Technical Memorandum

Preliminary Transport Assessment

Rangitīkei Solar Farm

FOR: FRV

SLR PROJECT No: 810.032031.00001 **REVISION:** v1.4

Information and Quality Control

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Executive Summary

FRV proposes to construct, operate, maintain, and, if necessary, decommission a utility scale solar farm with a peak output to the National Grid of approximately 220 MWac on approximately 507 hectares of rural land located on the edge of Marton in the Rangitīkei District. The project has a proposed generation capacity of up to 220 MWac and forms part of New Zealand's renewable energy transition. This technical memorandum has been prepared by SLR on behalf of FRV to assess the anticipated and known adverse traffic and transport effects of the project and the significance of these effects in accordance with section 13(4)(h) of the Fast-track Approvals Act 2024 (FTAA), in support of the project's referral application.

The site is bordered by four roads: State Highway 1 (SH1) to the east, Calico Line to the south, Tūtaenui Road to the west, and Colemans Road to the north. Construction traffic is estimated to generate up to 200 vehicle movements per day, including up to 100 heavy commercial vehicle (HCV) movements per day during the peak period and a small number of over-size/over-mass deliveries. Once operational, the site generates very low traffic (typically 4–6 staff vehicle movements per day).

There are three acceptable possible access points to the site identified from Calico Line, Tūtaenui Road and Colemans Road. Calico Line is identified as the preferred primary construction access route. It is a designated High Productivity Motor Vehicle route with an existing heavy vehicle presence (approximately one truck every 2 minutes) and only requires a right-turn bay to safely accommodate the additional construction traffic. By comparison, Colemans Road presents significant geometric and safety constraints that would require substantial upgrades to accommodate HCV movements, and its use as a primary haul route is not recommended. All three acceptable possible access points meet the minimum sight distance requirements of the Operative Rangitīkei District Plan. Two access points do not satisfy separation distance standards, which will be addressed through appropriate assessment as part of the substantive application.

The principal adverse effects are associated with the construction phase and are all temporary in nature. With the recommended mitigation measures in place (primarily Calico Line as the designated haul route, a right-turn bay at the primary access, and a Construction Traffic Management Plan), all construction-phase effects reduce to Low or Very Low significance. Operational effects are assessed as Very Low. No adverse traffic or transport effects of High or Very High significance are anticipated at any stage of the project.

From a traffic and transport perspective, no constraints have been identified that could limit referral of the project under the FTAA. The transport matters are well-understood at this stage, and the mitigation framework outlined in this memorandum is considered sufficient to support the referral application and provide certainty the anticipated and known adverse effects can be appropriately managed through the substantiative application process.

1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Fotowatio Renewable Ventures (FRV) to provide transport planning and traffic engineering advice for the Rangitīkei Solar Farm project (the project), located in the Rangitīkei District, near Marton.

The some 507 ha site is located northeast of the Marton Township. The site is bordered by Tūtaenui Road, Calico Line, NZ State Highway 1 (SH1) and Colemans Road.

This preliminary traffic and transport assessment has been prepared to formally document SLR's initial consideration of transport-specific matters, with a particular focus on site access. The assessment is preliminary in nature but is considered sufficient to support FRV's application for referral of the Rangītīkei Solar Farm under the Fast-track Approvals Act 2024 (FTAA), and specifically to address the requirements of section 13(4)(h) of the FTAA in relation to traffic and transport matters.

The preliminary assessment presented herein will, in time, be supplemented by a formal Integrated Transport Assessment (ITA), which will form part of the evidence base to be presented to the Expert Panel should the project be referred under the FTAA.

1.1 Structure

This memorandum is structured as follows:

2 Project Overview: Outlines the proposed access arrangement, construction haul route, and over-weight/over-dimension route options.

3 Existing Transport Environment: Describes the surrounding road network, traffic volumes, High Productivity Motor Vehicle (HPMV) designation, key intersections, and road safety record within the study area.

4 Preliminary Traffic Generation: Estimates construction and operational traffic generation, including vehicle types and trip patterns.

5 Access Design: Assesses site-specific transport constraints, sight distances, separation distances, and appropriate access design types.

6 Recommended Access Design: Sets out recommended primary and secondary access design requirements.

7 External Network Access: Assesses access to and from the wider road network.

8 Mitigation Measures: Identifies the Construction Traffic Management Plan requirements, and infrastructure upgrades, including a mitigation summary table.

9 Assessment of Anticipated and Known Adverse Effects: Assesses the nature, scale, and duration of anticipated and known adverse traffic and transport effects in accordance with section 13(4)(h) of the FTAA.

10 Significance of Adverse Effects: Rates the significance of each identified effect, both prior to and with anticipated mitigation measures in place.

11 Conclusions: Summarises the key findings of the assessment.

1.2 References

- Rangitīkei District Council. Operative Rangitīkei District Plan 2013 (ODP), including Subdivision and Land Development Addendum 2017.
- NZ Transport Agency | Waka Kotahi. High Productivity Motor Vehicle (HPMV) Route Approval Register.
- NZ Transport Agency | Waka Kotahi. Traffic Control Devices Manual (TCDM), Part 4.
- NZ Transport Agency | Waka Kotahi. Over-weight/Over-dimension (OW/OD) transport network.
- NZ Transport Agency | Waka Kotahi. Crash Analysis System (CAS) — data extract, Rangitīkei study area, 2020–2025.
- Standards New Zealand. AS/NZS 2890.1:2004 — Parking Facilities Part 1: Off-Street Car Parking.
- Ministry for the Environment. Fast-track Approvals Act 2024 (as amended by the Fast-track Approvals Amendment Bill).
- SLR Consulting. Site inspection notes and photographs, Rangitīkei Solar Farm, 27 January 2026.

1.3 Site Visit

SLR's Traffic Engineers undertook a site inspection on 27 January 2026 to assess the transport environment in the vicinity of the proposed Rangitīkei Solar Farm. The inspection covered the surrounding road network and proposed access locations, with observations recorded using fit-for-purpose equipment including a laser-guided range finder to determine sight distances. The following roads and intersections were reviewed:

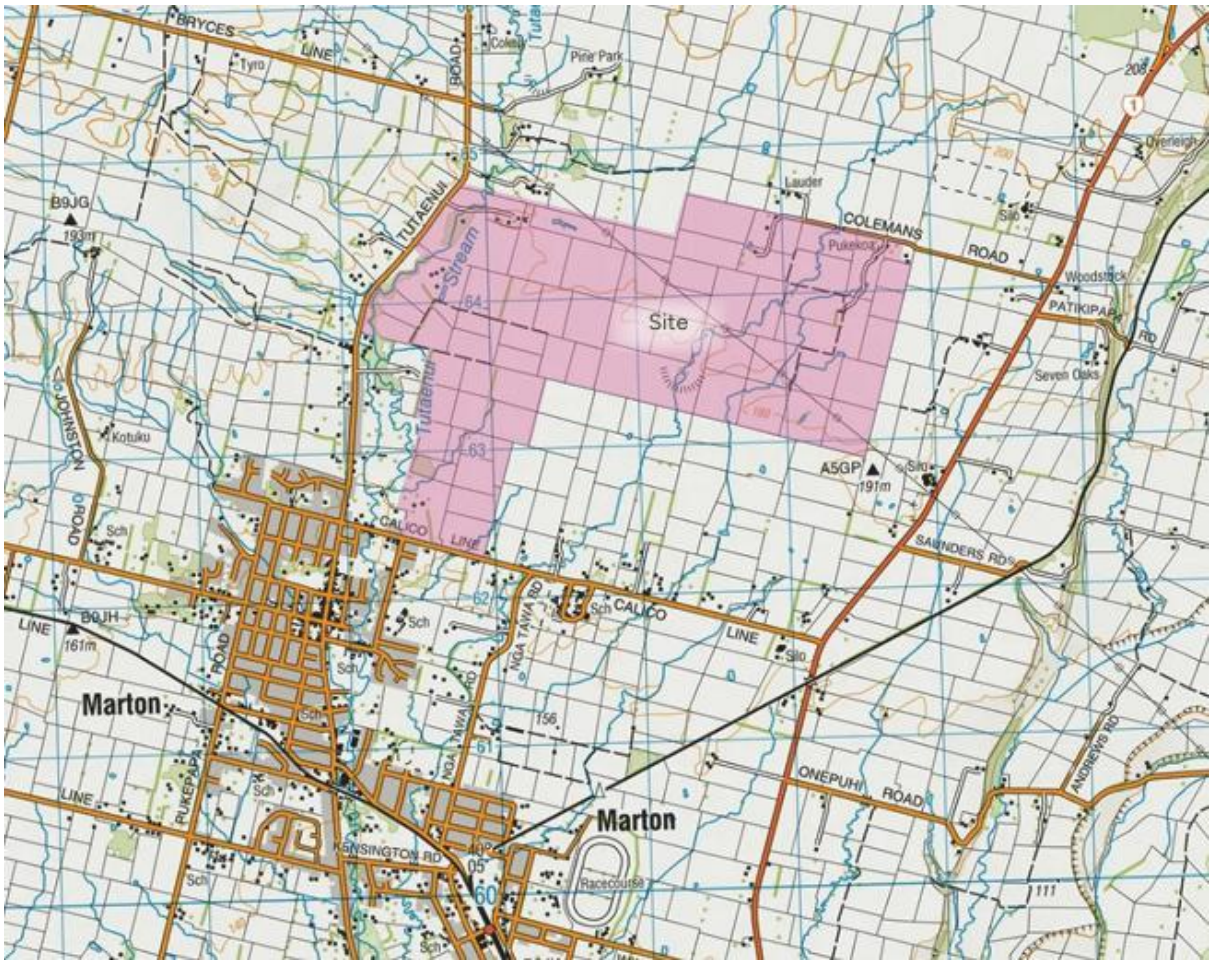
- SH1, including the intersections with Calico Line (location I3 referenced in Figures 2 and 4 below) and Colemans Road (I4)
- Calico Line, including the proposed primary access location (A2)
- Colemans Road, including the proposed secondary access location (A1) and identified geometric constraints (C1–C3)
- Tūtaenui Road, including the proposed secondary access location (A3) and identified geometric constraint (C4)
- Internal site frontages and existing watercourse crossings (C5, C6)

2.0 Project Overview

FRV proposes to construct, operate, maintain, and, if necessary, decommission a utility scale solar farm with a peak output to the National Grid of approximately 220 MWac on approximately 507 hectares of rural land located on the edge of Marton in the Rangitīkei District.

The site location is shown on Figure 1 below. The site is located immediately north-east of Marton and is bounded by Tūtaenui Road, Calico Line, State Highway 1, and Colemans Road.

Figure 1 Site Location



The site is held in four land holdings and has a total combined area of some 507 hectares. The site details are outlined in Table 1 below.

Table 1: Site Details

Address	Land Area	Legal Description
240 Tūtaenui Road, Marton	167.07 ha	Lot 2 DP 3350, Lot 2 DP 87115, Lot 1 DP 87829, Lot 1 DP 3391
119 and 178 Colemans Road, Marton	161.19 ha	Lot 2 DP 87829, Lot 2 DP 500699, Lot 1 A 2030, Lot 2 A 2030
Tūtaenui Road, Marton	128.83 ha	Part Blk XXXVII Rangitīkei DIST, Lot 1 DP 69932, Part Lot 1 DP 1669
65 Calico Line, Marton	49.76 ha	Part Blk XXXVIII Rangitīkei DIST

The key elements of the project are described in Table 2.

Table 2 Project Summary

Project element	Summary
Addresses	119 and 178 Colemans Road, 206 Tūtaenui Road, 240 Tūtaenui Road and 65 Calico Line
District Council	Rangitīkei District Council
Regional Council	Horizons Regional Council
Electricity Generating Works	Construction, operation, maintenance, and where necessary decommissioning, of a some 220 MWAC solar farm over an approximate development area of some 403 hectares, including elements such as: • Solar arrays installed on a single-axis tracking system or fixed-tilt mounts on pile-driven supports. It is anticipated that approximately 300,000 individual monocrystalline photovoltaic panels will be installed within a maximum height envelope of 4.5 metres. • Inverters and transformers and associated external cabling. • Underground cabling. • Provision for construction of some 190 MW BESS (battery energy storage system). • Construction of a new transmission substation and connection to Transpower's 220 kV overhead transmission lines which run through the site. • The proposed development will be delivered as a single-stage construction comprising the solar farm and all ancillary activities and infrastructure. The BESS is the only component that may be constructed separately, after the solar farm has been established and is operational. No further staging is proposed.
Ancillary Infrastructure	Construction of: • New primary site access from Calico Line and new secondary site access from Colemans Road. • Any necessary (yet to be determined) road or intersection upgrades, which may include widening of Colemans Road, and / or upgrade to the intersection of State Highway 1 / Colemans Road and / or right turn bay on Calico Line. • Temporary construction laydown and yard areas and associated temporary construction buildings and facilities. • Permanent storage and maintenance buildings and site office buildings and associated yard areas. • Water tanks and other fire prevention, management and mitigation measures, as required. • Internal access and maintenance roads and parking areas. • Lighting, fencing and security and monitoring cameras and devices. • Any necessary (yet to be determined) acoustic barriers.
Earthworks	Completion of earthworks required to construct the solar farm and the ancillary infrastructure, including: • Construction of new site accesses. • Completion of road upgrades (as required). • Formation of temporary construction laydown and yard areas. • Formation of internal access roads. • Piling of solar array support posts. • Construction of platforms for inverters and transformers. • Trenching of cables. • Formation of permanent building platforms and yard areas for substation and BESS.

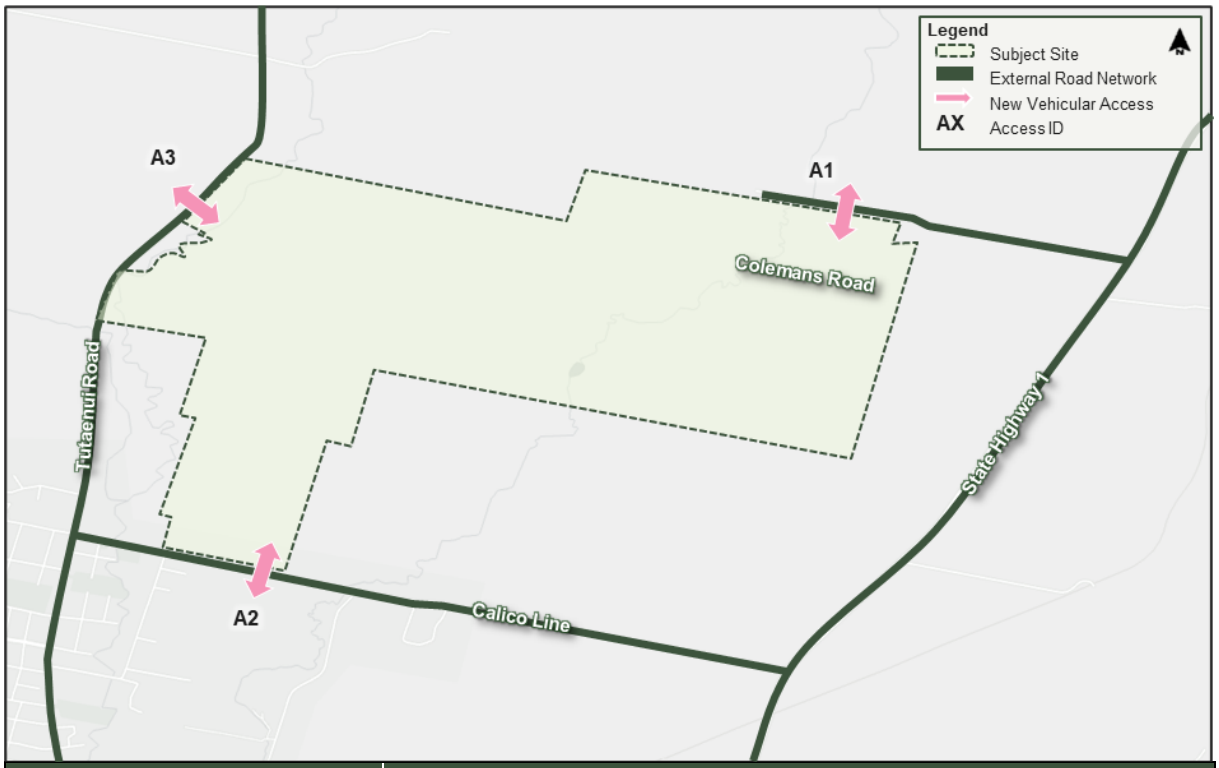
Project element	Summary
Subdivision	Subdivision to give effect to long-term lease (lease more than 35 years) which at a minimum will result in the creation of new lots over land to be retained by the landowners, and resulting lots containing the solar farm and the associated infrastructure.
Planting	Boundary mitigation planting, riparian planting around streams and wetlands and mid-block mitigation planting around infrastructure.
Construction Duration	Anticipated 18 to 24 months, with an anticipated peak construction period of 4 to 6 months.
Construction Workforce	Approximately 250 FTE during peak construction period.
Operational Hours	24 hours a day, seven days a week.
Operational Workforce	Approximately 4 – 6 FTE.
Operational Duration	Approximately 40 years, unless repowered.

Please note: The above information may be subject to change over the course of the project as the concept design is progressed.

2.1 Proposed Access

The site layout provided identifies the primary and secondary access locations as shown in Figure 2.

Figure 2 Proposed Access Locations



ID	Proposed Hierarchy
A1	Secondary
A2	Primary
A3	Secondary

2.2 Access Route(s)

It is anticipated that most traffic originating from the north and south of the site will utilise SH1 and, therefore, the intersections at Calico Line. However, Marton is a possible origin for construction workers hence, Broadway may be used by the workforce.

2.3 Over-weight & Over-dimension Route(s)

The construction of the solar farm involves the transportation of a range of materials, including solar panels, frames, fencing, etc. Most of these components will be transported on road legal vehicles (i.e. under 20m, under 44 tonnes); however, some components, such as the transformer, will require the use of an over-weight and/or over-dimension vehicle with a special vehicle permit.

NZTA's Over-weight and Over-dimension (OW/OD) transport network identifies SH1 from Wellington as an OW/OD route. Although the locations of origin for components of the solar farm are not known at this stage, the transportation of larger components is anticipated to be suitably catered for by the State Highway route.

It is anticipated that the OW/OD status of the SH1 route will be suitable for the number and scale of loads expected to require special OW/OD permits.

3.0 Existing Transport Environment

3.1 Road Network

The road network surrounding the site is shown in Figure 3 and key transport characteristics are summarised in Table 3.

Figure 3 Surrounding Road Network

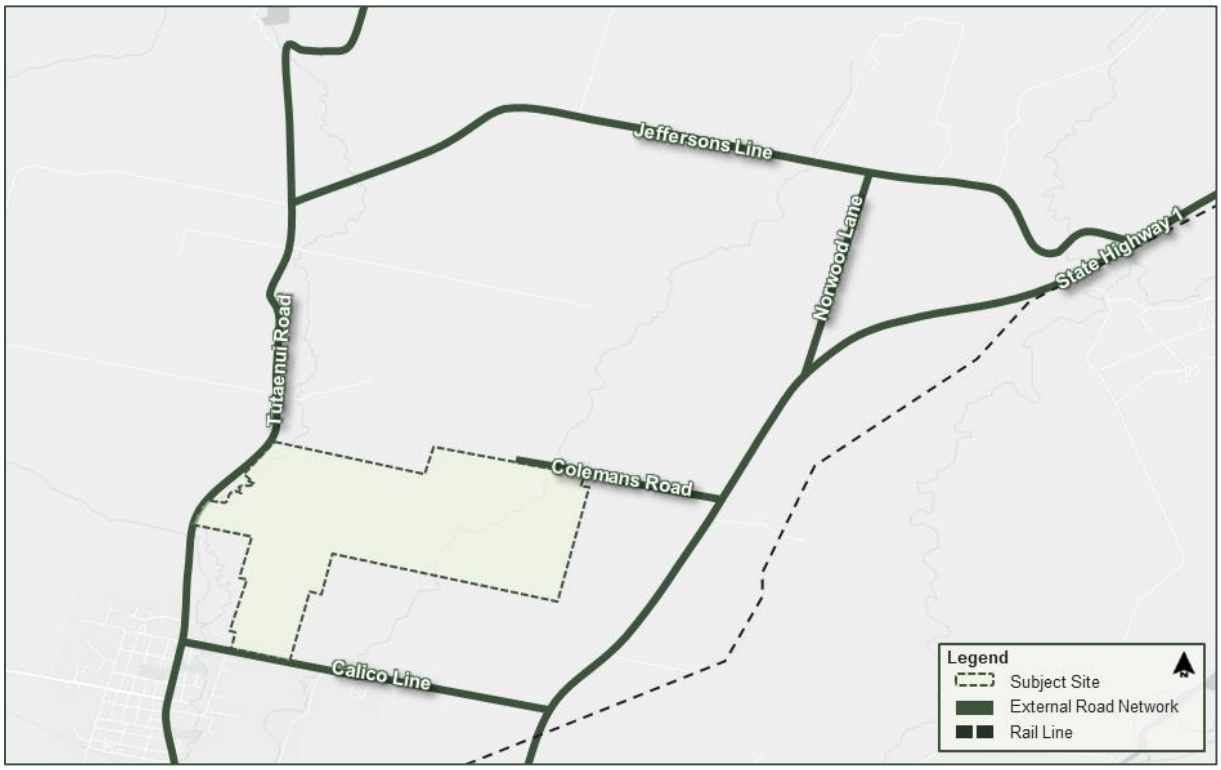


Table 3 Road Network Characteristics

Road	Classification	Authority	Existing Form
SH1	National (ONRC)	NZTA	Sealed carriageway with one 3.5 m traffic lane in each direction, divided with line marking and marked shoulder, no kerb and channel. On-street parking is not permitted. Northbound overtaking lane present 1.4 km north of the intersection with Calico Line, terminating south of Colemans Road. Designated HPMV route.
Calico Line	Arterial (ODP)	Council	Generally, a sealed carriageway with 3.5 m traffic lanes in each direction, divided with line marking and marked shoulder, no kerb and channel. On-street parking is not permitted. Designated HPMV route.
Tūtaenui Road	Collector (ODP)		Sealed carriageway with 2.5 m traffic lanes in each direction, divided with line marking and unmarked shoulder, kerb and channel. On-street parking is permitted.

Colemans Road	Local (ODP)		Sealed 3.5 carriageway, undivided, no kerb and channel.

Source: ODP & ONRC[1], HPMV[2] and site visit observations

3.2 Traffic Volumes

Traffic volume information for the locations identified in Figure 4 have been retrieved and are summarised in Table 4.

Figure 4 Road Network Characteristics Locations

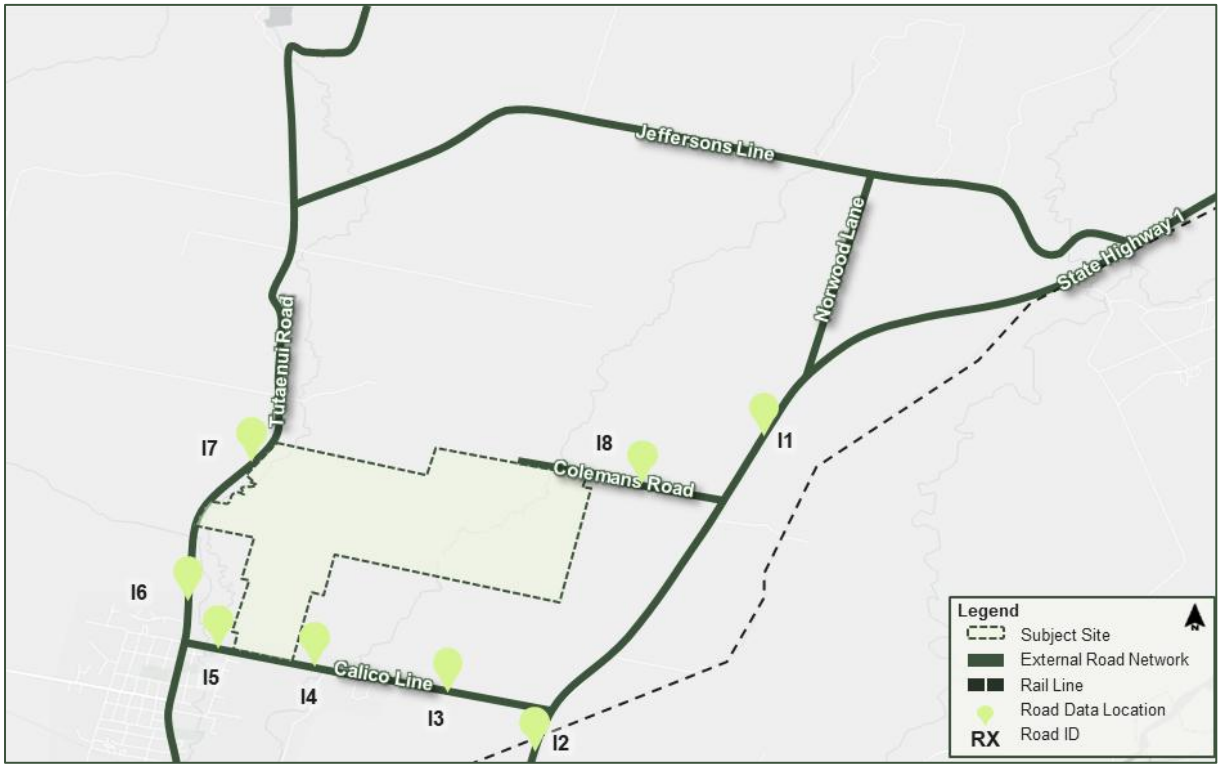


Table 4 Road Traffic Volumes

ID	Road Name	Posted Limit (km/h)	AADT* (vpd)	Peak Hour (vph)**	%HCV
1	SH1	100	5,848	700	23%
2			7,620	900	17%
3	Calico Line	100	2,071	250	19%
4		80	2,063	250	20%
5		50	1,881	225	19%
6	Tūtaenui Road	50	1,330	160	7%
7		100	760	90	5%
8	Colemans Road	100	40	5	6%

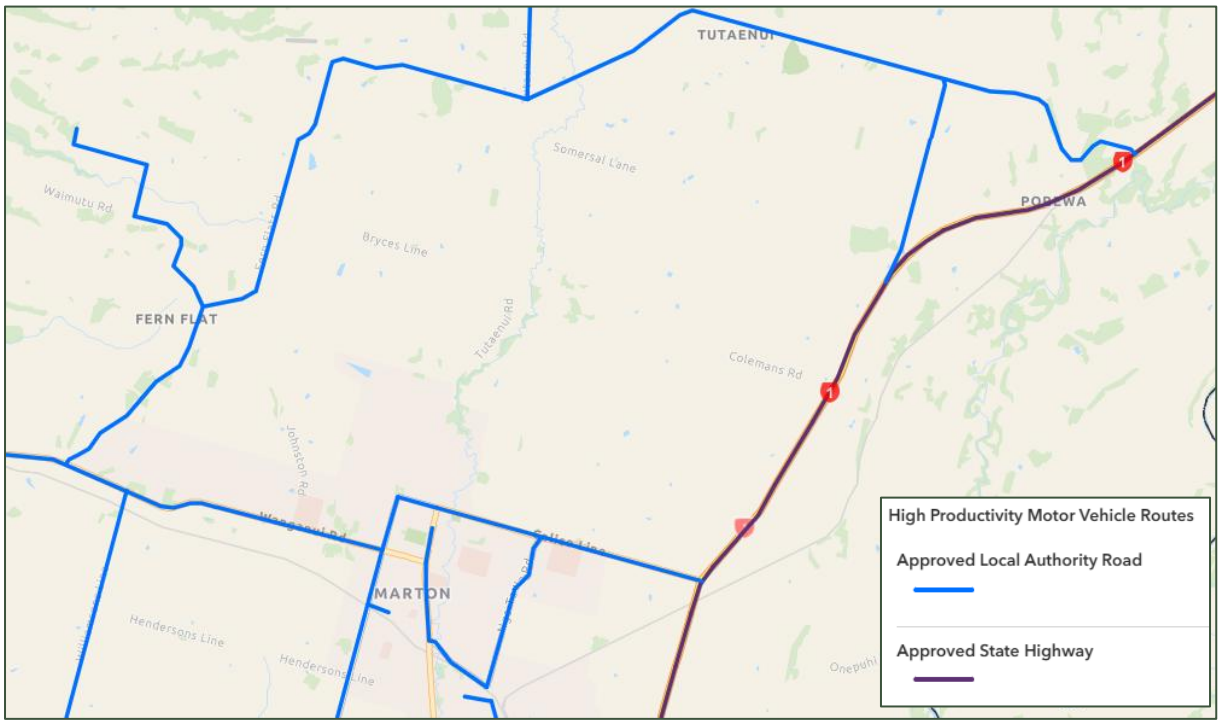
Source: MobileRoad[3] , *Annual Average Daily Traffic, **Assumed 12% AADT

[1] One Network Framework uses the One Network Road Classification (ONRC) for general traffic and Heavy Commercial Vehicles (HCVs).
[2] High Productivity Motor Vehicles (HPMVs).
[3] MobileRoad collates Council RAMM data and NZTA TMS data.

3.3 HPMV Network

NZTA has designated approved routes suitable for HPMVs carrying certain loads under a permit. The approved routes surrounding the site are shown in Figure 5.

Figure 5 HPMV Network Surrounding the Site



3.4 Key Intersections

Key intersections on the surrounding network are shown in Figure 6 below with an overview of their features and layouts being provided in Table 5.

Figure 6 Key External Intersections

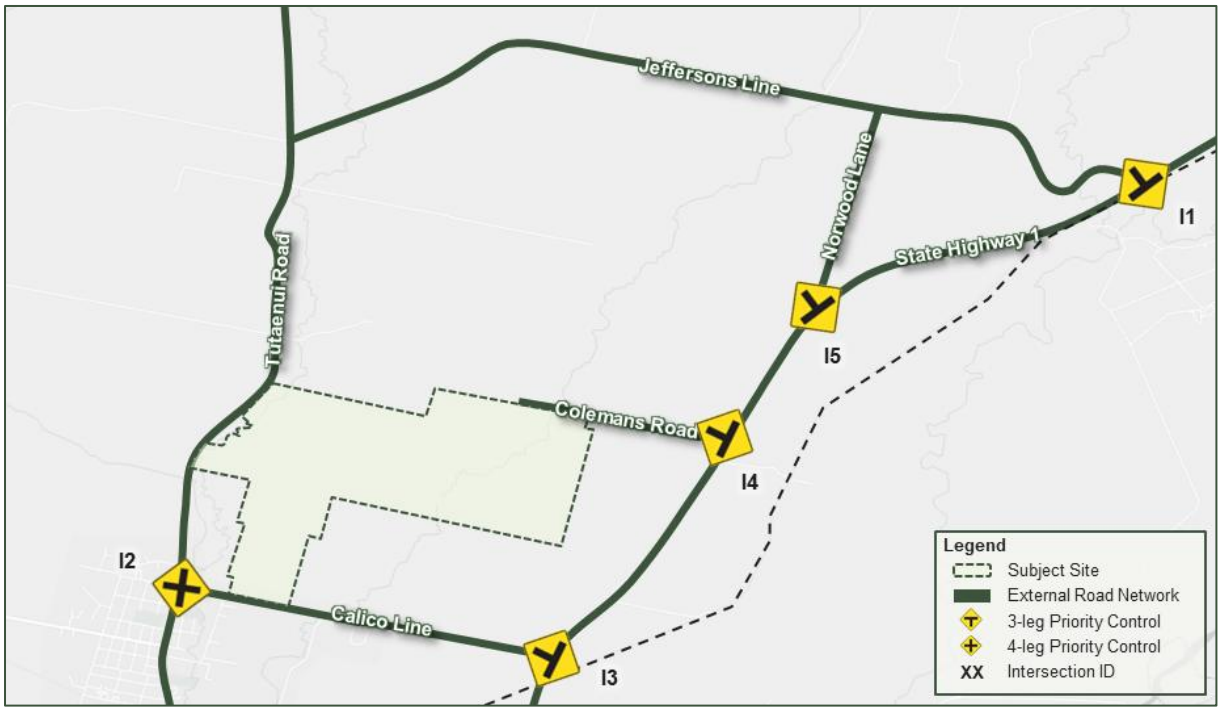


Table 5 Key Intersections Layout

ID	Intersection	Layout	Notes
I1	**SH1 / Jeffersons Line**		• Three-way priority (Give-Way) intersection. • Left turn deceleration lane and right turn bay on the major road.
I2	**Tūtaenui Road / Calico Line**		• Four-way priority (Stop on minor roads) intersection. • Within Marton town centre.

I3	**SH1 / Calico Line**		• Formal right-turning lane on the major approach and short left acceleration and deceleration lanes. • Appropriate sight distance on approach, although partially obstructed southbound due to a grade-separated rail crossing.
I4	**SH1 / Colemans Road**		• Immediately north of a northbound overtaking lane. • No formal turning lanes. • Property access opposite. • Appropriate sight distance on minor approach.

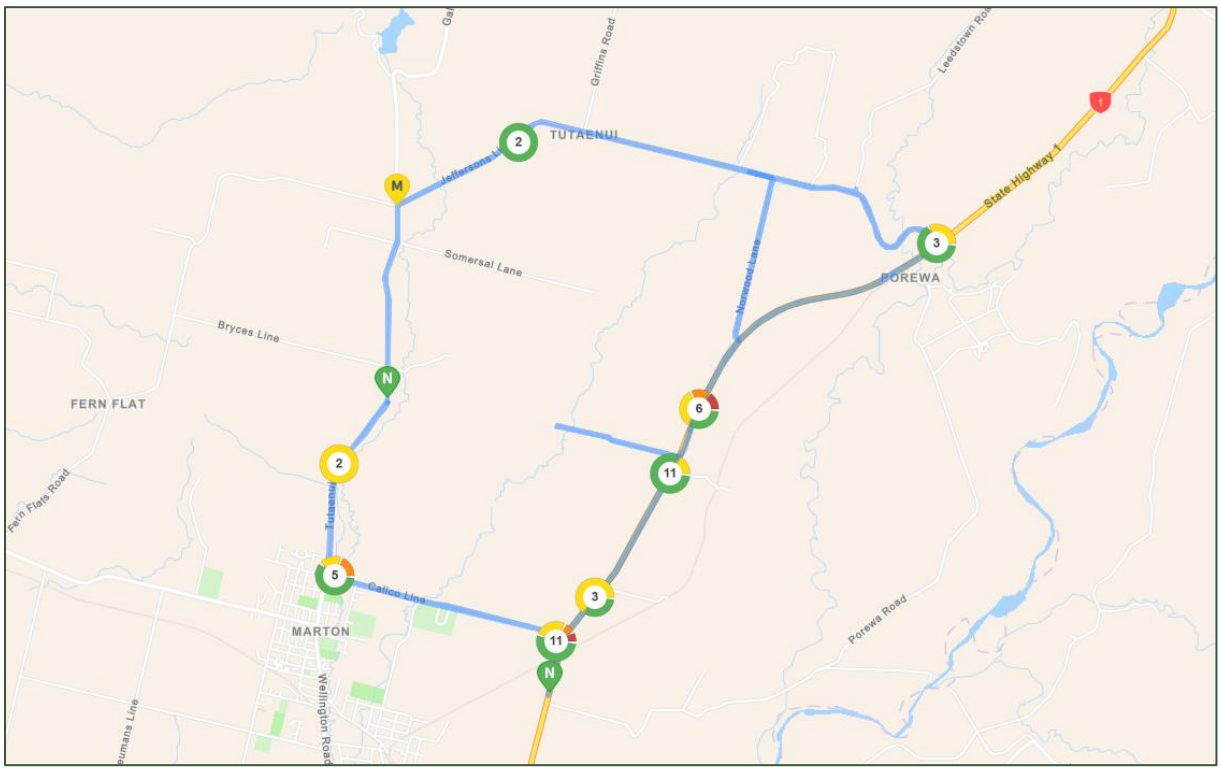
I5	**SH1 / Norwood Lane**		• Separated northbound left turn lane. • No right turn bay on major road. • No southbound acceleration lane on major road.

3.5 Road Safety Record

NZTA's Crash Analysis System (CAS) has been accessed to consider the recorded road safety incidents within the surrounding road network. The analysis considered the five-year period between 2021 and 2025 (inclusive).

Figure 7 shows the search area and the number of reported crash events over the search period.

Figure 7 CAS Search Area



A summary of the road safety record is provided in Table 6.

Table 6 Road Safety Summary

Location	Fatal and Serious	Minor	Non-Injury	Total
SH1	4	9	20	33
Calico Line	1	1	3	5
Tūtaenui Road	0	2	2	4
Jeffersons Line	0	2	2	4
Total	**5**	**14**	**27**	**46**

A total of 46 incidents were reported within the search area, including two fatal crashes and three serious injury crashes.

- Fatal crashes (2):
  - 2024-10-15, SH 1 (NIMT overbridge vicinity) – bus lost control, collided with overbridge abutment.
  - 2025-03-26, SH 1 near Norwood Lane – van vs truck, head-on on a straight section of road.

- Serious-injury crashes (3) and minor-injury crashes (14) are mostly on SH 1, often at or near driveways/side roads or loss-of-control on straights/curves under dark or wet conditions.

The crash data does not reveal any repeated crash manoeuvres or defined black-spot locations, with no single site recording more than 2 or 3 crashes that resulted in injuries within the five-year review period. Crash occurrences are generally distributed across the study network rather than concentrated at discrete locations.

4.0 Preliminary Traffic Generation

4.1 Construction Phase

A summary of anticipated construction traffic-generating activities is provided in Table 7.

Table 7: Summary of Traffic Generating Activities

Phase	Key Assumption(s)	Total anticipated trips
Site Clearance and establishment (1-3 months)	Activities include earthworks, internal road construction, site office construction etc	1,000 inbound, 1,000 outbound
Construction material delivery (8-10 months)	Material delivery including solar panels, inverters, etc	6,000 inbound, 6,000 outbound
Goods / Services etc (15-18 months)	Delivery of Water / Collection of Waste / Portaloos etc	2,000 inbound, 2,000 outbound
Workforce (18 months, peak workforce months 5-6)	Peak site workers: 250 people Operation: 6 days/week, 6 am to 6 pm Labourers to use shuttle buses, supervisors to use private vehicles. Assumed 16 passengers per bus assumed light vehicle trips per phase: Month 1-4: 14 light vehicle round trips per day Month 5-11: 30 light vehicle round trips per day Month 12-14: 20 light vehicle round trips per day Month 15-18: 16 light vehicle round trips per day Provided peak workforce estimates Month 1-4: 20% Peak workforce (~50 people) Month 5-11: 100% Peak workforce (~250 people) Month 12-14: 60% Peak workforce (~150 people) Month 15-16: 20% Peak workforce (~50 people)	Busses: 3,000 inbound, 3,000 outbound Light vehicle: 8,000 inbound, 8,000 outbound
Total (across 18 months)		**20,000 inbound, 20,000 outbound**

Based on SLR's experience with other solar farm projects, it is expected that a solar farm of this scale (220MW$_{AC}$ solar farm and 190MWh BESS) will generate between 80 and 200 vehicle movements per day during the peak construction period. A summary of the preliminary anticipated construction traffic generation is provided in Table 8. These values are information only and subject to confirmation and refinement through the design phase of the project.

Table 8 Summary of Construction Traffic

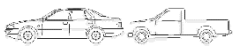
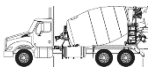
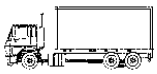
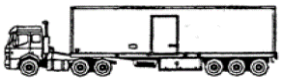
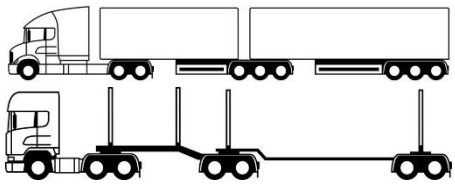
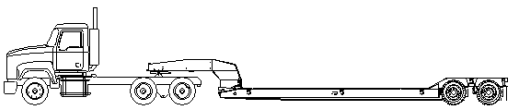
Vehicle Type	Average Vehicle Movements		Peak Vehicle Movements	
	Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicles	40	20	60	30
Buses	20	10	30	15
HCV	20	5	100	10
Total	**80**	**35**	**190**	**55**

The peak period of construction traffic generated by the Project is anticipated to occur between 6 am and 9 am for the morning peak, and between 4 pm and 7 pm for the evening peak.

4.1.1 Vehicle Types

The indicative vehicle types illustrated in Table 9 are typically associated with the delivery of similar solar farm developments. Further clarification of these vehicle types is required to confirm the full haulage fleet. It is noted that container-based haulage origins are unknown at this stage.

Table 9 Project Vehicle Fleet

Vehicle	Typical Vehicle Profile	Haulage Material
Private Vehicle (B85 design vehicle)		Supervision Workforce Assumed occupancy of 1.5 person per vehicle
Coaster Bus (22-seater Toyota Coaster)		Labour Workforce Assumed occupancy of 16 persons per vehicle
Concrete Truck (7.4 cubic meter)		Concrete
Heavy Rigid Vehicle (12.6m long HRV)		Waste removal
32t truck and dog (17m long)		Aggregates, Quarry Products
Six Axle Articulated (20m long AV)		40ft Container (one full-size)
B-Train (20m long)		20ft and 20ft Containers (one full-size and one half-size), Construction mobilisation, Construction demobilisation
Low Loader		Excavator, Bulldozer, Grader, Compactor, Piling Rig

4.2 Operational Phase

4.2.1 Activities

Once the Project is operational, there will be no activities that require a large on-site workforce. It is understood that for most of the Project's life, operations will involve a range of preventive, corrective, and condition-based maintenance activities, which will entail various maintenance, inspection, and servicing for the solar farm, the associated electrical network, and the internal road infrastructure.

The external movements associated with these tasks will generally be performed by Vans/ Utes, small rigid vehicles (SRVs), and medium rigid vehicles (MRVs).

4.2.2 Workforce

Post-construction, the anticipated maximum on-site workforce is 6 workers. The preliminary operational workforce assumptions are summarised in Table 10.

Table 10 Operational Workforce Assumptions

Element	Assumption
Workforce	6 persons maximum on-site
Roster	5 days on / 2 days off
Permanent Workforce	None
Contractor Workforce	10 persons (conservative maximum)
Anticipated Fleet	Light vehicles, Disposal trucks (SRVs and MRVs)

4.3 Decommissioning Phase

At the end of the Project's operational life, the Applicant will be responsible for decommissioning and rehabilitating the solar farm. It is anticipated that the decommissioning processes will generate traffic similar to that during the construction period, although this is beyond the design horizon considered herein.

5.0 Access Design

A review of the proposed site traffic arrangements has been undertaken against the following relevant documents:

- RDC ODP Part B Rules B9 Transport
- RDC Subdivision and Land Development Addendum 2017 (ODP Addendum)
- AS/NZS 2890.1:2004 Parking Facilities Part 1: Off Street Car Parking (AS 2890.1)
- Planning policy manual – for Integrated Planning & Development Of State Highways
- Road Traffic Standards 06 Guidelines For Visibility At Driveways (RTS 06)
- Road and Traffic Standards New Zealand on-road tracking curves for heavy vehicles (RTS 18)

5.1 Site-Specific Transport Constraints

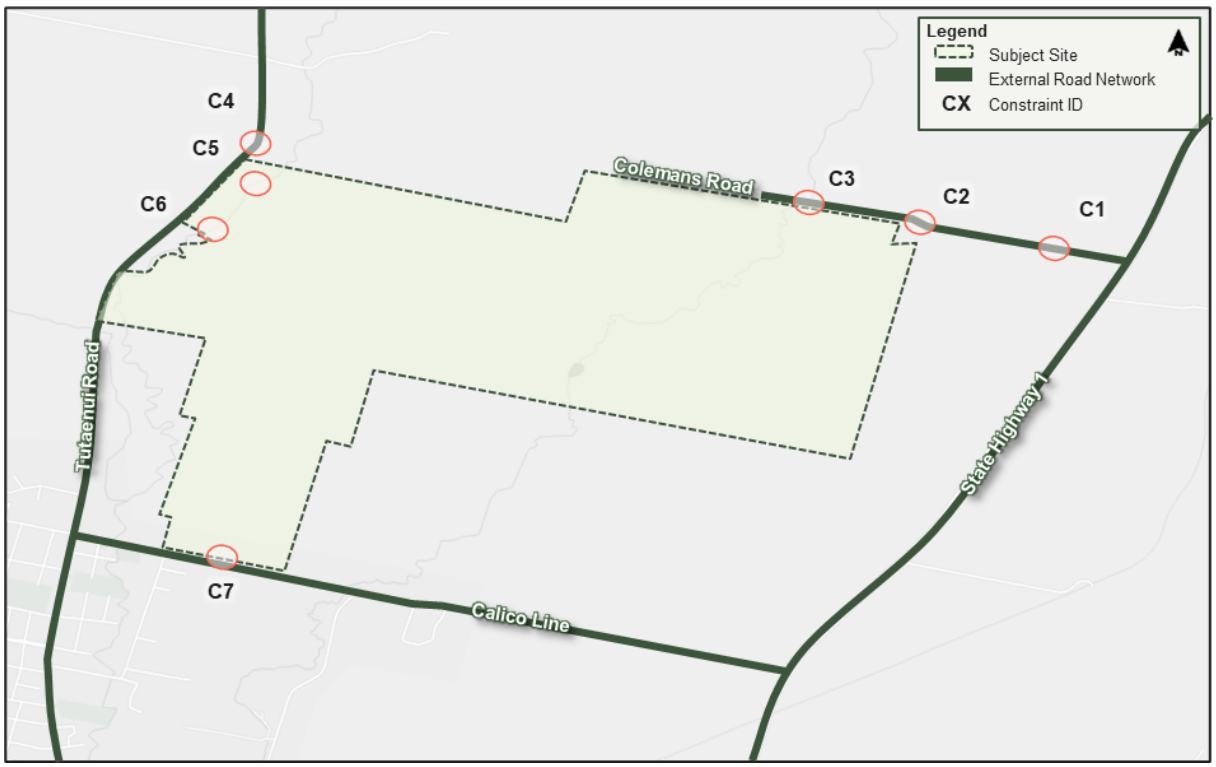
Following a physical site inspection on Monday 27 January 2026, the following constraints relating to the vehicle access location were identified as summarised in Table 11.

Table 11 Site Specific Transport Constraints

ID	Location	Constraint	Issue
C1	Colemans Road	Vertical crest	Limits sight distance
C2	Colemans Road	Dog leg	Limits sight distance
C3	Colemans Road	Culvert	Restricts access location
C4	Tūtaenui Road	Horizontal curve	Limits sight distance
C5 & C6	Internal	Existing streams and bridges	Restricts access location
C7	Calico Line	Culvert	Restricts access location

The constraints are shown in Figure 8.

Figure 8 Site Specific Constraints



5.2 Sight Distance Assessment

Rule B9.1-3 of the ODP stipulates that the applicable minimum sight distances for roads (other than state highways) are listed in Table B9.1 and measured in accordance with Figure 9.1. The required sight distances per Table B9.1 are reproduced in Table 12 for relevant roads.

Table 12 ODP Required Sight Distance

Posted (Legal) Speed Limit (km/h)	Required Sight Distances (m)
80	170
100	250

An assessment of the proposed accesses' observed sight distance is provided in Table 13.

Table 13 Proposed Access Sight Distance Assessment

Access	Fronting Road	Posted (Legal) Speed Limit (km/h)	Required Sight Distances (m)	Observed Sight Distance (m)	Assessment
A1	Colemans Rd	100	250	350 m / 385 m	Complies
A2	Calico Line	80	170	965 m / 360 m	Complies
A3	Tūtaenui Rd	100	250	555 m / 495 m	Complies

5.3 Separation Distance Assessment

Rule B9.1-4 of the ODP stipulates that the separation distances between accessways must be in accordance with Table B9.1. The posted speed limit is primarily used to determine

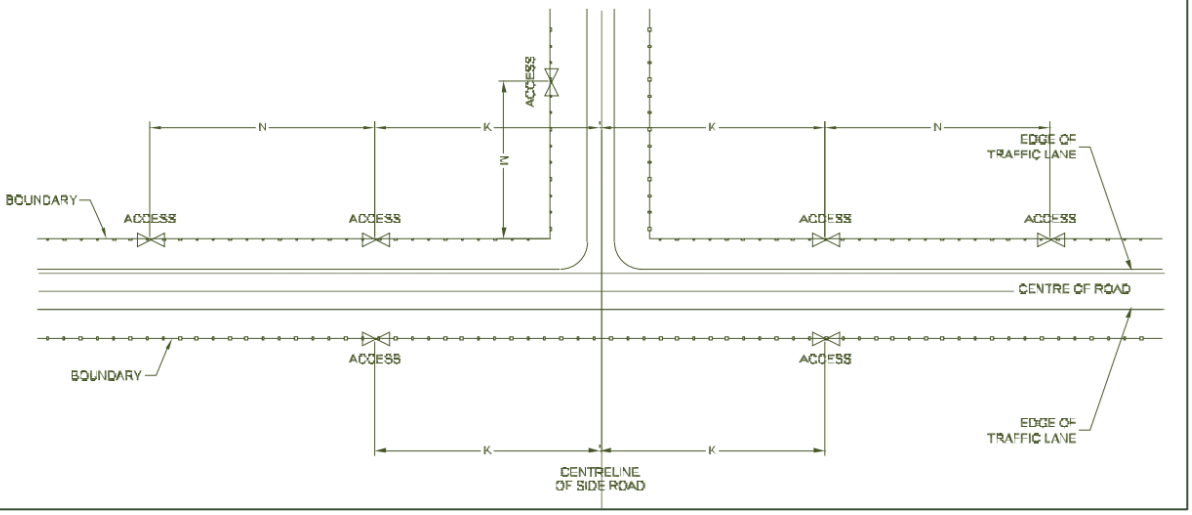
separation distance (in the absence of speed surveys). The separation distance is summarised in Table 14.

Table 14 ODP Vehicle Crossing Separation Distance

Posted (Legal) Speed Limit (km/h)	Location Of Property Access Relative To Intersection		Minimum Spacing Between Adjacent Property Accessways Distance N[4] (m)
	Minimum Distance K[5] (m)	Minimum Side Road Distance M[6] (m)	
80	120	60	100
100	200	60	200

For reference, Figure 9.5 of the ODP is reproduced below. It is noted that none of the proposed accesses is within 300 m of any intersection.

Figure 9.5 Access Sight Lines



An assessment of the proposed access separation distance (with respect to adjacent accesses) is provided in Table 15.

Table 15 Proposed Separation Distance Assessment

Access	Fronting Road	Minimum N (m)	Nearest N (m)	Assessment
A1	Colemans Road	200	150	**Does not Comply**
A2	Calico Line	100	50	**Does not Comply**
A3	Tūtaenui Road	200	340	Complies

The proposed access points A1 and A2 do not meet the required minimum separation distance standards. As a result, the proposal will require assessment as a restricted discretionary activity under the ODP, and the relevant matters of discretion will be addressed accordingly as part of the substantive application. Despite the non-compliance, the

[4] Labelled dimension per ODP Figure 9.5
[5] Labelled dimension per ODP Figure 9.5
[6] Labelled dimension per ODP Figure 9.5

proposed access locations for the Project are considered acceptable with appropriate mitigation.

5.4 Access Design Type

The access design should consider the ODP rules coupled with the needs of the Project's activity. We have considered the largest likely vehicle crossing required at the early stage to identify any constraints that require mitigation.

The access design footprint, therefore, considers inputs from the following:

- RTS06 rural vehicle crossing with low volumes, used by a high proportion of heavy vehicles.
- NZTA Planning Policy Manual – for Integrated Planning & Development of State Highways
- Subdivision and Development Addendum of the ODP.

Vehicle tracking will be carried out to confirm the feasibility of the anticipated design vehicles once the access locations are finalised, and the design footprint may be reduced once the construction vehicle demands are better understood.

6.0 Recommended Access Design

The access design will be revised as the Project demands are better understood and the access hierarchy is confirmed. Concept access designs will be reviewed following confirmation of the access locations. Consideration will be given to the vehicle fleet proposed to construct the Project to ensure the primary access can operate safely and efficiently for the largest anticipated design vehicle, whereas secondary accesses will consider both operational fleet requirements and ODP requirements.

6.1 Primary Access Design

It is recommended that the primary vehicle crossing be designed to accommodate frequent heavy commercial vehicles, with a minimum 6m carriageway width, plus shoulder/ seal widening adjacent to and opposite the vehicle crossing. Although the ODP suggests a maximum width of 4m, a wider width to facilitate construction and operational traffic[7] may be required.

The following is required to ensure the safety and efficiency of the surrounding road network is maintained:

- Primary HCV access via any road above a collector road will require a right turn bay.
- Primary HCV access via collector roads will require shoulder widening.
- Primary HCV access via local roads will require localised widening.

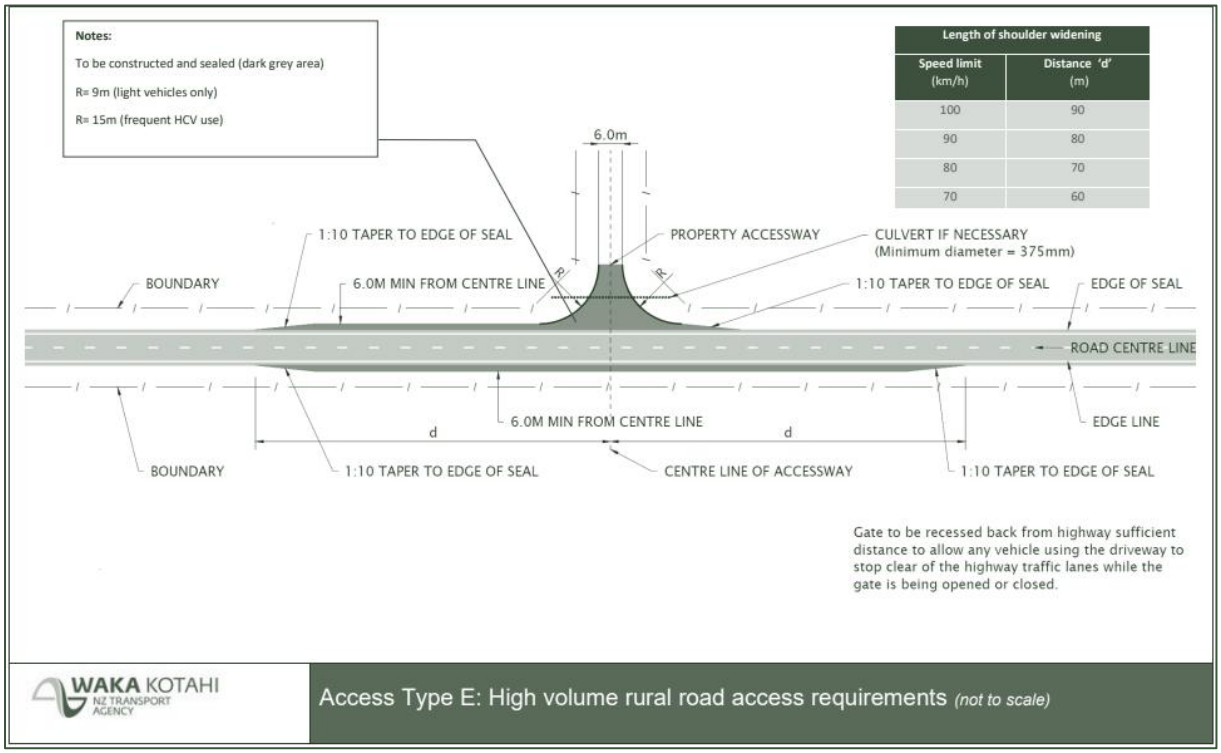
This means that:

- Primary HCV access via Calico Line will require a right-turn bay.
- Primary HCV access via Tūtaenui Road will require shoulder widening.
- Primary HCV access via Colemans Road will require localised widening.

Figure 9, Figure 10, and Figure 11 overleaf provide preliminary vehicle-crossing dimensions for conceptual design.

[7] Operational traffic demands may include the replacement of large components necessitating the need to maintain a larger vehicle crossing.

Figure 9 Vehicle Crossing Dimensions for Primary Access via Arterial/ Collector Roads

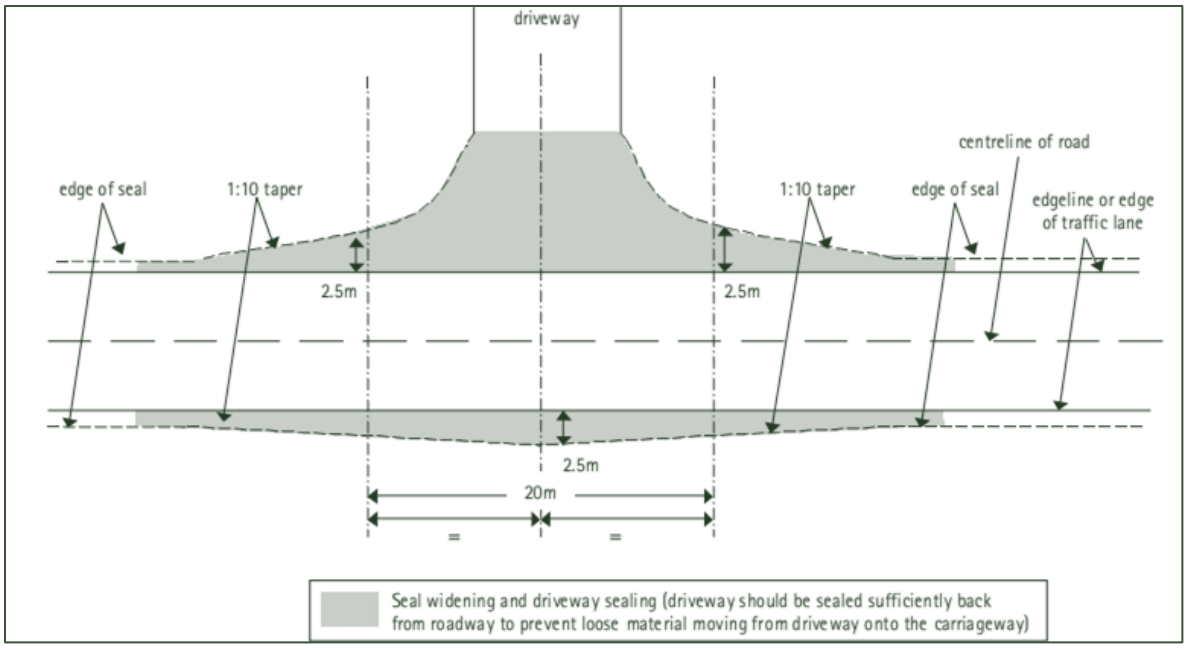


Source: Access Type E: High-volume rural road access requirements[8]

Note(s)

1. Subject to vehicle swept path assessments.
2. Subject to the right turn bay design.
3. Right turn bay design to conform to NZTA Traffic Control Devices Manual Part 4 Figure 15-5.

Figure 10 Vehicle Crossing Dimensions for Primary Access from Local Roads



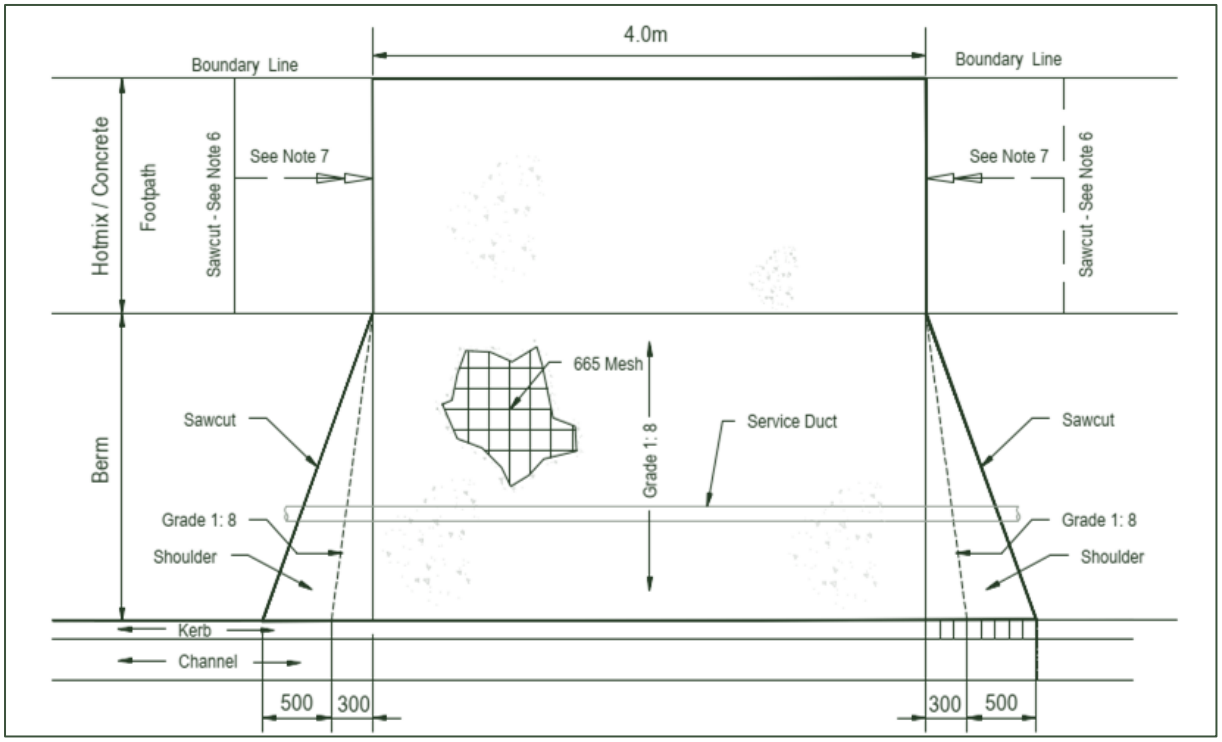
Source: RTS 06

[8] Access onto the state highway from private, Property, Planning Policy Manual NZTA

6.2 Secondary Access

It has been assumed that secondary access during both construction and operation will involve infrequent HCV movements and limited light-vehicle movements. Therefore, it is recommended that these accesses consider conforming to the ODP required layout reproduced in Figure 11.

Figure 11 Recommended Minimum Vehicle Crossing Dimensions For Secondary Access



Source: ODP Addendum Commercial / Industrial Vehicle Crossing

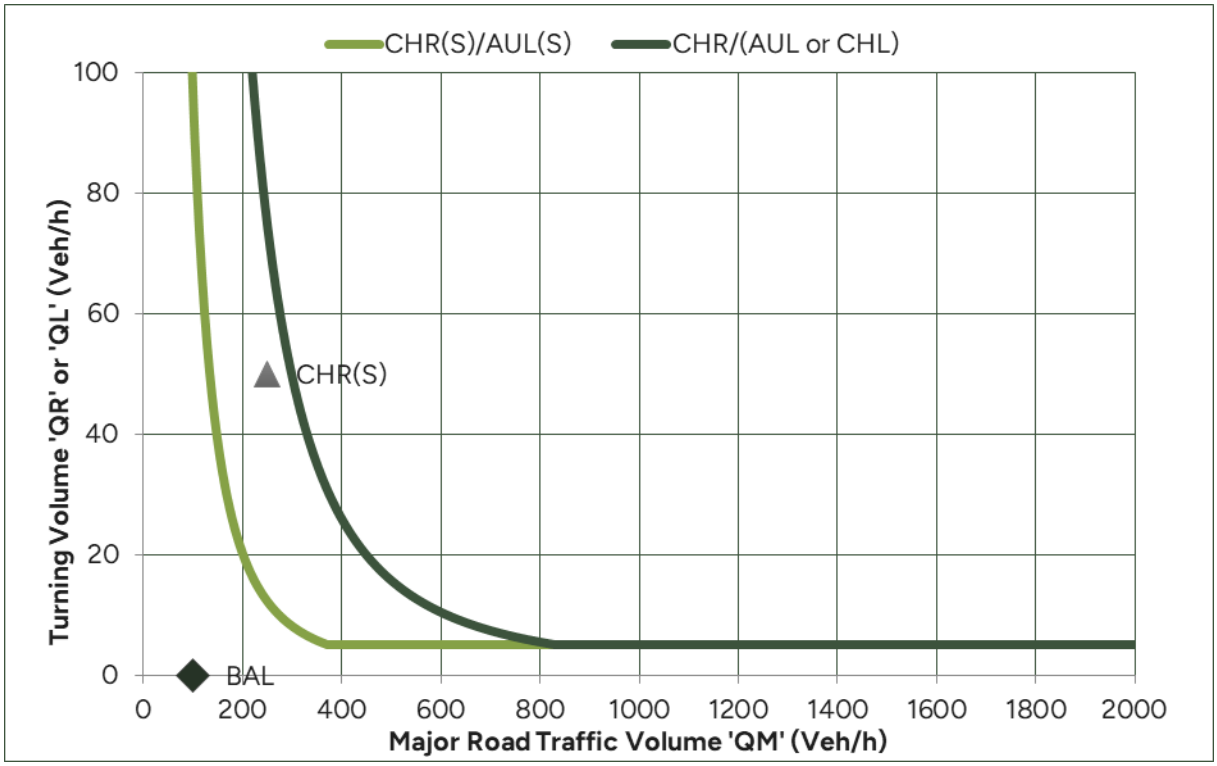
7.0 External Network Access

7.1.1 Calico Line

As Calico Line is a designated HPMV route and currently accommodates a high proportion of HCVs, it is recommended the access is designed with a central right turn bay to facilitate safe and efficient movements into and out of the site, while minimising interruption to passing through movements. In addition, a preliminary turn warrant assessment suggests that this would be required. The turn warrant assessment is summarised in Figure 12.

To reduce the deceleration component of the right turn bay, temporary amendment of the speed limit could be considered; however, this will require approval from the Council as Road Controlling Authority. This may be an appropriate mitigation to reduce amenity impacts during the temporary construction period.

Figure 12 Calico Line Preliminary Turn Warrant Assessment



Amenity impacts on surrounding land use and activities will need to be considered, given the school's proximity. In addition, consideration of the proposed shared path on the southern edge of Calico Line between the school and Marton town centre will be required.

7.1.2 Colemans Road

The existing sealed width of Colemans Road was measured onsite to be 3.5 m. The width is insufficient to facilitate safe and efficient simultaneous, two-way HCV movements. If Colemans Road requires access by a significant proportion of construction traffic, upgrading both Colemans Road and the SH1 intersection with Colemans Road is likely required.

Colemans Road upgrade will require widening from a 3.5 m sealed width to a desired 7 m sealed width. This includes the possible acquisition of property, as the existing road reserve is 10 m in width. Consideration to passing bays (approximately 18-20 m length) at appropriate locations may be suitable to mitigate safety and efficiency effects on Colemans Road, rather than full widening; however, upgrades to the intersection are still likely required.

The intersection upgrade is likely to require the following (subject to consultation with NZTA):

- Both left and right turn bays.
- Offset geometry for the left turn.
- A truck acceleration lane.

8.0 Recommendations and Mitigation Measures

8.1 Construction Traffic Management Plan (CTMP)

A CTMP or equivalent document should be prepared following approval but before the substantial commencement of construction activities. It is recommended that the following HCV construction access routes be considered to avoid upgrades to both the SH1 / Colemans Road intersection and Colemans Road, and avoid potential amenity impacts in Marton town centre. These routes can be included in the CTMP:

Access via Calico Line (Figure 13) and via Tūtaenui Road (Figure 14) are shown below. Additional routes should be consistent with the HPMV network.

Figure 13 Alternative HV Access via Calico Line

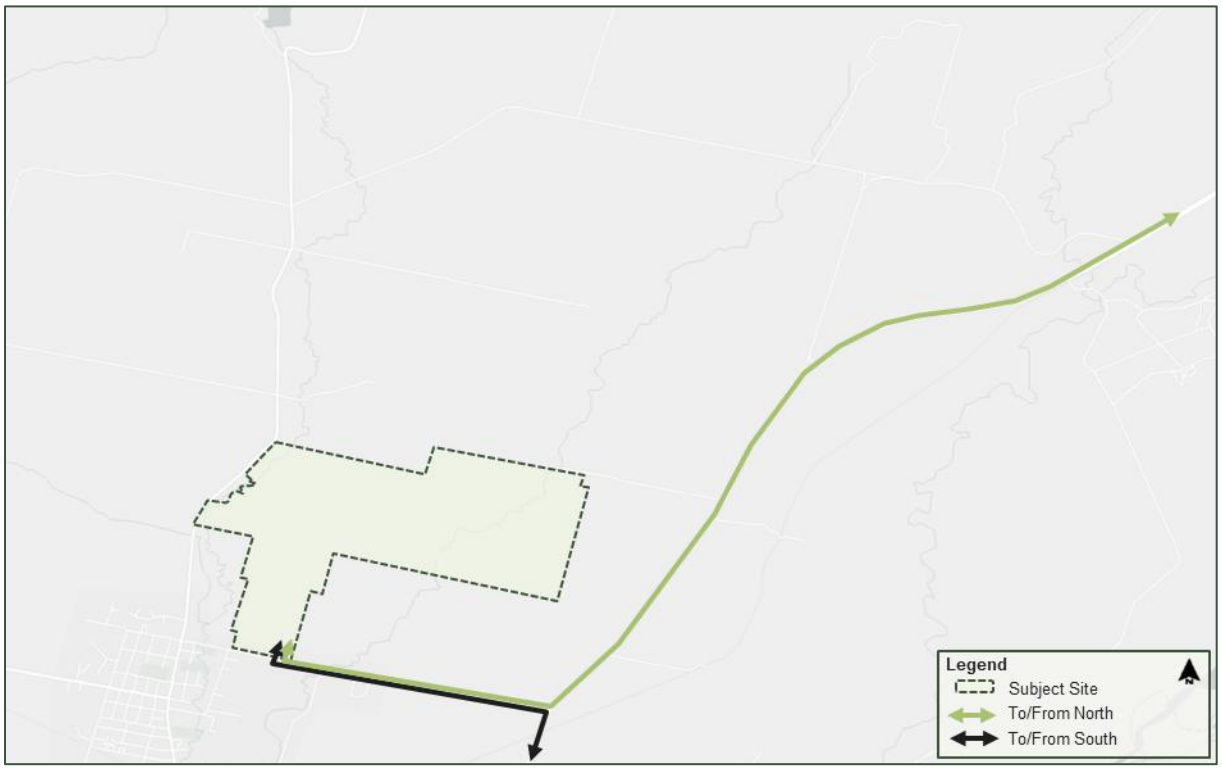
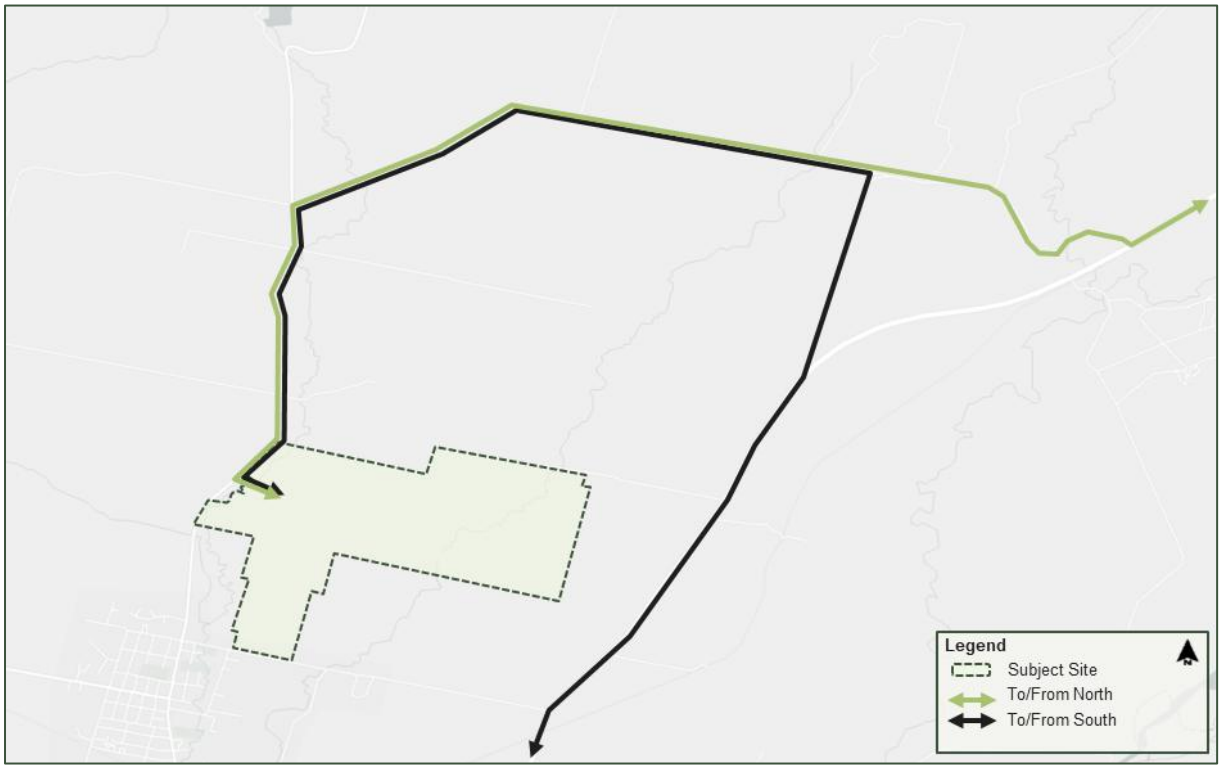


Figure 14 Alternative HV Access via Tūtaenui Road



8.2 Transport Infrastructure Upgrades

8.2.1 Calico Line Access

As described in Section 8.2.1, Calico Line access requires a right-turn bay to ensure the network continues to operate safely and efficiently.

8.3 Mitigation Summary

A summary of mitigation measures and commitments is provided in Table 16.

Table 16: Mitigation Measures

Ref	Measure	Phase	Responsibility	Timing
M1	Develop concept access design with sight distance checks and turn warrants.	Pre-construction	Designer	Design phase
M2	Secure OW/OD route approval and create an escort plan.	Pre-construction	Logistics	≥12 weeks before first delivery
M3	Prepare and approve a CTMP/TMD.	Pre-construction	Contractor	Before works begin
M4	Provide on-site parking for all workers.	Construction	Contractor	Ongoing
M5	Infrastructure upgrades	Pre-construction	Designer	Before works begin

9.0 Assessment of Anticipated and Known Adverse Effects

This section assesses the anticipated and known adverse effects of the Rangitīkei Solar Farm from a traffic and transport perspective, in accordance with section 13(4)(h) of the Fast-track Approvals Act 2024 (as amended). The assessment is structured around the construction and operational phases of the Project, as the relative effects and their durations differ materially between the two. For each effect, the nature, scale, and potential duration are described. Mitigation measures are then identified, and a residual significance rating is assigned using the scale: Very Low, Low, Moderate-Low, Moderate, Moderate-High, High, Very High.

The assessment uses the conceptual design as the anticipated point of reference, noting that the site layout and access hierarchy will be refined as the project progresses through detailed design and the substantive application. Effects are assessed based on the anticipated construction scenario using Calico Line as the primary HCV access route, consistent with the recommended mitigation approach.

9.1 Construction Phase Anticipated Adverse Effects

The construction phase is the primary period of potential adverse traffic and transport effects. The following effects have been identified based on the conceptual design and the anticipated 18–24 month construction programme, with a peak period of 4–6 months during which up to 200 vehicle movements per day (including up to 100 HCVs per day) are expected.

Increased traffic volumes and network congestion: Construction traffic is estimated to generate 80–200 vehicle movements per day. During the peak period, up to 100 HCV movements per day are anticipated on Calico Line. To contextualise this: Calico Line currently carries approximately 395 HCV per day (roughly one truck every two minutes across the operating day (6am-6pm)). At peak construction, Project HCVs would add approximately one additional truck every 7 minutes, averaged across the day, or around 1 additional truck every 4 to 5 minutes during the morning and afternoon peaks. This represents an increase in frequency, but not a step-change in the character of the route given its current HPMV designation, existing HCV profile, and available capacity. Increased turning movements at the access point may cause minor, temporary delays to through traffic. This effect is temporary and reversible, confined to the construction period.

Road safety: The introduction of new turning movements has the potential to increase conflict exposure between Project vehicles and through traffic on Calico Line, particularly for right-turn movements into and out of A2. Some consideration will be required during school hours given the proximity of Nga Tawa Diocesan School, though HCV operating hour restrictions may form part of the proposed mitigation. The separation distance non-compliance at A1 and A2 will require justification as part of the matters of discretion assessment under the substantive application; however, sight distances at both accesses meet the required minimums, which is the primary safety-critical parameter. The overall effect is temporary and, with the proposed mitigation in place, is not considered to present an unacceptable road safety risk.

OW/OD vehicle movements: The delivery of OW/OD components, including the high-voltage transformer, requires special vehicle permits and route-specific assessment. OW/OD movements are infrequent (estimated 1–10 events) but require network management including traffic control, temporary closures, and escort arrangements. Effects from individual events are temporary and short in duration but require careful advance coordination with NZTA and Council.

Amenity effects: The primary construction access via Calico Line passes in proximity to Nga Tawa Diocesan School. Adverse amenity effects include elevated traffic noise and vibration from HCV movements during school hours, dust generation, and potential safety risks to students using the proposed shared path along the southern edge of Calico Line. These effects are temporary and confined to the construction period but are of particular sensitivity given the vulnerable receiver group involved.

Workforce parking demand: A peak construction workforce of up to 250 FTE creates significant on-site parking demand. If not managed, overflow parking on Calico Line or Colemans Road would create safety risks and obstruct through traffic. The temporary nature of the construction period limits the duration of this effect, but the scale is significant during peak months.

9.2 Operational Phase Adverse Effects

Once the Project is operational, the traffic generated by the site is negligible. A maximum of 4–10 staff and contractor vehicle movements per day (light vehicles and small rigid vehicles) are anticipated. These volumes are immaterial relative to existing network flows and are not expected to produce any adverse effects on the surrounding road network, intersection performance, or road safety environment. No adverse operational phase traffic and transport effects are anticipated.

10.0 Significance of Adverse Effects

Table 17 provides a summary significance assessment of each identified adverse traffic and transport effect, both without mitigation (pre-mitigation) and with the mitigation measures described in Section 8 in place (post-mitigation). The significance ratings use the scale: Very Low, Low, Low-Moderate, Moderate, Moderate-High, High, Very High.

The below assessment indicates that the most significant pre-mitigation effects relate to road safety at site access points and OW/OD vehicle movements. With the anticipated mitigation framework outlined in this assessment in place, all construction-phase effects are reduced to Low or Very Low significance. Operational effects are assessed as Very Low with no additional mitigation required. No adverse traffic or transport effects of high or very high significance are anticipated, even in the absence of mitigation.

Table 17 Adverse Effects Significance Assessment

Effect	Nature, Scale and Duration	Phase	Pre-Mitigation Significance	Key Mitigation Ref	Post-Mitigation Significance	Discussion
Increased HCV volumes on Calico Line	Up to 100 HCV movements per day during the peak construction period (4–6 months). Baseline: Calico Line carries ~395 HCV per day (one truck every two minutes). At peak construction, project HCVs add approximately one additional truck every 7 minutes averaged across the day, or one every four to five minutes during peak hours. An increase in frequency, not a step-change in route character. Total vehicle increase across all types: 80–200 vpd. Duration: temporary, up to 18 months total.	Construction	Moderate	M3, M5	Low	Route-specific HCV restrictions via CTMP and right turn bay at Calico Line access reduce network-level effects.
Road safety	Introduction of new HCV access movements onto Calico Line (A2) and potentially Tūtaenui Road (A3) increases conflict exposure at entry/exit manoeuvres. Sight distances at all three accesses meet ODP minimums. Separation distance non-compliances at A1 and A2 increase residual risk if not adequately addressed. Duration: temporary, construction phase only for HCV movements.	Construction	Moderate	M1, M3, M5	Low	Right turn bay at A2, vehicle tracking confirmation, and CTMP measures substantially reduce conflict risk. Substantive application will address separation distance non-compliances and consideration to proposed shared path on southern edge of Calico Line.
Road pavement deterioration	Repeated HCV loadings on Colemans Road is likely to accelerate pavement deterioration above normal wear rates. Calico Line as a designated HPMV route is designed for high HCV loadings and is less susceptible. Duration: effects on pavement are permanent in terms of accelerated wear, though the roads are repairable.	Construction	Moderate-Low	M3	Very Low	Avoid Colemans Road for HCV construction access and undertake pre- and post-construction dilapidation surveys where Colemans Road used for construction access to establish a baseline and identify required remediation. HCV routing via Calico Line avoids damage to Colemans Road entirely.
OW/OD vehicle movements	The delivery of the high-voltage transformer and other OW/OD components requires special vehicle permits and route assessment. OW/OD vehicles are a small in number (estimated 1–10 movements), but their scale creates temporary but significant disruption to network operations if not properly managed. Duration: very short-term events, likely less than 1 day per delivery.	Construction	Moderate	M2, M3	Low	Formal OW/OD route approval and escort planning via NZTA process substantially reduces network disruption. Very limited in frequency and duration.
Amenity effects	Construction traffic accessing the site via Calico Line passes in proximity to Nga Tawa Diocesan School. Adverse amenity effects include increased noise and vibration from HCV movements, dust, and risks to pedestrian and cyclist safety (particularly along the proposed shared path). Duration: temporary, limited to the construction period (18 months, peak 4–6 months).	Construction	Moderate	M3	Very Low	Agreed HCV operating hours window (avoiding school start/finish times), speed limit review on Calico Line in the school vicinity, and stakeholder engagement with the school substantially reduce amenity impacts.
Workforce parking and on-site traffic management	A peak construction workforce of up to 250 FTE has the potential to generate significant on-site parking demand and associated light vehicle movements on surrounding roads if not managed. Unmanaged workforce parking on Calico Line or Colemans Road would conflict with through traffic and degrade road safety. Duration: temporary, construction phase only.	Construction	Moderate	M3, M4	Very Low	On-site parking provision for all workers and use of shuttle buses for labourers substantially reduces the on-road footprint of the workforce. Managed within the CTMP.
Concurrent SH1 maintenance works	Concurrent maintenance or upgrade works on the SH1 corridor have the potential to interact with project construction traffic, creating compounded network disruption and safety risks. Duration: dependent on NZTA works programming; potentially intermittent across the construction period.	Construction	Moderate	M3	Very Low	Delivery staggering and coordination with NZTA through the CTMP process reduces the risk of compounding network effects.
Operational traffic effects	Negligible traffic volumes (4–10 light vehicle movements per day). No adverse effects on network operations, safety or amenity are anticipated. Duration: ongoing, 40-year project lifetime.	Operational	Very Low	–	Very Low	No mitigation required.

11.0 Conclusions

The preliminary assessment concludes that the FRV Rangitīkei Solar Farm can be supported from a transport and traffic perspective, provided that appropriate construction-phase mitigation measures are implemented. While operational traffic demands are very low, construction activity, particularly HCV and OW/OD movements, represents the primary anticipated transport impact requiring management and mitigation.

Three potential access points have been assessed, with all meeting minimum sight-distance requirements. However, two access points (A1 and A2) do not meet the access separation standards included in the ODP and will therefore require assessment and supporting justification as part of the substantive application under the FTAA. Despite these non-compliances, the access locations are anticipated to remain feasible with appropriate mitigation.

Colemans Road presents the most significant infrastructure constraints due to its narrow width and the need for substantial upgrades at the SH1 intersection. Consequently, primary construction access via Calico Line provides a materially lower-cost alternative, though further consideration of amenity effects (particularly near Nga Tawa Diocesan School) will be required. The preferred construction access location is therefore Calico Line.

The Project risks identified can be effectively managed through early design refinement, targeted infrastructure upgrades, preparation of a CTMP, and clear definition of preferred heavy-vehicle routes. A detailed ITA will be prepared to support the substantive application, further evaluating construction impacts and confirming mitigation requirements.

Subject to the anticipated mitigation measures outlined in this assessment, no unmanageable transport or traffic constraints have been identified. From a transport perspective, the Rangitīkei Solar Farm is considered suitable for referral under the FTAA, and the access and traffic matters identified herein are capable of being resolved through approval conditions and appropriate construction management processes.

12.0 Closure

This technical memorandum has been prepared based on the information made available to SLR and is intended to support FRV's application for referral of the Rangitīkei Solar Farm under the FTAA.

Regards,

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