22 July 2024
Job No: 1016884.0001

Meridian Energy Limited
PO BOX 2128
Christchurch
Christchurch 8140

Attention: Nick Bowmar

Dear Nick

Mount Munro Wind Farm
Review of proposed SH2/Transmission line access

1 Introduction

Tonkin & Taylor Ltd (T+T) have been engaged by Meridian to carry out a desktop transport review of the proposed temporary construction access to the transmission line from an existing property access on State Highway 2 (SH2).

2 Transport conditions at the proposed access

2.1 Location

Meridian proposes to construct a windfarm of 20 wind turbines, 5 km south of Eketahuna in the Lower North Island (refer Figure 2.1 below). To access the western most part of the internal transmission line, Meridian is proposing to utilise an existing property access from SH2, which is also shown in Figure 2.1 below:

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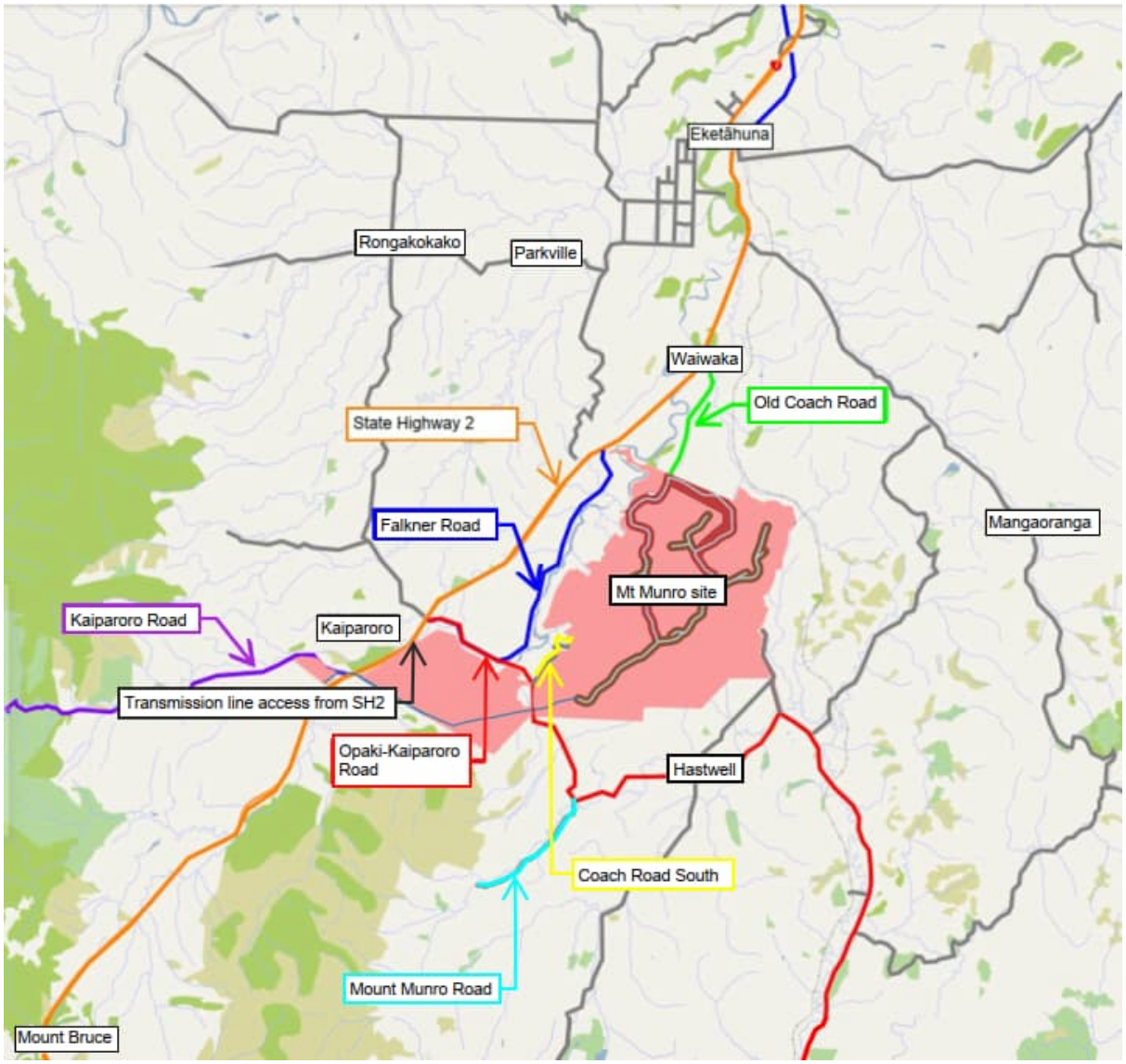

Figure 2.1: Mount Munro windfarm site, with the location of the proposed transmission line access from SH2.

The proposed site access is shown in 2.2 and Figure 2.3 below. It serves as the entrance to the property at #85151 SH2 and is approximately 580 m north of the SH2/Kaiparoro Road intersection.

Figure 2.2: Aerial of the existing property access to #85151 SH 2[1].

Figure 2.3: Street view of the existing property access to #85151 SH2[1] .

[1] Sourced from Google Maps, 17 July 2024

2.2 Existing traffic volumes

As detailed in Table 1 of Mr Shields evidence, traffic count data at SH2 Mount Bruce (which is the closest available count location to the access) indicates an Average Daily Traffic of 3,595 vehicles, with 13.5% of these being heavy vehicles.

2.3 Anticipated construction traffic volumes

Anticipated construction work includes excavation of pole holes, upgrade of tracks, delivery of components, installation of poles, concrete pouring and installation of cables and commissioning. Construction traffic will be a mixture of truck and trailer (largest vehicle anticipated), trucks and light vehicles for the construction workers. Work is anticipated to take four weeks up to the pole installation stage and then there will be a pause in the work, with installation of the cables and commissioning taking approximately two weeks (i.e. six week construction period in total). At this stage it is difficult to quantify the exact construction vehicle movements but, over this six week period, it is anticipated there could be 30 truck and 40 light vehicles over the six week period. For a six day working week, this would equate to approximately four vehicle movements/day over the six week period. It is acknowledged that for certain activities (eg concrete pour) the movements maybe more peaked but would still be anticipated to be below 10 vehicle movements/day. This low number of construction vehicles turning into and out of the access is not anticipated to create any capacity or operational issues on SH2 and is likely to be similar to what would be expected for a private vehicle access use.

2.4 Speed environment

From NZTA MegaMaps[2] the speed limit on SH2 at this location is 100 km/hr, with a mean operating speed of 97 km/h.

2.5 Road safety

Crash records were obtained from the NZTA Crash Analysis System (CAS) database for the full 5-year period 2019 to 2023, plus any crashes in 2024. The inclusion of 2024 data is for indicative purposes only and due to a delay between crashes and the upload of their data, 2024 data is likely incomplete at the time of preparing this report.

No crashes were reported within the study area (50m either side of the SH2/property access) within the five-year period.

3 Access sight distances

The available sight distance plays an important role in a driver determining whether it is safe for vehicles to enter or exit an access. The safe operation of an access is dependent on adequate sight distance in relation to both horizontal and vertical geometry.

The stopping sight distance and safe intersection sight distance at the access has been calculated and measured in accordance with Austroads Guide to Road Design Part 3: Geometric Design (2021) and Part 4A Unsignalised and Signalised Intersections (2017).

Stopping Sight Distance (SSD) is the distance to enable a normally alert driver, travelling at the design speed on wet pavement, to perceive, react and brake to stop before reaching a hazard on the road ahead. SISD is the minimum sight distance which should be provided on the major road at any intersection.

[2]MegaMaps Road to Zero Edition 2, retrieved from MegaMaps (nzta.govt.nz), accessed July 2024

To calculate both SSD and SISD the following values have been used:

- Operating speed = 100 km/h.
- Average gradient f = 0%.
- Reaction time = 2.5s.
- Coefficient of deceleration = 0.29.

The available sight distance for a vehicle approaching from the north to a vehicle setback 5 m from the access has been measured as 322 m, while for a vehicle approaching from the south the available sight distance has been measured as 323 m. These measurements are shown in Appendix A.

Table 3.1 below compares these measured values with the Austroads requirements:

Table 3.1: Sight Distance checks

Approach	Sight Distance	Distance (m)	Available Sight Distance (m) and whether satisfies Austroads guidance (✓ = yes)
North	SSD	205	322✓
	SISD	289	322✓
South	SSD	205	323✓
	SISD	289	323✓

As shown in Table 3.1 above, the site access complies with Austroads sight distance requirements and is therefore considered to be a safe form of access for construction vehicles to/from the transmission line construction site.

3.1 Access vehicle tracking

Vehicle tracking has been completed for vehicle movements into and out of the access. The vehicle used in this assessment was a Truck and Trailer unit, with a combined length of 17 m and width of 2.5 m which will be the largest vehicle which would use this access. The vehicle tracking is shown in Appendix B, which indicates minor widening of the radius of the access within the road reserve will be required to safely accommodate the tracking of a truck and trailer. Should the design vehicle be smaller than what has been indicated, the amount of widening shown in Appendix B could be reduced.

4 Conclusions

This desktop transport assessment assesses the suitability of the proposed SH2 access to the transmission line for construction vehicles.

A review of traffic flows, speed limits and historical crash data does not indicate any capacity, operational or safety issues with use of this access.

Visibility at the access complies with Austroads requirements and is therefore considered to be a safe form of access.

Vehicle tracking indicates that minor widening of the access within the road reserve will be required to provide safe access for a truck and trailer.

Accordingly, on the basis of this transport assessment, it is concluded that construction vehicle access to the transmission line from the existing #85151 property access on SH2 can be undertaken safely and without impacting the level of service for other road users and can be supported from a transport perspective.

5 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. We also understand and agree that our client will submit this report as part of the application for resource consent and that Tararua District Council, Masterton District Council, Greater Wellington Regional Council and Greater Wellington Regional Council as the consenting authorities will use this report for the purpose of assessing that application. This report 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.

Tonkin & Taylor Ltd

Report prepared by:

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Transport & Civil Engineer

Reviewed by:

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Jame Dyer
Senior Transport Planner

Authorised for Tonkin & Taylor Ltd by:

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Nick Peters
Project Director

22-Jul-24
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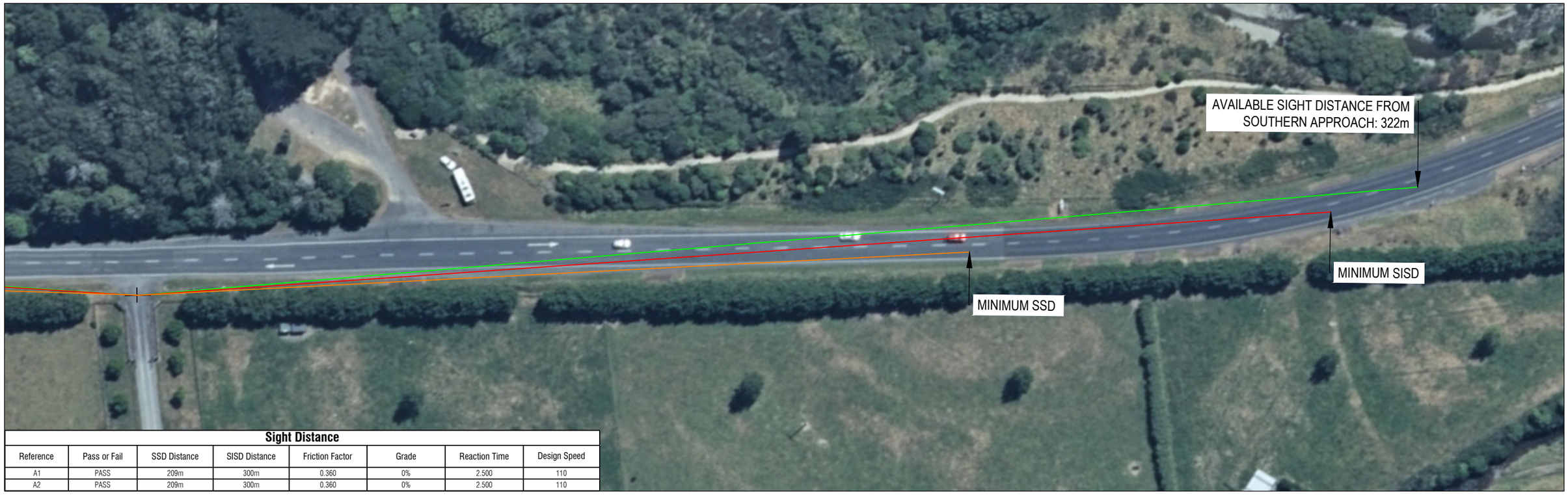
Appendix A Site Access Sight Distance



Sight Distance

Reference	Pass or Fail	SSD Distance	SISD Distance	Friction Factor	Grade	Reaction Time	Design Speed
A1	PASS	209m	300m	0.360	0%	2.500	110
A2	PASS	209m	300m	0.360	0%	2.500	110

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REV	DESCRIPTION	CAD	CHK	DATE
1	PRELIMINARY DRAFT	LC		

DESIGNED	ANGA	JUL 24	DRAWING STATUS
DRAWN	ANGA	JUL 24	PRELIMINARY DRAFT
DESIGN CHECKED			PROJECT PHASE
DRAWING CHECKED			CONCEPT DESIGN

NOT FOR CONSTRUCTION

APPROVED DATE

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED AS APPROVED

CLIENT **MERIDIAN ENERGY**

PROJECT **MT MUNRO WIND FARM**

TITLE SITE ACCESS SIGHT DISTANCE

SCALE (A3) 1:1000 DWG No. 1016884.1000-C402 REV 1

Appendix B Site Access Vehicle Tracking

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REV	DESCRIPTION	CAD	CHK	DATE
1	PRELIMINARY DRAFT	LC		

DESIGNED	LC	JUN 24	DRAWING STATUS
DRAWN	LC	JUN 24	PRELIMINARY DRAFT
DESIGN CHECKED			PROJECT PHASE
DRAWING CHECKED			CONCEPT DESIGN

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APPROVED DATE

CLIENT **MERIDIAN ENERGY**

PROJECT **MT MUNRO WIND FARM**

TITLE SITE ACCESS
VEHICLE TRACKING - SHEET 1

SCALE (A3) 1:500 DWG No. 1016884.1000-C400 REV 1

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REV	DESCRIPTION	CAD	CHK	DATE	APPROVED	DATE
1	PRELIMINARY DRAFT	LC				

DESIGNED	LC	JUN 24	DRAWING STATUS	PRELIMINARY DRAFT
DRAWN	LC	JUN 24	PROJECT PHASE	CONCEPT DESIGN
DESIGN CHECKED				
DRAWING CHECKED				

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CLIENT **MERIDIAN ENERGY**

PROJECT **MT MUNRO WIND FARM**

TITLE SITE ACCESS
VEHICLE TRACKING - SHEET 2

SCALE (A3) 1:500 DWG No. 1016884.1000-C401 REV 1