Appendix 7: Traffic Assessment

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Integrated Transport Assessment

prepared for

FARMERS CORNER

12-22 Longbeach Road, Ashburton

March 2019

Integrated Transport Assessment

prepared for

Farmers Corner

12-22 Longbeach Road, Ashburton

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Introduction

1. Farmers Corner Ltd has commissioned Novo Group to prepare an Integrated Transport Assessment (ITA) for a proposed Plan Change at 12-22 Longbeach Road in Ashburton to enable visitor accommodation and other tourist-based activities at the site.

2. This report provides an assessment of the transport aspects of the proposed development. It also describes the transport environment in the vicinity of the site, describes the transport related components of the proposal and identifies compliance issues with the transport provisions in the District Plan. It has been prepared broadly in accordance with the Integrated Transportation Assessment Guidelines specified in New Zealand Transport Agency Research report 422, November 2010.

3. The existing site includes retail, a restaurant and parking for approximately 22 car parks plus eight coaches. Vehicle access is taken from Longbeach Road.

4. The proposed Plan Change is intended to facilitate primarily the establishment of rural-based visitor accommodation on the site, as well as related activities including additional restaurant space. Access will remain to Longbeach Road. The site location is illustrated in **Figure 1** below and a copy of the concept plan[1] is contained in **Appendix 1**.

Figure 1: Site Location

[1] It should be noted that the concept plan is only an example of how the activity may be developed in order to assist with assessing the likely traffic effects. The concept plan is not a specific application and any development sought may not be laid out in a similar manner to that plan.

Transport Environment

Road Network

State Highway 1

5. State Highway 1 (SH1) forms part of the South Island strategic road network and is classified as an *Arterial Road* in the District Plan road hierarchy. This road provides one lane in each direction and has a speed limit of 100km/hr. The alignment in the vicinity of the application site is straight and flat.

6. The existing daily traffic volume on SH1 is approximately 8,412 vehicles. A weekday PM peak period traffic count was undertaken on 25 October 2018 at the intersection with Longbeach Road, which identified a peak hour volume on SH1 of 661 vehicle movements per hour. These turning volumes are illustrated on the diagrams in **Appendix 2**.

7. **Figure 2** illustrates the existing intersection arrangement with Longbeach Road. This reveals a priority controlled (give-way) T-intersection with the major approaches being the State highway. There is no right turn bay into Longbeach Road at present, although there is notable seal widening to enable through vehicles to pass a vehicle waiting to turn right. There is an approximate 110m long left turn lane (plus taper) to enable vehicles slowing to turn left into Longbeach Road to do so clear of through traffic.

Figure 2: SH1 / Longbeach Road Intersection

8. The visibility at the intersection along SH1 exceeds the 248m required by AustRoads.

Longbeach Road

9. Longbeach Road is classified as a *Principal Road* in the Ashburton District Plan. These types of road typically connect major rural areas and link *Arterial Roads* to *Collector Roads*. This road has a sealed width of approximately 11.6m with the northbound lane being 5.2m wide and the southbound lane is 6.4m wide. This width extends from the SH1 intersection to approximately 65m south of the site access.

10. The posted speed limit on Longbeach Road is 100km/hr. The traffic count referred to above identified a peak hour volume on this road of 61 vehicle movements. The daily traffic volume is estimated as being 610 vehicle movements[2].

11. The following figure is a view of Longbeach Road outside the application site looking toward SH1.

Figure 3: Longbeach Road Looking North

Intersection Operation

12. A SIDRA traffic capacity model has been created of the SH1 / Longbeach Road intersection for the weekday PM peak period. This period has been chosen because it is anticipated to represent the highest combination of background traffic and traffic generated by the proposed activity.

13. The model is based on the survey data described above and set out in **Appendix 2**. The results of this intersection model are summarised in **Table 1** and presented in full in **Appendix 3**.

[2] Based on the assumption that peak hour traffic volumes are approximately 10% of the daily volumes.

14. The model results align with the on-site observations with regard to queue lengths. These results indicate that the intersection is currently operating satisfactorily with regards to traffic capacity.

15. Vehicles turning right into Longbeach Road from SH1 were observed to wait in the through traffic lane, with following vehicles undertaking by using the wide shoulder. The traffic model has assumed that a formal right turn facility is provided to mimic the observed operation.

Table 1: SH1 / Longbeach Road Intersection Capacity – Existing Weekday PM Peak

Approach	Degree of Saturation	Delay (s)	Level of Service[3]	95th Percentile Queue (veh)
Longbeach Rd	0.070	17	C	0
SH1 East	0.193	1	-	-
SH1 West[4]	0.186	14	B	0
Overall	***0.193***	***1***	**-**	**-**

16. Traffic growth on SH1 has been occurring at a rate of 1.75% per year on average. A second version of the SH1 / Longbeach Road traffic model has been created that accounts for ten-years of growth at this rate (i.e. an increase in traffic volume of 17.5%). The results of this model are summarised in **Table 2** (continued in full in **Appendix 3**). This indicates that the existing intersection is also anticipated to operate satisfactorily in 2028.

Table 2: SH1 / Longbeach Road Intersection Capacity – 2028 Weekday PM Peak

Approach	Degree of Saturation	Delay (s)	Level of Service	95th Percentile Queue (veh)
Longbeach Rd	0.103	20	C	0
SH1 East	0.227	1	-	-
SH1 West[5]	0.218	15	B	0
Overall	***0.227***	***1***	**-**	**-**

Crash History

17. The NZ Transport Agency Crash Analysis System (CAS) has been reviewed to identify crashes that have been reported within 100m of the SH1 / Longbeach Road intersection and on Longbeach Road along the site frontage. This review is of the most recent five-years data available. The collision diagram is included as **Figure 4** and the plain English report is included in **Appendix 4**.

[3] Level of Service is a measure of intersection performance based on delays. Level of Service A is generally considered to be excellent, Level of Service E is generally considered to be at capacity and Level of Service F is over-capacity.
[4] Delay, LoS and queue values for right turn only.
[5] Delay, LoS and queue values for right turn only.

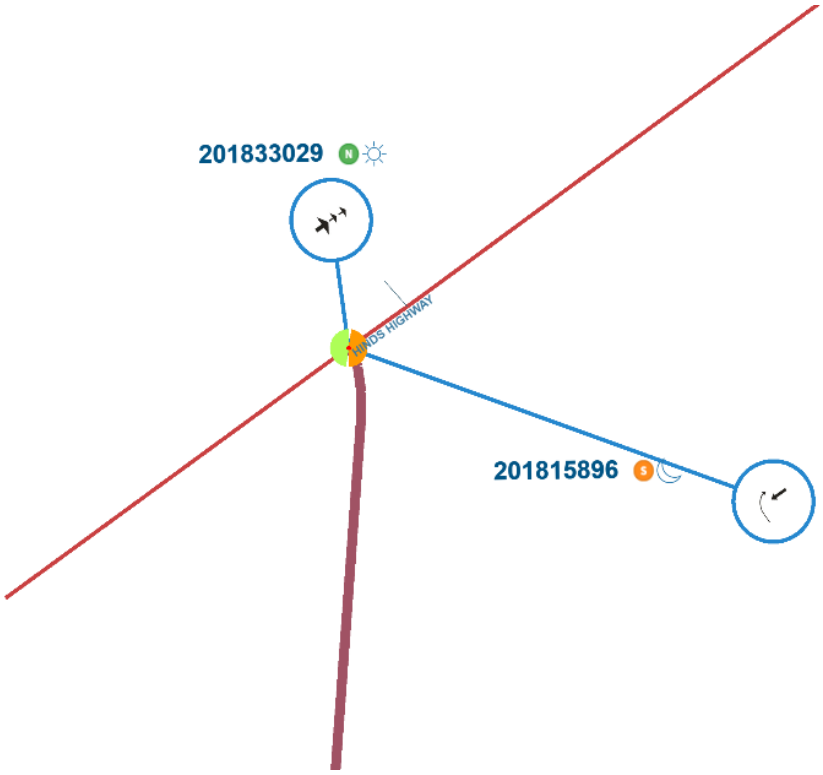

Figure 4: SH1 / Longbeach Road Collision Diagram

18. The crash review indicates that two crashes were reported within the parameters. These are summarised as:

    (a) A serious injury crash where a driver turning right out of Longbeach Road hesitated and stopped in the through lane, where they were hit by a southbound vehicle; and

    (b) A non-injury crash where a driver hit the rear-end of a vehicle that had stopped to turn right into Longbeach Road.

19. Although two crashes have been reported, the intersection is considered to be operating satisfactorily without a noticeable trend in the safety record.

Existing Activity

20. The main activity at the site is currently a shop and restaurant that comprises approximately 1,745m^2 Gross Floor Area (GFA). This has access to Longbeach Road approximately 94m south of the intersection with SH1. The site is supported by 22 car parking spaces plus eight coach parks. There is additional room to accommodate further on-site car parking.

21. The traffic counts undertaken at the SH1 / Longbeach Road intersection also counted the number of vehicles entering this part of the site. This identified that 3 coaches entered the site during the two-hour period 16:00 to 18:00. No other vehicle movements were recorded.

22. The site access is sealed, approximately 7.2m wide and includes radii to accommodate the swept path of vehicles into and out of the site. The visibility to the north extends to the SH1

/ Longbeach Road intersection, approximately 94m. The visibility to the south is greater than the 280m required by the District Plan. This main access includes widening of Longbeach Road that generally accords with Appendix 10-8 of the Ashburton District Plan[6].

23. The site also includes two residential properties that share an access that is approximately 208m south of the SH1 / Longbeach Road intersection. This access is unsealed and is approximately 3.4m wide. The visibility out of this access to Longbeach Road is greater than the 160m to the north and south required by the District Plan.

The Proposal

24. The proposal is to facilitate additional development at the application site including visitor accommodation as well as additional restaurant space. The rules framework seeks the following development content as a Permitted activity:

    (a) Total of 4,000m^2 GFA that includes the central hub plus the existing retail and food and beverage activity; and

    (b) 80 accommodation units.

25. The following sets out the high-level description of transport matters associated with the proposal and assesses the likely effects associated with those matters.

Traffic Generation

Visitor Accommodation Traffic Generation

26. It is anticipated that the proposed activity would attract a significant proportion of the visitor trips by coach travel and therefore the car volumes generated would be less than that of typical activities. However, this cannot be guaranteed, so the following traffic generation estimate uses survey data from car dominant activities. In our opinion, this over-estimates the likely traffic generation however it does ensure a robust assessment.

27. The traffic generation of the proposed accommodation units have been based on motel data from Christchurch. These rates have been applied to and accepted for numerous motels and travellers accommodation units throughout Christchurch and surrounding districts in the past decade. **Table 3** summarises the daily traffic generation from those surveys.

[6] Standards for the Design and Construction of Vehicle Crossings on Arterial and Principal Roads (Speeds >50km/Hr): Vehicle crossings where traffic levels are 30 or more equivalent car trips per day.

Table 3: CCC Motel Traffic Generation Survey 1999

	Generation Rates	Occupancy Rates
Average Daily Generation per Occupied Unit	6.0	75.4%
85th Percentile Daily Generation per Occupied Unit	7.3	81%
Maximum Daily Generation per Occupied Unit	8.7	81%

28. The above data suggests that the 80 accommodation units would generate approximately 473 vehicle movements per day when at 85th percentile occupancy of 81%. **Figure 5** illustrates the most recent twelve-month average occupancy data for motels in Canterbury. This indicates the highest average occupancy recorded was 81%, which suggests that the above traffic generation is suitably robust for the purposes of this assessment.

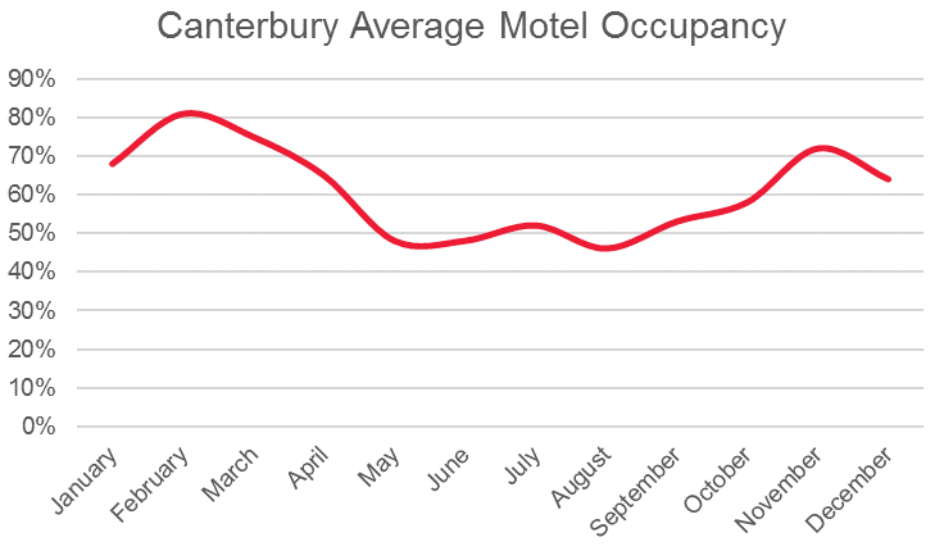

Figure 5: Average Monthly Occupancy (Statistics New Zealand)

29. In respect to peak hour traffic generation, data obtained from the above motel survey revealed an 85th percentile generation rate of 0.7 trips per occupied unit in the morning peak hour and an 85th percentile generation rate of 0.8 trips per occupied unit in the evening peak hour period. The following table sets out the 85th percentile traffic generation of the proposed activity.

Table 4: Visitor Accommodation Traffic Generation Summary

	85th Percentile (85% Occupancy)
AM Peak Hour	45 vehicles per hour[7]
PM Peak Hour	52 vehicles per hour[8]
Daily	473 vehicles per day[9]

30. The above traffic generation data has been compared to other published motel survey information, as set out in **Table 5**. This indicates that the data used is consistent with a range of comparative sources. This confirms that the survey data used for this assessment is robust.

Table 5: Published Motel Survey Data – Per Unit

Source	AM Peak	PM Peak	Daily
CCC Motel Data [10]	0.57	0.65	5.9
NZ Trips & Parking Database – 85th Percentile	0.57	0.53	1.27
ITE Trip Generation - Average[11]	0.45	0.47	5.56
RTA Guide to Traffic Generating Developments	-	0.4	3.0

31. The traffic generation during the PM peak has been identified as the highest. The split between arrivals and departures is based on data for motels in the Institute of Traffic Engineers *Trip Generation* books, which suggests 53% arrivals and 47% departures in the PM peak.

Restaurant and Retail Traffic Generation

32. The traffic generation associated with the central hub (that includes food and beverage) plus the existing retail and restaurant activity have been based on a traffic generation rate of 5.0 vehicle movements per hour per 100m^2 GFA. The type of retail proposed is anticipated to be aimed at the tourist market and would not generate as much traffic as for typical retail.

33. Generic retail traffic generation rates from the RTA *Guide to Traffic Generating Developments* suggest that retail would generate in the order of 4.6 to 5.6 vehicle movements per 100m^2 GFA. The same source suggests that restaurants would generate 5.0 vehicle movements per 100m^2 GFA. This rate is considered to be appropriate for both the retail and restaurant components of the proposed activity.

[7] 80 units x 81% occupancy x 0.7 vehicle movements per hour.
[8] 80 units x 81% occupancy x 0.8 vehicle movements per hour.
[9] 80 units x 81% occupancy x 7.3 vehicle movements per hour.
[10] Accounts for occupancy rate of 81% during the peaks and 61% for daily traffic.
[11] Accounts for occupancy rate of 81% during the peaks and 61% for daily traffic

34. Daily traffic generation rates for retail and restaurants in the RTA are 55.5 vehicle movements per 100m^2 GFA and 60 vehicle movements per 100m^2 GFA respectively. The higher rate associated with the restaurant will be adopted for the purpose of this assessment.

35. The ITE *Trip Generation* guide suggests that these vehicles would be split 67% arrivals and 33% departures in the weekday PM peak. This split has been adopted for both the retail and restaurant activity because the restaurant is anticipated to be the majority of the non-visitor accommodation floor area.

36. **Table 6** summarises the traffic generation associated with the indicative 4,000m^2 GFA retail and restaurant activity proposed. This has been applied to the existing and proposed floor areas, although it is noted that the traffic generation of the existing activity over a two-hour period was surveyed as being only three coach arrivals.

Table 6: Retail / Restaurant Traffic Generation Summary

	Vehicle Generation
PM Peak Hour	200
Daily	2,400

Overall Traffic Generation

37. The overall traffic generation of the activities is summarised in **Table 7**.

Table 7: Plan Change Traffic Generation Summary

Period	Activity	Arrivals	Departures	Total
Weekday PM Peak	Visitor Accommodation	27	24	52
	Retail / Restaurant	134	66	200
	Total	***161***	***90***	***252***
Daily	Visitor Accommodation	236	237	473
	Retail / Restaurant	1,200	1,200	2,400
	Total	***1,436***	***1,437***	***2,873***

38. This traffic has been distributed to the adjacent road network will all vehicles heading to / from the SH1 / Longbeach Road intersection, then turning in accordance with the proportions of vehicles passing Longbeach Road. This is illustrated on the diagrams included in **Appendix 2**.

39. It is reiterated that the above is considered to be a significant over-estimation of the likely traffic generation of the proposed activities. Notably, the daily traffic volume is approximately 34% of the passing traffic on SH1. However, the adoption of the above traffic generation leads to a robust assessment of the effects of this proposal.

Parking Provision

Visitor Accommodation

40. It is proposed to adopt the District Plan car parking requirements for visitor accommodation. This requires car parking at the following rate:

- 1 space per 2 beds or 1 space per individual unit (whichever is the greater); plus
- 1 space per 2 staff

41. The following table sets out a range of parking demands associated with motel developments with an assumed 81% occupancy to provide a comparison.

Table 8: Published Motel Parking Demands

Source	Parking Demand per Unit
CCC Motel Data – 85th Percentile[12]	*0.73*
NZ Trips & Parking Database – 85th Percentile	*0.58*
ITE Trip Generation – 85th Percentile[13]	*0.69*

42. The above suggests that the District Plan visitor accommodation car parking requirement should be sufficient to accommodate the likely car parking demand.

Restaurant and Retail

43. Again, it is proposed to adopt the District Plan car parking requirements for restaurants and retail activities. These requirements are:

- Restaurants - 1 space per 10m² public floor area; and
- Commercial or Retail Activities - 3 spaces per 100m² GFA plus 1 space per 100m² outdoor storage or outdoor display area for customers; plus 0.5 spaces per 100m² GFA for staff.

44. The RTA *Guide to Traffic Generating Developments* suggests a demand for 15 car parks per 100m² GFA of restaurant. In our experience, the PFA of a restaurant broadly converts to around 60% of the total GFA. Applying this to the parking rate of 15 car parks per 100m² GFA leads to 9 car parks per 100m² PFA. This suggests that the District Plan restaurant parking rate should be sufficient to accommodate the demand.

45. The RTA *Guide to Traffic Generating Developments* suggests a demand for 4.5 car parks per 100m² GFA of retail. The District Plan is effectively 3.5 spaces per 100m² GFA. Whilst it is acknowledged there is a difference between these rates, the proposed activity is anticipated to have a lower parking demand than standard retail within urban areas. This is because the proposed activity is anticipated to be aimed at a smaller tourist market with

[12] Accounts for occupancy rate and a base rate of 0.9 spaces per occupied unit.
[13] Accounts for occupancy rate and a base rate of 0.85 spaces per occupied unit.

fewer trips. Therefore, the District Plan car parking requirement is considered to be appropriate.

Cycle Parking and Loading Provision

46. The Plan Change will adopt the District Plan requirements for cycle parking and loading provision. This is considered to be sufficient to accommodate the likely level of cycle parking and loading demand at the site.

Parking and Loading Arrangements

47. It is proposed to adopt the District Plan standards relating to car parking, cycle parking and loading layout. These are sufficient to satisfactorily accommodate vehicles and no further discussion is considered to be necessary regarding this matter.

Access Arrangement

48. Two accesses are proposed to serve the Plan Change site. The first of these is the existing access arrangement, which was described in paragraph 22.

49. The Outline Development Plan shows the second access to be indicatively located approximately 62m south of the main access, broadly in the same location as the existing residential access. This access would be upgraded to comply with the District Plan requirements, such as width of access and widening of Longbeach Road.

District Plan Compliance Assessment

50. An assessment of the ability for a development consistent with the proposed Plan Change to comply with the transport standards of the District Plan has been undertaken and is contained in **Appendix 4**. **Table 9** summarises the non-compliances identified.

Table 9: District Plan Transport Non-Compliances

Rule	Nature of Non-Compliance
10.9.4 Spacing Between Vehicle Crossings On Principal and Arterial Roads where the legal speed limit is 100km/hr, the minimum spacing between successive vehicle crossings (regardless of the side of the road on which they are located) shall not be less than 200m. This rule shall not apply to vehicle crossings to farming activities, which do not provide access or a driveway to buildings (other than haysheds).	Does not comply because there is approximately 62m between the existing vehicle crossing and the proposed vehicle crossing on Longbeach Road. There is also an existing vehicle crossing approximately 40m north of the proposed vehicle crossing on the opposite side of Longbeach Road. 200m separation is required.
10.9.8 Vehicle Oriented Commercial Activities Unobstructed sight distances shall be available from all vehicle crossings, in accordance with the minimum sight distances specified in Table 10-11 below: ***Requires 280m visibility***	A sight distance of 280m is required and is achieved to the south. The visibility to the north out of the proposed access terminates at the SH1 / Longbeach Road intersection, 205m north of the proposed site access.

Assessment of Effects

51. The nature of the Plan Change proposal means that all transport matters need to be reviewed. The key matters for assessment are considered to be:

    (a) Parking & Loading: The provision of sufficient car parking and loading, as well as the provision of a practical and functional layout;

    (b) Site Access Arrangements: Provision of safe and efficient site access arrangements; and

    (c) Wider Network Effects: The transport effects on the wider transport network.

Parking & Loading

Parking and Loading Numbers

52. As identified earlier, it is proposed to adopt the District Plan car parking, cycle parking and loading requirements for the Plan Change. This has been identified as providing sufficient parking and loading to accommodate the demands on-site. As such, the existing District Plan parking and loading provisions are sufficient to avoid adverse effects.

Parking and Loading Layout

53. The proposed parking and loading layouts will comply with the District Plan. This will facilitate a safe and efficient parking and loading arrangements and avoid adverse effects.

Site Access

54. **Figure 6** illustrates the location of existing accesses for adjacent properties on Longbeach Road. The District Plan requires that a minimum of 200m separation is provided between accesses on this section of road, which restricts the ability to construct a compliant access to the Plan Change site to the approximate location indicated.

55. **Figure 6** indicates that a compliant access could be created for the Plan Change site. However, the Outline Development Plan indicates that the existing main access will be retained and the existing secondary access upgraded to serve the new activity. This leads to potential non-compliances regarding visibility and access spacing.

Figure 6: Existing and Potential Access Locations

Site Access Visiblity

56. The visibility non-compliance is considered to be acceptable. There is sufficient visibility to the south of the access as the road alignment is straight and flat. The visibility to the north terminates at the SH1 / Longbeach Road intersection, which is 205m north of the access. Road Traffic Standard 6 (*Guidelines for Visibility at Driveways*) requires 210m visibility for a high-volume access to a 90km/hr (operating speed) arterial road. Vehicles turning at the intersection would be travelling considerably slower than 90km/hr, so the 205m visibility available is considered to be more than sufficient to avoid adverse safety effects.

Access Seperation

57. The second non-compliance is with regard to the spacing of the Plan Change accesses with each other and the access to the residential property opposite the site. Insignificant effects are anticipated with regard to the residential access because the traffic generated by that site is minimal.

58. The separation between the proposed Plan Change accesses would be separated by approximately 62m. The majority of vehicles heading to the Plan Change site are assumed to travel from SH1. This means these vehicles are very unlikely to be travelling at 100km/hr as they have turned at the intersection and will be looking for the site access. As such, following vehicles should not have issues regarding the sudden breaking of vehicles looking for the site.

59. The accesses will need to be clearly signed as to which is the appropriate access to be used. Internal links are proposed to accommodate vehicles that have used the incorrect access so drivers would not need to use the public road network to circulate.

60. Overall, it is considered that the access separation would operate safely.

Wider Network Effects

61. The wider network effects of the proposed Plan Change have been assessed at the SH1 / Longbeach Road intersection. It is assumed that the right turn into Longbeach Road is formalised, as per the indicative diagram included in **Appendix 6** and **Figure 7**.

Figure 7: SH1 / Longbeach Road Right Turn Bay

62. The intersection modelling results based on adding the Plan Change traffic (associated with the Permitted activity of 80 visitor accommodation units plus 4,000m^2 GFA of related activities) to the year 2028 traffic volumes is summarised in **Table 10** and contained in full in **Appendix 7**.

Table 10: SH1 / Longbeach Road Intersection Capacity –2028 Weekday PM Peak with Plan Change

Approach	Degree of Saturation	Delay (s)	Level of Service	95th Percentile Queue (veh)
Longbeach Rd	0.434	25	C	13
SH1 East	0.227	-	-	-
SH1 West[14]	0.220	11	B	3
Overall	***0.434***	**-**	**-**	**-**

63. The above results indicate that the intersection will operate satisfactorily with the proposed development traffic added to the road network. The intersection model results indicate that the approaches and individual turning movements are anticipated to operate satisfactorily,

[14] Delay, LoS and queue values for right turn only.

with no movement exceeding level of Service D. This has been used (in part) to identify the development content thresholds for the Permitted activity status.

64. A second assessment has been undertaken that increases the number of visitor accommodation units to 100, whilst retaining 4,000m^2 GFA of food and beverage plus retail. The results of this model test are summarised in **Table 11**.

Table 11: SH1 / Longbeach Road Intersection Capacity – 2028 Weekday PM Peak with Plan Change (Sensitivity)

Approach	Degree of Saturation	Delay (s)	Level of Service	95th Percentile Queue (veh)
Longbeach Rd	0.460	25	D	14
SH1 East	0.227	-	-	-
SH1 West[15]	0.220	11	B	3
Overall	***0.460***	**-**	**-**	**-**

65. The results in **Table 11** are similar to those of **Table 10** for the Permitted activity status. However, the **Table 11** results indicate that the operation of the Longbeach Road approach has moved to Level of Service D (as the delay is greater than 24.9 seconds). As such, an activity with between 81 and 100 visitor accommodation units is proposed to be Discretionary, which accounts for matters wider than solely transport effects.

66. It is considered that the formalising of the right turn bay into Longbeach Road is required prior to establishing any additional activity at the Plan Change site. This is to ensure that traffic turning right into Longbeach Road from the State highway does not wait in the northbound traffic lane, which has the potential to create safety issues as following vehicles may not be expecting to slow.

67. The NZ Transport Agency indicated that they would prefer the left turn arrangement into Longbeach Road to be separated from the through traffic. The concern is that traffic turning left into Longbeach Road has the potential to obscure the view of following southbound traffic, such that traffic turning out of Longbeach Road may be tempted to take unsafe gaps.

68. In this instance, it is considered that the additional separation to the left turn lane is not necessary. The delay for traffic turning out of Longbeach Road remains within acceptable thresholds and is not proposed to exceed Level of Service C as a Permitted activity. This indicates that drivers are unlikely to get impatient and will wait to identify there is definitely a safe gap in traffic prior to pulling out. The proposed arrangement in **Appendix 6** is considered acceptable on this basis.

[15] Delay, LoS and queue values for right turn only.

Summary & Conclusion

Summary

69. A Plan Change is proposed for land at 12 to 22 Longbeach Road in Ashburton. The Plan Change will facilitate visitor accommodation as well as additional restaurant space. Access will remain to Longbeach Road. The Plan Change enables the following as a Permitted activity:

    (a) Total of 4,000m^2 GFA that includes the proposed central hub and existing retail and food and beverage; and

    (b) 80 accommodation units.

70. There is the ability for up to 100 visitor accommodation units (plus 4,000m^2 GFA for the proposed central hub and existing retail and food and beverage) as a Fully Discretionary activity.

71. The Plan Change does not propose to make any amendments to the District Plan transport rules as they currently apply to the site. We consider that the current rules are appropriate to manage the transport-related aspects of the proposal.

72. The site access location identified on the Outline Development Plan has been specifically reviewed as part of this assessment. It is considered that this location will not have adverse effects regarding the safety and efficiency of the adjacent transport network.

73. In addition to these, it is considered appropriate to require an upgrade of the SH1 / Longbeach Road intersection (as per **Appendix 6** of this report).

Conclusion

74. Based on the assessment undertaken above, we consider that the proposed Plan Change can be supported from a transport perspective as having less than minor effects.

Appendix 1

Concept Site Layout

FENCE LINE [EXISTING]

FENCE LINE [EXISTING]

FENCE LINE / BOUNDARY [EXISTING]

FENCE LINE / BOUNDARY [EXISTING]

FENCE LINE / BOUNDARY [PROPOSED]

HINDS HIGHWAY

LONG BEACH ROAD

+ 2ha BLOCK

PROPOSED BUILDINGS

1 CENTRAL CORE

2 ACCOMMODATION X 60 UNITS

3 WATER PAVILLION X 5

4 GLAMPING TENTS X 7

5 GLAMPING KITCHEN & UTILITY

6 SILOS X 7

7 CHAPEL

8 GLASSHOUSE

9 TENNIS PAVILLION

10 FOLLY

11 TOWERS

12 BBQ AREA

Job
Farmers Corner
Drawing Title
Site : Schematic + Boundaries
Scale
1:1000 @ A1
Date
16/03/18
Job Number
1667
All measurements to be checked on site before proceeding with any work

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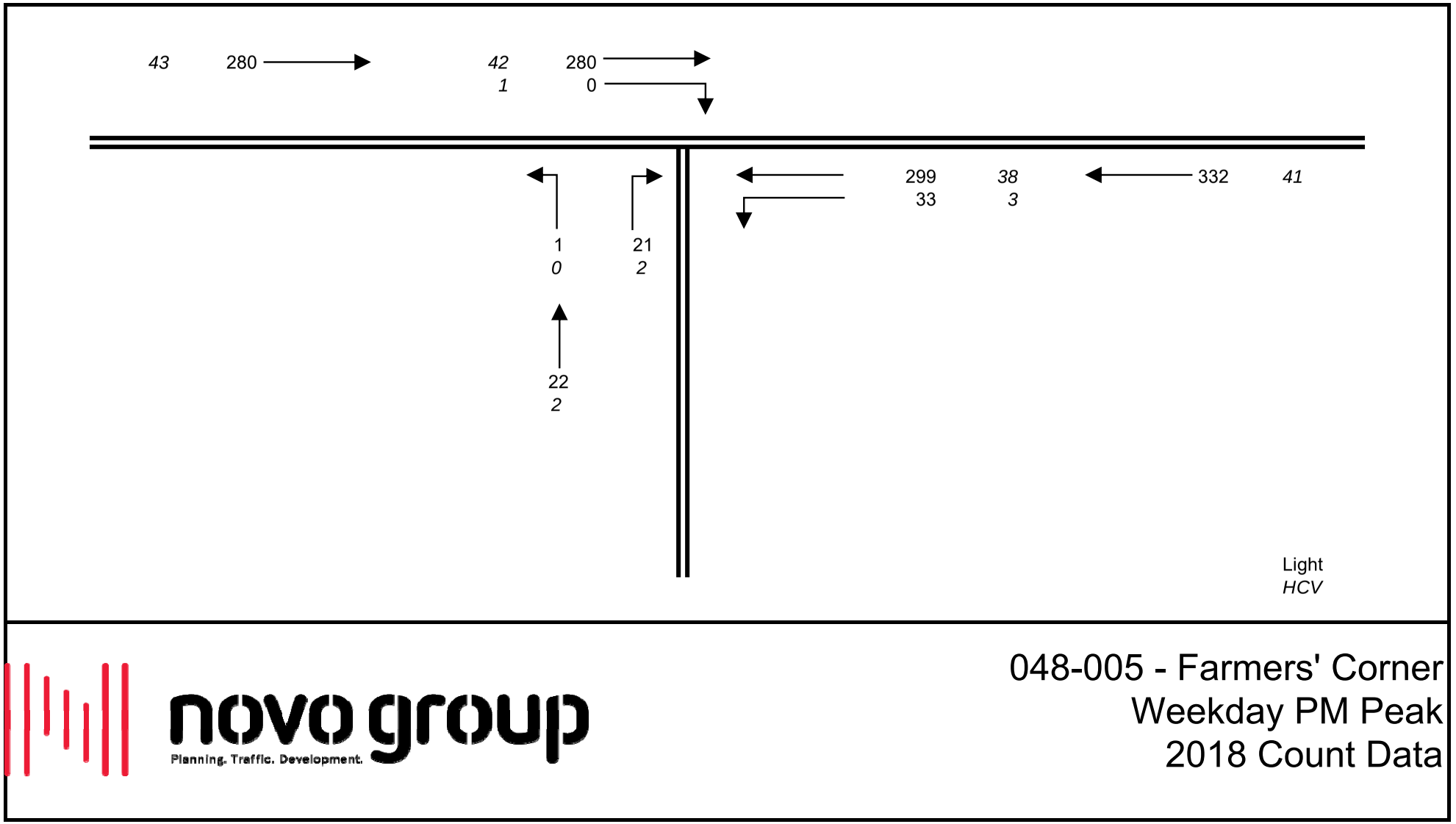
Appendix 2

Traffic Flow Diagrams



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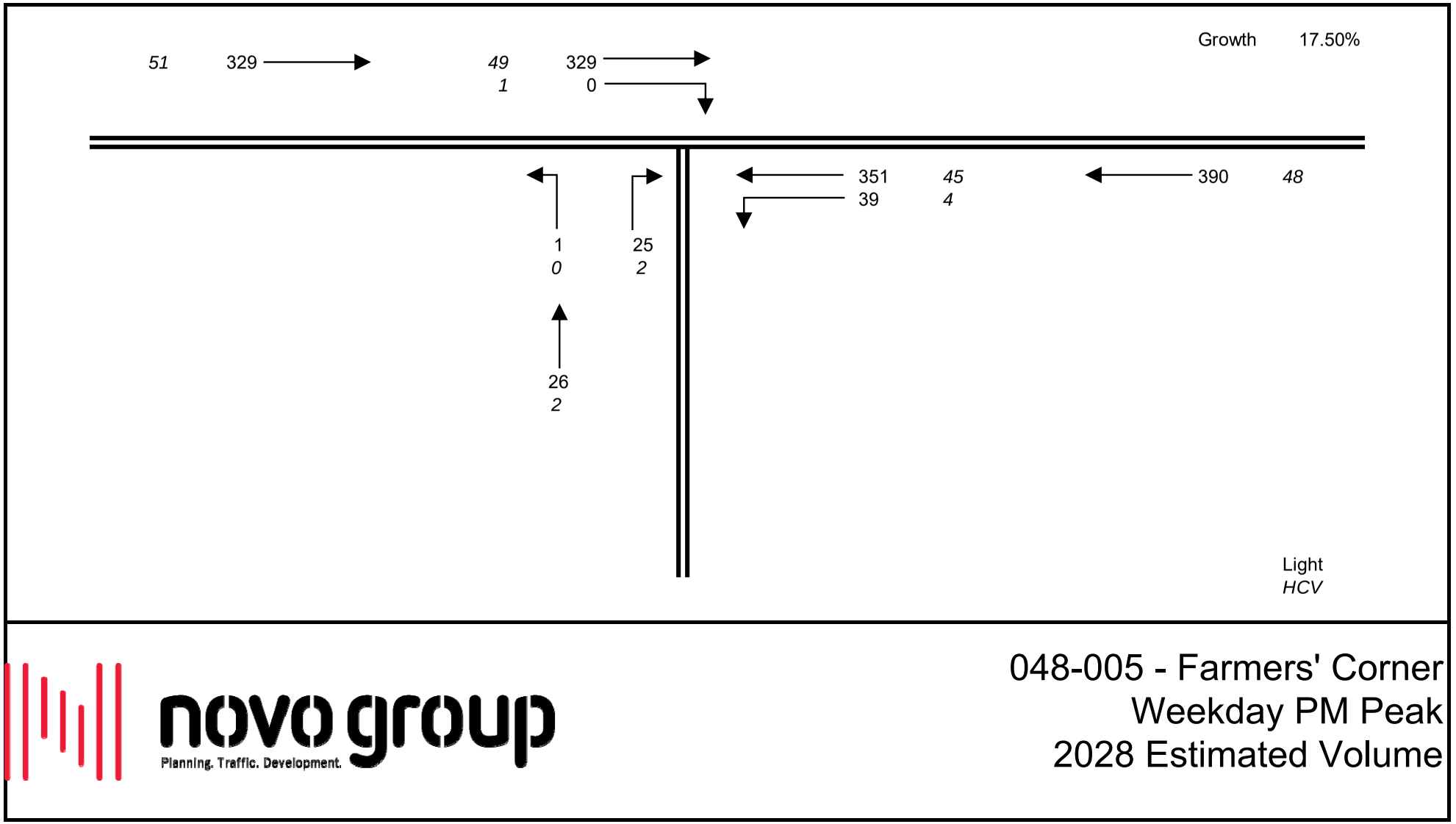
048-005 - Farmers' Corner
Weekday PM Peak
2018 Count Data



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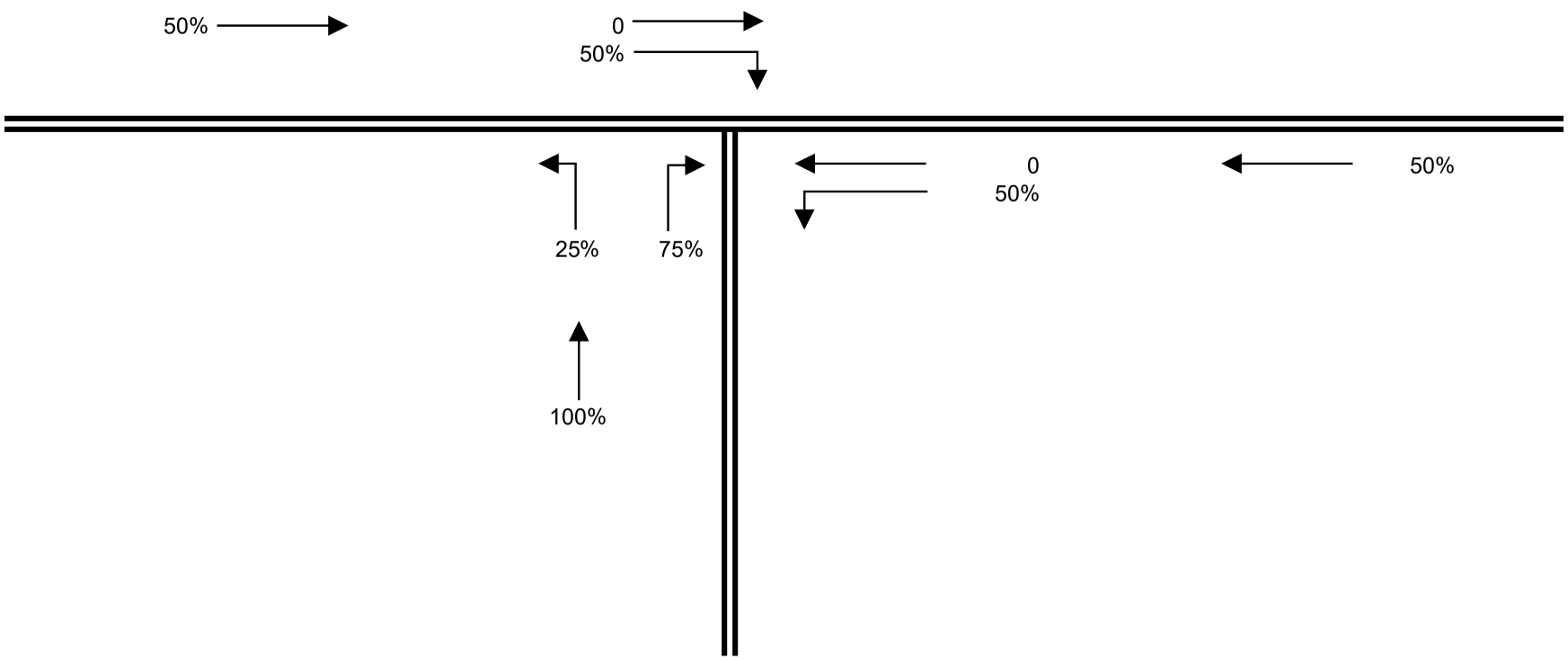
048-005 - Farmers' Corner
Weekday PM Peak
2028 Estimated Volume



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048-005 - Farmers' Corner
Weekday PM Peak
Development Traffic Distribution

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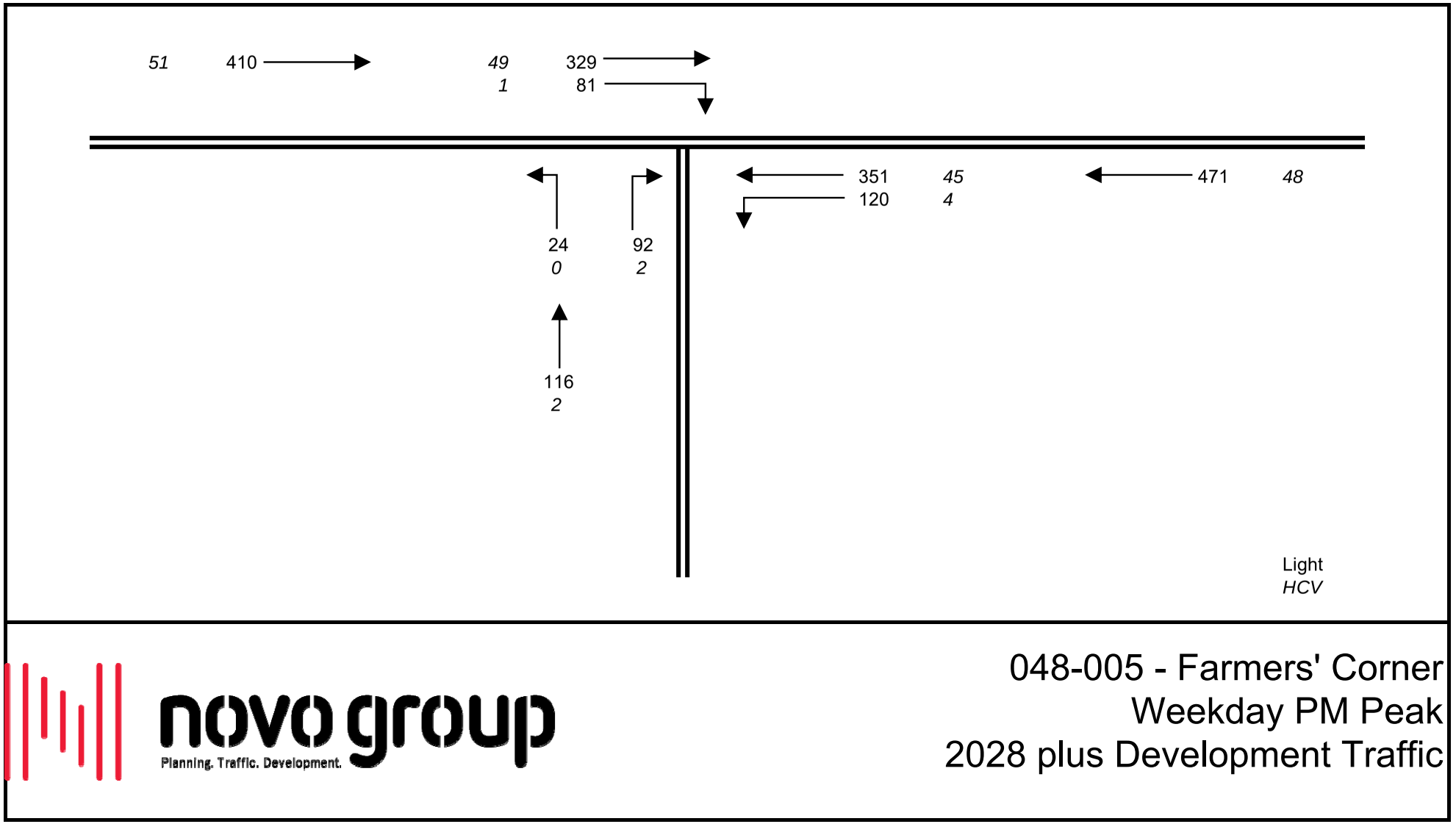
Planning. Traffic. Development.

048-005 - Farmers' Corner
Weekday PM Peak
Development Traffic



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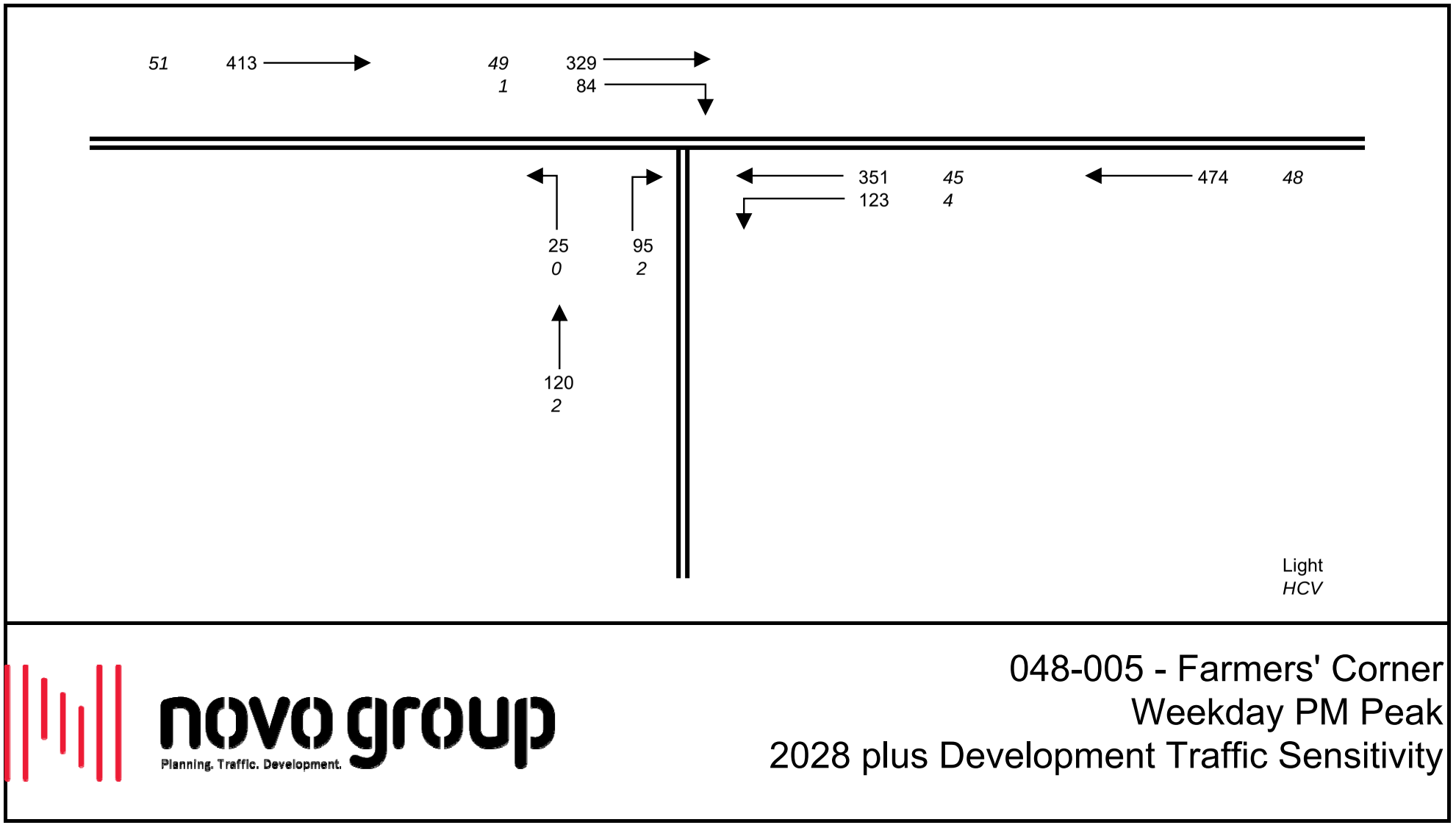
048-005 - Farmers' Corner
Weekday PM Peak
2028 plus Development Traffic



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048-005 - Farmers' Corner
Weekday PM Peak
2028 plus Development Traffic Sensitivity

Appendix 3

Existing Intersection Operation Results

MOVEMENT SUMMARY

Site: 101 [SH1/Longbeach - 2018 Weekday PM Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Longbeach Road												
1	L2	1	0.0	0.001	9.4	LOS A	0.0	0.0	0.40	0.60	0.40	72.9
3	R2	24	8.7	0.070	17.2	LOS C	0.2	1.8	0.68	0.89	0.68	60.9
Approach		25	8.3	0.070	16.9	LOS C	0.2	1.8	0.67	0.88	0.67	61.4
East: SH1												
4	L2	38	8.3	0.021	8.1	LOS A	0.0	0.0	0.00	0.66	0.00	71.5
5	T1	355	11.3	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach		393	11.0	0.193	0.8	NA	0.0	0.0	0.00	0.06	0.00	96.2
West: SH1												
11	T1	339	13.0	0.186	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
12	R2	1	100.0	0.002	13.6	LOS B	0.0	0.1	0.53	0.63	0.53	55.7
Approach		340	13.3	0.186	0.1	NA	0.0	0.1	0.00	0.00	0.00	99.6
All Vehicles		758	11.9	0.193	1.0	NA	0.2	1.8	0.02	0.06	0.02	95.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [SH1/Longbeach - 2028 Weekday PM Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Longbeach Road												
1	L2	1	0.0	0.001	9.7	LOS A	0.0	0.0	0.43	0.61	0.43	72.5
3	R2	28	7.4	0.103	20.3	LOS C	0.3	2.6	0.76	0.91	0.76	58.2
Approach		29	7.1	0.103	19.9	LOS C	0.3	2.6	0.75	0.90	0.75	58.6
East: SH1												
4	L2	45	9.3	0.026	8.1	LOS A	0.0	0.0	0.00	0.66	0.00	71.1
5	T1	417	11.4	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach		462	11.2	0.227	0.8	NA	0.0	0.0	0.00	0.06	0.00	96.1
West: SH1												
11	T1	398	13.0	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
12	R2	1	100.0	0.002	14.9	LOS B	0.0	0.1	0.57	0.66	0.57	54.6
Approach		399	13.2	0.218	0.1	NA	0.0	0.1	0.00	0.00	0.00	99.6
All Vehicles		891	11.9	0.227	1.1	NA	0.3	2.6	0.03	0.06	0.03	95.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix 4

NZ Transport Agency Crash Analysis System Output

Untitled query

Crash year

2014 — 2018

Saved sites

048-005 Farmers Corner

Plain English report

2 results from your query.

1-2 of 2

Crash road	Distance	Direction	Side road	ID	Date	Day of week	Time	Description of events	Crash factors	Surface condition	Natural light	Weather	Junction	Control	Crash count fatal	Crash count severe	Crash count minor
SH 1S		I	LONGBEACH ROAD	201815896	04/07/2018	Wed	18:45	Car/Wagon1 WDB on Hinds Highway hit Car/Wagon2 turning right onto AXROAD from the left	NULL	Dry	Dark	Fine	T Junction	Give way	0	1	1
SH 1S		I	LONGBEACH ROAD	201833029	22/01/2018	Mon	12:32	Car/Wagon1 NDB on Hinds Highway, Ashburton hit rear end of Car/Wagon2 stop/slow for queue	NULL	Dry	Bright sun	Fine	T Junction	Give way	0	0	0

1-2 of 2

Appendix 5

Transport Compliance Assessment

RULE	COMMENT	COMPLIES?
10.8 Site Standards – Parking and Loading		
10.8.1 Minimum Parking Space Requirements a) For all zones, except the Business A zone, the minimum number of parking spaces to be provided at all times, within the net area of the site of any activity, shall be as set out in Table 10-1 below: b) In the Business A Zone, residential activities shall be provided with carparking as set out in Table 10-1 above. c) In the Business A Zone of Ashburton only, no on-site car parking is required except as above, and where on-site car parking for the convenience of persons working or living on-site is proposed, it shall be provided to the rear of any building(s) on the site and all required loading spaces shall be provided at the rear of building(s) on the site.	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	
10.8.2 Assessment of Parking Areas a) The required parking spaces set out in Table 10-1 above shall be available for residents, staff and visitors at all times during the hours of operation of the activity to which they relate. b) Where a land use corresponds with two or more similar activities in Table 10-1 above, the activity with the higher parking rate shall apply. Where there are two or more different activities on a site, the total requirement for the site shall be the sum of the parking requirements for each activity. c) Where an assessment of the required parking standards results in a fractional space, any fraction under one half shall be disregarded and any fraction of one half or more shall be counted as one space. d) The area of any parking space or spaces provided and of vehicular access, driveways and aisles provided within a building shall be excluded from the assessment of gross floor area of that building for the purpose of ascertaining the total number of spaces required or permitted. e) Staff car parking spaces shall be marked accordingly	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	
10.8.3 Car Spaces for People with Disabilities a) Where car parking is provided for a non-residential activity, the minimum number of parking spaces for people with a disability shall be as follows: - no spaces required for the first 9 car parking spaces provided on site; - 1 space where between 10 and 20 car parking spaces are provided on site; - 2 spaces where between 21 and 50 car parking spaces are provided on site; - plus 1 space for every additional 50 car parking spaces provided on site, or part thereof	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	

RULE	COMMENT	COMPLIES?
b) Car parking for people with disabilities shall be located as close as practicable to the building entrance. The spaces should be on a level surface and be clearly marked and designed & constructed in accordance with NZS 4121: 2001 Design for access and mobility: Buildings and associated facilities.		
10.8.4 Size of Parking Spaces a) All required parking spaces, other than for residential units, shall be designed to accommodate a 90 percentile design motor car (refer Appendix 10-2) and shall be laid out in accordance with the minimum dimensions specified within Table 10-2 below and as illustrated within Appendix 10-2:	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	
10.8.5 Residential Parking Spaces a) Where residential car parking spaces are provided within a garage, the minimum internal dimensions shall be as set out in Table 10-3: b) The minimum width of the entrance to a single garage shall be no less that 2.4 m.	Not applicable	N/A
10.8.6 Cycle Parking a) All developments, other than residential and farming, are to provide cycle parking at a rate of 1 cycle space for every 20 car parking spaces provided. b) All required cycle parking shall be provided in cycle stands and laid out in accordance with Appendix 10-3.	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	
10.8.7 On-site Manoeuvring a) The manoeuvring area from the road transport network boundary to any parking space shall be designed to accommodate a 90 percentile car (refer Appendix 10-4). b) Onsite manoeuvring for a 90 percentile car (refer Appendix 10-4) shall be provided to ensure that no vehicle is required to reverse either onto or off a site where: - any activity has vehicle access and/or vehicle crossings to an arterial road; - any activity provides 4 or more parking spaces having vehicle access and/or vehicle crossings onto a principal or collector road; - any activity provides 10 or more parking spaces; - three or more residential units share a common access.	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	
10.8.8 Loading Space Provisions *a) Every site in the Business Zones and in the Commercial Area of the Aquatic Park Zone, except for the Business A Zone, shall provide one loading space and associated manoeuvring area.*	Not applicable, although it is anticipated that loading would be provided on-site.	N/A

RULE	COMMENT	COMPLIES?
10.8.9 Loading Areas a) Every loading space provided shall be of a useable shape and in accordance with the following minimum dimensions: - 9m deep - 3.5m wide - 4.5m high Except for: activities not involving the trading of goods (e.g. offices), where the gross floor area is less than 1500m², and on street parking is available for occasional servicing by larger vehicles, then loading space dimensions shall be in accordance with the following minimum dimensions: - 6.4m deep - 3.5m wide - 3.5m high b) The manoeuvring area from the road boundary to any loading space shall be designed to accommodate a 90 percentile two axle truck (refer Appendix 10-5). c) Onsite manoeuvring for a 90 percentile two axle truck shall be provided to ensure that no truck is required to reverse onto or off a site where any development provides loading areas or trade vehicle storage having vehicle access and/or a vehicle crossing onto an arterial, principal or a collector road. d) If parking or servicing by a large heavy vehicle, such as an articulated truck, is anticipated to occur on a site, then both b) and c) from above apply for the manoeuvring requirements of the vehicle. e) All loading spaces/areas shall be provided in a location that does not impede any through traffic, or manoeuvring areas, or any pedestrian or cycle access.	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	
10.8.10 Surface of Parking and Loading Areas a) The surface of all required parking, loading and trade vehicle storage areas in the Residential Zone, Business A, B, and C Zones, and the Aquatic Park Zone (except parking areas within the Recreational Area of the Aquatic Park Zone), shall be formed to provide an all weather surface. b) The first 3m of all such required areas (as measured from the road boundary) shall be formed and sealed for the full width of the vehicle crossing, to ensure that material such as mud, stone chips or gravel is not carried onto any footpath, road transport network or service lane. c) Parking and loading areas in the Recreational Area of the Aquatic Park Zone shall be formed and oversown with grass so as to maintain the character and appearance of the surrounding recreational area.	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	
10.8.11 Tree Planting within Car Parking Areas	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	

RULE	COMMENT	COMPLIES?
a) Where a car parking area has central parking rows, which do not abut a site boundary or building, trees shall be planted at least 7.5m apart adjacent to the central car parking spaces. The trees shall be protected from damage by vehicles.		
10.8.12 Queuing Length a) Where car parking is provided within a site, a minimum queuing length shall be provided in accordance with Table 10-4 below for vehicles entering the site: b) The required queuing length shall be measured from the road boundary at the car park entrance to the nearest vehicle control point or the point where entering cars could conflict with vehicles already on the site. c) Where more than one vehicle crossing is provided to a site, the required queuing length may be assessed for each access point individually, with each parking space allocated to the nearest entry vehicle crossing for the purpose of the assessment.	Can comply as there is ample space available on-site. To be assessed at the time of a resource consent application.	
10.9 Site Standards – Accessibility and Safety		
10.9.1 Roading, Access and Vehicle Crossings All new roads shall be laid out and vested in the Council, in accordance with Standard NZS4404:2010, other than as specified below: … … a) Where a new road transport network is proposed that is located in a manner that makes it capable of being extended in the future to service additional land, the future potential daily traffic volume for the extended road shall be used to determine the minimum and maximum widths required in Table 10-5 above. This determination shall be based on the greater of the actual number of allotments served or the potential number of allotments that could be served as a permitted or controlled activity. b) The carriageway of all new road transport networks laid out and vested in accordance with a) above shall be formed and sealed. c) Footpaths shall be constructed as a sealed strip of 1.5m width within the berm. d) All areas of berms not sealed in footpath are to be formed in grass. e) Cul-de-sac shall be constructed with turning heads of the following radii, measured from the centre of the turning head to the kerb face: - Residential zones and the Residential and Rural-Residential Areas of the Aquatic Park Zone – 9.5m - All other zones – 15m	Not applicable, as no new roads are proposed as part of this Plan Change.	N/A

RULE	COMMENT	COMPLIES?
f) If the corner lot is included in any subdivision, the corner at the road intersection shall be splayed with a diagonal line reducing each boundary by at least 4 metres from the corner, except that in a Business or Rural Zone or if the highest speed limit on either frontage road is greater than 50km/h, then the diagonal line reducing each boundary shall be at least 6 metres from the corner. The corner rounding or splay shall be vested in the Council. g) Within any new subdivision, provision shall be made for pedestrian and cycle access links, to a level appropriate to the scale and location of the development. h) Where a subdivision adjoins land not yet subdivided, provision shall be made for pedestrian, cyclist and vehicle access linkages between the areas, including vesting of land for future road transport network reserves for the purpose of facilitating connections to future roading extensions to serve surrounding land, or planned road links that may need to pass through the subdivision.		
10.9.2 Vehicular Access a) All vehicular access to fee simple title allotments, cross leases, unit titles or leased premises shall be in accordance with the standards set out in Table 10-6 below. This rule shall not apply to vehicle crossings directly on to individual sites, which do not involve an access (refer to the definition of "access"). The following standards in Table 10-6 are minimum standards: b) The minimum height clearance for all vehicular accesses shall be 4.5m. c) Access to allotments with the potential to accommodate more than 6 residential units shall be provided by way of a road and not by a private way or access lot. d) All vehicle crossings from sealed roads to vehicular accesses shall be sealed for the full berm width of the adjoining road. In the case of the Rural A, B and C Zones, if the access slopes up from the road, the crossing shall be sealed to a minimum distance of 10m from the edge of the carriageway. e) Where an allotment being created by subdivision or a new land use activity establishes on an existing site that has frontage to a state highway as well as to another road, vehicle access and vehicle crossings to the allotment shall be from the other road transport network, rather than the State Highway. f) No activity in the lower density area of the Residential C Zone as shown on the Lochhead Outline Development Plan shall have a vehicle access or vehicle crossing to State Highway 77. Note: For the purposes of this rule, an access shall be taken to slope up from the road if the access has an average gradient of 1:20 or steeper within 10m of the edge of the carriageway.	Can comply	
10.9.3 Distances of Vehicle Crossings from Intersections a) No part of any vehicle crossing shall be located closer to the intersection of any roads than the minimum distances specified in Table 10-7 below:	60m separation is required to the SH1 / Longbeach Road intersection. The existing access has approximately 94m is provided to the existing access. There is sufficient site frontage to accommodate alterations to this access arrangement and the access would be able to	

RULE	COMMENT	COMPLIES?
b) Distances shall be measured from the point at which the legal boundary lines of the two road frontages intersect. c) Where the boundaries of the site do not allow the provision of any vehicle crossing whatsoever in conformity with the above distances, a single vehicle crossing may be constructed provided it is located in the position which most nearly complies with the provisions of these rules	remain a compliant distance from the SH1 / Longbeach Road intersection.	
10.9.4 Spacing Between Vehicle Crossings a) On Principal and Arterial Roads where the legal speed limit is 100km/hr, the minimum spacing between successive vehicle crossings (regardless of the side of the road on which they are located) shall not be less than 200m. This rule shall not apply to vehicle crossings to farming activities, which do not provide access or a driveway to buildings (other than haysheds). b) On Principal and Arterial Roads where the legal speed limit is less than 100km/hr, the minimum spacing between successive vehicle crossings (either single or combined) on the same side of the road, shall not be less than 15m. This rule shall not apply to vehicle crossings which serve residential activities only. c) The separation distances shall be measured from the centre of one vehicle crossing to the centre of the succeeding vehicle crossing, parallel to the centreline of the transport network. d) Where the boundaries of the site do not allow the provision of any vehicle crossing whatsoever in conformity with the above distances a single vehicle crossing may be constructed in the position which most nearly complies with the provisions of this rule.	Does not comply because there is approximately 62m between the existing vehicle crossing and the proposed vehicle crossing on Longbeach Road. There is also an existing vehicle crossing approximately 40m north of the proposed vehicle crossing on the opposite side of Longbeach Road. 200m separation is required.	**No**
10.9.5 Maximum Number of Vehicle Crossings a) The maximum number of vehicle crossings to a site per road frontage shall be in accordance with Table 10-8 below:	The site has a frontage of approximately 390m to Longbeach Road and is entitled to two vehicle crossings. It is anticipated that the Plan Change would comply with this maximum number of crossings.	
10.9.6 Sight Distances from Vehicle Crossings a) Unobstructed sight distances shall be available from all vehicle crossings, in accordance with the minimum sight distances specified in Table 10-9 below: b) All sight distance measurements shall be undertaken in accordance with the diagram in Appendix 10-6.	Future access locations would be able to comply with this requirement as Longbeach Road is straight and flat.	Yes
10.9.7 Design and Construction of Vehicle Crossings onto Arterial Roads a) The length of any vehicle crossing shall be in accordance with dimensions set out in Table 10-10 below: b) The vehicle crossing length shall be measured along the property boundary.	The existing accesses comply with these requirements. Future access alterations would also be able to comply.	

RULE	COMMENT	COMPLIES?
c) All vehicle crossings on to arterial and principal roads where the speed limit exceeds 50km/hr shall be designed and constructed in accordance with the diagrams included in Appendices 10-7 – 10-8, except for vehicle crossings to farming activities in Rural Zones; this standard shall only apply where a vehicle crossing provides access or a driveway to building(s).		
10.9.8 Vehicle Oriented Commercial Activities a) Notwithstanding rules 10.9.3-10.9.6 above, all: - service stations; - truck stops; - commercial activities (or groups of retail activities using common vehicle crossings) containing a total gross floor area of more than 500m²; shall comply with the following additional rules: - No part of any vehicle crossing on to an arterial road shall be located closer than: - 60m to the departure side of any intersection; or - 30m to the approach side of any intersection. - Distance shall be measured from the point at which the legal boundary lines of the two road frontages intersect. - Unobstructed sight distances shall be available from all vehicle crossings, in accordance with the minimum sight distances specified in Table 10-11 below: - Where the legal road speed limit is 50km/hr, the above rule shall only apply to Arterial and Principal roads. - All sight distance measurements shall be undertaken in accordance with the relevant diagram in Appendix 10-6.	A sight distance of 280m is required and is achieved to the south. The visibility to the north out of the proposed access terminates at the SH1 / Longbeach Road intersection, 205m north of the proposed site access.	**No**
10.9.9 State Highway Access a) Any new subdivision or land use activity that would require direct access to a state highway at a location where there is currently no such direct access, or would require any alteration to, or increase in the use of an existing direct access to such a state highway, shall be a restricted discretionary activity.	No access is proposed to SH1.	
10.9.10 Minimum Sight Distances from Intersections a) Unobstructed sight distances shall be available from all intersections, in accordance with the minimum sight distances specified in Table 10-12 below: b) All sight distance measurements shall be undertaken in accordance with the relevant diagram in Appendix 10-6.	Not applicable as no intersections are proposed.	N/A
10.9.11 Spacing between Intersections a) All intersections shall be designed and located such that the minimum spacing between successive intersections is not less than the minimum distance specified in Table 10-13 below:	Not applicable as no intersections are proposed.	N/A

RULE	COMMENT	COMPLIES?
b) The distance shall be measured from the centre of one intersection to the centre of the succeeding intersection, parallel to the centreline of the road. c) In Rural Zones where the legal speed limit for the road is 100km/hr, the above standard shall apply regardless of the side of the road on which the intersections are located. d) On roads in other zones, the above standard shall apply to intersections on the same side of the road only.		
10.9.12 Tree Planting – Shading and Intersection Visibility a) No tree shall be allowed to grow such that it shades the carriageway of a road throughout the hours of 10am and 2pm on the shortest day of the year. b) No tree shall be planted within 30m of a road intersection, measured to the point at which the legal boundary lines of the two road frontages intersect.	The proposal can comply with this requirement.	
10.9.13 Direct Access via Railway Level Crossings a) Any new subdivision or land use activity that would require direct access over a railway level crossing at a location where there is currently no such direct access, and where no alternative access is provided, or would require any alteration to or increase in use of an existing direct access over a railway level crossing, shall be a restricted discretionary activity. b) Any new accessway shall be located a minimum of 30 metres from a road/rail level crossing. The 30 metres shall be measured from the closest rail track to the edge of seal on the proposed accessway.	Not applicable, as the access will be sufficiently separated from the rail corridor by SH1.	N/A
10.9.14 Railway Level Crossings – Vehicle Accessway Location and Minimum Sight **Distances** a) Any new vehicle accessway onto a road shall be located a minimum of 30 metres from a railway level crossing, measured from the closest railway track to the edge of seal of the proposed accessway. b) No obstruction shall be located such that it fails to comply with the railway level crossing approach sight triangles determined in accordance with Appendix 10-9. Notes: - The above controls apply to established level crossings. Sightlines are also a factor in the development of the design of new level crossings: however further technical assessment against rail and road design standards, and formal statutory approvals under the Railways Act 2005, are also required from the railway operator (Kiwirail). - The rail operator (Kiwirail) also has the authority to require the removal of vegetation, walls, fences, and other obstructions from these sightlines under Section 77 of the Railways Act 2005. The inclusion of the above sightline control standard ensures that development and road/rail safety standards are well integrated, and reduce the (later) risk of a landowner being required to remove obstructions.	Not applicable, as the access will be sufficiently separated from the rail corridor by SH1.	N/A

Appendix 6

SH1 / Longbeach Road Intersection Layout

Farmers Corner

Information has been derived from various organisations, including Environment Canterbury and the Canterbury Maps partners. Boundary information is derived under licence from LINZ Digital Cadastral Database (Crown Copyright Reserved). Environment Canterbury and the Canterbury Maps partners do not give and expressly disclaim any warranty as to the accuracy or completeness of the information or its fitness for any purpose.

Information from this map may not be used for the purposes of any legal disputes. The user should independently verify the accuracy of any information before taking any action in reliance upon it.

N

0 0.015 0.03 0.045 0.06 Kilometers

Scale: 1:1,000 @A3

Map Created by Environment Canterbury on 25/10/2018 at 11:59:20 a.m.

Appendix 7

With Development Intersection Operation Results

MOVEMENT SUMMARY

Site: 101 [SH1/Longbreach - 2028 Weekday PM Peak + Plan Change Permitted]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Longbeach Road												
1	L2	26	0.0	0.031	9.9	LOS A	0.1	0.7	0.44	0.70	0.44	72.2
3	R2	102	2.1	0.434	28.4	LOS D	1.8	13.0	0.86	1.01	1.17	52.4
Approach		128	1.6	0.434	24.6	LOS C	1.8	13.0	0.78	0.94	1.02	55.5
East: SH1												
4	L2	134	3.1	0.072	7.9	LOS A	0.0	0.0	0.00	0.66	0.00	73.3
5	T1	417	11.4	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach		551	9.4	0.227	1.9	NA	0.0	0.0	0.00	0.16	0.00	91.8
West: SH1												
11	T1	398	13.0	0.220	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
12	R2	89	1.2	0.118	11.2	LOS B	0.5	3.2	0.54	0.79	0.54	69.5
Approach		487	10.8	0.220	2.1	NA	0.5	3.2	0.10	0.15	0.10	92.5
All Vehicles		1166	9.1	0.434	4.5	NA	1.8	13.0	0.13	0.24	0.15	85.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [SH1/Longbeach - 2028 Weekday PM Peak + Plan Change RD]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Longbeach Road												
1	L2	27	0.0	0.033	9.9	LOS A	0.1	0.8	0.44	0.70	0.44	72.2
3	R2	107	2.0	0.460	29.2	LOS D	2.0	14.0	0.87	1.01	1.21	51.8
Approach		135	1.6	0.460	25.3	LOS D	2.0	14.0	0.78	0.95	1.05	55.0
East: SH1												
4	L2	137	3.1	0.074	7.9	LOS A	0.0	0.0	0.00	0.66	0.00	73.3
5	T1	417	11.4	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach		554	9.3	0.227	2.0	NA	0.0	0.0	0.00	0.16	0.00	91.7
West: SH1												
11	T1	398	13.0	0.220	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
12	R2	94	1.1	0.124	11.2	LOS B	0.5	3.4	0.55	0.80	0.55	69.5
Approach		492	10.7	0.220	2.2	NA	0.5	3.4	0.10	0.15	0.10	92.2
All Vehicles		1180	9.0	0.460	4.7	NA	2.0	14.0	0.13	0.25	0.16	85.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.