compared to those previously identified. Furthermore, all impacts can be managed and mitigated as part of the existing Project Approval conditions and in particular F15, F16, F17 and F21c which provide for pre-construction and during construction studies and plans.



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