Murra Warra Wind Farm Preliminary Traffic and Transport Assessment Report

Author: RES Australia

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Revision History

Issue	Date	Author	Reviewers	Nature And Location Of Change
01	12 June 2014	Justin Howes	Jeremy Moon Kevin Garthwaite	Issue to Key Stakeholders for Initial Consultation
02	23 Sept 2014	Justin Howes	-	Minor amendments following consultation with key stakeholders (ref Appendix D) and amended text in red
03	11 December 2015	Justin Howes		Incorporation of recommendations from Rex J Andrews Pty Ltd Route Study
04	1 June 2016	Justin Howes	Kevin Garthwaite	Updated project description

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EXECUTIVE SUMMARY

RES propose to develop a wind farm, with up to 116 turbines, approximately 32km north of Horsham near Murra Warra. This Preliminary Traffic & Transport Assessment Report is provided for discussion with key stakeholders; Vic Roads, Yarriambiack Shire Council and Horsham Rural City Council.

The report outlines anticipated project traffic generation (based on a "worst case" scenario) and provides an overview of delivery routes to site based on reasonable supply points. Turbine components are assumed to be delivered to Geelong and concrete materials would be sourced from the vicinity of Stawell / Great Western. Based on this, the report proposes a number of preliminary mitigation concepts:

- The development, including further feasibility assessment, of a Sandstone Quarry within the wind farm site to minimise the importation of site track and crane hardstanding materials;
- Upgrade of the proposed main site entrance intersection to the wind farm (Minyip-Dimboola Road and Ailsa-Wheat Road);
- Upgrade widening (unsealed) of approximately 25km of minor council roads to be utilised for wind farm construction and ongoing operations;
- A pavement maintenance agreement to be provided (to Yarriambiack and Horsham Councils) for the section of the Minyip-Dimboola Road between Ailsa-Wheat Road and the Henty Highway;
- A pavement maintenance agreement to be provided to Vic Roads for any use of a "C" Classification Road; and
- Consideration given to rehabilitation of the intersection pavement surface at Minyip-Dimboola Road / Henty Highway.

Further detailed traffic management planning documentation (beyond that which is outlined herein) will be developed after project development approval and in a staged manner consistent with DTPLI guidelines. This process is designed to draw in feedback from key stakeholders.

RES requests feedback from key stakeholders to the information presented in this document and ultimately, acceptance of the document for submission within the Murra Warra Wind Farm Development Application.

1 INTRODUCTION

This Preliminary Traffic & Transport Assessment Report provides a review of the existing traffic conditions for the proposed 116 Turbine Murra Warra Wind Farm. It seeks to identify potential adverse impacts on the road network as a result of the construction and operation of the wind farm and recommends management principles to mitigate any such impacts. The report is for preliminary consultation purposes and should be read with reference to the Drawings included in Appendix A. It should be noted that the project could be developed in stages and as such the traffic count data represents a "worst case" scenario.

This investigation and report has been prepared by RES, with specialist input provided, in regard to the transport of oversize components, by Rex J Andrews Pty Ltd, a company specialising in heavy vehicle transportation projects across Australia for over 24 years

2 RES AUSTRALIA

RES Australia is a 100% owned subsidiary of the Renewable Energy Systems group of companies (RES Group). RES Group is a specialist renewable energy developer with 30 years' experience. To date RES Group has built wind farm projects of over 10 GW around the world (with 128 wind farms developed and another 1.7 GW currently under construction). RES Australia has staff located in both Victoria and New South Wales and is currently developing a number of other sites in Victoria, New South Wales and South Australia. RES is committed to delivering the Murra Warra Wind Farm Project with minimum disruption to the regional and local traffic network.

3 SITE LOCATION & LAND USE

The proposed Murra Warra wind farm is located approximately 32 km North East of Horsham, immediately north and south of the section of Minyip-Dimboola[1] Road (Local Road) that runs between the Blue Ribbon Road (C231 VicRoads) and the Henty Highway (B200 VicRoads).

The site has a total area of approximately 4,200 hectares and is currently utilised for broad acre cropping. It is anticipated that once completed the Wind Farm will only have a very minor impact on these agricultural activities, typically wind farms occupy around 1% of the area within the land boundary. The general location of the proposed Wind Farm is shown in Appendix A - *Drawing 1: Murra Warra Wind Farm TMP Regional Plan.*

Local delivery routes and various quarries that could potentially be used for the project are shown in Appendix A - *Drawing 2: Murra Warra Wind Farm TMP Local Plan*.

[1] It is understood that the centre of the Minyip-Dimboola Road is the boundary between Yarriambiack Shire Council and the Horsham Rural City and is treated as a joint responsibility road in terms of maintenance and upgrades..

4 DEVELOPMENT PROPOSAL

The project will consist of a wind energy facility comprising of up to 116 wind turbine generators.

Turbines will be three bladed and have an expected capacity of approximately 3.6MW (rated capacity will depend on final turbine selection) reaching a maximum height to the tip of the rotor at its highest extent which will not exceed 220m. The turbines will comprise of up to 5 tubular steel tower sections, mounted by a nacelle containing the generator, gear box and electrical equipment. Crane pads of approximately 40x60m will be located at the base of each turbine tower. Each turbine will require a transformer and switchgear which will be housed inside the tower base, or externally, immediately adjacent to the base. Should an external transformer be required, typical dimensions are 5.5m length, 3m width and 3m height.

The turbines will be accessed via a network of access tracks which will be approximately 6m wide to allow access for construction and for ongoing maintenance throughout the life time of the wind farm. Where possible site access tracks will be established to utilise existing access points and roads. It is estimated that there will be approximately 75km of new tracks and upgraded roads required and approximately 50 access points from minor rural roads. There may be a need for some alterations to road junctions close to the site.

Internally, electricity will be distributed from each wind turbine to the Terminal Station via a network of medium voltage 33kV underground and overhead cables. It is estimated that there will be approximately 18km of overhead line, with pole heights of approximately 35m and 70-75km of underground cabling.

There will be a Utility area, Collector/ Switch Yard, Terminal Station and Quarry which will be co-located at approximately 618363m Easting 5967266m North.

The Utility area will be in a secure enclosed compound and will comprise of an operations and maintenance building, car parking, a site office, warehousing/workshop facility and an external yard area for storage which may include a bunded area for fuel storage, and other ancillary equipment.

The Collector/Switchyard will be in a secure enclosed compound and will be where overhead and underground cables from the wind farm collection system will be terminated. Typically this will comprise of bus bars, switchgear, metering, a control building, reactive and harmonic filtering plant and other ancillary equipment. There will be pylon structures to support cables from the internal overhead lines and out to the adjacent Terminal Station.

The Terminal Station will be in a secure enclosed compound and will typically consist of transformation equipment, bus bars, switch gear, disconnectors, a control building, communications tower and other ancillary equipment to enable connection to the adjacent 220kV transmission line including surge arrestors and pylon structures to support cables from the collector yard and up to the adjacent 220kV transmission line.

The Quarry will be approximately 12Ha inclusive of temporary stock piles for overburden material. The quarry will be used to provide base materials for road building. The location of the quarry will be adjacent to and immediately north of the Utility area and Terminal Station.

Six potential locations have been identified for the placement of hub height anemometry masts. These will be used for monitoring the performance of the wind farm. Final selection of no more than four of these locations will be made after final turbine selection has been made.

There will be other temporary infrastructure associated with the construction of the wind farm. A main site construction compound will be located adjacent to the utility area and will typically comprise of offices, laydown area, concrete batch plant, storage, workshops, bunded fuel storage a water storage dam and other ancillary construction equipment. Because of the extent of the site there may be need

for an additional two general construction compounds. Preliminary sites for these have been identified in the south west adjacent to the Kings Roads and in the north east adjacent to the Kewell North School Road. These compounds will contain a sub set of the elements described above for the main site compound. There will be two further construction compounds, one to service the construction of the Terminal Station and another one to service the construction of the connection to the 220kV transmission line. These facilites will be located adjacent to the Terminal Station and will also contain a sub set of the elements described above. All temporary infrastructure will be removed at the end of the construction programme and the sites rehabilitated if required by regulators and landowners.

The general extent of the site is shown in Appendix A - *Drawing 3: Murra Warra Wind Farm TMP Infrastructure Layout*[2].

4.1 Turbine Components

Each turbine installed will typically have a maximum of eleven oversize and / or overweight deliveries associated with it:

- Nacelle (1 or 2 deliveries)
- Hub (1 delivery)
- Blades (3 deliveries)
- Tower Sections (3 to 5 deliveries)
- Unit Electrical Equipment (1 delivery)

With the exception of the Tower Sections, these components are generally manufactured overseas. In accordance with the Route Assessment prepared by Rex J Andrews Pty Ltd (refer Appendix E), the primary route considered for the turbine components, and all imported towers entering Australia is via the Geelong Port.

The following route, an approximate length of 404km, is considered the most suitable option: The Esplanade, Corio Quay Road, Princes Highway (To Waurn Ponds), Princes Freeway, Western Ring Road, See below Western Freeway, Western Highway, Stawell-Warracknabeal Road to Minyip, Minyip-Dimboola Road, Ailsa Wheat Road. The proposed Geelong Route and other potential regional routes are shown in Appendix A - *Drawing 1: Murra Warra Wind Farm TMP Regional Plan.*

The Rex J Andrews Pty Ltd report concludes that, based on their route study, that with minor upgrades to some corners, all loads could physically be delivered to the Murra Warra Wind Farm site. Additional conclusions from the study are provided below:

> *On past experience we do not expect any problems with the bridge structures on this route. However all bridge structures would need to be assessed by VIC roads to confirm the axle loadings are acceptable.*
>
> *A maximum loaded height on this route of 5.3 metres must be achieved. And an article length of 65.0 metres should not be exceeded.*
>
> - *Geelong port has large amounts of storage area within the port. The hardstand areas are compacted and would need little work to accommodate the equipment.*
> - *The road is predominantly good quality highway, with approx. 3 kilometres of narrow pavement, and 1 Kilometre of gravel roads.*

[2] For the most up to date proposed layout refer to the main EIA and planning permit application documents.

- *All bridges are wider than 4.4 metres axle width.*
- *There are several large parking bays on this route that could comfortably handle the blades at 65 metres long.*
- *Vic Roads, Councils, Rail authorities and electrical must be contacted prior to departure.*
- *The Nacelles, Hubs and Towers could access the site on the Western Highway and Henty Highways via Horsham.*
- *Local manufactured towers could travel unrestricted from South Australia or Portland. The routes for these components would be via the main road networks.*

The Rex J Andrews Pty Ltd report was prepared based on a V126 turbine which has blade length of 61.7m. It is currently proposed to use the V136 turbine which has a blade length of 66.7m. Feedback from Rex J Andrews Pty Ltd has confirmed that the extra length will have an impact on the proposed transportation route, with additional works likely to be required to further modify tight corners and intersections. Rex J Andrews Pty Ltd are currently updating their route study to consider the longer blades.

The use of alternative routes[4] from Portland, Melbourne or Port Adelaide may still be explored after a permit has been obtained. It is likely that the tower sections will be manufactured in Portland and transported to site via Cavendish and Horsham.

Detailed oversize and over mass delivery assessments are typically considered closer to the time of construction as "Secondary Permits" under the existing State Road Authority processes.

4.2 General Project Construction Traffic

Aside from turbine components discussed above, other key features of the proposed Murra Warra Wind Farm construction phase are:

- onsite access tracks and hardstanding areas;
- establishment of temporary construction compounds for materials delivery;
- on-site concrete batching and/or importing redimix concrete to site for Turbine foundations;
- grid connection infrastructure (i.e. overhead power lines, transformer, substation and switchyard);
- onsite cabling (underground and overhead);
- temporary and permanent wind monitoring masts (anemometers);
- monitoring and maintenance facilities (controls building);

The traffic associated with the above aspects of construction can potentially be significant in terms of both overall traffic movements and pavement loads. This is especially the case for the construction of the on-site tracks which can contribute up to 60% of large truck movements and axel loads if all the capping materials are imported to the site from the surrounding region. For this reason, it is the intention of RES to establish an onsite quarry / borrow pit (if feasible) to reduce regional and local road impacts as much as possible. The Vic Roads Wind Farm Traffic Management Guidelines also strongly encourage the use of onsite quarries / borrow pits to minimise the need for importing site track material.

[4] or amendments to the proposed Geelong route.

4.3 Site Entrances

At present there are two site entrances anticipated for the project from Minyip Dimboola Road, the only major arterial road extending through the windfarm site.

There are however a number of existing minor classification Council roads (both formed and unformed paper roads) that will be utilised for both windfarm construction traffic and ongoing operations.

The proposed road and access track network is shown in Appendix A - *Drawing 3: Murra Warra Wind Farm TMP Infrastructure Layout.* Minor Council roads to be utilised for windfarm access include [approx. length in brackets]:

- Alisa Wheat Road (8.0km)
- Kings Road (6.7km)
- Dogwood Road (3.7km)
- Kewell North School Road (3.7km)
- Shalders Road (1.2km)
- Barret Road (2.3km)

The utilised sections of the above roads will be upgraded to a suitable standard for use by the Murra Warra project. Refer section 5.3 below for further details.

4.4 Wind Farm Operation

Once completed the wind farm operation will be monitored daily by staff located in the maintenance and service building onsite. It is anticipated that there will be up to 15 permanent staff on site who are likely to commute daily from within the Wimmera region. Typical activities include minor site track and hardstand area maintenance, routine turbine, gearbox, generator and electrical maintenance within the Nacelle and other general repair works which would require up to 3 service vans travelling around the site on a daily basis. Minor traffic generation of less than 2 or three truck deliveries per week on average would be associated with the delivery of the consumable items required for such routine maintenance activities.

Major unscheduled work that would require a crane is highly unlikely in the first 10 years of operations but could include blade repairs and work on gearbox or generators.

4.5 Oversize Vehicle

"Oversize" vehicles are all those vehicles or combinations that transport large indivisible loads with a maximum width of 3.5m, a maximum height of 4.6m and are up to 25m long[5]. Any items that are larger than this will need a special permit (such as wind turbine tower sections, nacelles, blades and the substation transformer) from Vicroads as per the requirements set out in the document "Additional Permit Conditions"[6].

In terms of Murra Warra Wind Farm, oversize vehicle and special permits will be required for the delivery of the following:

- Nacelle (the generator and gearbox (if present) of the turbine, housed in one unit and transported as a whole);

[5] Oversize Load Carrying Vehicles Information Document, Vic Roads
[6] VicRoads Publication No 0083

- Hub (rotor hub attached to the nacelle) ;
- Turbine Blades (three blades per turbine and transported individually);
- Turbine tower sections (three sections per turbine, each transported individually);
- Substation Transformer;
- Crawler cranes for lifting heavy items above hub height;
- Mobile telescopic cranes;
- Large construction vehicles such as dump trucks, scrapers, temporary batch plant etc.

4.6 Overmass Vehicle

"Overmass" vehicles include vehicles or combinations that exceed 6.5 tonnes. Special over mass vehicle permits will be required for the following:

- Nacelle;
- Tower sections;
- Substation Transformer;
- Crawler cranes.

5 EXISTING CONDITIONS AND PROPOSED UPGRADES

Detailed "Existing Condition" information will be provided for the road network surrounding the site in further issues of the project Traffic Management Plan. Preliminary investigations suggest that the existing road conditions proposed for project use are already at a suitable standard with the exception of the three potential upgrade locations noted below and as shown in Appendix A – *Upgrade Concepts Drawings 1, 2 and 3.*

5.1 Henty Highway & Minyip-Dimboola Road

The Henty Highway and Minyip-Dimboola Road intersection appears to have been improved in the last 10 years with a high level of channelisation on all approaches and speed reduction curves / mouth offsetting of the eastern leg of the Minyip-Dimboola Road. The vertical alignment is completely flat with unrestricted sight distance onto the Henty Highway from the Give Way control points. It is suggested that future development of this Traffic Management Plan (after wind farm permitting) would include an external Road Safety Review (RES do not anticipate that a geometric upgrade would be required) and Pavement Condition Review to assess the intersection for a possible Asphaltic Concrete upgrade to accommodate increased traffic movements.

The primary route for turbine components, and all imported towers entering Australia via the Geelong Port, as presented in the Rex J Andrews Pty Ltd Route Study (refer Appendix E), involves travel down Minyip-Dimboola Road from east to west, crossing over the Henty Highway. It is understood that loads will need to cross from the incorrect side onto the correct side with trailers likely mounting the median strips on Minyip-Dimboola Road. Some strengthening of the median strips may be required.

Figure 1 – Key Intersection 1 – Henty Highway and Minyip-Dimboola Road

Figure 2 Photo of Henty Highway and Minyip-Dimboola Road intersection looking north along the Henty Highway

5.2 Minyip-Dimboola Road & Ailsa Wheat Road

It is proposed that project traffic will turn north onto Ailsa Wheat Road from the Minyip-Dimboola road (approaching predominantly from the east) to access the main site compound and substation areas. The existing narrow seal of the Minyip-Dimboola Road and the unsealed Ailsa-Wheat Road are not considered suitable to accommodate this potentially high number of vehicle turns. A preliminary

concept for upgrade, consisting of shoulder widening and shoulder sealing and a 20m backseal down Ailsa Wheat Road is shown in Appendix A.

It is not considered that full left and right turn bays are required post construction. During construction there will be significant signage and speed limits installed to ensure safety for turning movements. It is therefore proposed that the final arrangement of the intersection should be simple through lanes as shown on the concept drawing.

Figure 3 – Key Intersection 2 – Minyip-Dimboola Road & Ailsa Wheat Road

Figure 4 - Minyip-Dimboola Road & Ailsa Wheat Road intersection looking east along Minyip Dimboola Road

5.3 Widening Of Existing Council Roads

As outlined in Section 4.3 above, a number of existing minor classification council roads (both formed and unformed paper roads) that will be utilised for both windfarm construction traffic and ongoing operations. The minor roads are typically dirt or roughly graded roads generally used for infrequent farm access. As such they are maintained to a lower standard than would typically be constructed within the Wind Farm itself. It is therefore proposed to upgrade these sections of road to a Wind Farm standard which would possibly include reforming the road and drainage improvements to ensure that the surface is suitable for year round and wet weather access.

Typical Wind Farm road standards are 4.5m to 5.5m road surface (plus shoulders) on straights – with widths of up to 7.5m on tight curves less than 80m radius. Typical Wind Farm track details are shown in Appendix A for discussion purposes.

Figure 5 – Ailsa Wheat Road looking north from Minyip Dimboola Road

Figure 6 - Ailsa Wheat Road looking south from Minyip Dimboola Road

6 WIND FARM TRAFFIC GENERATION

The traffic generation of the Murra Warra Wind Farm can be divided into distinct phases: Pre-Construction; Construction; Operational; and Repowering / Decommissioning phases.

6.1 Pre-Construction Traffic Generation

Activities such as site visits, geotechnical tests and setting-up of wind monitoring masts during this phase will generate minor levels of traffic involving road legal vehicles – these minor traffic movements are not included within the 23 month construction phase assessment below and are considered normal traffic movements for which no special Traffic Management Planning is required.

6.2 Construction Traffic Generation

Table 1 below summarises the likely traffic mix and the various activities that are anticipated for the construction phase. Traffic generation figures in this report are given as one-way delivery movements and have been computed for two scenarios:

Option 1 (All Materials Imported to the Site) - Total Wind Farm Construction Estimate – assuming all site track capping and subgrade improvement materials are imported to the site and redimix concrete is procured from an existing plant in Horsham.

Option 2 (On Site Quarry and Concrete Batchplant) – Total Wind Farm Construction Estimate – assuming all site track capping and subgrade improvement materials are sourced from an on-site quarry and Redimix concrete is batched on site.

Table 1 - Estimated Total Construction Traffic Volumes

Truck Delivery Movements		**Option 1**	**Option 2**
Wind Farm	Site Set-up	130	145
	Road & Hardstandings	27,777	1,158
	Foundation Construction	8,068	5,392
	Turbine Components	994	994
	Crane Mob / Demob	26	26
	Cable Installation	120	120
Internal Sub Station	Sub Station Civils	232	232
	Sub Station Electrical	54	54
	Crane Mob / Demob	8	8
General	Water and Fuel Delivery	500	500
Total Truck Deliveries		**37,909**	**8,630**
Misc Small Vehicles			
General	Workers and Visitors	13,000	13,000
	Misc small tools etc.	1,000	1,000
Total Light Vehicles		**14,000**	**14,000**
Total estimated traffic for project (one way delivery)		**51,909**	**22,630**

Option 1: Importing all Material - Option 2: On Site Quarry and Batch Plant

A detailed breakdown of these figures is presented in Appendix B. The distribution of this traffic over time is shown in the two figures below:

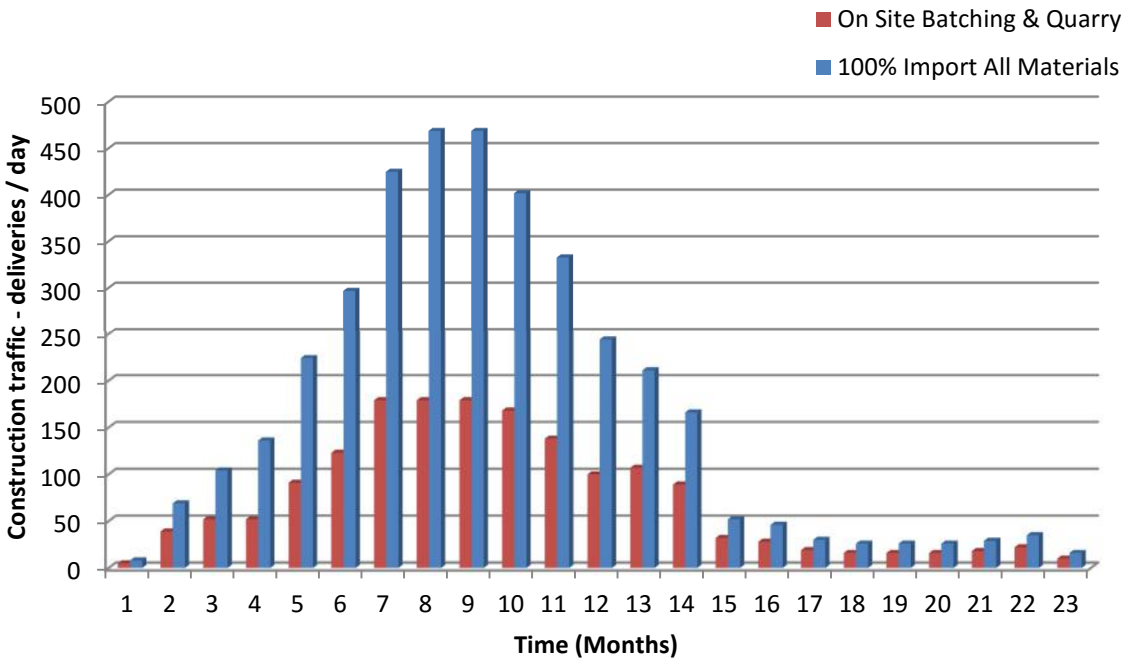

Figure 7 – Estimated Daily Construction Traffic - All Vehicles Deliveries

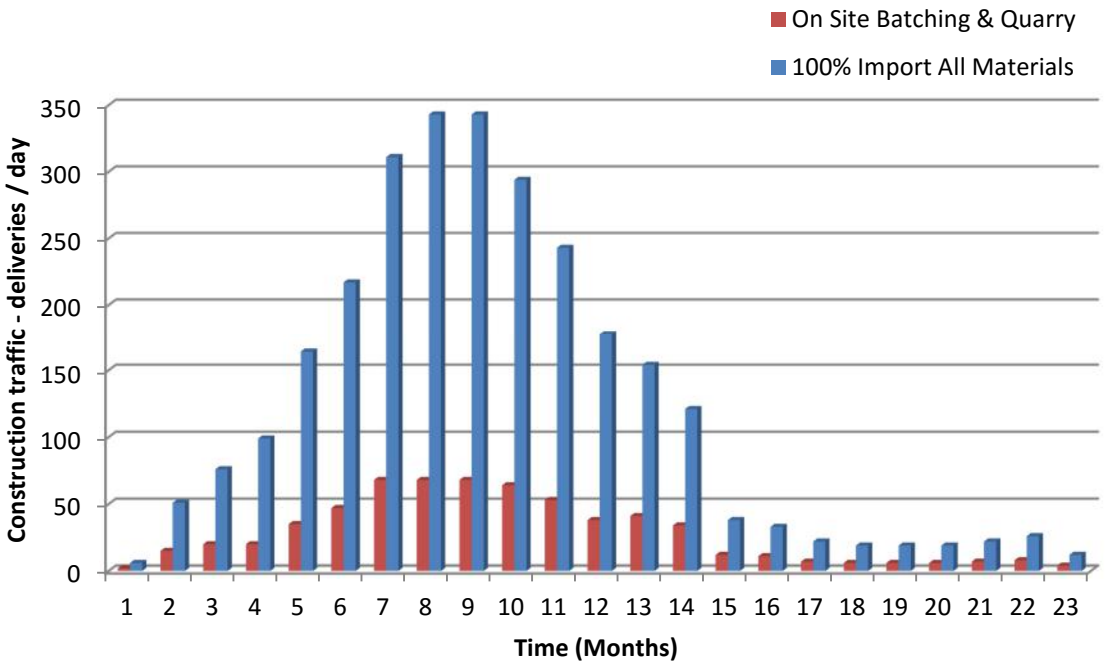

Figure 8 – Estimated Daily Construction Traffic - Truck Deliveries Only

6.2.1 Quarrying

The closest quarries to the site, some 27km south on Finlaysons Road and Ladlows Road, are considered to be medium to poor quality sandstone materials (Appendix A - *Drawing 2: Murra Warra Wind Farm TMP Local Plan*). The proposed onsite quarry(s) within the Wind Farm would produce a similar type of material to these nearby quarries. This material is locally used on unsealed roads and it is considered it would be suitable for use on internal Wind Farm tracks and Crane Hardstandings, the material could be strengthened with lime or cement stabilisation to provide improved running surface quality and track durability if required. An allowance for importing cement materials for road stabilisation (3% by mass) has been made in the Option 2 traffic count scenario.

Details of two potential onsite quarry sites are provided within the Murra Warra Wind Farm Geology and Hydrology Assessment Report prepared by RES Australia, dated October 2015.

There are a three "blue stone" quarries operating to the south and east of the site. It is expected that Conundrum Holdings and Tuckers Hill to the south east are the most likely to be considered for stone delivery to the wind farm site as haulage from these locations would be via the Western Highway to Horsham which is already heavily trafficked with Heavy Commercial Vehicles. Such good quality will definitely be required for concrete aggregate supply for the project.

6.2.2 Concrete Batching

The establishment of on-site batching plant is the most likely scenario for concrete manufacture to meet the approximately 500m^3 of concrete per turbine, which needs to be poured continuously. Water for construction (and concrete batching) could be sourced via the existing GWM water network with a large 24/7 trickle fed HDPE lined pond being installed at the concrete batching plant location to provide a point of water collection, storage and pick up.

6.2.3 Turbines

After the foundations have cured to their required strength, the WTG components will be delivered to site (or this will be carried out in parallel with foundation construction) on oversize / overmass vehicles and erected using some of the largest crawler cranes in Australia. Turbine delivery is discussed in section 4.2 above.

6.2.4 Electrical and Commissioning

It is anticipated that the grid connected substation will be contained within the southern section of site. This activity will require large hardstand areas and concrete footings to be installed prior to installation of any transformer(s), control buildings, operations buildings and switching rooms. This work, along with installation of internal wind farm reticulation to the substation would be completed in parallel with concrete foundation and tower installation activities. Much of the substation related activities will be undertaken by registered Transmission Network Service Providers (TNSP).

Turbine commissioning teams will be on site until all turbines have been tested and have come online to generate power. Civil contractors are expected to finish any remaining work before removing staff and equipment from the site.

6.3 Operational Traffic

Once completed the wind farm operation will be monitored daily by staff located in the maintenance and service building onsite. It is anticipated that there will be up to 15 permanent staff on site who are likely to commute daily from within the Wimmera region. Typical activities include minor site track and hardstand area maintenance, routine turbine, gearbox, generator and electrical maintenance within the Nacelle and other general repair works which would require up to 3 service vans travelling around the site on a daily basis. Minor traffic generation of less than 2 or three truck deliveries per week on average would be associated with the delivery of the consumable items required for such routine maintenance activities.

Major unscheduled work that would require a crane is highly unlikely in the first 10 years of operations but could include blade repairs and work on gearbox or generators.

6.4 Re-powering / Decommissioning

Re-powering the wind farm involves decommissioning (removing) the existing wind turbine components above ground level and upgrading the wind farm with newer technology wind turbines. Materials and machinery removed from the wind turbines would be removed from site and recycled. Subject to further planning consent being obtained, newer wind energy turbines would be erected on the site.

Decommissioning involves dismantling the wind turbines while leaving sub-surface cables and foundations in situ.

Both re-powering and decommissioning involve the use of large cranes to dismantle the WTG components and trucks to transport the components to their specified location. The traffic associated with either the re-powering or decommissioning phases would be similar to the traffic of the WTG components delivery, which is estimated to be about two wind turbines per week (i.e. blades, tower sections, hub and nacelle).

7 MITIGATION

Following achieving project development approval, a staged Traffic Management Plan (as outlined in Appendix C) will be developed to mitigate any adverse transport related issues including:

7.1 Traffic Controls

7.1.1 Delivery Times

Movement of oversize and over-mass vehicles to and from the site in accordance with this Traffic and Transport Report and any conditions of consent. Typically oversize and over-mass vehicles are permitted to operate from sunrise to sunset in rural areas, whereas there are further restrictions in urban areas such as Melbourne.

7.1.2 Escorts for Oversize and Over-mass Loads

Any vehicles exceeding a width of 3.5m or length of 25m require 1 pilot vehicle during the entire transport.

Any vehicles exceeding a width of 4.5m or a length of 30m require 2 certified pilots. A certified pilot vehicle means a pilot vehicle driven by a pilot vehicle driver who has successfully completed a Roads Corporation approved pilot vehicle driver course and is operating in accordance with the course requirements.

Vehicles exceeding a width of 5.5m or a length of 35m require 2 certified pilots and 1 escort vehicle (VicRoads) to accompany the trucks as required by VicRoads.

VicRoads will provide and manage all escorts required for the transports.

7.1.3 Delivery Plan

WTG components shall be delivered to site in sufficient time to meet the agreed construction programme, and in accordance with the requirements of VicRoads and Local Council.

7.2 Notifications

7.2.1 Emergency Services

The Victoria Police, Rural Fire Service and Victoria Ambulance service will be given written notice of the turbine deliveries. Further daily notifications will be given in advance of the vehicles leaving the port of entry. Any direction or advice provided by any emergency services personnel shall be documented by Murra Warra wind farm project management and strictly adhered to.

7.2.2 VicRoads

VicRoads will be given at least 4 weeks written notice of the WTG components deliveries, weekly updates will be provided during the delivery period once the delivery timetable has been finalised with the turbine supplier.

7.2.3 Local Residents

Local residents and especially all residents along the delivery routes during the delivery of the WTG components will be notified in writing by leaflets at least 4 weeks and again at least 1 week prior to the commencement of turbine deliveries. These written notifications will also be published in the local press to coincide with the leaflet drops.

7.2.4 Local Business

In addition to the leaflet drop and press notifications, local businesses will be consulted directly.

7.2.5 Local Services

RES will make every effort to work with local service providers to ensure that any potential disruption/s that could be caused by WTG deliveries are identified and avoided. Services of particular relevance include but are not limited to:

- Local buses;
- Local trains;
- Refuse collection;
- Livestock and agriculture product transportation;
- Farm machinery transportation; and
- Regular goods deliveries.

Consultation with any such service providers shall be made by the Murra Warra Wind Farm Construction Site Manager, at least 2 weeks in advance of any such planned deliveries.

7.2.6 Planned Engineering Works

RES will work with VicRoads to identify any planned engineering works that may conflict with the planned delivery times on any designated delivery route/s. Additional consultations with any affected residents will then be undertaken to minimise disruption to the local community and the planned engineering works.

7.2.7 School Buses and Community Events

RES will work with Local Council and School Bus Co-ordinators to identify any potential conflicts with morning and afternoon school bus services. Construction deliveries will be managed to avoid disrupting these services.

Planned and notified community events will also be considered by RES when scheduling deliveries. Consultations shall be undertaken by the Wind Farm Site Manager at least 2 weeks in advance of any deliveries to ensure that community concerns are considered.

7.3 Near Site Road Upgrades

As discussed in more detail above (section 3 of this report and shown on the Drawings), the existing near site road conditions are considered to be in suitable condition for the proposed development with the exception of three locations where upgrade work should be considered:

- Ailsa Wheat Road (North and South);
- Minyip-Dimboola Road / Ailsa Wheat Road Intersection;
- Henty Highway / Dimboola-Minyip Intersection.

7.4 Pavement Maintenance Agreement for Minyip-Dimboola Road

Assuming that the main entry into the site is from the east along Minyip-Dimboola Road, and upon finalisation of quarry supply points (including the confirmation of an on-site quarry or otherwise) it is proposed that a pavement maintenance agreement with Local Council would be executed for the 5.2km section of this road between the Henty Highway and the proposed Site Entrance at Ailsa-Wheat Road. This agreement would include a lump sum contribution for pavement damage to the Minyip to Dimboola Road and principles for monitoring and maintaining this section of the road during wind farm construction.

7.5 Pavement Maintenance Agreement for Vic Roads

If any "C" Classification Roads (or roads other than those shown on the plans appended to this report) are to be used, or if no on-site quarry is to be developed to win the bulk of the site track materials, then a pavement maintenance agreement would be required to be executed with VicRoads (once with final quarry locations had been confirmed) as per the principles discussed in their DRAFT Wind Farm TMP Guidelines (Version 4).

7.6 Off Site Road Upgrades and Temp Works

Subject to the final delivery route for oversize and over-mass transportation being confirmed and approved, minor work at off site intersections may be required.

Details of likely procedures or works at key corners and intersections along the primary Geelong Route are provided within the Rex J Andrews Pty Ltd 'Transport Management Plan' attached in Appendix E.

7.7 Proposed On Site Quarry

A significant reduction to truck and dog movements (and pavement impacts) can be achieved through the development of a sandstone borrow pit(s) within the boundary of the Wind Farm. This is a key traffic mitigation feature of the Murra Warra wind farm project and permission for borrow pits will form part of the overall permit application for the wind farm subject to a feasibility assessment.

8 CONCLUSIONS AND FURTHER WORK

This preliminary report has been produced for discussion purposes with key roads stakeholders:

- VicRoads;
- Yarriambiack Shire Council;
- Horsham Rural City Council.

It is not considered that additional consultation would be required beyond this group until oversize delivery routes and quarry supply points have been confirmed closer to the time of construction.

RES considers that the project is feasible from a traffic and transport point of view and any adverse effects associated with the project can be readily mitigated.

It is proposed that further detailed traffic management planning documentation (beyond that which is outlined herein) would be provided to the satisfaction of key stakeholders after a permit for the wind farm has been obtained. Appendix C provides RES commentary on the "model permit conditions" suggested as guidance by DPTLI for responsible authorities.

Comments received during an initial consultation process (outlined in Appendix D) have been incorporated into Issue 2 of this document. RES therefore now seeks a letter of "in-principle" acceptance of the proposed TMP process outlined here which would be used to support the Murra Warra Wind Farm development application process.