**BEFORE AN EXPERT PANEL**
**SOUTHLAND WIND FARM PROJECT**

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|---|---|
| Under the | **FAST-TRACK APPROVALS ACT 2024** |
| In the matter of | an application for resource consents, a concession, wildlife approvals, an archaeological authority and approvals relating to complex freshwater fisheries activities in relation to the Southland Wind Farm project |
| By | **CONTACT ENERGY LIMITED** |
| | Applicant |

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# SOUTHLAND WIND FARM
# TECHNICAL ASSESSMENT #12: TRANSPORT

**CHRIS ROSSITER**

**18 August 2025**

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## EXECUTIVE SUMMARY

1. Contact Energy Limited (**Contact**) proposes to construct a wind farm on the elevated land to the east of Wyndham (**Southland Wind Farm** / the **Project**).

### General construction traffic

2. Construction of the Project is expected to take about 24 to 30 months from the start of the initial works to all turbines being fully commissioned. This will involve construction of access roads, turbine foundation platforms and then the installation of the turbine equipment. Site rehabilitation works may continue on site for up to a year after wind farm commissioning.

3. Two vehicle access routes are proposed for the construction works: a northern access route via SH93 and Kaiwera Downs Road and a western access route via Wyndham using Waiarikiki-Mimihau Road and Venlaw Road.

4. The construction of roads and foundations will involve the import of aggregates to the construction site. Based on the indicative construction quantities, the wind farm construction will require up to 28,500 laden heavy vehicle deliveries to the site[1] over the full period of construction.

5. During the peak construction period, there will be approximately 60 deliveries per day and an estimated maximum of 10 deliveries in a single hour. It is expected that both access route options will be used during the civil works phase of construction, whereas the majority of deliveries associated with installing the wind turbine components will be via SH93 and Kaiwera Downs Road as this provides the simplest route from Southport to the site. Return trips from the site by unladen trucks and transporters will likely utilise both routes.

6. The Project could involve up to 250 workers being on site at any one time during the peak period of construction. This will generate a morning and evening travel demand for approximately 75 vehicle movements on both the northern and western access routes and a peak volume of about 50 vehicles per hour.

7. The change in truck volumes will be dependent upon where aggregates are sourced, including whether appropriate onsite material can be located in

[1] A “heavy vehicle delivery” will represent a single laden vehicle movement to the site. There will also be an additional return unladen vehicle movement.

sufficient volumes to reduce the number of trucks required to import aggregate to the site.

8. The changes in traffic volumes on both access routes will not contribute to any increase in delays at intersections because of the low existing volumes. The additional truck movements on SH93 may contribute to some additional travel time delays to other traffic due to their lower average travel speeds. The higher volume of vehicle movements on Waiarikiki Mimihau Road and Venlaw Road will be noticeable to local residents because of the very low volumes that currently exist but these effects will largely be limited to the daily tidal travel patterns in the morning and evening as workers travel to and from the site.

9. Both access routes follow unsealed roads which have sections with a narrow-formed width that does not allow for two-way truck movement. Since the access routes are long, it will be necessary to accommodate two-way movement. This can be actively managed using signals or passively managed with passing bays. The implementation of any active management controls and any proposed road widening for passing bays will need to be detailed within the Construction Traffic Management Plan (**CTMP**) for the Project. If any passing bays are considered necessary on public roads, then their location and design will need to be approved by the relevant council, either Southland District Council (**SDC**) for the western access route or Gore District Council (**GDC**) for the northern access route.

10. The construction movements will be managed in accordance with the CTMP to further reduce and address the potential for road safety and road asset management effects.

**Wind turbine component delivery**

11. Each wind turbine will require up to 12 special vehicle deliveries with the equipment transporters being either over-dimension or both over-dimension and over-weight. The length of the blades creates practical restrictions on which routes can be used between Southport and the site. This will require special permits from NZTA and local councils. The movement of the transporters will need to occur overnight with mobile road closures. This is typical for wind farm construction and indeed was deployed successfully during 2023 during the construction of the Kaiwera Downs wind farm.

12. The preferred route has been informed by the route used for the nearby Kaiwera Downs Wind Farm. The transporter tracking analysis suggests that some minor works will be required along the route to accommodate the transporter vehicles. This primarily involves temporary relocation of some power poles and street lights but will also require some seal extensions or temporary pavement.

13. The tower sections, nacelle, hub and transformers all represent over-weight and over-dimension loads. There are a number of height and weight restrictions on structures between Southport and the site which affect the choice of route. Again, the preferred route for these components has been influenced by the route used for the Kaiwera Downs Wind Farm.

**Overall assessment**

14. Overall, the construction works will not generate noticeable effects on the operation of the road network. The Project's potential construction traffic / transport effects can be managed via 'standard practice' measures for large infrastructure projects, together with measures to manage the more specific matter of turbine component delivery. These measures, which will be detailed in a CTMP, include:

    (a) site access arrangements;

    (b) travel routes;

    (c) construction programme and construction activity time restrictions;

    (d) traffic volumes;

    (e) overweight and over-dimension loads (routes, numbers and transport times);

    (f) driver protocols;

    (g) road improvements;

    (h) pavement maintenance;

    (i) monitoring;

    (j) communication / complaints arrangements; and

    (k) reducing conflict with stock movements and minimising the risks to students travelling to and from school.

15. The proposed conditions of consent include a scheme that requires Contact to be responsible for the maintenance and repair costs associated with the effects of increased traffic on local roading infrastructure (including unsealed roads).

16. The measures proposed to address potential effects have been developed through discussions with the District Councils in particular, including through the previous COVID-19 Recovery (Fast-track Consenting) Act 2020 (**Covid Fast-track**) process for the Project.

17. Once construction is complete, traffic flows generated by the Southland Wind Farm will be negligible and not contribute to any noticeable effects on the transport network. The main access to the wind farm post construction will be via the western access route, that is, Waiarikiki-Mimihau Road and Venlaw Road.

## INTRODUCTION

18. My full name is Michael Christopher Rossiter. I hold the position of Principal Transportation Engineer at Stantec New Zealand Limited (**Stantec**).

### Qualifications and experience

19. I have the following qualifications and experience relevant to this assessment:

    (a) I hold the academic qualifications of Bachelor of Science from the University of Exeter and Bachelor of Arts (Open) from the Open University.

    (b) I am registered as a Chartered Engineer with Engineering New Zealand. I have over 39 years engineering experience including 18 years' transportation engineering in New Zealand on a wide range of projects involving transportation engineering, transportation planning and assessment, analytical investigations and road safety audits.

20. I have held the position of Principal Transportation Engineer at Stantec since 2013 and have been employed at Stantec (and TDG prior to its incorporation with Stantec) since 2006. Prior to joining TDG (now part of Stantec) I was employed as a Principal Systems Engineer and Technical Manager with BAE Systems in England.

21. My role involves both preparing transportation assessment reports for resource consent applications and also providing transportation engineering peer review services for councils. I have also prepared expert transport evidence on behalf of several councils and private developers in relation to a variety of land-use resource consent hearings.

**Code of conduct**

22. I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. This assessment has been prepared in compliance with that Code, as if it were evidence being given in Environment Court proceedings. In particular, unless I state otherwise, this assessment is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

**Purpose and scope of assessment**

23. The purpose of this assessment is to assess the potential transport effects associated with the construction of the Project, to inform the application under the Fast-track Approvals Act 2024.

24. A key focus of my assessment relates to the delivery of turbine components (blades, tower sections, nacelle, hub and drive train) and the wind farm substation transformers from Southport to the site because these involve the transport of either over-dimension or over-weight loads. The selection of transport routes has been informed by the routes used by Mercury in the construction of the Kaiwera Downs Wind Farm, which is located nearby, and conversations between Contact and GDC.

25. The construction of the internal roads and turbine hard-stands will involve a much higher volume of truck movements than the transport of the turbine equipment. However, this involves standard truck types that will be subject to less restrictions in terms of roads that can be utilised. I include an assessment of the likely volume of movements that will be involved with the transportation of aggregates from off-site quarries, reinforcing steel, other power equipment infrastructure and construction staff travelling to and from the site.

26. My technical assessment has been structured to:

    (a) Describe the existing transport infrastructure that will be affected by the construction work;

    (b) Describe existing travel patterns on those roads;

    (c) Describe expected construction traffic demands and movement patterns;

    (d) Assess the effects of construction traffic on the transport network and identify of any necessary mitigation works;

    (e) Outline the proposed Construction Traffic Management Plan; and

    (f) Assess compliance with District Plan transport standards.

27. Operation of the wind farm will only require occasional access by vehicles associated with operational staff, and maintenance contractors. As traffic volumes are very low and infrequent, I have not assessed the operational traffic in detail as any traffic related effects will be negligible.

**THE SOUTHLAND WIND FARM PROJECT**

28. Contact is seeking various approvals necessary for the construction, operation and maintenance of the Southland Wind Farm in Slopedown, Southland. The Project includes up to 55 wind turbines and associated infrastructure.

29. The full project description for the Project is provided in the Part A of the substantive application document. I do not repeat it in my assessment. The figures referred to in this assessment that include the reference (Part G) are included in Part G of the substantive application document.

**EXISTING ENVIRONMENT**

30. In order to assess the potential transport effects associated with the construction of the Southland Wind Farm, I have considered the following matters which form the existing environment:

    (a) existing transport networks both strategic and local; and

    (b) existing state highway travel patterns.

**Existing Transport Networks**

*State Highway Network*

31. Figure Transport-1 (Part G) shows the state highway network within the Invercargill City, Southland, and Gore Districts. State Highway 1 (**SH1**) provides the primary strategic link for the South Island and links all major settlements along the east coast between Bluff in the south and Picton in the north. SH1 passes through the urban areas of Invercargill, Edendale, Mataura and Gore. State Highway 6 (**SH6**) provides an alternative route between Invercargill and Picton via the West Coast. State Highway 98 (**SH98**) and State Highway 93 (**SH93**) provide local connections between regional centres.

32. All the state highways in the region are classified as suitable for use by High Productivity Motor Vehicles (**HPMV**).

*District Road Network*

33. Figure Transport-5 (Part G) shows the parts of the district road network that will form the two access routes that are proposed for the wind farm site.

34. The northern access route is via SH93 and Kaiwera Downs Road. This route makes the greatest use of the state highway network and utilises only a short section of the local road network, Kaiwera Downs Road which is unsealed.

35. The western access route follows rural roads from Wyndham to the site including Mimihau School Road, Waiarikiki-Mimihau Road and Venlaw Road. Waiarikiki-Mimihau Road is sealed for a distance of about 7 km east of Mimihau School Road and then continues as an unsealed road. Venlaw Road is unsealed.

36. Ferry Road and Edendale Wyndham Road form the primary connection between the Edendale and Wyndham. Ferry Road meets SH1 at a roundabout that also provides access to the Edendale Dairy Factory. The road has a typical sealed carriageway width of 7.5 metres.

37. Wyndham Road provides a link between Wyndham and Mataura that broadly follows the true left bank of the Mataura River. The road has a sealed carriageway width that ranges from 7.0 m to 7.7 m.

*Critical Transport Route Restrictions*

38. Although the state highway network is able to accommodate the movement of HPMVs, there are weight and height restrictions that exist on the wider transport network that affect the selection of routes for transporting over-dimension and over-weight loads.

39. Locations with height restrictions include the Mataura Bridge (5 metre maximum) and, Rockdale Road, Invercargill (4.35 metre maximum).

40. Power lines cross the roads in multiple locations across the district and are required to provide 5.5 metre clearance above the road surface. This is not achieved in all locations.

41. Locations with bridge weight restrictions include the Mataura Bridge between Edendale and Wyndham.

42. There are also signposted heavy vehicle bypass routes in Gore and Invercargill.

**Existing State Highway Travel Patterns**

*Daily Traffic Volumes*

43. The urban section of SH6 between Invercargill and Lorneville carries the highest traffic volumes in the network with approximately 12,200 vehicles per day (**vpd**). Volumes further along SH6, north of Lorneville, decrease to about 5,300 vpd.

44. Where SH1 diverts to an east-west alignment along Tay Street within Invercargill, the traffic volumes remain relatively high at 11,100 vpd and decrease to 5,400 vpd around Wyndham.

45. Closer towards Gore, traffic volumes increase to about 10,800 vpd and decrease away from the township. SH98 and SH93 carry comparatively low traffic volumes of 1,000-2,000 vpd.

*Hourly Traffic Volumes*

46. The following figures show the hourly variation in state highway traffic volumes at three locations to show how traffic volumes reduce with distance from Invercargill and also to show the reducing effect of work related travel on the volumes. The three locations are:

(a) SH6 South of SH98 – Site ID: 00611171;

(b) SH1 North of Mataura – Site ID: 01S00861; and

(c) SH1 South of Mataura – Site ID: 01S00875.

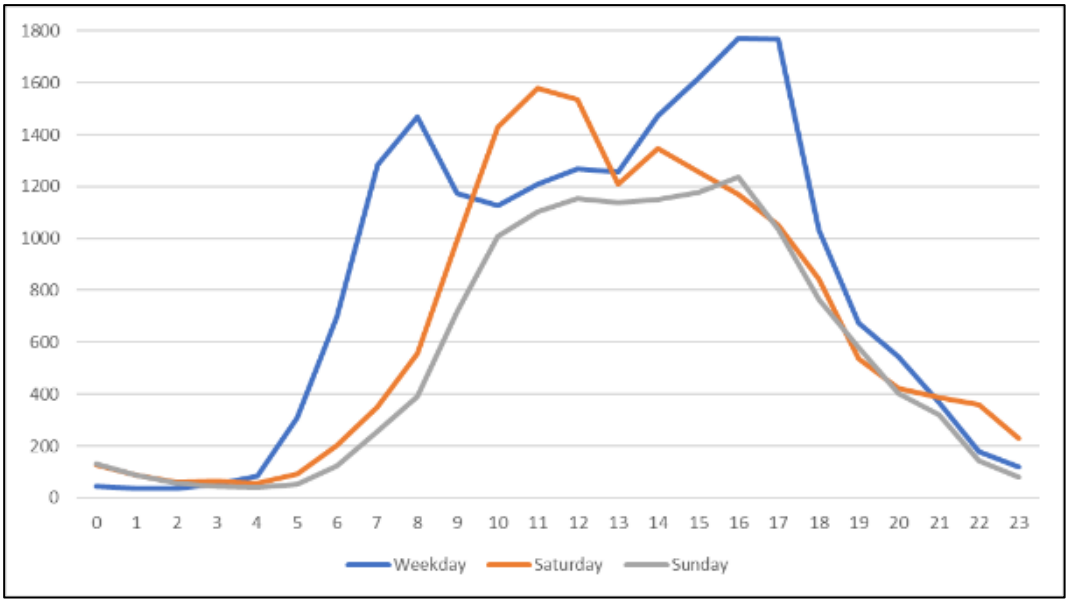


**Figure 1: Hourly Traffic Volumes on SH6 South of SH98 – Site 00611171**

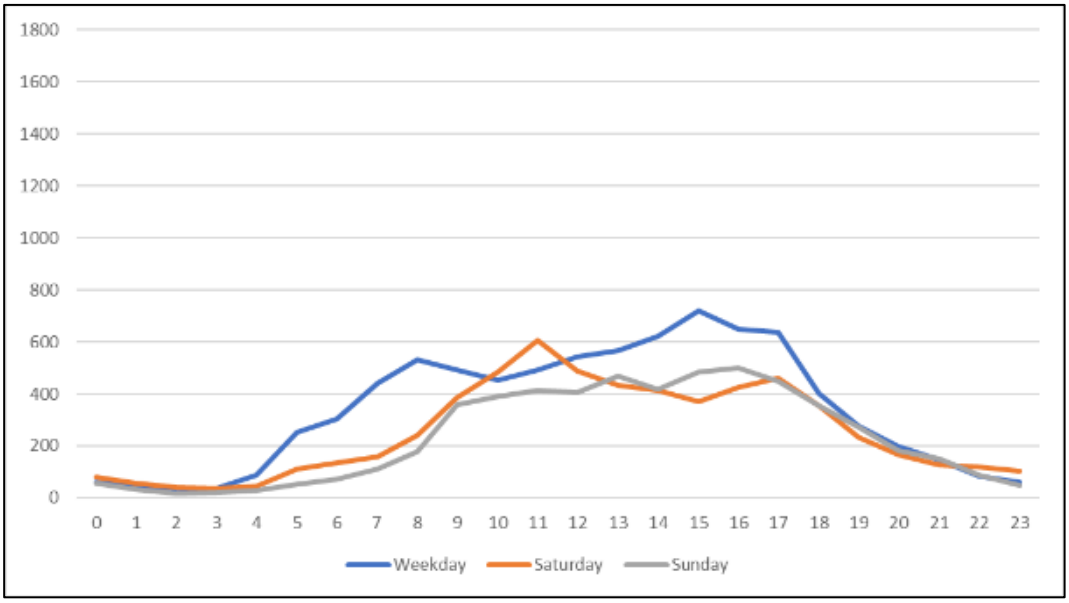


**Figure 2: Hourly Traffic Volumes on SH1 North of Mataura – Site 01S00861**

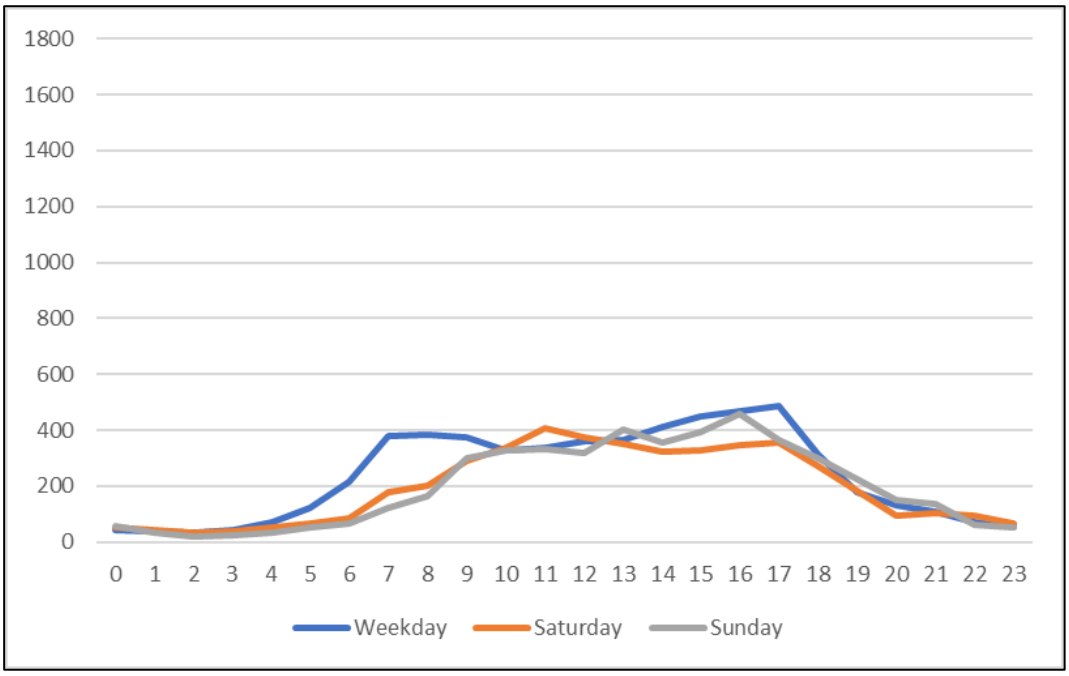


**Figure 3: Hourly Traffic Volumes on SH1 South of Mataura – Site 01S00875**

47. Figure 1 shows the hourly volumes on SH6 south of SH98 are strongly influenced by work place travel. During the week, there are two large peaks during the morning and evening commuter periods. Two-way traffic volumes during the night, 10:00 PM to 5:00 AM, are typically below 100 vehicle movements per hour (**vph**).

48. Figure 2 shows the variation in hourly volumes on SH1 to the north of Mataura with Figure 3 showing the hourly volumes to the south of Mataura. North of Mataura, hour traffic volumes range from 400 vph to 700 vph. Hourly volumes on the highway are lower to the south and range from 400 vph to 500 vph.

*Road Safety*

49. Figure 4 shows the Personal Risk[2] rating for the state highway network. The majority of the State Highway network is rated within the Low-Medium and Medium risk bands for personal risk. There are small concentrations of Medium-High rated risk within the centre of Invercargill and Gore. Additionally, near Gore, there is a small section of high risk highway south of the Mataura River bridge as well as on SH93, between Mataura and Clinton (at the intersection of SH1 and SH93).

[2] Personal Risk: Risk to the individual of fatal or serious casualties per million vehicle kilometres travelled.

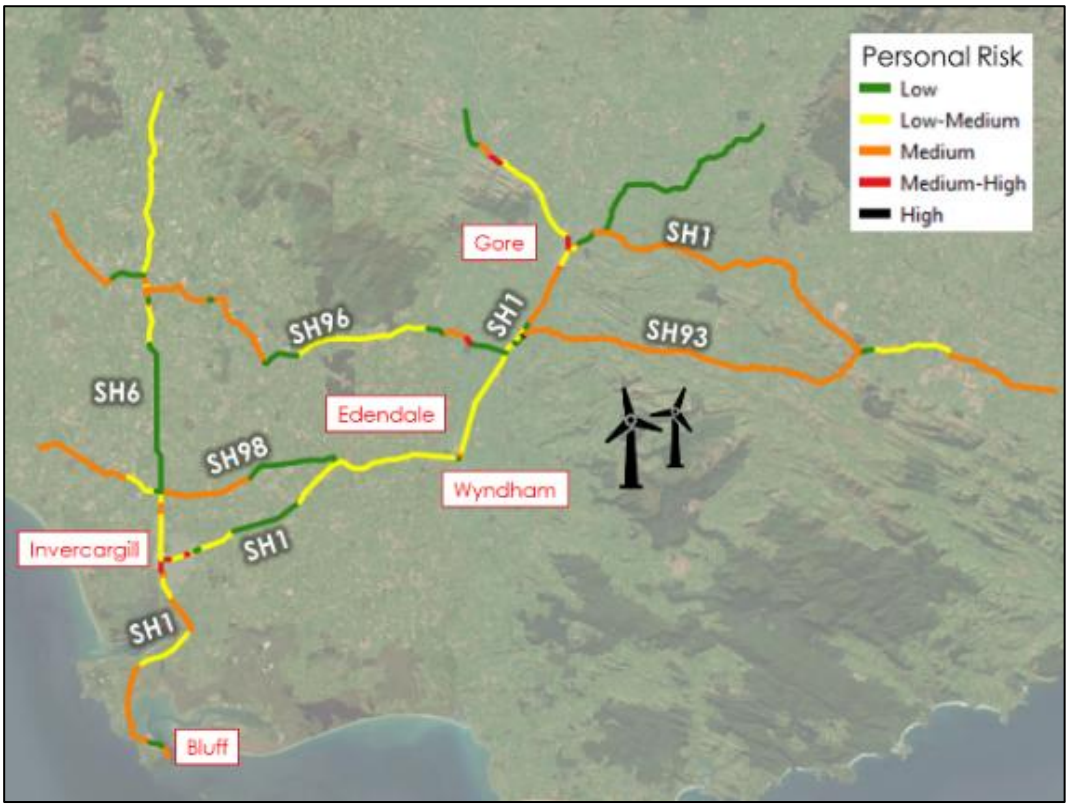


**Figure 4: State Highway Personal Risk Map (Source Te Paparanga Āmiki)**

50. The project construction traffic will predominantly utilise sections of the State Highway network with Low or Low-Medium safety ratings, but it will be necessary to use sections of the network with medium risk rating.

51. Figure 5 shows that the collective[3] risk ratings for the state highway network. are generally within the Low-Medium risk band, with short sections of Medium risk areas.

[3] Collective Risk: Risk density measured as the number of fatal and serious casualties over a distance.

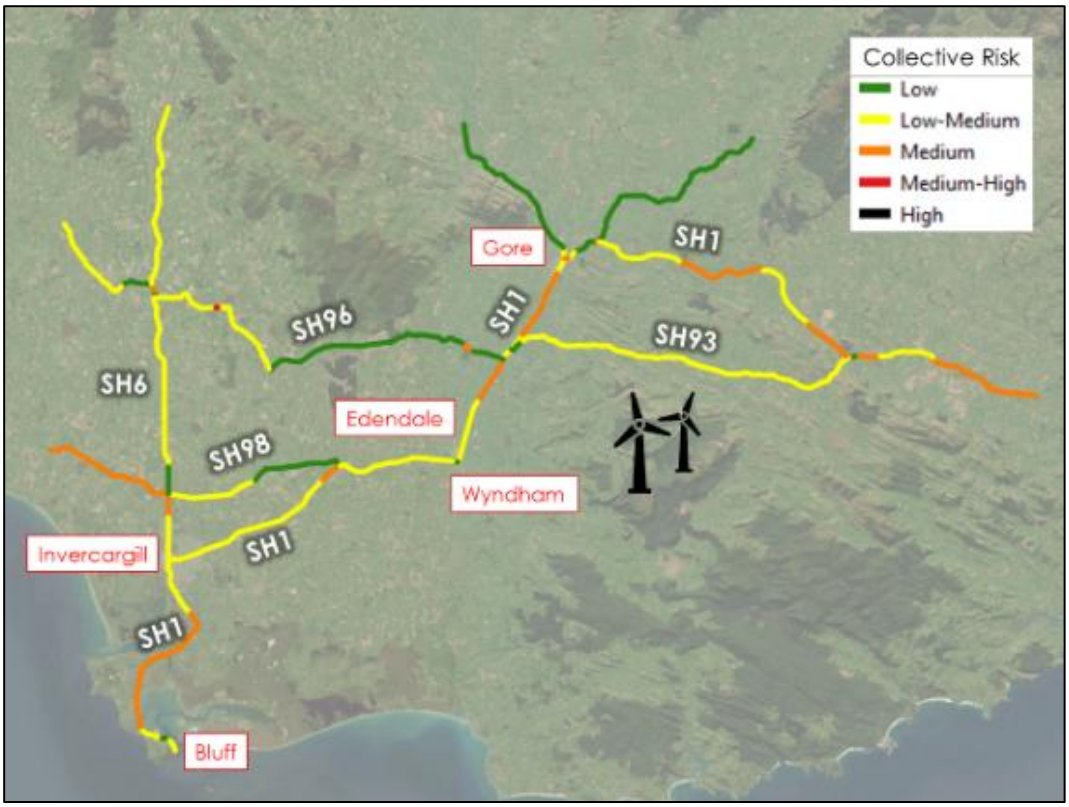


**Figure 5: State Highway Collective Risk Map (Source Te Paparanga Āmiki)**

## DISTRICT PLANS AND BYLAWS

### Southland District Plan and Bylaws

52. The wind farm will be constructed on rural-zoned land within the Southland District, with vehicle access being provided by private access roads that link to Kaiwera Downs Road in the Gore District and via Venlaw Road to the west.

53. Access design requirements are set out in the SDC Subdivision and Land Development Bylaw 2012.

54. The existing formation of Venlaw Road does not provide sufficient space for two-way movement of heavy vehicles along the full length of the road and it will be necessary to create passing opportunities along the road or implement active controls such as signals to ensure that movements are one-way only. If passing bays are proposed as part of the CTMP, then their location and number will need to be agreed with SDC.

55. The Project does not involve construction of any new roads for vesting with council but will require an upgrade to some existing forestry roads. The construction access roads will be formed with an unsealed, 6.5m wide carriageway (with localised widening at corners) to accommodate the

movement of the over-dimension vehicles. This will also allow for two-way movement of heavy vehicles at all times.

56. Since the roads are required for construction vehicle access only and the site is remote from any residential development, there are no practical requirements for providing either pedestrian or cycle facilities along the access roads.

57. The site is sufficiently large that there is ample space to provide for on-site parking and to accommodate any vehicle manoeuvring so that vehicles can depart in a forward direction from the site.

**Gore District Plan and Bylaws**

58. Although the primary construction site is located within the Southland District, one access to the site will be constructed from the end of Kaiwera Downs Road which is located within the Gore District.

59. Access design requirements are set out in the GDC Subdivision and Land Development Bylaw 2019. The Project does not involve construction of any new roads for vesting with council but will require an upgrade of an existing forestry road through the Port Blakely Forest from the southern end of Kaiwera Downs Road to the wind farm site. The access roads will be formed to a similar standard to those in the Southland District, that is, with a minimum formed width of 6.5 m.

60. The existing formation of Kaiwera Downs Road does not provide sufficient space for two-way movement of heavy vehicles along the full length of the road, and it will be necessary to create passing opportunities along the road or implement active controls such as signals to ensure that movements are one-way only. If passing bays are proposed as part of the CTMP, then their location and number will need to be agreed with GDC.

61. The size of the site means that there is adequate space for vehicles to turn around and depart in a forward direction onto the public road network.

62. Temporary parking areas will be created on-site during the construction phase of the project. These will not be sealed or marked and would be formed to minimise dust generation and manage stormwater. These will largely be removed at the completion the construction works. Parking will be retained at the Operations and Maintenance facility, the wind farm substation and Grid Injection Point.

63. There will be some localised stockpiling of materials during the construction of the new access road. The sites for any stockpiling of materials have not been confirmed but are likely to be on Contact property at the entrance to the Port Blakely Forest and also within Jedburgh Station and Matariki Forest, at the concrete batching plant locations. This will be confirmed during detailed design.

## ASSESSMENT OF EFFECTS

64. In my assessment, I have considered:

    (a) Construction traffic volumes;

    (b) Construction traffic routes;

    (c) Routes for over-weight and over-dimension loads; and

    (d) Operation and maintenance activities.

### Construction traffic volumes

65. The greatest volumes of vehicle movement will be generated during the construction phase of the Project. The construction activities will comprise:

    (a) staff travel;

    (b) transport of construction vehicles such as cranes;

    (c) building internal access roads to the turbine sites;

    (d) constructing the substations and power lines;

    (e) forming the foundations for the turbines; and

    (f) delivering and assembling the turbine components.

66. I understand that construction of the wind farm will take 2 to 2.5 years, with a further year for post commissioning rehabilitation works. Table 1 shows a simplified indicative construction programme for the purposes of assessing variations in traffic generation across the construction programme.

**Table 1: Indicative Construction Programme**

| Activity | Construction Period (Months) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 |
| **Civil works** | | | | | | | | | |
| **Foundations** | | | | | | | | | |
| **Electrical works** | | | | | | | | | |
| **Turbine Deliveries** | | | | | | | | | |
| **Commissioning** | | | | | | | | | |

*Construction staff movements*

67. I understand that the construction activity will typically involve about 150 people being on site at any one time but could reach 250 people over short periods of time. Since construction staff will be encouraged to share transport where possible, I have adopted an average vehicle occupancy of 1.6 people for the purposes of my assessment. This represents 40% of vehicles having a single occupant. Based on this occupancy rate, the construction activity could generate up to 300 staff vehicle movements per day on the network, that is, 150 inbound at the beginning of the day and 150 outbound at the end of the day.

68. The option of using minibuses to transport staff from local centres such as Gore and Mataura will be considered as part of the CTMP. The use of minibuses will reduce the number of vehicles associated with staff travel and therefore, reduce any effects on the transport network.

*Construction materials and quantities*

69. Table 2 shows the preliminary estimates for construction materials prepared by Riley Consultants Ltd. It includes an indication of the anticipated maximum number of material delivery loads that will be required for construction of the wind farm and average daily vehicle delivery loads - noting that each load will involve two movements (the delivery movement, and the unladen return movement). I expect articulated trucks, either semi-trailer or truck and trailer units, will be used for transporting aggregates to minimize the volume of truck movements on the network.

70. Two concrete batching facilities (comprising two batching plants at each location) will be established on site with aggregates being sourced from appropriate aggregate quarries within the local vicinity (identified in Figure Transport-3 (Part G)).

**Table 2: Indicative Construction Quantities and vehicle delivery loads**

| Activity | Quantity | Total Vehicle Delivery Loads | Total Days | Average Daily Delivery Loads |
|---|---|---|---|---|
| **Civil Works** | | | | |
| Access Roads | 210,000 $m^3$ | 12,600 | 550 | 23 |
| Pylon Access Tracks | 9,500 $m^3$ | 600 | 570 | 1 |
| WTG Laydown Areas (55) | 88,550 $m^3$ | 5,300 | 550 | 10 |
| Batching Plant, Substation | 50,600 $m^3$ | 3,000 | 550 | 5 |
| WTG Foundations – Aggregate (55) | 57,200 $m^3$ | 3,400 | 360 | 10 |
| WTG Foundations – Cement (55) | 19,250 $m^3$ | 1,450 | 360 | 4 |
| WTG Foundations – Water (55) | 11,000 $m^3$ | 370 | 360 | 1 |
| WTG Foundations – Steel (55) | 6,600 T | 275 | 360 | 1 |
| **Electrical Works** | | | | |
| Electrical 33kV cable / fibre optic | | 65 | 270 | <1 |
| Transmission Line – pylons | | 140 | 270 | <1 |
| Transmission Line – cable | | 65 | 270 | <1 |
| Transmission Line – aggregate | | 700 | 270 | 3 |
| Substation – deliveries | | 20 | 270 | <1 |
| O&M Building | | 20 | 270 | <1 |
| **Wind Farm General** | | | | |
| Turbine Bolts | | 275 | 180 | 3 |
| Formwork delivery | | 4 | 90 | <1 |
| Blade Frame support | | 4 | 90 | <1 |
| Container returns / transport frames | | 220 | 180 | 1 |
| Earth moving equipment | | 100 | 90 | 1 |

| Activity | Quantity | Total Vehicle Delivery Loads | Total Days | Average Daily Delivery Loads |
|---|---|---|---|---|
| Crane and lifting equipment | | 140 | 180 | <1 |
| Fuel | | 80 | 550 | <1 |
| **Over-dimension Loads** | | | | |
| Turbine Blades | | 165 | 180 | 1 |
| Tower Sections | | 330 | 180 | 2 |
| Nacelle + hub + drive train | | 165 | 180 | 1 |
| Main Transformers | | 2 | 180 | <1 |

71. Overall, the construction works are expected to involve a total of about 28,500 deliveries to the site over the construction period. Table 3 shows how the average daily volume of deliveries is likely to change over the full construction period. The civil and electrical works will account for the bulk of the movements and will occur over the first 18 months of construction works. The peak period of deliveries to the site, about 60 per day,[4] will be over about a nine-month period starting nine to 13 months after construction work begins.

**Table 3: Average Daily Deliveries across construction period**

| Activity | Construction Period (Months) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 |
| **Civil works** | 40 | 40 | 40 | 40 | 40 | 40 | | | |
| **Foundations** | | | 15 | 15 | 15 | 15 | | | |
| **Electrical works** | | | | 5 | 5 | 5 | | | |
| **Turbine Deliveries** | | | | | | | 5 | 5 | |
| **Commissioning** | | | | | | | 4 | 4 | 4 |

*Changes in traffic volumes*

72. In practice, there will be day to day variations depending upon any specific activities being undertaken. For the purposes of my assessment, I have adopted a peak hour arrival rate of 10 trucks, representing a peak two-way

[4] This would reduce if a suitable source of aggregates is identified within the site. For the purposes of this assessment, I have assumed that all necessary aggregates are transported to the site from an external source.

hourly volume of 20 vph. On Kaiwera Downs Road and SH93, this represents one truck movement every three minutes on average. A change in volume of this size will not contribute to any noticeable effects on the operation of the wider road network.

73. Hourly truck volumes of 10-20 vph along the western access route is likely to be noticeable to residents along this route because of the very low volumes that currently exist, less than 100 vpd. The primary effect will be to travel times because laden trucks will travel more slowly uphill and potentially will delay any following vehicles. This could add about 5 minutes travel time if a following vehicle is unable to pass a laden heavy vehicle on Waiarikiki-Mimihau Road. This could be managed through the CTMP by requiring drivers to allow following vehicles to pass where it is safe to do so.

74. Construction staff travel could generate up to 300 light vehicle movements per day (150 vehicles to the site, and 150 vehicles from the site) with staff travelling to the site in the morning and departing in the late afternoon. These movements will be distributed across the two access routes and could generate a peak hour volume of 50 vph on each route. During the day there will be only low levels of staff related movements. With the existing low traffic volumes on SH93 Old Coach Road, the traffic volumes will not contribute to any noticeable effects on intersection performance along the northern route.

75. Kaiwera Downs Road has been constructed with a formed but unsealed surface that varies in width from 4.5 m to 5.5 m. This does not provide sufficient width for two trucks to pass without using the adjacent berms. Since Kaiwera Downs Road is about 6 km long, even with the low volume of truck movements, each truck could expect to meet one or two trucks travelling in the opposite direction. A similar level of conflict can also be expected on Venlaw Road which forms part of the western access route.

76. Since both access routes follow unsealed roads which have sections with a narrow-formed width that does not allow for two-way truck movement and are long, it will be necessary to accommodate two-way movement. This can be actively managed using signals on narrow sections of road or passively managed with passing bays. The preferred approach will be confirmed in the CTMP following consultation with the relevant council, either SDC for the western access route or GDC for the northern access route.

*Turbine equipment*

77. Table 4 provides a summary of the indicative largest dimensions and load weights for the wind turbine equipment components based on a preliminary design option for the turbines. The actual component dimensions will be confirmed once the wind turbine selection process has been completed. This may affect the blade length and width of loads. I am aware that one design option being considered for the towers would involve the lower tower sections having diameters of up to 6 m. All the components are over-dimension compared with standard permitted load widths. The nacelles, tower sections and transformers are also over-weight.

78. Transport of the primary components for each wind turbine will involve 12 over-dimension loads with nine of these also being over-weight loads. The movement of these loads will require a special permit and approvals from the relevant Road Controlling Authorities. I anticipate that these movements will be coordinated where practical so that multiple loads are transported to the construction site in small convoys during nighttime hours to reduce the effects on the transport network.

**Table 4: Indicative Dimension and Weights for Wind Turbine Equipment Components**

| Component | Number | Dimensions | Weight |
|---|---|---|---|
| Blade | 3 per turbine | 83.5 m length 4.5 m maximum chord | 30 tonnes |
| Nacelle | 1 per turbine | 15.2m x 4.2m x 4.5m | 100 tonnes |
| Hub | 1 per turbine | 15.2m x 4.2m x 4.5m | 60 tonnes |
| Drive Train | 1 per turbine | 15.2m x 4.2m x 4.5m | 80 tonnes |
| Tower Section (no 1) | 1 per turbine | D4.7m x 13.3m | 80 tonnes |
| Tower Section (no 2) | 1 per turbine | D4.5m x 18.2m | 79 tonnes |
| Tower Section (no 3) | 1 per turbine | D4.5m x 23m | 82 tonnes |
| Tower Section (no 4) | 1 per turbine | D4.5m x 28m | 74 tonnes |
| Tower Section (no 5) | 1 per turbine | R4.5m x 30m | 66 tonnes |
| Substation Transformer | 2 x 185 MVA | 8.8m x 3.6m x 4.8m | 147 tonnes |

**Construction traffic routes**

*General construction materials and staff*

79. With two access routes being possible, the routes taken by workers travelling to the site will be largely influenced by where they live and where on-site work is occurring. Both routes will be available although it is likely some management of access may occur as the construction work progresses. That will be detailed in the CTMP.

80. Workers based in Gore or Mataura are likely to travel via the northern access route (Kaiwera Downs Road). For workers travelling from Edendale and Wyndham or further west, there will be some element of personal choice as travel times via both routes are expected to be about 35 minutes because of the lower speeds along the shorter route via Waiarikiki- Mimihau Road and Venlaw Road.

81. Overall, I consider it likely that worker travel movements will be generally evenly distributed across both routes. This means that during the peak construction period, there could be up to 75 staff vehicle movements approaching the site in the morning on each of the northern and southern access routes with similar volumes departing from the site in the late afternoon. I expect that these movements will be distributed across a two-hour period but with up to 50 movements occurring on each route in a one-hour period.

82. The transport of aggregates to the site will constitute the greatest volume of heavy vehicle movements over the construction period. I understand that there are four potential sources of aggregates to the north of the site, and three to the west. If aggregates are transported via the most direct routes from each of these potential sources, truck volumes would be evenly distributed between the northern and western access routes.

83. As a worst case, I have considered the effects of an arrival distribution with 70 percent of trucks approaching the site via either the northern or the southern route. This represents an average daily delivery volume of about 40 vehicle delivery loads. Although these will be broadly distributed across the day, there could be a peak hourly arrival volume of up to 10 trucks per hour. If all trucks depart via the same route, this would represent a peak two-way volume of 20 vph or one truck movement every three minutes on average.

*Over-weight and over-dimension roads*

84. Figure Transport-2 (Part G) shows the routes that will be followed by the over-dimension and over-weight loads between Bluff and wind farm site. The choice of preferred transport routes for these loads has been influenced by the feedback from GDC and Invercargill City Council (**ICC**) received during meetings and discussions with these councils following the recent construction of the Kaiwera Downs Wind Farm.

85. All transporters will depart from the port at Bluff and follow SH1 towards Invercargill. The over-weight loads (all turbine components except blades) will turn right at the SH1 / Elles Road roundabout and follow Elles Road before rejoining SH1 at the Elles Road / Queens Drive signalised intersection. This route has previously been used by Mercury for the Kaiwera Downs Wind Farm.

86. Due to the geometric constraints associated with the very long turbine blade lengths, the blade transporters will follow a different route to the over-weight loads and stay on SH1 to the SH1 / SH6 roundabout in Invercargill, then continue north on SH6 to the SH98 roundabout in Lorneville. They will turn east on SH98 and rejoin SH1 at Dacre before continuing east on SH1 to Edendale.

87. There is a weight restriction on the Mataura Bridge between Edendale and Wyndham which prevents this route being used by the over-weight transporters. The route that the over-weight transporters will need to follow to access the site follows SH1 from Edendale to Gore as shown in Figure Transport-2 (Part G). The over-weight transporters will then follow SH1 to Pukerau before turning south along Kaiwera Road to SH93 Old Coach Road.

88. The route through Gore has been based on feedback during conversations between Contact Energy and GDC. The proposed route shown in Figure Transport-4 (Part G) avoids the need to cross the railway line that is crossed by the published Heavy Bypass Route, and simplifies the manoeuvres required. This route will involve construction of a temporary driveable surface between the SH1 / Hyde Street roundabout and southern end of Ardwick Street. It will also require some minor works on Norfolk Street.

89. At the SH93 / Kaiwera Road intersection, the access route follows SH93 to the east for a few hundred metres before turning right into Kaiwera Downs

Road and then through the Port Blakely Forest, via an existing forestry road, to enter the Wind Farm Site at the Matariki Forest property.

90. The turbine blades will be transported via a more direct route to the site through Edendale and Wyndham, then follow Wyndham Road towards Mataura and SH93 Old Coach Road and then Kaiwera Downs Road and through the Port Blakely Forest.

91. Once the transporters have been unloaded, they have the option of returning to Bluff either via Kaiwera Downs Road to SH93 and Mataura or via the western access, via Venlaw Road to Wyndham and then Edendale.

92. The size of the loads means that special vehicle permits will be required from NZ Transport Agency Waka Kotahi (**NZTA**), ICC, SDC and GDC. Since the loads are over-width and may require transporters to use all available traffic lanes, I anticipate that mobile road closures will be required along the full transport route to minimise the risk of crashes with general traffic as the loads are transported from South Port to the site. I expect that the special vehicle permits will require that loads are moved overnight when traffic volumes on the road network are low to minimise disruption to other drivers. This would be consistent with the permits for the Kaiwera Downs Wind Farm which typically involved transporters departing from South Port between 1:00 AM and 3:00 AM.

93. I have included indicative transporter vehicle tracking paths in **Appendix A** and **Appendix B** of my evidence for tower transport and blade transport respectively. Since there is a wide variation in the load dimensions, I have investigated the tracking requirements for the widest and longest loads separately.

*Turbine Equipment excluding Blade Transporters*

94. SH1 / Ellis Road Roundabout:

    (a) This intersection was recently upgraded from a priority intersection to a roundabout. The roundabout has been formed with a 50 metre diameter central island and 6.6 metre wide circulating traffic lane. The central island has been hard landscaped and is traversable.

    (b) The indicative vehicle tracking for a transporter carrying a 30 metre long, 4.5 metre tower section indicates that a vehicle of this size can negotiate the roundabout without the need for any specific works and

without the need for the transporter to traverse the central island. A shorter but wider tower section can also be transported through the intersection without the need for any temporary works.

95. Elles Road / Tweed Street Roundabout:

    (a) Elles Road has been formed as a four lane, divided road and crosses Tweed Street at a dual circulating lane roundabout. The wide carriageway and wide circulating lane provides ample space for the tower transporter to negotiate the roundabout.

96. SH1 / Elles Road / Queens Drive:

    (a) Elles Road meets SH1 at a signalised crossroads intersection with Queens Drive to the north. The SH1 eastern approach has two through lanes and a right turn lane. The SH1 eastbound departure has a single lane only. My investigation of vehicle tracking for the tower transporter indicates that a right turn from Elles Street into the SH1 eastbound departure lane is not possible without removing multiple signal poles and streetlights. The transporter can complete the right turn if it uses the SH1 westbound approach lanes and then returns to the eastbound land at the Macmaster Street intersection about 100 metres to the east.

    (b) This manoeuvre will require a mobile road closure to allow the transporter to travel the wrong way along SH1 between Elles Road and Macmaster Street.

97. Following discussions between Contact and GDC, the proposed route through Gore for the heavy loads is as shown in Figure Transport-4 (Part G).

    (a) This route will construction of a temporary, driveable surface between the SH1 / Hyde Street / Crombie Street roundabout and Ardwick Street. I understand that these preliminary works have been agreed by GDC as being acceptable.

    (b) The transporters will turn from Ardwick Street into Irwell Street before crossing SH94 into Norfolk Street. The width and length of the load will influence the route along Norfolk Street but will require some minor works to create some additional driveable surface before crossing Ordsal Street.

98. SH1 Waipahi Highway / Kaiwera Road:

    (a) The SH1 Waipahi Highway / Kaiwera Road intersection is located in Pukerau to the east of Gore and is formed as a stop-controlled crossroads. On the western Waipahi Highway approach, there is a slight narrowing where the road crosses the Pukerau Stream with a barrier on both sides of the road. Overhead cables and power poles are located near the intersection. There is a small business on the southeastern corner of the intersection.

    (b) A transporter with the longest tower section can negotiate the intersection in Pukerau to travel south on Kaiwera Road. The manoeuvre will require the full width of the carriageway, and a mobile road closure will be required. No other works are necessary.

99. Kaiwera Road:

    (a) Kaiwera Road has a winding and gently undulating alignment. The road has sufficient width to accommodate the movement of the tower transporter but will need to utilise the full width of the road. A mobile road closure will be required to allow the transporter to travel safely along the road.

100. SH93 Old Coach Road:

    (a) Kaiwera Road meets SH93 Old Coach Road at a stop sign controlled intersection with Isla Road to the south. The Kaiwera Road approach descends gently towards the highway. I have investigated the indicative tracking for the tower transporter as it turns from Kaiwera Road into SH93 Old Coach Road. The turn will require the full width of the carriageway and a mobile road closure will be required. No other works are necessary.

101. SH93 Old Coach Road / Kaiwera Downs Road

    (a) This intersection is located along the rural section of the highway between Mataura and Clinton. SH93 has a gentle downward gradient towards the intersection on the western approach. The Kaiwera Downs Road approach to the intersection comprises a Give Way sign on the left side of the road. There is a diverge chevron board at the top of the T-junction. The Old Coach Road priority road has a relatively straight alignment.

(b) The turn movement for a transporter will require the full width of the carriageway and a mobile road closure will be required. No other works are necessary for this vehicle.

*Blade Transporters*

102. The proposed turbine blades are likely to be about 83.5 metres long and will require a purpose-built vehicle to transport them. An independently steered rear trailer / vehicle will be required to negotiate the various intersections along the access route and will involve slow speed manoeuvring at those locations. Since the transporter vehicle will be over-dimension, a special vehicle permit will be required from:

(a) NZTA for sections of the route on the state highway network;

(b) SDC (SH1 Edendale Roundabout to Wyndham, Wyndham Road); and

(c) GDC (Wyndham Road, Kaiwera Downs Road).

103. The analysis of vehicle tracking for these loads indicates that mobile road closures will be required as they are transported to the site from Bluff. To minimise conflicts with other traffic, these loads will be moved overnight. This will be detailed further in the CTMP.

104. SH1 Blackwater Street / Shannon Street:

(a) This intersection is located approximately 400m to the south of the Island Harbour in Bluff. The Shannon Street approach to the island comprises an approach splitter island. This intersection is a give-way controlled crossroads. SH1 Blackwater Street forms the priority road and has a right-turn bay and left-turn diverge lane onto Shannon Street.

(b) The transporters will need to turn right onto Blackwater Street (SH1) from Shannon Street to head north. Vehicle tracking analysis indicates that the vehicle body, as well as the overhang of the blade from the rear of the trailer, will conflict with several obstacles. These include a light pole on Shannon Street, and a light pole and power pole on the northern side of Blackwater Street. All signage on Shannon Street will also require temporary removal. Based on the likely path of a transporter vehicle, the turbine blade will traverse the air space above the properties on either side of Shannon Street. These properties are owned by the ICC and I understand that discussions with them to date

have confirmed that this will not be an issue. I also understand that the Council has confirmed that they will only require notification of dates when the delivery of the blades will occur.

105. SH1 Bluff Highway / Elles Road:

    (a) This intersection was recently upgraded from a priority intersection to a roundabout. The central island has been hard landscaped but is traversable.

    (b) At this intersection, the transporter vehicle will be required to travel straight through the roundabout and continue along Bluff Highway. To negotiate the intersection, the transporter will have to traverse the central island of the roundabout. The signs and handrailing for both approaches and the central island will require temporary removal on the near side. There are no other permanent obstacles that would obstruct the overhang of the vehicle and load.

106. SH1 Tay St / SH6 Dee Street:

    (a) The transporter vehicles will need to travel straight through from Clyde Street to Dee Street. To manoeuvre through the intersection, the vehicle will need to traverse across the central island but can maintain safe clearance from the monument.

107. SH6 North Road / SH98 Lorne-Dacre Road:

    (a) This intersection is in Lorneville, north of Invercargill at the junction of SH6, SH98 and SH99. Each approach has been formed with splitter islands, with the North Road approach having a wide radius left turn diverge lane. The southern splitter island has been sealed with concrete.

    (b) There are light poles located within the left turn diverge island. The central island has chevron boards for each of the approaches at the edges of the island. The Lorne-Dacre Road approach has been formed with a short splitter island and is currently grassed.

    (c) The transporter vehicle will turn right at the SH6 / SH98 intersection. This will involve using both sides of the carriageway and the transporter will traverse the splitter islands on the southern and eastern approach.

Although the southern splitter island is traversable, minor works will be required on the eastern island to make this traversable.

108. SH98 / SH1 – Dacre:

(a) SH98 Lorne-Dacre Road meets SH1 at a priority intersection with a right turn bay marked on SH1. A wide area of seal has been constructed on the south side of SH1. I understand that this was completed as part of the works to accommodate vehicle tracking for Kaiwera Downs Wind Farm turbine blade transporters.

(b) The indicative tracking for the larger transporters for the Southland Wind Farm suggests that no further seal widening is necessary but the longer blade may require the street light in the north-east quadrant to be temporarily relocated.

109. SH1 Edendale Roundabout:

(a) The Edendale roundabout was recently constructed to the west of the Edendale township as part of a town bypass. The roundabout also provides access to the adjacent dairy factory. Each approach has been formed with concrete splitter islands. There is a large radius central island with directional chevron signs on each approach and landscaping in the centre. There is a long section of safety boundary around the south-western edge of the roundabout to prevent vehicles from entering the adjacent stormwater detention area.

(b) At the Edendale roundabout, the transporter will turn off the state highway onto Salford Street to travel through Edendale. To avoid removal of the safety barrier in the south-western quadrant, the tractor unit will need to follow a path across the central island and over the eastern edge of Salford Street. Minor works will be necessary to create driveable surfaces to accommodate this manoeuvre and in my opinion, is preferrable to removal of the safety barrier for an extended period of time.

(c) The blade tracking will conflict with some street lights and these will need to be removed on a temporary basis. All signs around the intersection will need to be removeable.

110. Ferry Street / Balaclava Street:

    (a) The transporter will follow Ferry Street through Wyndham which involves a left turn at the Balaclava Street intersection. There is a grassed splitter island on the eastern approach which will need to be traversable. Indicative tracking suggests that the vehicle will otherwise be able to negotiate the intersection without any conflicts with power poles or streetlights.

111. SH93 Old Coach Road / Kaiwera Downs Road:

    (a) The right turn from SH93 Old Coach Road into Kaiwera Downs Road will require the transporter vehicle to traverse the grassed area to the east of the intersection. Minor works will be required to ensure that the area is traversable.

    (b) The blade may cross a small part of the adjacent land parcel (depending on the length of blade) but will be above the fence line.

*Pavement Damage*

112. The movement of over-weight and over-dimension transporters has the potential to damage the road pavement, particularly at intersections. I recommend that a condition of consent require route inspections to be undertaken in conjunction with the road controlling authorities (NZTA / South Roads and GDC) to record the existing state of the roads and identify reasonably foreseeable pavement wear issues associated with the overweight loads.

113. At the completion of construction, or when an issue arises, another inspection should be undertaken to determine what inputs and actions are required by the consent holder to ensure the wind farm's effects on road pavements are remedied.

114. In addition to any structural damage to pavements that may occur as a result of overweight loads, the general increase in truck traffic associated with construction may require more regular maintenance of the unsealed pavements on Kaiwera Downs Road, Waiarikiki-Mimihau Road and Venlaw Road. It is appropriate that this maintenance, principally consisting of grading, be undertaken by the consent holder during construction of the wind farm. Such an approach will avoid adverse effects on ride comfort and vehicle operating costs experienced by other road users.

### Operation and maintenance

115. I understand that 10 to14 full time staff will be employed in the operation of the wind farm, with occasional additional maintenance staff as required from time to time. On that basis, I expect that the maintenance activity will generate less than twenty vehicle movements per day, with the majority being light vehicles. The primary access route to be used for the operations phase of the wind farm will be via Venlaw Road and Thornhill Road. In my opinion, this volume of movements will not be discernible by other road users and the effects of such traffic will be negligible.

116. Based on the forecast level of movements for the operation of the wind farm, I do not consider that any specific management measures are necessary for the operational phase of the Project.

## MEASURES TO REMEDY OR MITIGATE ACTUAL OR POTENTIAL ADVERSE EFFECTS

### Proposed Resource Consent Conditions

117. The proposed conditions of consent TR1 to TR8 relate to transport matters. TR1 sets out the requirement for a CTMP with TR2 setting out the required content and TR3 setting out the responsibility for costs. Conditions TR4 to TR8 provide the framework for managing any effects on pavement surfaces.

### Construction Traffic Management

118. Based on the scale of traffic effects, I consider that the most appropriate method for managing the transport related effects of the Project is with implementation of a Construction Traffic Management Plan. This represents standard practice for large infrastructure projects and is required under the proposed conditions of consent.

119. A CTMP forms a key component for managing the traffic effects of a major infrastructure project of this nature. I have managed the preparation of a draft CTMP for the project but note that the final version will need input from the contractor in consultation with stakeholders and District Councils (ICC, SDC and GDC) at the detailed design stage, and be certified before any physical works begin. The CTMP will address any potentially sensitive land uses along the access routes such as schools and provide flexibility to accommodate rural related activities.

120. Copies of the CTMP will be provided to key stakeholders, including residents close to the construction vehicle access routes, so that they are fully informed of how the Project will affect the roads they use. This document will be maintained in an electronic format as a live document and will be updated as necessary to incorporate changes such as variations to the project schedule. This forms part of the consent condition TR2A.

121. I understand that Contact Energy will support the formation of a Community Liaison Group for the Project so that it can as a forum for the wider community to provide feedback to Contact Energy on the effectiveness of the CTMP including the identification of any potential alterations to reduce effects on the community. Updates on Project progress and planned works that will affect the community will be provided on a regular basis.

122. One purpose of the CTMP is to provide stakeholders with a clear understanding of the construction programme, expected traffic volumes during each stage including the need for transporting over-weight or over-dimension loads, any road improvements to be undertaken, and the traffic management measures being implemented such as temporary or mobile road closures.

123. The CTMP will document:

    (a) site access arrangements;

    (b) travel routes;

    (c) construction programme and construction activity time restrictions;

    (d) traffic volumes;

    (e) overweight and over-dimension loads (routes, numbers and transport times);

    (f) driver protocols;

    (g) any necessary road improvements;

    (h) pavement maintenance arrangements;

    (i) monitoring arrangements;

    (j) communication / complaints arrangements; and

(k) actions to reduce conflict with stock movements and minimising the risks to students travelling to and from school.

124. I have provided more detail below on the expected content of the CTMP.

125. Site Access Points and Travel Routes:

(a) The first part of the CTMP will provide details of the wider transport network surrounding the construction site, the vehicle access locations to the site and the routes that will be taken by construction vehicles.

126. Construction Programme and Traffic Volumes:

(a) The CTMP will provide details of the expected volumes of construction traffic on the various parts of the transportation network and also times of movements. It will provide the detailed schedule of the various work stages as the construction process proceeds.

(b) The level of detail should be sufficient for the general public to understand the type and frequency of vehicles that could be expected on each portion of route at any time during construction.

127. Over-weight and Over-dimension Loads:

(a) The latter stages of construction of the wind farm will involve transport of over-weight and over-dimension loads from South Port in Bluff. This creates very specific transport management requirements, and these should be addressed separately from the general construction traffic movements.

(b) Although specialist contractors will be engaged to transport the over-weight and over-dimension loads and this will require specific permits, the CTMP should outline what could be expected. This would typically include.

(i) transport routes;

(ii) confirmation of the times and locations when movement is prohibited, for example peak hours in Invercargill, and an indication of the times of day when deliveries are anticipated;

(iii) procedures for working around stock movements;

(iv) operating restrictions for bridge crossings;

(v) piloting procedures;

(vi) contingency plans for breakdowns, bridge or pavement failures, severe weather conditions, accidents, or roadworks;

(vii) provisions for co-ordination with other parties, including emergency services and Kiwirail; and

(viii) provisions for communication with school bus drivers if any day-time transport of over-weight or over-dimension loads is required.

(c) Including these details in the CTMP will assist regular road users in knowing how to respond to the presence of piloted oversize loads.

128. Driver Protocols:

(a) In addition to the driving standards required by law, all drivers involved in the Project will be subject to additional protocols when travelling along the district roads. This will include:

(i) giving way to school buses at all times;

(ii) travel speeds on unsealed roads;

(iii) use of two-way radios to communicate with school bus drivers; and

(iv) restrictions on traffic movements to accommodate farmers' planned stock movements.

(b) These protocols will be strictly enforced by the consent holder in addition to all other aspects of on-site health and safety.

129. Road Improvements:

(a) Since some localised improvement works at intersections will be required to accommodate the over-weight and over-dimension loads, it will be necessary for the contractor to prepare and submit to the relevant Road Controlling Authority an appropriately detailed schedule describing the works and the temporary traffic management provisions to be put in place during construction. The Local Government Act prohibits anyone from making improvements to a road without the express approval of the Road Controlling Authority (**RCA**), either the

relevant District Council for council roads or NZTA for works on the state highways.

(b) Venlaw Road and Kaiwera Downs Road do not allow for two-way movement of trucks along their full length and it will be necessary either to create passing bays at regular intervals or actively control vehicle movements to one way. The CTMP will establish the preferred approach for managing two-way truck movements while minimising effects on rural traffic movements and identify preferred locations for any passing bays in consultation with the relevant authority.

(c) The design process will include sufficient geotechnical investigations as are necessary to satisfy the RCA that batters will remain stable. Once the designs have been approved by the RCA, they will be incorporated into the overall CTMP, with details of:

(i) the physical extent and nature of the works;

(ii) an accompanying schedule of start and finish dates;

(iii) details for sourcing materials and disposal of spoil;

(iv) provisions for advisory signage;

(v) arrangements for temporary traffic management and supervision;

(vi) clean-up and overnight arrangements; and

(vii) contact telephone numbers.

130. Depending on the timing of these works relative to the overall project, this component of the CTMP may be prepared and circulated in advance of the rest.

(a) I note that proposed Condition TR3 specifically requires that Contact meets the costs of any physical improvement works that are necessary to accommodate access to the Project site.

131. Pavement Maintenance:

(a) The CTMP will describe the methodology that will be adopted in relation to pavement maintenance during construction to ensure that the road pavements are safe. The methodology will outline the mechanisms for staff, truck drivers or the general public to report

concerns such as potholes and the actions to restore the pavement to a safe condition.

(b) During construction, the focus of maintenance and repair work will be on restoring the road to a safe condition and may involve temporary rather than permanent works. Some more permanent pavement rehabilitation may be required following the completion of construction works to address damage that can be directly attributed to the construction works. A detailed inspection of all access roads will be required prior to the start of construction to provide a baseline of the existing road conditions. A second inspection following completion of construction will allow an assessment of the need for assessing the need for and extent of any necessary rehabilitation works.

132. Monitoring:

(a) The CTMP will describe how construction vehicle movements on the public road network will be monitored and could include:

(i) collecting actual traffic volumes in and out of the site on each access route;

(ii) ensuring safe pavement conditions are maintained, e.g. response and actions taken following reports of damage;

(iii) compliance with temporary traffic management plans; and

(iv) collating submissions from the general public or Community Liaison Group.

(b) The monitoring results will be reported to Council on a monthly basis.

133. Communication Protocols:

(a) The site manager(s) will be clearly recorded as the point of contact for road users.

(b) Specific contact arrangements will be provided to all affected farmers so that they can advise the project team of planned stock movements or special vehicle movements. These will then be communicated to drivers and local traffic management controllers to coordinate the farmers travel demands with construction vehicle movements.

(c) Provision will be made for the timing of oversize load movements or temporary road closures to be advertised through local media, enabling drivers to avoid them if they so choose.

(d) A copy of the CTMP will be available on the project website and will record a list of people and organisations that will be notified electronically of updates to the CTMP. This is expected to include:

(i) community groups in Wyndham, Edendale, Mataura and Gore;

(ii) NZTA;

(iii) ICC;

(iv) SDC;

(v) GDC;

(vi) Kiwirail;

(vii) Forestry logging companies;

(viii) Fonterra, as operators of the Edendale factory;

(ix) School bus operators in the relevant districts;

(x) Mataura Valley Milk;

(xi) Open Country Dairy;

(xii) Transporting NZ; and

(xiii) The Community Liaison Group.

(e) All amendments and updates to the CTMP, as approved by Council, will then be forwarded to those named on the list.

134. Stock movements and school students:

(a) The effects of construction traffic on stock movements and school buses was raised during the previous Covid Fast-track consenting process. I would expect these effects to be addressed as a matter of course in a CTMP for a rural site such as this but support conditions of consent that explicitly require them to be addressed.

135. In summary, I consider that the proposed transport conditions of consent (TR1 to TR8) are appropriate and sufficient to manage the effects of construction traffic on the transport network.

**Michael Christopher Rossiter**

**Appended figure sets (provided separately):**

- **Appendix A: Tower Transport Tracking Routes**
- **Appendix B: Blade Transport Tracking Routes**