8 September 2023
Job No: 1016884.1000

Meridian Energy
Level 11, NTT Tower
157 Lambton Quay
Wellington 6011

Attention: Nick Bowmar

Dear Nick

S92 response to transport-related issues for the proposed Mount Munro Windfarm Application APP-2022203902.00

1 Background

Tonkin & Taylor Ltd (T+T) was commissioned by Meridian Energy Limited (Meridian) to undertake an Integrated Transport Assessment (ITA) of the effects of a proposed wind farm (Mount Munro) in the Wairarapa. Meridian propose to construct a 20-turbine (90 MW) wind farm on an 8.9 km^2 site, located east of State Highway 2 (SH2), approximately 35 km north of Masterton and 4 km south of Eketāhuna.

The resource consent application was lodged with Horizons Regional Council, Greater Wellington Regional Council, Tararua District Council and Masterton District Council. The application numbers with each consenting authority are as follows:

- Horizons Regional Council – APP-2022203902.00;
- Greater Wellington Regional Council – WAR230312 [39005, 39006, 39007, 39008, 39009];
- Tararua District Council – 202.2023.53.1;
- Masterton District Council – RM 230068.

Additional information was requested under Section 92(1) of the Resource Management Act 1991 (RMA) on 6 July 2023. This letter addresses transport-related information requests numbered 5, 7, 8, 9, 10, 18, 22, 25, 32, 33 and 34 in the Section 92 request.

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2 S92 Responses

Number in S92 Request	S92 Request	Response
5	*What are the intended days and hours for construction traffic activity? Many if not all of the local intersections, including the SH2 intersections, do not appear to have lighting. Will construction vehicle activity be limited to daylight hours or is there an intention to add lighting at the intersections?*	There are three currently unlit intersections at: • Old Coach Road – main site access during construction and operation; • Kaiparoro Road – access for the construction and maintenance of the off-site substation; and • Opaki-Kaiparoro Road – access for the construction and maintenance of the transmission line. Flag lighting[1] at these intersections is not considered appropriate or necessary. The construction hours will typically be 7 am-5 pm and may extend to 7 pm. The latest sunrise time throughout the year in this area is at 7:42 am. The earliest sunset time is around 4:55 pm and the sun sets typically around 5pm between late May and early July. Natural lighting will be available during most of the construction hours for most of the year. The Tararua District Plan does not contain road lighting requirements for rural roads. Waka Kotahi's M30 Specification and Guidelines advise that lighting of an isolated intersection on an otherwise unlit route should only be considered after all options to highlight the intersection with passive devices such as signs, road markings, and delineation have been explored and implemented.[2] Guideline 14 of the M30 specification states that full isolated intersection lighting or flag lighting should be considered in the scenarios listed below, each of which has been assessed for the three intersections in question. The possible scenarios to warrant the use of flag lighting and the respective assessments are as follows: • *There is evidence of a high history of night time crashes.* – Due to the low number of crashes identified in the crash analysis (refer to response No. 8 and Appendix A), there is no evidence of a crash trend at night in the crash study area. • *There are raised islands that could be a hazard.* – This is not identified at any of the SH2 intersections. • *In the presence of pedestrians.* – Pedestrians are unlikely to be present due to the rural environment and the lack of local destinations in walking distance and of safe pedestrian facilities. • *An intersection has limited visibility, complex geometry, confusing background, unusual traffic patterns.*

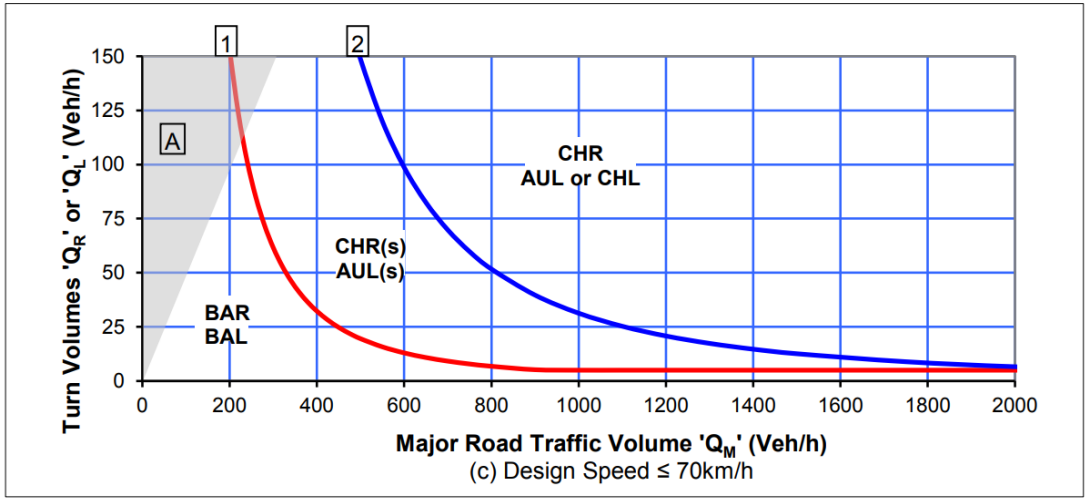
[1] Flag lighting refers to lighting of an isolated intersection on an otherwise unlit route.
[2] Section 14 of the Waka Kotahi M30 Specification and Guidelines for Road Lighting Design."

Number in S92 Request	S92 Request	Response
		– All three intersections have simple geometry and meet the sight distance requirements as assessed in Table 4.3 of the transport assessment. The SH2/Opaki-Kaipararoro Road intersection did not meet the safe intersection sight distance but it could be improved through vegetation removal based on the preliminary assessment. • *In a highly trafficked tourist route where drivers may not be familiar with the road.* – This section of SH2 is not considered to be a highly trafficked tourist route and the traffic volume in this section is low at 3,300 vehicles per day. • *Two main traffic routes meet or there is channelisation on either road.* – All three roads intersecting with SH2 are classified as local roads in the roading hierarchy of Tararua District Plan and no channelisation is identified on any roads. • *There are right turn movements or related turning bay* – The response to No.7 and No.25 has demonstrated that right-turning trucks will have sufficient gaps to turn right out without impacting the safety and efficiency of the intersections based on the estimated traffic volume in 2023. Therefore, the risk of not installing the light for right-turn movement is low with the appropriate signs. • *There are other special safety or layout factors that warrants a full intersection lighting design.* – These are not identified at any of the three intersections. Overall, the above assessment shows that none of the above scenarios applies to any of the three intersections. Therefore, flag lighting is not proposed and the use of appropriate passive devices will be explored and implemented as part of the detailed design. The Construction Traffic Management Plan will consider the most appropriate signs and controls, such as lower intersection speed limits and advanced warning signs of construction traffic for both intersections with State Highway 2 and on local roads. A preliminary assessment of the existing signs at the intersections has been attached as Appendix A.
7	*Table 2.2 of the Traffic and Transportation Effects Assessment, includes 3,500 vpd on SH2 at Mt Bruce with 13.8% heavy vehicles. The proportion of heavy vehicles is significant and interactions between turning and through heavy vehicles at the SH2 intersections will need*	The Mt Bruce site (ID: 00200859) recorded 3,595 vehicles (13.5% heavy vehicles) in 2022. For this application, modelling was not considered to be needed because the main road (SH2) only has two lanes (one in each direction) with relatively low volumes (3,595 two-way traffic per day) and the geometry and layout of

Number in S92 Request	S92 Request	Response
	to occur safely. With a 10-year lapse period requested what traffic growth is forecast for SH2 over the next ten years?	the intersections are simple (i.e. without channelised treatments or multiple lanes). As a result the assessment of whether vehicles can enter and exit the side roads can be completed by a first principles assessment[3]: • The assessment assumes the arrival of vehicles is evenly spaced (i.e., the gaps between vehicles are the same). However, in reality vehicles arrive in platoons (e.g. a couple of vehicles arrive at the same time with shorter gap in between). Therefore, the gap in the assessment is an indicative average while the gaps between vehicles could be smaller or larger. • The peak hour traffic volume is estimated to be 10% of the total traffic volume. However, the traffic volume could be evenly distributed throughout the day without an obvious peak hour due to the rural nature of this SH2 section. • The directional split is assumed to be 50/50 in this SH2 section. • The right turn movement requires the longest gap on main road. The average annual growth on state highways is estimated to be 3.6%[4]. Therefore, the estimated average daily traffic for 2023 is 3,724 vehicles. The peak hour traffic volume is estimated to be 10% of the daily traffic volume which is 372 vehicles per hour (186 vehicles per hour in each direction with the assumed 50/50 split). This indicates there are about 3.1 vehicles per minute and the average interval between two vehicles is approximately 19.4 seconds. Austroads AP-T293-15 Road Design for Heavy Vehicles states the critical gap for a right-turning truck-trailer ranges between 9.4 seconds and 10.6 seconds[5] without interfering with traffic on a two-lane two-way major road. Given the average interval between two vehicles is around 19.4 seconds at peak hour in each direction, this indicates it is highly likely for an approaching truck-trailer to have sufficient gap at the intersections and the likelihood of delay is very low. The transport assessment included an estimate of the number of trips completed by10-tonne heavy rigid vehicles. The capacity of these vehicles is lower than truck-trailers so more trips will be required. However, as these vehicles are shorter they require shorter gaps in SH2 traffic to turn right against without interfering with the traffic in either direction on the state highway. The required gap for a 10-tonne heavy rigid vehicle is 7.0-7.2 seconds in Austroads. The existing SH2/Old Coach Road intersection features the following rural basic turn treatments:
25	*Section 4.2 of the Traffic and Transportation Effects Assessment describes the capacity assessment. No intersection modelling has been undertaken and the section concludes that the capacity of the intersections is not likely to be an issue. Given that the largest trucks can take 10 to 15 seconds to clear an intersection when turning from a stop, please provide modelling which includes allowance for the gaps needed by larger trucks and also allows for traffic growth on SH2 over the next ten years.*	

[3] A first principles assessment refers to a method of analysis or evaluation that breaks down a complex problem or system into its fundamental components, underlying principles, and basic elements. It involves examining the most basic and essential aspects of a subject without relying on assumptions, conventions, or pre-existing solutions.
[4] Average increase rate calculated from Annual Average Daily Traffic for Site 00200859. The traffic volume data is attached as Appendix B.
[5] Retrieved from Table 3.18 in Austroads AP-T293-15 Road Design for Heavy Vehicles, ranges due to different analysis method (Greenshields or Raff).

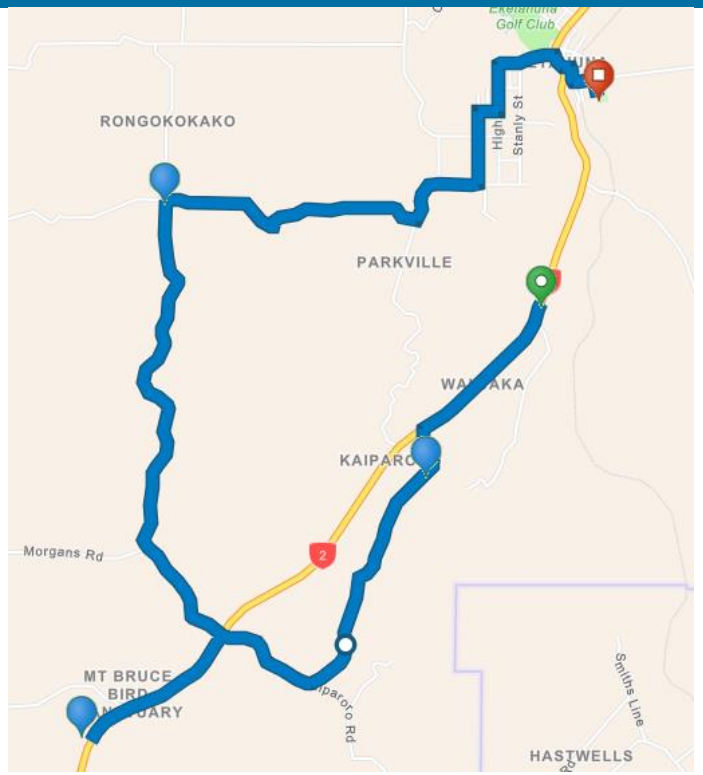
Number in S92 Request	S92 Request	Response
		• The basic right turn treatment (BAR) features a widened shoulder on the SH2 that allows through vehicles, having slowed, to pass to the left of turning vehicles. • The basic left-turn treatment (BAL) on the SH2 has a widened shoulder, which assists turning vehicles to move further off the through carriageway, thus making it easier for through vehicles to pass. • On Old Coach Road, the basic left-turn treatment allows turning movements from a single lane with a shoulder that is too narrow to be used by left-turning vehicles (to prevent drivers from standing two abreast at the holding line). Figure 2.1 shows Figure 2.25 from Section 2.3.6 of the Austroads Guide to Traffic Management Part 6 and it shows the warrants for turn treatments on major roads at unsignalised intersections. Line 1 (in red) is the threshold between a basic right and left turn treatment (BAR and BAL) and a channelised right-turn (CHR, e.g. right-turn bays) and auxiliary left-turn treatment (AUL, e.g. auxiliary left-turn lanes). Line 2 (in blue) is the threshold between a CHR and AUL or channelised left-turn (CHL, e.g. separated left-turn slip lane) treatments. Given the traffic volume of 372 vehicles per hour on the major road (SH2), BAR and BAL treatments are only warranted when the design speed is 70 km/h or lower. The existing speed limit through this intersection is 100 km/h. Therefore, the speed limit needs to be reduced to 70 km/h to comply with this standard. it is recommended the Corridor Access Request application and CTMP propose a temporary speed limit of 70 km/h through the Old Coach Road intersection during the construction periods.

Number in S92 Request	S92 Request	Response
		 *Figure 2.1: Warrants for turn treatments on major roads at unsignalised intersections when design speed is at or lower than 70km/h* Ten-year capacity assessment: As shown in Appendix B Table 2 the two-way traffic volume on SH2 is anticipated to be 5,304 vehicles per day in 2033 (assuming an estimated annual traffic growth of 3.6%). The peak hour traffic volume is estimated to be 10% of the daily traffic volume which is 530 vehicles per hour (265 vehicles per hour in each direction with the assumed 50/50 split). This indicates there would be 4.4 vehicles per minute and the average interval between two vehicles would be 13.6 seconds in each direction. This indicates the right-turning truck-trailers are still likely to have an acceptable gap when approaching the intersection and the likelihood of delay and queuing is low. In summary, the above assessment shows that the estimated traffic volumes in 2023 and 2033 are likely to provide sufficient gaps for movements of truck-trailers and the movement of truck-trailers is unlikely to impact the safety and efficiency at these intersections.

Number in S92 Request	S92 Request	Response
8	*Did any of the crashes referred to in Section 2.3 of the Traffic and Transportation Effects Assessment involve heavy vehicles? Please provide an update of the crash reporting to include crashes reported to date in 2023.*	The CAS query was re-submitted on Thursday 3 August 2023[6]. Between 2012 and 2023, there were only three crashes involving trucks/High Productivity Motor Vehicles (HPMV) and all three were non-injury crashes: • One of the crashes occurred in 2013 at 300 m northeast of Opaki-Kaiparoro Road on SH2. This crash occurred when an empty truck and trailer was blown over by strong wind. • Another crash occurred in 2016 at 200 m northeast of Falkner Road on SH2. This crash occurred due to a northbound car that veered off the road to avoid a head-to-tail crash with the front vehicle which stopped to avoid a southbound truck that crossed the centreline to overtake a cyclist. • The other non-injury crash occurred in 2022 at 250 m southwest of Kaiparoro Road on SH2 due to a northbound timber truck that drifted left at a moderate sweeping right-hand bend. The transport assessment identified 21 crashes in 2012-2021. There were no other crashes recorded in 2021 except the one non-injury crash reported in the transport assessment. Between 2022 and July 2023 (inclusive), a total of six crashes were recorded, including the abovementioned crash in 2022 involving a heavy vehicle. The site details summary for 2022 and 2023 is attached as Appendix C and a summary of the other five (non-heavy vehicle) crashes is as follows: • There were two serious crashes, one minor-injury crash and two non-injury crashes. • Four of the crashes were lost control/head on crashes on straight road or at a bend while the other one was a rear end crash. • One serious crash occurred in 2022 when a southbound car crossed the centreline and crashed into a parked vehicle at the northbound shoulder on SH2. • The other serious crash was a head-on crash that occurred in 2023 when a northbound vehicle travelled into the opposite lane. • No crash trend has been identified in the study area. • In response to the two crashes involving heavy vehicles in 2013 and 2016, the following is recommended to be included and addressed in the CTMP: – The CTMP should include consideration of unsafe wind speeds and propose mitigation measures, such as refraining truck movements and driver education.

[6] The processing time for injury crashes was four weeks and over three months from date received from NZ Police at the time of query.

Number in S92 Request	S92 Request	Response
		– This section of SH2 is near the New Zealand Cycle Trail of Heartland Ride – Tararua Traverse and there is likely to be a considerable number of cyclists. Therefore, the CTMP should include measures to ensure the road safety of all mode users, such as regular safety briefings to HCV drivers.
9	*Has any consultation been undertaken with New Zealand Cycle Trails regarding the effects on the Heartland Rides which are the Tararua Traverse and Route 52 cycle rides mentioned in Section 2.4 of the Traffic and Transportation Effects Assessment, and also the Connector Ride along Pa Valley?*	Waka Kotahi was consulted with as they administer the NZ Cycle Trails. Waka Kotahi feedback was as follows: "*Thanks for checking the NZ Cycle Network routes as part of your assessment. Your suggested mitigations look good to me.* *It would be worth noting in the assessment, that cyclists will be present year round, however the peak is in February/March each year, when Tour Aotearoa event cyclists travel through over a period of a few weeks – roughly a few dozen cyclists each day."* Therefore, the CTMP will include mitigation measures, such as signages, lower speed limits and driver briefings.
10	*At Section 2.4.1 'no school buses operating along any of the roads identified in Section 2.1.1.'. Please confirm whether all school drop-offs and pick-ups are done by private vehicle, especially for residents along Old Coach Road.*	Ministry of Education (MoE) has been consulted for school bus service information. Their email states: "*We only have 1 run going through that area. It turns off SH2 at Falkner Road, then back to SH at Opaki Kaiparoro Rd and down to 85274 State Highway 2. It then turns back and goes up South Rd number 2. Below is a screen shot of the route.*" The operating time for this route is 7:30 am to 9 am and 3 pm-4:30 pm.

Number in S92 Request	S92 Request	Response
		 *Figure 2.2:* Indicative school bus route received from MoE Specifically, there is no school bus service on Old Coach Road. The CTMP will include information of the abovementioned school bus service and propose mitigation measures such as the addition of roadside signs and driver briefings.
18	*Section 3.1.10 of the Traffic and Transportation Effects Assessment refers to a diesel tank being located on-site. Have truck movements been included in Table 3.4 for diesel delivery to the site?*	

Number in S92 Request	S92 Request	Response
22	*The trip generation forecasts for staff assume that two or three people will travel per vehicle with one arrival at and one departure from the site per day. Given the proximity to Eketahuna, is there the potential that staff might leave site for instance to purchase lunch? If not, how would this be controlled?*	Truck movements associated with diesel transport[7], the maintenance of gravity pad foundations[8] and wastewater and portaloo transport[9] were included in the transportation effects assessment. Table 3.4 of the Transport Assessment includes: • Up to 101 aggregate HCVs during civil work phase. • 60 water supply HCVs for civil work and turbine installation • 1 HCV for turbine components during installation and up to 20 HCVs for maintenance (including the gravity pad foundations) • A further 50 HCVs (for road upgrade phase only) or 100 HCVs per day for: – Earth moving machinery (excavators, dump trucks, compactors, etc). – Cement for on-site concrete batching. – Miscellaneous materials (incl. fencing, turbine formwork). – Reinforcing steel. – Electrical infrastructure materials. – Transporting diesel. – Wastewater and Portaloos. – Site offices. The unpredicted staff trips were not included in the transport assessment and these trips would not be controlled. However, these staff trips are unlikely to significantly impact the safety and operation at these intersections. The Appendix 1 of Waka Kotahi Planning Policy Manual includes the definition of equivalent car movement per day: • 1 car to and from the property = 2 equivalent car movements. • 1 truck to and from the property = 6 equivalent car movements. • 1 truck-trailer to and from the property = 10 equivalent car movements. On this basis, the transport assessment has accounted for: • Up to 50 cars to and from the property = 100 equivalent car movements.
32	*Do the material and associated forecast truck movements allow for the possibility of Gravity Pad Foundations described in Section 2.4.2 of the Assessment of Effects on the Environment (AEE)?*	
33	*Section 2.4.6 of the AEE describes the main laydown and site administration area and includes that wastewater will be trucked off the site and that portaloos will be serviced on an as required basis. What number of truck movements are likely to be associated with these activities and have these movements been included in the traffic activity forecasts?*	

[7] Further information request 18
[8] Further information request 32
[9] Further information request 33

<table>
<tr><th>Number in S92 Request</th><th>S92 Request</th><th>Response</th></tr>
<tr><td></td><td></td><td>• Up to 101 aggregate truck-trailers, 60 water truck-trailers and 100 equipment and materials truck-trailers = 261 truck-trailers = 2610 equivalent car movements.
Carpooling is also likely for these lunch trips so there would likely be no more than 26 equivalent car movements per day (up to 50 on-site staff and 4 people per car). This is less than 1% of the 2,710 equivalent car movements per day already counted for in the transport assessment. In conclusion, the impact of these unpredicted staff trips is almost negligible.</td></tr>
<tr><td>23</td><td>Section 3.7 of the Traffic and Transportation Effects Assessment refers to the Mount Munro Windfarm Port to Site Routes Assessment July 2021v2, has this document been provided?</td><td>The latest Mount Munro Windfarm Port to Site Routes Assessment May 2023 has been attached as Appendix D.</td></tr>
<tr><td>34</td><td>In respect to Masterton District Council (MDC) roading network, Section 5.5 of the AEE indicates that MDC roads may be required for people and material transportation with no additional detail given. Please provide an assessment of the effects on the roading hierarchy. Please include details on aggregate source and therefore transportation route(s) in order for us to assess the impact on the MDC roading networks and therefore upgrade requirements/cost recovery. For completeness, please also cover roads in the Tararua District Council jurisdiction.</td><td>The definitions of the respective road hierarchy in the Operative Wairarapa Combined District Plan and Tararua District Plan are shown in Table 2.1:

Table 2.1: Definitions of road hierarchy in Masterton and Tararua districts
<table>
<tr><th></th><th>Masterton (Wairarapa Combined District Plan</th><th>Tararua District Plan</th></tr>
<tr><td>Strategic Arterial</td><td>Road which forms part of the network of nationally or regionally important arterial routes that predominantly carry through traffic and the major traffic movements in and out of the District.</td><td>Roads which form part of the network of strategic arterial roads of national or regional importance. In the Tararua District, this classification applies only to State Highways, managed by the NZTA, on the basis of high traffic volumes.</td></tr>
<tr><td>District Arterial</td><td>A road which caters for traffic movement within or between major areas of the District and as alternative routes to neighbouring territorial authorities.</td><td>Roads which are important at the District level for carrying traffic between major areas within the District and as alternative routes to neighbouring Districts. Traffic movement is the main function but they often also serve as local roads</td></tr>
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<tr><th>Number in S92 Request</th><th>S92 Request</th><th colspan="3">Response</th></tr>
<tr><td></td><td></td><td colspan="3">
<table>
<tr><td>Collector</td><td>Locally preferred routes forming a link between the arterial roads and residential, commercial, industrial and recreational areas. Although having a major through traffic function, they also serve adjacent property.</td><td>These roads collect and distribute traffic to and from the arterial road network. These roads complement arterial roads in that through traffic is an important function but property access is also important.</td></tr>
<tr><td>Local</td><td>Roads with the main function of providing access to adjacent properties.</td><td>All other roads which have the provision of access to properties as their primary purpose. Some local roads have a minor role to play in the collection and distribution of traffic, but through traffic is generally to be discouraged due to the effect on the amenity of the surrounding area and the physical capability of the roads.</td></tr>
</table>
During the construction programme, there will be a significant increase in the number of trips along Old Coach Road to access the main site, as outlined above. Sections of Old Coach Road are proposed to be widened to provide passing opportunities and will be maintained by the consent holder during the project.
Traffic volumes to the transmission line and terminal substation accesses are not expected to exceed the permitted threshold described in TR-S30 in the Draft District Plan of 50 heavy vehicles per day.
The aggregate source is yet to be confirmed as well as the transport route, however this will approach the site via SH2 and Old Coach Road. Any aggregate source that exceeds the District Plan permitted threshold or consented vehicle movements will be subject to a separate consent application.
According to the historic One Network Road Classification (ONRC) data from MegaMaps[10], most of the local roads (excluding State Highway 2) between Masterton and Eketāhuna are classified as collector or access (local) roads.
In the One Network Framework (ONF) data from MegaMaps, most of the local roads (excluding State Highway 2) are classified as Rural Connectors or Rural Roads[11]:
</td></tr>
</table>

[10] Waka Kotahi MegaMaps: https://maphub.nzta.govt.nz/megamaps/

[11] Descriptions are from the Speed Management Guide: Road to Zero Edition: https://www.nzta.govt.nz/assets/resources/speed-management-guide-road-to-zero-edition/speed-management-guide-road-to-zero-edition.pdf

Number in S92 Request	S92 Request	Response
		• Rural Connectors: These roads provide the link between rural roads and interregional connectors. • Rural Roads: These roads primarily provide access to rural land for people who live there and support the land-use activity being undertaken. Overall, the surrouding land use along the roads and functions of the roads in Masterton are not changing as a result of the additional construction traffic movements. Once the construction starts, most vehicles will use State Highway 2 to access the site as the Old Coach Road intersection is the only access to the main construction site. The road hierarchy (as defined by the Operative Wairarapa Combined District Plan) of Opaki-Kaiparoro Road will need to change should this road be used for transporting aggregates. None of the other roads under the jurisdiction of Masterton District Council will need to change their hierarchy. For Tararua District, there will be increased traffic movements on Old Coach Road, Kaiparoro Road intersection and Opaki-Kaiparoro Road. The existing traffic volumes on all three roads are very low (28 vehicles per day on Old Coach Road, 12 vehicles per day on Kaiparoro Road and 65 vehicles per day on Opaki-Kaiparoro Road[12]). Therefore, the percentage of increase in traffic movement will be high due to the low existing traffic volume. The addition of construction traffic will cause the road hierarchy of Old Coach Road, Opaki-Kaiparoro Road and Kaiparoro Road to change. The transport assessment has recommended upgrading Old Coach Road, and changes to the SH2/Opaki-Kaiparoro Road intersection to achieve the Safe Intersection Sight Distance should it be needed for transporting aggregates. These measures will improve the efficiency and safety on Old Coach Road and at the SH2/Opaki-Kaiparoro Road intersection with the increased traffic volume. It is also noted that the road upgrade and windfarm construction will last for up to 32 months (two years and eight months). Meridian will maintain the roads during construction. Once construction is completed, the maintenance of the turbine and plant will only require up to 20 heavy vehicles and four vehicles per day.

[12] Data from Mobile Road: https://mobileroad.org/

3 Applicability

This report has been prepared for the exclusive use of our client Meridian Energy Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of a S92 request for the resource consent application (APP-2022203902.00) and that Horizons Regional Council, Greater Wellington Regional Council, Tararua District Council and Masterton District Council as the consenting authority will use this report for the purpose of assessing that application.

Tonkin & Taylor Ltd

Report prepared by:

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Appendix A Preliminary assessment of existing signs at the proposed site access intersections

There have been advance warning signs (W11-4 (L) and W11-4 (R), (as shown in Figure Appendix A.1) installed on SH2 approaching the proposed intersections (Old Coach Road, Kaiparoro Road and Opaki-Kaiparoro Road). These signs are recommended to remain in place and receive maintenance if needed (e.g. cleaning and re-stabilising).

W11-4 (L) Side road junction – controlled (left)	
W11-4 (R) Side road junction – controlled (right)	

Figure Appendix A.1: W11-4 (L) and W11-4 (R) advance warning signs[13]

An existing Chevron sight board at T-junction (W20-1.2 (4)) is located at the Old Coach Road/SH2 intersection and an existing Chevron sight board at T-junction black on yellow (W20-1.4) is located at the Falkner Road/SH2 intersection, as shown in Figure Appendix A.2. There is no existing headway chevron board at the Kaiparoro Road/SH2. The recommendations are:

- Falkner Road/SH2: The existing sign remains in place and gets maintained if needed.
- Old Coach Road/SH2: Replace the existing sign with the W20-1.4. This is required by the TCD manual Table 4-13. The minimum length of the W20-1.4 is 3000 mm for urban speed limit areas but should be increased proportionally to suit the rural speed limit areas.
- Kaiparoro Road/SH2: Install the W20-1.4 and position the sign with its centre offset to the left of the side road centreline, directly in front of approahcing drivers or in a position with maximised visbiilty to the sign.

W20-1.2 (2)/(4) Chevron sight board – at T-junction	
W20-1.4 Chevron sight board – at T-junction, black on yellow	

Figure Appendix A.2: W11-4 (L) and W11-4 (R) advance warning signs[14]

[13] Retrieved from Table 4-9 in Traffic Control Device (TCD) manual Part 4 draft for consultation August 2021.
[14] Retrieved from Table 4-13 in Traffic Control Device manual Part 4 draft for consultation August 2021.

Appendix B Traffic volumes Site 00200859

Appendix B Table 1: Traffic volume estimate for 2023

Year	AADT (vehicles per day)	Increase from previous year
2012	3020	N/A
2013	2968	-1.7%
2014	3036	2.3%
2015	3193	5.2%
2016	3347	4.8%
2017	3372	0.7%
2018	3643	8.0%
2019	3804	4.4%
Average rate of change (2012-2019)		**3.6%**
2020	3477	-8.6%
2021	3319	4.5%
2022	3595	8.3%
2023 (estimated)	**3724**	**N/A**

Appendix B Table 2: Traffic volume estimate by 2033

Year	AADT (vehicles per day)	Increase rate used
2023	3724	**3.6%**
2024	3858	
2025	3997	
2026	4141	
2027	4290	
2028	4444	
2029	4604	
2030	4770	
2031	4942	
2032	5120	
2033	5304	

Appendix C Crash analysis 2022-2023 site details summary report

Untitled query

Crash year

2022 — 2023

Saved sites

Mount Munro

Site details report

Fatal crashes: 0 | **Injury crashes:** 3 | **Non-injury crashes:** 3 | **Total crashes:** 6

Overall crash statistics

Crash severity

Crash severity	Number	%	Social cost $(m)
Fatal	0	0	0
Serious	2	33.33	1.56
Minor-injury	1	16.67	0.12
Non-injury	3	50.00	0.14
TOTAL	6	100	1.81

Crash numbers

Year	Fatal	Serious	Minor	Non-injury
2022	0	1	1	3
2023	0	1	0	0
TOTAL	0	2	1	3
Percent	0	33.34	16.67	50

Crash type and cause statistics

Crash type

Crash type	Crash numbers	% All crashes
Overtaking crashes	0	0
Straight road lost control/head on	3	50
Bend - lost control/Head on	2	33.33
Rear end/obstruction	1	16.67
Crossing/turning	0	0
Pedestrian crashes	0	0
Miscellaneous crashes	0	0
TOTAL	6	100

Overall casualty statistics

Injury severity

Injury severity	Number	% all casualties
Fatal	0	0.00
Serious Injured	4	57.14
Minor Injured	3	42.86
TOTAL	7	100.00

Casualty numbers

Year	Fatal	Serious Injured	Minor Injured
2022	0	2	2
2023	0	2	1
TOTAL	0	4	3
Percent	0.00	57.14	42.86

Note: Last 5 years of crashes shown (unless query includes specific date range).

Casualty types

Casualty types	Fatalities	Serious injuries	Minor injuries
Cyclists	0	0	0
Drivers	0	3	1
Motorcycle pillions	0	0	0
Motorcycle riders	0	0	2
Passengers	0	1	0
Pedestrians	0	0	0
Other	0	0	0
TOTAL	0	4	3

Note: Motorcycle stats include Mopeds.

Note: for Cyclist casualty numbers, query Road User Type - Cyclist, not Vehicle Type - Cycle

Driver and vehicle statistics

Crash factors

Crash factors	Crash numbers	% All crashes
#N/A	6	100.00
Alcohol	2	33.33
Disabled, old age or illness	0	0.00
Failed to give way or stop	0	0.00
Fatigue	0	0.00
Incorrect lanes or position	1	16.67
Miscellaneous factors	2	33.33
Overtaking	1	16.67
Pedestrian factors	0	0.00
Poor handling	2	33.33
Poor judgement	1	16.67
Poor observation	1	16.67
Position on Road	1	16.67
Road factors	1	16.67
Travel Speed	1	16.67
Unknown	0	0.00
Vehicle factors	0	0.00
Weather	0	0.00
TOTAL	19	316.67

Crashes with:

Factor groups	Crash numbers	% All crashes
All road user factors	6	100.00
Driver only factors	6	100.00
Pedestrian factors	0	0.00
Vehicle factors	0	0.00
Road factors	1	16.67
Environment factors	0	0.00
No identifiable factors	0	0.00
Retired codes - no future use	0	0.00
TOTAL	13	216.67

Notes: Factors are counted once against a crash - i.e. two fatigued drivers count as one fatigue crash factor.

Driver/vehicle factors are not available for non-injury crashes for Northland, Auckland, Waikato and Bay of Plenty before 2007. This will influence numbers and percentages.

% represents the % of crashes in which the cause factor appears.

Number of parties in crash

Party type	All crashes	% All crashes
Single party	2	33.33
Multiple party, including pedestrian	0	0.00
Multiple party, excluding pedestrian	4	66.67
TOTAL	6	100

Drivers at fault or part fault in injury crashes - by age

Age	Male	Female	Unknown	Total	Percentage (%)
0-4	0	0	0	0	0.00
5-9	0	0	0	0	0.00
10-14	0	0	0	0	0.00
15-19	0	0	0	0	0.00
20-24	0	1	0	1	25.00
25-29	0	0	0	0	0.00
30-34	0	0	0	0	0.00
35-39	0	0	0	0	0.00
40-44	1	0	0	1	25.00
45-49	0	0	0	0	0.00
50-54	1	1	0	2	50.00
55-59	0	0	0	0	0.00
60-64	0	0	0	0	0.00
65-69	0	0	0	0	0.00
70-74	0	0	0	0	0.00
75-79	0	0	0	0	0.00
80-84	0	0	0	0	0.00
85-89	0	0	0	0	0.00
90-94	0	0	0	0	0.00
95-99	0	0	0	0	0.00
100+	0	0	0	0	0.00
Unknown	0	0	0	0	0.00
TOTAL	2	2	0	4	–
Percent	50.00	50.00	0.00	100.00	–

Note: Driver information is not calculated for non-injury crashes.

Drivers at fault or part fault in injury crashes - by licence

Licence	Male	Female	Unknown	Total	Percentage (%)
Full	2	1	0	3	75.00
Learner	0	0	0	0	0.00
Restricted	0	1	0	1	25.00
Overseas	0	0	0	0	0.00
Wrong class	0	0	0	0	0.00
Never Licensed	0	0	0	0	0.00
Unknown	0	0	0	0	0.00
Forbidden	0	0	0	0	0.00
TOTAL	2	2	0	4	–
Percent	50.00	50.00	0.00	100.00	–

Note: Driver information is not calculated for non-injury crashes.

Vulnerable road users

Crash types	Number	Percentage (%)
Cyclist crashes	0	0.00
Pedestrian crashes	0	0.00
Motorcycle crashes	1	16.67
All other crashes	5	83.33
TOTAL	6	100

Note: Some crashes involve more than one vulnerable road user type.

Note: Motorcycle stats include Mopeds.

Road environment statistics

Road type

Road type	State highway	Local road	Unknown	N/A	Total	Percentage (%)
Urban	0	0	0	0	0	0.00
Open	6	0	0	0	6	100.00
Unknown	0	0	0	0	0	0.00
TOTAL	6	0	0	0	6	–
Percent	100.00	0.00	0.00	0.00	100.00	–

Natural light conditions

Conditions	Injury	Non-injury	Total	%
Light/overcast	2	2	4	66.67
Dark/twilight	1	1	2	33.33
Unknown	0	0	0	0.00
TOTAL	3	3	6	100

Conditions

Conditions	Injury	Non-injury	Total	%
Dry	3	2	5	83.33
Ice or Snow	0	0	0	0.00
Wet	0	1	1	16.67
Null	0	0	0	0.00
TOTAL	3	3	6	100

Intersection/midblock

Intersection/mid-block	Total	%
Intersection	3	50.00
Midblock	3	50.00
TOTAL	6	100

Vehicles involved in injury crashes (vehicle count)

Vehicle type	No. of vehicles	% of vehicles in injury crashes
Car/Wagon	4	66.67
SUV	0	0.00
Van	0	0.00
Ute	0	0.00
Truck	0	0.00
Truck HPMV	0	0.00
Bus	0	0.00
Motorcycle	2	33.33
Moped	0	0.00
Train	0	0.00
Cycle	0	0.00
Other	0	0.00
Unknown	0	0.00
50 Max	0	0.00
Left scene	0	0.00
Uncoupled towed vehicle	0	0.00
TOTAL	6	100.00

Vehicles involved in injury crashes (crash count)

Vehicle type	Injury crashes	% of injury crashes
Car/Wagon	2	66.67
SUV	0	0.00
Van	0	0.00
Ute	0	0.00
Truck	0	0.00
Truck HPMV	0	0.00
Bus	0	0.00
Motorcycle	1	33.33
Moped	0	0.00
Train	0	0.00
Cycle	0	0.00
Other	0	0.00
Unknown	0	0.00
50 Max	0	0.00
Left scene	0	0.00
Uncoupled towed vehicle	0	0.00
TOTAL	3	100.00

Objects struck

Objects struck	Injury crashes	%	Non-injury crashes	%
Crashes w/obj struck	1	16.67	3	50.00

Object struck	Injury crashes	%	Non-injury crashes	%
Animals	0	0.00	0	0.00
Bridges/Tunnels	0	0.00	0	0.00
Cliffs	0	0.00	1	16.67
Debris	0	0.00	0	0.00
Embankments	0	0.00	0	0.00
Fences	0	0.00	1	16.67
Guide/Guard rails	0	0.00	0	0.00
Houses	0	0.00	0	0.00
Traffic Islands	0	0.00	0	0.00
Street Furniture	0	0.00	0	0.00
Kerbing	0	0.00	0	0.00
Landslips	0	0.00	0	0.00
Parked vehicle	1	16.67	0	0.00
Trains	0	0.00	0	0.00
Sight Rails	0	0.00	0	0.00
Poles	0	0.00	0	0.00
Stationary Vehicle	0	0.00	0	0.00
Roadwork	0	0.00	0	0.00
Traffic Sign	0	0.00	0	0.00
Trees	0	0.00	0	0.00
Drainage Structures	0	0.00	1	16.67
Ditches	0	0.00	1	16.67
Other	0	0.00	0	0.00
Thrown or dropped objects	0	0.00	0	0.00
Water	0	0.00	0	0.00
TOTAL	1	–	4	–

Note: % represents the % of crashes in which the object is struck.

Vehicle usage in injury crashes

Vehicle usage	Fatal Crash	Serious Crash	Minor Crash	Total	Percentage (%)
Private	0	4	2	6	100.00
Attenuator Truck	0	0	0	0	0.00
Agricultural	0	0	0	0	0.00
Ambulance	0	0	0	0	0.00
Campervan	0	0	0	0	0.00
Concrete mixer	0	0	0	0	0.00
Fire	0	0	0	0	0.00
Logging truck	0	0	0	0	0.00
Mobile crane	0	0	0	0	0.00
Police	0	0	0	0	0.00
Rental	0	0	0	0	0.00
Road Working	0	0	0	0	0.00
Scheduled service Bus	0	0	0	0	0.00
School bus	0	0	0	0	0.00
Tanker	0	0	0	0	0.00
Taxi	0	0	0	0	0.00
Tour Bus	0	0	0	0	0.00
Trade person	0	0	0	0	0.00
Work travel	0	0	0	0	0.00
Work vehicle	0	0	0	0	0.00
Other	0	0	0	0	0.00
Null	0	0	0	0	0.00
TOTAL	0	4	2	6	–
Percent	0.00	66.67	33.33	100.00	–

Time period statistics

Month by injury/ non-injury crashes

Month	Injury crashes	%	Non-injury crashes	%	Total	%
Jan	0	0	0	0	0	0
Feb	0	0	0	0	0	0
Mar	0	0	0	0	0	0
Apr	1	33.33	1	33.33	2	33.33
May	0	0	0	0	0	0
Jun	0	0	0	0	0	0
Jul	0	0	1	33.33	1	16.67
Aug	0	0	0	0	0	0
Sep	1	33.33	0	0	1	16.67
Oct	0	0	0	0	0	0
Nov	1	33.33	1	33.33	2	33.33
Dec	0	0	0	0	0	0
TOTAL	3	100	3	100	6	100

Day/period

Day/Period	All crashes	% All crashes
Weekday	5	83.33
Weekend	1	16.67
TOTAL	6	100

Day/period by hour

Day/Period	00:00 - 02:59	03:00 - 05:59	06:00 - 08:59	09:00 - 11:59	12:00 - 14:59	15:00 - 17:59	18:00 - 20:59	21:00 - 23:59	Total
Weekday	0	0	1	0	2	1	1	0	5
Weekend	0	0	0	0	1	0	0	0	1
TOTAL	0	0	1	0	3	1	1	0	6

Day/period by hour DOW

Day/Period	00:00 - 02:59	03:00 - 05:59	06:00 - 08:59	09:00 - 11:59	12:00 - 14:59	15:00 - 17:59	18:00 - 20:59	21:00 - 23:59	Total
Mon	0	0	0	0	1	0	0	0	1
Tue	0	0	1	0	0	1	0	0	2
Wed	0	0	0	0	0	0	1	0	1
Thu	0	0	0	0	1	0	0	0	1
Sun	0	0	0	0	1	0	0	0	1
TOTAL	0	0	1	0	3	1	1	0	6

Appendix D Mount Munro Windfarm Port to Site Routes Assessment May 2023 v6

REPORT

Tonkin+Taylor

Mount Munro Windfarm

Update to Port to Site Assessment

Prepared for
Meridian Energy Limited
Prepared by
Tonkin & Taylor Ltd
Date
September 2023
Job Number
1016884.1000 v2

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Document control

Title: Mount Munro Windfarm					
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by:
21/06/2023	1	DRAFT for client review	T Breitenmoser	B Rodenburg	B Symmans
07/09/2023	2	Issue for consent application	T Breitenmoser	B Rodenburg	B Symmans

Distribution:

Meridian Energy Limited	1 copy
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Executive summary

In July 2021, Tonkin & Taylor Ltd (T+T) completed a port to site assessment for the proposed Mt Munro Wind Farm in the lower North Island. The purpose of the assessment was to provide information on the practicality of delivering turbine components to the site. Transport route options from five North Island posts were assessed.

The July 2021 assessment was completed considering transportation of the Siemens Gamesa SWT-DD-120 wind turbine, with a blade length of 59 m. The maximum weight assessed was the transformer – with an indivisible load of 120 tonnes.

However, as the project has progressed a larger turbine blade is being considered. This report outlines the update to the port to site assessment to consider a turbine blade length of up to 67 m. There has been no change to the maximum weight assessed.

This update to the port to site assessment has been completed considering only the two ports considered most feasible. Therefore, the two routes assessed in this update to the port to site assessment are:

- Napier Port; and
- Centre Port (Wellington).

Options and constraints.

The ability of the transport routes to be used for different turbine components and transformer loads is summarised in Table 1.1.

Table 1.1: Summary of constraints for each port to site route

Port	Weight			Length	Height (4.8 m)
	Transformer (120 t)	Nacelle (98 t)	Tower section (80 t)	Blade (67 m)	
Napier Port	✓[1]	✓[1]	✓[1]	✓	✓
Centre Port (Wellington)	✓	✓	✓	✓	✓

1 Subject to further assessment of structures on local road diversion routes around constraints on the state highway network.

Cost estimates

The costs of modification to the State Highway network and length of local road to the site access for the different delivery options for turbine components are shown in Table 1.2 below.

Table 1.2: Summary of cost estimates for each port to site route

Port	Weight	Length/Height[1]
Napier Port	$0.3 to $0.5 M	$1.2 to $2.1 M
Centre Port (Wellington)	$No cost	$1.3 to $2.2 M

1 Based on estimated construction rates and scope of work required for each modification required. Range applied to cost estimate -20% to +40%

Cost estimates do not include transporter costs, the temporary removal and replacement of roadside signage, streetlights and overhead power cables, or traffic management. Further engagement with transporters will be required to determine a cost estimate for these.

Meridian should note that a level of contingency has been applied to the cost estimates for physical modifications. However, Meridian may also wish to apply additional risk contingency to the totals reported in Table 1.2 above.

These costs are for physical works only. It is therefore recommended that Meridian add an allowance for professional services costs, client managed costs and contractor costs.

Risks and opportunities

It should be noted that the cost estimates are primarily based on a desk top assessment. Ground truthing may increase or decrease costs. It would be prudent to add a risk component to these costs until further work on transport routes is undertaken.

Local road diversion routes around constraints such as under strength/too low structures on the state highway network are required on all routes. There are smaller structures on these diversion routes which we have been unable to obtain desktop information for assessment. These should be further assessed as part of ground truthing.

Where a weight constraint has been identified along the state highway network, cost estimates assume that full replacement of the bridge is required. Potential cost savings may be available if bridges can be strengthened, rather than fully replaced.

Recent innovation in blade transporting using a blade manipulator trailer to lift the blade and reduce the effective length, as demonstrated recently for the Turitea Wind Farm[1], may present an opportunity to make the transport of blades easier and reduce costs in route modifications.

Summary

Based on this assessment of the specific turbine component specifications provided by Meridian, available information, and subject to reasonable route modifications where required, it is expected that the proposed turbine components can be transported to site.

[1] https://www.stuff.co.nz/business/125116033/turbine-blades-tilt-for-their-journey-to-the-ridges-above-palmerston-north

1 Introduction

Meridian Energy Limited (Meridian) is considering development of a new wind farm (Mount Munro Windfarm) in the Lower North Island, approximately five kilometres south of Eketāhuna. T+T have been engaged by Meridian to provide an update to the port to site assessment for the Mount Munro Windfarm project.

This work has been undertaken by T+T in accordance with T+T's offer of service dated 11 October 2021.

1.1 Previous work

A port to site assessment was completed in July 2021. This is documented in T+T report *Mount Munro Windfarm: Port to Site Routes Assessment* (version 2, issued July 2021).

The purpose of this report was to assess the port to site considerations for the transport of large turbine components. The feasibility of five port to site routes were assessed.

This assessment was completed considering transportation of the Siemens Gamesa SWT-DD-120 wind turbine, with a blade length of 59 m. The proposed transformer option advised by Meridian had a weight of 120 tonnes.

The transport routes assessed were from the following ports to the wind farm site;

- Ports of Auckland;
- Port of Tauranga;
- Napier Port;
- Taranaki Port; and
- Centre Port (Wellington).

The report was peer reviewed by WSP[2] in June 2021. Following this peer review, the report was updated and finalised.

1.1.1 Summary of July 2021 assessment

The ability of the transport routes to be used for different turbine components and transformer loads is summarised in Table 1.1.

[2] WSP memorandum – Mt Munro Port to Site Feasibility Review 21 June 2021. File Ref 5-C4317.00.

Table 1.1: Summary of constraints for each port to site route, as identified in the July 2021 assessment

Port	Weight			Length	Height
	Transformer (120t)	Nacelle (98t)	Tower section (80t)	SWT-DD-120 (59m)	
Ports of Auckland	✓1	✓1	✓1	✓	X
Port of Tauranga	Only if upgraded	Only if upgraded	Only if upgraded	✓	✓
Napier Port	✓1	✓1	✓1	✓	✓
Port Taranaki	X	X	X	✓	✓
Centre Port (Wellington)	✓1	✓1	✓1	✓	✓

1 No assessment of structures along local road diversions was completed. Therefore, in the July 2021 assessment, the feasibility of each route outlined above was subject to further assessment of structures on local road diversion routes around constraints on the state highway network.

Based on the July 2021 assessment of the specific turbine component specifications provided by Meridian, available information, and subject to reasonable route modifications where required, it was concluded that the proposed turbine components could be transported to site. It was concluded that the only two routes along which all components could be transported were from Napier and Wellington to the site. There were several routes or combination of routes that provided for transport of overweight and oversize components that did not have any fatal flaws. The most significant potential constraints identified were those on the off-highway bypass routes.

1.2 Update to Port to Site Assessment

Meridian are considering installation of larger wind turbines, with a diameter of up to 136 m diameter (67 m blade length). Consideration for turbine componentry transit for this larger turbine blade size is also required. As outlined in Section 1.1.1, based on the previous port to site assessment, the two port options considered the most likely by Meridian were Napier and Wellington. This updated assessment has therefore only considered these two routes.

1.3 Comparison of Port to Site Assessments

A comparison between the assessment parameters of the July 2021 and this update to the port to site assessment are shown in Table 1.2 below.

Table 1.2: Port to site assessments completed for Mount Munro Windfarm

Assessment	Routes assessed		Maximum Weight		Maximum Length (m)	Maximum Height (m)
	Number of routes	Ports	Component	Weight (tonnes)		
July 2021	5	Auckland, Tauranga, Taranaki, Napier, Wellington	Transformer	120	59	4.8
June 2022	2	Napier, Wellington	Transformer	120 (no change)	67	4.8 (no change)

2 Methodology

This assessment has been completed primarily as a desktop review of routes between the two ports and the site access.

2.1 Vehicle tracking

Along each of the two port to site routes the vehicle tracking has been updated. Previously, a maximum blade length of 59 m was assessed. This was increased to a length of 67 m. This assessment is a desktop study, based on aerial views and Google street view only.

2.1.1 Routes

The two routes considered in this assessment are:

- Napier Port to site (200 km); and
- Centre Port (Wellington) to site (220 km).

These port to site route assessments extend from each port to the State Highway Two (SH2)/local road intersection, and the local road to the site, accessed off Old Coach Road. The two routes outlined in this report are those which we believe would be the most feasible. These are based off Waka Kotahi approved over-dimension routes and specific restrictions noted by the Waka Kotahi permit process.

2.2 Weight

2.2.1 July 2021 assessment

In the July 2021 assessment, the maximum weight assessed was the transformer. The transformer is an indivisible load with a weight of 120 tonnes. Including the weight of the truck, trailer and second tractor unit, the maximum gross weight considered in the July 2021 assessment was 240 tonnes.

Waka Kotahi have strict controls on the weight and axle loads of overweight vehicles to protect the state highway road network assets. Overweight permits are required where indivisible loads exceed permitted axle loads.

Overweight Feasibility Studies for transport of this transformer load were requested from Waka Kotahi and received on 28 April 2021.

Where a constraint on the state highway network was identified, alternative local road diversion routes were proposed – either for just the transport of the wind turbine blades or for all components. The maximum gross weight along the route was either that of the transformer (240 tonnes) or the blades (assumed to be 42 tonnes). Structures on these diversion routes are not assessed as part of the Waka Kotahi Overweight Feasibility Study. Use of the local road diversion routes will be subject to Council approval which has not been considered for this assessment. Council will require assurance that overweight loads will not adversely impact their road network assets. For this high-level assessment, Local Councils were not engaged. Where a diversion along local roads was required, weight constraints have been identified but not further assessed.

2.2.2 Update to assessment

Despite consideration of larger wind turbines, Meridian have advised that the overall capacity of the project is comparable to the previous assessment. A transformer weight of 120 tonnes is still considered to be the maximum indivisible load. This will be transported to the intersection of SH2 and Kaiparoro Road.

Therefore, no update to the Overweight Feasibility Assessments previously received from Waka Kotahi are required.

The reports for each route are attached in Appendix C for reference and the route constraints noted in Table 3.1 below.

2.3 Drive over

Between completion of the July 2021 report, and the June 2022 report, a site visit was completed to assess the transport considerations of the project. Drive overs of sections of the route were completed to check assumptions made based on the available desktop information. This was not a full drive over and does not replace the need for assessment by a transport operator. Key sites visited were:

- Waipukurau bypass along Ongaonga Road;
- Norsewood bypass;
- Woodville bypass; and
- Eketāhuna bypass.

2.3.1 Waipukurau bypass

A bypass was proposed along Ongaonga Road. This bypass is required due to a length constraint through Waipukurau. As such, this bypass is only required for transport of the wind turbine blades, with a maximum componentry weight of 42 tonnes.

The key constraint along this route is a 22 m long bridge across Kahahakuri Stream (Figure 2.1 and Figure 2.2 below). The bridge was constructed in 1966.

Figure 2.1: Kahahakuri Stream Bridge on Ongaonga Road

Figure 2.2: Kahahakuri Stream Bridge on Ongaonga Road

2.3.2 Norsewood bypass

A bypass was proposed along Hovding Street. This bypass is required due to a height constraint under a 4.8 m high rail bridge. A diversion route was identified along Hovding Street. An opportunity to remove fencing and cross directly back to SH2 was identified. Following the drive over, it was concluded more likely to divert back from Hovding Street to SH2 prior to the bridge if required. This also removes the need to strengthen the bridge along Hovding Street.

2.3.3 Woodville bypass

A diversion along Nelson Street, Range Road and Troup Road East was proposed. This bypass is required due to a length constraint on SH2. Drive over of a number of different routes through Woodville was completed. As such, this bypass is only required for transport of the wind turbine blades.

Combined with vehicle tracking, the preferred route is considered to be along Tay Street and Station Street. This will avoid the two bridges and two railway crossings that would be required along Range Road.

2.3.4 Overhead powerlines

There is a substantial number of overhead power lines crossing the proposed routes. We consider a rate of two per kilometre[3] of route is a conservative estimate, noting that this is much lower sections of the road (for instance most crossings on the Wellington motorway network are underground). We estimate that approximately a quarter of these will require raising, but this will be dependent on the transport provider engaged and their specific equipment.

[3] Between Eketāhuna and Waipukurau (120km) we counted approximately 200 locations where power lines cross the route. This has been extrapolated as a reasonable estimate for the entire route.

3 Update to constraints

Potential constraints identified are shown on the Route Plans in Appendix A and listed in the route constraint tables in Appendix B. Where a Waka Kotahi approved diversion route is available, the length constraints along these routes have also been identified through vehicle tracking. We have assumed that the vertical curves along the State Highway network do not present any constraints.

3.1 Length

Vehicle tracking has been updated along the Napier and Wellington routes. Based on the updated tracking, the following additional/changed constraints were identified along the Napier route:

- Pedestrian crossing infrastructure at Dannevirke (near Miller Street)

Based on the updated tracking, the following additional/changed constraints were identified along the Wellington route:

- Roberts Line/Mihaere Drive roundabout; and
- Tight left turn at Roberts Line/SH3 intersection.

The most likely bypass route for transport of the turbine blades through Woodville (both routes) is now considered to be along Tay Street and Station Street. The following constraints are present:

- Tight left turn from SH2/Tay Street intersection;
- Tight right bend along Tay Street; and
- Tight left turn from Station Street/SH2 intersection.

3.2 Weight

As outlined in Section 2.2, no update to the Overweight Feasibility Assessments has been completed. The Overweight Feasibility Assessments for the two routes are attached in Appendix C.

As outlined in Section 2.3, the recommended local road diversion routes have been refined. Therefore, the only local road bridge that is now considered unavoidable is the Kahahakuri bridge, along the Ongaonga Road bypass.

3.3 Height

There is a substantial number of overhead power lines crossing the proposed routes. Applying the estimates described in Section 2.3.4 to each route this gives;

- Port of Napier (200 km) would have approximately 100[4] power lines to be temporarily raised and reinstated; or
- CentrePort (220 km) would have approximately 110[5] power lines to be temporarily raised and reinstated.

The cost estimates included in this report do not include these works, as it has been assumed that the cost associated with this will be included in transporter costs.

In addition overbridges at Eketāhuna (both routes) and Norsewood (Napier route only) are height constraints. Both have local road diversion routes as described in Appendix B.

[4] 200km x 2 (powerlines per km) x 0.25 (quarter of powerlines require raising) = 100
[5] 220km x 2 (powerlines per km) x 0.25 (quarter of powerlines require raising) = 110

3.4 Costs

High-level comparative cost estimates have been prepared for the modifications required to enable each route to carry the turbine components. Estimates of ranges for the common modifications are summarised below in Table 3.1. For physical works we have estimated a cost range of -20% to +40% rounded to the nearest round number.

These ranges are applied in Section 4 to determine high-level comparative cost estimates of the expected modifications required to enable each route option to carry the turbine components.

The development of these costs has been done as a desktop exercise. There is a risk that the estimates have not identified the full costs. The full cost can only be reliably estimated when ground truthing takes place. We therefore recommend that Meridian may want to add an additional risk factor.

These estimates are for physical works only and do not include allowance for professional services costs, client managed costs or contractor costs. We recommend that Meridian add an allowance for this.

Table 3.1 High level modification cost estimates

Modification	High level cost estimate	Comments
Temporary removal and replacement of roadside signage, streetlights, and overhead power cables	Cost to be included in the transportation of the components.	• Assumed this will be undertaken by the transport staff as they approach and pass each location.
Temporary removal and replacement of overhead signage (mounted on roadside poles)	$35k to $75k	• Allowing for five trips per turbine and to be lowered and replaced once per trip (20 turbines, 100 trips total). • If able to be undertaken by transport staff this would be more cost effective.
Temporary removal and replacement of overhead traffic signals or gantries	$100k to $170k	• Allowing for five trips per turbine and to be lowered and replaced once per trip (20 turbines, 100 trips total). • If able to be undertaken by transport staff this would be more cost effective.
Temporary removal and replacement of traffic signal poles	$50k to $100k	• Assumes temporary removal of signal poles or replacement with hinged poles. • If able to be undertaken by transport staff this would be more cost effective.
Temporary removal and replacement of railway level-crossing signs and infrastructure	$75 to $150k	• Allowing for removal and replacement of railway level-crossing signs and infrastructure.
Vegetation trimming (individual tree or per 50 m brush clearing)	$1.5k to $2.5k	• Once per location, no allowance for vegetation maintenance between loads.
Temporary removal and replacement of sheep/cattle fencing (per 50 m)	$2.5k to $5k	• Allowing for removal and replacement of fencing. • No allowance for acquisition, or approval to access and temporarily occupy private property.

Modification	High level cost estimate	Comments
Bank excavation (Per 50 m or part thereof, up to 150 cubic metres)	$10k to $20k	• Bank shaped to current profile (not changed to include benches or a changed slope). • Cleanfill disposal available. Disposal at general refuse rates will incur additional costs. • Hydroseed surface stabilisation. • Works within the road corridor. • Consents not allowed for (if required).
Intersection modification/ widening	$40k to $70k	• Once per location. • Allowing for temporary widening, removal of splitter islands and temporary asphalt. • Includes reinstatement at end of project (if required).
Approval to access and temporarily occupy non-developed private property (i.e., farmland or garden)	$100k	• Assumes a willing landowner. • Covers the costs of temporary occupation, fence and vegetation removal, rehabilitation and reinstatement, legal fees, and loss of use.
Replacement of Kahahakuri Stream bridge	$300k to $500k	• Estimate to replace span with new HN-HO-72 rated two lane concrete deck steel beam bridge in existing location with road closure during installation. This is subject to road controlling authority approval. • Estimate is based on discussions with Bridge It NZ on 3 June, 2022. • No allowance for ground improvement works that could be required to support bridge abutments. • Central Hawkes Bay District Council have offered to facilitate a structural review through their consultants (costs to be paid by Meridian) which would provide more certainty for this estimate.

Notes;

1 We have not allowed for transporter costs as this will be subject to negotiation between the transport contractor and Meridian. This may vary due to differing distances and other factors between each port.

2 Our estimate for property temporary occupation costs is preliminary and needs further verification.

3 Cost estimates do not include allowance for temporary traffic management.

4 The construction rates utilised for this high-level cost estimate are based on assumed design concepts, estimated quantities and a combination of recently submitted tender rates for similar projects within the regional area along with the latest available rates from QV Cost Builder database (formerly Rawlinsons). Consequently, a significant margin of uncertainty exists on the cost estimate and the contingency we have allowed should be considered as part of the cost rather than a potential add on.

5 No allowance has been included for cost escalation beyond 2022.

6 COVID-19 impacts: The derived rates are based on information and data obtained prior to COVID 19 being declared a pandemic by the World Health Organisation. New Zealand subsequently entering COVID 19 Alert Level 4 "lockdown" plus the global economic impacts of COVID 19 will have an impact on the construction industry in at least the immediate and medium term future. The significance and extent of COVID 19 impacts is uncertain at this time but likely to impact both labour and materials rates. We have not made any attempt to allow for the impact of COVID-19 in this estimate and recommend you seek specialist economic advice on what budgetary allowances you should make for escalation and changed construction costs post COVID 19.

3.5 Upcoming Waka Kotahi projects

Waka Kotahi's interactive projects map[6] and Arataki reports[7] (10-year guidance documents) were reviewed to identify any upcoming Waka Kotahi projects that could impact the transport of large turbine components. These are listed in Table 3.2 below.

Table 3.2 Upcoming Waka Kotahi Projects

Route	Name	Description	Assessment
Wellington	Te Ahu a Turanga: Manawatū Tararua Highway Project	Construction of a new road over the Ruahine Range between Woodville and Ashhurst. Completion estimated by the end of 2024.	Without construction of this highway, the route from Wellington and Taranaki to the site is not considered a feasible option.
Wellington	Peka Peka to Ōtaki Expressway	Construction of a four-lane expressway. Completion estimated late 2022.	Will improve feasibility of the Wellington route.
Wellington	Ōtaki to North of Levin	Construction of a new four-lane expressway from Ōtaki to North of Levin. Construction estimated 2025-2029.	Will improve feasibility of the Wellington route.

Table 3.2 only includes publicly notified projects recorded on the Waka Kotahi website. We have not considered any routine maintenance or general safety projects which are expected to have limited impact of the routes capacity to take wind turbine loads. This project list may also be subject to change with future releases of Waka Kotahi's National Land Transport Plans and should be reviewed at regular intervals.

[6] https://www.nzta.govt.nz/projects/
[7] https://www.nzta.govt.nz/planning-and-investment/planning/arataki/

4 Summary

Port	Approximate Route Distance (km)	Weight constraints	Length constraints	Height constraints	Estimated route modification costs
Napier Port	200 km (Napier – Hastings – Waipukurau – Woodville – Eketāhuna – Site entrance)	Central Hawkes Bay District Council will need to be engaged to determine if structures along local roads will require strengthening or replacement. The structures and maximum gross weights are: • A 22 m bridge on Ongaonga Road, Ongaonga (42 tonnes)	The 67 m blade is able to achieve tracking requirements with modifications to various intersections and constrained curves.	Thor Street overbridge, Norsewood (4.8 m clearance). An alternate route along Hovding Street exists. Rail bridge north of Eketāhuna (4.4 m clearance). An alternate route along Newman Road exists. Temporary raising or lowering and reinstatement of overhead powerlines and constraints required at various locations along the route.	Length/ Height: $1.2 to $2.1 M Weight: $0.3 to $0.5 M
CentrePort (Wellington)	240 km (Wellington – Tawa – Transmission Gully – Paraparaumu – Levin – Foxton – Sanson – Palmerston North – Ashurst – Woodville – Eketāhuna – Site entrance)	No constraints identified along State Highway network.	The 67 m blade is able to achieve tracking requirements with modifications to various intersections and constrained curves. Assumes Peka Peka to Ōtaki and the Te Ahu a Turanga: Manawatū Tararua Highway Projects are complete.	Rail bridge north of Eketāhuna (4.4 m clearance). An alternate route along Newman Road exists. Temporary raising or lowering and reinstatement of overhead powerlines and constraints required at various locations along the route	Length/ Height: $1.3 to $2.2 M Weight: No cost

From a transport assessment, both routes are considered feasible.

5 Risks and opportunities

The costs outlined in Section 4 are the best estimates of physical work costs associated with the level of detail at this stage of the assessment. These cost estimates are based on a desktop assessment and are indicative only. Ground truthing may increase or decrease costs. It would be prudent to add a risk component to these cost until further work on transport routes is undertaken. Cost estimates do not include transporter costs, the temporary removal and replacement of roadside signage, streetlights and overhead power cables or traffic management. Further engagement with transporters will be required to determine a cost estimate for this.

Travel along local roads is proposed, around diversions and at the site access. Diversions from the State Highway network are required around buildings restricting turns (Waipukurau and Woodville) and under-height structures (Norsewood and Eketāhuna).

There are also opportunities for reductions in costs. These include:

- Cost savings available for the Port of Napier route if the Kahahakuri Stream bridge can be strengthened (either permanent or temporarily propped) rather than fully replaced as has currently been priced;
- Potential for cost sharing of costs if Kahahakuri Stream bridge is replaced and Central Hawkes Bay District Council see benefit from the upgrade;
- Further optimisation of routes to minimise transportation costs. For example, transporting the turbine components from Wellington via SH57 could be investigated further. There is also an opportunity to transport blades from Auckland or Tauranga through the central North Island, while transporting heavier components from Napier via SH5; and
- Using innovative trailer configurations to reduce the length constraints along the route. This technology is being utilised to transport 55 m long wind turbine blades for the Turitea Wind Farm. Smith Crane and Construction have developed a trailer configuration that requires only one trailer at the front, tilting the blade to reduce the length to 27 m. A conversation with Smith Crane and Construction on 19 May 2021 indicate that transport of 59 m blades could be feasible, with the opportunity to significantly reduce civil works required for this project.

6 Applicability

This report has been prepared for the exclusive use of our client Meridian Energy Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

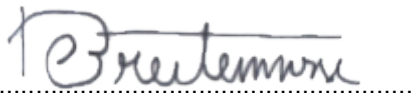
The construction rates utilised for this high level cost estimate are based on assumed design concepts, estimated quantities and a combination of recently submitted tender rates for similar projects within the regional area along with the latest available rates from QV Cost Builder database (formerly Rawlinsons). These rates are based on historic information and data and do not include allowance for any cost escalation since the date of the data other than where/as specifically stated.

Consequently, a significant margin of uncertainty exists on the cost estimate and the contingency we have allowed should be considered as part of the cost rather than a potential add on.

In particular, we have not made any attempt to allow for the potential impact of COVID-19 in this estimate. Also, supply chain disruptions are currently having quickly-changing effects on construction costs and schedules. We recommend you seek up-to-date specialist economic advice on what budgetary allowances you should make for escalation, including for any potential changes in construction costs and timing in relation to both COVID-19 and supply-chain issues.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:



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Senior Transport Engineer

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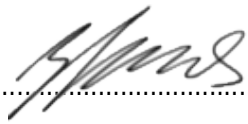

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Bruce Symmans

Project Director

TEBR

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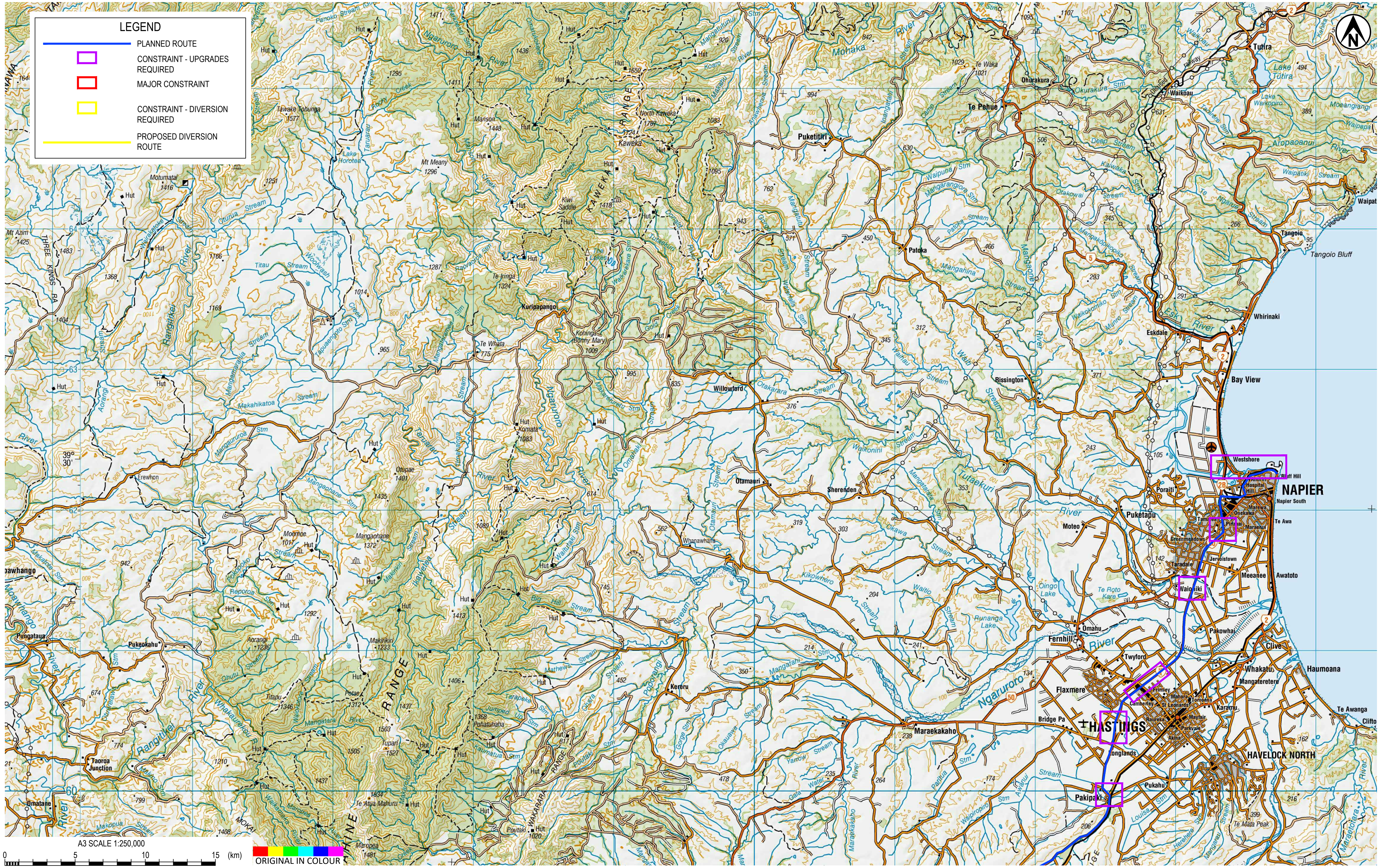
Appendix A Updated route plans

- Figures 1016884.0000-F21 to F23 (Napier)
- Figures 1016884.0000-F41 to F42 (Wellington)



NOTES:

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DRAWN	MROH	Apr. 21
CHECKED		
APPROVED	DATE	

CLIENT: MERIDIAN ENERGY

PROJECT: MT MUNRO - MEL WAIRARAPA WIND FARM

TITLE: PORT TO SITE ROUTE
NAPIER TO MT MUNRO WIND FARM SHEET 1

UNDER REVISION 1

SCALE (A3): AS SHOWN   FIG No. 1016884.0000-F21   REV 1

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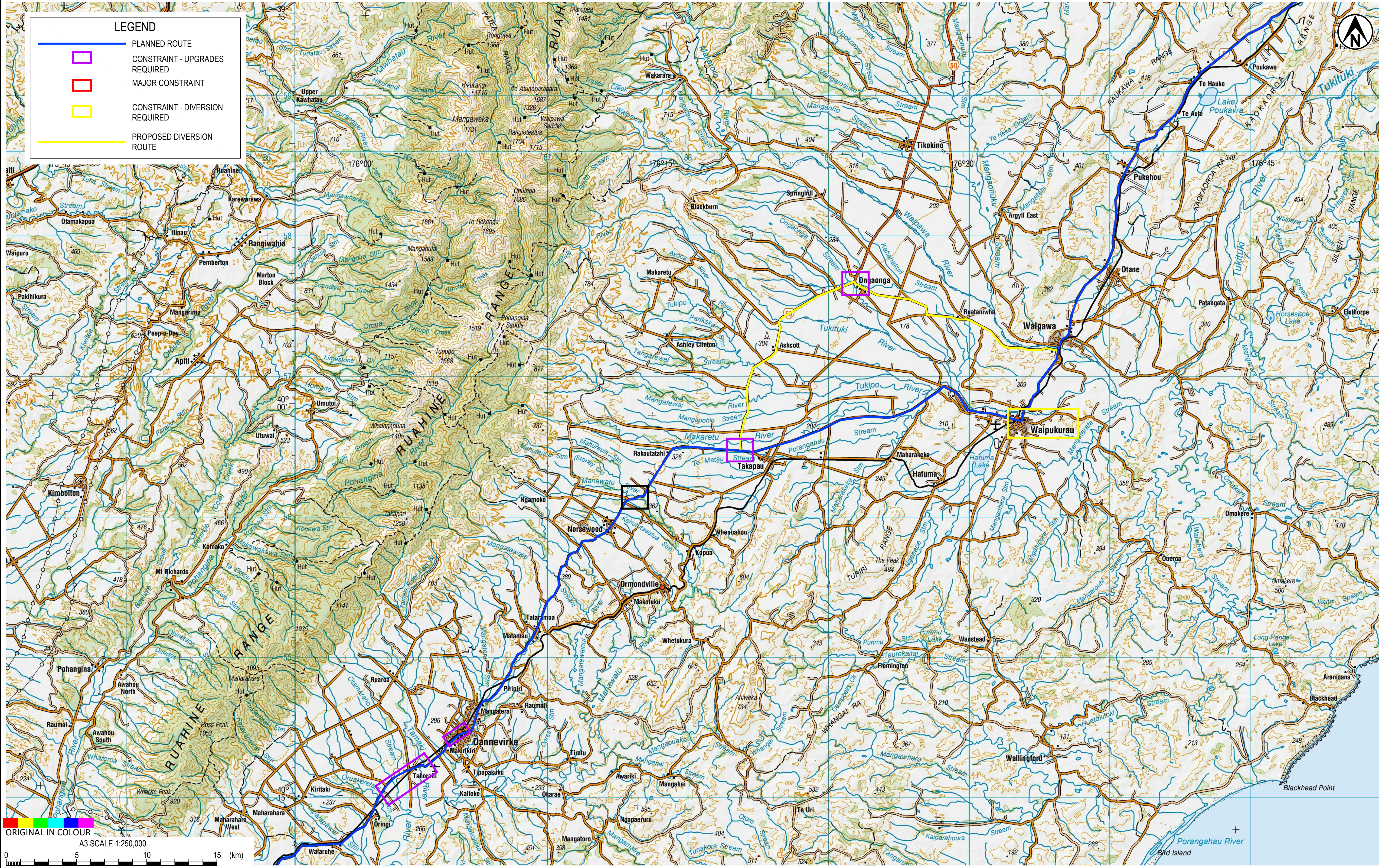

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PROJECT MT MUNRO - MEL WAIRARAPA WIND FARM

TITLE PORT TO SITE ROUTE
NAPIER TO MT MUNRO WIND FARM SHEET 2

UNDER REVISION 1

SCALE (A3) AS SHOWN FIG No. 1016884.0000-F22 REV 1

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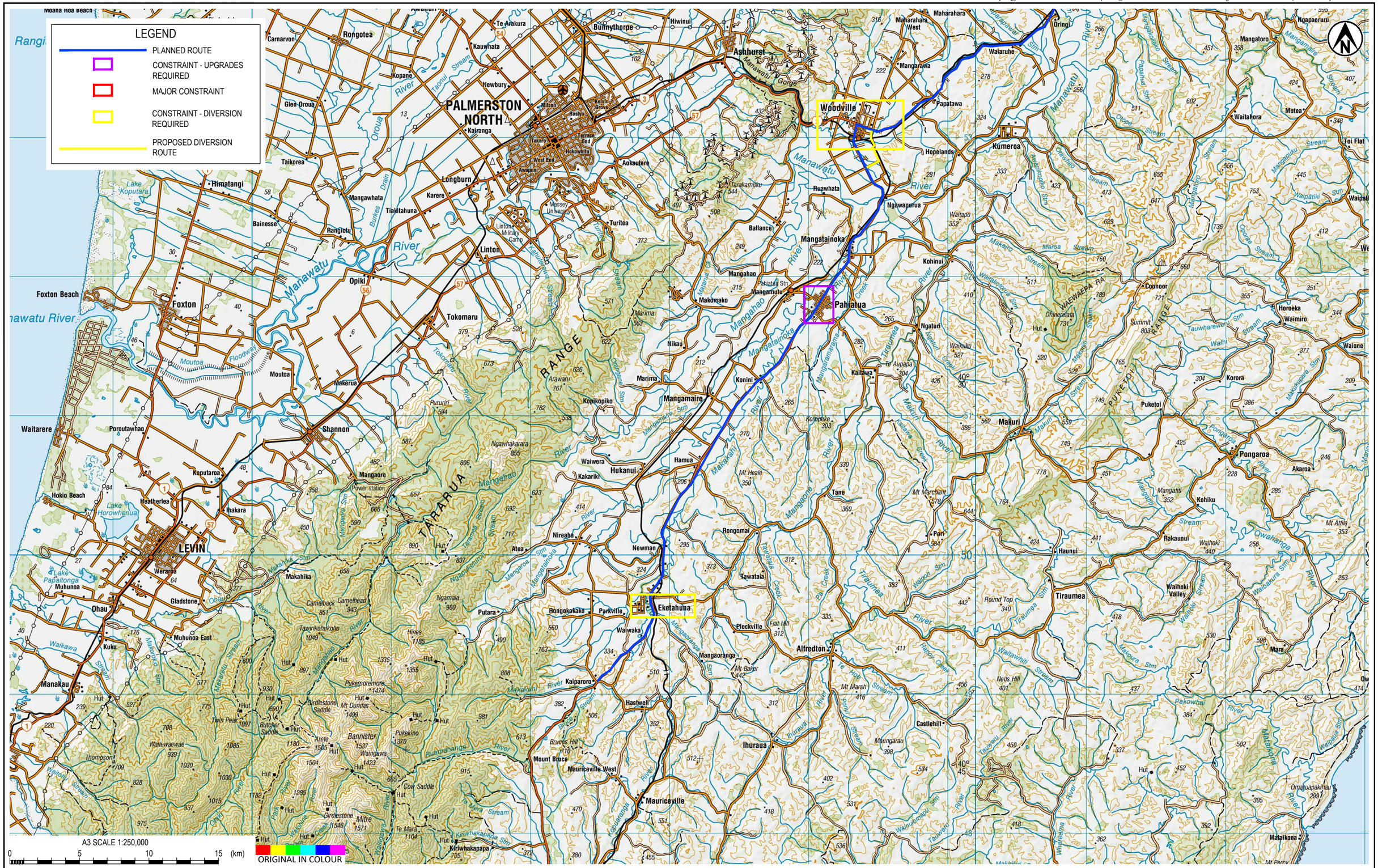

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TITLE PORT TO SITE ROUTE
NAPIER TO MT MUNRO WIND FARM SHEET 3

UNDER REVISION 1

SCALE (A3) AS SHOWN FIG No. 1016884.0000-F23 REV 1

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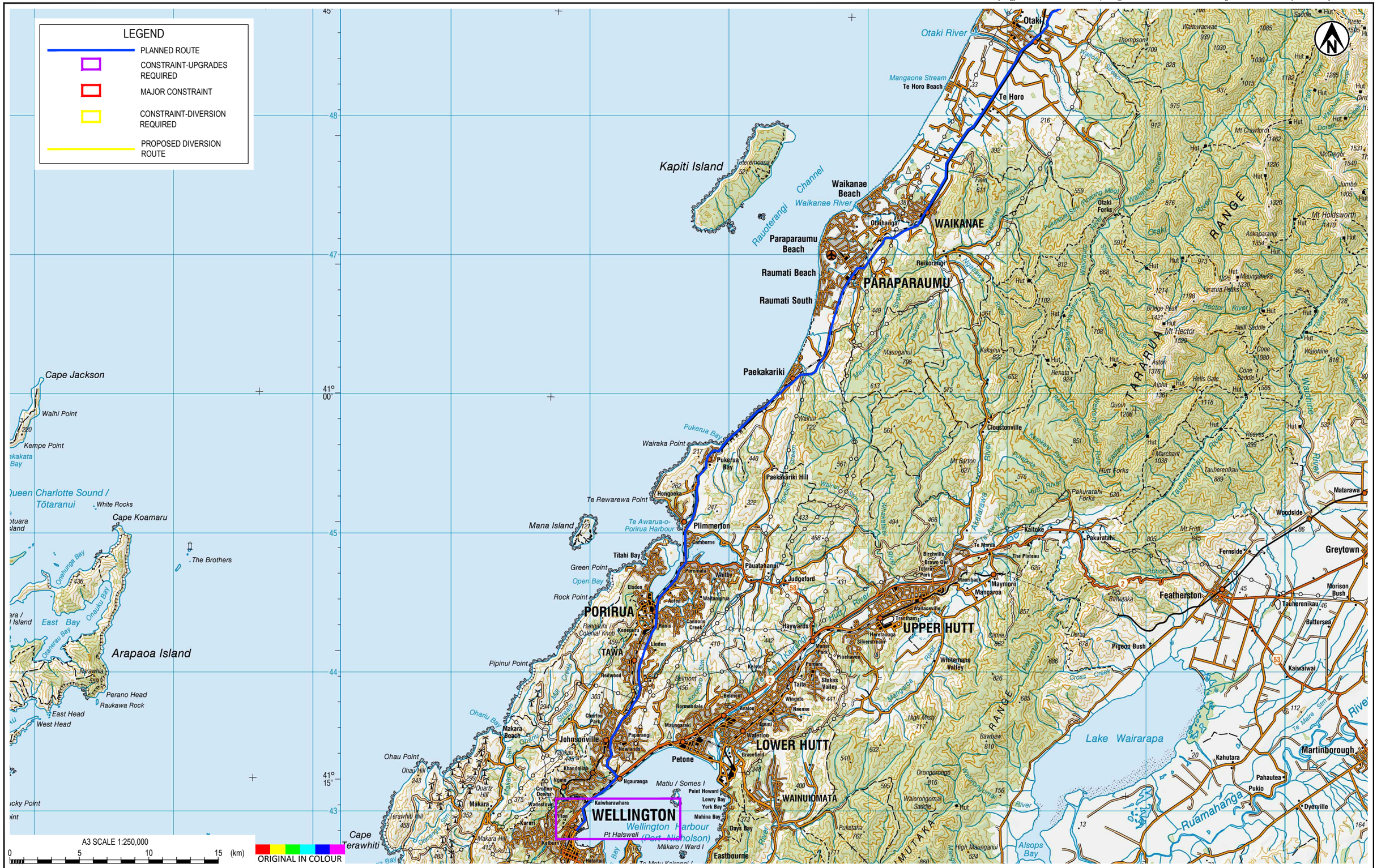

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CLIENT **MERIDIAN ENERGY**

PROJECT **MT MUNRO - MEL WAIRARAPA WIND FARM**

TITLE PORT TO SITE ROUTE
WELLINGTON TO MT MUNRO WIND FARM SHEET 1

UNDER REVISION 1

SCALE (A3) AS SHOWN FIG No. 1016884.0000-F41 REV 1

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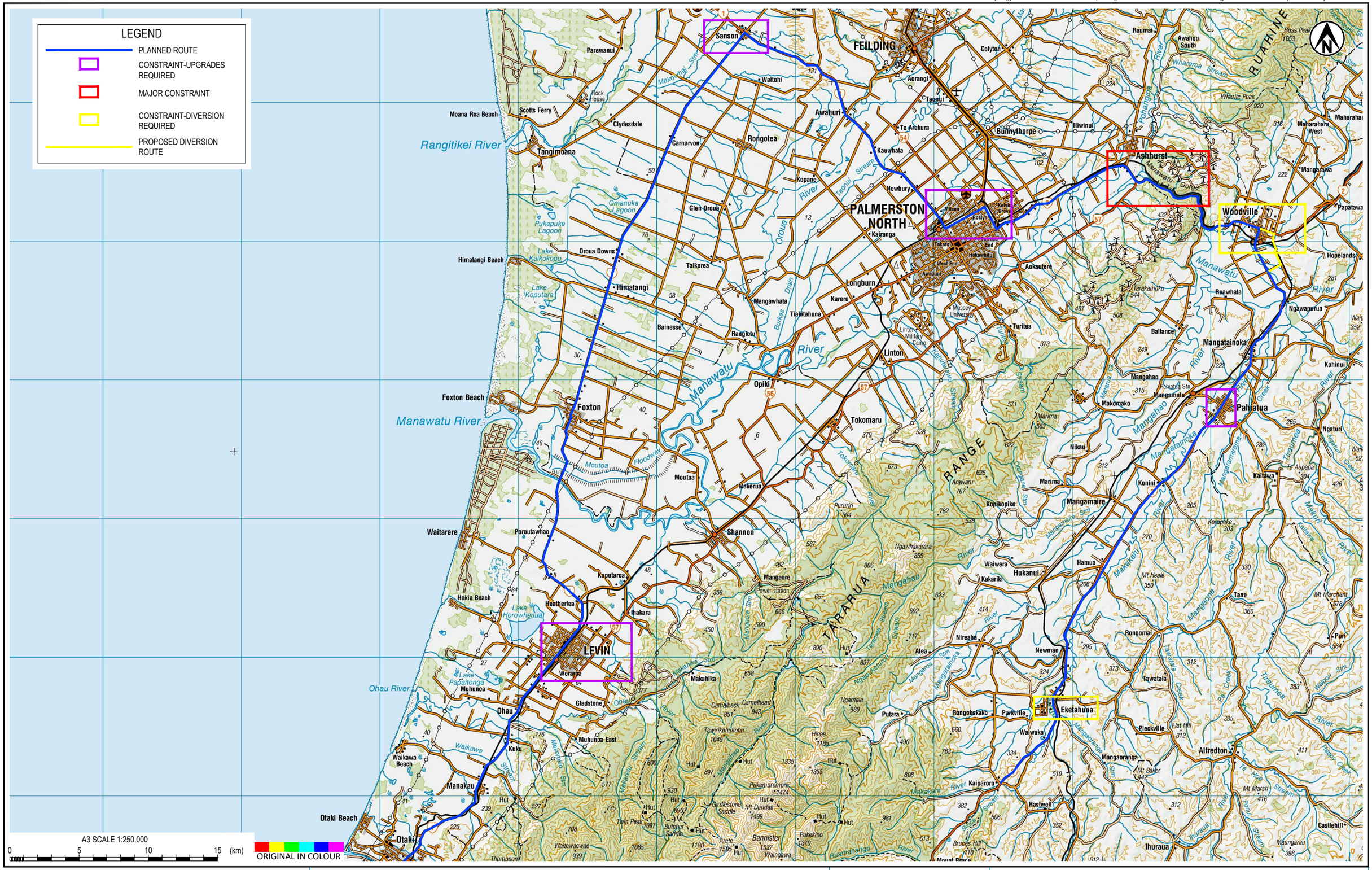

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PROJECT **MT MUNRO - MEL WAIRARAPA WIND FARM**

TITLE PORT TO SITE ROUTE
WELLINGTON TO MT MUNRO WIND FARM SHEET 2

UNDER REVISION 1

SCALE (A3) AS SHOWN FIG No. 1016884.0000-F42 REV 1

Appendix B Updated route constraint tables

B1.1 Updated route constraint tables

- B1 Napier
- B2 Wellington

B1.2 Route constraint table notes

1 Temporary raising or lowering and reinstatement of roadside signage, streetlights, and overhead power cables has been to be included in transporter costs and is not specifically identified below

2 Tables B1 and B2 are based on the route constraint tables produced for the 59m long blades and 120t indivisible load in July 2021. Most constraints are still a constraint for the updated assessment. Changes to the constraints previously reported in July 2021 are shown as follows;

- Additional constraints identified for passage of the 67 m long blades are shown in *red italics*
- Constraints no longer applicable due to a diversion route or reassessed following the drive over are shown ~~struck through~~
- Constraints not able to be temporarily addressed (for example buildings blocking passage or understrength bridge) and necessitating significant works or diversion have been made bold

B2 Napier

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Napier	Port of Napier	Port Access/Breakwater Rd	Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Traffic signals • Street furniture and signs
Napier	SH50	Customs Quay/Coronation St roundabout	The through movement of the trailer is restricted. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Widening of the existing bypass
Napier	SH50	SH50/Prebensen Dr-roundabout	Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Street furniture and signs
Napier	SH50	SH50/Ford Rd/Severn St roundabout	The through movement of the trailer is restricted. This may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Part of the central island
Napier	SH50	SH50/SH51 Roundabout junction	The through movement of the trailer is restricted. This may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Streetlights and signs
Napier	SH50	SH50/SH2 roundabout junction at Pakowhai Rd	The through movement of the trailer is restricted. This may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Part of the central island • Streetlights and signs

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Napier	SH2	SH2 roundabout with Evenden Rd	The through movement of the trailer is restricted. This may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Part of the central island • Streetlights and signs
Napier	SH2	SH2 roundabout with Omahu Rd	The through movement of the trailer is restricted. This may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Part of the central island
Napier	SH2	SH2 roundabout with York Rd	The through movement of the trailer is restricted. This may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Part of the central island
Napier	SH2	SH2 Roundabout with Maraekakaho Rd	The through movement of the trailer is restricted. This may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Part of the central island
Napier	SH2	Between Maraekakaho Rd and Railway Rd roundabouts	Possible restriction: Overhead powerlines
Napier	SH2	SH2 Roundabout with Railway Rd	The through movement of the trailer is restricted. This may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Part of the central island
Napier	SH2	SH2 Roundabout in Waipukurau	The right turn is extremely tight; The movement of the blade transporter cannot be accommodated due to adjacent buildings. Diversion route available via Ongaonga Road and SH50, as outlined below.

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Napier	Diversion route: SH50	Ongaonga Rd/SH50	Tight left turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Splitter island • Road signs • Overhead powerlines • Vegetation
Napier	Diversion route: SH2/ SH50 intersection	SH2/ SH50 intersection	Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Splitter island • Road signs • Vegetation
Napier	SH2	Between Waipukurau and Norsewood	Possible restriction; Overhead powerlines
Napier	SH2	Sharp bend in road north of Manawatu River bridge	Tight horseshoe bend with bank on the right hand side and gulley on the left hand side. Possible solution: Cutting of trees and cutting of embankment
Napier	SH2	Norsewood	Road Bridge Clearance 4.8 m Diversion available along Hovding St. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Widening of two intersections; • Roadside signs • Vegetation There is also an opportunity to remove fencing and cross directly back to SH2. Further investigation would be required.
Napier	*SH2*	*Dannevirke (near Miller Street)*	*Tight alignment through the pedestrian crossing. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed* • *Splitter island* • *Road signs*

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Napier	SH2	Between Dannevirke and Woodville	The following restrictions have been identified along the route between Dannevirke and Woodville: • Possible vegetation/tree removal • Overhead powerlines • Railway level crossing infrastructure (near Wi Duncan Road)
Napier	SH2	Between Dannevirke and Woodville	Possible restriction: Overhead powerlines
Napier	SH3/SH2	Woodville	The left turn is extremely tight; The movement of the blade transporter cannot be accommodated due to adjacent buildings. Diversion route available via Nelson Street, Range Road and Priest Road. Overhead powerlines and vegetation at various locations along the route.
Napier	*Diversion route at Woodville*	*Intersection SH2/Tay St*	*Tight left turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed:* • *Roadside signs* • *Shoulder widening* • *Vegetation removal*
Napier	*Diversion route at Woodville*	*Tay St*	*Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed:* • *Blade tracking crosses private property at 2 Tay St;* • *Vegetation* • *Fences* • *Shoulder widening*
Napier	*Diversion route at Woodville*	*Station St*	*Tight left turn. Utilise existing railway level crossing at yard.*
~~Napier~~	~~Diversion route at Woodville~~	~~Intersection SH2/Nelson St~~	~~Tight left turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed:~~ • ~~Roadside signs~~ • ~~Shoulder widening~~

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
~~Napier~~	~~Diversion route at Woodville~~	~~Nelson St~~	~~Tight S bend. Blade tail overhang may be accommodated if the following restrictions are modified:~~ ~~• Vegetation~~
~~Napier~~	~~Diversion route at Woodville~~	~~Range Rd at Railway line~~	~~Tight S bend across railway line. Blade tail overhang may be accommodated if the following restrictions are modified:~~ ~~• Railway crossing infrastructure~~ ~~• Vegetation~~ ~~• Power pole~~ ~~• Road signs~~
~~Napier~~	~~Diversion route at Woodville~~	~~Range Rd/Priest Rd~~	~~Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed:~~ ~~• Roadside signs~~ ~~• Shoulder widening~~ ~~• Utility pole~~
~~Napier~~	~~Diversion route at Woodville~~	~~Priest Rd/SH2~~	~~Tight left turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed:~~ ~~• Roadside signs~~ ~~• Shoulder widening~~
Napier	SH2	Pahiatua	Possible restriction: Overhead power cable crossings over traffic lanes.
Napier	SH2	Eketāhuna	Road Bridge Clearance 4.34 m Diversion available along Newman Rd. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Blade tracking crosses private property at 103 and 105 Newman Road; • Vegetation • Fences
Napier	SH2	Eketāhuna	Tight left turn bend. Blade tail overhang may be accommodated if the following restrictions are modified: • Streetlights • Road signs

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Napier	SH2	SH2/Old Coach Road Intersection	Tight left turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Road signs • Vegetation • Wooden fences

B3 Wellington

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Wellington	CentrePort Wellington	Port Exit -Whitmore Street-Lambton Quay Intersection	Possible restriction: Overhead power cable crossing over traffic lanes.
Wellington	Bunny Street	Whitmore St/Thorndon Quay intersection	Tight right turn onto Thorndon Quay. The blade end turn movement is restricted by: • Existing street furniture • Splitter islands • Traffic signals
Wellington	Thorndon Quay	Thorndon Quay bus station	Trees/signals
Wellington	Thorndon Quay	At Wellington Urban Motorway	Possible restriction: Overhead bridge
Wellington	Hutt Road	Intersection with railway and Aotea Quay	Possible restriction: Overhead bridge
Wellington	Hutt Road	At Aotea Quay intersection	Possible restriction: Overhead sign
Wellington	Hutt Road	Kaiwharawhara Rd intersection	Possible restriction: Overhead signal
Wellington	Hutt Road	Railway interchange just north of Onslow Rd	Possible restriction: Overhead bridge

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Wellington	SH1	Between Ngauranga Interchange and Porirua	The possible restrictions along SH1 are: • Overhead sign • Overhead bridge / Newlands interchange • Johnsonville south overpass • Johnsonville north overpass • Overhead bridge • Approx. 45 m Takapu Road • Overbridge • Approx. 45 m long bridge • Overhead signal • Long bridges along the route: (50m, 70m) • Overhead power cables
Wellington	SH1N	Levin	The possible restrictions along SH1N are: • Overhead bridge • Overhead signal
Wellington	SH1N	Sanson – SH1N/SH3 Intersection	Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Widen the right turn movement to include part of the parking area • Power poles (2) • Splitter islands (2) • Road signs
Wellington	SH3	SH3/ J F Kennedy Intersection	Possible restriction; • Overhead streetlight
Wellington	Tremaine Ave/SH3	Intersection Tremaine Ave and SH3	Tight left turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Overhead traffic signals

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Wellington	Roberts Line	Roberts Line/Mihaere Drive roundabout	The through movement of the trailer is restricted. This may be accommodated if the following restrictions are modified/ temporarily removed: • Two splitter islands • Part of the central island
Wellington	Roberts Line	Roberts Line/SH3	Tight left turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Roadside signs • Shoulder widening • Utility pole • Vegetation
Wellington	SH3	Manawatū Gorge	Current road closure for Te Ahu a Turanga: Manawatū Tararua Highway Project Te Ahu a Turanga: Manawatū Tararua Highway Project scheduled to be completed by 2024
Wellington	SH3/SH2	SH3/SH2 (Woodville)	The right turn is extremely tight; The movement of the blade transporter cannot be accommodated due to adjacent buildings. Diversion route available via Troup Road West. Vegetation clearance and intersection widening required along diversion route to accommodate swept path of blade
Wellington	Diversion route at Woodville	Intersection SH2/Tay St	Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Roadside signs • Shoulder widening Vegetation removal
Wellington	Diversion route at Woodville	Tay St	Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Blade tracking crosses private property at 2 Tay St; • Vegetation • Fences Shoulder widening

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Wellington	Diversion route at Woodville	Station St	Tight left turn. Utilise existing railway level crossing at yard.
~~Wellington~~	~~Diversion route along SH3/Troup Rd West~~	~~Intersection SH3 and Troup Rd West~~	~~Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed:~~ ~~• Roadside signs~~
~~Wellington~~	~~Diversion route at Woodville~~	~~Tight left bend along Troup Rd West~~	~~Tight left bend. Through movement of the trailer may be accommodated if the following restrictions are modified/ temporarily removed:~~ ~~• Shoulder widening~~
~~Wellington~~	~~Diversion route at Woodville~~	~~Troup Rd West~~	~~Tight 90° left bend. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed:~~ ~~• Shoulder widening~~
~~Wellington~~	~~Diversion route at Woodville~~	~~Intersection Troup Rd West and SH2~~	~~Tight right turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed:~~ ~~• Roadside signs~~ ~~• Shoulder widening~~
Wellington	SH2	Pahiatua	Possible restriction: Overhead power cable crossing over traffic lanes.
Wellington	SH2	Eketāhuna	Road Bridge Clearance 4.34 m Diversion available along Newman Rd. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Blade tracking crosses private property at 103 and 105 Newman Road; • Vegetation • Fences
Wellington	SH2	Eketāhuna	Tight left turn bend. Blade tail overhang may be accommodated if the following restrictions are modified: • Streetlights • Road signs

Port	Road/SH sections	Location/Intersection	Length and/or height constraints
Wellington	SH2	SH2/Old-Coach Road Intersection	Tight left turn. Blade tail overhang may be accommodated if the following restrictions are modified/ temporarily removed: • Road signs • Vegetation • Wooden fences

Appendix C Waka Kotahi Overweight Feasibility Assessments

- Port of Napier, Breakwater Road to SH2/Kaipararo Rd intersection
- Centreport Wellington to SH2/Kaipararo Rd intersection

NZ TRANSPORT AGENCY
WAKA KOTAHI

Feasibility No.: NP/S/21/0853

Tonkin+Taylor Ltd
PO Box 2083
Wellington 6140 **Attn: Tess Breitenmoser** **Cell: 027 8551715** **Phone: 04 3818560**

TSL No.

is hereby authorised to use (vehicle description): Special Project Transporter

Registered Nº(s): **TT Feas 1, TT Feas 2, TT Feas 3**

Feasibility Study Only - not for issue as an Overweight Permit

For the transport of: Substation transformer

On Route: **SH50 PON to SH2/Kaipararo Rd intersection**

Over the route specified below, subject to the conditions, restrictions, and maximum mass limits in this Permit.

VAI: **1.25**

Axle Number	1	2	3	4	5	6	7	8	9	10
Axle Type*	S	T	T	8	8	8	8	8	8	8
Individual Axle Mass Limit (kg)	6500	9000	9000	9500	9500	9500	9500	9500	9500	9500
Spacing from previous axle (m)	0.00	4.50	1.45	5.80	1.80	1.80	1.80	1.80	1.80	1.80
Tyre Size	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard

Axle Number	11	12	13	14	15	16	17	18	19	20
Axle Type*	8	8	8	8	8	8	8	8	8	8
Individual Axle Mass Limit (kg)	9500	9500	9500	9500	9500	9500	9500	9500	9500	9500
Spacing from previous axle (m)	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Tyre Size	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard

Axle Number	21	22	23	24	25	26	27
Axle Type*	8	8	8	S	S	T	T
Individual Axle Mass Limit (kg)	9500	9500	9500	5500	5500	7500	7500
Spacing from previous axle (m)	1.80	1.80	1.80	8.35	1.92	1.73	1.35
Tyre Size	Standard	Standard	Standard	Standard	Standard	Standard	Standard

* S=Single tyred axle, T=Twin tyred axle, 4=Four tyred oscillating axle, 8=Eight tyred oscillating axle, 12=Twelve tyred oscillating axle, 16=Sixteen tyred oscillating axle. The tyre sizes shall be as indicated above.

The total mass on any individual axle, axle set, or combination of axles must not exceed the sum of the mass limits shown for those axles in the table above.

Critical Conditions

The vehicle must not—

1. exceed the maximum permitted gross mass of **240,500** kilograms
2. exceed design limits, such as GVM
3. breach a travel restriction or requirement for a specified bridge or culvert.

Additional Conditions

1. *Separate Plant* - The carriage or towing of separate items of plant, equipment or materials not specifically nominated in the description of load is not permitted.
2. *Mass* - The mass of any axle shall not exceed the mass specified in this permit. The gross mass of the vehicle or combination of vehicles must not exceed the limit specified on the current certificate of loading issued to the vehicles.
3. *Authorised Agent* - The vehicle shall not be operated on a road or bridge under this permit when in the opinion of an authorised agent of the road controlling authority, as communicated to the operator, it would be contrary to public interest to do so.
4. *Non-Transferable* - This permit is not transferable either to other users of or to any vehicle other than the vehicle described by this permit.
5. *Weighing*- Police are authorised to divert vehicles up to five kilometres from the approved route for the purpose of weighing, provided under strength bridges are not included on the route.

ROUTE AND SPECIAL INSTRUCTIONS: Feasibility Study

This Feasibility Study has been issued as a guide to ascertain possible crossing restrictions for the vehicle combination listed under the following NZTA State Highway Route:

Hawkes Bay Region:

This permit covers State Highway and Napier City Council routes as specified below.

State Highway

Section	Highway	From RP	From Junction	To RP	To Junction
1	SH50	0 / 0.0		2 / 2.27	
PON SH50 to SH50/SH2 Intersection					
1	SH2	648 / 1.39		743 / 7.75	
SH2/SH50 intersection to SH2 CHB/Tararua District Bdry					

Local Authority Permit is required to travel on Local Authority roads not covered by this overweight permit.

For access to CHBDC please contact:

Central Hawke's Bay District Council – Shawn McKinley (06) 857 8060 shawn.mckinley@chbdc.govt.nz or
Ross Munroe (06) 857 8060 ross.munro@chbdc.govt.nz

Operator to obtain prior approval (at least 48 hours) to travel on Local Authority Roads

Manawatu Region:

Section	Highway	From RP	From Junction	To RP	To Junction
1	SH2	751 / 0.0		842 / 10.66	
SH2, from Norsewood Boundary to Kaipararo Rd Intersection, Eketahuna					

Special Instructions

1. **THIS PERMIT IS ISSUED FOR STATE HIGHWAY USE ONLY**

2. This permit does not cover travel on Local Authority Roads and prior approval must be obtained from the appropriate Local Authority to use their roads. (See below for Local Authority Contacts).

3. NOTE: Vehicle is to avoid moving through peak traffic hours. Vehicle travel times that apply to this permit are those that relate specifically to each type of vehicle as covered by the Land Transport Rule Vehicle Dimension and Mass 2016 Rule 41001.

6. Use bypasses when available.

Prior approval (at least 48 hours) must be obtained from the appropriate local authority to use the following bypasses:

SH 2 – Norsewood Subway **(if vehicle height exceeds 4.8m)**
South Bound Travel: SH2 Hovding Street, Norsewood, rejoin SH2
North Bound Travel: SH2 to Coronation Street to Upper Norsewood, Odin Street, rejoin SH2

Local Authority Contacts:

Tararua District Council – tmp@tararuaalliance.co.nz

Special Instructions

Requirement to observe permit conditions

A breach of weight limits specified on this form, or any permit condition, is an offence as provided in the *Land Transport (Offences and Penalties) Regulations 1999*.

Permit is invalid if:

a. The permit is altered without authority

b. The vehicles or persons operating the vehicles are not those described on the permit.

Revocation

This permit can be revoked, under clause 5.7 of the Rule.

Authorised Issuing Officer

	(Signature)
Angela O'Connor	(Name)
Permit Issuing Officer	(Designation)
(for) NZ Transport Agency	(Controlling Authority)
Napier	(Location)
207169 - 16 April 2021	(Permit Dated)

Advisory Notes:

1. This permit is an exemption from the mass limits set out in the Land Transport Rule: Vehicle Dimensions and Mass 2016, and does not authorise the user to exceed the exemption so permitted or exempt the user from complying with all other acts, regulations and other laws (including those relating to certificate of loading, road user charges or Static Roll Threshold).

2. This permit must be carried on the vehicle and must be surrendered for inspection on the demand of any enforcement officer, or an authorised agent of the NZ Transport Agency or a road controlling authority.

3. The conditions on the reverse of this form shall apply together with any other conditions on the attached sheets.

4. *Overdimension* - For the transport of vehicles and loads that exceed the limits specified in Section 6 of the Land Transport Rule: Vehicle Dimensions and Mass 2016, a separate permit must be obtained from the Overdimension Permit Issuing Agency (OPIA) at the NZ Transport Agency, Palmerston North. OPIA contact number 0800 OVERSIZE / 0800 683774.

5. *Railway Level Crossings* - Travel over level crossings is not fully covered by this permit. Operators of overweight and overdimension vehicles may require permission from KiwiRail or their agents for travel over railway level crossings

6. *Tyre pressure* - Tyres must be operated at the pressures recommended by either the manufacturer or the Tyre and Rim Associations but not exceeding the maximum pressures stated in the Land Transport Rule 32013: Tyres and Wheels 2001.

7. For copies of the HB and Gisborne route maps refer to NZ Transport Agency Overweight Permit Route Maps Manual – State Highway Section Pages 7 and 8 for the By-pass route for Hastings refer to Bypass Section Page 9 (available on our website www.nzta.govt.nz).

Fees Payable:

Permit Issuing Fee (As specified in 'Schedule' of the Land Transport certification and other fees) Regulations 2014	$18.18
Bridge Supervision Fee (0 Trips)	$0.00
Total Fee	$18.18
GST	$2.73
Total	$20.91

Critical Conditions: Bridge Restrictions

1. Engineering supervision of bridges is required during the trip authorised by this permit. For this purpose the user to whom this permit is issued shall contact the agents of the road controlling authorities nominated below at least **24 hours** in advance of the bridge crossing and arrange to meet the supervisor.

   The vehicle and its load shall be operated in strict accordance with all instructions given by the supervisor and it shall not proceed past the arranged meeting place without being instructed to do so by the supervisor.

   Note: (a) A police officer, unless specifically authorised by the road controlling authority, is not empowered to carry out bridge engineering supervision

   (b) If the operator fails to rendezvous within one hour of the time arranged and the supervised crossing(s) is/are postponed or cancelled, a fee of $40 will be charged (the equivalent of one supervised crossing).

2. Agents are:

	Agents:	**Telephone:**
All SH Bridges Listed except DO NOT CROSS	Self-Supervision. BESS certified drivers only. BESS ID Card or Letter Must Be Carried on Vehicle. Failure to produce VOIDS Permit NOTE: Traffic control requirements	
SH Bridges showing as DO NOT CROSS	DO NOT CROSS ON THIS PERMIT	

All NCC Bridges Listed except DO NOT CROSS	Self-Supervision. BESS certified drivers only. BESS ID Card or Letter Must Be Carried on Vehicle. Failure to produce VOIDS Permit NOTE: Traffic control requirements	
NCC Bridges showing as DO NOT CROSS	DO NOT CROSS ON THIS PERMIT	

3. Bridges requiring engineering supervision are
4.

Hawkes Bay Region:

Bridge No.	State Highway	Route Position	Bridge Name	BSN	Speed*	Position*	Risk to Other Vehicles*	GPS Co-ords N/E
1	2	651/0.64	Kennedy Road Overbridge (Incr Dir)	6516	20	Own Lane	Not Significant	5618709/1933399
2	2	651/4.87	Tutaekuri River Bridge (Incr Dir)	6559	10	Central	High	5615166/1931523
3	2	691/16.11	Kaikora Bridge (Incr Dir)	7071	20	Own Lane	Not Significant	5577821/1909668
4	2	707/6.82	Waipawa River Bridge (Incr Dir)	7138	10	1.56	High	5572083/1906382

Bridge No.	State Highway	Route Position	Bridge Name	BSN	Speed*	Position*	Risk to Other Vehicles*	GPS Co-ords N/E
5	2	707/12.31	Tukituki River (Waipukurau) Bridge (Incr Dir)	7193	10	Own Lane	Low	5567460/1903860
6	2	729/0.0	Maharakeke Stream Bridge (Incr Dir)	7290	10	Central	High	5568269/1896861

Manawatu Region:

Bridge No.	State Highway	Route Position	Bridge Name	BSN	Speed*	Position*	Risk to Other Vehicles*	GPS Co-ords N/E
1	**2**	**758/0.42**	**Mangatewai-Nui River Bridge (Incr Dir)**	**7584**	**10**	**Central**	**High**	**5557389/1871639**
2	2	758/11.13	Piri Piri Rail Overbridge (Incr Dir)	7691	10	Own Lane	Low	5548215/1866889
3	2	772/4.28	Tapuata Stream (Stanley St) Bridge (Incr Dir)	7763	20	Own Lane	Not Significant	5543935/1862900
4	2	772/11.97	Oringi North Rail Overbridge (Incr Dir)	7840	10	Own Lane	Low	5539133/1857564
5	2	772/15.75	Raparapawai Stream Bridge (Incr Dir)	7878	10	Own Lane	Low	5536697/1854877
6	2	788/0.7	Herberts Bridge (Incr Dir)	7887	50	Own Lane	Not Significant	5536672/1854018
7	2	808/0.0	Manawatu River (Ngawapurua) Bridge (Incr Dir)	8080	20	Own Lane	Not Significant	5525600/1845307
8	2	808/4.99	Mangatainoka River Bridge (Incr Dir)	8130	20	Own Lane	Not Significant	5521568/1842943
9	2	825/0.0	Makakahi River (Konini) Bridge (Incr Dir)	8242	50	Own Lane	Not Significant	5512556/1836607
10	2	842/2.79	Waiwaka No.2 Bridge (Incr Dir)	8448	20	Own Lane	Not Significant	5495844/1828870
11	**2**	**842/9.64**	**Makakahi River (Kaiparoro) Bridge (Incr Dir)**	**8516**	**10**	**Central**	**High**	**5490734/1824617**

*See the next page

4. The user to whom this permit is issued shall contact the police at least two working days in advance of the crossing of any bridge in the above list where "police control" is indicated and make arrangements for a police officer to be present to control other traffic during the supervised crossing.

5. Bridge Engineering Self Supervision is permitted only for the bridge listed and the person named in condition 2 above.

Critical Conditions: Bridge Restriction Requirements

A. SPEED

The speed of the overweight vehicle shall not exceed the value shown while on the bridge.

B. POSITION

The vehicle shall travel in the left hand lane on all bridges except those for which alternative bridge engineering supervision instructions are specifically provided in this permit.

Own Lane - the overweight vehicle shall travel in its own lane as far as is practicable.

Offset - the overweight vehicle shall travel so that its centre is at the indicated distance from the kerb on the left of the vehicle.

Central - the overweight vehicle shall travel on that part of the bridge most favourable to the structure. This shall be:

(i) central on the beam system for bridges with beams and concrete decks;
(ii) central between kerbs for slab bridges;
(iii) approximately central on the beam system but with wheels as near as possible over the beams for bridges with timber decks.

Opposite Bridge - the overweight vehicle shall use the bridge for the opposing traffic direction.

Ford or Bypass - the overweight vehicle **shall not cross the bridge** but use the adjacent ford or bypass.

C. TRAFFIC CONTROL

Other heavy vehicles proceeding in the same direction shall be spaced at least 30 metres from the overweight vehicle while it is on the bridge. Cars may be closer if necessary.

Where “offset”, “central” or “opposite bridge” is indicated for position, traffic travelling in the opposing direction shall be prevented from crossing the bridge while the overweight vehicle is on it.

Traffic control at bridge crossings shall be in accordance with the “Code of Practice for traffic control at bridges being crossed by overweight vehicles”

Traffic control requirements:

Risk to other vehicles	Traffic control requirements
Not significant	None required
Low	Overweight vehicle to have revolving amber light or flashing amber light visible from the rear together with rear facing retro-reflective hazard panels
High	Provide qualified traffic controllers or Class 1 or Class 2 certified pilots using approved industry procedures.

NZ TRANSPORT AGENCY
WAKA KOTAHI

NZ TRANSPORT AGENCY
WAKA KOTAHI

Feasibility No.: WN/S/21/0557

Tonkin+Taylor Ltd, PO Box 2083, Wellington 6140, Attn: Serene Saab, Fax: , Phone: 04 3818560

TSL No.

is hereby authorised to use (vehicle description): Special Project Transporter

Registered Nº(s): **TT Feas 1, TT Feas 2, TT Feas 3**

Feasibility Study Only - not for issue as an Overweight Permit

For the transport of: **1 x Substation Transformer**

On Route: **Centreport Wellington to SH2/ Kaipararo Rd Intersection, Eketahuna**

Over the route specified below, subject to the conditions, restrictions, and maximum mass limits in this Permit.

VAI: **1.25**

Axle Number	1	2	3	4	5	6	7	8	9	10
Axle Type*	S	T	T	8	8	8	8	8	8	8
Individual Axle Mass Limit (kg)	6500	9000	9000	9500	9500	9500	9500	9500	9500	9500
Spacing from previous axle (m)	0.00	4.50	1.45	5.80	1.80	1.80	1.80	1.80	1.80	1.80
Tyre Size	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard

Axle Number	11	12	13	14	15	16	17	18	19	20
Axle Type*	8	8	8	8	8	8	8	8	8	8
Individual Axle Mass Limit (kg)	9500	9500	9500	9500	9500	9500	9500	9500	9500	9500
Spacing from previous axle (m)	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Tyre Size	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard

Axle Number	21	22	23	24	25	26	27
Axle Type*	8	8	8	S	S	T	T
Individual Axle Mass Limit (kg)	9500	9500	9500	5500	5500	7500	7500
Spacing from previous axle (m)	1.80	1.80	1.80	8.35	1.92	1.73	1.35
Tyre Size	Standard	Standard	Standard	Standard	Standard	Standard	Standard

* S=Single tyred axle, T=Twin tyred axle, 4=Four tyred oscillating axle, 8=Eight tyred oscillating axle, 12=Twelve tyred oscillating axle, 16=Sixteen tyred oscillating axle. The tyre sizes shall be as indicated above.

The total mass on any individual axle, axle set, or combination of axles must not exceed the sum of the mass limits shown for those axles in the table above.

Critical Conditions

The vehicle must not—

1. exceed the maximum permitted gross mass of **240,500** kilograms

2. exceed design limits, such as GVM

3. breach a travel restriction or requirement for a specified bridge or culvert.

Additional Conditions

1. *Separate Plant* - The carriage or towing of separate items of plant, equipment or materials not specifically nominated in the description of load is not permitted.

2. *Mass* - The mass of any axle shall not exceed the mass specified in this permit. The gross mass of the vehicle or combination of vehicles must not exceed the limit specified on the current certificate of loading issued to the vehicles.

3. *Authorised Agent* - The vehicle shall not be operated on a road or bridge under this permit when in the opinion of an authorised agent of the road controlling authority, as communicated to the operator, it would be contrary to public interest to do so.

4. *Non-Transferable* - This permit is not transferable either to other users of or to any vehicle other than the vehicle described by this permit.

5. *Weighing*- Police are authorised to divert vehicles up to five kilometres from the approved route for the purpose of weighing, provided under strength bridges are not included on the route.

ROUTE AND SPECIAL INSTRUCTIONS: FEASIBILITY STUDY

This Feasibility Study has been issued as a guide to ascertain possible crossing restrictions for the vehicle combination listed under the following NZTA State Highway Route:

This permit applies only to the route or routes set out below (if any).

Section	Highway	From RP	From Junction	To RP	To Junction
1	SH1N	1068 / 2.86		932 / 0.0	37
SH1N, from the Aotea Quay Ramps to SH3 Junction, Sanson					
1	SH1T	1047 / 20.0		1030 / 0.0	
SH1T - Transmission Gully					
1	SH1P	995 / 20.0		995 / 0.0	
SH1P - New SH1N Section - Otaki to PekaPeka					
1	SH3	450 / 0.0	37	474 / 13.48	
SH3, from SH1N Junction, Sanson to Manawatu Scenic Route Intersection, Ashurst					
1	PalmCC - SADDLE ROUTE	0 / 0.0	SADDLE0	0 / 5.5	SADDLE5
Saddle Bypass Route					
1	TaraDC - SADDLE ROUTE	5 / 0.0	SADDLE5	5 / 10.2	SADDLE9
Saddle Bypass Route					
1	SH3	491 / 7.68		500 / 0.0	39

SH3 from Woodlands Rd Intersection to SH2 Junction, Woodville					
2	SH2	802 / 0.0	39	842 / 10.66	
SH2, from SH3 Junction, Woodville to Kaipararo Intersection, Eketahuna					

Wellington City Council Roads

Travel is permitted on the following New Plymouth District Council road subject to Clause 3 of Critical Conditions: Bridge Conditions below

Centreport Wellington – Bunny St – Featherston St – Thorndon Quay - Hutt Rd – Centennial Highway - SH1N (Ngauranga Interchange)

Operator to obtain prior approval (at least 48 hours) to travel on all other Local Authority Roads.
Refer below for Local Authority contact details.

Special Instructions

The following are not included under this Feasibility Study

- Compliance with the Land Transport Rule: Vehicle Dimension and Mass 2016
- Final Approval for actual overweight permits is at the discretion of the road controlling authority.

1. Vehicle must travel in the left hand lane at all times on the Wellington Urban Motorway (WUM)

2. The Traffic Operations Center (TOC Ph: 0800 869 286) must be notified in advance of any trip commencing, informing the TOC of the time that the vehicle is expected to be on the Wellington Urban Motorway (WUM).

3. Travel on the Wellington Urban Motorway up to the Aotea Quay On and Off Ramps Only

4. SH1N 1060/7.56 BSN 10676 NGAURANGA GORGE OVERPASS (NZMG 5994321/2662022) OVERLOAD VEHICLES MUST NOT TRAVEL ON SHOULDERS

5. SH1N 1060/7.56 BSN 10676 NGAURANGA GORGE OVERPASS - NORTHBOUND (NZMG 5994318/2662009) OVERLOAD VEHICLES MUST NOT TRAVEL ON SHOULDERS

6. Travel on the Porirua Johnsonville Motorway is Approved Subject to:
   a. Use Class 1 rear pilot for all restricted bridge crossings on Porirua/Johnsonville Motorway,
   b. Load not to exceed 3.7m in width. Where the width of the load exceeds 3.7 metres then the Glenside By-Pass shall be used.
   c. Travel in the left hand (slow) lane,
   d. The vehicle with its load should be capable of maintaining a speed of 70km/h under normal operating conditions, where conditions such as speed of other vehicles, traffic congestion, weather, crashes or other incidents affect travel speed the vehicle's speed must be adjusted appropriately.

7. The operator is responsible for ensuring that the load can negotiate overhead bridges, obstructions and structures. It is the operator's responsibility to get an over-dimensional permit if the vehicle requires one.

   The following height clearance information is provided as general guidance for Wellington (Region 9) structures: SH1 Waikanae Railway Subway 4.9m; SH1 Helston Road Underpass 4.8m (slow lane); SH1 Newlands Overbridge 5.02m (slow lane); SH1 NIMT 4.92m (fast lane); SH2 Ngauranga Offramp Overbridge 4.9m; SH2 Petone Overbridge 4.3m.

8. The Operator is responsible for all approvals related to the crossing of rail facilities.

9. Vehicle travel times that apply to this permit are those that relate specifically to each type of vehicle as covered by the Land Transport Rule Vehicle Dimension and Mass 2016 Rule 41001. NOTE: No travel

during peak hours.

10. MOTORWAY BYPASS

Porirua - Johnsonville Motorway bypass via Glenside Route: (PCC Local Authority Permit required).
Glenside Route Northbound Travel: Hutt Road to Ngauranga intersection (SH1) - Johnsonville Road - Middleton Road - Willowbank Road - Main Road Tawa - Kenepuru Drive - Raiha St - Prosser St - Titahi Bay Road - Mungavin Intersection - SH1 - North.

Glenside Route Southbound Travel: SH1 - Mungavin Intersection - Titahi Bay Road - Prosser Street - Raiha Street- Kenepuru Drive - Main Road Tawa - Willowbank Road - Middleton Road - Johnsonville Road - SH1 -Ngauranga Intersection - Hutt Road - South.

11. LOCAL AUTHORITY CONTACTS

Wellington City Council – op.opermits.wellington@wsp.com
Porirua City Council - roadprotectionteam@pcc.govt.nz

For notification of over dimension travel on Wellington City Council roads please contact Peter.Hamilton@wcc.govt.nz Phone: 027 803 0341

Requirement to observe permit conditions

A breach of weight limits specified on this form, or any permit condition, is an offence as provided in the *Land Transport (Offences and Penalties) Regulations 1999*.

Permit is invalid if:

a. The permit is altered without authority

b. The vehicles or persons operating the vehicles are not those described on the permit.

Revocation

This permit can be revoked, under clause 5.7 of the Rule.

Authorised Issuing Officer

.....	(Signature)
Rachel Field	(Name)
23 April 2021	(Date)
Permit Issuing Officer	(Designation)
(for) NZ Transport Agency, Wellington City Council	(Controlling Authority)
Wellington	(Location)
207672 - 22 April 2021	(Permit Dated)

Advisory Notes:

1. This permit is an exemption from the mass limits set out in the Land Transport Rule: Vehicle Dimensions and Mass 2016, and does not authorise the user to exceed the exemption so permitted or exempt the user from complying with all other acts, regulations and other laws (including those relating to certificate of loading, road user charges or Static Roll Threshold).

2. This permit must be carried on the vehicle and must be surrendered for inspection on the demand of any enforcement officer, or an authorised agent of the NZ Transport Agency or a road controlling authority.

3. The conditions on the reverse of this form shall apply together with any other conditions on the attached sheets.

4. *Overdimension* - For the transport of vehicles and loads that exceed the limits specified in Section 6 of the Land Transport Rule: Vehicle Dimensions and Mass 2016, a separate permit must be obtained from the Overdimension Permit Issuing Agency (OPIA) at the NZ Transport Agency, Palmerston North. OPIA contact number 0800 OVERSIZE / 0800 683774.

5. *Railway Level Crossings* - Travel over level crossings is not fully covered by this permit. Operators of overweight and overdimension vehicles may require permission from KiwiRail or their agents for travel over railway level crossings

6. *Tyre pressure* - Tyres must be operated at the pressures recommended by either the manufacturer or the Tyre and Rim Associations but not exceeding the maximum pressures stated in the Land Transport Rule 32013: Tyres and Wheels 2001.

Fees Payable:

Permit Issuing Fee (As specified in Schedule 4A of the Heavy Motor Vehicle Regulations 1974)	$54.55
Bridge Supervision Fee (0 Trips)	$0.00
Total Fee	$54.55
GST	$8.18
Total	$62.73

Critical Conditions: Bridge Restrictions

1. Engineering supervision of bridges is required during the trip authorised by this permit. For this purpose the user to whom this permit is issued shall contact the agents of the road controlling authorities nominated below at least **24 hours** in advance of the bridge crossing and arrange to meet the supervisor.

   The vehicle and its load shall be operated in strict accordance with all instructions given by the supervisor and it shall not proceed past the arranged meeting place without being instructed to do so by the supervisor.

   Note: (a) A police officer, unless specifically authorised by the road controlling authority, is not empowered to carry out bridge engineering supervision

   (b) If the operator fails to rendezvous within one hour of the time arranged and the supervised crossing(s) is/are postponed or cancelled, a fee of $40 will be charged (the equivalent of one supervised crossing).

2. Agents are:

Bridge Engineering Self-Supervision (BESS) registered Driver.
BESS ID Card or Letter Must Be Carried On Vehicle
Failure to produce VOIDS Permit

3. Bridges requiring engineering supervision are:

Bridge No.	State Highway	Route Position	Bridge Name	BSN	Speed*	Position*	Risk to Other Vehicles*	GPS Co-ords N/E
1	1N	1068/2.24	Thorndon Overbridge - Northbound (Decr Dir)	10704	20	Own Lane	Not Significant	5429718/1749121
2	1N	1060/7.99	Ngauranga Overbridge - Northbound (Decr Dir)	10680	50	Own Lane	Not Significant	5432148/1751932
3	**1N**	**1060/7.56**	**Ngauranga Gorge Overpass (Decr Dir)**	**10676**	**10**	**6.10**	**High**	**5432608/1752000**
				Overload Vehicles Must Not Travel On Shoulders				
4	1N	1050/6.84	Raroa – Temporary - Stage 2 (Tg Bridge 26) (Decr Dir)	10568	10	Own Lane	Low	5441921/1754106
5	1N	1035/15.27	Paremata Harbour Bridge (Northbound) (Decr Dir)	10504	20	Own Lane	Not Significant	5448107/1757010
6	1N	1035/7.63	Pukerua Bay Rail Overbridge (Decr Dir)	10426	10	Own Lane	Not Significant	5455223/1758466
7	1N	1035/0.0	Paekakariki Rail Overbridge (Decr Dir)	10350	10	Own Lane	Not Significant	5460147/1763774

Bridge No.	State Highway	Route Position	Bridge Name	BSN	Speed*	Position*	Risk to Other Vehicles*	GPS Co-ords N/E
8	1N	1011/15.37	Poplar Avenue Overpass (M2pp) (Decr Dir)	10264	50	Own Lane	Not Significant	5466033/1767767
9	1N	1011/11.66	Kapiti Road Overpass Northbound (M2pp) (Decr Dir)	10228	50	Own Lane	Not Significant	5469486/1768424
10	1N	1011/8.83	Otaihanga Road Overpass (M2pp) (Decr Dir)	10198	50	Own Lane	Not Significant	5471476/1770437
11	1N	1011/4.04	Nga Manu Road Overpass (M2pp) (Decr Dir)	10150	10	Own Lane	Low	5474953/1773225
12	1N	995/4.78	North Otaki Main Road Underpass (Pp2o Bridge 2) (Decr Dir)	9997	20	Own Lane	Not Significant	5485819/1782453
13	1N	995/0.0	Pukehou (Manakau South) Overbridge (Decr Dir)	9950	10	Own Lane	Low	5488541/1785844
14	**1N**	**985/6.85**	**Manakau North Rail Overbridge (Decr Dir)**	**9919**	**10**	**Central**	**High**	**5492190/1787873**
15	1N	985/6.53	Waikawa Stream Bridge (Decr Dir)	9915	50	Own Lane	Not Significant	5492365/1788136
16	1N	985/3.01	Ohau River Bridge (Decr Dir)	9880	10	Own Lane	Low	5495451/1789456
17	1N	932/4.35	Makahikaroa Stream Bridge (Decr Dir)	9364	20	Own Lane	Not Significant	5541545/1803622
18	1T	1047/8.948	Kenepuru Tua Tahi (TG Bridge 24) (Decr Dir)	10560	50	Own Lane	Not Significant	5442746/1754719
19	**1T**	**1047/0.117**	**Pauatahanui (Tg Bridge15) (Decr Dir)**	**10471**	**10**	**5.75**	**High**	**5446865/1760972**

Bridge No.	State Highway	Route Position	Bridge Name	BSN	Speed*	Position*	Risk to Other Vehicles*	GPS Co-ords N/E
20	1T	1030/17.227	Matai Taua (Tg Bridge 13) (Decr Dir)	10470	10	Own Lane	Low	5446960/1761039
21	**1T**	**1030/17.227**	**Sh58 Northbound Exit Ramp (Tg Bridge 14) (Decr Dir)**	**10473**	**10**	**Central**	**High**	**5446904/1760927**
22	1T	1030/11.373	Horokiri Ki Runga (TG Bridge 8) (Decr Dir)	10414	50	Own Lane	Not Significant	5453223/1763673
23	1P	995/6.64	Otaki River Bridge (Pp2o Bridge 5) (Decr Dir)	10015	50	Own Lane	Not Significant	5484511/1781283
24	1P	995/3.88	Waitohu Stream Bridge (Pp2o Bridge 1) (Decr Dir)	9988	10	Own Lane	Low	5486658/1782770
25	3	471/0.0	Mangaone Stream Bridge (Incr Dir)	4705	20	Own Lane	Not Significant	5531697/1820368
26	3	471/0.74	Rangitikei Line Rail Overbridge (Incr Dir)	4717	50	Own Lane	Not Significant	5531099/1820764
27	3	474/6.37	Stoney Creek Bridge (Sh 3) (Incr Dir)	4804	10	Own Lane	Low	5532606/1827593
28	**3**	**474/6.73**	**Whakarongo Culvert (Incr Dir)**	**4807**	**10**	**Central**	**High**	**5532632/1827950**
29	**PalmCC - SADDLE ROUTE**	**0/3.27**	**SADDLE ROAD BRIDGE (Palmcc) (Incr Dir)**	**33**	**10**	**Central**	**High**	**5531231/1841479**
30	3	491/8.24	Mangapapa Stream Bridge (Incr Dir)	4992	50	Own Lane	Not Significant	5531186/1842722
31	2	808/0.0	Manawatu River (Ngawapurua) Bridge (Incr Dir)	8080	20	Own Lane	Not Significant	5525600/1845307
32	2	808/4.99	Mangatainoka River Bridge (Incr Dir)	8130	20	Own Lane	Not Significant	5521568/1842943

Bridge No.	State Highway	Route Position	Bridge Name	BSN	Speed*	Position*	Risk to Other Vehicles*	GPS Co-ords N/E
33	2	825/0.0	Makakahi River (Konini) Bridge (Incr Dir)	8242	50	Own Lane	Not Significant	5512556/1836607
34	2	842/2.79	Waiwaka No.2 Bridge (Incr Dir)	8448	20	Own Lane	Not Significant	5495844/1828870
35	**2**	**842/9.64**	**Makakahi River (Kaiparoro) Bridge (Incr Dir)**	**8516**	**10**	**Central**	**High**	**5490734/1824617**

*See the next page

4. The user to whom this permit is issued shall contact the police at least two working days in advance of the crossing of any bridge in the above list where "police control" is indicated and make arrangements for a police officer to be present to control other traffic during the supervised crossing.

5. Bridge Engineering Self Supervision is permitted only for the bridge listed and the person named in condition 2 above.

Critical Conditions: Bridge Restriction Requirements

A. SPEED

The speed of the overweight vehicle shall not exceed the value shown while on the bridge.

B. POSITION

The vehicle shall travel in the left hand lane on all bridges except those for which alternative bridge engineering supervision instructions are specifically provided in this permit.

Own Lane - the overweight vehicle shall travel in its own lane as far as is practicable.

Offset - the overweight vehicle shall travel so that its centre is at the indicated distance from the kerb on the left of the vehicle.

Central - the overweight vehicle shall travel on that part of the bridge most favourable to the structure. This shall be:

(i) central on the beam system for bridges with beams and concrete decks;
(ii) central between kerbs for slab bridges;
(iii) approximately central on the beam system but with wheels as near as possible over the beams for bridges with timber decks.

Opposite Bridge - the overweight vehicle shall use the bridge for the opposing traffic direction.

Ford or Bypass - the overweight vehicle **shall not cross the bridge** but use the adjacent ford or bypass.

C. TRAFFIC CONTROL

Other heavy vehicles proceeding in the same direction shall be spaced at least 30 metres from the overweight vehicle while it is on the bridge. Cars may be closer if necessary.

Where “offset”, “central” or “opposite bridge” is indicated for position, traffic travelling in the opposing direction shall be prevented from crossing the bridge while the overweight vehicle is on it.

Traffic control at bridge crossings shall be in accordance with the “Code of Practice for traffic control at bridges being crossed by overweight vehicles”

Traffic control requirements:

Risk to other vehicles	Traffic control requirements
Not significant	None required
Low	Overweight vehicle to have revolving amber light or flashing amber light visible from the rear together with rear facing retro-reflective hazard panels
High	Provide qualified traffic controllers or Class 1 or Class 2 certified pilots using approved industry procedures.

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