

07 December 2020

Terrena Kelly  
Waitomo District Council  
Queen Street  
PO Box 404  
Te Kuiti 3941

Dear Terrena

### **Transportation Response to s92 – Taumatotora Wind Farm – RM200019**

The following provides responses to the request for information on the above consent application, dated 7 September 2020.

#### **Question A**

The proposed arrangement is that truck & trailer units will transport the turbines from New Plymouth Port to the subject site via SH3, Marokopa Road and Taharoa Road. In 2005, Ventus Energy Ltd predicted that the development would generate a total of 2650 trips for the entire project, however, did not include the following.

- Trips per day (07:00PM to 07:00AM)
- Trips per route
- Duration / Period
- Number of trips where roads will need to be closed during transport due to extra-long loads.

An update of all the vehicle trips to the subject site should be provided in a detailed description/table format including the Annual Average Daily Traffic.

#### **Response A**

Please refer to **Appendix 1** for the information relating to the vehicle trips data. The total trips generated from the windfarm for the original consent was 11,970 trips. This figure is provided in the AEE. There has been a minor decrease in the total trips generated for this consent variation, as the expected trip generation is now 10,215 trips. This illustrates there will be reduced effects for this consent variation.

#### **Question B**

Ventus Energy Ltd provides Annual Average Daily Traffic (AADT) volumes for the year 2004. Traffic volumes over the last 16 years have increased since that date. The applicant should provide the latest traffic volumes along the proposed traffic route to go hand in hand with the traffic volumes generated by the windfarm. This will also provide a clear understanding of the existing road network.

## **Response B**

Please refer to **Appendix 2** for the traffic volumes. The traffic volumes have generally increased slightly from 2004 to 2020, although in some cases have in fact decreased. The change in traffic volumes between 2004 and 2020 is very minor, and it should be considered that the small change has a very minor effect on the consideration of the consent variation.

## **Question C**

Ventus Energy Ltd identified five locations along Taharoa Road which required upgrading and removal of vegetation. The current assessment is not supported as a full route assessment should be undertaken by a Traffic Engineer which should include the following.

- To assess all Waitomo Roads, including intersections that are relevant to the project.
- Identify areas along the route where the semi-trailer may have limited manoeuvring space e.g. tight corners / bends, intersections and bridges.
- Provide RP locations as a reference.

The isolated areas should be provided with a RP location (Mobileroad) along with detailed mitigating measure. A swept path should be provided for all locations as this would help identify the constraints.

## **Response C**

We have reviewed the Ventus Energy memo and the data around typical turbine loads and find that there are no increased effects on the road network due to the improved transportation methods now available. In fact, due to the reduced numbers of turbines, the numbers of component transporters (and concrete and aggregate trucks) are reduced. It should be noted that the transporters that are to be used will not be larger than what was previously consented, and therefore providing this information should be outside the scope of this consent variation.

Furthermore, the wind turbine blades are of a newer generation of wind turbine, featuring a 'two-piece' blade design, this can be seen on the following link:

<https://www.ge.com/renewableenergy/wind-energy/onshore-wind/cypress-platform>. This turbine design allows the blade to be assembled on-site, reducing the length of each component part during transportation, and making the turbine blades easier to transport. This allows for the turbine transporters to cause no greater impact than the previous design.

Additionally, the original consent for the turbine transporter was for a conventional trailer transport. The newer generation of wind turbine blades can be transported via the conventional trailer method, as well as using a rotor blade adaptor, this can be seen on the following link: <https://www.scheuerle.com/products/wind-industry/rotor-blade-adapter.html>. The rotor blade adaptor allows the transporter to be shorter than the conventional trailer transport. This method would offset the impact of the increased rotor blade diameter and rotor blade length.

### **Question 21**

Please provide an update of CAS data and AADT for the full length of the project route. A trip generation (daily trips) of the windfarm should be presented according to the following.

- a. Expected number of vehicle movements, particularly heavy vehicle numbers during each construction phase.
- b. Preferred routes for heavy vehicles.
- c. Temporary traffic management measures required to manage heavy vehicle movements to / from site.
- d. Measures to prevent, monitor and remedy tracking of dust and debris.
- e. Monitoring and reporting of construction traffic and traffic management measures.

### **Response 21**

A CAS report is not considered necessary. Traffic volumes are very low for the roads that are to be used during the construction of the wind farm. Additionally, there is a net reduction in the number of vehicle trips generated by the Wind Farm construction. Crash patterns throughout these roads should not impact the transportation of the legal and specialist vehicles used during construction.

The AADT is provided in **Appendix 2**, and this accounts for the current preferred route.

a) A trip generation of the wind farm has a net decrease relative to the previous consent. It is expected there will be 30.0 trips per day for heavy vehicles along the preferred route, whereas the previous consent had an expected 36.1 trips per day. Calculations for cut and fill of the wind farm have been undertaken and illustrate there is a negligible change in these volumes. This confirms that there will be a less than minor effect regarding the number of heavy vehicles during construction.

b) Regarding the preferred route for heavy vehicles, this is considered outside the scope of this variation. The variation would result in a reduced impact on the road network when compared to the original proposal. The reduced number of turbines would result in a lower frequency of heavy vehicles travelling to the site. Detailed investigations will be undertaken at a later stage to determine the most appropriate route, and a full route assessment will be undertaken to ensure temporary traffic management measures are in place. Following a detailed investigation, in which the consent holder is required to carry out as a condition of consent, it may be found that alternative routes and methods are superior. Confirmation of the route at this resource consent stage is not considered necessary. The assessment of the alternative routes will be undertaken in consultation with the appropriate roading authorities. Any superior travel routes or methods shall be disclosed and worked through the appropriate channel as part of the TMP. There are several routes that may be taken, and these are dependent upon which port the turbines arrive upon, as well as the costs/feasibility of each route, taking into account the traffic management requirements.

c) d) e) In response to questions 21c, 21d and 21e, this level of detail cannot be provided at this stage of the project. At a later stage, a Construction Traffic Management Plan (CTMP) would be prepared and adhered to, in order to avoid or mitigate potential traffic effects on other road users. It is proposed that these consent conditions require these details be addressed through the proposed CTMP accordingly.

### **Question 22**

Please provide an assessment of the achievable sight lines at the site access should be undertaken to confirm whether sufficient sight distance exists to meet the minimum requirements of NZTA Guidelines RTS 6.

### **Response 22**

An assessment has been undertaken to check sight lines at the site access, and these meet design standards as shown in **Appendix 3** of the report. The sight lines are based on the existing speed limit in the area, which is 100km/h. It should be noted that sight lines are likely to improve during the construction period with a TMP in place near the site access. A TMP would likely reduce the speed limit and therefore reduce vehicle speeds near the sight access, thereby improving safety for access to the site.

### **Question 23**

Please provide an assessment of the vehicle swept path should be provided for the isolated areas along the entire route. Furthermore, a journey run / test run with a semi-trailer truck should be undertaken along the entire route (New Plymouth Port to subject site) and a recording of this should be provided as evidence.

### **Response 23**

This level of detail cannot be realistically be provided at this early stage in the project. The majority of vehicles are legal and would fit within the current roading network. It is only the specialist vehicles transporting the turbines that would need to be reviewed. These vehicles will be covered under the Overweight and Over dimensional permits, that will be applied for at a later stage. The component sizing of the turbines has been reviewed and would not require an increase in the sizing of the transporters. This in combination with fewer total trips generated during construction, should cause no increased effect than the 2004 design. This combined with the reduced frequency of large vehicles trips would result in a net reduction in overall impact. Additionally, a CTMP would be prepared and adhered to, in order to avoid or mitigate potential traffic effects on other road users. It is proposed that these consent conditions require these details be addressed through the proposed CMP accordingly.

Several Environment Court decisions have deferred any requirement to provide these types of details until after the consent has granted, requiring instead that they be submitted through a Construction or Construction traffic management plan. For example, for the Awhitu Wind Farm the Environment Court required that the consent holder prepare over-dimensioned vehicle traffic management plans and obtain the required approval from (then) Transit New Zealand, the Land Transport Safety Authority and the local authority prior to the movement of any over-dimensioned vehicles on a public road. Condition 7 of the Makara (Mill Creek) Wind Farm consent set out the details required within the construction traffic management plan, including swept paths for over-dimensioned vehicles and requiring that over-width permit applications be made post consent. Details as to hours during which overweight/over-dimensioned loads could take place were also to be submitted post consent (in consultation with the local authority).

In summary, the changes to the traffic volumes, the changes to the traffic generated as a result of the wind farm, as well as the change to the number and type of wind turbine components, have not resulted in any significant change from the previously approved consent, therefore the consent should not be changed as a result of the transportation effects.

Please don't hesitate to contact me if you require any further clarification.

Yours faithfully



**Matthew Arnerich**  
Senior Transportation Engineer  
(09) 366 7533  
Bsc, GDipEng (Transportation), MEngNZ  
D: 021 1059 676 E: [matthew.arnerich@tes.net.nz](mailto:matthew.arnerich@tes.net.nz)  
Traffic Engineering Solutions Limited  
Level 2B, 54 Wellesley Street, Auckland 1010  
<http://www.tes.net.nz>

Yours faithfully



**James Daly**  
Principal Transportation Engineer  
(09) 366 7534  
BE(Civil), MEngNZ  
D: 027 310 8766 E: [james.daly@tes.net.nz](mailto:james.daly@tes.net.nz)  
Traffic Engineering Solutions Limited  
Level 2B, 54 Wellesley Street, Auckland 1010  
<http://www.tes.net.nz>

## Appendices

- Appendix 1    Vehicle Trips
- Appendix 2    AADT
- Appendix 3    Sight Access Visibility

# Appendix 1

Vehicle Trips

<b>Vehicle Trips</b>			
	Vehicle Trips 2004	Vehicle Trips 2020	Change in Trips
<b>Aggregate for roads</b>	3170	2504	-666
<b>Concrete sourced from existing Batching plant</b>	1040	917	-123
<b>Concrete from on-site batching plant - aggregate</b>	310	275	-35
<b>Concrete from on-site batching plant - cement</b>	190	165	-25
<b>Reinforcing Steel</b>	50	44	-6
<b>Construction Personnel</b>	5400	4750	-650
<b>Construction Machinery</b>	600	525	-75
<b>General Material Supply</b>	300	265	-35
<b>Turbine components</b>	160	110	-50
<b>Contingency</b>	750	660	-90
<b>Trips Per Day</b>	65.8	52.5	-13
<b>Trips Per Day (7pm to 7am)</b>	0.9	0.6	-0.3
<b>Trips Per Route</b>	11970	10215	-1755
<b>Duration (days)</b>	182	182	N/A
<b>No. of trips with roads closed</b>	0	0	N/A



# Appendix 2

Average Annual Daily Traffic (AADT)

<b>Traffic Volumes - 2020</b>					
<b>Road Name</b>	<b>Carriageway Start Name</b>	<b>Carriageway End Name</b>	<b>AADT</b>	<b>HCV%</b>	<b>HCV</b>
State Highway 3	Rangi Street	Oha Street	2323	24%	558
State Highway 3	Gribbin Street	Manganui Street	2323	24%	558
State Highway 3	Te Kauri Road	Takarei Terrace	2323	24%	558
State Highway 3	Mangakowhai Road	Tikitiki Road	2323	24%	558
State Highway 3	Gladstone Street	Tynan Road	4755	16%	761
Manganui Road	Taumatamaire Road	Ordish Road	200	10%	20
Mangatoa Road	Pomarangai Road	Soundy Road	50	10%	5
Marokopa Road	Mangatoa Road	Taharoa Road	300	10%	30
Taharoa Road	Marokopa Road	Te Waitere Road	150	10%	15
Taumatatotara West Road	Taharoa Road	n/a	<50	n/a	n/a

<b>Traffic Volumes - 2004</b>					
<b>Road Name</b>	<b>Carriageway Start Name</b>	<b>Carriageway End Name</b>	<b>AADT</b>	<b>HCV%</b>	<b>HCV</b>
State Highway 3	Hills Road	Pilot Road	2066	n/a	n/a
State Highway 3	Paekaka Road	Hunt Road	2084	n/a	n/a
State Highway 3	Te Kauri Road	Takarei Terrace	2044	n/a	n/a
State Highway 3	Mangakowhai Road	Tikitiki Road	2838	n/a	n/a
State Highway 3	Gladstone Street	Tynan Road	5714	n/a	n/a
Manganui Road	Taumatamaire Road	Ordish Road	150	n/a	n/a
Mangatoa Road	Pomarangai Road	Soundy Road	<50	n/a	n/a
Marokopa Road	Mangatoa Road	Taharoa Road	250	n/a	n/a
Taharoa Road	Marokopa Road	Te Waitere Road	110	n/a	n/a
Taumatatotara West Road	Taharoa Road	n/a	<50	n/a	n/a

\*Traffic volumes for 2020 have been obtained via the Waka Kotahi One Network Road Classification (ONRC)

# Appendix 3

Sight Access Visibility



Driveway Sight Distance				
REF	Operating Speed (km/h)	Minimum Sight Distance (m)	Available Sight Distance (m)	Meets CSD
S1	90	130	130+	Yes

**CONCEPT DESIGN**

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Checked	Approved	Date
A	FIRST ISSUE		JM	MA	JD	11/20

FOR:

BY: **TRAFFIC ENGINEERING SOLUTIONS LIMITED**

Traffic Engineering Solutions Limited  
 PO Box 7237, Wellesley Street, Auckland 1036  
 P: 0800 837 583, E: info@tes.net.nz



Drawn	JM	Designed	JM
Drafting Check	MA	Design Check	JD
Approved			
Date	27/11/2020		
Scale	1:500 @ A3 SIZE		

Client **VENTUS ENERGY**  
 Project **TAUMATATOTARA WIND FARM ENTRANCE ONE VISIBILITY PLAN**

Original Size **A3** Project No: **T20133** Drawing No: **V1** Rev: **A**





Driveway Sight Distance				
REF	Operating Speed (km/h)	Minimum Sight Distance (m)	Available Sight Distance (m)	Meets CSD
S2	90	130	130+	Yes

**CONCEPT DESIGN**

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Checked	Approved	Date
A	FIRST ISSUE		JM	MA	JD	11/20

FOR:

BY: **TRAFFIC ENGINEERING SOLUTIONS LIMITED**  
 Traffic Engineering Solutions Limited  
 PO Box 7237, Wellesley Street, Auckland 1036  
 P: 0800 837 583, E: info@tes.net.nz



Drawn	JM	Designed	JM
Drafting Check	MA	Design Check	JD
Approved			
Date	27/11/2020		
Scale	1:500 @ A3 SIZE		

Client **VENTUS ENERGY**  
 Project **TAUMATATOTARA WIND FARM ENTRANCE ONE VISIBILITY PLAN**  
 Original Size **A3** Project No: **T20133** Drawing No: **V2** Rev: **A**





Driveway Sight Distance				
REF	Operating Speed (km/h)	Minimum Sight Distance (m)	Available Sight Distance (m)	Meets CSD
S3	90	130	130+	Yes

**CONCEPT DESIGN**

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Checked	Approved	Date
A	FIRST ISSUE		JM	MA	JD	11/20

FOR:

BY: **TRAFFIC ENGINEERING SOLUTIONS LIMITED**  
 Traffic Engineering Solutions Limited  
 PO Box 7237, Wellesley Street, Auckland 1036  
 P: 0800 837 583, E: info@tes.net.nz



Drawn	JM	Designed	JM
Drafting Check	MA	Design Check	JD
Approved			
Date	27/11/2020		
Scale	1:500 @ A3 SIZE		

Client **VENTUS ENERGY**  
 Project **TAUMATATOTARA WIND FARM ENTRANCE TWO VISIBILITY PLAN**  
 Original Size **A3** Project No: **T20133** Drawing No: **V3** Rev: **A**





Driveway Sight Distance				
REF	Operating Speed (km/h)	Minimum Sight Distance (m)	Available Sight Distance (m)	Meets CSD
S4	90	130	130	Yes

**CONCEPT DESIGN**

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Checked	Approved	Date
A	FIRST ISSUE		JM	MA	JD	11/20

FOR:

BY: **TRAFFIC ENGINEERING SOLUTIONS LIMITED**  
  
 Traffic Engineering Solutions Limited  
 PO Box 7237, Wellesley Street, Auckland 1036  
 P: 0800 837 583, E: info@tes.net.nz



Drawn	JM	Designed	JM
Drafting Check	MA	Design Check	JD
Approved			
Date	27/11/2020		
Scale	1:500 @ A3 SIZE		

Client **VENTUS ENERGY**  
 Project **TAUMATATOTARA WIND FARM ENTRANCE TWO VISIBILITY PLAN**  
 Original Size **A3** Project No: **T20133** Drawing No: **V4** Rev: **A**