Southern Link Inland Port

Integrated Transport Assessment - Addendum

Stantec

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Prepared by:

C. Rossiter

Signature

Chris Rossiter

Printed Name

Reviewed by:

AA Metherell

Signature

Andrew Metherell

Printed Name

Approved by:

Signature

Sarah Lloyd

Printed Name

Executive Summary

Following the lodgement of the substantive application by Southern Link Property Limited under the Fast-track Approvals Act 2024 to establish the Southern Link Inland Port (SLIP), the Expert Panel has requested additional information in relation to the Integrated Transport Assessment (ITA). This addendum to the ITA has been prepared to respond to the request as outlined in Minute 4 from the Panel.

The forecast traffic generation for the Inland Port set out in Section 7.2.3 and Table 7-5 of the ITA was based on the existing logistics movements provided by of the Dynes / Icon group and also by an analysis of container movements at Port Otago. It is considered that this information provides a robust basis for assessing the future movements at the Inland Port and the consequential changes in traffic volumes on Dukes Road North, State Highway 87 (SH87) and also State Highway 88 (SH88).

In collating this information for the Panel, an error has been identified in Table 7-2 of the ITA which incorrectly combined one-way and two-way movements. A corrected table is included in this addendum. The correction results in a small change in the traffic volume forecasts at intermediate stages of development but does not alter the overall forecast of the traffic generation.

The analysis of traffic volumes on SH87 north of the SH1 interchange indicates that there have been only low levels of growth in recent years. At full development of the SLIP, which could take about 10 years, the SLIP could contribute to about 1% growth to SH87 traffic volumes north of SH1 compared with 2025 volumes, and that contribution is not expected to materially change in the future.

The SLIP represents a high trip generating activity under the Dunedin City Second Generation District Plan rules and assessment against the transport objectives and policies is provided in the ITA. This addendum includes additional commentary with reference to all individual assessment matters under Rule 6.11.2 in response to the Expert Panel request.

The panel has requested a schedule of the proposed mitigation works to address any material negative transport effects of the SLIP. The primary adverse effect of the SLIP is considered to be potential effects on road safety associated with the volume of heavy vehicle movements rather than effects on the operational performance of the network.

Author

Christopher Rossiter is a Principal Transportation Engineer at Stantec New Zealand Limited (**Stantec**). He has held this position since 2013 and been employed at Stantec (and TDG prior to its incorporation with Stantec) since 2006. Prior to joining TDG (now part of Stantec), he was employed as a Principal Systems Engineer and Technical Manager with BAE Systems in England.

Chris holds the academic qualifications of Bachelor of Science from the University of Exeter and Bachelor of Arts (Open) from the Open University, England.

Chris is registered as a Chartered Professional Engineer with Engineering New Zealand. He has 40 years' engineering experience including 19 years' transportation engineering in New Zealand on a wide range of projects involving transportation engineering design, road safety audits, transportation planning and assessment.

Chris' role at Stantec includes preparing transportation assessment reports for resource consent applications and also providing transportation engineering services for many councils.[1] He has prepared expert transport evidence on behalf of councils and also for private developers in relation to a variety of land-use resource consent hearings and plan changes. His experience includes providing transportation engineering advice and assessment for a wide variety of land development projects across the South Island including large industrial sites such as the Southern Link Inland Port.

This report has been prepared in compliance with the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023 as if it was expert evidence presented in proceedings before the Environment Court. Unless stated otherwise, this report is within Chris' area of expertise and does not omit consideration of material facts known to him that might alter or detract from the opinions expressed in this report.

[1] Hastings, Central Hawke's Bay, Gisborne, Palmerston North, Whanganui, Carterton, Upper Hutt, Tasman, Nelson, Buller, Waimakariri, Christchurch, Ashburton, Timaru, Clutha, Queenstown Lakes, Invercargill.

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C.4 PM Peak with SLIP

1 Introduction

Following the lodgement of the substantive application by Southern Link Property Limited under the Fast-track Approvals Act 2024 to establish the Southern Link Inland Port (SLIP) in Mosgiel, the Expert Panel (Panel) has requested additional information in relation to the Integrated Transport Assessment (ITA). This addendum to the ITA has been prepared to respond to the request as outlined in Minute 4 issued by the Panel.

The addendum addresses:

- The source data and methodology used to derive heavy vehicle movement volumes
- Future receiving environment
- Dunedin City Second Generation District Plan (District Plan) – an assessment against the high trip generator transport matters of discretion

2 Heavy Vehicle Movements

2.1 Overview

The Panel has requested more information in relation to the ITA, specifically;

> *Describe the source data and methodology used to derive the forecast heavy vehicle movements outlined in the ITA (Section 7.2.3) that result in the expected changes in truck volumes in Table 7-5. This includes heavy vehicle movements arising from the import and export operation, warehousing activities, and container servicing facility. The forecast predictions should reflect the full development (at Stage 3). Describe the confidence in those transport predictions.*

The forecast traffic movements at the SLIP have been derived from the existing freight movement patterns by Dynes / Icon who will represent the first large haulage operator that will be based on the site and also the container movement information provided by Port Otago. Given their knowledge of existing freight movement patterns within the Dunedin area, this is considered the most reliable source of information for estimating future movements at the SLIP. This addendum provides further information on how the existing freight movement patterns reported by Dynes / Icon and Port Otago have been used to forecast the future heavy vehicle movement volumes at the SLIP.

At full development of the SLIP, heavy vehicle movements will be generated by three primary activities:

- Warehouse related activity;
- Road / rail transfer activity; and,
- Container maintenance and repair.

The early stages of development involve the consolidation of the Dynes / Icon activity from their multiple sites across Dunedin to the SLIP. This primarily involves warehouse related activity. As the site is developed, it is expected that the additional warehouse space available on site will be taken up by other haulage operators and that these will have similar traffic generating characteristics.

The establishment of the road / rail transfer hub will result in the relocation of container truck movements from Port Chalmers to the SLIP. Since container movements at Port Chalmers and at the Strathallan container maintenance facility are well understood, this provides a reliable basis for understanding movements at the SLIP.

The relocation of the container maintenance and repair facility from Strathallan to the SLIP will replace movements that currently occur between existing Dynes / Icon sites to Strathallan with internal movements at the SLIP. However, existing container movements by rail between the Fonterra Mosgiel site on Dukes Road North and Strathallan will need to travel a short distance of 0.7km on Dukes Road North between the Mosgiel site and the SLIP.

2.2 Seasonal Effects

The ITA identified that the heavy vehicle volumes on the state highway network exhibit moderate seasonal effects with the highest volumes typically occurring through the late summer period and the lowest volumes during the winter. This is also reflected in the average weekday traffic volumes recorded on SH87 and shown in Figure 2-1.

One consequence of this seasonal variation is that heavy vehicle volumes during the busier periods of the year can be up to 20% higher than the annual average. This was accounted for in the ITA where both average and peak volumes were repeated.

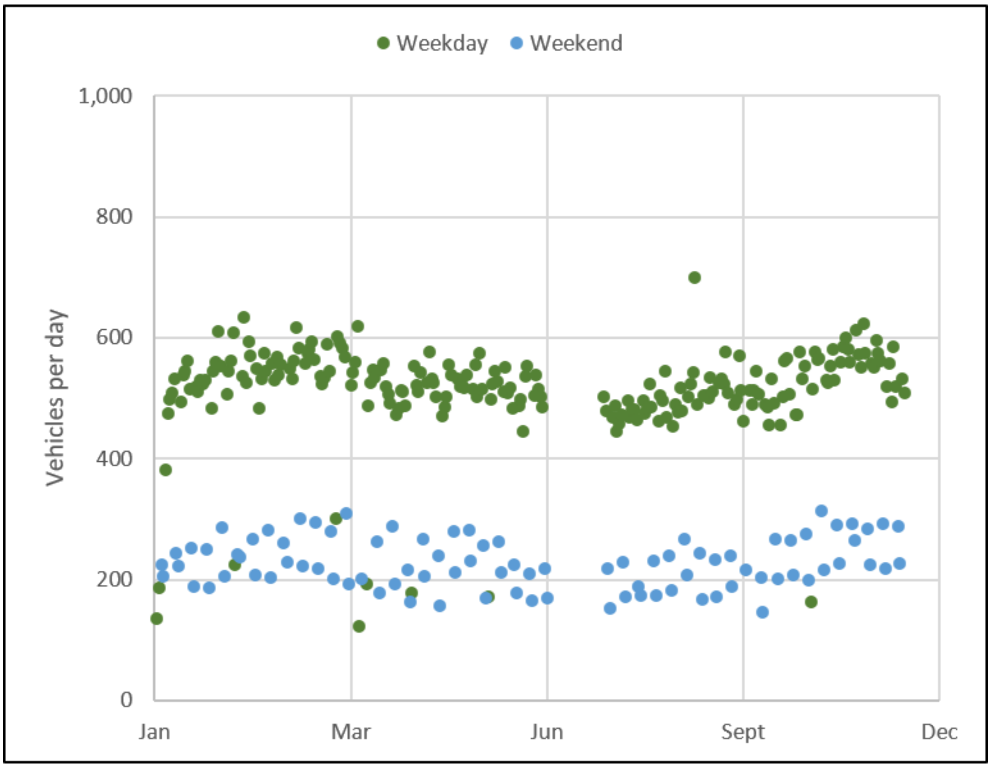

Figure 2-1: Heavy vehicle volumes on SH87, July 2025 to June 2026

2.3 Dynes / Icon Consolidation

2.3.1 Existing Movement Patterns

The anticipated transport movement patterns in Section 7.2.3 of the ITA were based on information provided by Dynes / Icon on their existing freight movement patterns.

Appendix A of this Addendum includes an Origin-Destination matrix to show the indicative existing pattern of heavy vehicle movements associated with the existing Dynes / Icon activity in the Dunedin area. Table 2-1 shows the movements aggregated broadly by location.

- “Mosgiel” - Carncross Street –
- “Dunedin” - T-Shed, 88 Parry Street, 95 Parry Street, Strathallan
- “Port Chalmers” - Sawyers Bay, Port Chalmers
- “North” – ie SH1 north of Dunedin
- “South” – ie SH1 south of Mosgiel

Table 2-1: Aggregated Dynes/Icon heavy vehicle movements per annum - existing

Origin	**Destination**					
	Mosgiel	**Port Chalmers**	**North of Dunedin**	**Dunedin**	**South of Mosgiel**	**TOTAL**
Mosgiel				540	400	**940**
Port Chalmers	790	1,360		2,180	120	**4,450**
North of Dunedin		300		200		**500**
Dunedin		2,170	500	3,150	1,180	**7,000**
South of Mosgiel	150	620		930		**1,700**
TOTAL	**940**	**4,450**	**500**	**7,000**	**1,700**	**14,590**

Based on this operating scenario, the Dynes / Icon activity has been analysed based on the routes utilised between origin and destination to determine the movements on each highway. The activity currently generates about 1,880 heavy vehicle movements per annum on State Highway 87 (SH87) through Mosgiel[2] and about 6,180 heavy vehicle movements per annum on State Highway 88 (SH88) between Dunedin and “Port Chalmers” (Sawyers Bay)[3]. The Sawyers Bay warehouse activity contributes about 1,360 heavy vehicle movements per annum to SH88 between Sawyers Bay and Port Chalmers.

2.3.2 Utilisation of Spare Train Capacity

Following the submission of the substantive application, Icon have started to test options to reduce existing heavy vehicle movements through Mosgiel by using spare capacity on trains that currently access the Fonterra site on Dukes Road North. It is understood that using this spare capacity has reduced heavy vehicle movement volumes through Mosgiel by up to 20 vehicles per day because it has reduced the need to move containers by road between Carncross Street and Strathallan.

2.3.3 SLIP Logistics Changes

The first stage of development of the SLIP involves the consolidation of much of Dynes / Icon activities at the SLIP and provides the basis for forecasting heavy vehicle movement volumes with Stage 3 development complete.

Following the establishment of the SLIP and relocation of the Dynes / Icon activities (excluding 95 Parry Street), there is forecast to be a reduction in truck movements within central Dunedin and SH88, but an increase on SH87. The consolidation of Dynes / Icon activity to one site means that the majority of existing heavy vehicle movements between the Dynes / Icon sites will become internal to SLIP and there will be no demand generated by relocated Dynes / Icon activities for road transport between Port

[2] 940 from Mosgiel (of which 540 are to Dunedin and 400 are to south of Mosgiel) + 940 to Mosgiel (of which 790 are from Port Chalmers, and 150 are from south of Mosgiel)
[3] 3,090 from Port Chalmers (4,450 less 1,360 local movements) + 3,090 to Port Chalmers (4,450 less 1,360 local movements).

Chalmers and the SLIP. It is understood that the warehouse at 95 Parry Street will be retained to support local distribution within the central Dunedin area and there will continue to be truck movements between the warehouse and Port Chalmers. The consolidation of a large share of the warehouse activity to the SLIP will change existing regional vehicle movements between the Dynes / Icon sites and origins / destinations to the south as these will need to use SH87 to access the SLIP, rather than SH1 to central Dunedin (and on to Port Chalmers via SH88).

2.3.4 Forecast Movement Patterns

The overall effect of the Dynes / Icon consolidation is that heavy vehicle volumes on SH88 between Sawyers Bay and Dunedin generated by Dynes / Icon will reduce by about 4,000 movements per annum from 6,180 to 2,100[4] but heavy vehicle volumes on SH87 could increase by about 2,300 movements per annum from 1,880 to 4,000[5]. That represents an increase of about 8 movements per day on average (based on 260 working days a year) and about 10 movements per day during the busiest parts of the year when movement volumes are up to 20% higher than the annual average.

Table 2-2: Aggregated Dynes/Icon heavy vehicle movements per annum – with SLIP

Origin	**Destination**					
	SLIP	**Port Chalmers**	**North of Dunedin**	**Dunedin**	**South of Mosgiel**	**TOTAL**
SLIP			150	150	1,700	**2,000**
Port Chalmers			300	750		**1,050**
North	150	300				**450**
Dunedin	150	750		600		**1,500**
South	1,700	0				**1,700**
TOTAL	**2,000**	**1,050**	**450**	**1,550**	**1,700**	**6,700**

2.4 Additional Warehouse Activity

The consolidation of the Dynes / Icon activity to the SLIP is expected to use about 40% of the proposed warehouse storage area, about 32,700 m^2 out of 79,800 m^2, and will generate about 4,000 heavy vehicle movements on SH87. The remaining warehouse area will be available for other freight haulage operators.

Since the additional warehouse area would be expected to have a similar rate of heavy vehicle movement generation to Dynes / Icon, at full occupancy of the SLIP, the total warehouse activity on site could be expected to generate about 10,000 heavy vehicle movements per annum on average.

This is lower than reported in Table 7-3 of the ITA which has incorrectly included a two-way movement volume for the warehouse activities with one-way movement volumes for the other volumes. The corrected volumes for SLIP when fully developed are shown in Table 2-3.

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[4] 1,050 towards Port Chalmers, 1.050 from Port Chalmers
[5] 2,000 towards Mosgiel (SLIP), 2,000 from Mosgiel (SLIP)

Table 2-3: Anticipated truck arrival volumes at the Southern Link Inland Port per annum.

Activity	Stage 1	Stage 2	Stage 3
Fonterra / Container Servicing Depot	9,000	9,000	9,000
Container Import / Export	11,000	11,000	11,000
Warehousing Activities	2,000	3,500	5,000
TOTAL	**22,000**	**23,500**	**25,000**

Table 2-4 shows the corrected weekday average truck volumes[6], estimated peak daily volume and peak hour volumes at the SLIP site entrance for each stage of the development. This replaces Table 7-4 in the ITA. Based on existing activity variation across the year, the peak day volumes are likely to be up to 20% higher than the average daily volume. The hourly peak volume has been estimated to present about 14% of the daily volume on a peak day.

Table 2-4: Indicative daily and peak hour truck movement volumes at the SLIP site entrance

Volume	Stage 1	Stage 2	Stage 3
Daily average	169	181	192
Peak day	203	217	231
Peak hour	29	31	33

The changes in truck volumes on Dukes Road North south of the Fonterra site and on SH87 will be less than shown in Table 2-4 because the container movements between the Fonterra site and SLIP will not use this part of the network. The ITA analysis of movements anticipated that about 20% of the additional movements on SH87 would be to or from the south. It is now understood that this is incorrect and that no changes in truck volumes on SH1 south of Mosgiel are expected and that truck volumes on SH1 between Mosgiel and Dunedin would rise by a similar amount to the change on SH87. This is shown in Table 2-5, which replaces Table 7-5 in the ITA.

Table 2-5: Expected changes in weekday truck movement volumes on the highway network

Location	Stage 1	Stage 2	Stage 3
SH87	50	56	123
SH1 south of Mosgiel	0	0	0
SH1 Mosgiel to Dunedin	50	56	123

2.5 Port Otago

One long term objective of the SLIP is moving more container movements to rail. The focus of this objective is movement of dry products because it is not practical to meet the additional power requirements for moving refrigerated containers by rail. Table 2-6 shows the indicative volumes of containers associated with dry products that were transported by road to and from Port Otago in 2025.

[6] Based on 260 working days

Although there are differences in the import and export volumes, this is balanced by the need for empty containers to be returned to source. While there is some uncertainty on the volume of empty containers moved by road because containers will be moved by rail when capacity is available, the tabulated volumes represent the maximum number that would be moved by road and could be transferred to the SLIP.

Table 2-6: Indicative container movements per annum for dry products (2025) (Source: Port Otago 2025)

	Full	Empty	TOTAL
Import	6,550	6,550	13,100
Export	3,750	3,750	7,500
TOTAL	10,300	10,300	20,600

Port Otago has indicated that the import / export operations involve a mix of Twenty-foot Equivalent Units (TEU) and forty-foot units, with the latter accounting for 75% to 80% of all containers. If each container movement involved a single heavy vehicle movement, the existing port activity would generate about 20,600 movements per annum. In practice, since some trucks can transport multiple containers, for example, two single TEU containers, the number of truck movements required to move all containers is about 10% lower. However, since it is not possible for logistics operations to achieve 100% backloading, this reduction is offset by additional unladen truck movements. Port Otago has reported that they currently achieve backloading rates across all haulage operators of about 85%. The overall effect is that there are about 21,300 heavy vehicle movements per annum (entering and exiting) at Port Otago associated solely with dry product import and export operations.

The establishment of the SLIP will enable the dry product containers to be moved to and from Port Otago by rail rather than road. If all the associated containers were moved to the SLIP, this would reduce heavy vehicle movements on SH88 by 21,300 per annum or about 80 per day on average on weekdays. However, this would also increase average truck volumes on SH87 by a similar amount. The existing seasonal variation shown in Figure 2-1 in import / export activity is reflected in SH87 heavy vehicle volumes and means that during the busiest parts of the year (typically February to April), daily truck volumes on SH87 could be up to 20% higher, that is, up to 100 movements per day.

If it is not possible to achieve a complete transfer of all dry product import / export activity to the SLIP, the changes in truck movement volumes on both SH88 and SH87 would be lower than indicated above.

2.6 Fonterra Mosgiel

The existing Fonterra activity at Mosgiel involves moving empty containers by rail between the Mosgiel site and Strathallan for maintenance or repair. With the relocation of the container repair facility from Strathallan to the SLIP, the Fonterra container repair activity will instead involve moving containers between the Fonterra site on Dukes Road North, from their access on Dukes Road North, to the SLIP which is approximately 0.7 km.

Based on the existing level of container movement between Fonterra Mosgiel and Strathallan, the relocation of the repair facility will require about 9,000 container movements per annum in each direction between the Fonterra site and the SLIP. This could require about 18,000 additional truck movements per annum on the section of Dukes Road North between the two sites which represents about 70 movements per day on average based on 260 working days or up to 10 movements per hour during the day.

2.7 Summary

The forecast heavy vehicle movement volumes have been based on annual truck movement patterns provided by Dynes/ Icon and Port Otago. In collating this information, an error has been identified in Table 7-3 of the ITA because this includes a mix of one-way and two-way volumes. This has been corrected in this addendum. This does not result in any alterations to the conclusions of recommendations contained within the ITA.

Table 2-7 provides a tabulated summary of anticipated two-way, heavy vehicle movements per annum generated by the SLIP Stage 3 development at different parts of the road network (reductions shown in red).

At full development (completion of Stage 3), the SLIP is expected to generate about 32,000 heavy vehicle movements per annum on Dukes Road North and SH87 Gordon Road. This represents about 125 movements per day on average based on 260 working days per year, with daily volumes reaching 150 per day during the busiest weeks of the year.

Table 2-7: Annual heavy vehicle movements by location on completion of SLIP Stage 3

Location	Dynes / Icon	Other Warehouse	Road / Rail Hub	Container Maintenance	TOTAL
Dukes Road North north Stedman Road	+4,000	+6,000	+22,000	18,000	**+50,000**
Dukes Road North north of SH87	+4,000	+6,000	+22,000	0	**+32,000**
SH87 Gordon Road	+4,000	+6,000	+22,000	0	**+32,000**
SH88	-4,000	-6,000	-22,000		**-32,000**

Figure 2-2 shows the forecast heavy vehicle movements generated by the SLIP in the context of average weekday volumes recorded on SH87 north of SH1 in 2025. It shows that the SLIP heavy vehicle movements would account for a small proportion of the overall traffic movement volume. The average heavy vehicle volume on a weekday in 2025 was 540 out of a total volume of 15,145. Traffic volumes were 15% to 20% lower at weekends. The SLIP would increase weekday heavy vehicle volumes to about 670 per day on average and total volumes (light and heavy vehicles) to about 15,300. The SLIP could contribute to about 1% growth to SH87 traffic volumes north of SH1 compared with 2025 volumes.

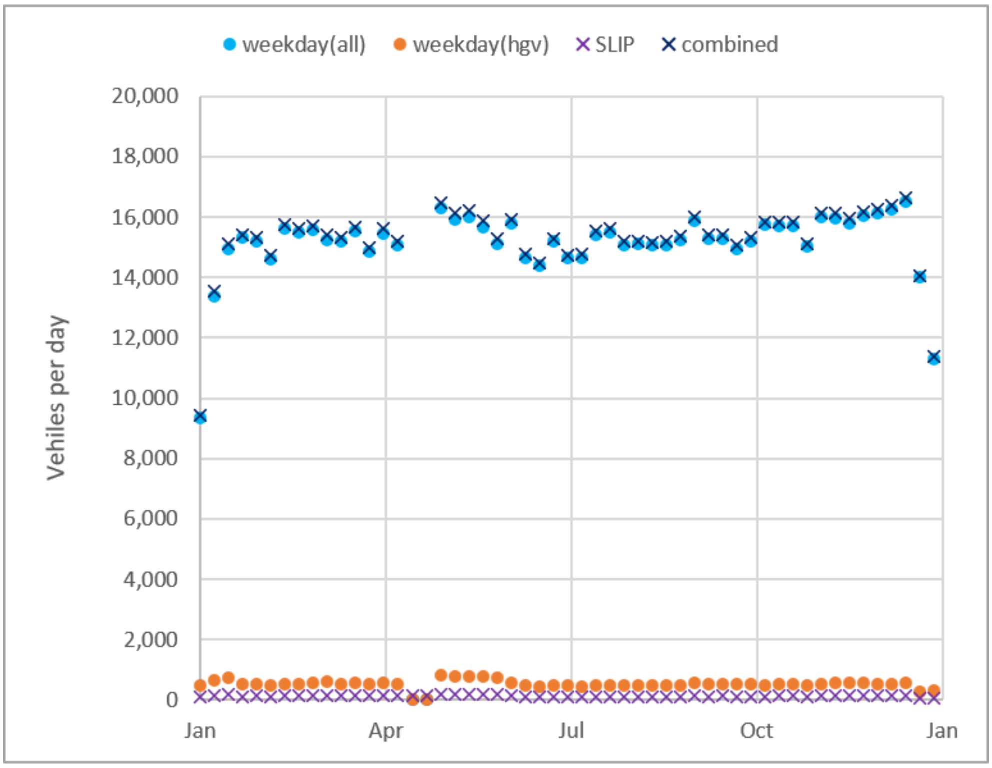


Figure 2-2: Effect of SLIP on traffic volumes – 2025 reference

In practice, the change in volumes on Dukes Road North and SH87 will be lower than this because the total includes some of the existing activity at Carncross Road which will be relocated to the SLIP. Since the establishment of the road / rail transfer hub will also create an opportunity for existing activities in the Dukes Road Industrial Zone to use rail rather than road, this could contribute to reduced truck movements on the wider network.

3 Future Transport Environment

The ITA did not explicitly consider future growth in traffic volumes because the historical records did not show evidence for any underlying growth and because the change in traffic volumes associated with the SLIP was small compared with existing volumes. Additional commentary on the effects of the SLIP in the context of a future scenario with growth in discussed below.

Figure 3-1 shows the average weekday volumes recorded on SH87 Gordon Road at the NZTA Traffic Monitoring System (TMS) count site 1 km west of State Highway 1 (SH1) from 2018 to 2025. In the five year period 2021 to 2025, the average weekday volumes have been about 15,100 vehicles per day, and have risen by about 0.2% per annum, which represents a very low level of growth. The 90th percentile daily volume, which broadly represents traffic volumes during the five busiest weeks of the year, was typically about 5% higher than the average weekday volume.

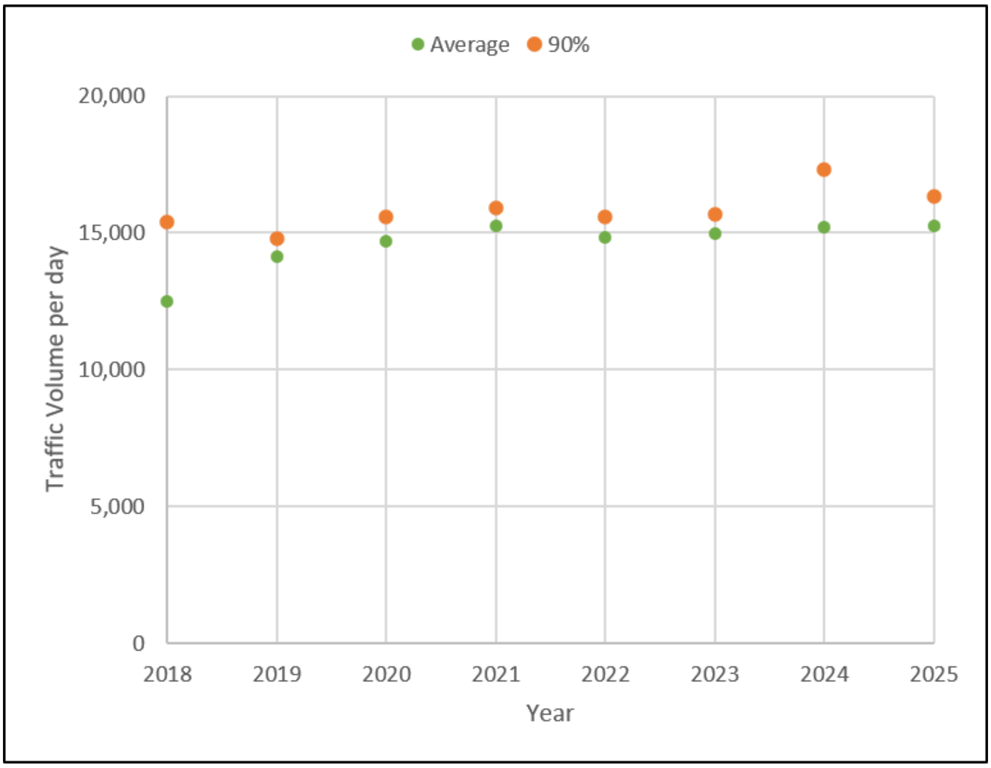


Figure 3-1: Average daily traffic volumes on SH87 Gordon Road (Source: NZTA TMS)

The average and 90th percentile weekday heavy vehicle volumes on SH87 Gordon Road are shown in Figure 3-2. Average weekday heavy vehicle volumes have ranged from 550 per day to 700 per day since 2020 with an overall average of 640 per day. There is greater seasonal variation in the heavy vehicle volumes compared with general traffic, with 90th percentile volumes ranging from 740 per day to 870 per day, with an average of 790 per day.

Both data sets indicate that historically there has been very low levels of traffic growth in Mosgiel. The low levels of growth may reflect the capacity constraints at the SH1 / SH87 interchange. A separate NZTA study is underway to investigate options to reduce congestion.

If the historic level of growth continued, traffic volumes on SH87 north of SH1 could be expected to grow by less than 5% over the next 10 years. If daily volumes grew by 5% compared with current volumes, average traffic volumes on SH87 west of SH1 would reach about 15,800 vpd, which is similar to the volumes currently experienced during the busiest weeks of the year.

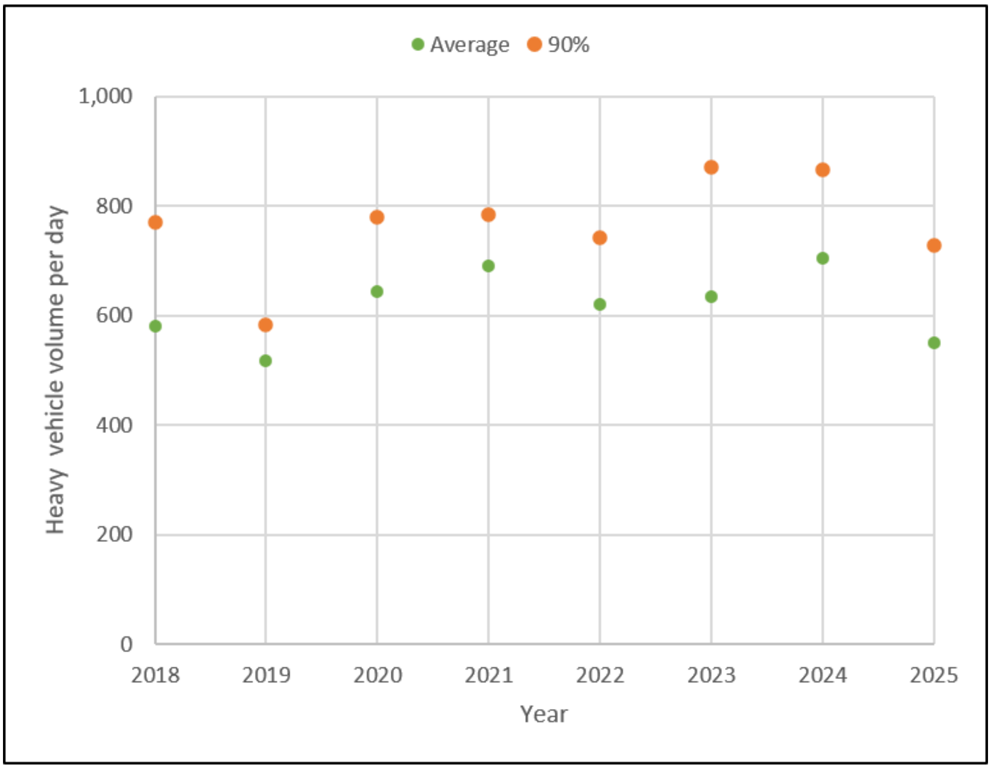


Figure 3-2: Average weekday heavy vehicle volumes on SH87 Gordon Road (Source: NZTA TMS)

The addition of 130 to 150 heavy vehicles movements per day represents a small proportion of the overall traffic on the strategic road network compared with existing and potential future volumes. Although the Mosgiel connection to SH1 at SH87 can become congested at peak times, the SLIP heavy vehicle movements are spread across the day, and will represent an even smaller proportion of overall traffic at peak times.

Light vehicle movements associated with staff travel is unlikely to be entirely additive to the state highway traffic volume because the establishment of the SLIP creates a new local employment centre which will redistribute some existing employment based trips.

4 Dunedin District Plan

4.1 Transport

The ITA includes an assessment against the transport objectives and policies in the Dunedin City Second Generation District Plan (District Plan). Minute 4 from the Expert Panel seeks assessment against the individual assessment matters set out under Rule 6.11.2 and this is presented below.

4.1.1 Rule 6.11.2 Assessment of Restricted Discretionary Activities

At full development, the SLIP is expected to generate about 310 light vehicle movements per day on average which will be largely associated with staff travel, and 130 to 150 heavy vehicle movements per day. On that basis, the SLIP represents a High Trip Generating Activity under the District Plan and an assessment is required of the:

- Effects on safety and efficiency of the transport network.
- Effects on amenity.

4.1.1.1 Effects on Safety and efficiency of the transport network

> ***6.11.2.2(a)(i) Objective 6.2.3 - Land use, development and subdivision activities maintain the safety and efficiency of the transport network for all travel modes and its affordability to the public.***

The assessment of the SLIP proposal against Objective 6.2.3 and its underlying policies is included in the ITA and is not repeated here.

> ***6.11.2.2(a)(ii) High trip generators are designed and located to avoid or, if avoidance is not practicable, adequately mitigate adverse effects on the safety and efficiency of the transport network.***

The SLIP site is located adjacent to the existing Dukes Road North industrial zone and the Taieri Branch Line railway. Dukes Road North is classified as a strategic road and provides direct access to SH87 which forms part of the wider strategic road network. The site location adjacent to the railway supports the creation of the road / rail transfer hub which will contribute to a reduction in heavy vehicle movements across the wider transport network.

The NZTA Planning Policy Manual (PPM) includes guidance on design standards for private property access to a state highway and represents an appropriate reference for informing decisions on design standards for the SLIP. Since the existing volumes on Dukes Road North, east of Stedman Road, are about 1,400 vehicles per day (vpd) and the SLIP will generate about 450 vpd, the PPM guidance indicates that forming the access as an intersection should be considered. The proposed access includes provision for widening of Dukes Road North and marking of a right turn bay with storage space for two heavy vehicles. This represents an appropriate level of treatment to ensure that the access can operate safely and efficiently.

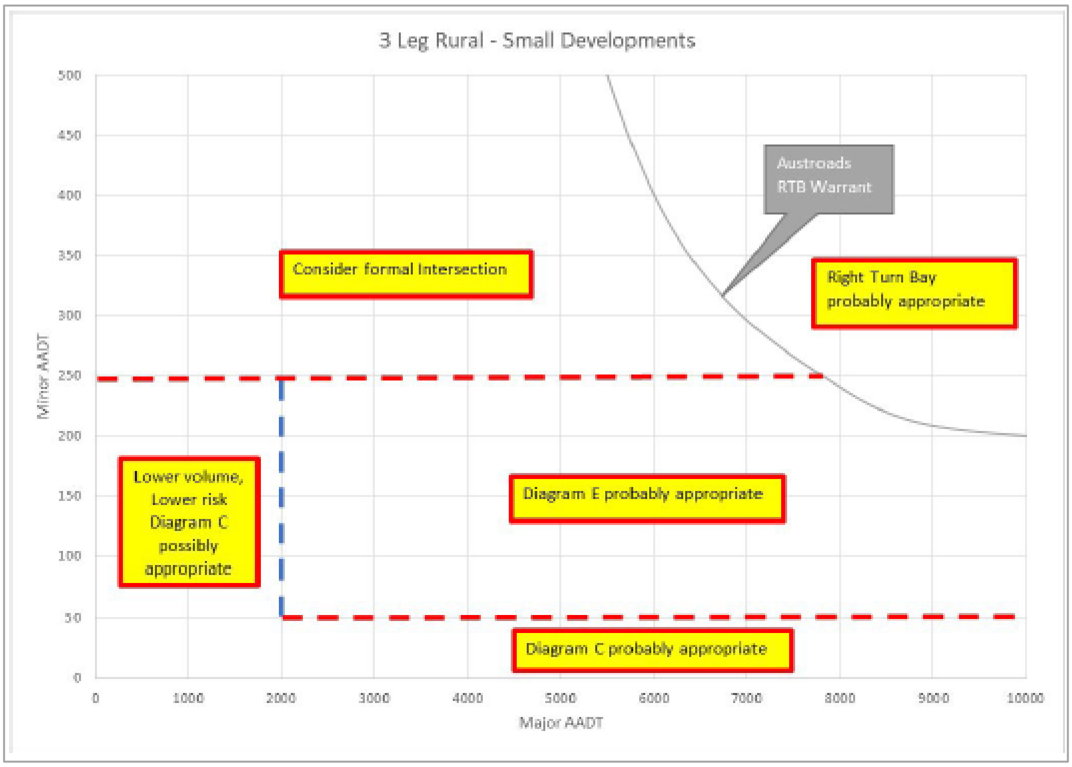


Figure 4-1: PPM Access to State Highway from Private Property Figure 8-1

Dukes Road crosses SH87 at a priority-controlled crossroads intersection with SH87 having priority. SH87 has a curved alignment through the intersection with Dukes Road North meeting at the apex of the curve as shown in Figure 4-2. Beyond the intersection, all roads have straight and level alignments. Dukes Road South is subject to a stop control because of the restricted visibility on that approach whilst Dukes Road North is give-way controlled.

A right-turn bay is located on SH87 for Dukes Road North and is supplemented by a short left-turn lane in the opposite direction. Single arrow chevron signs are located along the outside of the curve, with a chevron board opposite Dukes Road South. Chevron boards with supplementary 65 km/h recommended speeds are located at the intersection facing both northbound and southbound traffic along SH87.

From a road safety perspective, a primary concern with the existing intersection is the storage length of the right turn bay because this is not sufficient to accommodate an articulated vehicle. This increases the risk of a tail-end type crash because a long vehicle waiting to turn right may partially obstruct the SH87 through lane. The NZTA Crash Analysis System only includes details of one crash at this intersection in the five year period 2021 to 2025. That involved a rear end collision and property damage only.

Figure 4-2: SH87 / Dukes Road North / Dukes Road South intersection (DCC GIS Maps)

If Dukes Road North was assessed as a private access from an industrial zone to the state highway and ignoring any movements on Dukes Road South, then the PPM provides some guidance on the expected intersection form to align with Safe Systems treatments. Since SH87 carries an average daily volume of about 5,000 vpd and Dukes Road North has an average daily volume of over 4,000 vpd, Figure 8-2 of the PPM (replicated in Figure 4-3) indicates that a roundabout represents the preferred intersection treatment to minimise injury crash rates. Currently, there are no safety improvements proposed at the intersection and no funding has been allocated in the Otago / Southland Regional Land Transport Plan for works on this section of the highway. However, funding has been allocated for investigation and implementation of Mosgiel Freight Improvements in the 2024 to 2030 period.

Although reconfiguring the intersection as a roundabout or extending the right bay at the intersection would provide safety benefits, changes to the intersection are not warranted by the change in traffic movement volumes associated with the SLIP. SLPL has consulted with NZTA and NZTA have indicated that they did not consider that any improvements were necessary to accommodate the additional movements associated with the SLIP. They also did not consider that the SLIP would trigger a need for improvements to SH87 Gordon Road or wider transport network.

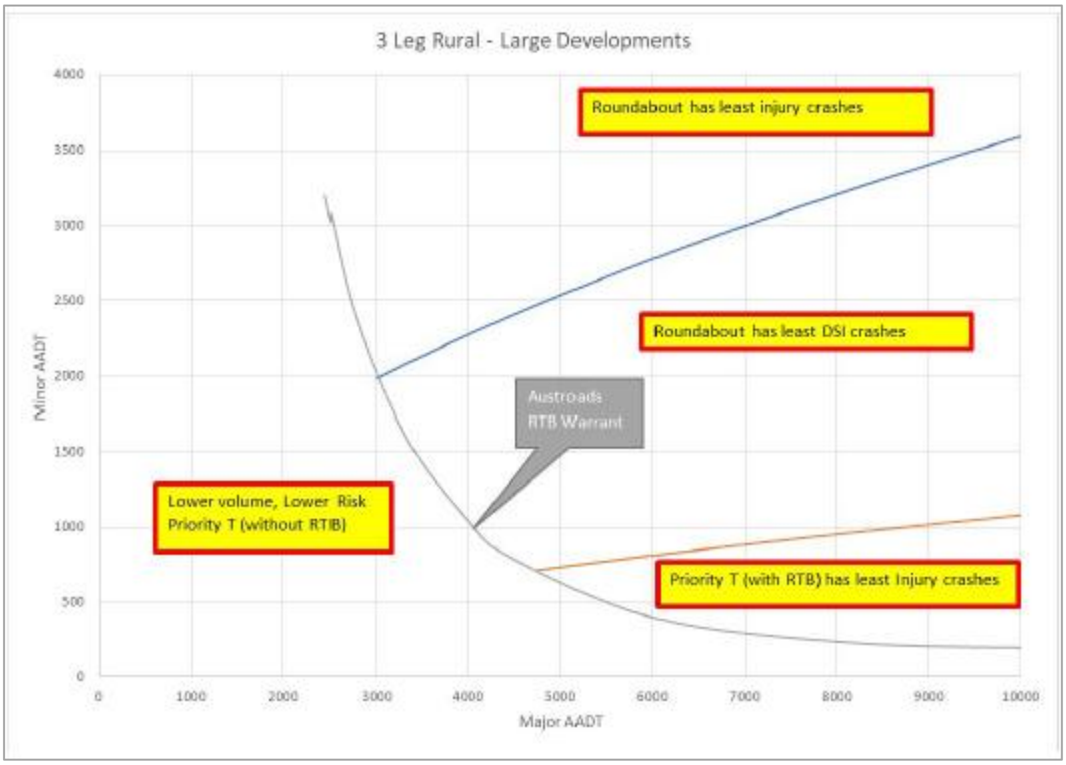


Figure 4-3: PPM Access to State Highway from Private Property Figure 8-2

6.11.2.2(a)(iii) The assessment will consider the findings of an Integrated Transport Assessment.

An ITA was prepared as part of the substantive application for the SLIP. It concluded that the proposed Inland Port will contribute to area wide benefits by reducing the need for freight to be transported by road to or from Port Chalmers as the site will be linked by the railway network. This will reduce heavy vehicle volumes on SH88 and also on SH1 within central Dunedin. However, the SLIP will contribute to some increase in truck movements on SH87 as the site develops.

Although the SLIP will add to heavy vehicle movements on SH87 Gordon Road, through central Mosgiel, since these are travelling through rather than turning at intersections, it is considered that they would not contribute to a noticeable change in the risk of a crash involving a heavy vehicle. Appendix B includes a tabulated safe system assessment of the access route between the SLIP and SH1. This has been broken into four sections.

- Dukes Road North – Industrial Zone
- Dukes Road North – rural
- SH87 rural – urban limit to Dukes Road North
- SH87 Gordon Road

The generally straight and level alignment of the access roads, along with the signs and marking, contributes to a reduced risk of ‘run-off-road’ or ‘head-on’ collisions. However, the speed environment does increase the risk of death or serious injury in the event of a crash outside of Mosgiel. This remains the case whether or not the SLIP is approved.

The configuration of the SH87 / Dukes Road North intersection and its location on a curve contributes to a moderate rating for intersection related crashes which have greater likelihood for causing injury because of the speed environment and the volume of heavy vehicles turning at this location. This represents an existing risk location from a Safe Systems perspective and safety improvements to the intersection would be required to better align the configuration with Safe System outcomes.

Dunedin City Council (DCC) has provided details of a vehicle movement survey that was conducted in March 2026 at the SH87 / Dukes Road intersection. Appendix C includes figures of the recorded peak turning volumes and intersection analyses.

During the morning and evening peak periods, nearly 50% of all movements were between Gordon Road and Dukes Road North which reflects the existing level of employment within the Dukes Road industrial zone. About 25% of all movements were between Taieri and Mosgiel with the remaining movements distributed across the approaches.

The SIDRA intersection analysis software has been used to assess the existing level of performance of the intersection. The analysis indicates that all movements on the Dukes Road South approach experience average delays of 10 to 15 seconds which represents Level of Service (LOS) B. This suggests that the movements are largely unconstrained by other movements on the network. The right turn movement from Dukes Road North towards Taieri also operates at LOS B during the morning and evening peak periods with 95th percentile queue lengths of less than 10 m. Although there is a high demand for the right turn movement from Gordon Road into Dukes Road North, the opposing volumes on SH87 are very low and the average delays are less than 10 seconds even at peak times.

For the purposes of assessing the worst-case potential effects of the SLIP on the intersection, the two-way heavy vehicle movement volume between Gordon Road and Dukes Road North was increased by 30 vehicle movements per hour, that is, 15 movements in each direction. That represents more than 20% of the expected average daily heavy vehicle movement volume. It is understood that the peak light vehicle demands at the SLIP will not coincide with the network commuter peak periods because the shift changes will occur before 8:00 AM and mid-afternoon. Light vehicle movement volumes have been modelled towards the SLIP in the morning and away from the SLIP in the evening. Based on the SIDRA analyses, the modelled increase in peak volumes would not contribute to any noticeable changes in delays or queue lengths as these are all forecast to be less than 2 seconds and 2 metres respectively.

Based on the intersection performance analysis, no changes to the intersection are warranted due to effects on efficiency.

Within Mosgiel, the existing high volume of vehicle movements along with pedestrians and cyclists results in moderate safety risk rating for vulnerable road users. This is mitigated to some extent by the urban speed environment, but the presence of heavy vehicles does increase the risk of serious injury in the event of a crash. Within an urban environment, crashes at intersections are more common than crashes along mid-block sections of road. Since the heavy vehicle movements generated by the SLIP will be travelling straight through intersections rather than turning, it is considered unlikely that they would contribute to a change in intersection crash rates.

Overall, the addition of heavy vehicle movements associated with the SLIP does not change any of the Safe System rating scores. However, the higher volume of traffic movements could marginally increase crash rates but this could be expected even without the SLIP because traffic volumes are expected to grow regardless.

6.11.2.2(a)(iv) For activities that are likely to generate trips by bicycle, Council will consider whether the site and vehicle access design provides for the safety of cyclists entering and exiting the road network.

Since the SLIP represents a new employment centre and is located adjacent to the existing industrial zone at Mosgiel, it is expected that there will be demand for active travel to/from the SLIP for travel to work purposes.

It is considered unlikely that cyclists would choose to travel to the SLIP using SH87 and Dukes Road North because of the high traffic volumes, lack of sealed shoulders and the high speed environment.

Stedman Road provides the most direct link to the nearest areas of residential development in Mosgiel west of Wingatui Road. Stedman Road has an urban speed limit and carries an average daily volume of about 1,000 vpd. Wingatui Road links to Factory Road which provides access to the wider Mosgiel residential area.

While travel to the site by walking or cycling will have a low demand, DCC has indicated a desire for a new section of footpath to be formed along Dukes Road North west of the Site access to ensure that any active travel demand can be met safely and avoids conflict with truck movements. Although this does not represent a material negative effect, the SLPL is proposing to implement this to address road safety concerns, and this is a requirement of the proposed consent conditions.

6.11.2.2(a)(v) In assessing the effects on the safety and efficiency of the transport network, Council will consider:

1) ***the effects of the physical works on safety on the frontage road.***
2) ***the effects of the physical works on congestion on the frontage road.***
3) ***the effects of the physical works on pedestrian and cycle connectivity and safety.***
4) ***the capital and maintenance costs of the physical work.***

The development of the SLIP includes provision for widening of Dukes Road North at the Site access to accommodate the creation of a full right-turn bay. This represents an appropriate level of treatment to ensure that the access can operate safely and efficiently. The design has been discussed with DCC and its implementation will be required as a condition of consent.

The SLIP is not expected to generate a significant number of trips by walking or cycling, the lack of a path in this location would increase the safety risk to pedestrians and cyclists because of the high volume of large, heavy vehicles. Although this does not represent a material adverse effect, an extension to the existing footpath network on the Dukes Road frontage west of the Site access is proposed to mitigate this risk and provide a facility to enable that cyclists and pedestrians to safely travel to the SLIP entrance from Stedman Road.

6.11.2.2(a)(vi) Council will generally only consider new transportation infrastructure (e.g. traffic signals, roundabouts etc.) as acceptable when there are no other practicable design solutions.

The configuration of the proposed access arrangements to the SLIP site have been discussed with DCC and the general layout has been agreed. Traffic signals or a roundabout are not considered necessary at the SLIP site access to allow it to operate safely and efficiently.

6.11.2.2(a)(vii) Traffic entering and exiting the site does not cause adverse safety or congestion effects on any frontage road.

DCC has provided details of a recent traffic count Dukes Road North east of Stedman Road (February 2026). This recorded peak hour volumes of about 190 vehicles per hour (vph) in the morning and 230 vph in the evening. Based on these flows, right turn movements from Dukes Road North into the SLIP will be opposed by volumes of about 120 vph at peak times which represents two vehicles per minute on average. Since this provides ample time for a vehicle to enter the site, the SLIP will not contribute to any congestion effects at the entrance.

6.11.2.2(a)(viii) The vehicle movements generated by the activity do not result in overall traffic volume on any frontage road exceeding the capacity of that road.

Dukes Road North is classified as a Strategic Road in the District Plan with Stedman Road being classified as an Industrial Road. Peak hour, two-way traffic volumes on Dukes Road North range from about 230 vph east of Stedman Road to about 430 vph east of SH87 in the evening peak period.

The busiest period of light vehicle movements associated with the SLIP will be at shift change times which will occur before 8:00 AM, mid-afternoon and late evening. Traffic volumes on Dukes Road North are lower at these times than the commuter peak periods and there is ample capacity to accommodate the additional movements.

Although the SLIP could contribute 20 to 30 vph in its busiest hour of the day which is expected to be during the day rather than in the evening peak, the combined traffic volume remains well within the total capacity of the road.

6.11.2.2(a)(ix) The frontage road has adequate on-road queuing space.

The proposed widening of Dukes Road North to accommodate the creation of a full right-turn bay at the Site access will ensure that there is sufficient space to accommodate any turning trucks without affecting through movement on Dukes Road North.

6.11.2.2(a)(x) The activity is located on a frontage road with capacity to absorb the additional vehicle movements associated with the activity.

As a two-lane road, Dukes Road North has a theoretical capacity to accommodate 1,500 to 1,600 vph in each direction. Since the existing two-way peak hour volumes are below 500 vph, the road provides a high level of service and there is ample capacity on Dukes Road North to accommodate the additional vehicle movements.

6.11.2.2(a)(xi) Travel planning interventions are proposed to reduce the number of vehicle movements generated by the activity.

The nature of the road / rail transfer hub and associated warehouse activity requires freight movement by road before it can be moved to rail. The logistics operators already use heavier or longer trucks where practical to minimise vehicle movements on the network.

A footpath along the Dukes Road frontage west of the Site access is proposed to enable staff choosing to walk or cycle rather than drive to do so safely.

> ***6.11.2.2(a)(xii) Physical works will be used where appropriate (including left in, left out vehicle access; turning bays; traffic signals and roundabouts)***

The development of the SLIP includes provision for widening of Dukes Road North at the Site access to accommodate the creation of a full right-turn bay.. The configuration of the proposed access arrangements to the SLIP site have been discussed with DCC and the general layout has been agreed.

4.1.1.2 Effects on Accessibility

> ***6.11.2.2(b)(i) Objective 6.2.2 Land use activities are accessible by a range of travel modes.***

The assessment of the SLIP proposal against Objective 6.2.2 and its underlying policies i.s included in the ITA and is not repeated here.

> ***6.11.2.2(b)X. The activity is located:***
>
> ***1) within convenient walking access of sufficient car parking (including any car parking provided on-site) and, where public car parking is relied on, the activity will not significantly impact the availability of that car parking to other nearby activities; and***
>
> ***2) within convenient walking access of travel modes other than private car, except where the activity is not suited to access by these modes***

The SLIP site layout includes 180 parking spaces for staff which is sufficient parking to meet the anticipated staff demands and is not reliant on any public parking outside of the site. This approach reflects the lack of public parking available within the area.

There are no public transport services that operate on Dukes Road North and none are currently planned. An extension to the footpath network on Dukes Road North west of the Site access is proposed to support walking and cycling from nearby residential areas.

> ***6.11.2.2(b)ii. For activities that are likely to generate a significant number of trips by walking, cycling or public transport:***
>
> ***1) activities likely to generate trips by cycling have safe access for cyclists into and through the site and secure cycle parking;***
>
> ***2) activities likely to generate trips by walking have safe access for pedestrians into and through the site; and***
>
> ***3) activities likely to generate trips by public transportation are located a reasonable walking distance from a frequent public transportation route with safe access for pedestrians from a bus stop to the site.***

The SLIP is not expected to generate a significant number of trips by walking or cycling. The location of the site beside the existing industrial zone means that typical travel distances from nearby residential areas will be more than 2 km. Although cycling may represent a practical travel option for workers that live within Mosgiel, the shift change times, which involve travel in dark conditions, will reduce the attractiveness of this as an option.

> ***6.11.2.2(b)iii. The assessment of high trip generators will generally consider the findings of an Integrated Transport Assessment (see Special Information Requirement Rule 6.14.2), including the likely parking demand of the land use activity and the availability of public parking in the vicinity of the site.***

An ITA has been prepared as part of the substantive application for the SLIP. Since there are no minimum parking space requirements in the District Plan, only the layout of the parking was assessed in the ITA. The site plans indicate that there will be about 180 parking spaces available on site which is sufficient to the meet the staff parking demands even if all staff travelled separately by private vehicle and were on site at the same time. This means that the SLIP will not generate an overflow parking demand onto the public road network.

> ***6.11.2.2(b)Y. In assessing the effects of the activity on the availability of public car parking to other nearby activities, Council will consider whether changes to the management of public car parking are necessary to mitigate those effects (e.g. changes to time-limits or charging for car parks).***

The SLIP will provide sufficient parking to meet all its parking demands and is not reliant on any public parking being available or provided by DCC.

> ***6.11.2.2(b)Z. In assessing whether an activity is suited to access by travel modes other than private car, Council will consider whether the general public will be accessing the activity, the number of trips anticipated by the general public, and whether the activity is of a nature that makes access by travel modes other than private car a practicable alternative (e.g. for office, retail, or schools) or not (e.g. for restaurant – drive through, or service stations).***

There are no public transport services operating on Dukes Road North or currently planned to service the industrial zone. This means that the dominant travel mode choice for staff will be private vehicle either as a driver or passenger.

The nature of the activities at the SLIP means that it is not open to the general public and all access is controlled by security gates.

> ***6.11.2.2(b)Z.v. In assessing the appropriateness of the location, Council will consider the road classification of roads where vehicle access is proposed (see Appendix 6A) and, in general, according to that classification, a local road is not an appropriate location for high trip generators.***

Dukes Road North forms part of the DCC Strategic road network. Site access is proposed directly to Dukes Road North which is consistent with its high trip generating activity status.

6.11.2.2(b)Z.vi. There is safe and convenient access to and within the site for pedestrians

A footpath along the Dukes Road frontage west of the Site access is proposed to enable staff choosing to walk or cycle rather than drive to do so safely.

6.11.2.2(b)Z.vii. Provision of facilities for people accessing the site by a variety of travel modes (for example dedicated carpool parking, changing rooms, secure bike storage).

Although staff at the SLIP will be able to travel by private vehicle, cycle or on foot, the dominant mode will be private vehicle either as a driver or passenger. Cycle parking and changing facilities will be provided as part of the staff amenities within the site.

6.11.2.2(b)Z.viii. There are frequent public transport services within 200m of the site.

There are no public transport services operating on Dukes Road North or currently planned to service the industrial zone. This means that the dominant travel mode choice for staff will be private vehicle either as a driver or passenger.

6.11.2.2(b)Z.ix. Customer or visitor car parking is designed to ensure that vehicles travel at safe speeds within it (for example by using speed bumps and advisory signage).

The nature of the activities at the SLIP means that it is not open to the general public and all access is controlled by security gates. Vehicle speeds within the site will be controlled by advisory signage.

5 Transport Mitigation

Minute 4 issued by the Panel requested a full schedule of any mitigations proposed to mitigate any material negative transport effects of the SLIP. Since there is no definition of what constitutes a material effect in the FTAA, for the purposes of this response it has been interpreted as:

- A measurable increase in traffic that degrades an intersection's level of service.
- A safety impact that increases crash risk or creates new conflict points.
- Significant effects on active mode connectivity or public transport operations.
- Heavy vehicle movements that materially affect the surrounding road network.
- Changes requiring upgrades to roads, intersections, parking supply, or access arrangements.

Based on the forecast levels of SLIP traffic generation, the SLIP will not contribute to any noticeable changes in delays or operational performance of intersections. The SLIP does create a new conflict point at the entrance on Dukes Road North but since works are proposed to ensure that the entrance is designed to enable a high level of safety to be maintained, this is not considered to be a material adverse effect. The SLIP is not located on a public transport route and access to the SLIP does not traverse any cycle routes. A footpath along the Dukes Road frontage west of the Site access is proposed to ensure that workers can access the site safely. Although the SLIP will contribute to higher heavy vehicle movement volumes on Dukes Road North and SH87 Gordon Road, this will not materially affect the operation of the roads because both roads form part of the strategic road network providing access to the Dukes Road industrial zone. NZTA have not identified a need for any alterations to the state highway network to accommodate the higher volume of heavy vehicle movements.

Overall, the SLIP is not expected to contribute to material adverse effects on the operation of the transport network but mitigation works are proposed to avoid adverse road safety effects. The provision of the railway siding represents a fundamental requirement for the SLIP to support the road / rail transfer facility and enable a reduction in heavy vehicle movement volumes across the wider transport network.

Table 5-1 provides a schedule of the mitigation works proposed to address effects on the land transport network and identifies the associated conditions of consent that require implementation of the works. The schedule comprises recommended mitigation measures to address potential adverse road safety effects, as well as upgrades that SLPL has agreed to following consultation with the DCC. Where the mitigation measures proposed are addressing a material effect, or have been agreed with DCC, this is noted in the table below.

Table 5-1: Land transport mitigation and associated conditions of consent

Mitigation	Potential Adverse Effect Addressed	Conditions of Consent
Widening of Dukes Road North to enable the creation of a right turn bay into the SLIP Agreed with DCC	Road safety (intersection, heavy vehicles)-	72, 73, 74, 75
Formation of SLIP access as an intersection Agreed with DCC	Road safety (intersection, heavy vehicles)	72, 73, 74, 75
Provision of on-site queuing space Agreed with DCC	Road safety (intersection, heavy vehicles)	72, 73, 74, 75

Mitigation	Potential Adverse Effect Addressed	Conditions of Consent
Construction of an at least 2m wide footpath along the Dukes Road North frontage west of the Site access Agreed with DCC	Road safety (Active modes)	72, 73, 74, 75
Provision of on-site parking	Road safety (off-site parking)	76, 77, 79, 80
Provision of on-site loading	Road safety (heavy vehicles)	78, 79, 80
Construction of railway siding	Road safety, Railway safety	81, 82, 83

Appendices

Appendix A Origin-Destination Matrices

A.1 Base Scenario

Origin		**Destination**										
		“Dunedin”						**“Port Chalmers”**				
		Carncross St	**T-Shed**	**88 Parry St**	**95 Parry St**	**Strathallan**	**Dunedin (General)**	**Sawyers Bay**	**Port Chalmers**	**North**	**South**	**TOTAL**
“Dunedin”	**Carncross St**					540					400	**940**
	T-Shed							130			130	**260**
	88 Parry St					1,300	200			200	700	**2,400**
	95 Parry St						300		500		100	**900**
	Strathallan						750		640	300	250	**1,940**
	Dunedin (General)			200	300	100			900			**1,500**
“Port Chalmers”	**Sawyers Bay**	250	130						680		120	**1,180**
	Port Chalmers	540		1,300	500		250	680				**3,270**
	North			200					300			**500**
	South	150	130	700	100			370	250			**1,700**
	TOTAL	**940**	**260**	**2,400**	**900**	**1,940**	**1,700**	**1,180**	**3,270**	**300**	**1,700**	**14,590**

A.2 SLIP Scenario

Origin		**Destination**										
		"Dunedin"						**"Port Chalmers"**				
		Carncross St	**T-Shed**	**88 Parry St**	**95 Parry St**	**Strathallan**	**Dunedin (General)**	**Sawyers Bay**	**Port Chalmers**	**North**	**South**	**TOTAL**
"Dunedin	**Carncross St**										400	**400**
	T-Shed										180	**180**
	88 Parry St						150			150	700	**1,000**
	95 Parry St						300		500			**800**
	Strathallan										300	**300**
	Dunedin (General)			150	300				250			**700**
"Port Chalmers"	**Sawyers Bay**										120	**120**
	Port Chalmers				500		250			300		**1,050**
	North			150					300			**450**
	South	400	180	700		300		120				**1,700**
	TOTAL	**400**	**180**	**1,000**	**800**	**300**	**700**	**120**	**1,050**	**450**	**1,700**	**6,700**

Appendix B Safe System Assessment

The Safe System audit methodology brings together the Safe System assessment and safety concern ratings into one report.

The Safe System assessment evaluates a project's alignment with Safe System principles and identifies ways to improve alignment with a focus on minimising fatal and serious injuries. It investigates the inherent risk of the infrastructure and includes consideration of road user exposure.

The safety concern ratings are to identify individual aspects of the project that are a concern with an associated risk profile as per the concern ratings matrix. The assessment matrix is used to determine the extent to which existing conditions and potential project options align with the Safe System principles. This is achieved through a scoring system which considers seven crash types and the exposure, likelihood and severity of injury associated with crash type. Each combination is assigned a score out of four. The exposure, likelihood and severity scores for each crash type are multiplied to give a product out of 64. These are then added to determine the total safe system assessment score with a maximum of 448.

A score of zero or close to zero indicates a high level of alignment with the Safe System principles with the level of alignment decreasing as the assessment score increases.

Table B-2: Existing Situation – Dukes Road North (Industrial Area)

	Run-off road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclists
Exposure Comments:	Dukes Road North – 3,000 vpd High heavy vehicle volumes	Dukes Road North – 3,000 vpd High heavy vehicle volumes	Dukes Road North – 3,000 vpd High heavy vehicle volumes	Railway crossing - < 10 trains/day	Dukes Road North - < 10 ppd	Dukes Road North < 10 cpd	Dukes Road North – < 10 vpd
Exposure Score:	2/4	2/4	2/4	2/4	1/4	1/4	1/4
Likelihood Comments:	Factors that increase the likelihood include: •	Factors that increase the likelihood include: •	Factors that increase the likelihood include: • Slow manoeuvring heavy vehicles	Factors that increase the likelihood include: • Slow manoeuvring heavy vehicles • Train Movements	Factors that increase the likelihood include: • Incomplete footpath network	Factors that increase the likelihood include: • No cycle lanes	Factors that increase the likelihood include: • Speed
	Factors that decrease the likelihood include: • Straight road alignment • Edge lines / kerbs • Industrial environment	Factors that decrease the likelihood include: • Straight road alignment • Centre line markings / no overtaking • Industrial environment	Factors that decrease the likelihood include: • Signs and marking • Clear sight lines at intersections • Right turn bays	Factors that decrease the likelihood include: • Signs and marking at level crossing • Familiar drivers (major employment centre)	Factors that decrease the likelihood include: • Wide berms where there are no footpaths	Factors that decrease the likelihood include: • Wide traffic lanes	Factors that decrease the likelihood include: •
Likelihood Score:	2/4	2/4	2/4	2/4	1/4	1/4	1/4
Severity Comments:	Factors that increase the severity include: • 80 km/h speed limit • Power poles	Factors that increase the severity include: • 80 km/h speed limit • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Side impact crashes • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Vulnerable road user • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Vulnerable road user • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Vulnerable road user • Heavy vehicles
	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •
Severity Score:	3/4	3/4	3/4	3/4	4/4	4/4	4/4
Product	**12/64**	**12/64**	**12/64**	**12/64**	**4/64**	**4/64**	**4/64**
						TOTAL	**60/448**

Table B-3: Existing Situation – Dukes Road North (Rural)

	Run-off road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclists
Exposure Comments:	Dukes Road North – 3,000 vpd High heavy vehicle volumes	Dukes Road North – 3,000 vpd High heavy vehicle volumes	Dukes Road North – 3,000 vpd High heavy vehicle volumes		Dukes Road North - < 10 ppd	Dukes Road North < 10 cpd	Dukes Road North – < 10 vpd
Exposure Score:	2/4	2/4	2/4	2/4	1/4	1/4	1/4
Likelihood Comments:	Factors that increase the likelihood include: • No sealed shoulders • Road surface in winter conditions	Factors that increase the likelihood include: •	Factors that increase the likelihood include: • Slow manoeuvring heavy vehicles	Factors that increase the likelihood include: • Rural driveways	Factors that increase the likelihood include: • No footpaths	Factors that increase the likelihood include: • No cycle lanes	Factors that increase the likelihood include: • Speed
	Factors that decrease the likelihood include: • Straight road alignment •	Factors that decrease the likelihood include: • Straight road alignment • Centre line markings	Factors that decrease the likelihood include: • Clear sight lines at intersections	Factors that decrease the likelihood include: • Familiar drivers (residents / major employment centre)	Factors that decrease the likelihood include: • Grassed berms	Factors that decrease the likelihood include: •	Factors that decrease the likelihood include: •
Likelihood Score:	2/4	2/4	2/4	2/4	1/4	1/4	1/4
Severity Comments:	Factors that increase the severity include: • 80 km/h speed limit • Power poles	Factors that increase the severity include: • 80 km/h speed limit • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Side impact crashes • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Vulnerable road user • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Vulnerable road user • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Vulnerable road user • Heavy vehicles
	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •
Severity Score:	3/4	3/4	3/4	3/4	4/4	4/4	4/4
Product	**12/64**	**12/64**	**12/64**	**12/64**	**4/64**	**4/64**	**4/64**
						TOTAL	**60/448**

Table B-4: Existing Situation – SH87(Rural)

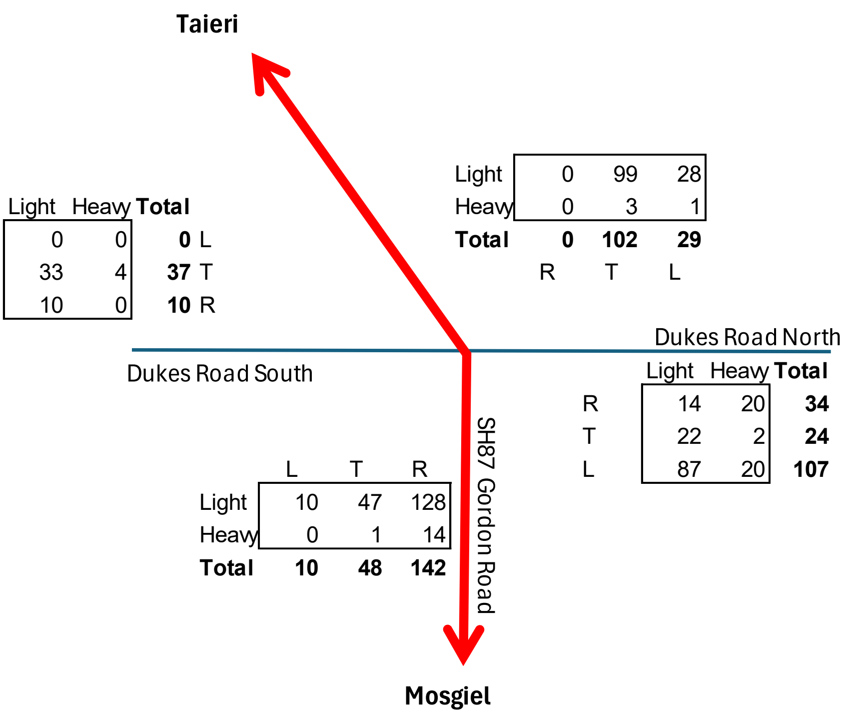
	Run-off road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclists
Exposure Comments:	SH87 – 5,000 vpd High heavy vehicle volumes	SH87 – 5,000 vpd High heavy vehicle volumes	SH87 – 5,000 vpd High heavy vehicle volumes	SH87 – 5,000 vpd	SH87 – Unlikely	Dukes Road North < 10 cpd	Dukes Road North – < 10 vpd
Exposure Score:	3/4	3/4	3/4	3/4	0/4	1/4	1/4
Likelihood Comments:	Factors that increase the likelihood include: • Sloped, grassed berms • Rural environment	Factors that increase the likelihood include: • Rural environment • Tourist route	Factors that increase the likelihood include: • Slow manoeuvring heavy vehicles • Short right turn bay • Short sight lines	Factors that increase the likelihood include: • Rural driveways	Factors that increase the likelihood include: • No footpaths	Factors that increase the likelihood include: • No cycle lanes	Factors that increase the likelihood include: • Speed
	Factors that decrease the likelihood include: • Generally straight road alignment • Line markings • Narrow sealed shoulder	Factors that decrease the likelihood include: • Generally straight road alignment • Centre line markings	Factors that decrease the likelihood include: • Signs and markings	Factors that decrease the likelihood include: • Familiar drivers (residents / major employment centre)	Factors that decrease the likelihood include: • Grassed berms	Factors that decrease the likelihood include: •	Factors that decrease the likelihood include: •
Likelihood Score:	2/4	2/4	3/4	2/4	1/4	1/4	1/4
Severity Comments:	Factors that increase the severity include: • 80 km/h speed limit •	Factors that increase the severity include: • 80 km/h speed limit • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Side impact crashes • Tail end crashes • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Vulnerable road user • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Vulnerable road user • Heavy vehicles	Factors that increase the severity include: • 80 km/h speed limit • Vulnerable road user • Heavy vehicles
	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •
Severity Score:	3/4	3/4	3/4	3/4	4/4	4/4	4/4
Product	**18/64**	**18/64**	**27/64**	**18/64**	**0/64**	**4/64**	**4/64**
						TOTAL	**89 / 448**

Table B-5: Existing Situation – SH87 Gordon Road (Urban)

	Run-off road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclists
Exposure Comments:	SH87 – 11,000 to 15,000 vpd	SH87 – 11,000 to 15,000 vpd	SH87 – 11,000 to 15,000 vpd	SH87 – 11,000 to 15,000 vpd	> 100 per day	> 100 per day	> 100 per day
Exposure Score:	4/4	4/4	4/4	4/4	4/4	4/4	4/4
Likelihood Comments:	Factors that increase the likelihood include: • On-street parking	Factors that increase the likelihood include: • Tourist route	Factors that increase the likelihood include: • Slow manoeuvring heavy vehicles	Factors that increase the likelihood include: •	Factors that increase the likelihood include: •	Factors that increase the likelihood include: • No cycle lanes	Factors that increase the likelihood include: •
	Factors that decrease the likelihood include: • Urban environment • Straight road alignment • Signs and markings	Factors that decrease the likelihood include: • Urban environment • Straight road alignment • Signs and markings	Factors that decrease the likelihood include: • Signs and markings • Right turn bays in some locations	Factors that decrease the likelihood include: •	Factors that decrease the likelihood include: • Footpaths on both sides of highway • Signalised crossing • Zebra crossings	Factors that decrease the likelihood include: • Wide shoulder in some areas	Factors that decrease the likelihood include: •
Likelihood Score:	2/4	2/4	3/4	2/4	2/4	2/4	2/4
Severity Comments:	Factors that increase the severity include: • urban speed limit •	Factors that increase the severity include: • urban speed limit • Heavy vehicles	Factors that increase the severity include: • urban speed limit • Side impact crashes • Tail end crashes • Heavy vehicles	Factors that increase the severity include: • urban speed limit • Heavy vehicles	Factors that increase the severity include: • Urban speed limit • Vulnerable road user • Heavy vehicles	Factors that increase the severity include: • urban speed limit • Vulnerable road user • Heavy vehicles	Factors that increase the severity include: • urban speed limit • Vulnerable road user • Heavy vehicles
	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •
Severity Score:	2/4	2/4	2/4	2/4	3/4	3/4	3/4
Product	**16/64**	**16/64**	**24/64**	**16/64**	**24/64**	**24/64**	**24/64**
						TOTAL	**144 / 448**

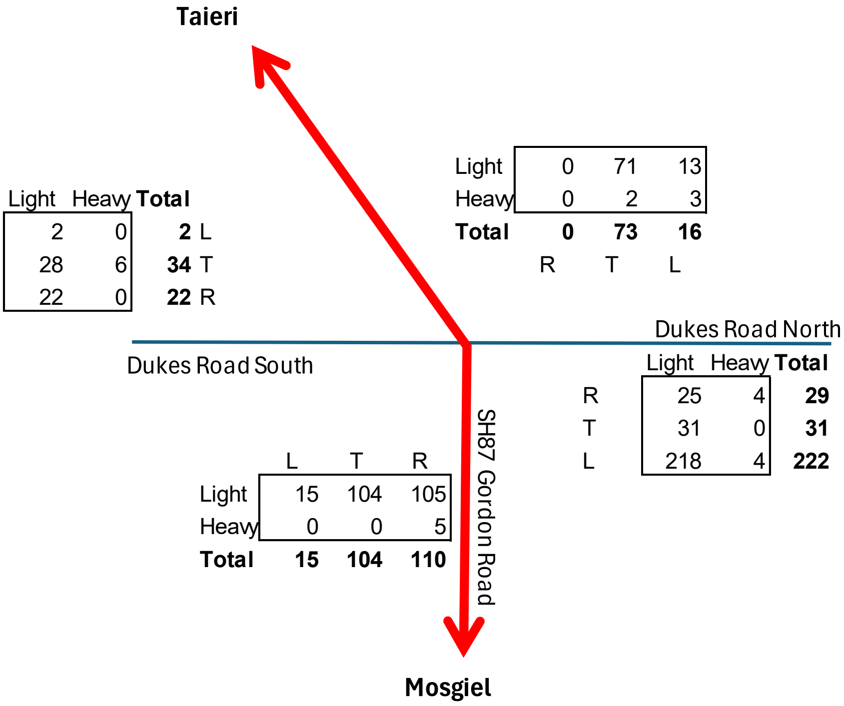
Appendix C SH87 / Dukes Road

C.1 AM Peak - Existing



Approach	Movement	Average Delay (s) / LOS	95% Queue Length (m)
Gordon Road	Left	7 (A)	0
	Through	0 (A)	0
	Right	7 (A)	4
Dukes Road North	Left	8 (A)	8
	Through	9 (A)	8
	Right	14 (B)	8
SH87 Taieri	Left	7 (A)	0
	Through	0 (A)	0
	Right	8 (A)	0
Dukes Road South	Left	9 (A)	2
	Through	11 (B)	2
	Right	12 (B)	2

C.2 PM Peak - Existing



Approach	Movement	Average Delay (s) / LOS	95% Queue Length (m)
Gordon Road	Left	7 (A)	0
	Through	0 (A)	0
	Right	7 (A)	3
Dukes Road North	Left	8 (A)	9
	Through	8 (A)	9
	Right	11 (B)	9
SH87 Taieri	Left	7 (A)	1
	Through	0 (A)	0
	Right	9 (A)	1
Dukes Road South	Left	9 (A)	3
	Through	12 (B)	3
	Right	13 (B)	3

C.3 AM Peak with SLIP

Approach	Movement	Average Delay (s) / LOS	95% Queue Length (m)
Gordon Road	Left	7 (A)	0
	Through	0 (A)	0
	Right	8 (A)	6
Dukes Road North	Left	8 (A)	9
	Through	9 (A)	9
	Right	14 (B)	9
SH87 Taieri	Left	7 (A)	1
	Through	0 (A)	0
	Right	8 (A)	1
Dukes Road South	Left	9 (A)	2
	Through	12 (B)	2
	Right	12 (B)	2

C.4 PM Peak with SLIP

Approach	Movement	Average Delay (s) / LOS	95% Queue Length (m)
Gordon Road	Left	7 (A)	0
	Through	0 (A)	0
	Right	7 (A)	4
Dukes Road North	Left	8 (A)	12
	Through	9 (A)	12
	Right	12 (B)	12
SH87 Taieri	Left	7 (A)	1
	Through	0 (A)	0
	Right	9 (A)	1
Dukes Road South	Left	9 (A)	3
	Through	12 (B)	3
	Right	15 (B)	3

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Stantec New Zealand
Building 2 Hazeldean Business Park
Level 3, 2 Hazeldean Road
Addington, Christchurch 8024
NEW ZEALAND
Mail to: PO Box 13052, Christchurch 8140
stantec.com